



Department  
for Transport

# **Consumer Experience at Public Chargepoints**

Government Response to the 2021  
Consultation on the Consumer Experience at  
Public Chargepoints

Department for Transport  
Great Minster House  
33 Horseferry Road  
London  
SW1P 4DR



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## Foreword from the Secretary of State

Climate change is no longer taking place over generations, but years. Given cars and vans contribute nearly a fifth of our overall emissions, decarbonising road transport quickly is vital. And that's exactly what we're doing. In November 2020, the Prime Minister put the UK on course to be the fastest nation in the G7 to decarbonise road transport, announcing that sales of all new petrol and diesel cars and vans would end in 2030. At COP26 in Glasgow, we secured 110 signatures to our global Zero Emission Campaign, binding government's, cities and manufacturers to 100% zero emission car and van sales by 2040 at the latest. So, where the UK is leading, the global community is following.

Yet the benefits of switching to EVs do not stop at the reduction in carbon emissions. We'll stop harmful air pollutants from the tailpipe, saving lives and creating more healthy pollution-free communities, especially in built up areas. It is already cheaper to own and use an EV over the course of the vehicle's lifetime compared to an internal combustion engine equivalent. All this means that when you're considering your next car, EVs should be the clear choice.

Government and industry have supported the installation of around 29,000 publicly available charging devices including over 5,100 rapid devices – one of the largest networks of rapids in Europe. And we have seen positive action from industry to improve people's experiences using public chargepoints. But we need to go faster and further. To keep momentum, we must harness and channel the ingenuity of industry, businesses, chargepoint and energy providers, local government and others.

If we are to reach mass adoption of EVs, it's essential that consumers feel confident using public chargepoints. I want it to be as easy to charge your EV as it is to fill up at the pump for everyone. Consumers should be able to locate available chargepoints simply, pay for a charge easily, and be assured that the chargepoint they choose is reliable, regardless of where they are in the UK. Consumers must be at the heart of our transition.

That is why I want to thank all those that responded to this consumer experience consultation. The changes we are setting out here are a significant step forward. Through our new regulations, we will ensure that drivers can rely on the public network, that they can compare prices easily and they are able to pay for their charge without relying on multiple apps on their phone. Range anxiety will be reduced significantly as we work with industry to make it easier to find and use chargepoints across the UK. And we are

supporting the transition of vehicle fleets through our measures to enable payment roaming.

The Rt Hon Grant Shapps MP  
Secretary of State for Transport

## Foreword from Parliamentary Under Secretary of State

This is a historic time for transport in Britain, as government works in partnership with the private sector to deliver charging infrastructure that is ready for the biggest change in motoring for well over a century. The economic, climate, air quality and energy security benefits of the transition to electric vehicles are clearer than ever. We have already reached a tipping point: in 2021 as many electric vehicles were bought as in the previous five years combined. This huge increase in electric vehicle uptake is being seen in the charging infrastructure market too, with 37% growth in public chargepoints in 2021 alone.

Since 2020, we have committed over £2.5 billion to the EV transition, including nearly £1.7 billion to support charging infrastructure. This will support communities right across the country to transition to electric vehicles, including urban areas, market towns and rural areas. We are committed to ensuring that no area is left behind in this transition.

Charging infrastructure should be inclusively designed for use for all EV consumers, regardless of any mobility or dexterity impairments. This is why we have partnered with the British Standards Institution and the charity Motability to develop inclusive charging standards. This work will include the research and design of new standards, which we consider are essential to ensure that disabled drivers' and pedestrians' needs are considered in the switch to EVs. We are expecting these standards to be finalised in summer 2022.

I want to thank all who responded to this consultation. We want to make it as easy for people to own an electric vehicle as it is to own a petrol or diesel vehicle. The ambitious measures set out in this document do just that. Making it easier for people to find, pay for, rely on and get value for money on the public chargepoint network is critical to building public confidence in switching to an EV. As we move towards the 2030 phase out date for petrol and diesel cars and vans, the government is committed to ensuring consumers have a positive experience when using electric vehicle charging infrastructure.

Trudy Harrison MP

Parliamentary Under-Secretary of State of State for Transport

## Executive summary

In 2019, the Government committed to meeting net-zero greenhouse gas emissions by 2050, to ensure the UK ends its contribution to climate change. To achieve this, the Government is taking decisive action to end the sale of new petrol and diesel cars and vans from 2030, with all new cars and vans fully zero emission at the tailpipe from 2035. The move to zero emission vehicles (ZEVs) is essential to meet our legally binding carbon targets.

The EV chargepoint market is growing rapidly with considerable market development and growing breadth of offers for the consumer. It is crucial that drivers have confidence in charging infrastructure, to drive forward the EV transition and ensure a modern, growing market that attracts investment. We want to enable innovative charging approaches such as 'plug and charge' to ensure that all consumers can charge their vehicle easily and reliably, as part of their day-to-day life. This is essential, not only for existing EV consumers, but for encouraging consumers to switch to EVs at a faster rate. We are building on the positive steps from industry to encourage the uptake of EVs through a better consumer experience across the public network.

Our work to date to support consumers' transitions to EVs has been informed and assisted by the Electric Vehicle Energy Taskforce which the Government set up in 2018 to bring together the energy and automotive sectors. We have also worked with the Competition and Markets Authority (CMA) to align with their recently published Electric Vehicle Charging Market Study Report<sup>1</sup>. The report considered the scale and pace of chargepoint supply, focusing on competition and consumer outcomes to ensure a national network of EV chargepoints is in place ahead of the 2030 phase out on the sale of new petrol and diesel cars. We recently published our EV Infrastructure Strategy<sup>2</sup>, Transport Decarbonisation Plan<sup>3</sup> and Net Zero Strategy<sup>4</sup>, which together outline our work to advance EV infrastructure and deliver on our net zero commitments.

In Spring 2021, we consulted to improve the consumer experience at public EV chargepoints in the UK. We sought views on four key areas: streamlining the physical and digital payment methods offered to consumers, open data, supporting a reliable charging

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<sup>1</sup> <https://www.gov.uk/cma-cases/electric-vehicle-charging-market-study>

<sup>2</sup> <https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy>

<sup>3</sup> <https://www.gov.uk/government/publications/transport-decarbonisation-plan>

<sup>4</sup> <https://www.gov.uk/government/publications/net-zero-strategy>



network and ensuring pricing transparency. This response sets out our final policies following this consultation.

