

# Enabling the transition to electric vehicles:

**The regulator's priorities  
for a green, fair future**



#GreenFairFuture

# Report

## Enabling the transition to electric vehicles: the regulator's priorities for a green fair future

**Publication date:** 4th September 2021

**Contact:** EV Policy Team

**Email:** [consumeraffairs@ofgem.gov.uk](mailto:consumeraffairs@ofgem.gov.uk)

This document communicates our ambition supporting the transition to Electric Vehicles (EVs). It also sets out our priorities for supporting EV deployment and the integration of EVs into the electricity system.

© Crown copyright 2021

The text of this document may be reproduced (excluding logos) under and in accordance with the terms of the **Open Government Licence**.

Without prejudice to the generality of the terms of the Open Government Licence the material that is reproduced must be acknowledged as Crown copyright and the document title of this document must be specified in that acknowledgement.

Any enquiries related to the text of this publication should be sent to Ofgem at: 10 South Colonnade, Canary Wharf, London, E14 4PU. Alternatively, please call Ofgem on 0207 901 7000.

## Contents

<b>Contents .....</b>	<b>2</b>
<b>Foreword .....</b>	<b>3</b>
<b>1. Executive Summary .....</b>	<b>4</b>
<b>2. Introduction .....</b>	<b>8</b>
Ofgem’s role .....	10
Ofgem’s priorities .....	11
<b>3. Getting networks ready for EVs .....</b>	<b>13</b>
Section summary .....	13
Networks Overview .....	13
Introduction.....	14
Priority Area 1: Ensure the network is prepared for EV adoption .....	14
Priority Area 2: Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges. ....	16
Actions.....	18
<b>4. System Integration.....</b>	<b>20</b>
Section summary .....	20
System Integration Overview .....	21
Introduction.....	21
Priority Area 3: Enabling rapid development and maximising the uptake of smart charging and V2X technology .....	23
Actions.....	28
<b>5. Consumer participation and protection .....</b>	<b>29</b>
Section summary .....	29
Consumer Overview .....	29
Introduction.....	29
Priority Area 4: Consumer Participation and Protections .....	30
Actions.....	33
<b>6. Working with stakeholders .....</b>	<b>34</b>

## Foreword

To meet the UK’s 2050 climate change targets means decarbonising all parts of the economy. With the transport sector accounting for 27% of greenhouse gases emitted in 2019, the rapid take up of electric vehicles (EVs) will be vital if UK is to hit its climate change targets.

Ofgem will make sure that energy sector regulation supports the rapid transition to EVs, and does so at least cost to consumers. We are already accelerating investment in the energy networks to ensure they are prepared for the increased demand for electricity, and recently set out our proposals to reduce the costs of installing new chargepoints.

We intend to go further, building a smart and flexible energy system that can utilise the huge number of EV batteries that are going to be plugged into our system to keep costs down for everyone. Consumers must be at the heart of this transition. For example, we will be encouraging products and services to be available which enable drivers to charge their cars where it is most convenient from them, for example ‘on the go’ and at workplaces; when it’s cheapest to do so; and which allow the sale of electricity back to the grid when it’s most needed.

Our priority is ensuring that all consumers benefit from this transition to EVs. This document sets our priorities for making that happen.

We look forward to ongoing work with Government, industry, and consumers to ensure we have the energy system we need to support the electric vehicle revolution.

**Jonathan Brearley**  
**Chief Executive,**  
**Office of Gas and Electricity Markets**



## 1. Executive Summary

1.1. The rapid uptake of electric vehicles (EVs)<sup>1</sup> will be the most significant change in our energy sector over the next 10 years. We may well see 14 million EVs on UK roads by 2030. By 2050, electric cars and vans are expected to need 65–100TWh of electricity annually: an increase of 20–30% over today’s levels.<sup>2</sup> This will require significant investment in the energy system. But, with the right planning and regulatory measures, EVs can be an asset to the energy system, as well as to the environment. All consumers should be able to benefit from the transition, and our job is to help make this a reality.

1.2. We believe that high numbers of EVs on the system could reduce total costs of energy for everyone, even non EV owners, particularly if it is the norm that EVs charge in ‘off-peak’ hours, using smart charging. EV owners are expected to benefit from cheaper running costs of EVs compared to petrol or diesel vehicles, but non-EV owners will also benefit. This is because EVs will enable a better utilisation of the electricity network and generation assets, thereby reducing unit costs.

1.3. Ofgem has an important role to play in enabling the widespread adoption of EVs and their lower-cost integration into the electricity system. We have a range of regulatory tools at our disposal - from establishing market mechanisms to mandatory requirements. On EVs, we plan to adopt a balanced approach, establishing price incentives and enabling market-based solutions to encourage smart charging, supported as needed by regulatory measures such as the government’s plans to mandate that all new private EV chargepoints are capable of smart charging.

1.4. As the transition to EVs happens, Ofgem will ensure both that the networks are prepared for increased EV adoption whilst avoiding over-investment, and that network connections are timely and cost-effective. Network companies will need to adapt to these challenges. They will need to ensure that they monitor their network to target strategic investment where capacity is needed; that the process for connecting EV infrastructure to the network is easier; and that costs to connect are fair. Ofgem is proposing to reduce

---

<sup>1</sup> There are already half a million BEV and PHEVs on UK roads, and to date this year (up to July) new car registrations have seen BEV and PHEV registrations overtaking full diesel car registrations: <https://www.smmmt.co.uk/vehicle-data/car-registrations/>

<sup>2</sup> The CCC’s Sixth Carbon Budget: [Sixth Carbon Budget - Climate Change Committee \(theccc.org.uk\)](https://www.theccc.org.uk/publications/sixth-carbon-budget/). CCC pathways suggest that the total demand from electrification of all road transport (including motorcycles, buses, and HGVs) could account for around 15-20% of the total electricity demand in 2050 (excluding demand from electrolysis using surplus generation).

costs for developers to install new electric vehicle charging stations where reinforcement of the existing network is required.

1.5. When and how EV users charge their vehicles will be critical to the impact on the overall system. If EVs smart charge and provide flexibility to the grid, they will be a huge asset to the energy system. Without smart charging, by 2050 EVs could introduce significant additional peak demand. Models suggest that EVs could see peak demand rise by more than ~20GW (which is 35% of current peak demand). With smart charging, the impact to peak demand would be minimised (models suggest smart charging alone could avoid 5-15GW of demand).<sup>3</sup> Smart charging should benefit EV owners, who can charge their vehicles when electricity prices are low – for example overnight, or at times of high renewable electricity supply.

1.6. Vehicle batteries can play an active role in the energy system of the future. Vehicle-to-X (V2X) technologies allow to export electricity during periods of high demand and/or low electricity supply. V2X’s potential goes beyond reducing peak demand, as it is capable of providing a temporary source of energy supply. By 2050, the capacity of V2X could significantly exceed 30GW.<sup>4</sup> By providing power to the grid or buildings, they have the potential to provide further benefits to the energy system, and to EV owners providing that flexibility, as they earn money or reduce their own energy consumption from exporting power. If appropriately integrated, these technologies can lower the overall generation capacity required on the system and also avoid additional network costs. V2X technologies are at an early stage, but Ofgem is keen to support the development of this market.

1.7. To unlock that flexibility, and maximise the benefits of EVs, we will need greater consumer participation. Consumers must be at the heart of the EV transition. To enable this, there is a need for new innovative products, technologies, and services to emerge in the retail market. For example, we may see the emergence of service-based business models in which consumers buy ‘miles’ and service levels from transport providers, rather than kWh from an energy supplier. Consumers need a choice of products as well as increased awareness and confidence in these new offerings. We will adapt our regulatory

