



Department for  
Energy Security  
& Net Zero



Thinks  
— Insight & Strategy —

# Smart Charging Process Evaluation

Process Evaluation of the Electric Vehicles  
(Smart Charge Points) Regulations 2021

Methodology Report

Report produced by Ricardo and Thinks Insight & Strategy  
for the Department of Energy Security and Net Zero

August 2023

Completed by Ricardo and Thinks Insight & Strategy for the Department for Energy Security and Net Zero prior to the recent general election in the United Kingdom in July 2024. As such, any references to government policies, commitments, or initiatives may reflect the stance of the previous administration and were accurate at the time of fieldwork and writing.



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# 1 Introduction

This report sets out the methodology for the **Process Evaluation of the Electric Vehicle (EV) ‘Smart Charge Points’ Regulations (2021)**<sup>1</sup> (the ‘Regulations’) following their phased enforcement in June and December 2022<sup>2</sup>. This process evaluation was commissioned by the Department for Energy Security and Net Zero (DESNZ), formerly part of the Department for Business, Energy & Industrial Strategy (BEIS), and conducted by Ricardo and Thinks Insight and Strategy. The project began in November 2022 and completed in September 2023.

The process evaluation forms part of a phased evaluation plan for the Regulations, including:

- A baseline survey<sup>3</sup> carried out in January 2022 with EV drivers to help understand the public attitudes towards, and the current use of, smart charging at home and in the workplace. The study provides baseline evidence to inform the monitoring and evaluation of the progress of the Regulations against their objectives.
- A process evaluation of the implementation of the Regulations (this study).
- Future interim impact evaluation expected by 2025 and final impact evaluation by 2027.

This rest of this document is structured in four sections, as follows:

- **The Evaluation Approach**, outlining the objectives, conceptual framework and specific process evaluation questions considered herein.
- **Data Collection Methods**, setting out the approaches employed to collect evidence such as desk and field or primary research.
- **The Analytical Approach**, summarising how the data and insights were analysed and considered.
- **The Limitations**, summarising how the data and insights were analysed and considered.

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<sup>1</sup> The Department for Energy Security and Net Zero, The Office for Zero Emission Vehicles and The Office for Product Safety and Standards (2022) Regulations: Electric vehicle smart charge points, GOV.UK. Available at: <https://www.gov.uk/guidance/regulations-electric-vehicle-smart-charge-points>

<sup>2</sup> The Regulation was implemented in two phases with most features coming into effect in the second half of 2022 (phase 1), and security features coming into effect after 30th December 2022 (phase 2).

<sup>3</sup> Department for Science Innovation and Technology and Department for Business, Energy & Industrial Strategy (2022) Electric vehicle smart charge point survey 2022, GOV.UK. Available at: <https://www.gov.uk/government/publications/electric-vehicle-smart-charge-point-survey-2022>

## 2 The Evaluation Approach

This section sets out the process evaluation (or project) objectives, and summarises the conceptual framework for the evaluation, which includes the final list of research or process evaluation questions targeted through this project.

### 2.1 Process Evaluation Objectives

The primary objective of this process evaluation is to provide **an understanding of how the Electric Vehicle (EV) ‘Smart Charge Points’ Regulations (2021) have been implemented and how industry and consumers have responded to this**. The outputs of the evaluation will inform further policy developments on smart charging and provide lessons learnt for other developments concerning smart secure energy systems, smart heating appliances, and energy smart appliances, which have been recently introduced into Parliament through the Energy Security Bill<sup>4</sup>.

DESNZ set out **five specific objectives for this project** and process evaluation, which were to:

1. Understand how the charge point industry in Great Britain has responded to the implementation of the Regulations, and industry views on first-year effects.
2. Understand if the Regulations will support opportunities for wider industry (charge point manufacturers, retailers, energy suppliers, technology providers etc.).
3. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience.
4. Provide insight into the barriers, enablers and incentives for smart charging.
5. Review the policy process and develop lessons learnt for future policy making.

### 2.2 Conceptual Framework for the Evaluation

In addition to these five specific objectives, DESNZ also defined a longlist of 25 research questions. Moreover, UK government process evaluations must be aligned, to the extent that it is possible, with HM Treasury’s Magenta Book<sup>5</sup>. Thus, **a conceptual framework for the evaluation was developed to confirm the scope and technical and data requirements, as well as identify any opportunities to streamline the research questions**. This way, the

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<sup>4</sup> UK parliament (2023) Energy bill [HL] publications - parliamentary bills - UK parliament, UK parliament. Available at: <https://bills.parliament.uk/bills/3311/publications>

<sup>5</sup> HM Treasury (2020) Magenta Book Central Government guidance on evaluation, Official Documents. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/879438/HMT\\_Magenta\\_Book.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879438/HMT_Magenta_Book.pdf)

framework would ensure that the design and implementation of any data collection methods would meet the project's needs and UK Government's standards.

### 2.2.1 Overview

This conceptual framework was developed and considered **in five steps**:

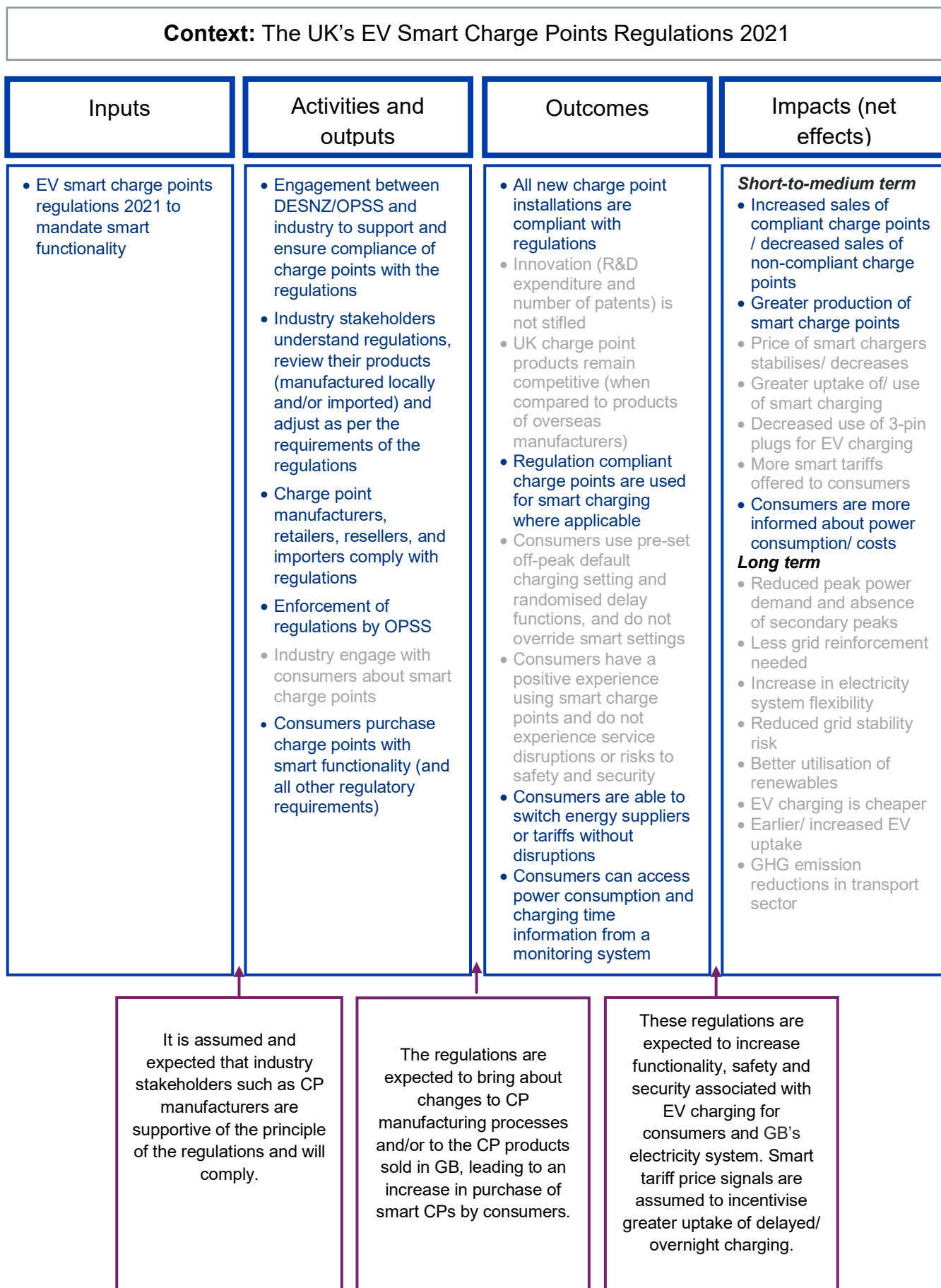
- Step 1: the rationale for the intervention, the Regulations and their scope, as well as high-level and specific objectives were explored.
- Step 2: based on this, further research regarding the success hypotheses of the Regulations, and targeted interactions with stakeholders, a rapid map of the Theory of Change of the Regulations was developed.
- Step 3: the technical requirements and standards for a process evaluation based on the HMT's Magenta Book were considered.
- Step 4: the five core and standard process evaluation questions identified in the HMT Magenta Book were mapped against the project objectives, to consider the extent to which these could all be met. These were also mapped in more detail against the 25 research questions outlined in the project's Terms of Reference, see Appendix 1 - Mapping of project objectives and research questions against HMT Magenta book evaluation questions.
- Step 5: a proposal was developed for the research questions and methods that would be employed to meet the needs of the project and the standards and technical requirements outlined on HMT's Magenta Book.

The following subsections provide insights into some of these steps, especially the theory of change and final conclusions reached through this exercise: the final process evaluation (or research) questions.

### 2.2.2 Theory of Change

A rapid theory of change map was considered to provide a benchmark or contrast against which to consider the 25 research questions identified as part of the project's Terms of Reference and the project inception discussions. The Figure below provides a simplified version of this map, which will be updated in future evaluation phases.

Figure 1 Rapid Theory of Change assessment



Legend for text above - *Directly related to the Regulations;* *Indirectly related to the Regulations*

### 2.2.3 Process Evaluation Questions

At a high-level, there are five core questions that must be asked as part of a process evaluation in line with the HMT’s Magenta Book<sup>4</sup>, which include:

- Was the intervention delivered as intended<sup>6</sup>? Were there any unexpected or unintended issues in the adoption of the Regulations across stakeholders? To what extent has the adoption of these Regulations reached all the stakeholders that it was intended to?
- What worked well, or less well, for whom and why?
- What could be improved?
- What can be learned from the delivery methods used? Could other mechanisms have been used to deliver the intended supply and demand changes in the charge point market?
- How has the context influenced delivery?

These five, standard process evaluation questions were mapped against the project objectives and the longlist of 25 research questions, and it was concluded that the longlist of research questions could be mapped effectively onto the standard process evaluation framework. However, a few potential gaps were identified within the longlist of research questions, and in particular not all intended outputs and outcomes of the Regulations were covered in this longlist. For example, it was considered that questions on the charge point customer’s experience and the extent to which the implementation of the Regulations is working as intended for customers were not necessarily captured as effectively as they could have been. This is in part because of the indirect nature of the impact on consumers, and this potentially taking longer to fully materialise. Therefore, it will be explored in further phases of the evaluation programme. A comparison of the old vs new research questions is provided in Appendix 2 – Mapping of initial against new research objectives and research questions for reference.

The result of this exercise produced a **final list of process evaluation questions and sub-questions that would be targeted through the project to meet DESNZ’s needs and the UK Government technical standards**. The table below summarises these.

**Table 1 Final process evaluation questions structured into five groups**

High-level questions	Final longlist of research questions
1. How has the charge point industry in GB responded to the Regulations so far?	a) How have industry interpreted the Regulations?
	b) How have industry made changes to comply with Regulations? Have they changed their products and, if

<sup>6</sup> Please note that ‘as intended’ would refer to the delivery of regulations in a way that would lead to the achievement of the success hypotheses outlined in the theory of change.



	<p>so, how? Have they developed new models? What functionalities do these products provide (e.g., default settings, etc.)?</p>
	<p>c) To what extent are charge points sold in compliance with each regulatory requirement? And why? Please consider how contextual factors may affect this. How have sellers demonstrated compliance?</p>
	<p>d) How have businesses targeted consumers? Have they created partnerships to boost awareness of the smart charge point offering? For example, partnerships between charge point manufacturers and vehicle dealerships.</p>
	<p>e) On the one hand, what has enabled industry compliance? On the other, what barriers and challenges have industry faced to comply with the regulatory requirements? And, what about selling the compliant smart charge points?</p>
<p><b>2. What are some of the economic and broader implications for the industry from complying with these Regulations?</b></p>	<p>a) Has the availability of charge points been affected? Are there more 'smart charge points' offered in the market?</p>
	<p>b) What are the prices of these smart charge points on offer? Alternatively, what about the costs of manufacturing?</p>
	<p>c) How have smart charge point sales evolved over the last year?</p>
	<p>d) How has trade evolved over the last year, including exports and imports especially associated with smart charge point technology? Have GB manufactured smart charge points remained competitive?</p>
<p><b>3. How have consumers responded to the new charge point offering?</b></p>	<p>a) Are consumers aware of and accessing information on smart charging and, if so, how? How are they influenced by stakeholders?</p>

	<p>b) How have consumers responded to these new, regulation-compliant charge points? Are they receptive, that is, purchasing these smart charge points in place of other options available to them? Why? Please consider any external or contextual factors that may affect consumer decisions.</p>
	<p>c) To what extent are consumers who own smart charge points using smart charging functionalities? In particular, do they use the pre-set off-peak default settings? Do they use the randomised delay functions? Or are they overriding these settings? What are their reasons (e.g. hardware or software design, needs, etc.)?</p>
	<p>d) On the one hand, what has motivated consumers to purchase smart charge points and use the smart charging functionality? On the other, what barriers and challenges have consumers faced, both in purchasing these charge points as well as using their smart functionality?</p>
<p><b>4. What are the experiences of consumers/users of smart charge points?</b></p>	<p>a) How do consumers perceive their consumer journey from point-of-purchase, to installation, to use of a smart charge point?</p>
	<p>b) Have consumers experienced any service disruptions (e.g. from losing connection to a communications network and/or cyber-attacks) and how have they reacted?</p>
	<p>c) Are consumers aware they can switch between energy suppliers and/or tariffs? What proportion of consumers have attempted a switch and what has their experienced been (e.g. any disruptions, administrative hurdles, etc.)?</p>
	<p>d) How are consumers accessing information about smart charge points? Are consumers who own smart charge points aware of their power consumption and charging time information from their smart charge point? Do they make use of this information?</p>

<b>5. What are some of the lessons learnt from the implementation of the Regulations so far? Is any other precedent that could be relevant?</b>	a) Are there any lessons learnt from the implementation of the policy so far (from both the industry's and consumer's perspectives)? What could be improved to enable an even more effective implementation of the Regulations?
	b) What other measures or actions could be taken to improve industry compliance, if at all possible?
	c) What are other measures or incentives that could be introduced to improve consumer uptake of smart charge points and use of the smart functionalities?
	d) Is there any precedent (in other jurisdictions or other policy areas) with learnings that should be considered for the ongoing implementation of these Regulations?

## 3 Data Collection Methods

This section provides an overview of the data collection approach and delves into the desk and field research methods employed as part of this project.

### 3.1 Overview of the approach to data collection

The process evaluation employed desk-research and field (or primary) research methods to collect the evidence that is necessary to provide insights against the final list of five high-level questions and 21 specific research questions, i.e., to understand how the intervention has been or is being implemented and any lessons learnt. The Table provides an overview of how the data collection methods were used to answer the five high-level questions.

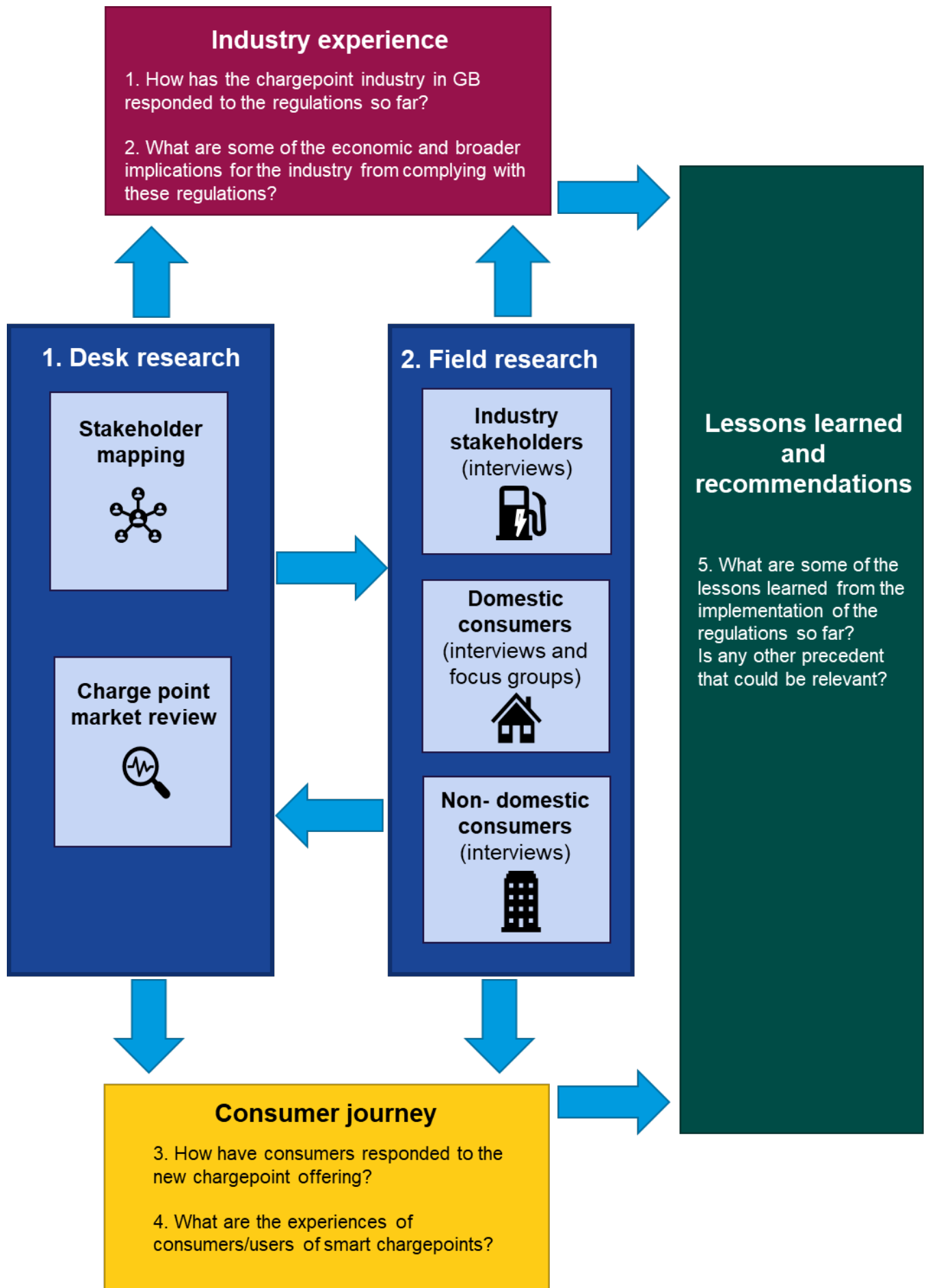
**Table 2 Overview of data collection methods against the high-level research questions**

High-level questions	Data collection methods
<b>1. How has the charge point industry in GB responded to the Regulations so far?</b>	Charge point market review, pre-screening surveys and interviews with industry stakeholders, charge point cost information request, available public data.
<b>2. What are some of the economic and broader implications for the industry from complying with these Regulations?</b>	
<b>3. How have consumers responded to the new charge point offering?</b>	Pre-screening surveys and interviews with domestic and non-domestic consumers, focus groups with domestic consumers, interviews with industry and/or experts where necessary.
<b>4. What are the experiences of consumers/users of smart charge points?</b>	
<b>5. What are some of the lessons learnt from the implementation of the Regulations so far? Is any other precedent that could be relevant?</b>	Analysis of evidence collected against Questions 1-4, interviews with industry and consumer stakeholders, experts and policymakers, literature research.

These data collection methods were selected to maximise the likelihood of collecting the necessary evidence to meet the project's objectives (as listed in Process Evaluation Objectives). An overview of the approach is also depicted in Figure 2 below).

More information about the desk and field research approaches is provided in the following subsections.

Figure 2 Overview of the data collection methodology



## 3.2 Desk research

A Rapid Evidence Assessment (REA) of published literature and publicly available market activity was conducted to create a comprehensive synthesis of the information on smart charging in terms of stakeholders, consumers and the market. This was used to inform two specific desk-based tasks: a review of the charge point market and the mapping of key stakeholders impacted or influenced by the Regulations, which are described in the following paragraphs.

### 3.2.1 Charge point market review

A database of household and workplace charge points currently being sold in the UK was collated from desk-based research of publicly available information. The list of manufacturers was compiled using the list of manufacturers from the Delta-EE's EV Charging Player Database<sup>7</sup> in combination with the approved residential charge point model list<sup>8</sup> to create a referencing database (cross-checked with OPSS list of manufacturers). The combination of these sources gives us confidence that the majority of charge point manufacturers operating in the UK market are likely to be captured in this review. In some instances, charge points that appeared in the referencing database were excluded, if the manufacturers were found to have discontinued product sales and/or withdrawn the product from the UK market.

Cost and other information (i.e., connectivity, single or three-phase power type, and features outlined in the Regulation) were collected from the manufacturer's websites (November 2022). The cost information was collected from third-party websites when not stated on the manufacturer's website<sup>9</sup>. The release date was, in most cases, taken from the date given on the technical specifications. The majority of the features were also taken from these technical specifications. Some manufacturers also provide regulation-compliant statements declaring that their charge points have the associated features that are required by the Regulations. These compliant statements were also reviewed in the process.

This charge point market review provided insights into the extent of the (self-reported by manufacturers) features covered in the Regulations' requirements before and after the June 2022 enforcement date. An update was provided in March 2023 to understand the market response to the security requirement set out in the December 2022 requirements. Limitations of this research are identified and discussed in Section 5.1.

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<sup>7</sup> LCP Delta (2023) EV Charging Service: Expert Insight into an Emerging Sector, LCP Delta. Available at: <https://www.delta-ee.com/research-services/ev-charging-service/>

<sup>8</sup> Office for Zero Emission Vehicles (2022) Residential authorised charge point model list, GOV.UK. Available at: <https://www.gov.uk/government/publications/residential-approved-charge-point-model-list>

<sup>9</sup> The third-party sellers for charge points where some prices were obtained include [cef](#), [voltaev](#), [RS components](#), [electrical2go](#)

## Verification of self-reported compliance

To verify self-reported compliance with the Regulations identified in the charge point market review, 13 manufacturers were re-contacted following the interviews, with five responses received

Each manufacturer was asked to confirm the approximate number of products that have smart-charging features (i.e., pre-set off peak; randomised delay; user interface; electricity supplier interoperability; ability to charge without a communications network; measuring system that is visible to owner; safety provisions; and security requirements, including cybersecurity) and are covered under the Regulations:

- before the 30 June 2022 enforcement date
- after the 30 June enforcement date (but before the 31 December enforcement date)
- after the 31 December enforcement date

This process found that the randomised delay feature and the security standard feature were the least adopted after the 30 June implementation date. This aligned with the market review findings. However, the manufacturer verification found that pre-set off-peak charging was also a difficult to implement feature, whilst the desk-based market review found that this feature was well adopted after June 30. This could be a result of different definitions being used for compliance, with charge points having this feature but not necessarily meeting the compliance standards as set out in the Regulation. The verification only considered a very small sample (n=5) of manufacturers, and so cannot be used directly validate the market review findings.