**Table 1 - Summary of Final Policies**

Policy Area	Summary of Final Policies
<b>Minimum payment</b>	<p>Consumers should be able to charge their vehicle and pay with ease, as they would for any other service. We will mandate:</p> <ul style="list-style-type: none"> <li>• A payment method that is not specific to a brand and does not require a payee's mobile or internet signal, available at: <ul style="list-style-type: none"> <li>○ Newly installed chargepoint sites (above 7.1 kW)</li> <li>○ Retrofitting at existing rapid sites (50 kW and above)</li> </ul> </li> </ul>
<b>Payment roaming</b>	<p>Consumers should be able to access and pay at all public chargepoints<sup>5</sup> easily with membership cards or smartphone apps. We will:</p> <ul style="list-style-type: none"> <li>• Mandate industry-led payment roaming, with enforcement to come into effect from 24 months after the legislation comes into force</li> <li>• Allow a provision for Government to designate approved providers if industry does not demonstrate sufficient progress in this timeframe</li> <li>• Provide information as to how operators can meet these requirements in the consumer experience technical guidance that will support these regulations</li> </ul>
<b>Open data</b>	<p>All drivers should be able to locate available and working chargepoints easily when they need to charge their vehicle. We will:</p> <ul style="list-style-type: none"> <li>• Mandate the adoption of Open Chargepoint Interface Protocol (OCPI)<sup>6</sup>.</li> <li>• Mandate that all static and some dynamic data is made openly available, as specified in technical guidance.</li> <li>• Progress our open data workstream to understand how we should open this data and specify this in technical guidance.</li> </ul>
<b>Pricing transparency</b>	<p>We want consumers to be able to understand and compare pricing offers across the UK charging network to select the best available price. We will mandate that:</p> <ul style="list-style-type: none"> <li>• Pence per kWh is used at all public chargepoints.</li> <li>• The pricing offer is clearly displayed to the consumer before charging commences, whether this is on the chargepoint, through a separate device such as an app or website.</li> <li>• The price cannot increase once charging has commenced.</li> </ul>

<sup>5</sup> See Annex A for the definition of public chargepoints

<sup>6</sup> <https://evroaming.org/ocpi-background/>

<b>Reliability</b>	<p>EV consumers should feel confident that the UK charging infrastructure is reliable and easy to use. We will mandate:</p> <ul style="list-style-type: none"> <li>• A 99% reliable charging requirement across the rapid network, including the Strategic Road Network (SRN), trunk roads and Motorway Service Areas (MSAs). This will be set through a separate guidance document to be published alongside the regulations. <ul style="list-style-type: none"> <li>○ We will monitor the market for improvement of reliability over the next 24 months.</li> <li>○ We will then take powers to mandate a 99% reliable charging network across the entire public UK network if progress has not been made.</li> <li>○ Ahead of this decision, we will list publicly the chargepoint operators who do not maintain a reliable network and enforce self-reporting until open data has come into effect.</li> <li>○ Reliability will be measured through open data.</li> </ul> </li> <li>• That all charging networks for all public EV chargepoints have a free 24-7-hour helpline when consumers experience an issue trying to charge their EV.</li> </ul>
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We will appoint an appropriate body to enforce the new regulations. This body will have powers to inspect, test and remove hardware and software situated on both public and private land. Where there is a breach of the requirements, the enforcement body will work with the charge point operator to remedy the non-compliance. Where a person does not comply with the compliance notice, the enforcement body may require them to pay a civil penalty. The civil penalty regime set out in legislation will be fair and proportionate and ensure that chargepoint operators are not penalised for aspects over which they have no control.

We have also identified several emerging policy areas including consumer protections, accessible chargepoints, signage, lighting, and weatherproofing. In July 2021, we announced our partnership<sup>7</sup> with the British Standards Institution (BSI) and the disability charity Motability to develop charging standards to improve disabled people's experience when using public EV chargepoints across the UK. These standards are being developed in collaboration with consumer groups, chargepoint operators and other stakeholders and will provide a new, clear definition of accessibility for public EV chargepoints. In parallel, we are working collaboratively with industry and consumer groups to gather more evidence on how best to ensure the public charging network is accessible and safe, and that appropriate protections are in place to meet consumer needs. With this in mind, we consulted in Autumn 2021 on introducing new primary powers in these areas as part of the Future of Transport Regulatory Review consultation<sup>8</sup>. We will publish our response to this consultation shortly.

<sup>7</sup> <https://www.gov.uk/government/news/uk-government-partners-with-disability-charity-to-set-standards-for-electric-vehicle-chargepoints>

<sup>8</sup> <https://www.gov.uk/government/consultations/future-of-transport-regulatory-review-zero-emission-vehicles>

## Introduction

In Spring 2021, we consulted on improving the consumer experience at public chargepoints. Whilst the charging sector is delivering infrastructure with support from Government where that is required, through our engagement with drivers and consumer groups we have identified several issues. The consultation set out our baseline expectations to improve the consumer experience when using the public charging network. We proposed interventions in four areas.



## **Payment**

Paying for charge should be a smooth, hassle-free process for the consumer, regardless of the chargepoint operator.

Simple payment solutions have emerged, but there remains no common method of access across chargepoint networks. Consumers sometimes need a different smartphone app or membership card for each network. This results in a more complicated experience than that enjoyed by petrol or diesel vehicle drivers or EV drivers on mainland Europe, where roaming solutions exist.

## **Reliability**

Broken or unavailable chargepoints undermine consumer confidence in the public chargepoint network. People's safety can be at risk if they are left stranded and unable to charge their vehicle. It is essential that the public chargepoint network is well maintained and that faults are repaired quickly. Consumers should be able to contact the chargepoint operator if something goes wrong, to get assistance and to continue their journey.

## **Pricing Transparency**

The cost of electricity drawn from public chargepoints is priced using a range of different metrics. A lack of a standard pricing metric prevents consumers from easily comparing prices.

We want consumers to be able to easily compare the cost of charging between different networks, helping drive competition and bring down prices. Evidence from consumer surveys suggests that consumers are confused by a lack of comparability of pricing information at either public chargepoints or through other means (for example, smartphone apps).

## **Open Data**

Consumers should be able to access a range of software solutions providing them with comprehensive and accurate chargepoint data that enables them to locate and access chargepoints with ease. Currently, chargepoint operators only display static information such as location and power rating related to their network on their apps.

More comprehensive private-sector led solutions are emerging, such as Zap-Map's platform which provides location and 'live' availability chargepoint data. However, this data is not available beyond bilateral agreements, and a lack of mandated data provision standards means that chargepoint data can be incomplete and inaccurate.

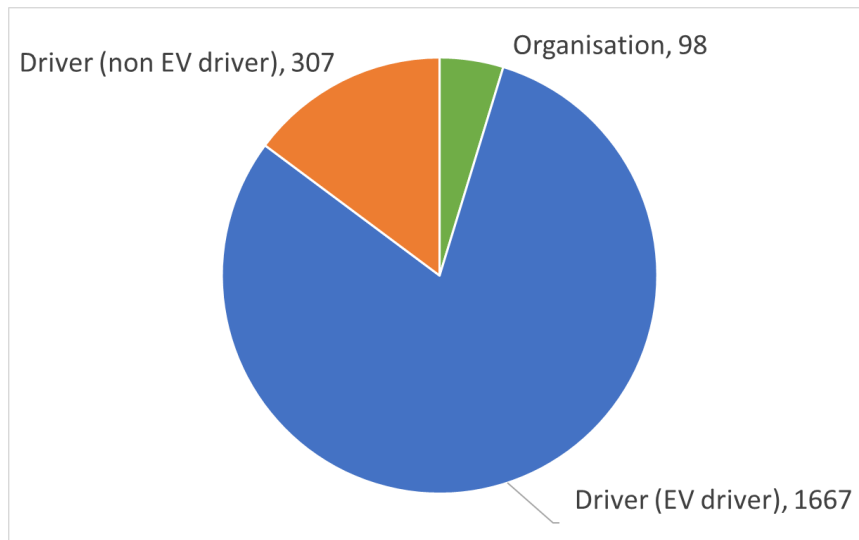
## **Emerging policy areas**

We sought views on four emerging policy areas: consumer protections, accessible and inclusive chargepoint design; weatherproofing and lighting; and signage. We recognise that these emerging policy areas are likely to become more important; consulting now enables us to determine whether Government intervention might be needed in the medium to long term and proactively respond.