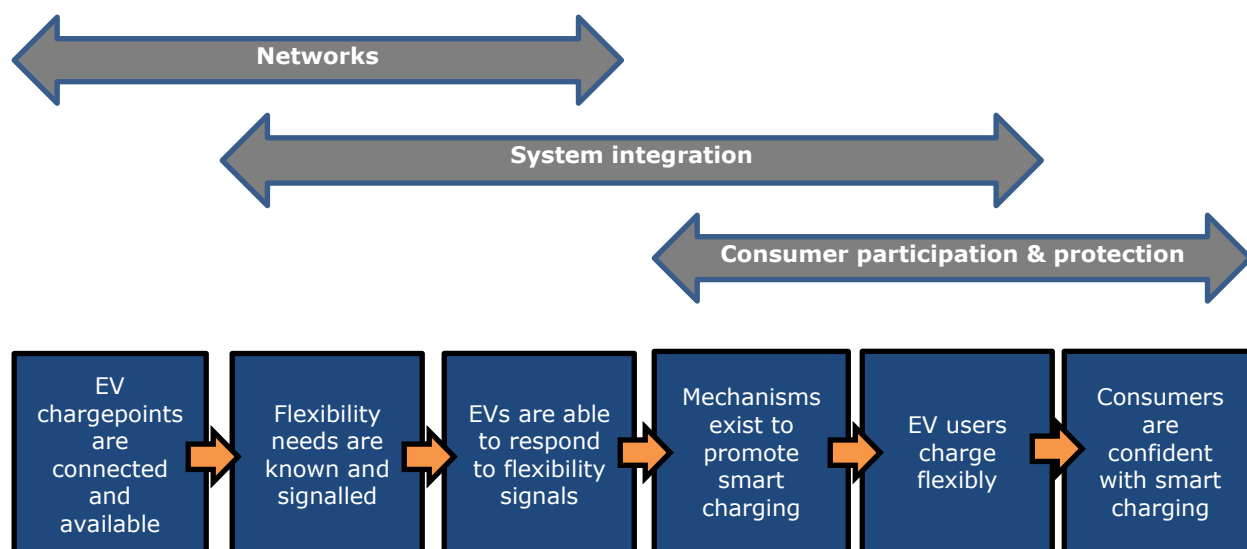
---

<sup>3</sup> <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021>

<sup>4</sup> Based on FES2021 scenarios (Consumer Transformation and Leading the Way).  
<https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021>

approaches to ensure we can continue to protect the interests of consumers as the market changes.

1.8. To draw together this document, we have considered the elements needed for the low-cost integration of EVs to the electricity system. We have identified six outcomes required across three broad areas: networks, system integration, and consumer participation and protection:



1.9. Ofgem has a key role in enabling all of these outcomes, working with the Government and industry. To achieve this, we have identified four areas of priority activity for Ofgem across the three themes:

#### Priority activity for Ofgem

- **Networks:**

**Priority 1: Ensure the network is prepared for EV adoption.** We will ensure network investment is in the right areas and at the right time to enable EV adoption, whilst minimising the costs of new network infrastructure. This includes network companies making informed projections of local uptake, and putting in place plans to meet needs arising, as well as using flexible solutions where they are more cost effective than new network capacity.

**Priority 2: Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges.**

We propose to reduce barriers to network connection by reducing EV connection charges associated with reinforcement of shared network assets. We will also incentivise improvements to the connection process through the network price controls for electricity distribution networks (RIIO-ED2).

- **System integration:**

**Priority 3: Enable rapid development and uptake of smart charging and V2X technology.**

We will facilitate the uptake of smart charging through market incentives including Market-Wide Half-Hourly Settlement and Time of Use tariffs. We will work with Government and industry to progress smart charging defaults (pre-set charging at off-peak times), to remove barriers for V2X, and to develop enablers such as data and communications for dynamic smart charging.

- **Consumer participation and protection:**

**Priority 4: Support consumer participation** including supporting the development of innovative products, coupled with consumer awareness and confidence, to boost consumer engagement; **and ensure consumer protections keep up with technological and business model change.**

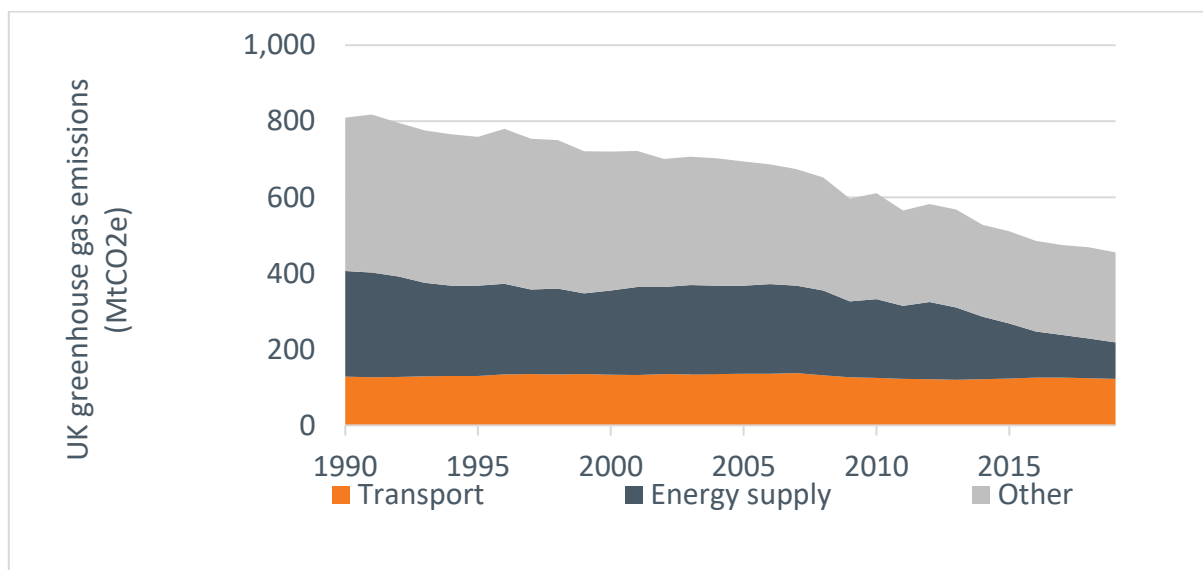
1.10. We will be engaging with key stakeholders as we develop and deliver these priorities, and welcome views on this document. Please send any comments on this report to [consumeraffairs@ofgem.gov.uk](mailto:consumeraffairs@ofgem.gov.uk)



## 2. Introduction

2.1. The transport sector is now the UK’s largest single source of greenhouse gas (GHG) emissions, rising to over a quarter of the total as emissions from other sectors have fallen.<sup>5</sup> Ultimately, if the UK is to reach its emissions targets, virtually all transport will need to be based on low carbon energy sources rather than fossil fuels.<sup>6</sup>

Figure 1: Greenhouse gas emissions by sectors



Source: BEIS: 2019 UK Greenhouse Gas Emissions, Final Figures

2.2. The emergence and adoption of increasingly cost competitive electric vehicles will be the primary route to decarbonise road transport. The resulting electrification of transport will have significant benefits not only for EV users, but wider society including other electricity consumers through reducing carbon emissions and improving air quality.<sup>7</sup> The government has made ambitious commitments to decarbonise transport, including the ending of new sales of petrol and diesel cars and vans from 2030, new Plug-in Hybrid

<sup>5</sup> [2019 UK Greenhouse Gas Emissions, Final Figures \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/654442/2019-UK-GHG-Emissions-Final-Figures.pdf) (NB international aviation and shipping not included in this figure)

<sup>6</sup> 78% reduction in greenhouse gas emissions by 2035, compared to 1990 levels, [UK enshrines new target in law to slash emissions by 78% by 2035 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035); [Net zero greenhouse gas emissions by 2050, UK becomes first major economy to pass net zero emissions law - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/net-zero-greenhouse-gas-emissions-by-2050-uk-becomes-first-major-economy-to-pass-net-zero-emissions-law)

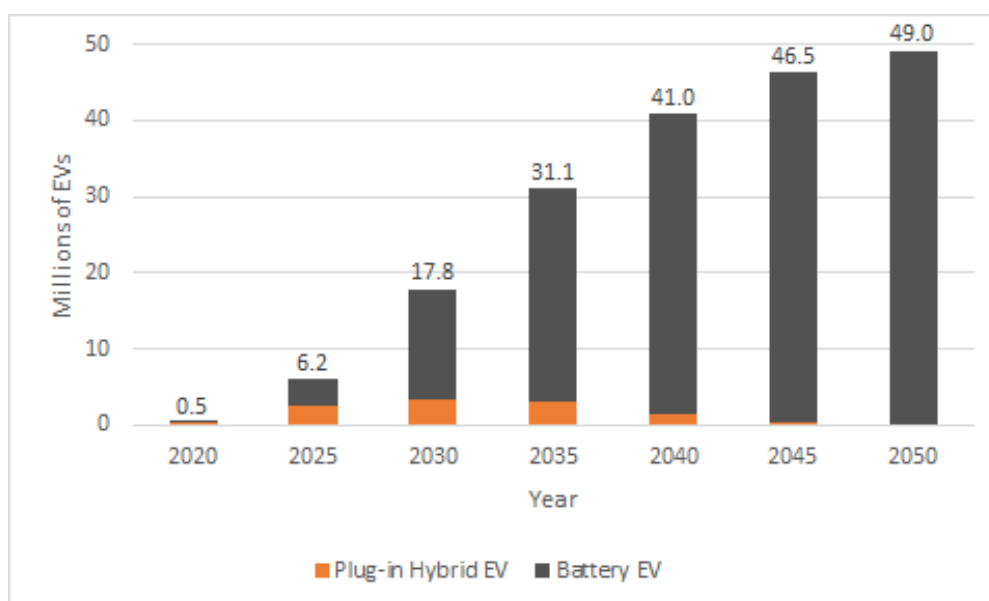
<sup>7</sup> <https://www.ofgem.gov.uk/publications/ofgems-future-insights-paper-5-implications-transition-electric-vehicles>

Electric Vehicles (PHEVs) from 2035 and, subject to consultation, new diesel and petrol heavy goods vehicles (HGVs) from 2040.