### 3.2.2 Stakeholder mapping

The typical ecosystem of actors involved in the electric vehicle charge point provision and service management for private end-users<sup>10</sup> was mapped on the basis of the rapid evidence assessment (REA). This mapping facilitated the identification of key stakeholders and provided insights into the interactions between the main stakeholder groups. Moreover, the mapping also helped unpack how the Regulations either directly or indirectly affected stakeholder groups.

Actors in the map were split, and colour-coded into five stakeholder types:

- Upstream Supply Chain (cyber security leaders, software solution providers, hardware solution providers)
- Product and Service Market (charge point manufacturers, charge point installers, charge point retailers, vehicle dealerships, e-mobility services data communication companies)
- Energy System (energy generators, non-balancing unit generators and distributed energy resources, transmission system operators, electricity system operators, distribution network operators, utility suppliers, energy aggregators)

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<sup>10</sup> Private end users classed as domestic, workplace and business operators.



- End-users
- Compliance and Regulating Authorities

This assessment also informed the list of industry stakeholders targeted in the field research and supported the development of the questions used in such exercise, which is described in the following section.

### 3.3 Field research

Field research was conducted across industry, consumer, and non-domestic consumer groups, to collect insights on how the Regulations have been implemented, experienced or responded to by different stakeholders.

The objectives of this field research were to:

- Give relevant stakeholder groups the opportunity to engage with the evaluation.
- Gather insights on how the Regulations have been interpreted and implemented by key stakeholder groups.
- Seek feedback, from relevant stakeholders, on the Regulations and key aspects that have been either straight-forward or challenging to comply or engage with.
- Identify specific lessons learnt relating to key barriers, enablers, incentives, and external factors affecting the response to or implementation of the Regulations for each stakeholder group.
- Explore whether the Regulations might support opportunities for wider industry.
- Understand how new device standards have been adopted by the industry resulting in impacts on consumer choices and experiences.

A summary of the approach employed for and a sample size of members of each stakeholder group (industry stakeholders, domestic and non-domestic consumers) participating in this exercise is provided in the following subsections.

#### 3.3.1 Policymakers

Prior to the main tranche of fieldwork, **two scoping interviews were carried out with four internal stakeholders** from DESNZ and Office for Product Safety and Standards (OPSS) to capture key background information and context to the Regulations. Interviewees were identified on the basis of their prior involvement in the development of the Regulations or in OPSS's case their involvement in their enforcement.

The key points covered were the rationale and objectives for the development of the Regulations and any challenges and risks with development or implementation of the Regulations.

Policy maker discussion guides are provided in Appendix 6.3.1.

### 3.3.2 Industry stakeholders

The field research carried out sought to explore the industry's perspective and thus multiple stakeholder groups were targeted and engaged, including charge point manufacturers, charge point installers, charge point resellers and retailers, energy suppliers, distribution system operators, trade associations, solution providers, electricity system operators and charge point importers.

The stakeholder mapping exercise discussed in Section 3.2.2 supported development of the stakeholder engagement plan and subsequent indicative list of initial targets. This list identified priority stakeholder groups based on a balanced approach, which as predicted was flexed to reflect levels of actual engagement across each group. The recruitment of stakeholders to participate in the field research exercise was split into two waves, through which approximately<sup>11</sup> **100 industry stakeholders were contacted**.

The engagement with these stakeholders resulted in an approximate response rate of 53%, and a conversion rate<sup>12</sup> from pre-screening to interview of 66.6. This process is described in more detail below and the number of stakeholders who responded and were interviewed are listed, by stakeholder group, in Table 3 below. Whilst detailed fieldwork tools are provided in Appendix 6.3.2.

#### Wave 1: Pre-screening survey

- **51 short surveys were completed.** Each survey hosted nine questions in an online format to collect information about the organisation's characteristics, the target market and their awareness of the Regulations.

#### Wave 2: Interviews

- **36 follow-up interviews were conducted** with a sample of the industry stakeholders who were contacted at the pre-screening stage<sup>13</sup>.
- The remaining 17 did not progress to interview stage for a variety of reasons including:
  1. Duplicate submissions from one organisation
  2. Lack of response or declining to participate
  3. Organisation was out of scope for this research
  4. Responding after the recruitment deadline
- Interviews were 60 minutes in duration, and focused on collecting information of the organisation's role in the smart charge point supply chain; understanding and

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<sup>11</sup> While Ricardo directly engaged with 100 Industry organisations throughout the course of this fieldwork, we cannot be certain of the exact number of stakeholders contacted due to support from external organisations (e.g., trade associations)

<sup>12</sup> Conversion rate is calculated as the percentage of pre-screening surveys (51) resulting in an interview (34). This conversion rate does not include the two interviews which progressed directly to interview stage rather than as a result of the pre-screening process.

<sup>13</sup> In two cases interviewees were progressed directly to the interview stage surpassing pre-screening due to limited time and knowledge that the stakeholder was in scope for this study.

interpretation of the Regulations; experience of complying with Regulations; impacts of the Regulations on their business; and any reflections on consumer behaviour toward smart charge points.

A summary of the sample of stakeholders who responded to the pre-screening survey and participated in the interview process is provided in Table 3 by stakeholder group. Figures presented in brackets demonstrate where organisations identified as more than one stakeholder group. While one key category has been selected, those presented in brackets should provide confidence to the variety of views captured across stakeholder groups within this fieldwork.

**Table 3: Summary of field research undertaken across industry stakeholders (08 March - 05 May 2023)**

	<b>51 pre-screening surveys completed</b>	<b>36 interviews of 60 min each completed</b>
<i>NB: Some organisations identify as multiple stakeholder groups, number in brackets includes total number of organisations identified as having multiple roles.</i>		
Charge point manufacturers	19 (28)	13 (16)
Charge point installers	7 (11)	5 (9)
Charge point retailers /resellers	10 (17)	5 (13)
Energy supplier	2 (3)	1 (2)
Distribution system operators	2 (2)	2 (2)
Trade associations	4 (4)	5 (5)
Software solution provider	3 (5)	1 (2)
Hardware solution provider	1 (1)	1 (1)
Electricity system operators	1 (1)	1 (1)
Charge point importers	2 (3)	2 (3)

Following interviews, 13 manufacturers were then re-contacted for further information as indicated in Section 3.2.1.

### 3.3.3 Consumers

The field research performed also explored the smart charge point consumers’ perspective by targeting two distinct groups: domestic consumers and non-domestic consumers (i.e., businesses with fleets; workplaces offering electric vehicle charging; landlords; and property developers). These are described in the following paragraphs.

### 3.3.3.1 Domestic Consumers

Participants recruited for the domestic consumer research represented a variety of stages in the consumer journey; and demographics including, those with varying baseline knowledge, engagement, and control over decisions related to installing a home charger, to ensure the sample contained a range of views and demographics, in line with the sample specification.

The recruitment of domestic consumers was conducted through a recruitment partner. Several recruiters that specialise in the recruitment of participants for automotive research were involved. Each recruiter has their own database of members of the public who have previously expressed an interest in taking part in market research and have agreed to be contacted if opportunities arise. Recruiters primarily invited participants to take part in research from these databases, however additional supplementary recruitment methods were employed as required, including but not limited to leafleting in local areas, ‘snowballing’ (encouraging existing contacts to refer others they know), or posting on social media (including on their own pages, local area groups, or interest-based groups).

All potential participants were screened using a structured questionnaire or "screener" which checked that they fit the relevant sample criteria for inclusion. The fieldwork was then split into two waves, which are described below. Whilst detailed fieldwork tools are provided in Appendix 6.3.3.

#### Wave 1: Short or one-off interviews

- 14 shorter introductory interviews to understand consumer characteristics and their electric vehicle and charge point consumer journey so far.
- 12 separate, one-off interviews with consumers who have experienced most or all of the end-to-end electric vehicle and charge point journey.

The numbers of participants in wave 1 of this field research, by type, are captured in the Table below.

**Table 4: Summary of domestic consumers who participated in Wave 1 of the fieldwork (18-27 January 2023)**

<b>14x pre-interviews (30 mins each)</b> <i>NB: follow-up depths with these participants took place in Wave 2</i>	<b>12x standalone depth interviews (60 mins each)</b>
5x who are considering purchasing a home charger	4x who are considering purchasing a home charger
4x who have purchased a home charger, but not yet had it installed	2x who have purchased a home charger, but not yet had it installed
5x who have recently purchased and installed a home charger	6x who have recently purchased and installed a home charger

## Wave 2: Follow-up interviews and focus groups

- 12 follow-up interviews were completed with the consumers who underwent introductory interviews, to understand how their experience has changed over time at different stages of the consumer journey.
- Two focus groups, with four to five participants and lasting 2 hours, were conducted virtually on Zoom with range of EV users and/or purchasers. Each group was split so that it had shared ground, for example, according to length of EV ownership/ charging experience or habits.

The numbers of participants in wave 2 of this field research, by type, are captured in the Table below.

**Table 5: Summary of domestic consumers who participated in Wave 2 of the fieldwork (9-17 March 2023)**

12x follow-up interviews (60 mins each)	2x focus groups (90 mins each)
4x who are considering purchasing a home charger	1x group (4x participants) who have completed the home charger purchase journey 1x group (5x participants) who started and abandoned the home charger purchase journey
4x who have purchased a home charger, but not yet had it installed	
4x who have recently purchased and installed a home charger	

During the fieldwork process, of the 12 interviewees who were interviewed and later re-interviewed by the second interview: eight had a change to their status within the consumer journey:

- three had their charger installed in the intervening period;
- one sold their EV; and
- four had taken specific further steps in their research, for example, talking to specific people or getting quotes for prices.

### 3.3.3.2 Non-Domestic Consumers

A priority list of non-domestic consumers was developed as outlined in the non-domestic consumer sample specification.

Based on characteristics identified within this document, organisations were then prioritised and recruited through various methods, including utilising contacts who responded to the previous BEIS consultation (a maximum of six due to prior knowledge of the regulations) and organisations that Ricardo had previous contact with. These organisations were obtained through a variety of work streams, including (but not limited to) air quality, net zero, sustainability, compliance and these stakeholders therefore covered a mix of those who were

more and less informed about electric vehicle charge points, and at different points along the customer journey. Predicted characteristics were then verified during the pre-screening survey to ensure all consumer groupings were represented and a diverse sample obtained. Alternative contacts were also sought through online research and word of mouth.

The recruitment and field research of non-domestic consumers was also split in two waves, during which 53 stakeholders were contacted in total. This engagement resulted in an overall response rate of 26.4%, of which 85.7% were interviewed. The two waves are described below and the number of participants are listed, by type, in Table 3. Whilst detailed fieldwork tools are provided in Appendix 6.3.4.

### Wave 1: Pre-screening survey

- **14 short surveys were completed.** The survey hosted eight questions in an online format to understand the characteristics of non-domestic consumers and their electric vehicle and charge point consumer journey so far.

### Wave 2: Interview

- **12 follow-up interviews were conducted** with non-domestic consumers who completed the pre-screening survey. The remaining two organisations were out of scope for this research.
- Each interview lasted 60 minutes, with the aim of understanding their organisation’s interest and consumer experience so far (depending on stage of their consumer journey), as well as the use and awareness of charge points, and their understanding of the Regulations.

A summary of the sample covered by the pre-screening survey and interviews is provided in Table 6.

**Table 6: Summary of non-domestic consumers who participated in field research (08 March – 03 May 2023)**

14x Pre-screening Surveys (60 mins each)	12x Interviews (60 mins each)
<p>4x organisations which operate a fleet of vehicles</p> <ul style="list-style-type: none"> <li>• 1x in the process of researching charge points and/or EVs but with no fixed purchasing plans</li> <li>• 2x with charge points already installed and being used</li> <li>• 1x with charge points already installed, being used but looking to install more</li> </ul>	<p>3x organisations which operate a fleet of vehicles</p> <ul style="list-style-type: none"> <li>• 1x in the process of researching charge points and/or EVs but with no fixed purchasing plans</li> <li>• 1x with charge points already installed and being used</li> <li>• 1x with charge points already installed, being used but looking to install more</li> </ul>

<p>2x property developers installing EV charging facilities</p> <ul style="list-style-type: none"> <li>• <i>1x in the process of choosing charge points</i></li> <li>• <i>1x with charge points already installed</i></li> </ul>	<p>2x property developers installing EV charging facilities</p> <ul style="list-style-type: none"> <li>• <i>1x in the process of choosing charge points</i></li> <li>• <i>1x with charge points already installed</i></li> </ul>
<p>5x workplaces with employees who need access to charge points</p> <ul style="list-style-type: none"> <li>• <i>1x in the process of choosing charge points for installation</i></li> <li>• <i>4x with charge points already installed and being used</i></li> </ul>	<p>5x workplaces with employees who need access to charge points</p> <ul style="list-style-type: none"> <li>• <i>1x in the process of choosing charge points for installation</i></li> <li>• <i>4x with charge points already installed and being used</i></li> </ul>
<p>2x organisations who both operate vehicles, install charge points as property developers and have workplaces where employees require access to charging</p> <ul style="list-style-type: none"> <li>• <i>1x in the process of choosing charge points for installation</i></li> <li>• <i>1x with charge points already installed and being used but looking to install more</i></li> </ul>	<p>2x organisations who both operate vehicles, install charge points as property developers and have workplaces where employees require access to charging</p> <ul style="list-style-type: none"> <li>• <i>1x in the process of choosing charge points for installation</i></li> <li>• <i>1x with charge points already installed and being used but looking to install more</i></li> </ul>
<p>1x EV supplier</p>	

## 4 The Analytical Approach

The analysis of the data collected was focused on responding to the research questions mapped to the project objectives against the evaluation questions in HMT's Magenta Book, as set out in the Conceptual Framework for the Evaluation section above. In the charge point market review this involved quantitative analysis while in the fieldwork research this primarily involved qualitative analysis.

A summary of the approaches taken to analyse these two key data sources is provided below.

### 4.1 Market review analysis

The charge point market review exercise provided a database of household and workplace charge point models currently being sold in the UK. Each model's technical specification was reviewed to ascertain which features required by the Regulations were included within the charge point model. This data was then recorded in the database along with any available cost information. The information was analysed using MS Excel, with data converted into descriptive data visualisations.

Due to the variability of the data, half year time series were used as opposed to monthly time series to enable longer term trends to be identified more clearly. Analysis was focused on newly released charge points each half year due to data limitations in terms of identifying all models available on the market at any given time. The number of newly released charge point models with the features required by the Regulations overall and the individual requirements were counted, and percentages of charge point models with all features (as self-reported by manufacturers) required under the June 2022 requirements calculated per half year period. This data was then compared against a small sample of feedback provided by industry stakeholders during the field research to confirm whether there were any clear inconsistencies between the publicly available information and intel directly from the manufacturers in terms of levels of compliance and key activities required for charge point models to become compliant.

Mean averages were used to interpret the cost information available on a half year basis for single phase and three phase charge points.

### 4.2 Fieldwork data analysis

For the field research, qualitative engagement tools - interview and focus group topic guides were developed to explore the required research questions. These were then used to capture notes from all the discussions and recordings were also taken to ensure any missed important information was picked up at later stages. Copies of the interview and focus group topic guides can be found in the appendices.



Following completion of the fieldwork stage, the notes were compiled to provide one single dataset of responses per group, i.e. one for industry stakeholders, one for domestic consumers and one for non-domestic consumers. This approach enabled a centralised review of qualitative data in one place. It also enabled analysis of responses by different stakeholder or audience groups, e.g. by charge point manufacturers or installers and also comparison of results between different groups. Analysis focused on identifying key themes, trends or points of differentiation in the data focused around the different research questions. Multiple team members reviewed the data to mitigate against any personal bias, and the key themes for each question were agreed between the team of researchers.

For the domestic consumers, a framework of customer type and hypotheses was created in Wave 1, namely that domestic consumers sit across a spectrum of adoption from those on the latter end of early adopters and early mainstream consumers. This was revisited upon completion of the second wave of fieldwork to determine areas where the story had changed, nuanced had been revealed and further insight had been uncovered.

The sample of only 11 responses for non-domestic consumers across four subgroups meant it was not possible to develop a robust framework for this group in the same way.

Once analysis was completed across the three different groups, key themes and nuances were compared across the groups to identify conflicting feedback or commonalities between them. Gaps in the datasets were also filled, for example where it was not possible engage vehicle dealerships, insights from consumers provided alternative insights. Similarly, industry stakeholders provided some insights about consumer choices.

This was complemented by a small number of quantitative responses in the industry research, which was analysed using MS Excel, with data converted into descriptive data visualisations. Quantitative data was reviewed alongside the qualitative themes to check for consistency in the responses.

## 5 The Limitations

The key limitations identified in this study cover three areas of the data collection: the desk-based charge point market review, fieldwork and analysis, which are outlined in the following subsections. The limitations should be considered when drawing conclusions from this study. Throughout the study, actions were taken to mitigate and reduce limitations where possible. Whilst some limitations are outlined below, we are confident that overall the research provides strong evidence.

### 5.1 Charge point market review

The charge point market review provides a rapid review of publicly available information and a snapshot of the UK charge point market, which covers a wide range of manufacturers and their associated products. This means that the review is therefore as reliable as the public information collected. The consultation phase of the Process Evaluation has offered the opportunity to contrast some of the details of this market review with manufacturers directly.

The statistics present features as a share of models available for sale rather than the share of models sold or in use. Therefore, the results are a useful, but only indicative measure of the current market. This was a proportionate approach given the time and resources available to undertake the market review.

Given the large number of charge point manufacturers selling to the UK market, a purely desk-based research approach was taken to collect the data. This was decided as the most efficient use of the resources available for the project timescales, as reaching out to each charge point manufacturer individually would have been very time consuming (and contact details are not available). This review also does not consider compliance with the Regulations (being conducted by OPSS), only self-reported features of charge points as stated publicly by the manufacturers (via their website or similar).

#### **Self-reporting of functionality**

A key limitation of this approach is the reliance on information publicly shared or published by the manufacturer, that is, self-reported public information. Manufacturers may be less likely to announce certain aspects to the public if consumers are unlikely to be interested. For example, some consumers might not perceive the randomised delay function in the Regulations as a value-adding feature and, therefore, manufacturers might not prioritise mentioning such feature on their product descriptions. On the other hand, manufacturers may report the presence of some functionality that may not be fully compliant with the Regulations.

This review has been based on self-reported information on manufacturer's websites, and this decision was made to maximise the market coverage based on the time and resources available for this project. The results were not fully validated with the manufactures directly (aside from a very small sample, as described below), as this would have been a time-

consuming process and direct contact information was not available for every manufacturer in the UK. Thus, there may be cases of over and under reporting of certain charge point functionalities. Readers should keep this limitation in mind. Verification of charge point information with manufacturers in the stakeholder engagement part of the project was conducted in April 2023; however, this was only done with a sample of manufacturers. This process found that the randomised delay feature and the security standard feature were the least adopted after the 30 June implementation date. This aligned with the market review findings. However, the manufacturer verification found that pre-set off-peak charging was also a difficult to implement feature, whilst the desk-based market review found that this feature was well adopted after June 30. The verification only considered a very small sample (n=5) of manufacturers, and so cannot be used directly validate the market review findings.

The data presented in the market review does not relate to compliance of the charge point and associated features. Instead, the data indicates whether the manufacturers have publicly stated that the product contains a particular feature. For example, a product may have a user interface, but this may not be compliant with the Regulations. In such cases, the charge point is deemed to have the particular feature (user interface), but the details of the features have not been checked for compliance against the Regulations.

### Missing price information

Another limitation from this review is missing price information. Most manufacturers do not sell their charge points directly to consumers as the charge points need to be installed by a certified electrician. This is stipulated in the Building Regulation in England for the installation of electric vehicle charge points or cable routes<sup>14</sup>. Manufacturers can also reach a wider proportion of the market by selling through retailers or distributors. The charge point unit plus installation costs also depends on the complexity of the installation and whether additional work is required to install the charge point. Thus, most manufacturers supply charge point units to distributors and electricians without publicly disclosing the unit price, with very few manufacturers publishing the recommended retail price of their products or selling their products online with unit and installation cost as a bundle. The cost information was collected from third-party websites when not stated on the manufacturer's website<sup>15</sup>. Therefore, the price /cost information provided in this review should be taken as indicative, and not necessarily representing the actual price or cost of purchasing and installing a charge point. Averages in price/ costs for charge points have been taken across a wide time period (i.e. half year) to allow for limitations in cost information to be (potentially) averaged out.

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<sup>14</sup> Department for Levelling Up, Housing and Communities (2021) Infrastructure for charging electric vehicles: Approved documents, GOV.UK. Available at: <https://www.gov.uk/government/publications/infrastructure-for-charging-electric-vehicles-approved-document-s>

<sup>15</sup> The third-party sellers for charge points where some prices were obtained include [cef](#), [voltaev](#), [RS components](#), [electrical2go](#)

## Reliability of e-commerce data

This research has not included charge points sold on e-commerce platforms (e.g. Amazon, eBay) as it is not always clear whether these charge points have already been used and are being resold as second-hand. Second-hand and used charge points are in scope of the Regulations; however, if the seller does not sell charge points as a business, then such seller does not need to comply with the Regulations.

## 5.2 Field research

The fieldwork methodology described in Section 3.3 has some limitations. While the sample of participants secured and the methodologies used capture a range of views across stakeholder groups, there are a few limitations which should be considered when drawing conclusions from this research. These include: short timeframes for engaging stakeholders, the limited sample of participants, information gaps and biases (including under-coverage, sample and cognitive)

**Short timeframes:** timeframes for recruiting stakeholders and performing interviews were reduced for industry and non-domestic consumer fieldwork, primarily as a result of the 2023 Local Elections pre-election period (purdah). This limited the time available to conduct these activities. Requirements associated with purdah meant that new stakeholders could not be recruited from 13 April 2023 onwards. This subsequently limited the sample size achieved during the allocated timeframe across the non-domestic consumer sample.

**Limited engagement:** In this context, some industry stakeholders appeared especially unwilling to engage during the initial recruitment communications. While the recruitment successfully recruited the target sample of industry participants with the support of trade associations and OPSS, limited engagement or fatigue across industry was identified and should be noted as a possible barrier to future research in this space.

**Sample of participants:** the sample size was reduced due to a number of limiting factors such as short timeframes and limited engagement (as highlighted above). Despite the lower than intended sample, by consulting a number of key industry groups (representing multiple viewpoints<sup>16</sup>), the fieldwork presents a solid sample that we believe likely to capture high-level trends as well as individual organisation's experiences. Nevertheless, the low sample size should be kept in mind when generalising across individual stakeholders due to a reduced depth (i.e., number of organisations interviewed per stakeholder group).

For the domestic consumer sample in particular it should also be considered that some individuals may be more likely to volunteer to take part in research compared to others, which could skew the results of the research. To try to reach as wide an audience as possible, recruitment partners used a variety of methods to recruit potential participants, including leafleting in local areas, word of mouth and posting on social media. We also set sample criteria for inclusion and quotas for specific demographic groups, then screened all potential participants to ensure as representative mix as possible. Offering an incentive payment can

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<sup>16</sup> Trade associations interviewed in this study represent more than 1,600 organisations

also increase uptake among different people who would otherwise be less interested in taking part.

**Information gaps and sample biases:** the low sample size meant that certain industry stakeholder groups including dealerships and cyber security leaders were not represented in this field research. While we were not able to consult the groups directly, we were able to collect some evidence on dealership interactions with consumers through the consumer research, whilst cyber security leaders were represented through the trade associations engaged.