## Responses to the consultation

We received 2072 response to our Spring 2021 consultation. There were 1667 responses from individuals who had driven an EV and 307 responses from individuals who had never driven an EV. We had 13 responses from chargepoint operators, 85 from other organisations. All responses have been considered when forming the final set of policies.

Chart 1 - Profile of respondents



## Government's proposed approach to legislation

Our final policy decisions require regulatory amendments. We will finalise and lay regulations in Parliament in 2022 on the measures set out, parliamentary time allowing. Using Part 2 of the Autonomous and Electric Vehicles Act 2018 (AEVA), we will impose requirements on public chargepoints concerning the methods of payment, reliability of chargepoints and require the sharing of specific data sets. Using the Prices Act 1974, we will lay regulations concerning how the price of charging should be displayed.

The consultation stated any proposals should only apply to public chargepoints. In accordance with the Alternative Fuels and Infrastructure Regulations 2017 (AFIR)<sup>9</sup>, we consider a chargepoint public if it is:

1. intended for use by members of the general public (including those situated in public car parks, whether or not those car parks are available only to consumers of specific goods or services); and
2. not intended for—
  - 2.1 exclusive use in respect of a vehicle produced by a specific manufacturer;
  - 2.2 use by persons engaged in specific occupations;

<sup>9</sup> [The Alternative Fuels Infrastructure Regulations 2017 \(legislation.gov.uk\)](https://www.legislation.gov.uk)

2.3 use by persons whilst at their place of employment (including visitors); or

2.4 exclusive use by occupiers of, or visitors to, residential premises.

If a chargepoint or chargepoint network is out of scope now and is brought in scope after the regulations are brought into force, we expect the chargepoint(s) to be compliant with the regulations. This is in line with the AFIR.

The territorial extent of Part 2 of the AEVA is UK-wide. We therefore consulted in relation to all public chargepoints operated in the UK. We have worked with colleagues in the devolved administrations and will continue to do so as we implement the changes. We will be applying the regulations to the entire UK.

We will appoint an appropriate body to enforce the regulations. We will introduce a similar enforcement regime to that currently in place under the AFIR, whereby the enforcement body has the powers to inspect, test and remove hardware and software situated on both public and private land.

We anticipate that, where the enforcement body considers there to have been a breach of the requirements, a notice may be served on the chargepoint operator describing the steps required to remedy the non-compliance and by when. Where a person does not comply with the compliance notice, the enforcement body may require them to pay a civil penalty. The civil penalty regime will be fair and proportionate and ensure that chargepoint operators are not penalised for aspects over which they have no control. Any civil penalties will be at the discretion of the enforcement body.

The consultation proposed lead times for the proposals in the consultation, due to the time it will take to update hardware and software to meet new specifications. We have carefully considered the benefits to consumers versus achievability from chargepoint operators in meeting the regulations. Our final set of lead times reflect careful consideration of the benefits to consumers and the ability of CPOs to meet new requirements.

**Table 2 - Summary of legislation lead times**

Legislation lead times (time allowed for compliance)	Legislative requirement	Rationale for the policy lead time
Immediately after legislation comes into effect	All new chargepoints over 7.1 kW to meet minimum payment requirements	We expect chargepoint operators to capitalize on the lead time between the government response being published before legislation comes into effect.
	Pricing to be displayed in pence/kWh	We do not expect the transition to pence/kWh to be burdensome. The majority of chargepoint operators already use p/kWh.
	Chargepoint operators to publish data and adopt the Open Charge Point Interface (OCPI) data standard	Chargepoint operators have been engaged for many years on this topic.

12 months after legislation comes into effect	Rapid chargepoints including those situated on the SRN to be 99% reliable	Rapid chargepoints are predominantly situated on the SRN, are fewer in numbers, and are not reliable at present.
	24/7 helpline	Time needed to recruit and train staff and establish the call line system.
	Public rapids retrofit to meet payment requirements	Time needed to undertake retrofitting on less numerous rapid chargepoints should not need to exceed 12 months.
12 months after proprietary networks' individual sites become public	Rapid charging sites that have become public retrofit to meet payment requirements	Time needed to undertake retrofitting per site that is opened to the public should not need to exceed 12 months
24 months after legislation comes into effect	Review extending reliability to entire network	Time needed for data reporting systems to be created to monitor reliability without Government intervention.
	Chargepoint operators must comply with payment roaming	Time needed to connect to roaming providers and develop roaming solutions should not need to exceed 24 months. There are already roaming providers in the market, and it is only those chargepoint operators who do not yet offer roaming that will need to take action to do so.

# EV consumer journey



Minimum payment methods at all new fast chargers over 7.1kW and all rapid chargers.



Access to a 24/7 consumer helpline.

Pricing in p/kWh and displayed clearly.



Able to easily locate public electric vehicle chargepoints.

A reliable charging network across the UK.





# Payment

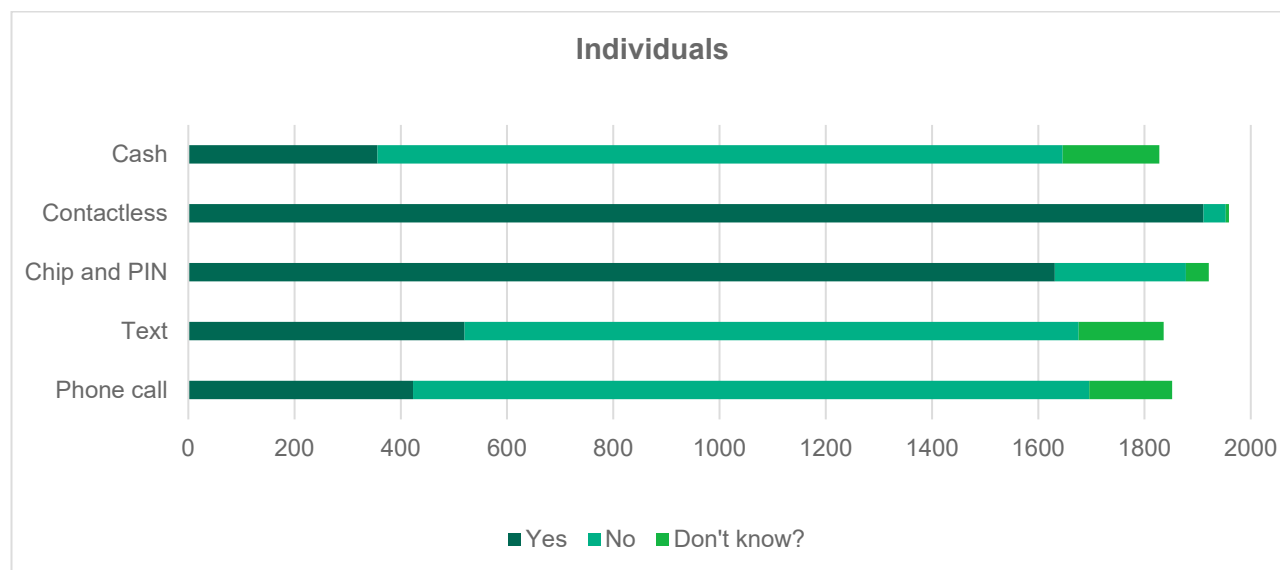
## Making it easier to pay

Currently, paying to charge an EV on the public network can be confusing and slow. In too many cases, a consumer needs a smartphone with internet and signal to pay for a charge. This means that paying for a charge is often frustrating to drivers who are used to paying with a card at petrol stations. In the worst case, some consumers can be unable to pay for a charge at a specific chargepoint, which is a particular issue if they do not have the battery range to reach an alternative.