2.3. As a result, it is expected that the number of EVs, and especially pure EVs (powered wholly by a battery which is charged from electricity) will rise substantially. The Climate Change Committee’s (CCC) Sixth Carbon Budget Balanced Pathway projects that the number of pure EVs on the road could grow to 14m by 2030<sup>8</sup> from half a million in 2021. This is broadly in line with estimates from other sources.<sup>9</sup>

2.4. This growth will require increased capacity in the electricity system. The electrification of transport will increase electricity demand significantly. CCC estimates by 2050 EVs are expected to introduce an additional 65-100TWh of annual electricity demand to the system, or an increase of 20-30% over today’s levels.<sup>10</sup> Millions of chargepoints will need to be installed across the country, requiring new and upgraded network infrastructure. And the electricity system will need to become more flexible if it is to integrate these new sources of demand effectively.

Figure 2: Projected total electric cars and vans on the road in the UK



Source: CCC Sixth Carbon Budget, Balanced Pathway

<sup>8</sup> <https://www.theccc.org.uk/publication/sixth-carbon-budget/> Note, analysis for CB6 assumed phase of all BEVs was the former date of 2032

<sup>9</sup> <https://www.smmmt.co.uk/category/vehicle-data/new-car-van-forecasts/>

<sup>10</sup> <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

## **Ofgem’s role**

2.5. Ofgem is Great Britain’s independent regulator responsible for electricity and gas companies. Our statutory duty is to protect the interests of current and future energy consumers, including their interests in greenhouse gas reductions.

2.6. We are committed to enabling decarbonisation set out in our Decarbonisation Action Plan<sup>11</sup> at lowest costs to energy consumers, driving innovation and competition. We recognise that we have a critical role to play in the energy transition. In support of the Government’s commitment to a 2030 phase out for new sales of petrol and diesel cars and vans, and the rapid expected uptake of EVs, our role is to ensure that energy networks can support this uptake at lowest overall costs; to facilitate the emergence of innovative products for EV smart charging; and to ensure all consumers are protected as new products and services emerge.

2.7. Ensuring the energy system facilitates the growth of and low-cost integration of EVs can only be achieved through collaboration with government and industry. The Government decides what should be funded by taxpayers (e.g. incentives to encourage EV uptake) and establishes product standards. Government sets the overall policy and legislative framework, within which we put in place the regulatory policies and market frameworks. We work closely with Government, for example, we have recently published the joint BEIS-Ofgem Smart Systems and Flexibility Plan, phase 2.<sup>12</sup>

2.8. Ofgem has and will continue to work with government to develop and/or implement recommendations set out in the following publications:

- Government’s Transport Decarbonisation Plan
- Joint Ofgem/Government Smart Systems and Flexibility Plan, Phase 2
- The Competition and Markets Authority’s (CMA) EV charging market report
- Transport Committee - UK Parliament - Zero emission vehicles Report
- Government's EV Infrastructure Strategy (expected autumn 2021)
- Joint Ofgem/BEIS EV Flexibility policy statement (expected 2022)

---

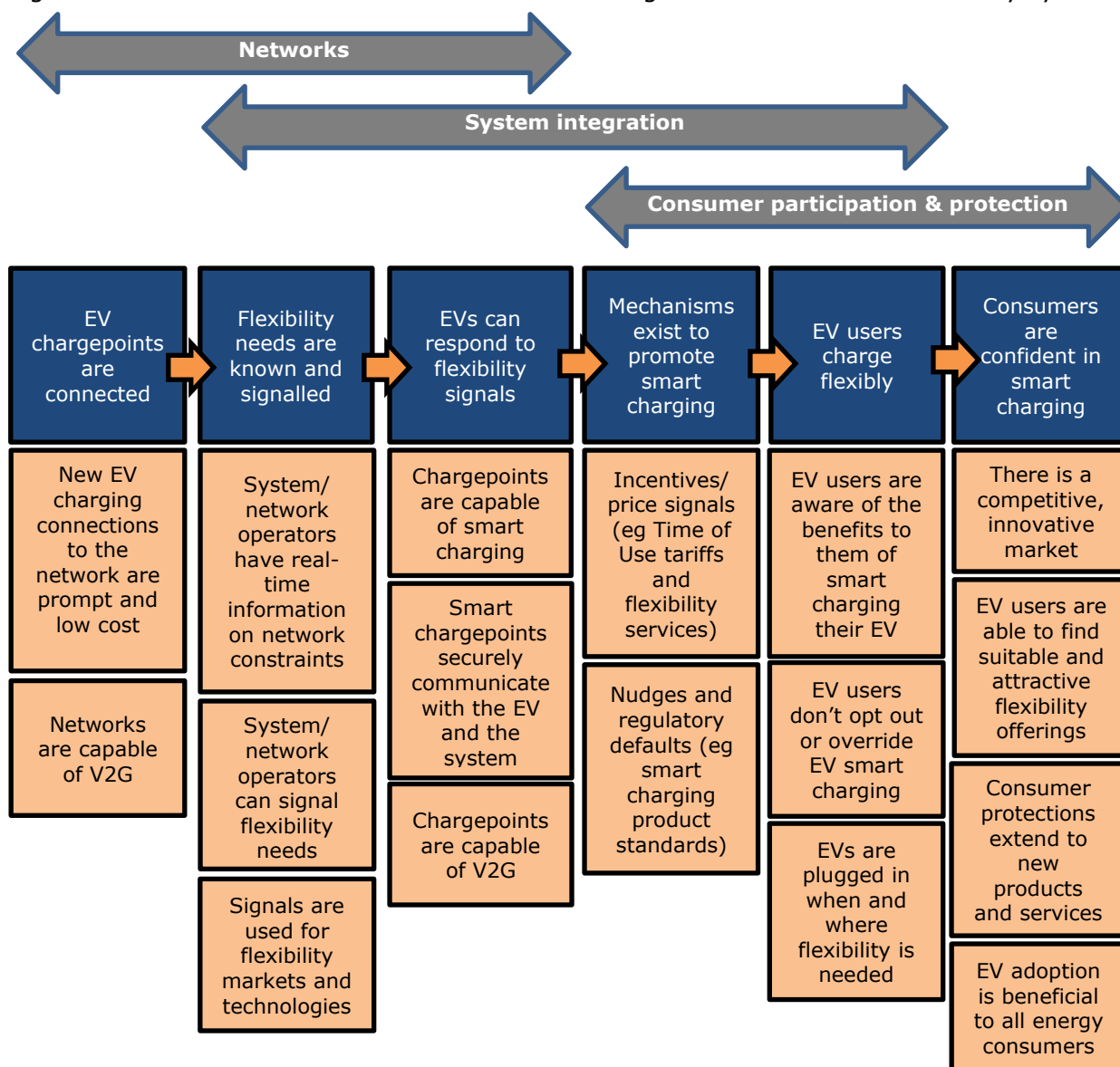
<sup>11</sup> <https://www.ofgem.gov.uk/publications/ofgems-decarbonisation-action-plan>

<sup>12</sup> <https://www.gov.uk/government/publications/transitioning-to-a-net-zero-energy-system-smart-systems-and-flexibility-plan-2021>

## Ofgem’s priorities

2.9. Ofgem has an important role to play in enabling the widespread adoption of EVs and their low-cost integration into the electricity system. As the transition to EVs happens, Ofgem will ensure that the networks are prepared for increased EV adoption, facilitate unlocking flexibility through smart charging and V2X, and increase greater consumer participation through emerging new innovative products, technologies, and services in the retail market. The orange boxes in Figure 3 list the steps needed to deliver the outcomes (blue boxes). There are currently gaps against all of these outcomes. We have identified actions/decisions which are within our remit, and areas where we can work with HMG and industry to deliver government’s 2030 commitment.