Moreover, a low sample size has a range of other potential limitations, such as under coverage and self-selection biases (as noted above) which might affect the production of insights. These can be due to limited input from certain groups (i.e. cyber security leaders), those self-selecting to have a personal interest in the topic and/or certain demographics which make them more likely to engage with the fieldwork. Mitigation actions were taken as part of the analysis undertaken for this study, nevertheless, these limitations should be understood when considering the final outputs. These included: targeting specific stakeholders, and engagement with trade associations (as mentioned above) and OPSS to increase reach of recruitment; and a shortened screening survey to reduce possibility of fatigue.

**Memory and cognitive biases:** The research relied on participants being able to accurately recall their experiences and accurately convey their current knowledge, rather than an observation of their experiences or an objective view. This means that participants may have at times over- or under-stated their true knowledge, thoughts or experiences, as established by research into cognitive biases and heuristics. Some relevant cognitive biases include the overconfidence effect, whereby people tend to report higher levels of confidence in their knowledge than their objective level of knowledge<sup>17</sup>, the Dunning-Kruger effect, whereby people with the lowest level of knowledge are most likely to overestimate their level of knowledge<sup>18</sup>, and social desirability bias, whereby due to societal norms people tend to overreport socially desirable activities and underreport socially undesirable ones<sup>19</sup>. We conducted a portion of the interviews in two parts to mitigate the effect of time on participants' memory of events, and the risk of feelings in the moment being overwritten or forgotten. While other cognitive biases are harder to combat, we provided information about smart charging to all participants, to reduce the risk of false confidence in their knowledge impacting the interviews. We emphasised the neutrality of the interviewers, and that participants could tell the interviewer if they did not know the answer.

**Methodology:** While the majority of the domestic consumer research was conducted as one-to-one interviews, we also conducted two focus groups: one with people who already had their

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<sup>17</sup> Fischhoff, B., & Slovic, P., & Lichtenstein S. (1977). 'Knowing with Certainty: The Appropriateness of Extreme Confidence.' *Journal of Experimental Psychology*, 3(4), 552-564 DOI: <https://doi.org/10.1037/0096-1523.3.4.552>

<sup>18</sup> Kruger, J., & Dunning, D. (1999). 'Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments.' *Journal of Personality and Social Psychology*, 77(6), 1121-1134 DOI: [10.1037/0022-3514.77.6.1121](https://doi.org/10.1037/0022-3514.77.6.1121).

<sup>19</sup> Krumpal, I. (2011). 'Determinants of social desirability bias in sensitive surveys: a literature review.' *Quality & Quantity journal*, 47, 2025-2047 DOI: <https://doi.org/10.1007/s11135-011-9640-9>

charger installed, and one with people who began the process of purchasing a charger but did not complete it. While focus group discussions can provide rich data by allowing participants to build on each others' experiences and discuss common themes, it is possible for some with strong views to influence others' responses due to social desirability bias (Krumpal, 2011). Although well-trained moderators can reduce the impact, this can create a bias within the group's responses that does not necessarily reflect the uninfluenced views of the group.

All fieldwork was conducted online via Zoom. While this method can boost participation for time-poor groups or those who would face logistical barriers to in-person fieldwork, those who are less comfortable with technology or who do not use the internet may not volunteer to take part.

**Use of closed questions:** across both pre-screening and interviews, closed questions were utilised to collect data from participants. They were used as they are considered less cognitively demanding, particularly during the pre-screening process to alleviate fatigue and increase participation. However, closed questions have the potential to increase biases in participant responses such as question order bias. These potential biases were mitigated against by always accompanying closed questions with open ones, to provide the participant with an opportunity to present their own views and explanations.

### 5.3 Analysis

For the analysis, limitations were associated with the limited sample of direct engagements due to the qualitative nature of this research. This meant that any conclusions developed are indicative but not necessarily representative of the wider population from the sample obtained, that is, uncertainty remains given the limited reach and inability to employ more robust statistical methods.

**Using mean averages for cost analysis:** as limited cost information was publicly available, mean averages were used for cost analysis in the market review. Outliers were represented by error bars but the inclusion of these may have skewed the data. Again mean averages may not be representative but give an indication of the overall direction of travel of costs (prices) for smart charge point models.

**Limited sample of direct engagements:** the reduced direct sample size as highlighted in 5.2 means that some findings within the analysis may not reflect views of the wider population.

**Overlooking nuances and minority responses in favour of key trends:** the thematic analysis of qualitative data was focused on identifying key trends, themes, and patterns in responses so it is possible that some nuances or minority responses may not be reported.

**Personal biases from project team:** the project team was small in nature and therefore the same researchers carried out the interviews and the analysis which may introduce biases to the analysis, based on what they think they heard in the interviews. However, the analysis was reviewed by a colleague who had not conducted any interviews to check for consistency and reliability.

A peer review quality assurance exercise was carried out whereby the Project Manager and Project Director of the study reviewed the outputs of the analysis.

# 6 Appendices

## Appendix 1 - Mapping of project objectives and research questions against HMT Magenta book evaluation questions

Project objective	Process evaluation questions				
	A Have the regulations delivered as intended?	B What has worked well, or less well, for whom and why?	C What could be improved?	D What can be learned from the delivery methods used?	E How has the context influenced delivery?
1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects.	X	X*		X*	X
2. Understand if the regulations will support opportunities for wider industry		X			
3. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience.	X	X*		X	X
4. Provide insight into the barriers, enablers and incentives for smart charging.			X	X	X
5. Review the policy development and implementation process and develop lessons learnt for future policy making		X	X	X	X*



## Appendix 2 – Mapping of initial against new research objectives and research questions

Previous objective	New high level research question	Previous research questions	New proposed research questions
<b>1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects.</b>	1. How has the charge point industry in GB responded to the regulations so far?	1d) How have industry interpreted the regulations?	How have industry interpreted the regulations?
		3a) How have industry made changes to comply? 3b) Have they made additional changes to products? 3c) How have they developed the default settings for charge points?	How have industry made changes to comply with regulations? Have they changed their products and, if so, how? Have they developed new models? What functionalities do these products provide (e.g., default settings, etc.)?
		2a) How have charge point manufacturers and retailers changed their products? Have they developed new smart models of charge points? How have prices changed? What functionalities to products provide?	
		1a) To what extent are charge point sellers compliant with the regulations, and each requirement? 1c) How have sellers demonstrated their compliance?	To what extent are charge points sold in compliance with each regulatory requirements? How have sellers demonstrated compliance?
		2d) Have businesses created partnerships to boost awareness or target consumers? For example, a vehicle dealership partnering with a charge point manufacturer to sell charge points?	How have businesses targeted consumers? Have they created partnerships to boost awareness of the smart charge point offering? For example, partnerships between charge point manufacturers and vehicle dealerships.
		1b) What barriers or challenges have they faced in complying? 5a) Have any barriers, challenges, and risks to the regulations been identified? 5b) What has enabled industry and consumers to positively adapt to the regulations?	On the one hand, what has enabled industry compliance? On the other, what barriers and challenges have industry faced to comply with the regulatory requirements? And, what about selling the compliant smart charge points?
<b>2. Understand if the regulations will support opportunities for wider industry</b>	2. What are some of the economic and broader implications for the industry from complying with these regulations?	1h) What types of charge points are available and what are their costs and functionalities?	Has the availability of smart charge points been affected? Are there more smart charge points offered in the market?
		1e) What has been the cost of compliance for charge point sellers and other supply-chain actors? 1i) How do first-year costs faced by industry compare to estimated costs in the impact assessment? 2a) How have charge point manufacturers and retailers changed their products? Have they developed new smart models of charge points? How have prices changed? What functionalities to products provide?	What are the prices of these smart charge points on offer? Alternatively, what about the costs of manufacturing?

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Previous objective	New high level research question	Previous research questions	New proposed research questions
		2b) How have sales been affected?	How have smart charge point sales evolved over the last year?
		2c) How has overseas trade been affected?	How has trade evolved over the last year, including exports and imports especially associated with smart charge point technology? Have GB manufactured smart charge points remained competitive?
		1f) Have any unintended consequences been identified?	Have any unintended consequences been identified?
<b>3. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience.</b>	3. How have consumers responded to the new charge point offering?	4c) Where do consumers seek information on smart charging and how are they influenced by stakeholders?	Are consumers aware of and accessing information on smart charging and, if so, how? How they are influenced by stakeholders?
		New	How have consumers responded to these new, regulation-compliant charge points? Are they receptive, that is, purchasing these smart charge points in place of other options available to them? Why?
		3d) How does the hardware and software design encourage consumers to smart charge?	To what extent are consumers who own smart charge points using smart charging functionalities? In particular, do they use the pre-set off-peak default settings? Do they use the randomised delay functions? Or are they overriding these settings? What are their reasons (e.g. hardware or software design, needs, etc.)?
		5a) Have any barriers, challenges, and risks to the regulations been identified?	On the one hand, what has motivated consumers to purchase smart charge points and use the smart charging functionality?
		5b) What has enabled industry and consumers to positively adapt to the regulations? 4b) Why do different types of consumers have different barriers to and motivations for smart charging?	On the other, what barriers and challenges have consumers faced, both in purchasing these charge points as well as using their smart functionality?
<b>4. Provide insight into the barriers, enablers and incentives for smart charging.</b>	4. What are the experiences of consumers/users of smart charge points?	4d) How do consumers perceive their consumer journey from point-of-purchase, to installation, to use of a charge point?	How do consumers perceive their consumer journey from point-of-purchase, to installation, to use of a smart charge point?
		New	Have consumers experienced any service disruptions (e.g. from losing connection to a communications network and/or cyber-attacks) and how have they reacted?
		New	Are consumers aware they can switch between energy suppliers and/or tariffs? What proportion of consumers have attempted a switch and what has their experienced been (e.g., any disruptions, administrative hurdles, etc.)?
		3e) How are industry providing consumers with information on smart charging?	How are consumers accessing information about smart charge points? Are consumers who own smart charge points aware of their power consumption and charging time information from their smart charge point? Do they make use of this information?

## Smart Charging Process Evaluation – Methodology Report

Previous objective	New high level research question	Previous research questions	New proposed research questions
<b>5. Review the policy development and implementation process and develop lessons learnt for future policy making</b>	5. What are some of the lessons learned from the implementation of the regulations so far? Is any other precedent that could be relevant?	5c) Are there any lessons learnt for future policy making?	Are there any lessons learnt from the implementation of the policy so far (from both the industry's and consumer's perspectives)? What could be improved to enable an even more effective implementation of the regulations?
		1g) Are there learnings to take implement with similar policies in the future?	What other measures or actions could be taken to improve industry compliance, if at all possible?
		New	What are other measures or incentives that could be introduced to improve consumer uptake of smart charge points and use of the smart functionalities?
		4a) How are consumers likely to respond to different types of incentives?	Is there any precedent (in other jurisdictions or other policy areas) with learnings that should be considered for the ongoing implementation of these regulations?
New			

## Appendix 3 - Fieldwork materials

The following pages include the fieldwork materials used in the research as indicated in the main report.

The following pages include the fieldwork materials used in the research as indicated in the main report.

### 6.1.1 Policymaker interview guide

#### Introduction

BEIS has commissioned Ricardo Energy & Environment to carry out a process evaluation of the EV 'smart charge points' regulations 2021, to understand how well they have been implemented and how industry and consumers have responded to their implementation. This will inform further policy development on smart charging and provide lessons learned for wider policy development, e.g., topics covered by the Energy Security Bill.

In the first instance, we would like to undertake exploratory interviews with BEIS/OPSS officers to capture key background information and context to the regulations.

The aims of the exploratory interviews are to:

- Gain a greater understanding as to background to the regulations and their development, the policy process and any lessons learned.
- Ensure that relevant issues are identified and addressed in the subsequent consultations to guide the design of our questions for stakeholder engagement (targeted surveys and interviews).
- Request your guidance for the identification of most relevant literature, or other sources of evidence/data relevant to the implementation of the regulations.

The inputs you provide will help to sense check the research questions we are covering as part of the study and inform the design of the process evaluation in terms of stakeholder engagement materials and questions.

#### **A. Background information / Intros**

1. Please provide an overview of your role and team within BEIS.

#### **B. Exploratory questions**

##### **B.1 Rationale and objectives for the development of the regulations**

1. Please can you provide some background for why and how the regulations for smart charge points in the UK were developed? What were the main drivers? Were there particular stakeholders which were asking for the regulations to be implemented?

Click here to enter text

2. What were the key outcomes expected / planned as a result of the implementation of the regulations? What prompted this review now?

Click here to enter text

3. What was the reasoning for the selection of aspects covered by the regulations, and why were some options rejected? Were there particular vocal stakeholders or stakeholder groups opposing / supporting particular options? Was anything raised around competition / technology neutrality?

Click here to enter text

4. How were stakeholders engaged over the course of the regulations' development?

Click here to enter text

5. How were consumers – domestic and non-domestic engaged over the course of the regulations' development?

Click here to enter text

6. Can you think of any lessons learned from the process / things that could be done differently in the future?

Click here to enter text

## **B.2 Challenges and risks with development or implementation of the regulations**

7. Are you aware of any key challenges or risks to the successful implementation of the regulations?

Click here to enter text

8. Please can you provide any feedback from the stakeholders you have engaged with so far on the implementation of the regulations, e.g. which aspects of the regulations have received the most support and/or pushback?

Click here to enter text

9. Which stakeholder groups (i.e., charge point operators, charge point manufacturers, distribution network operators) have shown the most support / opposition to the regulations? And which stakeholder groups have shown the most engagement in the consultation process?

Click here to enter text

10. Have any complementary measures, e.g., awareness campaigns, been introduced alongside the regulations, e.g. to promote smart charge points / smart charging to consumers?

Click here to enter text

11. Is any kind of monitoring carried out to measure uptake of smart charge points by consumers (domestic / non-domestic)? Is there any non-domestic baseline data?

Click here to enter text

12. Have you received any feedback (separate from the baseline survey) from consumers, e.g., around functionality, use of three pin?

Click here to enter text

13. Have you observed any reactions from the energy sector in response to the implementation of the regulations, e.g., around TOU tariffs? Any feedback regarding the randomised delays covered in Section 11.

Click here to enter text

### **B.3 Potential future policy or regulation changes**

14. In your view, do the original objectives still hold or are there are elements that should be considered going forwards?

Click here to enter text

15. In your view, do you see the smart charging regulations being adapted to cover public charge points in future?

Click here to enter text

16. In your view, what are the next priority areas for the development of the regulations? i.e., are you looking to expand the scope of the regulations to cover other technical aspects of smart charging in the near future (as with the addition of cyber-security)?

Click here to enter text

### **C. Other comments**

17. Please discuss any other issues you feel are relevant.

Click here to enter text

18. Please provide references to any studies, reports, or other documents that you think are relevant for this consultation, with links for online download where possible.

Click here to enter text

Thank you for your contributions!

## 6.1.2 Industry interview guides

### 6.1.2.1 Pre-screening survey guide

#### Welcome

#### 1) Please provide the following information\*

Organisation name:

Contact name:

Contact email address:

Position/role in organisation:

Telephone number:

#### 2) Please select the option that represents the main activities of your organisation (you may select more than one) \*

Charge point manufacturer

Charge point retailer

Charge point reseller

Vehicle dealership

Charge point installer

Energy supplier

Charge point importer

Trade association

Other (please specify):

#### 3) If you selected multiple options in the question above, please indicate below which one you consider to be your 'primary' activity.

#### 4) How many employees are in your organisation\*

Sole trader

1-49

50-249

250-499

500-1000

1000+

**5) Please choose the type of charge points your organisation relates to: \***

Home

Workplace

Depot

Other (please specify):

**6) Please consider your organisation's experience of complying with the Regulations and select the statement that most closely aligns**

It required significant effort to comply with the regulations

It required moderate effort to comply with the regulations

It required little effort to comply with the regulations

It was easy and effortless to comply with the regulations

It was not possible to comply with the regulations

Don't know

**7) Has your organisation changed or seen a change in the sales of smart charge points or related services, as a result of having to comply with The Electric Vehicles (Smart Charge Points) Regulations 2021**

Yes, there has been a notable increase in smart charge point related sales since the June 2022

Yes, there has been a small increase in smart charge point related sales since the June 2022



Yes, there has been a notable decrease in smart charge point related sales since the June 2022

Yes, there has been a small decrease in smart charge point related sales since the June 2022

No, there has been no noticeable change in smart charge point related sales since the June 2022

Don't know

**8) Did your organisation's costs change as a direct result of the adjustments required to comply with the Regulations**

Costs decreased overall

No changes in costs

Costs had a small increase (0%- 5%)

Costs increased moderately (up to 20%)

Costs increased notably (>20%)

Don't know

Not applicable

**9) How has your organisation specifically targeted consumers to encourage the use of smart charging**

Partnerships with other ecosystem stakeholders to offer benefits (e.g., discounts, free services, etc.)

Participated or led new awareness campaigns on Smart Charging (e.g., informative material on the advantages of smart charging)

Advertised on advantages of smart charging products (e.g., promote smart charging as a desirable feature, differentiated tariffs)

No specific actions were taken to promote smart charging

Other (please specify):

**Thank You!**

### 6.1.2.2 Interview guide

#### Background helpful to interviewer

Ricardo Energy & Environment (Ricardo) and BritainThinks have been contracted to carry out a process evaluation of the Electric Vehicle (EV) 'Smart Charge Points' Regulations (2021) on behalf of the Department for Energy Security and Net Zero (DESNZ) formerly the Department for Business, Energy & Industrial Strategy (BEIS)) following their phased enforcement in June and December 2022. This research will help to understand how the regulations have been implemented and the initial response of industry and consumers.

The process evaluation forms part of a phased evaluation plan for the regulations including:

- A baseline survey carried out in January 2022 with EV drivers to help understand the public attitudes towards, and the current use of, smart charging at home and in the workplace. The study provides baseline evidence to inform the monitoring and evaluation of the progress of the regulations against their objectives.
- A process evaluation of the implementation of the regulations (this study).
- Future interim impact evaluation expected by 2025 and final impact evaluation by 2027.
- Risks to consumers from non-standardisation related to interoperability, data, and safety.

More information on the baseline prior to the implementation of the regulations is provided in Section 5.2 of this document.

#### A.1 The regulations and their scope

The regulations implemented in June 2022 state that electric vehicle private charge points which are sold for use in a domestic or workplace environment in Great Britain with smart cables (defined as an electrical cable which is a charge point and is able to send and receive information) must have smart functionality and meet certain device-level requirements, which include:

- Smart functionality, including the ability to send and receive information, the ability to respond to signals to increase the rate or time at which electricity flows through the charge point, demand side response services and a user interface.
- Charge point network interoperability, allowing the EV driver to charge at any charge point seamlessly ensuring that every charge point will have common smart functionalities regardless of charge point operator or energy distribution network operator.
- Continued charging even if the charge point ceases to be connected to a communications network.
- Safety provisions, preventing the user carrying out an operation which could risk the health or safety of a person.

- A measuring system, to measure or calculate the electricity imported or exported and the time the charging session lasts, with visibility to the owner of this information.
- Security requirements consistent with the existing cyber security standard ETSI EN 303 645 (coming into force on 30 December 2022).
- The regulations also state that charge points must also incorporate pre-set, off peak, default charging hours and allow the owner to accept, remove or change these upon first use and allow for a randomised delay function.

Assurance of compliance with the regulations is demonstrated through:

- a statement of compliance to be provided with the sale of any relevant charge point;
- a technical file to be kept by the seller for any relevant charge point that they sell, a copy of which can be supplied to any purchaser on request. Separate technical files are required where there are differences in make, model or software version.
- a record/register, to be kept by the seller, of sales of all relevant charge points sold from 30 June 2022 and maintained entries in this register for 10 years.

These regulations do not apply to:

- Charge points sold in Northern Ireland
- Charge points sold before 30 June 2022
- Charge points not intended to be used with Great Britain at any time
- Charge points sold by individuals outside of the purposes of their trade, such as second-hand sales
- Non-smart cables or rapid charge points
- Charge points intended for use as public charge points.

### **Enforcement**

An enforcement authority, Office for Product Safety and Standards (OPSS), issues an 'information notice' (request for information of documents), which enables the monitoring of compliance with the regulations. If a person fails to provide a compliant 'information notice', the OPSS may make an application to the court, who may subsequently make an order requiring the person to ensure the notice is complied with. The OPSS may also inspect a premise for the purposes of ascertaining whether there has been a breach of the Regulations and seize and detain any relevant products or records.

Where the enforcement authority considers there to be a breach of the Regulations, a compliance notice may be issued requiring the person/business in question to take steps in relation to the breach, e.g. withdraw relevant charge points from the market or even recall

relevant charge points from users. The party in breach may also be required to pay a civil penalty if the OPSS does not consider there to be a 'reasonable excuse for the non-compliance of the breach'.

If a business knows they are not in compliance with the regulations, they may propose an Enforcement Undertaking to the OPSS, providing a commitment to take specific actions within a specified timeframe to address the non-compliance. OPSS assess Enforcement Undertakings on a case-by-case basis and, if in agreement, accepts. When the OPSS is satisfied that all actions specified in an Enforcement Undertaking are completed, it issues a Completion Certificate which has the effect of discharging the Enforcement Undertaking.

### **A.2 Objectives of the Regulations**

With the introduction of these regulations, the Government aims to 'maximise the use of smart charging technologies to benefit both consumers and the electricity system', whilst supporting the transition to EVs.

The regulations were established to achieve these aims, which are underpinned by three specific policy objectives and a range of sub-objectives. These are listed below.

Policy Objective 1: Maximise the use of smart charging technologies:

- 1a. To have smart functionality in all charge points in scope (i.e. any private charge points in scope that are sold in GB should have smart functionality) .
- 1b. To incorporate pre-set, off-peak default charging hours in all charge points in scope.
- 1c. To allow the owners/users of all charge points in scope to accept, remove or change these default settings upon first use and subsequently.

Policy Objective 2: Support and protect grid stability:

- 2a. To have the technical capability to provide demand-side response (DSR) services in all charge points in scope, so to enable their contribution to balancing the electricity load.
- 2b. To incorporate a ten-minute randomised delay function in all charge points in scope, to help avoid sharp secondary peaks in power demand.
- 2c. To configure all charge points in scope to have controls that provide appropriate protection against risk of harm or disruption to the electricity system.

Policy Objective 3: Protect the consumer:

- 3a. To align the configuration of all private charge points in scope with the existing cyber security standard ETSI EN 303 645 (which would provide appropriate protection against risk of physical harm or harm to personal data security or disruption to a charge point and the own/user of the charge point).

3b. To configure all charge points in scope so that operations that could pose a risk to health or safety of a person are prevented.

3c. To configure all charge points in scope so users can continue charging even if the charge point ceases to be connected to a communications network.

3d. To ensure the electricity supplier interoperability of all charge points in scope (which would provide continuity in access to charging in the event that the owner/user switches between energy suppliers / to a different tariff).

3e. To provide a means of measuring or calculating the electricity imported or exported and the time the charging lasts via a monitoring system, with visibility to the owner of this information.

### **A.3 Moderator objectives**

The objective of this interview is to explore the experiences of different groups of industry stakeholders (i.e., Charge point manufacturers and their suppliers, charge point retailers and resellers, vehicle dealerships, charge point installers, energy suppliers, charge point importers, and trade associations). This discussion guide is designed to:

1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects:

- To what extent are charge point sellers compliant with the regulations, and each requirement?
- What barriers or challenges have they faced in complying?
- How have sellers demonstrated their compliance?
- How have industry interpreted the regulations?
- What has been the cost of compliance for charge point sellers and other supply-chain actors?
- Have any unintended consequences been identified?
- Are there learnings to take implement with similar policies in the future?
- What types of charge points are available and what are their costs and functionalities?
- How do first-year costs faced by industry compare to estimated costs in the impact assessment?