We consulted on requiring a minimum payment standard to ensure consumers can rely on a familiar payment method across chargepoint networks. This would need to include a method that did not require an internet connection and worked at the chargepoint. The payment method could be in the form of contactless payment, for example, or a call or text-based solution. Chargepoint operators could go beyond the minimum requirement should they desire to.

Almost all private individual respondents requested contactless, with slightly fewer supporting chip and pin payments as a payment method. Cash, text or phone payments were largely identified as not preferred and there was less confidence in these methods to pay. Almost all respondents stated that these requirements should apply to all chargepoints. Most chargepoint operators argued that any requirement should be for rapids only, and that the cost would be too high for slower chargepoints.

Chart 2 – Individual respondents' preferred payment method



We will require new public chargers above 7.1 kW to have a payment method available either per chargepoint or per site that is easy to use and familiar to as many people as possible. It must have an available physical, non-proprietary method of payment that does not require a payee's mobile or internet connection. The payment method must also be compliant with the AFIR 2017 ad hoc requirement<sup>10</sup> which ensures a consumer can use a chargepoint without having to enter into a pre-existing contract. This requirement will come into effect immediately after the legislation is laid (see table 2).

It is essential that our regulatory arrangements support accelerated rollout of diverse types of charging. It is particularly important that all consumers can pay easily and simply for charge at a rapid chargepoint. Drivers using high-speed charging on a long journey are less likely to be familiar with the chargepoint. They are therefore less likely to have the relevant app already installed on a smartphone. There may also be greater risk of being stranded if they cannot pay for a charge at a specific site. Therefore, all rapid chargepoints 50 kW and above will have to have an easy payment mechanism that does not require downloading an app, a phone or a consumer's mobile signal. This will apply to both new and existing rapid chargepoints. The payment mechanism must be retrofitted and made available within 12 months of the legislation coming into effect.

A proprietary network, a chargepoint network open only to specific car manufacturers, which opens their existing rapid chargepoints to be used by other EV consumers on a site-by-site basis must retrofit and provide the minimum payment standard within 12 months of the individual network site becoming public. Subsequent individual sites on the network will have 12 months from opening for public use.

We have decided to only apply this requirement to chargepoints above 7.1kW. This reflects a balance between potential impact on individual consumers and the stage of market development. Consumers are likely to be more familiar with their local slower chargepoints and to use the same ones repeatedly. They are therefore able to ensure they

<sup>10</sup> <https://www.legislation.gov.uk/uksi/2017/897/regulation/5/made>

have access to the required payment method in advance. We have also considered the impact on the total cost of the charge.

We expect a gradual transition of existing chargepoints between 7.1kW and 50kW adopting the minimum payment standard as chargepoints are maintained and replaced over time. Therefore, we see requiring only new chargepoints between 7.1 kW and 50 kW, as a mechanism to deliver easy, universal payment method whilst recognising the early state of the market and the need to continue the roll out of new infrastructure.

We want to ensure that all consumers benefit from an easy payment method. However, the slow charging market is at a different stage of market development and faces different challenges. Therefore, over the coming months we will carry out a further consultation on extending the minimum payment method to new chargepoints below 7.1kW. This will allow us to gather views from industry and consumers on this proposal in order to decide whether further regulation is required in the interests of consumers.

## Roaming

There is currently no payment solution which allows consumers to take advantage of different payment platforms and subscriptions across the majority of networks. This is particularly important for fleet vehicles who cannot rely solely on ad hoc payment. We want to see roaming solutions develop to support the electrification of fleets. Currently software fleet solutions for paying at chargepoints are fragmented and some chargepoint operators do not work together or with third party providers.

We define roaming as the ability to use a payment app across multiple chargepoint networks, with all public chargepoint networks covered by at least one roaming provider. This would reduce the number of apps that fleet managers would need to be able to charge across the public network. We consulted on a range of options to achieve this in the UK.

Almost all respondents said that we should take some action to intervene in the market to support roaming and to ensure there is a positive experience for consumers and fleets. There were split views on how to achieve roaming, with no overall majority for any option. These options included the Government developing a platform to enforce cooperation between chargepoint operators and third parties with the development of supporting standards.

Some respondents were against Government intervention, particularly chargepoint operators. They proposed that industry should develop roaming, pointing to progress solutions tailored to fleets and argued that market forces would bring a better solution than Government intervention. Chargepoint operators made the point that there was no universal roaming petrol card. Chargepoint operators told us it was too early to intervene and should only happen if there is an issue, and some suggested a tiered approach to regulation in the market. Some drivers and mixed organisations raised the concern that roaming would increase the cost to the end consumer.

We have considered these concerns very carefully. Roaming solutions, led by third parties or chargepoint operators, are being developed by industry, which we welcome and want to

see expanded to cover more of the public network. However, we need to ensure progress is made quickly enough to support the accelerated electrification of vehicle fleets. The second-hand market is critical to our overarching EV transition. It is where approximately 80% half of all cars are bought and sold in the UK. Fleet turnover is crucial to growing the second-hand market.

We are taking powers to mandate and enforce roaming and will come into effect from 24 months after legislation comes into effect. This will give chargepoint operators time to connect to roaming providers and for industry to develop solutions. Government will provide technical guidance to show chargepoint operators how they can meet these requirements, retaining the power to accredit roaming providers if necessary.

# Data

## Opening up chargepoint data

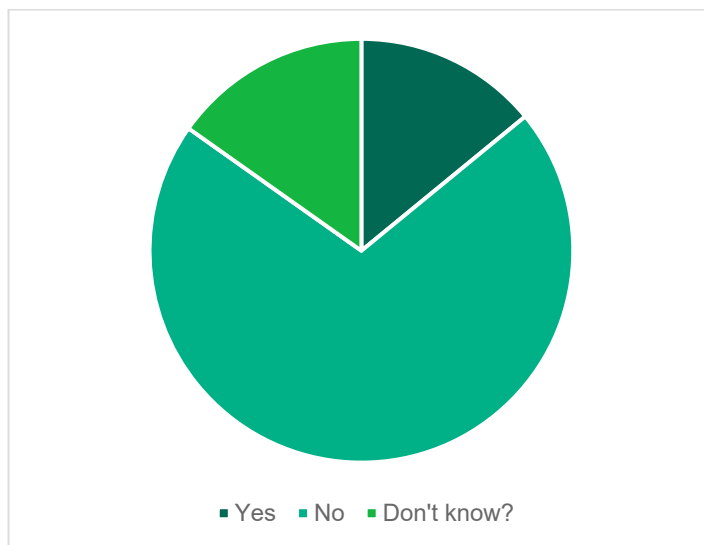
Consumers should be able to easily locate a working chargepoint that suits their needs, whether running day-to-day errands, charging overnight, or travelling a longer distance. Consumers should have a choice between different methods of accessing the information they need, for example through their vehicle, phone, or another device.