Figure 3: The elements needed for the low-cost integration of EVs to the electricity system



2.10. The rest of this document sets out the key challenges within each of our priority areas and how we plan to address them.

### 3. Getting networks ready for EVs

#### Section summary

As transport is electrified, tens of millions of EVs will need to connect to the electricity network. Through our network price controls we are ensuring that networks will be prepared for EV uptake, and that there is sufficient network capacity, whilst avoiding unnecessary network investment (e.g. utilising smart charging and V2X) and keeping costs down for consumers. The likely ‘clustering’ of rapid EV uptake in some locations faster than the national average is a significant challenge, which network companies must prepare for.

Our goal is to ensure that new EV connections are provided promptly, and the connections process is easy and consistent. Additionally, through our proposed reforms to the network charging regime, we are proposing reductions in customer connection costs.

#### Networks Overview

**The challenge:** New network capacity will be needed, but it is challenging to identify exactly where and when EV uptake is likely to arise. This requires new regulatory approaches to ensure network investment is timely and at least cost. In addition, connection charges and time have been a barrier to investment in EV charging infrastructure.

#### Priority areas:

##### Ensure the network is prepared for EV adoption

We will ensure network investment is in the right areas and at the right time to enable EV adoption, whilst minimising the costs of new network infrastructure. As part of the network price controls for electricity distribution networks (RIIO-ED2) we will ensure that network companies are making informed projections of local uptake and putting in place plans to meet needs arising, using flexible solutions where they are more cost effective than new network capacity.

**Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges.**

Our proposals for changes to connection charging (the Access and Forward-Looking Charging Significant Code Review)<sup>13</sup> will reduce barriers to network connection by reducing EV connection charges associated with reinforcement of shared network assets. We will also incentivise improvements to the connection process through the network price controls for electricity distribution networks (RIIO-ED2).<sup>14</sup>

## Introduction

3.1. The transition to EVs will need increased network capacity to provide power for this new and significant source of electricity demand. Vehicles will need to be connected and charged in order to meet transport needs.

3.2. To meet demand, a large number of new charge points will be required. The CCC forecast a potential 370,000 public charge points will be required by 2035. Over the same period, we estimate up to 19 million home charge points may also be required, to meet EV uptake projections.<sup>15</sup> The Government is expected to set out their plans in an EV Infrastructure Strategy later this year.

3.3. As part of their investigation into the EV charging market, the Competition and Markets Authority (CMA)<sup>16</sup> recommended Ofgem “make changes to speed up grid connections, invest strategically and lower connection costs.” We agree with the CMA’s recommendation. We set out below the actions Ofgem intends to take to facilitate at least cost the network connections and capacity required to meet future EV infrastructure needs.

## Priority Area 1: Ensure the network is prepared for EV adoption

3.4. To meet future EV charging demands, significant network reinforcement will be needed for all types of charge points, from ultra-rapid public chargepoints to domestic

---

<sup>13</sup> [Network charging and access reform | Ofgem](#)

<sup>14</sup> [Network price controls 2021-2028 \(RIIO-2\) - Electricity distribution price control 2023-2028 \(RIIO-ED2\) | Ofgem](#)

<sup>15</sup> CCC CB6 Fig 3.1.b (public charge points); domestic figure 60% of 27.6m EV cars (pg 98, <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf> )

<sup>16</sup> [Electric vehicle charging market study: final report - GOV.UK \(www.gov.uk\)](#)

chargepoints. The key challenge is ensuring there is sufficient network capacity, when and where it is needed, at least cost to consumers.

3.5. We determine network investment through our network price controls. In preparation for the forthcoming price control period (RIIO-ED2), we are requiring distribution network operators (DNOs) to forecast EV adoption. Where additional capacity is required, we will seek to ensure it is made in a timely and strategic fashion. DNOs should consider sizing reinforcement to meet longer-term demand projections for example, electrification of heating such with heat pumps, rather than taking an incremental approach which can potentially increase disruption and long run costs.

3.6. We want to minimise network investment costs, which means only investing where it is needed. Nonetheless, a significant challenge for local networks is to predict where EV uptake is likely to arise, and when. We will be incentivising and funding network operators to improve their monitoring and visibility of low voltage networks. In order to improve forecasting of EV uptake (and other sources of future demand), we are encouraging improvements in customer-centric modelling to better predict clusters of faster EV uptake. The uncertain pace of location of EV adoption means we cannot approve a full five-year programme of work in advance, so we intend to use uncertainty mechanisms in RIIO-ED2. We also encourage DNOs to work with local stakeholders to determine likely needs for local public charging infrastructure. Doing so will not only ensure that the network investment is efficient but also ensure that the needed work is done in a timely manner.

3.7. We will also ensure that, where network capacity is insufficient, this is tackled at least cost to consumers. In particular by requiring DNOs to first maximise flexibility (including from EVs), where this is a viable alternative to network reinforcement. In addition, our Network Innovation Allowance (NIA)<sup>17</sup> and Electricity Network Innovation Competition (NIC)<sup>18</sup> provide funding for DNOs to try new operational, technical, commercial, and contractual arrangements that may allow connection of users without the need for network reinforcement. Going forward, the NIC will be replaced by the £450m

---

<sup>17</sup> In the RIIO-2 price control, NIA provides limited funding to RIIO network licensees to enable them to take forward innovation projects that have the potential to address consumer vulnerability and/or deliver longer-term financial and environmental benefits for consumers

<sup>18</sup> The Electricity Network Innovation Competition (NIC) was an annual opportunity for electricity network companies to compete for funding for the development and demonstration of new technologies, operating and commercial arrangements.



Strategic Innovation Fund (SIF), which will fund big, bold, and ambitious projects including helping us integrate EVs into the energy system effectively.

3.8. Some ultra-rapid charging infrastructure will be important to ensure EV users are confident they can charge their car quickly when they need to. The Government’s £950m Rapid Charging Fund is expected to deliver around 6,000 high powered charge points across England’s motorways and major A roads by 2035.<sup>19</sup> In parallel, Ofgem in May 2021 announced £300m for additional network investment as part of the RIIO-ED1 Green Recovery Scheme.<sup>20</sup> Around half of this investment is for new EV charging infrastructure such as cabling and substations that will provide the network capacity to support 1,800 new ultra-rapid charging points at motorway service stations, tripling the number of these public charge points, and a further 1,750 rapid public charge points at other key transits and city hubs to reduce EV range anxiety and improve consumer confidence.

3.9. This is part of a big injection of investment in our energy networks that will take place over the next seven years to provide consumers with safe, secure, and clean energy at an affordable price. We settled the electricity Transmission price controls in December 2020, covering the investment programme over the five-year period to 2026, making available more than £10 billion for additional network investment, and the electricity distribution price controls covering investment in local grids, covering the five-year period to 2028, will be confirmed in 2022.

**Priority Area 2: Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges.**

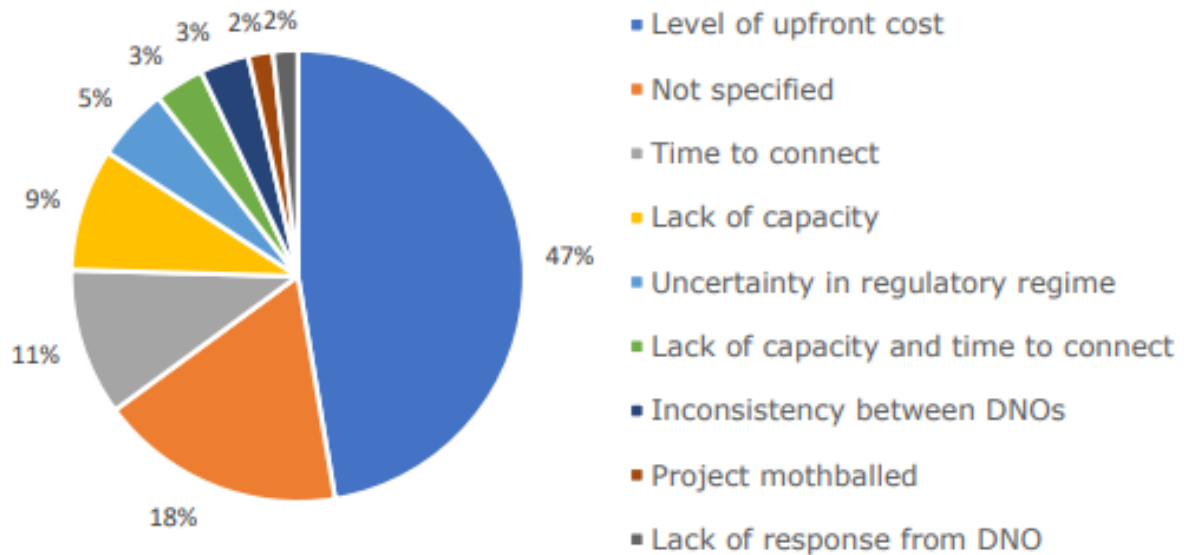
3.10. The rapid growth in EV adoption is leading to an increased demand for new connections to the grid. The connection process for households with a domestic chargepoint is generally simple and often does not trigger upstream network reinforcement. However, developers requiring larger scale chargepoint connections can experience two significant barriers: the costs of connecting to the network; and the pace and difficulty of the process of connection (see Figure 4). We are addressing both these issues.