2. Understand if the regulations will support opportunities for wider industry:

- How have charge point manufacturers and retailers changed their products? Have they developed new smart models of charge points? How have prices changed? What functionalities to products provide?
  - How have sales been affected?
  - How has overseas trade been affected?
  - Have businesses created partnerships to boost awareness or target consumers? For example, a vehicle dealership partnering with a charge point manufacturer to sell charge points?
3. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience:
- How have industry made changes to comply?
  - Have they made additional changes to products?
  - How have they developed the default settings for charge points?
  - How does the hardware and software design encourage consumers to smart charge?
  - How are industry providing consumers with information on smart charging?
4. Review the policy development and implementation process and develop lessons learnt for future policy making:
- Have any barriers, challenges, and risks to the regulations been identified?
  - What has enabled industry and consumers to positively adapt to the regulations?
  - Are there any lessons learnt for future policy making?

### **About this discussion guide**

The purpose of this document is to serve as a guide to inform the discussions.

As these are qualitative interviews, the moderator will use the guide flexibly and be guided by what comes out of the pre-completed questionnaire and the discussions themselves.

### **B. Introduction**

Explain purpose of the interview:

Ricardo is conducting this research on behalf of the Department for Energy Security and Net Zero (department focused on the energy portfolio from the former Department for Business, Energy and Industrial Strategy (BEIS)) to understand how industry stakeholders

have understood and complied with the new Electric Vehicle Smart Charge Points Regulations that came into effect in 2022, and whether they have had any influence or impact on their businesses.

Explain how the interview will be run:

- In this interview, we will explore further some of the points that you included in your questionnaire. We will take notes as you are speaking and would like to record the session, to enable us to go back to points as needed. The interview will last up to about 45 minutes.
- Your feedback today and in the questionnaire, will be aggregated with others to inform our final report. Your inputs will be referenced either to your organisation or anonymised as per your response in the questionnaire, but you won't be personally identifiable in our report.
- You can opt out of the research at any time (although you may forfeit your right to any incentive/benefit).
- Ricardo will hold your name and contact information for up to 12 months for quality monitoring purposes only and will not pass on any personal data to any third party.

**Obtain permission to continue the interview and to audio/video record.**

**Offer opportunity to ask questions about the research process**

**Ask participants to introduce themselves:**

- Name, organisation, role
- Their organisation's experience with electric vehicles and charge points.

**Confirm through their answers which consumer they fit into out of:**

- Charge point manufacturer
- Charge point retailer
- Charge point reseller
- Vehicle dealerships
- Charge point installers
- Energy supplier
- Charge point importers

- Trade associations

### **C. Responses to the new EV Smart Charge Points Regulations**

First of all, we're interested in hearing about your organisation's understanding and interpretation of the Regulations and how it has responded to the requirements, particularly in relation to compliance.

**1. [Expanding from Q6 in the questionnaire, on requirements] Can you please provide any further reflections on your interpretation of the Regulations, especially on those requirements that your organisation may understand the least at the moment.**

- a. Smart functionality -Pre-set off peak
- b. Smart functionality -Randomised delay
- c. Smart functionality -User interface
- d. Electricity supplier interoperability
- e. Ability to charge without a communications network
- f. Measuring system that is visible to owner
- g. Safety provisions -Preventing harm to users
- h. Security requirements, including cybersecurity

**2. [Expanding from Q9 in the questionnaire] Can you explain in a bit more detail what changes has your organisation made to its products or services since the implementation of the regulations, to be compliant? (e.g., changes to products, new models, hardware/software changes)**

- a. Which functionalities and how did you adjust them on existing models?
- b. Which hardware changes did you perform to existing models?
- c. Which software changes did you perform to existing models?
- d. Did you develop new models? Why?
- e. Can you tell me more about the default settings of these Regulations compliant models? Are Regulations requirements set by default or optional by additional configuration?
- f. Other implications



**3. [Expanding from Q13 in the questionnaire, on difficulties faced] Please can you tell me about how your organisation has been impacted by difficulties faced by other businesses your organisation works with across your supply chain.**

- a. If they have faced similar difficulties and challenges as the ones in your organisation, is this industry wide? How?
- b. If they have faced different difficulties and challenges as the ones in your organisation, what are those difficulties and how do they affect you?
- c. Don't know
- d. Impacts of the new EV Smart Charge Points Regulations

Next, we'd like to talk more about your perceived impacts of the Regulations on industry activities.

**4. [Expanding from Q18 in the questionnaire] Please provide any further information with regards to the effects of the Regulations, or external factors, on changes in your organisation's operating and capital costs:**

- a. How have cost changes been directly related to compliance of the regulations?
- b. How have cost changes been due to changes in the amount of additional supplies needed (e.g., material, elements, etc.)
- c. How cost changes were due to changes in the added value chain (e.g., implement new technologies, staff hire or lay-off)
- d. If cost are caused mainly by external factors such as inflation, logistic crisis after COVID, high energy prices, etc.

**5. [Expanding from Q23 in the questionnaire] Please can you tell more about smart charge point sales?**

- a. Have sales of charge points increased, decreased, or remained similar? Why?
- b. Have these sales dynamics been affected directly by the perceived benefits of smart charging from the end customer?
- c. Are those changes rather driven by supply/demand market dynamics? i.e., customers buy smart charge points because they are more available or price is similar, not because they find additional benefits.

- d. In general charge points have seen a decrease in uptake because the economy and external factors have influenced?
- e. Doesn't know why sales have changed.

**6. [Expanding from Q27 in the questionnaire] If your organisation imports or exports charge points from or to the UK, could you please share some impacts of the Regulations in international trade and competitiveness?**

- a. Have imports/exports in general decreased or increased?
- b. After the regulations GB manufactured charge points remain competitive?
- c. How have the Regulations affected the offer of multiple charge point models coming from foreign manufacturers?
- d. Have you seen foreign manufacturers produce UK market specific products just to comply with regulations?
- e. In the case of exporting, how has this affected the competitiveness of UK made smart charge points? Do the features required by the Regulations add any additional value appreciated in foreign markets?

**7. [Expanding from Q28 in the questionnaire] Do you have any views on intended and unintended consequences of the Regulations?**

- a. Costs
- b. Supply chain issues
- c. Redundancy of products and knock on impacts to the organisation
- d. Delays in launching products, loss of revenue
- e. Change in consumer uptake of smart or 3-pin charge points
- f. Consumer behaviour influenced by The Regulations

In this section, we would like to hear how your organisation has promoted and created awareness across its customer base on the requirements from the Regulations.

**8. [Expanding from Q33 in the questionnaire] Can you tell me more about your communication of the requirements from The Regulations and its benefits to your customer base. Additionally, could you please expand on your insights on how consumers are adopting smart charge points?**

- a. Has your organisation been actively communicating and promoting the new features of Smart Charge Points established in the regulation? If yes, how?
- b. What kind of information do customers value the most when making their purchasing decision? Which channels have you used to communicate this?
- c. Have you offered and communicated additional incentives to your costumers to promote smart charge point sales? Why? (e.g., they are not competitive enough or I really want to encourage smart charging and people is unaware of its benefits.)
- d. How have they valued the hardware and software design changes you have made in the new models?
- e. Lessons learned and final remarks

In this section, we would like to hear how your insights on lessons learned of the application and compliance of regulations.

**9. [Expanding from Q34 in the questionnaire] Can you please expand on you organisation’s journey to comply with regulations; and your recommendations to improve the implementation going forward.**

- a. Are the difficulties to comply more on the interpretation side or in the technical side? (i.e., Regulations should be clearer vs. costs, and technical requirements from the regulations are too difficult to meet) What would you believe could help overcome those difficulties? (e.g., clearer definitions or more relaxed requirements or a longer transition period to adopt the Regulations)
- b. Can you expand on the positive aspects of the Regulations? What has made them easy to comply with or what should be replicated when formulating future regulations?
- c. What other actions, if anything, could be taken by the Government or other stakeholders to support your organisation, involved in smart charge point ecosystem, to comply with the regulations?
- d. Other comments

**10. Please discuss any other issues you feel are relevant.**

Thank you for your contributions!

## 6.1.3 Domestic Consumer interview guides

### 6.1.3.1 Wave 1

#### *Pre-interview interview guides*

#### **Moderator objectives**

The objective of this **depth interview** is to explore the **experiences of EV home charger purchasers in the early stages of their purchase journey**. This discussion guide is designed to:

1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects: Have any unintended consequences been identified?
2. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience: How are industry providing consumers with information on smart charging?
3. Provide insight into the barriers, enablers and incentives for smart charging:
  - How are consumers likely to respond to different types of incentives?
  - Why do different types of consumers have different barriers to and motivations for smart charging?
  - Where do consumers seek information on smart charging and how are they influenced by stakeholders?
  - How do consumers perceive their consumer journey from point of purchase, to installation, to use of a charge point?
4. Review the policy development and implementation process and develop lessons learnt for future policy making.
  - Have any barriers, challenges, and risks to the regulations been identified?
  - What has enabled industry and consumers to positively adapt to the regulations?
  - Are there any lessons learnt for future policy making?

#### **About this discussion guide**

The purpose of this document is to serve as a guide to inform the flow of the discussions, rather than a definitive list of questions to cover. As these are qualitative sessions, the moderator will use the guide flexibly and be guided by what comes out of the discussions.

In this discussion guide, instructions to the moderator are *italicised* and key questions are **bolded**.

**[THIS FRONT SHEET SHOULD BE DETACHED FROM THE DISCUSSION GUIDE BEFORE THE START OF THE SESSION.]**

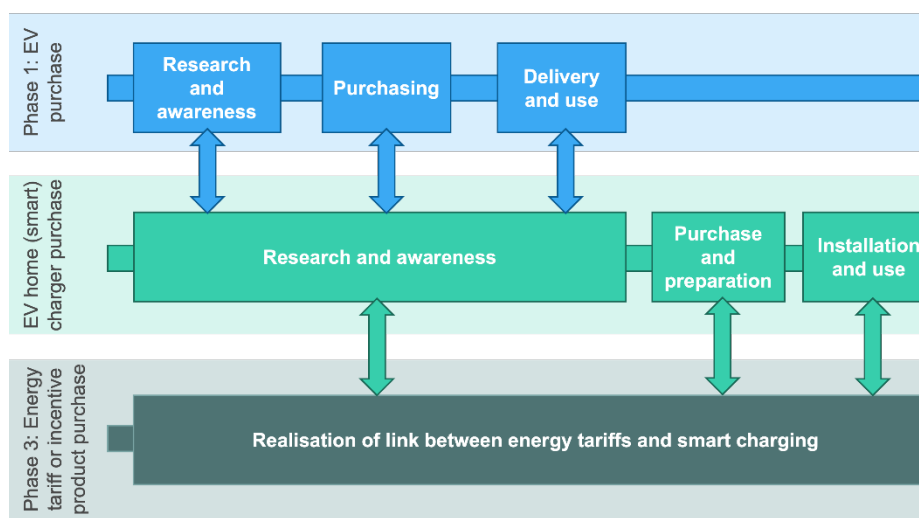
Section	Key discussion points and probes	Time	Materials
<p><b>Section 1: Introduction</b></p> <p>Aims: Introduce research, explain terms and understand participants' backgrounds</p>	<p>My name is [XXX] and I'm a researcher from an independent research agency called BritainThinks. We conduct research on a range of topics, from understanding people's experiences of different products or services, how they feel about certain companies or organisations, or what they think about specific issues. This involves speaking to lots of different people all round the country and listening to what they have to say.</p> <p><i>Explain purpose of the session:</i></p> <ul style="list-style-type: none"> <li>• BritainThinks is conducting this research on behalf of the Department for Business, Energy and Industrial Strategy (a department of the UK government) to understand <b>people's experiences buying and using EV home chargers.</b></li> </ul> <p><i>Explain terms of the session:</i></p> <ul style="list-style-type: none"> <li>• We're an independent research agency so I'm here to listen to your honest views and opinions; there are no right/wrong answers.</li> <li>• We abide by the Market Research Society code of conduct. This means that everything you say today will be completely confidential and you won't be personally identifiable in our report.</li> <li>• BritainThinks will hold your name and contact information for up to 12 months for quality monitoring purposes only and will not pass on any personal data to any third party.</li> <li>• If you say something that gives me reason to think you or someone else is at risk of harm, we may be legally obliged to pass this information to the relevant authorities.</li> <li>• You can opt out of the research at any time (although you may forfeit your right to any incentive/benefit). If you would rather skip past any questions I may ask, please do just let me know.</li> <li>• We'll be talking for <b>30 minutes</b>– finishing up at [XXX]. I have a lot of questions to get through so, in order to finish on time, I may need to interrupt you or move the conversation on.</li> <li>• As you will be aware, there will also be a follow-up interview lasting 60 minutes to take place in March. We will speak to you closer to then to schedule in a time that works for you. Could you confirm that you will be able to take part in an additional interview then?</li> <li>• <i>Obtain permission to audio/video record and recap how the recording will be used</i></li> <li>• <i>Ensure participant has signed consent form(s)</i></li> <li>• <i>Offer opportunity to ask questions about research process</i></li> </ul>	<p>5 (5)</p>	<p>Consent form</p>

	<p><i>Ask participants to introduce themselves:</i></p> <ul style="list-style-type: none"> <li>• <i>Name</i></li> <li>• <i>Occupation</i></li> <li>• <i>Something you like to do in your free time</i></li> </ul>		
<p><b>Section 2: The EV purchase journey</b></p> <p>Aims: Context, and stress test the consumer journey map</p>	<p>We'd like to start off by briefly talking about where you're currently at in the process of buying or leasing an EV – whether you've got it already or are still partway through the process.</p> <ul style="list-style-type: none"> <li>• <b>2A: Please briefly tell me where you've got to so far with buying or leasing an EV.</b> <ul style="list-style-type: none"> <li>○ What steps, if any, have you taken so far towards buying or leasing an EV?</li> <li>○ How long ago did you did begin this process?</li> </ul> </li> </ul>	<p>3 (8)</p>	
<p><b>Section 3: The home charger purchase journey</b></p> <p>Aims: Stress test the consumer journey map, barriers and incentives</p>	<p>The main part of our conversation today will be about buying a home charger for your EV. We're interested in hearing about your experience with this from the very beginning when you first started thinking about buying a charger, through to where you've got to in the process so far.</p> <ul style="list-style-type: none"> <li>• <b>3A: First of all, please can you tell me about your experience so far of buying an EV home charger (which could include both the charge point itself and 3-pin cable).</b> <ul style="list-style-type: none"> <li>○ <i>If participant is unsure where to start, moderator to probe with the following:</i> <ul style="list-style-type: none"> <li>▪ What, if anything, have you done so far to start the process of buying a home charger?</li> <li>▪ When you first began thinking about buying a home charger, what did you start doing first?</li> </ul> </li> <li>○ What, if anything, do you feel you know about home chargers? <i>Moderator to probe around different types of home chargers, including smart chargers.</i></li> </ul> </li> <li>• <b>3B: What type of charger, if any, do you have or intend to purchase? Moderator to let respondent answer, without probing, but listening out for:</b> <ul style="list-style-type: none"> <li>○ Smart charge point</li> <li>○ Non-smart charge point</li> <li>○ Smart 3-pin cable</li> <li>○ Non-smart 3-pin cable</li> </ul> </li> <li>• <b>3C: At what point in the process of buying an EV did you first start looking into home charging?</b></li> </ul>	<p>15 (23)</p>	

- What prompted you to first start looking into this?

*Moderator to refer to the consumer journey diagram **but not show diagram to participant** to identify where the participant is in the charger purchase journey, and ask questions appropriately:*

### Customer journey



*Research stage:*

### 3D: You did/didn't mention that you'd done some research.

- Why did you or didn't you do some research on EV chargers?
- What information, if any, have you looked for as part of this process?
- What information, if any, have you found out as part of your research?
  - To what extent, if at all, do you feel you have found the information you were looking for?
- Where, if anywhere, have you looked to find out information about home chargers?
  - How important, if at all, has speaking to other EV drivers been for you?
- Which sources, if any, have been most useful so far?
  - Which sources, if any, have been least useful so far?
- What other information, if any, do you wish you had or could have access to about smart chargers?

	<p><i>Purchase and preparation phase:</i></p> <p><b>3Ea: For those who <i>have purchased</i> a charger:</b></p> <ul style="list-style-type: none"> <li>• How did you decide which charger to buy?</li> <li>• What, if anything, influenced your choice of who to buy your charger from?</li> <li>• What, if anything, have you had to do to prepare your home for the charger to be installed?</li> <li>• How did you know what you needed to do to prepare your home for the charger to be installed?</li> <li>• What other information, if any, would you want to know about charger installation?</li> </ul> <p><b>3Eb: For those who have <i>not yet</i> purchased a charger:</b></p> <ul style="list-style-type: none"> <li>• Do you know which, if any, charger you are likely to buy?</li> <li>• Do you expect you will take any advice about purchasing a charger? <i>If so</i>, from what source or whom?</li> <li>• What, if anything, do you expect you will have to do to prepare your home for a charger to be installed?</li> <li>• What information, if any, would you want to know about charger installation?</li> </ul>		
<p><b>Section 4: Next steps</b></p>	<p>Looking ahead to what you will need to do to finish the process of getting a home charger installed...</p> <ul style="list-style-type: none"> <li>• <b>4A: What are the next steps you're planning to take towards buying or installing your home charger?</b> <ul style="list-style-type: none"> <li>○ What has prompted you to take that step next?</li> <li>○ What other steps, if any, do you expect to take thereafter?</li> <li>○ Do you plan to do any further research on home chargers?                             <ul style="list-style-type: none"> <li>▪ What information, if any, would you look for?</li> <li>▪ <i>If so</i>, where do you intend to go for information?</li> </ul> </li> <li>○ Where do you expect you will go to purchase a home charger?</li> </ul> </li> <li>• <b>4B: How confident or not confident do you feel about the rest of the process to get your charger? Why?</b> <ul style="list-style-type: none"> <li>○ What, if anything, concerns you about what you will need to do next?</li> <li>○ What, if anything, could help make this easier?</li> </ul> </li> </ul>	<p>5 (28)</p>	



<p><b>Section 5: Conclusion</b></p>	<p>And finally...  <b>5A:</b> If you could sum up your experience buying a home charger in a sentence, how would you describe it?   <i>Thank and close. Remind participant of follow-up interview to take place in March, confirming best contact information for re-recruit closer to the date. Provide incentive and inform payments will be made via the website Ayda.</i></p>	<p>2  (30)</p>	
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### *Standalone Depth interview guide*

#### **Moderator objectives**

The objective of this **depth interview** is to explore the **experiences of EV home charger purchasers in the early stages of their purchase journey**. This discussion guide is designed to:

1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects: Have any unintended consequences been identified?
2. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience: How are industry providing consumers with information on smart charging?
3. Provide insight into the barriers, enablers and incentives for smart charging:
  - How are consumers likely to respond to different types of incentives?
  - Why do different types of consumers have different barriers to and motivations for smart charging?
  - Where do consumers seek information on smart charging and how are they influenced by stakeholders?
  - How do consumers perceive their consumer journey from point of purchase, to installation, to use of a charge point?
4. Review the policy development and implementation process and develop lessons learnt for future policy making.
  - Have any barriers, challenges, and risks to the regulations been identified?
  - What has enabled industry and consumers to positively adapt to the regulations?
  - Are there any lessons learnt for future policy making?

#### **About this discussion guide**

The purpose of this document is to serve as a guide to inform the flow of the discussions, rather than a definitive list of questions to cover. As these are qualitative sessions, the moderator will use the guide flexibly and be guided by what comes out of the discussions.

In this discussion guide, instructions to the moderator are *italicised* and key questions are **bolded**.

[THIS FRONT SHEET SHOULD BE DETACHED FROM THE DISCUSSION GUIDE BEFORE THE START OF THE SESSION.]

Section	Key discussion points and probes	Time	Materials
<p><b>Section 1: Introduction</b></p> <p>Aims: Introduce research, explain terms and understand participants' backgrounds</p>	<p>My name is [XXX] and I'm a researcher from an independent research agency called BritainThinks. We conduct research on a range of topics, from understanding people's experiences of different products or services, how they feel about certain companies or organisations, or what they think about specific issues. This involves speaking to lots of different people all round the country and listening to what they have to say.</p> <p><i>Explain purpose of the session:</i></p> <ul style="list-style-type: none"> <li>BritainThinks is conducting this research on behalf of the Department for Business, Energy and Industrial Strategy (a department of the UK government) to understand <b>people's experiences buying and using Electric Vehicle home chargers.</b></li> </ul> <p><i>Explain terms of the session:</i></p> <ul style="list-style-type: none"> <li>We're an independent research agency so I'm here to listen to your honest views and opinions; there are no right/wrong answers.</li> <li>We abide by the Market Research Society code of conduct. This means that everything you say today will be completely confidential and you won't be personally identifiable in our report.</li> <li>BritainThinks will hold your name and contact information for up to 12 months for quality monitoring purposes only and will not pass on any personal data to any third party.</li> <li>If you say something that gives me reason to think you or someone else is at risk of harm, we may be legally obliged to pass this information to the relevant authorities.</li> <li>You can opt out of the research at any time (although you may forfeit your right to any incentive/benefit). If you would rather skip past any questions I may ask, please do just let me know.</li> <li>We'll be talking for <b>an hour</b> – finishing up at [XXX]. I have a lot of questions to get through so, in order to finish on time, I may need to interrupt you or move the conversation on.</li> <li><i>Obtain permission to audio/video record and recap how the recording will be used</i></li> <li><i>Ensure participant has signed consent form(s)</i></li> <li><i>Offer opportunity to ask questions about research process</i></li> </ul> <p><i>Ask participants to introduce themselves:</i></p> <ul style="list-style-type: none"> <li><i>Name</i></li> <li><i>Occupation</i></li> <li><i>Something you like to do in your free time</i></li> </ul>	<p>5 (5)</p>	<p>Consent form</p>

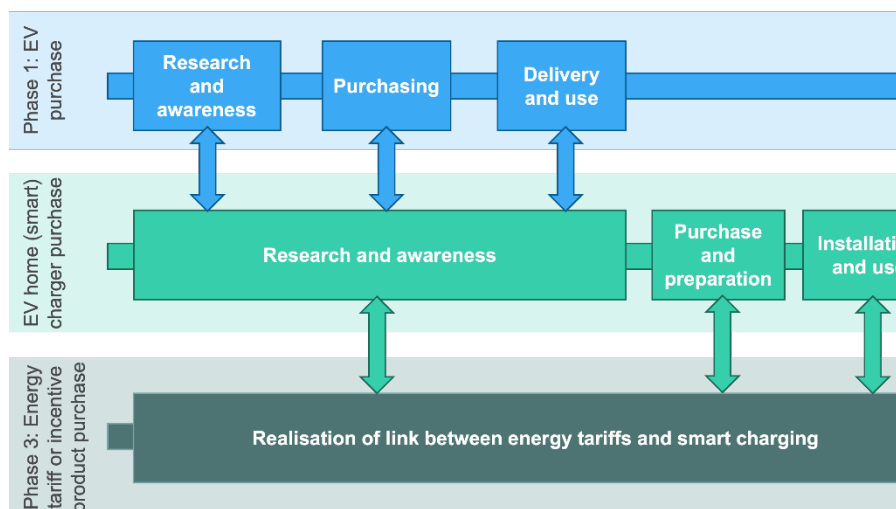
<p><b>Section 2: EV purchase context</b></p> <p><b>Aims:</b> To provide context for the consumer journey map</p>	<p>We'd like to start off by briefly talking about where you're currently at in the process of buying or leasing an EV – whether you've got it already or are still partway through the process.</p> <ul style="list-style-type: none"> <li>• <b>2A: Please briefly tell me where you've got to so far with buying or leasing an EV.</b> <ul style="list-style-type: none"> <li>○ What steps, if any, have you taken so far towards buying or leasing an EV?</li> <li>○ How long ago did you did begin this process?</li> <li>○ <i>For those who already have an EV:</i> <ul style="list-style-type: none"> <li>▪ How long ago did you buy/lease your EV?</li> <li>▪ Where did you purchase/lease your EV from? <i>Moderator to probe on dealership, secondhand, etc.</i></li> <li>▪ Have you owned or leased an EV before?</li> </ul> </li> <li>○ <i>For those who do not yet have an EV:</i> <ul style="list-style-type: none"> <li>▪ What has made you decide to purchase/lease an EV?</li> <li>▪ Where do you intend to purchase/lease your EV from?</li> </ul> </li> </ul> </li> </ul>	<p>5  (10)</p>	
<p><b>Section 3: The home charger purchase journey</b></p> <p><b>Aims:</b> Stress test the consumer journey map</p>	<p>The main part of our conversation today will be about buying a home charger for your EV. We're interested in hearing about your experience with this from the very beginning when you first started thinking about buying a charger, through to wherever you've got to so far.</p> <ul style="list-style-type: none"> <li>• <b>3A: Please can you tell me about your experience so far with buying an EV home charger (which could include both the charge point itself and 3-pin cable).</b> <ul style="list-style-type: none"> <li>○ <i>If participant is unsure where to start, moderator to probe with the following:</i> <ul style="list-style-type: none"> <li>▪ What, if anything, have you done so far to start the process of buying a home charger?</li> <li>▪ When you first began thinking about buying a home charger, what did you start doing first?</li> </ul> </li> <li>○ What, if anything, do you feel you know about home chargers? <i>Moderator to probe around different types of home chargers, including smart chargers.</i></li> </ul> </li> <li>• <b>3B: What type of charger, if any, do you have or intend to purchase? Moderator to let respondent answer, without probing, but listening out for:</b></li> </ul>	<p>25  (35)</p>	<p>Customer journey diagram overview</p>

- Smart charge point
- Non-smart charge point
- Smart 3-pin cable
- Non-smart 3-pin cable

- **3C: At what point in the process of buying an EV did you first start looking into home charging?**
  - What prompted you to first start looking into this?