We identified “must have” data sets and consulted on requiring these to be made openly available. Open data means that industry would be able to understand where data is held and in what format. However, more sensitive information may only be accessed by permitted parties. This includes static data required for consumers to be able to locate the right chargepoint i.e. information which does not change such as location, chargepoint speed and available payment types.

We also consulted on opening dynamic data, i.e. data which will change over time, such as availability and the state of repair of a chargepoint. This would allow consumer facing apps to be developed which provide information on whether a chargepoint is currently available, for example.

Nearly all respondents wanted open static data and live dynamic data, including marking charging bays unavailable on a live network map and identifying if chargepoints were broken or in use. Chargepoint operators were mainly against the open dynamic data provision due to commercial concerns regarding competition at well-utilised sites. Some respondents highlighted that some data is not held by industry, including data on disabled access.

**Chart 3 –Are there any 'Must have' data types that should not be made available?**



To ensure that open data is easier to use and accessible for third parties such as industry innovators to develop maps for consumers to locate chargepoints, we consulted on requiring a data standard such as the Open Charge Point Interface (OCPI) data standard. There were overwhelmingly positive responses to mandating the use of OCPI as a data standard. Respondents highlighted that many chargepoint operators had already adopted this standard. Some respondents had concerns with hard coding any versions or specific protocols in legislation.

We consulted on how we should open chargepoint data to industry. We considered whether we should develop a hybrid data architecture solution which would allow chargepoint operators to push data through a central data broker. This would be accessible by innovators and other third parties to provide services to consumers. There was a mixed response to the hybrid architecture proposal, with a slight majority in favour of the hybrid approach. Some respondents stated that any data solution must be kept up to date with technological advances and capable of managing data securely. A few respondents from organisations stated that Government should set up an industry forum to coordinate on standards and data architecture implementation, aligning across other countries. Many respondents, individuals and industry, were unsure about the Modernising Energy Data<sup>11</sup> work stream and stated that there was not enough information to make a firm response.

We will require public EV chargepoint static and dynamic data to be openly available by default. We are not persuaded by arguments for withholding dynamic availability data from consumers, as open dynamic data supports the consumer to locate the right available chargepoint for their needs while they travel across the UK.

We will mandate chargepoint operators to adopt the OCPI data standards within 12 months of the legislation coming into effect, and for this standard to be kept up to date with the latest version release. We are working with industry and stakeholders through an open data workstream including a data discovery<sup>12</sup> to identify a solution to make the data openly

<sup>11</sup> <https://www.gov.uk/government/groups/modernising-energy-data>

<sup>12</sup> [Open Electric Vehicle \(EV\) chargepoint data - Digital Marketplace](#)

available. We expect a solution to be developed by the end of 2022. We will develop a guidance document alongside the legislation to set out technical requirements to support the adoption of the data standards and data solution. We will ensure this is updated as required so that it remains in line with new solutions and does not become a barrier to innovation.

# Pricing Transparency

## Using a single payment metric

We want to ensure that EV drivers can easily compare the cost of charging between different networks. To achieve this, we consulted on requiring a pence per kilowatt hour (p/kWh) metric at chargepoints for a unit of electricity sold under both subscription and pay-as-you-go (PAYG) models. We proposed exemptions for free charging, parking and charging bundles, overstay charges, and consumers being paid to provide electricity to the grid through vehicle-to-grid technology. We also proposed giving chargepoint operators flexibility on how they display the charge cost, the kWh consumed and the total cost of the charging event to the consumer, as long as it is clear and easily accessible for all consumers.

Nearly all of respondents favoured the pence per kwh as a standard pricing metric. Respondents wanted information displayed clearly for consumers so that pricing information is prominent and clear, and that the tariff should be available to the consumer ahead of starting a charging session. There was a split of opinion from respondents whether price exemptions should be included and if so, which exemptions.

We will require chargepoint operators to display their pricing in p/kWh metric. This requirement will apply immediately after the legislation has come into effect. We will allow chargepoint operators discretion on how to display that information as long as it is clear, regardless of payment method.

Currently, some chargepoint operators earn revenue through charging for electricity or parking as part of a bundled service. This is sometimes through a pence per minute metric. We will require that when a bundle is offered, an equivalent p/kWh is also shown.

## Measuring Instrument Regulations meters

We consulted on requiring newly installed or renewed chargepoints having Measuring Instrument Regulations 2016 (MIR)<sup>13</sup>. MIR meters enable fair and standardised measurement as they accurately and consistently measure the amount of electricity used, for example household electricity meters are MIR compliant. The use of MIR compliant

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<sup>13</sup> <https://www.legislation.gov.uk/uksi/2016/1153/contents/made>



meters will assure consumers of the amount of electricity they are paying for when they use a chargepoint.

Almost all respondents agreed with metering electricity. Chargepoint operators and manufacturers opposed MIR meters in DC chargepoints due a claimed lack of standard for accurately measuring the amount of electricity delivered in a DC chargepoint, saying, in their opinion, it would halt the roll out of charging infrastructure.

Due to the lack of standards, and the time needed for development of standards for DC chargepoints, we do not propose to change regulations on MIR compliant meters but will update guidance in 2022 to clarify current legislation.

# Reliability

## Ensuring a reliable charging network

Chargepoints should be guaranteed to be working and in good condition, even while the charging network is undergoing rapid growth. This was echoed by respondents, one of which stated, “the number of chargepoints would be fine if they all worked”. We consulted on whether there was consumer support for introducing a 99% reliability standard across the network. To avoid excessive strains on industry, we proposed a year lead time for regulations to come into force. Proposals also included exemptions for events out of chargepoint operators control such as malicious damage.

Nearly all responses agreed with the 99% reliability requirement, with most of the chargepoint operators also agreeing. Most responses agreed with a per network reliability metric. Some respondents suggested that each charging location should have 99% reliability and that the Government should set clear targets and a minimum state of repair. Several respondents suggested the development of an annual reliability table, assigning reliability scores for consumers to view chargepoint operators with poor reliability and consumer experience. Some industry respondents raised that they would need to ramp up from 95% to hit 99% over a four-year period.

Government is committed to improving reliability for electric vehicle consumers and has previously signalled the need for a reliable charging network. We will require 99% reliability per chargepoint operator for the UK rapid network, including along the SRN, at trunk roads and MSAs, within 12 months of the legislation coming into effect. We will not accept any exemptions for the reliability metric such as poor weather conditions. The reliability will be measured using open data and we develop the reliability metrics with industry in the next year to be outlined in guidance documents. We will monitor the market for improvement in reliability and will take the powers to mandate a 99% reliable charging network across all chargepoints of all speeds in the UK if adequate improvements are not made by the end of 2023. Ahead of our decision, we will publicly list those chargepoint operators that do not maintain a reliable network. We will enforce self-reporting until open data has been mandated, which must also be shared with the relevant enforcement body as per the guidance document to be published alongside the legislation.