---

<sup>19</sup> [Government vision for the rapid chargepoint network in England - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/government-vision-for-the-rapid-chargepoint-network-in-england)

<sup>20</sup> [Decision on the RIIO-ED1 Green Recovery Scheme | Ofgem](#)

Figure 4: Stakeholder feedback from larger connection customers on issues experienced with new connections to distribution networks



Source: Access and Forward-looking Charges Significant Code Review, Impact Assessment<sup>21</sup>

3.11. For domestic customers, in the vast majority of cases they won't need to pay for a network upgrade when they install their EV chargepoint.<sup>22</sup> But for non-domestic customers, the cost of connecting to the network can be a significant barrier. Current arrangements mean consumers seeking to connect must pay for any reinforcement required to the existing network at the same voltage level or the one above. But for larger scale charging infrastructure, eg, vehicle depots, car parks, blocks of flats, this can result in prohibitively high costs, meaning connecting customers delay or decide against installing EV charging infrastructure. We have recently set out our minded-to proposals to connection charging.<sup>23</sup> Our proposals will reduce barriers to network connection by removing those costs associated with reinforcement of shared networks. The costs of this reinforcement will be

<sup>21</sup> <https://www.ofgem.gov.uk/sites/default/files/2021-06/%282%29%20Ofgem%20Access%20SCR%20-%20Impact%20Assessments.pdf>

<sup>22</sup> This is because most domestic properties in the UK are connected at less than 100 amps, below which reinforcement charges for the wider network do not typically apply

<sup>23</sup> [Access and Forward-looking Charges Significant Code Review - Consultation on Minded to Positions | Ofgem](#)

spread more fairly over a wider customer base and over time, through ongoing use of system charges.<sup>24</sup>

3.12. The time taken to deliver new connections can also be a problem. We welcome recent improvements in DNO’s performance in the connection process - the time taken to connect has improved by 27% since 2013<sup>25</sup> and the time to issue quotes has improved by over 50%. The package of connections incentives within the next price control (RIIO-ED2) will drive timely and efficient connections for all types of connection customers and will be supported by the approach to strategic investment. We expect to see further improvements for all EV charge point connection customers, including charge point operators, local authorities, and fleet operators.

## Actions

What we have done	
Priority Area 1 - Ensure the network is prepared for EV adoption	Priority Area 2 - Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges.
<ul style="list-style-type: none"> <li>• <b>Network investment</b> – Funding for EV infrastructure from the £300m Green Recovery Scheme.</li> <li>• <b>Planning for EV uptake</b> – RIIO-ED2 Sector Methodology and Business Plan Guidance<sup>26</sup> requires DNOs to take forecasts of EV uptake and consumer behaviour into consideration, while assessing investment needs in their local areas.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Cost</b> - Published our Access and Forward-Looking Charging SCR Consultation on Mindful to Positions. We are proposing to reduce barriers to network connection by removing those connection costs associated with reinforcement of shared networks.</li> </ul>

<sup>24</sup> Proposals will only affect larger 3-phase connected customers (eg EV charging hubs).

<sup>25</sup> This is for ‘smaller connections’ (up to 4 domestic properties)

<sup>26</sup> [RIIO-ED2 Business Plan Guidance | Ofgem](#)

What are we going to do	
Priority Area 1 - Ensure the network is prepared for EV adoption	Priority Area 2 - Reducing barriers to network connections by ensuring efficient and timely process and proposals to reduce EV connection charges.
<ul style="list-style-type: none"> <li>• <b>Better forecasting</b> - Assess draft business plans to ensure that EV uptake and consumer behaviour have been taken into consideration, as per our business plan guidance.</li> <li>• <b>Monitoring and planning</b> – <ul style="list-style-type: none"> <li>➤ We will require DNOs to put in place improved network monitoring capabilities during RIIO ED2, whilst ensuring that their spending plans represent good value for energy consumers.</li> <li>➤ We intend to use uncertainty mechanisms as a recognition that the uncertain pace of location of EV adoption means we cannot approve a full five-year programme of work in advance.</li> <li>➤ RIIO-ED2 licence obligation requiring DNOs to publish digitalisation strategies.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Connection costs</b> - Publish our Final Access and Forward-Looking Charging SCR decision by the end of 2021 and implement changes from 2023.</li> <li>• <b>RIIO-ED2 connections incentives</b> – for smaller connections we will incentivise DNOs to reduce connection times for customers seeking a small, or minor, connection to the distribution network. For larger connections customers, DNOs will need to have in place and then deliver a strategy which meets customers’ expectations of more timely and efficient connections.</li> <li>• <b>Good service</b> - DNOs will be expected to improve their customer service by sharing good practice on EV charge point connections and measuring reported improved customer service by 2023.</li> </ul>

## 4. System Integration

### Section summary

As the transition to EVs proceeds, it will have a growing impact on the energy system. Some recharging will need to be fast for charging en-route during longer journeys, but most charging has the potential to be slower, where the EV is parked for longer durations. We would like to see most EV charging to occur at times of low demand, for example overnight, which should reduce system costs and benefit the EV user through cheaper electricity. If EV charging is smart and flexible, EVs will be a significant asset to the system.

Over time, as data improves and incentives get stronger, EV charging will become smarter, responding to local and national system constraints to deliver best value for the EV owner and the energy system as a whole. This is likely to include growing use of V2X (vehicle to grid/building) technologies, which enables EVs to export power back to the grid during periods of peak demand, helping to integrate intermittent renewable generation with the electricity system. We are aiming to identify and remove barriers to V2X, a process that will be assisted by the government’s recently published Call for Evidence on V2X.

Smart charging and V2X together could reduce peak demand by 32GW by 2050, equivalent to the generation capacity of ten Hinkley Point C power stations.<sup>27</sup> Ofgem believe that high numbers of EVs on the system could reduce total costs of energy for everyone, even non EV owners, particularly if a high share of EVs smart charge, enabling a better utilisation of the electricity network and generation assets, thereby reducing unit costs.

---

<sup>27</sup> [Future Energy Scenarios 2021 | National Grid ESO](#) via Consumer Transformation

## System Integration Overview

### **The challenge:**

Most EVs in the UK are not currently smart charging due to a combination of factors: not every EV chargepoint is smart, the current incentives for smart charging are not sufficiently strong and, partly as a result of this, there are limited smart EV tariffs on offer from suppliers. And there are additional barriers facing V2X: few EVs are currently V2X enabled, the required equipment is relatively expensive, and there are regulatory barriers. Additionally, as with smart charging, there are relatively weak incentives. Working alongside Government to tackle these barriers, and further clarify the role of V2X, is an Ofgem priority.

### **Priorities**

#### **Enabling rapid development and uptake of smart charging and V2X technology**

We will facilitate the uptake of smart charging through market incentives including Market-Wide Half-Hourly Settlement and Time of Use tariffs. We will work with Government and industry to progress smart charging defaults (pre-set charging at off-peak times); to remove barriers for V2X; and to develop enablers such as data and communications for dynamic smart charging.

## **Introduction**

4.1. Smart charging can enable better use of network assets by shifting demand away from peak periods. It can also help to make best use of renewable power by charging when the wind is blowing, and the sun is shining. A further potential benefit comes from Vehicle-to-X (V2X), which is the umbrella term for EVs exporting electricity, to the grid (V2G), the home (V2H) or buildings (V2B), such as a business premises, during periods of high demand or low electricity supply. V2X enables EVs to act as mini local power plants.