*Moderator to refer to the consumer journey diagram **but not show diagram to participant** to identify where the participant is in the charger purchase journey, and ask questions appropriately:*

### Customer journey



*Research stage:*

**3D: You did/didn't mention that you'd done some research.**

- Why did you or didn't you do some research on EV chargers?
- What information, if any, have you looked for as part of this process?
- What information, if any, have you found out as part of your research?
  - To what extent, if at all, do you feel you have found the information you were looking for?
- Where, if anywhere, have you looked to find out information about home chargers?

	<ul style="list-style-type: none"> <li>○ How important, if at all, has speaking to other EV drivers been for you?</li> <li>● Which sources, if any, have been most useful so far? What has useful about this?             <ul style="list-style-type: none"> <li>○ Which sources, if any, have been least useful so far? What was not useful about this?</li> </ul> </li> <li>● What other information, if any, do you wish you had or could have access to about smart chargers?</li> </ul> <p><i>Purchase and preparation phase:</i></p> <p><b>3Ea: For those who <i>have purchased</i> a charger:</b></p> <ul style="list-style-type: none"> <li>● How did you decide which charger to buy?</li> <li>● What, if anything, influenced your choice of who to buy your charger from?</li> <li>● What, if anything, have you had to do to prepare your home for the charger to be installed?</li> <li>● How did you know what you needed to do to prepare your home for the charger to be installed?</li> <li>● What other information, if any, would you want to know about charger installation?</li> </ul> <p><b>3Eb: For those who have <i>not yet purchased</i> a charger:</b></p> <ul style="list-style-type: none"> <li>● You mentioned that [you intend to buy X charger / you have not yet decided which charger to buy]. Why [have you / have you not] made this decision?</li> <li>● Do you expect you will take any advice about purchasing a charger? <i>If so</i>, from what source or whom?</li> <li>● What, if anything, do you expect you will have to do to prepare your home for a charger to be installed?</li> <li>● What information, if any, would you want to know about charger installation?</li> </ul> <p><i>Installation phase:</i></p> <p><b>3Fa: For those who <i>have installed</i> a charger:</b></p> <ul style="list-style-type: none"> <li>● Please talk me through your experience of the installation process.</li> <li>● When was your charger installed?</li> <li>● Who, if anyone, assisted with the installation process?</li> </ul>		
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	<ul style="list-style-type: none"> <li>• What, if anything went well? What if, anything, went wrong about this process?</li> <li>• How long did it take in total to go from first thinking about getting a home charger to having it installed and ready to use?</li> </ul> <p><b>3Fb: For those who <i>have not yet installed</i> a charger (including those who have not yet purchased):</b></p> <ul style="list-style-type: none"> <li>• At what point, if any, do you intend to have a charger installed?</li> <li>• Please talk me through your expectations of the installation process.</li> <li>• Who, if anyone, to your mind assist with installation?</li> <li>• What, if anything are you concerned about regarding charger installation?</li> <li>• How long do you expect it will take in total to having the charger installed and ready to use?</li> </ul>		
<p><b>Section 4: Your feelings about the process</b></p> <p>Aims: Understand barriers and incentives</p>	<p>We're interested in hearing about what the experience of buying a home charger feels like.</p> <ul style="list-style-type: none"> <li>• <b>4A: How would you describe the way you're feeling about the process of buying (for those who have installed, and installing) a home charger so far?</b> <ul style="list-style-type: none"> <li>○ Would you say the process has felt easy or difficult? Why?</li> <li>○ Has your experience with home chargers to date been similar to your experience of purchasing any other item? How so?</li> <li>○ If the process of buying a charger were a person, how would you describe that person?</li> </ul> </li> <li>• <b>4B: How much, if at all, do you feel you know about home chargers?</b> <ul style="list-style-type: none"> <li>○ To what extent, if at all, are you aware of smart chargers? <ul style="list-style-type: none"> <li>▪ What do you expect smart chargers do differently?</li> <li>▪ What is the purpose of smart chargers?</li> </ul> </li> <li>○ What, if anything, do you know about the process of buying, installing and using a smart charger?</li> </ul> </li> <li>• <b>4C: Have you experienced any problems or difficulties during the process to get a home charger so far? If so, what happened?</b> <ul style="list-style-type: none"> <li>○ (If resolved) How did these problems get resolved?</li> <li>○ (If not resolved) How confident or not confident do you feel about these problems being resolved?</li> </ul> </li> </ul>	<p>10 (45)</p>	

	<ul style="list-style-type: none"> <li>• <b>4D: What, if anything, would you change to make the process easier for a person like you to buy a home charger? Why?</b> <ul style="list-style-type: none"> <li>○ What, if anything, has been helpful to you in your process of buying a home charger so far?</li> <li>○ What, if anything, would you like to know about buying a home charger?</li> </ul> </li> </ul>		
<p><b>Section 5A: Looking ahead</b></p> <p><i>Aim: Understand barriers, understand awareness of smart charging</i></p>	<p><i>[ASK ONLY THOSE WHO HAVE NOT YET HAD THE CHARGER INSTALLED]</i> Looking ahead to what you will need to do to finish the process of getting a home charger installed...</p> <ul style="list-style-type: none"> <li>• <b>5Aa: What, if anything, have you heard about smart chargers?</b> <ul style="list-style-type: none"> <li>○ Where did you see this information?</li> <li>○ What would you expect the benefits of having a smart charger to be?</li> <li>○ What would you expect the drawbacks of having a smart charger to be?</li> <li>○ What do you think about the idea of scheduled charging, where smart chargers can schedule charging to happen during off-peak hours?</li> <li>○ <i>Moderator to probe on any references to smart charging regulations being introduced, or all domestic chargers needing to be smart.</i></li> </ul> </li> <li>• <b>5Ab: What are the next steps you're planning to take towards buying or installing your home charger?</b> <ul style="list-style-type: none"> <li>○ What has prompted you to take that step next?</li> </ul> </li> <li>• <b>5Ac: What, if anything, concerns you about what you will need to do next?</b> <ul style="list-style-type: none"> <li>○ How confident or not confident are you that you will be able to get your charger installed? Why?</li> <li>○ What, if anything, could help make this easier to overcome?</li> </ul> </li> </ul>	<p>10 (55)</p>	
<p><b>Section 5B: Using your charger</b></p> <p><i>Aim: Understand barriers and incentives</i></p>	<p><i>[ASK ONLY THOSE WHO HAVE HAD THE CHARGER INSTALLED]</i> We're interested in hearing about how you use your home charger at the moment.</p> <ul style="list-style-type: none"> <li>• <b>5Ba: Please walk me through, step by step, how you use your home charger? Moderator to listen out for smart functionality features, including scheduled charging and optimising charging time during off-peak hours.</b></li> <li>• <b>5Bb: You may have heard that some chargers come with 'smart' functions, such as the ability to schedule</b></li> </ul>	<p>10 (55)</p>	



<p><i>to smart charging</i></p>	<p><b>charging. Is this something you can do with your charger?</b></p> <ul style="list-style-type: none"> <li>○ <i>If yes:</i> <ul style="list-style-type: none"> <li>▪ How often do you use the scheduled charging function?</li> <li>▪ How do you use this function? <i>Moderator to probe on phone app, in-car or on CP interface; internet connectivity, user interface (e.g. connects to a mobile phone app, web app), connects to my vehicle’s on-board computer, charging scheduling, integration with home energy system, home load balancing, vehicle-to-x).</i></li> <li>▪ Why do you choose (not) to use this scheduling function?</li> <li>▪ Is there anything that could make it easier to use the scheduling function?</li> </ul> </li> <li>○ <i>If no:</i> <ul style="list-style-type: none"> <li>▪ Why have you not yet used smart charger functionality? <i>Moderator to listen out for having a smart charger but choosing not to use it, having a smart charger but not feeling able to use it and having a charger without smart functionality.</i></li> <li>▪ Was smart charging something you considered before you bought your charger?                             <ul style="list-style-type: none"> <li>• <i>If so, Why did you choose not to have smart functionality?</i></li> <li>• What, if anything, appeals to you about smart functionality?</li> </ul> </li> <li>▪ What, if anything, has prevented you from using functions available on your charger?                             <ul style="list-style-type: none"> <li>• What, if at all, would you feel more comfortable using these functions?</li> </ul> </li> </ul> </li> <li>○</li> </ul> <ul style="list-style-type: none"> <li>• <b>5Bc: To what extent have you considered switching your energy tariff now that you’re charging your EV at home?</b> <ul style="list-style-type: none"> <li>• <i>[If participant is unsure what this means] With a time of use tariff, energy used at ‘off peak’ times, such as overnight, is cheaper than energy used at peak times, such as early evening. Smart charge points or smart 3-pin cables can be used with a time of use tariff to shift charging from more expensive peak hours to less expensive off-peak hours. Non-smart chargers don’t have the functionality to do this automatically, though a driver could still manually plug-in and charge their vehicle at off-peak times.</i></li> </ul> </li> <li>○ At what point did you start considering this?</li> </ul>		
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	<ul style="list-style-type: none"> <li>○ What, if anything, prompted you to start considering this?</li> <li>○ What, if anything, stopped you from pursuing a switch?</li> <li>○ To what extent does the cost of energy affect your decisions about charging your EV?</li> </ul> <ul style="list-style-type: none"> <li>● <b>5Bd: What, if anything, have you heard about changes to regulations for home EV chargers?</b> <ul style="list-style-type: none"> <li>○ <i>If aware:</i> Where did you become aware of this?           <ul style="list-style-type: none"> <li>▪ How do you feel about these changes to regulations for home EV chargers in the last year?</li> <li>▪ <i>[If mention future changes to security]</i> How do you feel about upcoming changes to home EV chargers?               <ul style="list-style-type: none"> <li>● <i>[If mention future changes to security]</i> What impact, if any, do you expect these will have on you?</li> </ul> </li> <li>▪ What impact, if any, do you feel these changes have had on you?</li> </ul> </li> <li>○ <i>If not aware:</i> New regulations have been introduced that will require all new private chargers (including all domestic chargers) to have ‘smart’ functionality.           <ul style="list-style-type: none"> <li>▪ How do you feel about these upcoming changes?</li> <li>▪ What, if anything, would you want to know about them?</li> </ul> </li> </ul> </li> </ul>		
<p><b>Section 6: Conclusion</b></p>	<p>And finally...</p> <ul style="list-style-type: none"> <li>● <b>6A:</b> If you could sum up your experience buying, installing and using a home charger in a sentence, how would you describe it?</li> </ul> <p><i>Thank and close. Explain that incentives will be paid using the incentive platform Ayda within <u>2 weeks</u>.</i></p>	<p>5 (60)</p>	

### 6.1.3.2 Wave 2

#### *Follow-up Interview interview guide*

#### **Moderator objectives**

1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects: Have any unintended consequences been identified?

2. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience: How are industry providing consumers with information on smart charging?
3. Provide insight into the barriers, enablers and incentives for smart charging:
  - How are consumers likely to respond to different types of incentives?
  - Why do different types of consumers have different barriers to and motivations for smart charging?
  - Where do consumers seek information on smart charging and how are they influenced by stakeholders?
  - How do consumers perceive their consumer journey from point of purchase, to installation, to use of a charge point?
4. Review the policy development and implementation process and develop lessons learnt for future policy making.
  - Have any barriers, challenges, and risks to the regulations been identified?
  - What has enabled industry and consumers to positively adapt to the regulations?
  - Are there any lessons learnt for future policy making?

### About this discussion guide

These depth interviews are the second of a pair of interviews with domestic consumers at varying points of the home charger purchase journey. The purpose of this document is to serve as a guide to inform the flow of the discussions, rather than a definitive list of questions to cover. As these are qualitative sessions, the moderator will use the guide flexibly and be guided by what comes out of the discussions. In this discussion guide, instructions to the moderator are *italicised* and key questions are **bolded**.

Section and aim	Key questions and probes	Time	Total
<p><b>1: Introduction and warm-up</b></p> <p>Aims: Introduce the research, explain terms and reintroduce participants if needed</p>	<p>Thank you for joining this second interview today. I know we have/haven't met before - my name is <b>[XXX]</b> and I'm a researcher from an independent research agency called Thinks Insight &amp; Strategy (previously known as BritainThinks).</p> <p><i>Explain purpose of the session:</i></p> <ul style="list-style-type: none"> <li>• As before, we are conducting this research on behalf of the Department for Energy Security and Net Zero, which is a department of the UK government that was previously part of the department for Business, Energy and Industrial Strategy. The purpose of this research is to</li> </ul>	5	5

	<p>understand public experiences with buying, installing and using EV home chargers.</p> <p><i>Explain terms of the session:</i></p> <ul style="list-style-type: none"> <li>• We're an independent research agency so I'm here to listen to your honest views and opinions; there are no right/wrong answers.</li> <li>• We abide by the Market Research Society code of conduct. This means that everything you say today will be completely confidential and you won't be personally identifiable in our report.</li> <li>• The only time this confidentiality may be broken is if you say something that gives me reason to think you or someone else is at risk of harm, in which case we may be legally obliged to pass this information on to the relevant authorities.</li> <li>• Thinks Insight &amp; Strategy will hold your name and contact information for up to 12 months for quality monitoring purposes only and will not pass on any personal data to any third party.</li> <li>• You can opt out of the research at any time (although you may forfeit your right to any incentive/benefit).</li> <li>• We'll be talking for <b>60 minutes today</b> – finishing up at <b>[XXX]</b>. I have a lot of questions to get through so, in order to finish on time, I may need to interrupt you or move the conversation on.</li> </ul> <p><i>Obtain permission to video record and recap that the recording may be shared with the client for research purposes only and will not be published.</i></p> <p><i>Offer opportunity to ask questions about research process.</i></p> <p><i>Ask participant to (re)introduce themselves, saying:</i></p> <ul style="list-style-type: none"> <li>• Name</li> <li>• Occupation</li> <li>• Something you like to do in your free time</li> </ul>		
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<p><b>2: Progress since the previous interview</b></p> <p>Aims: Understand whether/how participants have progressed in their purchase journeys since the pre-interview</p>	<p>During the last interview in January, we spoke about what you had done so far towards buying and installing an EV home charger.</p> <ul style="list-style-type: none"> <li>• <b>Since then, have you taken any more steps towards buying, installing and/or using your EV home charger?</b></li> </ul> <p><i>Moderator to have to hand where the participant reported being up to during the pre-interview, and can remind participant of this if needed.</i></p> <p><i>If no:</i></p> <ul style="list-style-type: none"> <li>○ Why is it that you have not taken any further steps since our previous interview?</li> <li>○ What, if anything, has prevented you from taking further steps? Why?</li> <li>○ At what point are you expecting to take your next step to purchase or install your home charger? Why?</li> </ul> <p><i>If yes:</i></p> <ul style="list-style-type: none"> <li>○ What step(s) have you taken?</li> <li>○ <i>If more research:</i> <ul style="list-style-type: none"> <li>▪ What prompted you to take this step(s)?</li> <li>▪ What did you look for and where?</li> <li>▪ How easy/difficult was it to find what you were looking for? Why?</li> <li>▪ What, if any, is the next step and when will you take it?</li> </ul> </li> <li>○ <i>If purchased a charger:</i> <ul style="list-style-type: none"> <li>▪ What prompted you to take this step(s)?</li> <li>▪ What was the process that you went through to purchase your charger?</li> <li>▪ How would you describe this process? Why?</li> <li>▪ What, if any, is the next step and when will you take it?</li> <li>▪ <i>If not mentioned:</i> What, if anything, will/have you had to do to prepare your home for the charger to be installed? How would you describe this process? Why?</li> </ul> </li> <li>○ <i>If installed a charger:</i></li> </ul>	<p>10</p>	<p>15</p>
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	<ul style="list-style-type: none"> <li>▪ What prompted you to take this step(s)?</li> <li>▪ What was the process that you went through to install your charger?</li> <li>▪ How would you describe this process? Why?</li> <li>▪ What, if any, is the next step and when will you take it?</li> <li>▪ How long did it take in total to go from first thinking about getting a home charger to having it installed and ready to use?</li> <li>○ <i>If started using their charger:</i> <ul style="list-style-type: none"> <li>▪ How have you found using your charger since having it installed?</li> <li>▪ What, if any, is the next step and when will you take it?</li> </ul> </li> <li>• <b><i>If needed: Have you experienced any problems or difficulties during the process of buying/installing a home charger since we last spoke? If so, what happened?</i></b> <ul style="list-style-type: none"> <li>○ <i>If resolved:</i> How did this get resolved? Are you happy with the resolution? Why/why not?</li> <li>○ <i>If not resolved:</i> How confident or not confident do you feel about this being resolved? Why?</li> </ul> </li> </ul> <p><i>If a participant has decided that they no longer want to purchase/install/use their home charger, ask the following and then use the rest of the guide as applicable:</i></p> <ul style="list-style-type: none"> <li>• <b>What has led you to stop the process of buying/installing/using your home EV charger?</b> <ul style="list-style-type: none"> <li>○ What was the most significant barrier to purchasing/installing/using a home EV charger? Why?</li> <li>○ What, if anything, could have helped you get around this problem?</li> <li>○ <i>If no longer getting an EV: Listen out for and respond to mentions of EV range anxiety, public charge points and electricity prices</i></li> </ul> </li> </ul>		
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	<p><i>and try where possible to focus on charging:</i> To what extent, if at all, have concerns about charging affected your decision to not get an EV?</p>		
<p><b>3: Considerations for purchasing home chargers</b></p> <p>Aims: To understand more about the purchase process and participants' spontaneous views on smart features</p>	<p>I'd like to talk a little more about home chargers.</p> <ul style="list-style-type: none"> <li>• <b>What was/is important to you when thinking about purchasing a home charger? Why?</b> <i>Moderator to listen out for mentions of appearance/aesthetics, price, functionality/capability, environmental considerations, smart features, brand recognition.</i> <ul style="list-style-type: none"> <li>○ <b>Which of these factors was/is the <u>most</u> important? Why?</b></li> <li>○ <b>And which of these factors was/is the <u>least</u> important? Why?</b></li> </ul> </li>   <li>• <b>In your view, what is the difference between charging with a charge point vs. using a three-pin plug and cable for charging at home?</b> <i>Moderator to listen out for mentions of smart features.</i> <ul style="list-style-type: none"> <li>○ Which did/would you choose and why?</li> </ul> </li>   <li>• <i>(If already purchased EV)</i> <b>Where did you purchase your EV and what influence (if any) did the person selling you your EV have over your choice of charger?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for mentions of dealerships offering chargers with the EV at purchase.</i></li> <li>○ <b>To what extent, if at all, was any charging equipment included with the purchase of your EV?</b></li> </ul> </li>   <li>• <i>(If not already purchased EV)</i> <b>To what extent, if at all, do you think that charging equipment would be provided with the purchase of your EV?</b></li> </ul>	<p>10</p>	<p>25</p>