In order to ensure that no areas are left behind, especially rural areas, we are requiring every rapid chargepoint operator’s network to be 99% reliable. We recognise that this will be of greater cost to chargepoint operators than the original fleet average metric proposed

in the consultation but regard it as essential that our network is working properly regardless of location. In response to suggestions for the development of an annual reliability table, Government or the enforcement body will develop a publicly available table alongside enforcement of the 99% reliability measure.

We will require a free 24/7 helpline to be provided by chargepoint operators at all chargepoints to ensure consumers can access support whenever they are struggling to charge. This will be enforced 12 months after the legislation comes into effect. We expect the helpline to provide a positive consumer experience, to respond to consumers quickly and support those who have an issue using the charging network to continue their journey having been able to charge their vehicle. We are seeking views on ways to further strengthen consumer protections through the 24/7-hour helpline. We consulted on potential measures to ensure consumers have access to adequate redress when using charging infrastructure in the Future of Transport Regulatory Review consultation last year.<sup>14</sup> We will publish our response to this consultation shortly.

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<sup>14</sup> <https://www.gov.uk/government/consultations/future-of-transport-regulatory-review-zero-emission-vehicles>

## Emerging Policy Areas

## Emerging policy areas



### Consumer protection

We are taking action to support low-income households, data privacy, exclusivity contracts at Motorway Service Areas and mis-selling electric vehicle bundles and tariffs.



### Accessibility

Partnership with British Standards Institution and Motability to develop inclusive design standards and define an accessible chargepoint.



### Weatherproofing and lighting

Encouraging provision of adequate lighting and weatherproofing. Will publish an electric vehicle infrastructure guide for Local Authorities.



### Signage

Working with Local Authorities, ensuring the chargepoint sign is widely used and will update On-Street Residential Chargepoint Scheme guidance if necessary.

The consultation also consulted on four emerging policy areas: consumer protection, accessible and inclusive chargepoint design; weatherproofing and lighting; and signage. These policy areas were identified through existing user research as areas of growing importance.

We recognise that these emerging policy areas are likely to become more important and so consulting now enables us to determine whether Government intervention might be needed in the medium to long term and proactively respond.

## Consumer protection

Consumers should have a positive experience when charging their EV. We consulted on whether there were additional concerns for consumer protection relating to the use of public chargepoints that had not been highlighted in the consultation. Most respondents agreed with the consumer issues raised in the four key areas of the consultation. Key themes which emerged from respondents who highlighted further areas for research included:

- **Protection for low-income households** - Consumers who are most likely to regularly use public charging are those without off-street parking, who are typically more concentrated in less affluent areas and in the rental sector. The impact of regulation must take into account these households to make sure that costs, including compliance costs, are not passed on by chargepoint operators.
- **Mis-selling of EV tariffs and bundles** - Consumers need to be fully aware of the tariffs and the respective costs and benefits. We will need to challenge confusing messaging and occurrences of mis-selling at the earliest opportunity.
- **Exclusivity contracts at MSAs** - The exclusivity agreements that we understand to be in place for EV charging at MSAs restrict the choice available to consumers.
- **Information and data privacy** - Detailed historical data collection could indirectly have privacy issues as it is possible to determine the home or business of a car owner or even the identity of the driver themselves, based on where cars are charging frequently. There should be robust security and protocols in place to prevent data breaches and fraudulent activity.

### Next steps

In the responses to the consumer experience consultation, there were a number of points raised under consumer protection:

- **Protection for low-income households** The EV charging infrastructure strategy sets out our approach to ensure that the UK develops a public charging network that meets the needs of EV drivers, wherever they live. We recognise that currently public charging tariffs are more expensive than those available to people using smart chargepoints at home. The CMA estimated that people who charge at home could save £84 per year, compared to people using on-street chargepoints<sup>15</sup>. We are funding trials of charging solutions that allow people without off-street parking to charge on cheaper energy tariffs at off-peak times. For example, one trial in Oxford will soon begin exploring the use of street adaptations to allow people to safely run a cable from their house to their car, through a gully in the pavement. The Agile Streets project is trialling smart public charging, enabling people using public chargepoints to access cheaper tariffs.
- **Mis-selling of EV tariffs and bundles** – Government will publish a policy statement jointly with Ofgem in 2022, on maximising the opportunity for flexibility from electric vehicles, while protecting the electricity grid and consumers. We will coordinate with the Electric Vehicle Energy Taskforce and industry to make sure that consumers have access to the right information and advice to choose the right goods or services

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<sup>15</sup> <https://www.gov.uk/government/publications/electric-vehicle-charging-market-study-final-report/final-report#home-workplace-and-destination-charging>

for their needs and get products set up in line with their preferences. We will also review energy consumer protections to ensure these are appropriate electric vehicle owners and users, to give consumers confidence in smart charging.

- **Exclusivity contracts at MSAs** - The Competition & Markets Authority have published the results of their investigation into the sector. The report concluded that there is a competition issue at MSAs requiring a full investigation<sup>16</sup>.
- **Information and data privacy** - We will not be opening consumer data in these regulations. For any future data work, we will ensure compliance with the relevant privacy and data protection regulations.

## Accessibility and inclusive design

Nearly all respondents agreed with the importance of the issues we had identified to ensure that the charging network is inclusive for all consumers, including disabled people. Over half agreed with the issues raised and believed that no other issues should be considered, but 42% of respondents thought that other issues should be considered, such as clearer instructions located on the chargepoint.

We firmly believe that the UK's charging network should be inclusively designed for use by all EV users, regardless of any mobility or dexterity impairments. Introducing standards across charging infrastructure was a dominant theme throughout the consultation responses with strong support for ensuring that chargepoints are inclusive for all consumers. Most respondents answered 'no' or 'don't know' to providing supervised stations for those who require assistance. Respondents also highlighted the need for an inclusive physical environment for non-EV drivers navigating the streetscape.

Respondents also raised a range of specific areas for improvement, including setting the minimum and maximum height for sockets (hip height for wheelchair users), no special/additional equipment required to access this; ensuring easy payment for all, and for apps to be included in this as an option. Some respondents highlighted that payment via smartphone can be easier for wheelchair users than accessing chip and pin or contactless payment interfaces.

A number of respondents raised that chargepoints should be designed with a view to reducing obstructions on the road and pavement, for those with reduced vision and mobility. They emphasised avoiding negative impact on walking and movement around a chargepoint by encouraging consideration of the use of roads for locations for chargepoints. Respondents said more national guidance would be welcome in this area.

### **Next steps**

We have commenced work with the British Standards Institution (BSI) and Motability<sup>17</sup>, a charity with the vision that nobody with disabilities shall be disadvantaged due to poor access to transportation. This work will involve the research and design of new standards, which we consider are essential to ensure that disabled drivers' and pedestrians' needs

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<sup>16</sup> <https://www.gov.uk/government/publications/electric-vehicle-charging-market-study-final-report>

<sup>17</sup> <https://www.gov.uk/government/news/uk-government-partners-with-disability-charity-to-set-standards-for-electric-vehicle-chargepoints>

are considered in the switch to EVs. These standards – to be finalised by summer 2022 – are being developed in collaboration with consumer groups, chargepoint operators and other stakeholders and will provide a new, clear definition of accessibility for public EV chargepoints.