4.2. Without smart charging, models<sup>28</sup> suggest that peak demand in 2050 could be increased by 19-26GW (32 to 44% of current peak demand). However smart charging

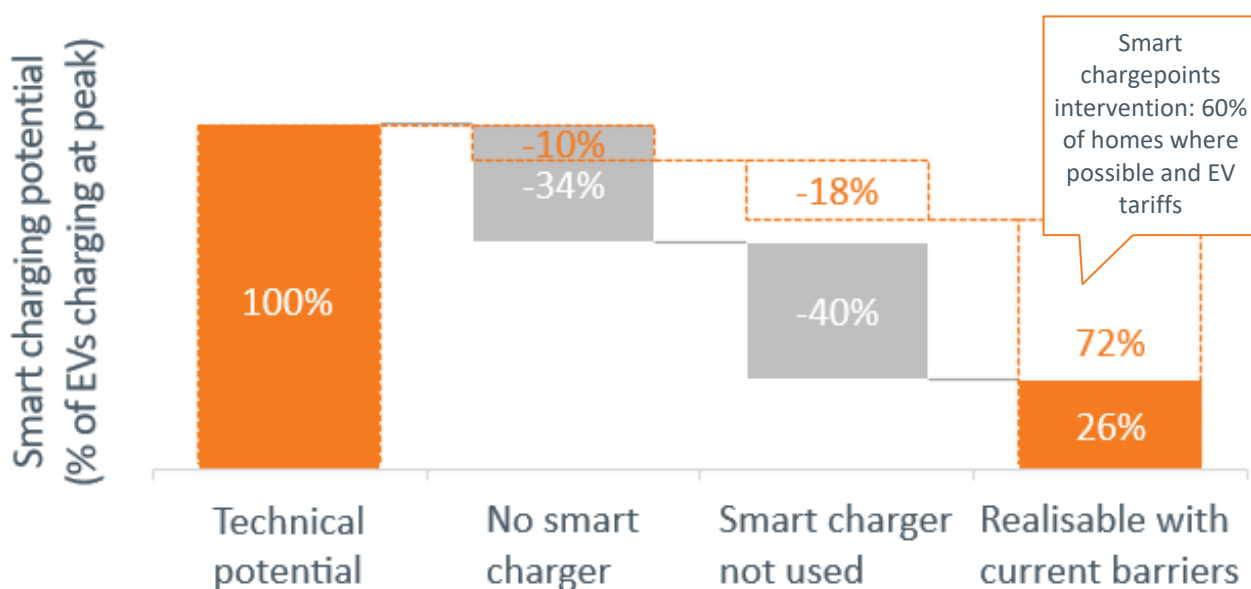
---

<sup>28</sup> FES2021 net zero compliant scenarios (Consumer Transformation, System Transformation and Leading the Way). <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021>

enables this to be reduced by 6-15 GW. Sufficient uptake of V2X could, in effect, reduce peak demand in 2050 by a further 8-20 GW.<sup>29</sup>

4.3. Ofgem has considered the technical potential of smart charging and the barriers which could prevent smart charging being realised. Current barriers relating to a of lack of smart chargepoints and their use are being addressed in part through government legislation. However, we recognise that the effectiveness of these actions will need to be monitored and complemented by additional actions to ensure that businesses and consumers have the right incentives, nudges, and requirements to deliver full potential.

Figure 5: Smart charging potential in 2050 at peak demand, broken down by barrier<sup>30</sup>



Source: Ofgem internal analysis (grey steps: current barriers; orange steps show feasible potential).

4.4. Both smart charging and V2X will need the right incentives, technology, and innovation. Ofgem’s goal is to enable widespread adoption of smart charging, and over time, V2X, to benefit EV owners and reduce costs of the energy system, benefitting all

<sup>29</sup> Based on FES2021 scenarios which are compatible with net zero by 2050 (Consumer Transformation, System Transformation and Leading the Way). Peak demand calculated as Average Cold Spell winter peak system demand in each scenario. <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021>

<sup>30</sup> Our analysis comparing the current barriers with our view of where current standards for smart chargepoint installations and signals (TOU tariffs) will get to by 2050

energy consumers. Addressing the challenges in the priority areas below should establish examples for other potential sources of flexibility, such as heat pumps, to follow.

### **Priority Area 3: Enabling rapid development and maximising the uptake of smart charging and V2X technology**

#### **Smart Charging**

4.5. Significant progress is being made for the development of smart charging. The Government Response to the 2019 Consultation on Electric Vehicle Smart Charging<sup>31</sup> commits to laying legislation later this year to mandate that all new private home and workplace charge points under 50kW have smart functionality, and to nudge users to charge off-peak through personalised default charging.

4.6. To deliver effective smart charging on a mass scale, consumers will need smart chargepoints, receiving signals on when they should charge, and price incentives. It is also important that smart charging is clear and easy for the user. At the moment, most chargepoints and charging apps rely on manual input, and facilitate charging at fixed times, eg, low prices overnight, higher at peak times. In a world with more EVs and renewables, if we are to ensure a low-cost energy system, smart charging needs to become the norm. Chargepoints will need to be smart and dynamic, able to respond in as the needs of the local and national energy system change, benefiting both the EV owner and the wider system.

#### **Ev.energy Smart Charging case study**

UK Power Networks (UKPN) operates the distribution grid across South East and Eastern England, including London. UKPN forecasts there will be 4.5 million EVs connected to its network by 2030, 30 times more than are connected today. UKPN partnered with ev.energy to incentivise EV users to engage with smart charging.

ev.energy aggregated 1,000 EVs on UKPN’s network, to test the feasibility of collective smart charging. All EV drivers using the ev.energy app, with managed charging enabled, earn 1 Reward point for any managed charging session >10 kWh.

---

<sup>31</sup> [Electric vehicle smart charging - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/electric-vehicle-smart-charging)



Reward points can be redeemed for Amazon gift cards, free rapid charging, carbon offsets, and more.

ev.energy delivered an impressive 80% peak EV load reduction from scheme participants between 6-9pm and have since been awarded the UK’s first commercial tender using domestic EV to manage the grid. ev.energy have found that offering incentives to users significantly helps to boost the uptake of smart EV charging, with ev.energy’s user base having an opt-in rate of 75%.

ev.energy have tested a range of propositions to encourage people to smart charge, including offers powered by partner energy suppliers. Together Igloo Energy and ev.energy offer up to 300 free miles a month via smart charging. More recently, ev.energy have partnered with E.ON Next to launch an off-peak energy tariff, providing charging at 4p/kWh between the hours of 12am-4am.



4.7. Trials have shown that financial incentives have resulted in substantial shifts in EV charging demand.<sup>32</sup> We expect new and existing retailers will play a key role in developing smart charging offers that respond to varied EV user needs, with user-focused design

---

<sup>32</sup> [My Electric Avenue \(ssen.co.uk\)](https://www.ssen.co.uk) ; Electric Nation [Smart Charging Trial](#)

features such as automation, nudges, and personalised charging solutions. At present, though, the commercial incentive for energy suppliers to offer products and services that incentivise domestic consumers to use off peak energy use is limited, as costs faced by energy suppliers do not vary significantly between peak and low demand periods in a day. Ofgem is taking steps to make the system more dynamic and cost reflective. In April 2021 we announced our decision to pursue an industry-led implementation of market-wide half-hourly settlement (MHHS). In August 2021 we published decisions about the governance framework and the obligations that should be places on parties to ensure that MHHS implementation happens in a timely and effective manner. To further incentivise the development of new products, we are also requiring suppliers to be able to offer Time of Use tariffs by 2025.<sup>33</sup> The reforms will improve price signals faced by suppliers and encourage them to develop new products which will reward customers for smart charging.

4.8. To inform and accelerate these developments, The Department for Business, Energy and Industrial Strategy launched the Alternative Energy Markets Energy programme in March 2021. It’s first phase, the Energy Price Signals Study<sup>34</sup> will explore innovative price signal regimes for policy and system costs for domestic consumers.