<p><b>4: Smart charging features</b></p>	<p><b>I want to talk specifically about smart home chargers now.</b></p> <ul style="list-style-type: none"> <li>• <b>To what extent are you familiar with the term ‘smart charger’ or ‘smart home charger’?</b></li> <li>• <b>In your own words, how would you define a ‘smart charger’?</b></li> <li>• <b>What, if any, smart features or smart functionality are you aware of for home chargers? What do you know about them?</b>  <i>Moderator to listen out for the extent to which the participant differentiates between smart features for home chargers vs. smart charging features that come with the vehicle itself.</i></li> </ul> <p><i>(If already purchased home charger)</i></p> <ul style="list-style-type: none"> <li>○ To what extent are each of these features appealing or unappealing for you personally?</li> <li>○ Which, if any, of these features does your home charger have?</li> <li>○ <b>Which, if any, of these features was (most) influential in deciding which home charger to purchase? Why?</b></li> <li>○ <b>How, if at all, did you become aware of these features? What sources, if any, informed you of them?</b></li> <li>○ <b>Which, if any, do you use? Why?</b> <ul style="list-style-type: none"> <li>▪ What are the benefits?</li> <li>▪ To what extent, if at all, do you alter settings on these features? <i>Probe around overriding randomised delays.</i></li> <li>▪ <i>[If altering settings]</i> Why do you do this? <i>Probe around smart tariffs, home optimisation/solar generation.</i></li> </ul> </li> <li>○ Which, if any, do you not use? Why not? What are the drawbacks?</li> </ul> <p><i>(If not already purchased home charger)</i></p> <ul style="list-style-type: none"> <li>○ To what extent are each of these features appealing or unappealing for you personally?</li> <li>○ <b>Which, if any, of these features do you think would be (most) influential in deciding which home charger to purchase? Why?</b></li> </ul>	<p>20</p>	<p>45</p>
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	<ul style="list-style-type: none"> <li>○ Which, if any, do you think you would use? Why? What would be the benefits?</li> <li>○ Which, if any, do you think you would not use? Why not? What would be the drawbacks?</li> </ul> <p>I've got some information to share with you now about smart charging, I will show it on screen and read it out for you now:</p> <p>“Smart functionality can be described as the ability for a charge point to receive and respond to a signal by changing the time and rate at which electricity flows through the charge point. This form of demand side response (DSR) allows an EV owner to shift their charging to different periods of the day such as overnight when demand is low or when there is high renewable generation on the system.</p> <p>Smart EV home chargers may have some of the following features:</p> <ul style="list-style-type: none"> <li>- The ability to respond to signals to increase the rate or time at which electricity flows through the charge point. This allows the charger to respond to signals telling it there is high or low electricity demand across the country. It can alter when or how much electricity it draws down to avoid overloading the system.</li> <li>- Demand side response services, meaning that charge points must be able to delay charging or vary the charging rate in response to external signals. This will give the option for energy companies to offer things like variable pricing for off-peak charging.</li> <li>- A user interface, for example an app. This allows the user to see information about the charger and change settings.</li> <li>- Pre-set, off-peak default charging hours (which can be overridden). This is so that the charger can be set to charge only when demand for electricity is lowest.</li> <li>- A randomised delay function. This is where a charger that's set to turn on or off according to off-</li> </ul>		
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	<p>peak hours will randomly start and finish up to 10 minutes from the specified time. This is to avoid too many chargers turning on and off at precisely the same moment, which could result in a sudden electricity surge that could cause significant problems for the electricity grid.</p> <ul style="list-style-type: none"> <li>• <b>To what extent is this information familiar or new to you?</b> <ul style="list-style-type: none"> <li>○ <b>What, if anything, was surprising or you hadn't heard of before?</b></li> </ul> </li>   <li>• <b>What are your thoughts on the list of smart features listed here?</b> <ul style="list-style-type: none"> <li>○ What, if anything, was surprising or you hadn't heard of before?</li> <li>○ <i>(For any features not previously mentioned)</i> To what extent is this smart charging feature appealing or unappealing to you? Why/why not?</li> </ul> </li> </ul> <p>Still thinking about the list of smart features here, including anything you already know about them...</p> <ul style="list-style-type: none"> <li>• <b>What, if any, do you think the benefits are of these smart features?</b> <ul style="list-style-type: none"> <li>○ <i>Prompt if needed:</i> What, if any, benefits are there for you personally?</li> </ul> </li> <li>• <b>What, if any, do you think the drawbacks are of these smart features?</b> <ul style="list-style-type: none"> <li>○ <i>Prompt if needed:</i> What, if any, drawbacks are there for you personally?</li> </ul> </li>   <li>• <b>Thinking about any smart features here that you don't use/don't anticipate using, what, if any, are the barriers to you using them?</b> <ul style="list-style-type: none"> <li>○ <b>How, if at all, could these barriers be overcome?</b></li> </ul> </li> </ul>		
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	<ul style="list-style-type: none"> <li>• <b>Thinking about any smart features here that you do use/do anticipate using, what, if anything, could encourage you to use these features more?</b> <ul style="list-style-type: none"> <li>○ <b>What incentives, if any, are you aware of for using smart functionality on charge points?</b> <i>Moderator to listen out for mentions of the following:</i> <ul style="list-style-type: none"> <li>▪ <i>Financial incentives (e.g. NGESO's winter demand flex services/Hugo app, vouchers, public charging membership)</i></li> <li>▪ <i>Non-financial incentives (e.g. environmental benefits, user-friendly interfaces)</i></li> </ul> </li> <li>○ <i>[If not previously aware]</i> There are a number of incentives, both financial and non-financial for consumers who use smart functions on their charge points. For example, some businesses and the National Grid have limited programmes on providing lump payments to individuals for using less energy during peak times. Have you heard of any programme like this or others, including vouchers, bundles or discount?           <ul style="list-style-type: none"> <li>▪ <i>[If so]</i> Where did you become aware of this? Have you made use of any of these schemes?</li> </ul> </li> <li>○ To what extent, if at all, would this motivate you to use smart functionalities on your charge point?</li> </ul> </li> </ul>		
<p><b>5: Energy tariffs</b></p> <p>Aims: Understand the degree to which participants have considered switching energy tariff</p>	<p>I'd now like to talk about energy tariffs.</p> <ul style="list-style-type: none"> <li>• <b>To what extent, if at all, does the cost of energy affect your decisions about charging your EV? How and why?</b></li> <li>• <b>To what extent, if at all, are you aware of the option to switch your energy tariff as part of charging your EV at home?</b></li> </ul> <p><i>If needed: "With a time of use tariff, energy used at 'off peak' times, such as overnight, is cheaper than energy</i></p>	5	50

	<p>used at peak times, such as early evening. Some types of home chargers or 3-pin cables can be used with a time of use tariff to shift charging from more expensive peak hours to less expensive off-peak hours. Other chargers don't have the functionality to do this automatically, but it would still be possible to manually plug-in and charge a vehicle at off-peak times."</p> <p><i>For those who are aware:</i></p> <ul style="list-style-type: none"> <li>○ How did you become aware of this? And at what point in the process?</li> <li>○ To what extent did or are you considering doing this? Why/why not? Who/what was/is influential in your decision?</li> <li>○ In the end, did you switch your energy tariff or are you planning to? Why/why not?</li> <li>○ <i>For those who did not consider/did not switch/are not planning to:</i> What, if anything, would need to be different for you to consider switching your energy tariff?</li> </ul> <p><i>For those not aware:</i></p> <ul style="list-style-type: none"> <li>○ <i>Moderator to read out definition and show on screen</i></li> <li>○ What do you think about this information? Is anything new/surprising?</li> <li>○ To what extent do you think you would consider doing this? Why/why not?</li> <li>○ <i>For those who would not consider:</i> What, if anything, would need to be different for you to consider switching your energy tariff?</li> </ul>		
<p><b>6: Awareness of regulations</b></p> <p>Aims: Understand consumer awareness of the regulations and the impact of these regulations on</p>	<p>To finish off, I'd like to talk a bit now about regulations for EV smart home chargers.</p> <ul style="list-style-type: none"> <li>• <b>What, if anything, have you heard about changes to regulations for home EV chargers?</b> <i>If aware:</i> <ul style="list-style-type: none"> <li>○ How did you become aware of this?</li> <li>○ What impact, if any, do you feel these changes have had on you?</li> </ul> </li> </ul>	<p>10</p>	<p>60</p>

<p>consumer experiences</p>	<p>I'm going to tell you a little bit more about these new regulations that have been put in place during the past year.</p> <p>The first set of regulations are about <u>smart functions</u>. From 30<sup>th</sup> June 2022, all new home EV chargers sold for domestic use in the UK must have certain smart features, including the following:</p> <ul style="list-style-type: none"> <li>- Smart functionality. including the ability to send and receive information, the ability to respond to signals to increase the rate or time at which electricity flows through the charge point, demand side response services to reduce demand on the grid at peak times, and a way for the user to interact with the charger (user interface).</li> <li>- Electricity supplier interoperability, which means you can still use the smart features even if you switch electricity supplier.</li> <li>- Continued charging even if the connection to a communications network drops mid-charge.</li> <li>- Safety provisions to prevent the user from doing something that could be a health or safety risk.</li> <li>- A measuring system, to measure or calculate the electricity imported or exported and the time the charging lasts. The owner of the charger must be able to see this information.</li> <li>- Pre-set, off peak, default charging hours. However, they must allow the owner to accept, remove or change these at any point.</li> <li>- The ability for a randomised delay function. This is where a charger that's set to turn on or off according to off-peak hours will randomly start and finish up to 10 minutes from the specified time. This is to avoid too many chargers turning on and off at precisely the same moment, which could cause significant problems for the national energy supply.</li> <li>- In addition, they must meet certain requirements around safety and interoperability, including the ability to switch energy suppliers without it affecting the functions of the charge point.</li> </ul>		
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	<ul style="list-style-type: none"> <li>• What do you think about these new regulations?</li> <li>• <b>What impact, if any, do you feel these regulations may have / may have had on you?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for impact on both the <u>experience</u> of purchasing as well as their <u>decision-making</u> itself.</i></li> </ul> </li> <li>• Is there anything else you would want to know about this?</li> </ul> <p>The second set of regulations are about <u>security</u>. From 30<sup>th</sup> December 2022, all new home EV chargers sold for domestic use in the UK must conform to higher security standards, including:</p> <ul style="list-style-type: none"> <li>- A tamper detection mechanism</li> <li>- A security event log of notifications</li> <li>- Transparent details of firmware, including which software version they have and any software updates due</li> <li>- New encryption and authentication standards</li> </ul> <ul style="list-style-type: none"> <li>• What do you think about these new regulations?</li> <li>• <b>What impact, if any, do you feel these regulations may have / may have had on you?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for impact on both the <u>experience</u> of purchasing as well as their <u>decision-making</u> itself as well as extent to which these are thought to relate to smart charging functionalities.</i></li> </ul> </li> <li>• Is there anything else you would want to know about this?</li> </ul>		
<p>Wrap-up and close</p>	<p>And finally...</p> <ul style="list-style-type: none"> <li>• <b>If you could give one piece of advice for someone looking to make it easier to buy or use a smart EV home charger, what would your advice be?</b></li> </ul>	<p>-</p>	<p>60</p>

	<p>Thank you so much for taking part in this interview, and our previous interview back in January – we’ve really appreciated you taking the time to talk to us.</p> <p>We will be making payments in the same way as for your previous interview, so please do look out for an email from the website Ayda within the next 2 weeks.</p> <p>If you have any questions, please get in touch.</p>		
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*Installed Focus Group discussion guide*

**Objectives**

1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects: Have any unintended consequences been identified?
2. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience: How are industry providing consumers with information on smart charging?
3. Provide insight into the barriers, enablers and incentives for smart charging:
  - How are consumers likely to respond to different types of incentives?
  - Why do different types of consumers have different barriers to and motivations for smart charging?
  - Where do consumers seek information on smart charging and how are they influenced by stakeholders?
  - How do consumers perceive their consumer journey from point of purchase, to installation, to use of a charge point?
4. Review the policy development and implementation process and develop lessons learnt for future policy making.
  - Have any barriers, challenges, and risks to the regulations been identified?
  - What has enabled industry and consumers to positively adapt to the regulations?
  - Are there any lessons learnt for future policy making?

**About this discussion guide**

This focus group will be conducted domestic consumers at varying points of the home charger purchase journey. The purpose of this document is to serve as a guide to inform the flow of the discussions, rather than a definitive list of questions to cover. As these are qualitative sessions, the moderator will use the guide flexibly and be guided by what comes out of the discussions. In this discussion guide, instructions to the moderator are *italicised* and key questions are **bolded**.

Section and aim	Key questions and probes	Time	Total
<p><b>PRE-TASK</b></p> <p>Aims: Understand on an individual basis stage of journey and background on EV purchase and stress-test consumer journey mapping</p>	<p><i>**This will be shared with participants in advance of the focus group**</i></p> <p>We are looking forward to our session in the coming days on electric vehicles and home chargers. So we can have an idea of the different experiences of participant in advance of the session, we'd like you to answer some questions beforehand. In advance of the session, please take a look at the questions below and send back some answers to us. This should just take 10-15 minutes of your time.</p> <ol style="list-style-type: none"> <li>1. Where have you got to so far with buying or leasing an EV? Please select one.             <ol style="list-style-type: none"> <li>a. I'm looking into it.</li> <li>b. I've purchased/leased an EV but haven't received it yet.</li> <li>c. I've purchased/leased an EV and have used it.</li> </ol> </li> <li>2. What prompted you to look into and/or purchase an EV? Please answer in a sentence or two below.</li> <li>3. What sources, if any, did you use when looking into EVs? Please list as many as you'd like and explain why you used these.</li> <li>4. Where have you got to so far with purchasing a home charger? Please select one.             <ol style="list-style-type: none"> <li>a. I'm looking into it.</li> <li>b. I've purchased a home charger but have not yet had it installed.</li> <li>c. I've purchased a home charger, have it installed but have not yet used it.</li> <li>d. I've purchased a home charger, have it installed and have used it.</li> </ol> </li> <li>5. What sources, if any, did you use when looking into home chargers? Please list as many as you'd like and explain why you used these.</li> <li>6. What has been your experience so far with buying an EV home charger or 3-pin charger cable? Please answer in a sentence or two below.</li> <li>7. Are you aware of the ability to change energy tariffs when it comes to home charging? Please select one.             <ol style="list-style-type: none"> <li>a. Yes</li> </ol> </li> </ol>	-	-



	<p>b. No c. Not sure</p> <p>8. Have you considered changing energy tariffs as a result of having your home charger? Have you already done so? Please answer in a sentence or two below.</p> <p>Thank you for sharing – we look forward to meeting you in the session!</p>		
<p><b>1: Introduction and warm-up</b></p> <p>Aims: Introduce the research, explain terms and warm-up participants</p>	<p><i>While participants are joining the focus group and waiting for it to commence, welcome them to the session, explain we will be getting started shortly, and draw their attention to the key functions on Zoom such as the ‘mute’ and ‘chat’ functions to ensure they know how to use these.</i></p> <ul style="list-style-type: none"> <li>• <i>If any participants’ full names are showing up on Zoom, ask them to change this to their first name only, or change this for them, before the group begins.</i></li> <li>• <i>If any participants do not have their camera turned on, encourage them to turn this on.</i></li> </ul> <p><i>Introduce and explain terms of session, covering the following key points:</i></p> <p><i>Purpose:</i> Thank you for joining today’s session. We may or may not have met before. My name is [XXX] and I’m a researcher from an independent research agency called Thinks Insight &amp; Strategy (previously known as BritainThinks).</p> <ul style="list-style-type: none"> <li>• As before, we are conducting this research on behalf of the Department for Energy Security and Net Zero, which is a department of the UK government that was previously the department for Business, Energy and Industrial Strategy. The purpose of this research is to understand public experiences with buying, installing and using EV home chargers.</li> </ul> <p><i>Explain terms of the session:</i></p> <ul style="list-style-type: none"> <li>• We’re an independent research agency so I’m here to listen to your honest views and opinions; there are no right/wrong answers.</li> </ul>	<p>5</p>	<p>5</p>

	<ul style="list-style-type: none"> <li>• We abide by the Market Research Society code of conduct. This means that everything you say today will be completely confidential and you won't be personally identifiable in our report.</li> <li>• [NOTE-TAKERS/OBSERVERS], who are colleagues of mine and people working with me on this project, are also listening in to hear what you have to say and may write some notes, but they will not include any personally identifiable information in their notes.</li> <li>• The only time this confidentiality may be broken is if you say something that gives me reason to think you or someone else is at risk of harm, in which case we may be legally obliged to pass this information on to the relevant authorities.</li> <li>• Thinks Insight &amp; Strategy will hold your name and contact information for up to 12 months for quality monitoring purposes only and will not pass on any personal data to any third party.</li> <li>• If you want to opt out any time before then, then that is absolutely fine. If you do leave the session early, one of my colleagues will just follow up with you to make sure that you are okay.</li> <li>• We'll be talking for <b>90 minutes today</b> – finishing up at <b>[XXX]</b>. I have a lot of questions to get through so, in order to finish on time, I may need to interrupt you or move the conversation on. I am also very keen that we hear from everyone in the session today, so please don't be offended at any point if I ask you to wait a moment to wait your turn so we can hear from someone in the group who has had less opportunity to speak so far.</li> </ul> <p><i>Check if any participants have any questions, and ask permission to start audio recording.</i></p> <p><i>Moderator to ask each participant to introduce themselves, including:</i></p> <ul style="list-style-type: none"> <li>• <i>Their name</i></li> <li>• <i>What they do, if they are currently working</i></li> <li>• <i>What they like to do in their free time</i></li> </ul>		
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<p><b>2: Experience buying and installing home chargers</b></p> <p>Aims: Understand overarching views of EV purchase journey</p>	<p>As you are aware, today we will be speaking about purchasing a home EV charge point.</p> <ul style="list-style-type: none"> <li>• <b>If you had to describe your entire experience of buying, installing and using your EV home charger, what would you say? Feel free to use the chat function or say aloud.</b></li> <li>• <b>What, if anything, have you found easy about this process?</b></li> <li>• <i>Moderator to probe on which interactions were helpful (e.g. retailers, installers), and which stages were easiest.</i></li> <li>• <b>What problems or difficulties, if any, have you experienced during the process of buying/installing a home charger? If so, what happened?</b> <ul style="list-style-type: none"> <li>○ Has this been resolved?           <ul style="list-style-type: none"> <li>▪ <i>If resolved:</i> How did this get resolved? Are you happy with the resolution? Why/why not?</li> <li>▪ <i>If not resolved:</i> How confident or not confident do you feel about this being resolved? Why?</li> </ul> </li> </ul> </li> </ul>	<p>10</p>	<p>15</p>
<p><b>3: Considerations for purchasing home chargers</b></p> <p>Aims: Understand more about the purchase process and participants' spontaneous views on smart features</p>	<p>Thank you for your participation so far. We are now going to focus a little bit more on home chargers.</p> <ul style="list-style-type: none"> <li>• <b>In your view, what is the difference between charging with a charge point vs. using a three-pin plug and cable for charging at home?</b> <i>Moderator to listen out for mentions of smart features.</i> <ul style="list-style-type: none"> <li>○ Which did/would you choose and why?</li> <li>○ To what extent did you consider not getting a charge point, and instead relying on a 3-pin plug?           <ul style="list-style-type: none"> <li>▪ <i>Moderator to listen out for mentions of improved functionality, smart features, safety, charging speed and convenience</i></li> </ul> </li> </ul> </li> <li>• <b>I'd like everyone to think about the three things that have been most important to you when</b></li> </ul>	<p>15</p>	<p>30</p>

	<p><b>purchasing their home charger. Again, feel free to drop this into the chat or say aloud.</b></p> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for mentions of appearance/aesthetics, price, functionality/capability, environmental considerations, smart features, brand recognition.</i></li> <li>○ <b>Moderator to voice over top 3-4 factors coming through. Why are these important to you?</b></li> <li>○ <b>Which of these factors was the <u>most</u> important? Why?</b></li> <li>○ <b>And which of these factors was the <u>least</u> important? Why?</b></li> </ul> <ul style="list-style-type: none"> <li>● <b>Where did you purchase your EV and what influence (if any) did the person selling you your EV have over your choice of charger?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for mentions of dealerships offering chargers with the EV at purchase.</i></li> <li>○ <b>To what extent, if at all, was any charging equipment included with the purchase of your EV?</b></li> <li>○ <b>To what extent, if at all, did the person selling/leasing you your EV provide any information about chargers?</b></li> <li>○ <b>To what extent, if at all, did the person selling/leasing you your EV suggest specific charger brands or models?</b></li> <li>○ <b>What information, if any, do you wish you had had at that stage?</b></li> </ul> </li> </ul>		
<p><b>4: Smart charging features</b></p> <p>Aims: Understand pre-existing knowledge of smart chargers and introduce</p>	<p><b>Let's move on now to discuss smart home chargers specifically.</b></p> <ul style="list-style-type: none"> <li>● <b>By a show of hands (and remember there are no right or wrong answers), who is familiar with the term 'smart charger' or 'smart home charger'?</b></li> </ul>	<p>30</p>	<p>60</p>

<p>participants to detailed information on functionalities and incentives</p>	<ul style="list-style-type: none"> <li>• <b>Regardless of whether you know the term or not, in your own words, what do you think ‘smart charger’ means?</b></li> <li>• <b>What, if any, smart features or smart functionality are you aware of for home chargers? What do you know about them?</b> <i>Moderator to listen out for the extent to which the participant differentiates between smart features for home chargers vs. smart charging features that come with the vehicle itself.</i></li> </ul> <p><b>I’ve got some information to share with you now about smart charging, I will show it on screen and read it out for you now. Moderator to screenshare and read out:</b></p> <p>“Smart functionality can be described as the ability for a charge point to receive and respond to a signal by changing the time and rate at which electricity flows through the charge point. This form of demand side response (DSR) allows an EV owner to shift their charging to different periods of the day such as overnight when demand is low or when there is high renewable generation on the system.</p> <p>Smart EV home chargers may have some of the following features:</p> <ul style="list-style-type: none"> <li>• The ability to respond to signals to increase the rate or time at which electricity flows through the charge point. This allows the charger to respond to signals telling it there is high or low electricity demand across the country. It can alter when or how much electricity it draws down to avoid overloading the system.</li> <li>• Demand side response services, meaning that charge points must be able to delay charging or vary the charging rate in response to external signals. This will give the option for energy companies to offer things like variable pricing for off-peak charging.</li> <li>• A user interface, for example an app. This allows the user to see information about the charger and change settings.</li> </ul>		
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	<ul style="list-style-type: none"> <li>• Pre-set, off-peak default charging hours (which can be overridden). This is so that the charger can be set to charge only when demand for electricity is lowest.</li> <li>• A randomised delay function. This is where a charger that's set to turn on or off according to off-peak hours will randomly start and finish up to 10 minutes from the specified time. This is to avoid too many chargers turning on and off at precisely the same moment, which could result in a sudden electricity surge that could cause significant problems for the electricity grid.</li>   <li>• <b>Had anyone heard any of this information before today? <i>If so, where?</i></b> <ul style="list-style-type: none"> <li>○ <b>What, if anything, stands out to you from this?</b></li> <li>○ <b>What, if anything, is surprising or something you hadn't heard of before?</b></li> <li>○ <b>What, if anything, do you have questions about or want to learn more about?</b></li> </ul> </li>   <li>• <b>What are your thoughts on the list of smart features listed here?</b> <ul style="list-style-type: none"> <li>○ What, if anything, is surprising or something you hadn't heard of before?</li> <li>○ <i>(For any features not previously mentioned)</i> Something mentioned here that we haven't already talked about is [XXX]. To what extent is this smart charging feature appealing or unappealing to you? Why/why not?</li> </ul> </li> </ul> <p>Still thinking about the list of smart features here, including anything you already know about them...</p> <ul style="list-style-type: none"> <li>• <b>What, if any, do you think the benefits are of these smart features?</b> <ul style="list-style-type: none"> <li>○ What, if any, benefits are there for you personally?</li> <li>○ What, if any, wider benefits do you think there are?</li> </ul> </li> </ul>		
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	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ <i>Moderator to probe on mentions of the grid (or similar language).</i></li> </ul> </li> <li>• <b>What, if any, do you think the drawbacks are of these smart features?</b> <ul style="list-style-type: none"> <li>○ <i>Prompt if needed:</i> What, if any, drawbacks are there for you personally?</li> </ul> </li> <li>• To the best of your knowledge, are any of these features ‘defaulted’ to turn on?</li>   <li>• <b><i>Moderator to go through features in turn, asking:</i></b> <ul style="list-style-type: none"> <li>○ To what extent are each of these features appealing or unappealing?</li> <li>○ <b>To the best of your knowledge, which, if any, of these features does your home charger have?</b></li> <li>○ <b>Which, if any, of these features was (most) influential in deciding which home charger to purchase? Why?</b></li> <li>○ <b>How, if at all, did you become aware of these features? What sources, if any, informed you of them?</b></li> <li>○ <b>Which, if any, do you use? Why?</b> <ul style="list-style-type: none"> <li>▪ What are the benefits?</li> </ul> </li> <li>○ <b>Which, if any, of these features is ‘defaulted’ as part of a smart home charge point? <i>Moderator to listen out for and probe around randomised delay function and off peak scheduling.</i></b> <ul style="list-style-type: none"> <li>▪ To what extent, if at all, do you alter settings on these features? <i>Probe around overriding scheduled charging, followed by randomised delays.</i></li> <li>▪ <i>[If needed]</i> How frequently, if at all, do you override off peak charging?</li> <li>▪ <i>[If altering settings]</i> Why do you do this? <i>Probe around smart tariffs, home optimisation/solar generation.</i></li> </ul> </li> <li>○ Which, if any, do you not use? Why not? What are the drawbacks?</li> </ul> </li> </ul>		
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	<ul style="list-style-type: none"> <li>• <b>Thinking about any smart features here that you do use, what, if anything, could encourage you to use these features more?</b> <ul style="list-style-type: none"> <li>○ <b>What incentives, if any, are you aware of for using smart functionality on charge points?</b> <i>Moderator to listen out for and probe around mentions of the following:</i> <ul style="list-style-type: none"> <li>▪ <i>Financial incentives (e.g. NGENSO's winter demand flex services/Hugo app, vouchers, public charging membership)</i></li> <li>▪ <i>Non-financial incentives (e.g. environmental benefits, user-friendly interfaces)</i></li> </ul> </li> </ul> </li>   <li>• <b>There are a number of incentives, both financial and non-financial for consumers who use smart functions on their charge points. For example, some businesses and the National Grid have limited programmes on providing lump payments to individuals for using less energy during peak times. Have you heard of any programme like this or others, including vouchers, bundles or discount?</b> <ul style="list-style-type: none"> <li>○ <i>[If so] Where did you become aware of this? Have you made use of any of these schemes?</i></li> <li>○ <i>To what extent, if at all, would this motivate you to use smart functionalities on your charge point?</i></li> <li>○ <i>To what extent, if at all, would knowing the benefits of smart charging for the national electricity grid affect your decision of whether to use smart functionalities on your charge point?</i></li> </ul> </li> </ul>		
<p><b>5: Energy tariffs</b></p> <p>Aims: Understand the degree to which participants have considered</p>	<p>I'd now like to talk about energy tariffs.</p> <ul style="list-style-type: none"> <li>• <b>To what extent, if at all, does the cost of energy affect your decisions about charging your EV? How and why?</b></li> </ul>	<p>10</p>	<p>70</p>