The standards will consider aspects such as kerb height, adequate space between bollards and chargepoints being of a height suitable for wheelchair users. They will also consider chargepoints in the context of their surrounding built environment to ensure pedestrians and other road users' needs are reflected.

We note and welcome the work of others on this area of importance, including:

- Scottish and Southern Electricity Network (SSEN) “Equal EV” project.<sup>18</sup>
- UK Power Network’s “Enable” project<sup>19</sup> - developing a coordinated approach with local authorities to serve the needs of EV drivers with disabilities that can be delivered within Local Area Energy Plans and further enhance the Charge Collective approach.
- Transport Scotland’s award £210,000<sup>20</sup> for test solutions to improve accessibility.

## Signage

Respondents were asked their opinion on chargepoint signage and a dominant view was that signage requires some form of improvement. Respondents also stated that consumers need to be able to make informed choices, including around accessibility, before they reach a chargepoint location. Responses from drivers suggested a lack of signposting to public chargepoints along motorways, A-roads, at MSAs and destinations. Some respondents also raised the need for enhanced coordination with local councils around signage.

We note that the Traffic Signs Manual recommends a uniform sign for chargepoints, although this sign is mainly used in residential areas. Responses suggest that more work is needed in highlighting this sign and ensuring that drivers know where chargepoints are located. Consumers can find the general location of chargepoints on apps such as Google Maps and Zap-map, but this is not always precise and so signage is still important. Physical signage will be supported by open, accurate data so that drivers will be able to more easily find chargepoints through their car or other navigation systems.

### **Next steps**

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<sup>18</sup> [http://news.ssen.co.uk/news/all-articles/2020/november/23-million-disabled-motorists-at-risk-of-being-left-behind-in-the-electric-vehicle-transition/#:~:text=Scottish%20and%20Southern%20Electricity%20Networks%20\(SSEN\)%20alongside%20Connected%20Kerb%20and,make%20the%20switch%20to%20EVs.](http://news.ssen.co.uk/news/all-articles/2020/november/23-million-disabled-motorists-at-risk-of-being-left-behind-in-the-electric-vehicle-transition/#:~:text=Scottish%20and%20Southern%20Electricity%20Networks%20(SSEN)%20alongside%20Connected%20Kerb%20and,make%20the%20switch%20to%20EVs.)

<sup>19</sup> <https://innovation.ukpowernetworks.co.uk/projects/enable/>

<sup>20</sup> <https://www.transport.gov.scot/news/winners-of-accessible-travel-fund-announced/>



We will continue to work with local authorities to ensure that the chargepoint sign<sup>21</sup> is widely used where appropriate. We will look at updating the ORCS guidance<sup>22</sup> if necessary. Over time, it is expected that chargepoint operators will become one of the major commercial operators at MSAs and will be able to finance MSA approach signage. Until then, we will work with MSAs and chargepoint operators to ensure appropriate signage is provided as part of any funding from Project Rapid<sup>23</sup>.

## Lighting and Weatherproofing

Many responses stated that they felt a lack of universal coverings, means that they can often be exposed to poor weather whilst charging their vehicle. Additionally, chargepoints can be standalone in car parks and in unfamiliar locations at night. Without lighting this can make people, particularly women, feel unsafe. This issue is exacerbated as chargepoints are installed in an increasingly diverse range of locations, often in more isolated and exposed locations than is the case for petrol stations.

Responses highlighted weatherproofing and lighting as important areas for improvement, with a strong majority supporting improvements in each area respectively, and 63% requested that improvements apply to all chargepoints. Organisations responded less positively, with 51% supporting weatherproofing improvements and 56% supporting lighting improvements, and for specific locations only.

Most respondents stated that improved lighting was necessary for consumer safety and a positive consumer experience when charging. EV users, particularly women, raised concerns about safety when using poorly lit chargepoints. A number stated that we need to consider light pollution and setting specific lighting requirements on or around the chargepoint. Further consideration is needed as to whether such issues are part of chargepoint operators' remit.

Some respondents said exposed locations needed protection, and that a test should be applied to locations to understand the characteristics of each area. Others suggested that new chargepoints, particularly rapid chargepoints at MSAs and along A-roads, should be located under some sort of roofing or covering and have adequate lighting. Some respondents were opposed to intervention in this space, citing different regulations affecting the built environment would place a higher burden on chargepoint operators to resolve these issues.

We recognise the importance of these issues, particularly around lighting and consumers feeling safe when charging. We acknowledge the need to keep street furniture in line with local requirements and consider local authorities will know their area best for this purpose.

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<sup>21</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/782724/traffic-signs-manual-chapter-03.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/782724/traffic-signs-manual-chapter-03.pdf)

<sup>22</sup> <https://www.gov.uk/government/publications/grants-for-local-authorities-to-provide-residential-on-street-chargepoints/grants-to-provide-residential-on-street-chargepoints-for-plug-in-electric-vehicles-guidance-for-local-authorities>

<sup>23</sup> <https://www.gov.uk/government/publications/government-vision-for-the-rapid-chargepoint-network-in-england/government-vision-for-the-rapid-chargepoint-network-in-england>

### ***Next steps***

We will encourage the provision of adequate lighting, CCTV and weather coverings where appropriate through our guidance and engagement with local authorities. We will continue to support efforts to establish charging hubs, such as those in Dundee<sup>24</sup>, where chargepoints are sheltered and well-lit. However, the majority of public chargepoints are not located within such hubs and will require different approaches. We will continue to work with local authorities to balance the consumer experience with the risk of additional cost and local councils' efforts to reduce street furniture. In early 2022, in collaboration with the Institution of Engineering and Technology (IET), we will publish an EV infrastructure guide for local authorities to assist with the transition to ZEVs.

The Department is also considering the potential scope for a unified consent to grant all the necessary permissions for a chargepoint; this could include any associated street furniture or covering structure for new chargepoints within that consent

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<sup>24</sup> <https://www.drivedundeeelectric.co.uk/princes-street>

## Equality Duty

The equality duty addresses whether protected groups are disadvantaged by our final policy and if this could be improved. Results from the consultation suggest that elderly people, those with disabilities, women and ethnic minority protected groups are likely to be positively impacted by these proposals.

A minimum payment method at newly installed higher powered and all rapid public chargepoints without the need for smartphone or internet access would positively impact older consumers. 30% of 65–74-year-olds do not currently access the internet, according to an OFCOM report<sup>25</sup> from 2020. Regulations mandating that pricing information be displayed easily and accessibly would benefit groups with learning disabilities and elderly people.

Mandating open and dynamic chargepoint data that will be available to consumers through industry apps and websites, will improve the experience for all consumers in understanding whether they are working and available. Open data will enable consumers to assess whether the chargepoints are suitable for their needs, particularly those with disabilities. Opening public EV chargepoint data is supported by the CMA's EV market study<sup>26</sup> to enable consumers to have a better consumer experience at public chargepoints and support the roll-out of EVs.

Improving the reliability of public chargepoints will benefit all consumers as they will not need to travel further or spend more time trying to find a working chargepoint. Groups with higher deprivation rates such as those with disabilities will benefit, as they will likely drive cheaper EVs with shorter ranges.