## **Vehicle-to-X**

4.9. V2X is also maturing rapidly and could play a significant role in the future of the energy system. V2X technology could be a key component in enabling an energy system to maximise use of high levels of renewable supply and contribute to managing periods of lower supply/higher demand. National Grid ESO’s Future Energy Scenarios 2021 (FES) publication identifies that V2X<sup>35</sup> could provide a demand reduction at the winter peak of between 8GW and 20GW (roughly equivalent to the generation capacity of three to six Hinkley Point C Nuclear Plants) (see Figure 6) by 2050 depending on the future energy scenario with up to 45% of consumers participating in V2X. When combined with demand reductions from smart charging, this could be equivalent to the generation capacity of 10 Hinkley Point C Nuclear Plants.<sup>36</sup> V2X’s potential goes beyond reducing peak demand, as it

---

<sup>33</sup> [Market-wide Half-hourly Settlement: Decision on implementation arrangements | Ofgem](#)

<sup>34</sup> [Alternative Energy Markets, Energy Price Signals Study: contract awarded - GOV.UK \(www.gov.uk\)](#)

<sup>35</sup> Based on net zero compliant scenarios (Leading the Way, Consumer Transformation, System Transformation) [Future Energy Scenarios 2021 | National Grid ESO](#)

<sup>36</sup> Based on FES2021 scenarios (Consumer Transformation and Leading the Way).  
<https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021>

is capable of providing a temporary source of energy generation. By 2050, the capacity of V2G could significantly exceed 30GW.<sup>37</sup>

4.10. Furthermore, consideration of the scale of the potential battery resource on the system in 2050 shows that, if the technologies and policies were to be put in place to realise even a part of their technical potential, then the potential could far exceed 30GW. This is an exciting opportunity to maximise effective use of future assets to benefit energy consumers.

4.11. There are, however, significant technology and cost barriers for V2X to overcome for its adoption and usage to become mainstream. V2X chargepoints currently cost between £3,000 - £4,000, although this is down from over £10,000 a few years ago.<sup>38</sup> Some of the technological barriers are outside our remit: most EVs are not currently capable of exporting power due to the protocol and cables they use, but this is expected to change by the mid-2020s. We welcome BEIS’s Call for Evidence on V2X technologies,<sup>39</sup> which will give us further insight into the potential impact of barriers within our remit. We want to see V2X technology installed across the network in future to maximise its benefits. Ofgem will work to identify and overcome these regulatory barriers where relevant to its remit.

#### **Octopus Powerloop V2G case study**

Launched in 2018, Powerloop<sup>40</sup> is a Vehicle-to-Grid (‘V2G’) consortium project run by Octopus Electric Vehicles and Octopus Energy in partnership with UK Power Networks, Energy Saving Trust, Open Energi, and Guidehouse.

Powerloop aims to demonstrate the value of using the power stored in EV batteries to provide grid flexibility and lower homeowners’ bills by shifting demand through smart charging, and showcase the role of V2G in decarbonisation to achieve net zero.

---

<sup>37</sup> Based on FES2021 scenarios (Consumer Transformation and Leading the Way).  
<https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021>

<sup>38</sup> Such as one of the V2G trials such as: <https://electricnation.org.uk/2020/10/08/electric-nation-vehicle-to-grid-trial-to-partner-with-wallbox-as-v2g-charger-supplier/>

We’re expecting V2G chargepoints could cost £660-£1,160 by 2030

<sup>39</sup> [Role of vehicle-to-X energy technologies in a net zero energy system: call for evidence - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/role-of-vehicle-to-x-energy-technologies-in-a-net-zero-energy-system)

<sup>40</sup> Powerloop is funded by the Department for Business, Energy and Industrial Strategy (BEIS) and the Office for Zero Emission Vehicles (OZEV), with Innovate UK acting as delivery partner

Octopus Energy has introduced a new V2G tariff featuring a dual export band and a six-hour cheap overnight window - optimising both the export times to help the grid, as well as the recharge times to ensure customers’ EVs are charged with the cheapest, greenest electrons available and giving V2G consumers an income from exporting electricity from their EVs. The project has also looked at effectively integrating generation from solar and V2G, including the development of a device which allows connection for export in constrained areas.<sup>41</sup>

Working with UKPN, the project has contributed to a number of improvements to the connection process of low carbon technologies. UKPN has released Smart Connect,<sup>42</sup> which makes the connection process for low carbon technologies faster and more transparent. In addition, the Energy Networks Association<sup>43</sup> has changed the process for V2G applications to make V2G a new separate technology type.

In the next phases of the project, the real-life data gathered from the vehicles and chargers will be analysed to understand consumers’ interaction with the technology and explore avenues for commercialising the service through flexibility markets.



---

<sup>41</sup> Device compliant with Engineering Recommendation G100: [EN A EREC G100 \(energynetworks.org\)](https://www.energynetworks.org/EN/ENREC/G100/G100.html)

<sup>42</sup> <https://www.ukpowernetworks.co.uk/internet/en/news-and-press/Game-changing-digital-portal-for-green-technology-launched.html>

<sup>43</sup> <https://www.energynetworks.org/newsroom/slashing-red-tape-on-the-road-to-net-zero>

4.12. Across both smart charging and V2X, we are aware that more work needs to be done: for example, to ensure that chargepoints are interoperable; to drive consumer engagement and awareness of the advantages of smart; and to improve the flow of data bi-directionally between chargepoints and operators, aggregators, and networks. We are developing our position on these issues and are working with BEIS to deliver a joint EV Flexibility Policy Statement in 2022.

## Actions

What we have done
<b>Priority Area 3: Enabling rapid development and uptake of smart charging and V2X technology</b>
<ul style="list-style-type: none"> <li>• <b>Smart Chargepoints</b> - Collaborated with BEIS on Smart Charging Legislation to be laid later this year</li> <li>• <b>V2X barriers</b> - Collaborated with BEIS on V2X Call for Evidence</li> <li>• <b>Market-wide half-hourly settlement</b> - Announced our decision to pursue an industry-led implementation of market-wide half-hourly settlement and the governance framework. We are also requiring suppliers to be able to offer Time of Use tariffs by 2025.</li> </ul>

What we are planning to do have done
<b>Priority Area 3: Enabling rapid development and uptake of smart charging and V2X technology</b>
<ul style="list-style-type: none"> <li>• <b>Price Signals</b> - We will improve price signals for flexible network usage through: network charging reform, ensuring timely implementation of market-wide half-hourly settlement, and developing further measures to strengthen incentives for flexibility through our Full Chain Flexibility programme</li> <li>• <b>Maximise EV flexibility</b> - We will publish a joint BEIS/Ofgem EV Flexibility Policy Statement in 2022 to look into chargepoint interoperability; to drive consumer engagement with smart; and to improve the flow of data bi-directionally between chargepoints and operators, aggregators, and networks.</li> <li>• <b>Smart technical guidance</b> - We will work with BEIS on clear technical guidance outlining how industry should comply with upcoming regulations on smart charging.</li> </ul>

## 5. Consumer participation and protection

### Section summary

The adoption of EVs will change energy markets, triggering the emergence of new business models, technologies, and services. The development of new EV-related energy products and services should help enable decarbonisation at lowest cost for all consumers.

If implemented successfully, the emergence of new EV-related products and services in the retail market should help increase competition, driving down costs and delivering increased customer benefits. Ofgem will respond with regulation that moves fast to ensure all consumer interests are protected in this rapidly evolving market.

### Consumer Overview

**The challenge:** Although growing, there is limited choice of EV-related products and services, and limited awareness and confidence around current offerings. An evolving system and emerging products may create new risks for consumers.

#### Priority area:

#### Consumer Participation and Protections

Support the development of innovative products that, coupled with increasing consumer awareness and confidence, can boost consumer engagement.

Ensure consumer protections keep up with technological and business model changes, including working with the Government on options to regulate EV-related service providers. We will adapt our regulatory approaches to ensure we can continue to protect the interests of consumers as the market changes.

### Introduction

5.1. The increasing uptake of EVs will require, and result in, the development of new products and services aimed at EV users, beyond those available today. This may change the way many EV users engage with their energy use and their electricity supplier. Ofgem believe that the growing number of EVs on the system could reduce energy bills for all consumers over time, even non EV owners, particularly if a high share of EVs smart charge.