<p>switching energy tariff</p>	<ul style="list-style-type: none"> <li>• <b>To what extent, if at all, did you consider switching your energy tariff when you started your EV at home?</b></li> </ul> <p><b>I'd now like to share some information on energy tariffs with you. Moderator to screenshare and read out:</b> "With a time of use tariff, energy used at 'off peak' times, such as overnight, is cheaper than energy used at peak times, such as early evening. Some types of home chargers or 3-pin cables can be used with a time of use tariff to shift charging from more expensive peak hours to less expensive off-peak hours. Other chargers don't have the functionality to do this automatically, but it would still be possible to manually plug-in and charge a vehicle at off-peak times."</p> <p>For those of you who were aware...</p> <ul style="list-style-type: none"> <li>○ How did you become aware of this? And at what point in the process?</li> <li>○ To what extent did or are you considering doing this? Why/why not? Who/what was/is influential in your decision?</li> <li>○ In the end, did you switch your energy tariff or are you planning to? Why/why not?</li> <li>○ <i>For those who did not consider/did not switch/are not planning to:</i> <ul style="list-style-type: none"> <li>• <i>What were the main reasons you did not switch your energy tariff?</i></li> <li>• <i>What, if anything, would need to be different for you to consider switching your energy tariff?</i></li> </ul> </li> </ul> <p>For those of you who were not aware...</p> <ul style="list-style-type: none"> <li>○ What do you think about this information? Is anything new/surprising?</li> <li>○ To what extent do you think you would consider doing this? Why/why not?</li> <li>○ What, if anything, would need to be different for you to consider switching your energy tariff?</li> </ul>		
<p><b>6: Awareness of regulations</b></p>	<p>To finish off, I'd like to talk a bit now about regulations for EV smart home chargers.</p>	<p>15</p>	<p>85</p>

<p>Aims: Understand consumer awareness of the regulations and the impact of these regulations on consumer experiences</p>	<ul style="list-style-type: none"> <li>• <b>What, if anything, have you heard about changes to regulations for home EV chargers?</b> <ul style="list-style-type: none"> <li>○ How did you become aware of this?</li> <li>○ What impact, if any, do you feel these changes have had on you?</li> <li>○ For those who might not have been aware, what information, if any feels important for you to know? How would you like to hear this.</li> </ul> </li> </ul> <p><b>I'm going to tell you a little bit more about these new regulations that have been put in place during the past year. Some of these will be familiar to you from the previous information I shared. In this section, I'd like you to think about what it means that regulations for some features are introduced. <i>Moderator to screenshare and read out:</i></b></p> <p>The first set of regulations are about <u>smart functions</u>. From 30<sup>th</sup> June 2022, all new home EV chargers sold for domestic use in the UK must have certain smart features, including the following:</p> <ul style="list-style-type: none"> <li>- Smart functionality. including the ability to send and receive information, the ability to respond to signals to increase the rate or time at which electricity flows through the charge point, demand side response services to reduce demand on the grid at peak times, and a way for the user to interact with the charger (user interface).</li> <li>- Electricity supplier interoperability, which means you can still use the smart features even if you switch electricity supplier.</li> <li>- Continued charging even if the connection to a communications network drops mid-charge.</li> <li>- Safety provisions to prevent the user from doing something that could be a health or safety risk.</li> <li>- A measuring system, to measure or calculate the electricity imported or exported and the time the charging lasts. The owner of the charger must be able to see this information.</li> </ul>		
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	<ul style="list-style-type: none"> <li>- Pre-set, off peak, default charging hours. However, they must allow the owner to accept, remove or change these at any point.</li> <li>- The ability for a randomised delay function. This is where a charger that's set to turn on or off according to off-peak hours will randomly start and finish up to 10 minutes from the specified time. This is to avoid too many chargers turning on and off at precisely the same moment, which could cause significant problems for the national energy supply.</li> <li>- In addition, they must meet certain requirements around safety and interoperability, including the ability to switch energy suppliers without it affecting the functions of the charge point.</li> </ul> <ul style="list-style-type: none"> <li>• <b>What do you think about these new regulations?</b> <ul style="list-style-type: none"> <li>○ What, if anything, stands out to you?</li> <li>○ What, if anything, surprises you about what I've just shared?</li> <li>○ What questions, if any, do you have about this information?</li> </ul> </li> <li>• <b>What impact, if any, do you feel these regulations may have on you?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for impact on both the <u>experience</u> of purchasing as well as their <u>decision-making</u> itself.</i></li> <li>○ <b>How do you feel about certain features, including randomised delay and off peak scheduling, being 'defaulted' to turn on?</b> <ul style="list-style-type: none"> <li>▪ <i>Moderator to listen out for and probe around degree to which end consumer understands the choice to override.</i></li> </ul> </li> </ul> </li> <li>• Is there anything else you would want to know about this?</li> </ul> <p><b><i>Moderator to read out on the next slide:</i></b> The second set of regulations are about <u>security</u>. From 30<sup>th</sup> December</p>	
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	<p>2022, all new home EV chargers sold for domestic use in the UK must conform to higher security standards, including:</p> <ul style="list-style-type: none"> <li>- A tamper detection mechanism</li> <li>- A security event log of notifications</li> <li>- Transparent details of firmware, including which software version they have and any software updates due</li> <li>- New encryption and authentication standards</li> </ul> <ul style="list-style-type: none"> <li>• <b>What do you think about these new regulations?</b> <ul style="list-style-type: none"> <li>○ What, if anything, stands out to you?</li> <li>○ What, if anything, surprises you about what I've just shared?</li> <li>○ What questions, if any, do you have about this information?</li> </ul> </li> <li>• <b>What impact, if any, do you feel these regulations may have / may have had on you?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for impact on both the <u>experience</u> of purchasing as well as their <u>decision-making</u> itself as well as extent to which these are thought to relate to smart charging functionalities.</i></li> </ul> </li> <li>• Is there anything else you would want to know about this?</li> </ul>		
<p>Wrap-up and close</p>	<p>Thank you all for your time today. It's been really helpful to hear from you.</p> <ul style="list-style-type: none"> <li>• <b>As you know, this research has been commissioned by the Department for Energy Security and Net Zero, which is a department of the UK government. Thinking about everything we've discussed today, if you could give one piece of advice for government to make it easier to buy or use a smart EV home charger, what would it be? Feel free to drop this into the chat or say aloud.</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to probe around responses as needed.</i></li> </ul> </li> </ul>	<p>5</p>	<p>90</p>

	<ul style="list-style-type: none"> <li>• <b>[If time] Before we finish, does anyone have any final thoughts you want to add about the topics we've spoken about today?</b></li> </ul> <p>Thank you so much for taking part in our focus group—we've really appreciated you taking the time to talk to us.</p> <p>We will be making payments in the same way as for your previous interview, so please do look out for an email from the website Ayda within the next 2 weeks.</p> <p>Have lovely evenings and take care.</p>		
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*Leavers Focus Group discussion guide*

**Objectives**

1. Understand how the charge point industry in Great Britain has responded to the implementation of the regulations, and industry views of any first-year effects: Have any unintended consequences been identified?
2. Understand how the device standards have been adopted by industry and what this may mean for consumer choice and experience: How are industry providing consumers with information on smart charging?
3. Provide insight into the barriers, enablers and incentives for smart charging:
  - How are consumers likely to respond to different types of incentives?
  - Why do different types of consumers have different barriers to and motivations for smart charging?
  - Where do consumers seek information on smart charging and how are they influenced by stakeholders?
  - How do consumers perceive their consumer journey from point of purchase, to installation, to use of a charge point?
4. Review the policy development and implementation process and develop lessons learnt for future policy making.
  - Have any barriers, challenges, and risks to the regulations been identified?
  - What has enabled industry and consumers to positively adapt to the regulations?
  - Are there any lessons learnt for future policy making?

**About this discussion guide**

This focus group will be conducted with domestic consumers who have started and abandoned the home charger purchase journey (and subsequently rely on a 3-pin cable or public charging). The purpose of this document is to serve as a guide to inform the flow of the discussions, rather than a definitive list of questions to cover. As these are qualitative sessions, the moderator will use the guide flexibly and be guided by what comes out of the discussions. In this discussion guide, instructions to the moderator are *italicised* and key questions are **bolded**.

Section and aim	Key questions and probes	Time	Total
<p><b>PRE-TASK</b></p> <p>Aims: Understand on an individual basis stage of journey and background on EV purchase and stress-test consumer journey mapping</p>	<p><i>**This will be shared with participants in advance of the focus group**</i></p> <p>We are looking forward to our session in the coming days on electric vehicles and home chargers. In advance of that session, please take a look at the questions below and send back some answers to us. This should just take 10-15 minutes of your time.</p> <ol style="list-style-type: none"> <li>9. Where have you got to so far with buying or leasing an EV? Please select one.               <ol style="list-style-type: none"> <li>a. I'm looking into it.</li> <li>b. I've purchased/leased an EV but haven't received it yet.</li> <li>c. I've purchased/leased an EV and have used it.</li> <li>d. I considered purchasing/leasing an EV but have decided against it.</li> </ol> </li> <li>10. What prompted you to look into and/or purchase an EV (even if you decided against it)? Please answer in a sentence or two below.</li> <li>11. What sources, if any, did you use when looking into EVs? Please list as many as you'd like and explain why you used these.</li> <li>12. Why did you decide against purchasing a home charger? Please answer in a sentence or two below.</li> <li>13. What sources, if any, did you use when looking into home chargers? Please list as many as you'd like and explain why you used these.</li> <li>14. Are you aware of the ability to change energy tariffs when it comes to home charging? Please select one.               <ol style="list-style-type: none"> <li>a. Yes</li> <li>b. No</li> <li>c. Not sure</li> </ol> </li> </ol> <p>Thank you for sharing – we look forward to meeting you in the session!</p>	-	-
<p><b>1: Introduction and warm-up</b></p> <p>Aims: Introduce the</p>	<p><i>While participants are joining the focus group and waiting for it to commence, welcome them to the session, explain we will be getting started shortly, and draw their attention to the key functions on Zoom such as the 'mute' and 'chat' functions to ensure they know how to use these.</i></p>	10	10

<p>research, explain terms and warm-up participants</p>	<ul style="list-style-type: none"> <li>• <i>If any participants' full names are showing up on Zoom, ask them to change this to their first name only, or change this for them, before the group begins.</i></li> <li>• <i>If any participants do not have their camera turned on, encourage them to turn this on.</i></li> </ul> <p><i>Introduce and explain terms of session, covering the following key points:</i></p> <p><i>Purpose:</i> Thank you for joining today's session. My name is [XXX] and I'm a researcher from an independent research agency called Thinks Insight &amp; Strategy (previously known as BritainThinks).</p> <ul style="list-style-type: none"> <li>• We are conducting this research on behalf of the Department for Energy Security and Net Zero, which is a department of the UK government that was previously part of the department for Business, Energy and Industrial Strategy. The purpose of this research is to understand public experiences with buying, installing and using EV home chargers.</li> </ul> <p><i>Explain terms of the session:</i></p> <ul style="list-style-type: none"> <li>• We're an independent research agency so I'm here to listen to your honest views and opinions; there are no right/wrong answers.</li> <li>• We abide by the Market Research Society code of conduct. This means that everything you say today will be completely confidential and you won't be personally identifiable in our report.</li> <li>• [NOTE-TAKERS/OBSERVERS], who are colleagues of mine and people working with me on this project, are also listening in to hear what you have to say and may write some notes, but they will not include any personally identifiable information in their notes.</li> <li>• The only time this confidentiality may be broken is if you say something that gives me reason to think you or someone else is at risk of harm, in which case we may be legally obliged to pass this information on to the relevant authorities.</li> <li>• Thinks Insight &amp; Strategy will hold your name and contact information for up to 12 months for quality</li> </ul>		
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	<p>monitoring purposes only and will not pass on any personal data to any third party.</p> <ul style="list-style-type: none"> <li>• If you want to opt out any time before then, then that is absolutely fine. If you do leave the session early, one of my colleagues will just follow up with you to make sure that you are okay.</li> <li>• We'll be talking for <b>90 minutes today</b> – finishing up at [XXX]. I have a lot of questions to get through so, in order to finish on time, I may need to interrupt you or move the conversation on. I am also very keen that we hear from everyone in the session today, so please don't be offended at any point if I ask you to wait a moment to wait your turn so we can hear from someone in the group who has had less opportunity to speak so far.</li> </ul> <p><i>Check if any participants have any questions, and ask permission to start audio recording.</i></p> <p><i>Moderator to ask each participant to introduce themselves, including:</i></p> <ul style="list-style-type: none"> <li>• <i>Their name</i></li> <li>• <i>What they do, if they are currently working</i></li> <li>• <i>What they like to do in their free time</i></li> </ul>		
<p><b>2: Perceptions on EV home chargers</b></p> <p>Aims: Understand reasons for dropping out of purchase journey</p>	<p><b>Each of you has decided against purchasing a home charger for your EV, and it'd be great if we could start off today's session understanding a little bit more about why that is.</b></p> <p><b>Firstly, if you had to describe your experience of looking into home chargers for your EV in three words, what would you say? Feel free to share this in the chat function or say aloud?</b></p> <ul style="list-style-type: none"> <li>• Why do you feel that way?</li> </ul> <p><b>At what stage in the journey did you decide against continuing with the purchase?</b></p> <ul style="list-style-type: none"> <li>• <i>Moderator to listen our for and probe around research/awareness stage, purchasing stage and installation stage.</i></li> <li>• <b>Why did you decide against continuing the purchase?</b></li> </ul>	<p>20</p>	<p>30</p>



	<ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for and probe around cost of charge point, challenges installing, availability of public charging stations, workplace charging, worry about impact on energy bills, lack of information more broadly, security etc.</i></li> <li>● <b>What sources, if any, played a part in your decision to not proceed with purchasing a home charger?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for and probe in turn around specific websites, family/friends, news sources, etc.</i></li> <li>○ What did these sources tell you about home chargers?</li> <li>○ To what extent, if at all, did you conduct follow-up research or conversations into this?</li> </ul> </li> <li>● <b>How do you charge your electric vehicle now?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for mentions of 3-pin plug, public charging, workplace charging.</i></li> <li>○ How would you describe your feelings about the way in which you charge your electric vehicle?</li> <li>○ How easy, if at all, do you find this?</li> <li>○ How difficult, if at all, do you find this?</li> </ul> </li> <li>● <b>How does the way you charge now compare to how you think it would be to charge using a home charger?</b></li> <li>● <b>How open, if at all, are you to changing the way in which you charge your EV in the future?</b> <ul style="list-style-type: none"> <li>○ What would influence you to change the way in which you charge your EV?</li> </ul> </li> </ul>		
<p><b>3: Information sources</b></p> <p>Aims: To understand trusted</p>	<p>Thank you for your participation so far. I'd now like to get a sense for where you have gotten information from when it comes to home chargers.</p> <ul style="list-style-type: none"> <li>● <b>Firstly, what, if anything do you feel you know about home chargers?</b></li> </ul>	<p>10</p>	<p>40</p>

<p>sources of information</p>	<ul style="list-style-type: none"> <li>• <b>What, to your mind, are the most important considerations for home chargers?</b>  <i>Moderator to listen out for mentions of appearance/aesthetics, price, functionality/capability, environmental considerations, smart features, brand recognition.</i> <ul style="list-style-type: none"> <li>○ <b>Moderator to pull out top 3 factors coming through. Why are these important to you?</b></li> <li>○ <b>Which of these factors was/is the <u>most</u> important? Why?</b></li> <li>○ <b>And which of these factors was/is the <u>least</u> important? Why?</b></li> </ul> </li>   <li>• <b>In your view, what is the difference between charging with a charge point vs. using a three-pin plug and cable for charging at home?</b>  <i>Moderator to listen out for mentions of smart features.</i> <ul style="list-style-type: none"> <li>○ Which did/would you choose and why?</li> </ul> </li>   <li>• <b>Thinking to your entire process of looking into EVs and/or home chargers, where, if anywhere, did you get your information from?</b> <ul style="list-style-type: none"> <li>○ <b>Which sources, if any, have been most useful so far?</b></li> <li>○ <b>Which sources, if any, have been least useful so far?</b></li> <li>○ <b>How important, if at all, did you find speaking to other EV drivers has been for you?</b></li> </ul> </li>   <li>• <b>What information, if any, did you feel you could trust? Why?</b> <ul style="list-style-type: none"> <li>○ What information, if any, did you feel was less trustworthy and/or reliable? Why?</li> </ul> </li>   <li>• <b>What other information, if any, do you wish you had or could have access to about smart chargers?</b></li>   <li>• <b>Where did you purchase your EV and what influence (if any) did the person selling you your EV have over your considerations of chargers?</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to listen out for mentions of dealerships offering chargers with the EV at purchase.</i></li> </ul> </li> </ul>		
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	<ul style="list-style-type: none"> <li>○ <b>To what extent, if at all, was any charging equipment included with the purchase of your EV?</b></li> </ul>		
<p><b>4: Smart charging features</b></p> <p>Aims: Understand pre-existing knowledge of smart chargers and introduce participants to detailed information on functionalities and incentives</p>	<p><b>I'd now like to move on now to discuss smart home chargers specifically.</b></p> <ul style="list-style-type: none"> <li>● <b>By a show of hands (and remember there are no right or wrong answers), who is familiar with the term 'smart charger' or 'smart home charger'?</b></li> <li>● <b>Regardless of whether you know the term or not, in your own words, what do you think 'smart charger' means?</b></li> <li>● <b>What, if any, smart features or smart functionality are you aware of for home chargers? What do you know about them?</b> <i>Moderator to listen out for the extent to which the participant differentiates between smart features for home chargers vs. smart charging features that come with the vehicle itself.</i></li> <li>● <b>Moderator to pull out features mentioned, asking in turn:</b> <ul style="list-style-type: none"> <li>○ To what extent are each of these features appealing or unappealing?</li> <li>○ <b>How, if at all, did you become aware of these features? What sources, if any, informed you of them?</b></li> </ul> </li> </ul> <p><b>I've got some information to share with you now about smart charging, I will show it on screen and read it out for you now. Moderator to screenshare and read out:</b></p> <p>“Smart functionality can be described as the ability for a charge point to receive and respond to a signal by changing the time and rate at which electricity flows through the charge point. This form of demand side response (DSR) allows an EV owner to shift their charging to different periods of the day such as overnight when demand is low or when there is high renewable generation on the system.</p>	<p>15</p>	<p>55</p>

	<p>Smart EV home chargers may have some of the following features:</p> <ul style="list-style-type: none"> <li>- The ability to respond to signals to increase the rate or time at which electricity flows through the charge point. This allows the charger to respond to signals telling it there is high or low electricity demand across the country. It can alter when or how much electricity it draws down to avoid overloading the system.</li> <li>- Demand side response services, meaning that charge points must be able to delay charging or vary the charging rate in response to external signals. This will give the option for energy companies to offer things like variable pricing for off-peak charging.</li> <li>- A user interface, for example an app. This allows the user to see information about the charger and change settings.</li> <li>- Pre-set, off-peak default charging hours (which can be overridden). This is so that the charger can be set to charge only when demand for electricity is lowest.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Had anyone heard any of this information before today? <i>If so, where?</i></b> <ul style="list-style-type: none"> <li>○ <b>What, if anything, stands out to you from this?</b></li> <li>○ <b>What, if anything, was surprising or you hadn't heard of before?</b></li> <li>○ <b>What, if anything, do you find appealing or unappealing about this?</b></li> <li>○ <b>What, if anything, do you have questions about or want to learn more about?</b></li> </ul> </li> <li>• <b>What are your thoughts on the list of smart features listed here?</b> <ul style="list-style-type: none"> <li>○ What, if anything, was surprising or you hadn't heard of before?</li> <li>○ <i>(For any features not previously mentioned)</i> Something mentioned here that we haven't already talked about is [XXX]. To what extent is this smart charging feature appealing or unappealing to you? Why/why not?</li> </ul> </li> </ul>		
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	<p>Still thinking about the list of smart features here, including anything you already know about them...</p> <ul style="list-style-type: none"> <li>• <b>What, if any, do you think the benefits are of these smart features?</b> <ul style="list-style-type: none"> <li>○ <i>Prompt if needed:</i> What, if any, benefits are there for you personally?</li> </ul> </li> <li>• <b>What, if any, do you think the drawbacks are of these smart features?</b> <ul style="list-style-type: none"> <li>○ <i>Prompt if needed:</i> What, if any, drawbacks are there for you personally?</li> </ul> </li>   <li>• <b>What incentives, if any, are you aware of for using smart functionality on charge points?</b>  <i>Moderator to listen out for and probe around mentions of the following:</i> <ul style="list-style-type: none"> <li>▪ <i>Financial incentives (e.g. NGENO's winter demand flex services/Hugo app, vouchers, public charging membership)</i></li> <li>▪ <i>Non-financial incentives (e.g. environmental benefits, user-friendly interfaces)</i></li> </ul> </li>   <li>• <b>There are a number of incentives, both financial and non-financial for consumers who use smart functions on their charge points. For example, some businesses and the National Grid have limited programmes on providing lump payments to individuals for using less energy during peak times. Have you heard of any programme like this or others, including vouchers, bundles or discount?</b> <ul style="list-style-type: none"> <li>○ <i>[If so]</i> Where did you become aware of this? Did you consider making use of any of these schemes?</li> </ul> </li>   <li>• <b>Has anything I've shared with you on smart chargers changed your opinion on installing a home charger? Why or why not?</b></li> </ul>		
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<p><b>5: Energy tariffs</b></p> <p>Aims: Understand the degree to which participants have considered switching energy tariff</p>	<p>I'd now like to talk about energy tariffs.</p> <ul style="list-style-type: none"> <li>• <b>To what extent, if at all, did the cost of energy have an impact on your decisions to not purchase a home charger? How and why?</b></li> <li>• <b>To what extent, if at all, are you aware of the option to switch your energy tariff as part of charging an EV at home?</b></li> </ul> <p><b>I'd now like to share some information on energy tariffs with you. Moderator to screenshare and read out:</b> "With a time of use tariff, energy used at 'off peak' times, such as overnight, is cheaper than energy used at peak times, such as early evening. Some types of home chargers or 3-pin cables can be used with a time of use tariff to shift charging from more expensive peak hours to less expensive off-peak hours. Other chargers don't have the functionality to do this automatically, but it would still be possible to manually plug-in and charge a vehicle at off-peak times."</p> <p><i>For those who are aware:</i></p> <ul style="list-style-type: none"> <li>○ How did you become aware of this? And at what point in the process?</li> <li>○ Would you consider doing this in future? Why/why not? Who/what would be influential in your decision?</li> </ul> <p><i>For those not aware:</i></p> <ul style="list-style-type: none"> <li>○ <i>Moderator to read out definition and show on screen</i></li> <li>○ What do you think about this information? Is anything new/surprising?</li> <li>○ To what extent do you think you would consider doing this? Why/why not?</li> </ul>	<p>10</p>	<p>65</p>
<p><b>6: Awareness of regulations</b></p> <p>Aims: Understand consumer awareness of the regulations and the impact of these</p>	<p>To finish off, I'd like to talk a bit now about regulations for EV smart home chargers.</p> <ul style="list-style-type: none"> <li>• <b>What, if anything, have you heard about changes to regulations for home EV chargers?</b> <ul style="list-style-type: none"> <li>○ How did you become aware of this?</li> <li>○ What impact, if any, do you feel these changes will have?</li> </ul> </li> </ul>	<p>20</p>	<p>85</p>