As part of the section on emerging policy areas, we sought views on improving the accessibility of public charging for disabled EV consumers. Most respondents agreed with the issues raised and highlighted that more should be done to ensure inclusive chargepoint design. Several respondents referred to safety concerns around lighting and weatherproofing, with multiple respondents raising concerns for lone women at poorly lit

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<sup>25</sup> [https://www.ofcom.org.uk/data/assets/pdf\\_file/0031/196375/adults-media-use-and-attitudes-2020-report.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0031/196375/adults-media-use-and-attitudes-2020-report.pdf)

<sup>26</sup> <https://www.gov.uk/cma-cases/electric-vehicle-charging-market-study>

chargepoints. These concerns were echoed in a Consumer Charging Report<sup>27</sup> by EVA England and the CMA EV market study,<sup>28</sup> both from 2021.

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<sup>27</sup> <https://www.evaengland.org.uk/wp-content/uploads/2021/04/EVA-England-Consumer-Charging-Survey-Report.pdf>

<sup>28</sup> <https://www.gov.uk/cma-cases/electric-vehicle-charging-market-study>

## Additional comments

Several additional comments were raised during the consultation covering a variety of issues within and external to the consumer experience at public chargepoints.

### *Infrastructure provision:*

A core set of standards were advocated for, including a maximum distance between chargers on motorways and trunk roads, a provision in communities of a certain size and availability in rural locations. We published our infrastructure strategy earlier in the year, a key aspect of which was asking Local Authorities to develop their own strategies for public chargepoint provision in their area. These strategies must be aligned with plans to support walking and cycling and should consider charging opportunities for electric bikes and motorbikes as well as cars and vans. The principles in the infrastructure strategy also apply to electric mopeds and motorbikes, which can use the same chargepoints as electric cars and vans.

Respondents made the point that chargepoints should be grouped together in hubs or mini-hubs to support safety and security and make it more economical to provide required measures, with a clear definition of public charging. Guidance for local authorities around installing EV infrastructure has been issued by the IET<sup>29</sup>, which includes guidance about chargepoint locations and safety. Since 2020, this government has committed over £2.5 billion to the EV transition, of which nearly £1.7 billion is to support charging infrastructure. We consider a chargepoint public if it is intended for use by members of the general public

### *Recognisable chargepoints*

Designated colour bays for EV chargepoints were suggested by respondents. Local authorities are best placed to judge parking pressures. Parking policy and its enforcement is devolved to local authorities. This is also a matter for the local highway authority, who can use a Traffic Regulation Order under the Road Traffic Regulation Act 1984, to implement parking restrictions e.g. EV dedicated bays.

### *Energy capacity, renewable energy sources and technologies:*

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<sup>29</sup> <https://www.cenex.co.uk/news/draft-guide-for-local-authorities-on-ev-charging-infrastructure-open-for-feedback/>

The importance of supporting more renewable energy sources and communicating on technology choices to consumers was raised by respondents. The Government's support for smart charging helps to utilise renewable energy. EVs produce substantially lower levels of greenhouse gas (GHG) emissions, even when accounting for the energy produced for electricity generation. Renewable hydrogen supplied in the UK is eligible for the Renewable Transport Fuel Obligation (RTFO), a certificate trading scheme. Large-scale low carbon battery manufacture investment in the UK is supported through the announcement of up to £1bn to support EV supply chains.

The issue of grid capacity was raised by respondents with specific reference to electric fleets. We recognise that the uptake of EVs will inevitably lead to more demand on the grid, which is why we will be mandating smart charging for at-home charging, where the majority of charging takes place. This will ensure that the grid is able to cope with increased demand, with vehicles charging when there is less demand overnight. Similarly, smart cables are available for EV consumers without smart home charging units. The UK electricity market is already set up to bring forward the investment in generation that will be required to meet this. The Contracts for Difference scheme supports significant investment in low carbon generation, and is backed by the Capacity Market, our principal tool for ensuring the security of electricity supply. In the Net Zero Strategy, Government set out that, subject to security of supply, all our electricity will come from low carbon sources by 2035. This brought forward the Government's commitment to a fully decarbonised power system by 15 years<sup>30</sup>.

*Industry forum:*

Respondents also called for the creation of an Industry Forum established by Government where OEMs, chargepoint operators and charger manufacturers can work closer together. We are continuing our work with the Electric Vehicle Energy Taskforce, who reported in January 2020 with proposals on how we can maximise the uptake of smart charging and ensure the energy system is ready for EVs.

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<sup>30</sup> HM Government (2021). Net Zero Strategy: Build Back Greener: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1033990/net-zero-strategy-beis.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf)

# Annex

## Annex A: Definitions Lists

AFIR – Alternative Fuel Infrastructure Regulations 2017

DNO – distribution network operator

Dynamic data – describes data types that are subject to change on a regular basis such as whether the chargepoint is in use or available, also referred to as live data

eMSP – an eMobility Service Provider is a provider of charging services to customers. Such services typically include providing access to charging stations for vehicle users via charging cards or apps, processing requests to charge, and taking payments for charging sessions. A chargepoint operator may also perform the role of an eMSP

EV – electric vehicle

IET – Institute for Engineering and Technology

p/kWh – pence per kilowatt hour, a measurement of the price per kilowatt hour

MIR – Measurement Instrument Regulations 2016<sup>31</sup>

<sup>32</sup>MSA – motorway service area

Non-proprietary – conforming to standards that are in the public domain and so not restricted to one manufacturer

OCPI – the Open Charge Point Interface protocol is an international standard that enables chargepoint operators to standardise their data collection and storage

OEM – original equipment manufacturer

ORCS - on-street residential scheme

PAYG – pay as you go. In this context, for consumers who drive to the chargepoint, charge and pay at the chargepoint either through contactless, an app or through another payment method after each charging session

Public chargepoints – a chargepoint intended for use by members of the general public as defined in the AFIR regulations<sup>33</sup>

Roaming – the ability to use a payment app across multiple chargepoint networks, with all public chargepoint networks covered by at least one roaming provider

RFID card – radio-frequency identification chargepoint travel card, which enables users to charge without using an app

SRN – Strategic Road Network

Static data – data that describes the reference data of the chargepoint such as location, number of charging points and who operates and owns the chargepoint

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<sup>31</sup> <https://www.legislation.gov.uk/ukxi/2016/1153/contents/made?view=plain>

<sup>32</sup> <https://www.legislation.gov.uk/ukxi/2016/1153/contents/made?view=plain>

<sup>33</sup> <https://www.legislation.gov.uk/ukxi/2017/897/regulation/9/made>

V2G – vehicle to grid technology enables batteries to store and discharge energy back to the grid

ZEV – zero emission vehicle

## Annex B: Chargepoint Definitions

A public chargepoint can vary in speed from 3.7kW upwards. There are the current definitions in AFIR 2017.

“high power recharging point” means a recharging point that allows for a transfer of electricity to an electric vehicle with a power of more than 22kW;

“normal power recharging point” means a recharging point accessible to the public that allows for a transfer of electricity to an electric vehicle with a power less than or equal to 22kW, excluding devices—

(a) with a power less than or equal to 3.7kW, or

(b) the primary purpose of which is not recharging vehicles