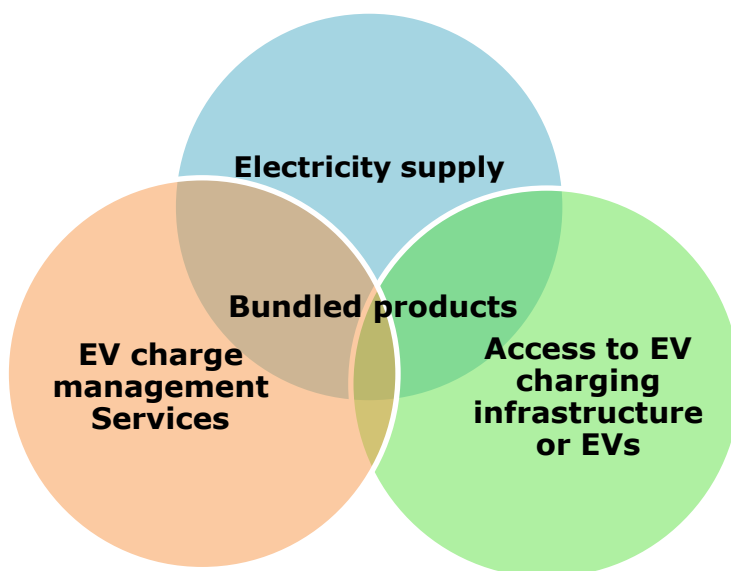
## **Priority Area 4: Consumer Participation and Protections**

### **Consumer Participation**

5.2. All consumers should benefit from the growth of products and services that enable the decarbonisation of transport at lowest cost. We want to enable the development of innovative EV products, services and supply tariffs that help support EV uptake and decarbonisation at lowest cost. For example, we want to facilitate innovative products and services that enable and encourage EV users to charge during off-peak periods and periods of high renewable output.

5.3. We are starting to see products and services emerge that are aimed at EV users. There are an increasing number of electricity supply tariffs on the market that are designed for EV users (often referred to as “EV tariffs”). Most of these offer a cheaper tariff rate overnight, to encourage EV users to charge their car at off-peak periods. Some of these EV tariffs offer bundles or incentives, such as access to a public EV charging network, vouchers, or free miles.

Figure 7: Energy supply is increasingly bundled with other EV services



5.4. It is not yet clear whether potential future EV users will adopt smart charging: our research shows that a third of consumers (34%) (predominantly non EV owners) aren’t currently open to using products and services that would help them use energy flexibly, such as smart appliances, and a further third (34%) are undecided or don’t know, with



reasons including fears that their appliances wouldn’t operate when required, and data privacy concerns.<sup>44</sup> However, recent evidence from EV owners is more encouraging (see box below).

### **Ofgem Consumer Studies**

Understanding consumer attitudes, behaviours and potential detriment is key to shaping our future regulatory approach to EVs. Ofgem regularly conducts consumer research including recent EV-related studies, which have helped shape the priorities in this document.

- **Consumer Survey 2020<sup>45</sup>:** Our annual survey of energy consumers included several targeted questions to EV owners. The research found that:
  - those who own EVs are more open to embracing changes in how they use their energy;
  - More than 3 times as many EV owners say they are on a TOU tariff compared to the population overall; and
  - Two-thirds of EV owners would consider smart charging their vehicle to avoid times when electricity is most expensive.
- **Qualitative user research with EV drivers<sup>46</sup>:** In October 2020, we undertook a number of remote research interviews with 29 EV drivers to understand their overall experience with their EV and identify their user needs. Research findings included:
  - as early adopters, the EV drivers needed to undertake a lot of proactive research, finding out information from a variety of sources;
  - most of the EV drivers who charge at home, plug in when they get home and leave it overnight, creating opportunities for smart charging; and
  - charging experiences varied, but public chargepoint accessibility and usability issues were a barrier for using an EV for longer journeys.

---

<sup>44</sup> Ofgem Consumer Survey 2020 <https://www.ofgem.gov.uk/publications/consumer-survey-2020-decarbonisation-insights>

<sup>45</sup> <https://www.ofgem.gov.uk/publications/consumer-survey-2020-decarbonisation-insights>

<sup>46</sup> <https://www.ofgem.gov.uk/publications/qualitative-user-research-electric-vehicle-drivers>



5.5. We are confident that, as EV numbers rise and incentives for flexibility are strengthened (see previous section), the number of EV tariffs will grow, as will the number of consumers choosing to smart charge their vehicles. Ofgem aims to facilitate the emergence of innovative new EV products and services including through the Innovation Link that supports innovators in navigating the regulatory landscape by providing an informal steer on regulatory implications relevant to their business models.

### **Consumer Protection**

5.6. As the market changes to meet the need for EV-related products and services, we want all consumers, including disengaged and vulnerable consumers, to benefit, and to continue to be protected and empowered.

5.7. With these changes to tariffs and services and the rollout of offers for EV consumers, including bundled products, EV tariffs may be more complex for consumers to understand and compare than traditional electricity supply tariffs. Although we are already seeing retailers come up with simplified offers for consumers, it is not clear that these will always be easily comparable for consumers, enabling them to identify offers that best suit their needs, circumstances, and abilities. In anticipation of this, we are working with Government to consider the role of third-party intermediaries (such as price comparison websites) and to improve the use of data, to give consumers the right tools to help them make the right choices for their circumstances.

5.8. EV charging at home will change the nature of domestic consumers’ electricity usage, which may lead to the creation of new situations in which consumers find themselves vulnerable.

5.9. We will need to ensure that regulations move fast and evolve as necessary to keep pace with any potential issues that may emerge. We will work with government to ensure consumers’ interests continue to be protected.

5.10. Consumers are also likely to face different costs for charging EVs at different locations. Public charging is often significantly more expensive than home charging due to the infrastructure investment, maintenance costs and higher taxation, and can vary significantly between different sites. The House of Commons Transport Committee

published a Zero Emission Vehicles report in July 2021<sup>47</sup> which said that consumers should not be paying ‘excessive pricing’ to charge at public chargepoints. The Competition and Markets Authority (CMA) also published a report in July 2021,<sup>48</sup> which noted that charging should be ‘convenient and affordable’. Government is taking steps, such as its consultation on the consumer experience at public chargepoints, which closed in April 2021.<sup>49</sup>

5.11. Ofgem is conducting further work on how to enable a future retail market that can protect and promote the interests of consumers whilst supporting the technological and behavioural changes needed to support decarbonisation at lowest cost.

## Actions

What we have done
<b>Priority Area 4 – Support consumer participation and protections</b>
<ul style="list-style-type: none"> <li>• <b>Research-</b> Consumer Survey 2020 and qualitative user research with electric vehicle drivers</li> <li>• <b>Consumer protection</b> - Updated Consumer Vulnerability Strategy in 2019</li> <li>• <b>Innovation Link</b> – supports innovators in navigating the regulatory landscape.</li> </ul>

What we are going to do
<b>Priority Area 4 – Support consumer participation and protections</b>
<ul style="list-style-type: none"> <li>• We will publish a Retail Strategy that will consider how best to support consumer participation and ensure consumer protection.</li> <li>• Work with BEIS to identify gaps in the current framework of consumer protections for EV owners, and potential solutions.</li> <li>• Work with the Government to ensure fair pricing, including examining the role of Third-Party Intermediaries (TPIs).</li> </ul>

---

<sup>47</sup> [Zero emission vehicles - Transport Committee - House of Commons \(parliament.uk\)](https://www.parliament.uk/business/committees/committees-a-z/transport-committee/)

<sup>48</sup> [Final report - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/94444/final-report-2021.pdf)

<sup>49</sup> [The consumer experience at public chargepoints - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/the-consumer-experience-at-public-chargepoints)

## 6. Working with stakeholders

It is important that we continue to work and engage with a wide range of stakeholders. EVs are a rapidly evolving sector and engagement is important to ensure we continue to identify the correct priorities; update our consumer protections; and ensure Ofgem plays its role in enabling the decarbonisation of transport and the uptake of EVs at pace and at least cost.

We have existing working groups and forums through which we interact with our stakeholders. These include:

- The EV Energy Taskforce (EVET)
- Impacts of Low Carbon Technologies on Low Voltage Networks Working Group
- Energy Networks Association Low Carbon Technology Working Group
- Our joint Smart Systems Forum with the Department of Business, Energy & Industrial Strategy (BEIS)
- Collaborative engagement to support the development of our Full Chain Flexibility Strategic Change Programme, generating a strategic view of steps to deliver a fully flexibility energy system

We welcome views from stakeholders on this report and the approach we have proposed.

In particular:

- The main barriers and challenges we have identified
- Our proposed priority actions
- Any market developments we have missed, or additional actions we should be considering

Alongside regular Ofgem publications such as our Forward Work Programme, we are expecting to publish the following publications which will set out further detail and proposals for EVs:

- The Retail Strategy
- Joint Ofgem/Government EV Flexibility policy statement, which will include more on our work on Full Chain Flexibility (FCF) (expected 2022)

## Any Feedback

Please send any comments on this report to [consumeraffairs@ofgem.gov.uk](mailto:consumeraffairs@ofgem.gov.uk)