<p>regulations on consumer experiences</p>	<ul style="list-style-type: none"> <li>○ For those who might not have been aware, what information, if any feels important to know? How would you like to hear this?</li> </ul> <p><b>I'm going to tell you a little bit more about these new regulations that have been put in place during the past year. Moderator to screenshare and read out:</b></p> <p>The first set of regulations are about <u>smart functions</u>. From 30<sup>th</sup> June 2022, all new home EV chargers sold for domestic use in the UK must have certain smart features, including the following:</p> <ul style="list-style-type: none"> <li>- Smart functionality. including the ability to send and receive information, the ability to respond to signals to increase the rate or time at which electricity flows through the charge point, demand side response services to reduce demand on the grid at peak times, and a way for the user to interact with the charger (user interface).</li> <li>- Electricity supplier interoperability, which means you can still use the smart features even if you switch electricity supplier.</li> <li>- Continued charging even if the connection to a communications network drops mid-charge.</li> <li>- Safety provisions to prevent the user from doing something that could be a health or safety risk.</li> <li>- A measuring system, to measure or calculate the electricity imported or exported and the time the charging lasts. The owner of the charger must be able to see this information.</li> <li>- Pre-set, off peak, default charging hours. However, they must allow the owner to accept, remove or change these at any point.</li> <li>- The ability for a randomised delay function. This is where a charger that's set to turn on or off according to off-peak hours will randomly start and finish up to 10 minutes from the specified time. This is to avoid too many chargers turning on and off at precisely the same moment, which could cause significant problems for the national energy supply.</li> </ul>		
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	<ul style="list-style-type: none"> <li>- In addition, they must meet certain requirements around safety and interoperability, including the ability to switch energy suppliers without it affecting the functions of the charge point.</li> </ul> <ul style="list-style-type: none"> <li>• <b>What do you think about these new regulations?</b> <ul style="list-style-type: none"> <li>○ What, if anything, stands out to you?</li> <li>○ What, if anything, surprises you about what I've just shared?</li> <li>○ What questions, if any, do you have about this information?</li> </ul> </li> <li>• .</li> <li>• <b>What impact, if any, do you feel these regulations have on your view of home chargers?</b> <ul style="list-style-type: none"> <li>○ Is there anything else you would want to know about this?</li> </ul> </li> </ul> <p><b><i>Moderator to read out on the next slide:</i></b> The second set of regulations are about <u>security</u>. From 30<sup>th</sup> December 2022, all new home EV chargers sold for domestic use in the UK must conform to higher security standards, including:</p> <ul style="list-style-type: none"> <li>- A tamper detection mechanism</li> <li>- A security event log of notifications</li> <li>- Transparent details of firmware, including which software version they have and any software updates due</li> <li>- New encryption and authentication standards</li> </ul> <ul style="list-style-type: none"> <li>• What do you think about these new regulations?</li> <li>• What, if anything, stands out to you?</li> <li>• What, if anything, surprises you about what I've just shared?</li> <li>• What questions, if any, do you have about this information?</li> </ul>		
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	<ul style="list-style-type: none"> <li>• <b>What impact, if any, do you feel these regulations have on your view of home chargers?</b> <ul style="list-style-type: none"> <li>○ Is there anything else you would want to know about this?</li> </ul> </li>   <li>• <b>Thinking about both smart function and security regulations, to what extent, if at all, does knowing about these regulations make you reconsider installing a home charger? Why or why not?</b></li> </ul>		
<p>Wrap-up and close</p>	<p>Thank you all for your time today. It's been really helpful to hear from you.</p> <ul style="list-style-type: none"> <li>• <b>As you know, this research has been commissioned by the Department for Energy Security and Net Zero, which is a department of the UK government. Thinking about everything we've discussed today, if you could give one piece of advice for government to make it easier to buy or use a smart EV home charger, what would it be? Feel free to drop this into the chat or say aloud.</b> <ul style="list-style-type: none"> <li>○ <i>Moderator to probe around responses as needed.</i></li> </ul> </li> <li>• <b>[If time] Before we finish, does anyone have any final thoughts you want to add about the topics we've spoken about today?</b></li> </ul> <p>Thank you so much for taking part in our focus group—we've really appreciated you taking the time to talk to us.</p> <p>We will be making payments through Ayda and you should receive an email asking for your details to process this. If you have any questions at all, let us know.</p> <p>Have lovely evenings and take care.</p>	<p>5</p>	<p>120</p>

## 6.1.4 Non-domestic consumer interview guides

### 6.1.4.1 Pre-screening survey guide

#### 1) Please provide the following information: \*

Organisation name:

Contact name:

Position/role in organisation:

Email address:

#### 2) Which description best describes your organisation's interest in electric vehicles (EVs) and charge points, and reflects the perspective from which you will answer the questions?

If you are an association, please select the group that best reflects your members.\*

A business that operates a fleet of vehicles

A property developer installing EV charging facilities

A landlord with tenants who need access to charge points now or in the future

A workplace with employees who need access to charge points now or in the future

Other - Write In:

#### 3) How many employees are in your organisation?\*

Sole trader

1-49

50-249

250-499

500-1000

1000+

**4) How many vehicles does your organisation operate?\***

1-9

10-24

25-49

50+

**5) Approximately how many of these are electric?**

\_\_\_\_\_ [ ] \_\_\_\_\_

**6) Which statement best represents your organisation's current situation regarding EV charge points?\***

We have limited interest in purchasing EV charge points

We are researching EVs and/or charge points but do not have any fixed plans for purchasing

We are in the process of choosing a charge point(s) for purchase and installation (i.e., type and/or number)

We have purchased a charge point(s) and are waiting for installation

We already have a charge point(s) installed and being used

We already have a charge point(s) installed but are looking to install more

Other - Write In:

**7) To the best of your knowledge, is your organisation aware of The Electric Vehicles (Smart Charge Points) Regulations 2021 (adopted on 30th June 2022)?\***

We are not aware of these regulations

We are aware of these regulations but have limited understanding of their requirements

We have reasonable understanding of these regulations

We have a strong understanding of these regulations

Don't know

**8) Were any of your charge points installed after 30th June 2022, when the Regulations started to come into effect?\***

Yes

No

Don't know

**Thank You!**

#### **6.1.4.2 Interviews**

##### **INTERVIEWER PRE-INTERVIEW CHECK LIST**

- Quick online review of organisation
- Review pre-screening survey responses
  - Check respondents name
  - Check organisation type – copy response across to Q4 in this guide for prompt
  - Check statement on EV charge point situation – helpful insight that might influence how you phrase / skip questions.
  - Check awareness of regs – relevant for Q22
  - Check whether any charge points were installed after 30<sup>th</sup> June 2022. If yes, consider asking whether they can differentiate between charge points installed before and after this date, in some of their responses. E.g. when asking about functionality, is there any difference between charge points?

**Introduce yourself**

*My name is [XXX] and I'm a researcher from a consultancy called Ricardo Energy & Environment, or Ricardo for short. We are a leading global engineering, mobility and environmental consultancy.*

**Ask participant to introduce themselves:**

- Name, organisation, role etc.

**Explain purpose of the interview**

*Ricardo is conducting this research on behalf of the Department for Energy Security and Net Zero (a department of the UK government) to understand how non-domestic/commercial EV consumers have understood and engaged with the new Electric Vehicle (Smart Charge Points) Regulations that came into effect in 2022, and whether they have had any influence or impact on decisions made to install or operate charge points.*

**Explain how the interview will be run**

- *The interview will last up to an hour.*
- *Your feedback today will be aggregated with others to inform our final report. Your inputs will be referenced either to your organisation or anonymised depending on your preference, but you won't be personally identifiable in our report.*
- *You can opt out of the research at any time (although you may forfeit your right to any incentive/benefit).*
- *Ricardo will hold your name and contact information for up to 12 months for quality monitoring purposes only and will not pass on any personal data to any third party.*

**Ask two questions:**

1. Obtain permission to continue the interview and to audio/video record.
  - a. If yes, start recording
2. Offer opportunity to ask any questions about research process
  - a. If you do not know how to answer any questions, defer to answering by email after the interview

**Welcome**

**Background**

The Department for Energy Security and Net Zero (DESNZ) formerly the Department for

Business, Energy & Industrial Strategy (BEIS)) is evaluating the implementation of the recently introduced Electric Vehicles (Smart Charge Points) Regulations. From the 30th June 2022, charge point manufacturers and retailers have had to adhere to this new law that has been set up to reduce the amount of energy being used during times of peak demand and improve the security of charge points.

In line with their ongoing commitment to evaluate the work of government, DESNZ have commissioned Ricardo Energy & Environment to engage with various stakeholder groups, to understand how the Regulations have been implemented and how industry and charge point customers have responded to their implementation.

### **The Interview**

Following your responses to the brief screening survey, we have invited you to take part in a 45-minute interview that will follow the structure of this questionnaire.

Your organisation has been classified into our 'non-domestic customer' stakeholder group, and therefore the purpose of this questionnaire is to understand:

- Your organisation's experience along the charge point purchasing journey
- The extent that your charge point users interact with smart functionality
- Your organisation's awareness of the Regulations and any impact of their implementation

*Note - Where we refer to an 'organisation', we also mean any sole traders, individual landlords etc.*

Please familiarise yourself with the questions in this questionnaire ahead of your scheduled interview. While we have attempted to tailor the questions, it is possible that not all questions will be relevant for your organisation or you may not be in a position to respond to them.

If you have any questions, please do not hesitate to contact us at [SmartCharging@Ricardo.com](mailto:SmartCharging@Ricardo.com).

### **1) Completed by:**

( ) Respondent

( ) Interviewer

### **2) Please provide the following information:\***

Organisation name: \_\_\_\_\_

Contact name: \_\_\_\_\_

**3) Please indicate how you would like us to present the information provided during our discussion and any other information or data you provide to us.**

*The study team will keep detailed notes of the discussion and will make use of your contribution (information/data provided) only for the needs of this study.\**

**Complete based on response provided**

I consent to the information I provide being referenced to my organisation

I consent to the information I provide being anonymised (i.e. without name of the organisation but with affiliation to industry sector)

**Background**

**4) Which description best describes your organisation's interest in electric vehicles (EVs) and charge points, and reflects the perspective from which you will answer the questions?**

*If you are an association, please select the group that best reflects your members.*

Screening response: *[insert]*

A business that operates a fleet of vehicles

A property developer installing EV charging facilities

A landlord with tenants who need access to charge points now or in the future

A workplace with employees who need access to charge points now or in the future

Other - Write In:

[Notes]

The experience of consumers along the customer journey

*For this first set of questions, we're interested in hearing about your experience so far with purchasing a private EV charger or multiple chargers – starting from when you first started thinking about buying the charger, looking for information about them, through to wherever you've got to so far.*

For this series of questions, we're interested in hearing about your experience so far with purchasing a private EV charger - from when you first started thinking about buying a charger, through to wherever you've got to so far.

**Awareness and information gathering**

*For question 5, please have a look at the options provided and let me know through which channels your organisation has accessed information on purchasing EV charge points?*

**5) Through which of these channels have you or your organisation accessed information and guidance on purchasing EV charge points? Select all that apply.**

- Business association
- Electric vehicle or charge point manufacturer/retailer
- Government
- Energy supplier
- Knowledge sharing / word of mouth (i.e. informal discussions)
- Consultancy
- Not applicable
- Other - Write In (Required):

[Notes]

**6) In your opinion, is there sufficient information available and accessible on purchasing charge points?**

- Yes, there is sufficient information available and accessible
- Yes, there is some information available but it is not always accessible
- No, there is not sufficient information available and accessible
- Don't know

**7) Any final comments on the awareness and information gathering stage of the EV charge point purchasing journey (e.g. motivators for starting to look at electric vehicles and charge points, or type of information you typically look for)**



***Thanks, can you also tell me a bit more about any motivators for looking at charge points, or any other final comments you have about your experience with this first stage of the purchasing journey?***

What were the motivators for starting to look at electric vehicles and charge points?

What sort of information were you looking for?

Did you find what they were looking for? If not, what information was missing / unavailable?

Was there anything that influenced your decision to go ahead or not with purchasing electric vehicles and charge points?

[Notes]

### **Purchasing and installation**

*Now we will move on to talk about your experience of purchasing and installing electric vehicle chargers.*

**8) If applicable, what has been your organisation's overall experience in purchasing and installing electric vehicle charge points?**

#### **General prompt**

*What went well?*

#### **Prompt on cost**

*Have you noticed any changes in the cost of purchasing and / or installing charge points?*

*When did you notice these changes?*

*Were they sudden or gradual?*

*[If, they observed changes] Do you have a view as to what caused these changes?*

[Notes]

**9) What has been the key motivation of your organisation for installing EV charge points, or considering to?**

**Note – this point may have been covered in the previous section when asking about motivators**

**Prompt:**

*What factors informed your final purchase decision? For example, cost, reputation, good will*

[Notes]

**10) Have you received any incentive(s) for installing charge points?**

Yes, grant funding

Yes, subsidies

Yes, private incentive (e.g. offered as part of a bundle of products or services)

No

Don't know

Other - Write In:

[Notes]

**11) What challenges, if any, did your organisation face in the purchasing and installation of charge point(s)? (e.g. The cost of the charge point, compatibility with EV, grid connection time and cost, charge point availability)**

**Can you describe what you think went well and what did not go well. Were there any problems or delays encountered along the way?**

*Challenges or issues you faced, e.g. with the purchase, incentives, the installation, energy supply, setting up the charge points ready for use etc.*

*What were the standout pain points?*

[Notes]

### **Use of charge points**

For businesses - *Finally, let's talk about your experience of using the chargers.*

For employers - *Finally, let's talk about the use of the charger by your employees.*

For property/landlord - *Finally, let's talk about the use of the chargers.*

### **12) If applicable, what has been your organisation's overall experience in using electric vehicle charge points?**

#### **Prompt**

What business model do you operate – do you/ your organisation cover the cost of vehicles charging or do drivers have to pay for this?

**Prompt on cost - Can you explain in a bit more detail what if any changes you've seen to the cost of using charge points, i.e. to charge vehicles?**

*When did you notice these changes?*

*Were they sudden or gradual?*

*[If, they observed changes] When did you observe the changes and do you have a view as to what caused these changes?*

*[If, they observed changes] What have those changes have meant to them - e.g. has that made them reconsider decisions to purchase an EV charger in either way?*

[Notes]

### **13) What challenges, if any, has your organisation faced in the use of charge point(s)? (e.g. driver experience, effective control system and user interface, incentives, service disruption).**

**Now can you tell me about what challenges, if any, your organisation faced in the use or operation of charge point(s) and how you responded /reacted to these?**

*e.g. driver experience, effective control system, user interface, management, insurance, security, energy supply. What were the standout pain points?*

*Have you had any disruptions to service?*

*Do you know how drivers are engaging with the different functionalities, e.g. the interface / monitoring. Are they aware of their power consumption / charging time etc?*

*How much information is your organisation getting from these charge points? And are you using that information at all? If so, for what purpose?*

[Notes]

### **Smart features of charge points**

*I want to move on to talk about smart charge points now. This means an electric vehicle charging station that has advanced features and capabilities to improve the user experience and optimize the charging process. Typical features include:*

*User interface (like a mobile app)*

*Visibility/availability of charging event information (e.g. charging time)*

*Improved safety and security features*

*Continued charging in the event internet connection disruption*

*Switching tariffs/suppliers to save money on off-peak electricity use*

In this section, we look at the functionality offered by smart charge points. A smart EV charge point is an EV charging station that is equipped with advanced features and capabilities to improve the user experience and optimize the charging process. Key features typically include a user interface, internet connectivity, data tracking, and charge scheduling.

#### **14) Which smart charge point feature(s) are you aware of?**

[ ] Ability to schedule charging (e.g. off-peak)

User interface

Visibility/availability of charging event information (e.g. charging time)

Improved safety and security features

Continued charging in the event internet connection disruption

Switching tariffs/suppliers to save money on off-peak electricity use

None

Other - Write In:

[Notes]

**15) If you have purchased a smart EV charge point, please describe the influence of any smart features in your decision to purchase**

**Prompt**

*Was it something that was factored from the beginning, or did it emerge after some research?*

*Did they look for any specific features in general when looking for a charge point.*

*Can you explain in a bit more detail your views around which incentives could encourage more organisations like yourselves to purchase and use smart charging functionalities?*

[Notes]

**16) How does your organisation or users of the EV charge points interact with above mentioned smart charging functionalities?**

**Prompt**

*Do they encourage smart charging at home too, for example by covering the cost of a charge point*

[Notes]

**17) Is your organisation looking at tariffs and smart charging to help reduce energy bills?**

**Prompt**

*What sort of tariff product do you need / would like to see*

*Do you negotiate new contracts with suppliers?*

[Notes]

The regulations require that charge points sold for the intended private charging of vehicles must meet certain requirements. These requirements introduce a number of functionalities that the user can interact with:

**Off-peak charging schedule:** The charge point has pre-set default off-peak charging hours, which the owner can accept, remove or change.

**Randomised delay function\*:** The charge point is configured to operate with a delay of random duration of up to 10 minutes, which can be manually overridden by the owner.

*\*The function will randomly delay the charge start time by up to 10 minutes to prevent multiple charging sessions starting at the same time, which could create secondary peaks or energy demand on the national grid.*

*Building on that, I'd now like to talk a bit more about some specific functionalities that are required by the Regulations. Basically, the Regulations require that charge points sold for the intended private charging of vehicles must meet certain requirements. These requirements introduce a number of functionalities that the user can interact with:*

*One of these is Off-peak charging schedule: this means that the charge point has pre-set default off-peak charging hours, which the owner can accept, remove or change.*

*Another of these is a Randomised delay function\*: This means that the charge point is configured to operate with a delay of random duration of up to 10 minutes, which can be manually overridden by the owner.*

**18) Do any of the charge points bought, owned and/or used by your organisation have either of the two functionalities?\***

- No, they do not have either
- Yes, they have pre-set off peak functionality
- Yes, they have randomised delay functionality
- Don't know

**19) To the best of your knowledge, please select approximately how often each functionality is set or overridden by either the charge point owner or user.**

	<b>Off-Peak Charging</b>	<b>Randomised Delay</b>
<b>Charge point owners</b> (i.e. workplace or organisation)	Never / Sometimes / Always / Not permitted to override / Don't know	Never / Sometimes / Always / Not permitted to override / Don't know
<b>Charge point users</b> (i.e. employee or EV driver)	Never / Sometimes / Always / Not permitted to override / Don't know	Never / Sometimes / Always / Not permitted to override / Don't know

**20) Please use this space to provide any further explanation for your answer above. For example, what is preventing a user from adjusting the 'smart' functions, or why has a user decided to adjust a function?**

**Can you tell me more about management of charge point settings.**

Are they set or overridden by your organisation

Are they set or overridden by users / drivers? How? What's the process.

Do you know what the typical reasons are for this (settings being overridden)?

[Notes]

**21) Other than the off-peak charging and randomised delay functionalities explored above, the regulations require charge points to offer a number of other functionalities:**

*Electricity supplier interoperability, allowing the charge point to retain smart functionality even if the owner switches electricity supplier*

*Continued charging even if the charge point ceases to be connected to a communications network*

*A measuring system, to measure or calculate the electricity imported or exported and the time the charging lasts, with visibility to the owner of this information*

Select which if these functions you are aware of?

Electricity supplier interoperability

Continued charging

Measuring system and visibility

If applicable, please tell us about your experience with them.

**Please tell me more about your experience using any of these smart functionalities**

*Was it easy to use?*

*Do you have any problems or difficulties? How did you address or get round these?*

[Notes]

**The new EV Smart Charge Points Regulations**

*We're nearly there now! I just have some final few questions about your views on the Regulations themselves.*



## **The Regulations**

The new law is titled '[Electric Vehicles \(Smart Charge Points\) Regulations 2021](#)'. The regulations cover private EV charge points which are sold for use in a domestic or workplace environment in Great Britain. There are two main aspects:

The regulations ensure charge points have **smart functionality**, allowing the charging of an electric vehicle when there is less demand on the grid, or when more renewable electricity is available.

The regulations also ensure that charge points meet certain device-level requirements, enabling a **minimum level of access, security and information** for consumers.

The regulations came into effect on the 30th June 2022, apart from the security requirements, which came into force on the 30th December 2022.

**Screening response:** *[insert]*

If they indicated that they are not aware of the regulations then you can skip Q22

### **22) How did you become aware of these regulations?**

My organisation keeps track of regulatory changes with regards to EV charging

Charge point manufacturers

The government

Trade body

Consultancy

News

We are not aware of these regulations

Other - Write In:

[Notes]

### **23) Please use this space to provide any further explanation for your answer above.**

[Notes]

**24) Do you have any opinions on the regulations (e.g. If you think it is a good idea, or whether you have any concerns)?**

**Can you share any views you might have on the Regulations?**

*Do they seem like a good idea?*

*Hearing about the Regulations now or previously, how much, if at all, do you think they might influence any future decision making to purchase electric vehicle charge points?*

*Do you see there being any benefits to you? Can you describe these?*

*Do you have any concerns about the Regulations? Can you describe these?*

*Are you concerned about any disbenefits or costs to you/your organisation? Can you describe these?*

*Where would you seek additional information about how these regulations affect your business and why?*

[Notes]

**Contacting for further research**

*Before we finish I just have a few final questions, about contacting you for further research. As I've explained, we are carrying out this project for the Department for Energy Security and Net Zero and it's possible that we might have some follow on queries based on your answers given here today.*

**25) Would you be happy to be re-contacted by Ricardo within the next 12 months for further research related to this project?\***

( ) Yes (Please provide a relevant email address ):

[Notes]

( ) No

**26) Would you be happy to be contacted by DESNZ within the next 24 months for further research related to this project?\***

( ) Yes (Please provide a relevant email address ):

[Notes]
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( ) No

Thank You!

Thank you for your contributions!

For any further comments or questions, contact us at the following email address:  
SmartCharging@Ricardo.com

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This publication is available from: [www.gov.uk/government/publications/process-evaluation-of-the-electric-vehicles-smart-charge-points-regulations-2021](https://www.gov.uk/government/publications/process-evaluation-of-the-electric-vehicles-smart-charge-points-regulations-2021)

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