Electric vehicle charging market study: Invitation to comment
Response from ChargePoint

INTRODUCTION

ChargePoint welcomes the opportunity to submit comments to the Competition and Markets Authority (CMA)'s electric vehicle charging market study.

ChargePoint is the world's leading provider of electric vehicle (EV) charging solutions. Founded in 2007, ChargePoint is a category creator in EV charging, operating in every segment from commercial to fleet to residential. We have created one of the world's largest charging networks by selling individual organisations and businesses everything they need to electrify their parking spaces – networked charging hardware, software and associated support services.

ChargePoint serves customers through its software-defined hardware portfolio, comprehensive suite of software solutions and robust network and services designed for a wide range of use cases. ChargePoint's offerings have attracted a growing customer base of more than 4,000 organisations and businesses, building a network of more than 115,000 public and private places to charge worldwide.

In addition, ChargePoint offers access to an additional 133,000 public places to charge through roaming integrations across North America and Europe. Drivers plug into the ChargePoint network approximately every two seconds and have completed over 82 million charging events to date.

ChargePoint designs, engineers and manufactures its own hardware and software solutions from its California headquarters and in offices around the US, India, China, UK and Mexico. In the UK our engineering lab and office in Reading is our largest location outside the US and houses 30 engineers specialising in mechanical engineering, power electronics and software, in addition to a growing sales force and network of resellers and installers.

ChargePoint has answered the CMA's questions below.

THEME ONE: DEVELOPING COMPETITION WHILE INCENTIVISING INVESTMENT

1. How is the EV charging sector developing and how will technological or other developments (for example smart technologies) impact sector development and competition?

1.1 The EV charging sector has been developing rapidly over the last decade from the sale of a basic socket attached to a wall or post, to a software-led provision of a networked charging solution, of which the physical charging hardware is one part.

1.2 So today, a good consumer experience of charging is defined by the quality of the software which connects the charger to its surrounding ecosystem: the vehicle, the mobile device, the app, the cloud and the payment provider.

1.3 Charging hardware continues to improve, for example in the speeds of charging they deliver and the quality, longevity and ease of maintenance in the industrial design. ChargePoint develops, engineers and builds its own charging hardware and has invested in a design

approach which ensures that maintenance and repair are made easy, cheap and simple. Its testing regime[1] is unique and helps withstand wear and tear and exposure to the elements.

1.4 However the biggest advances in our sector are in software, which ChargePoint also develops in-house. Our software is uniquely designed to work in tandem with our hardware or 'on-ramped' onto third-party hardware. So, for example, a company with a range of different chargers procured over the years can operate them all in one place with ChargePoint's system.

1.5 Developments like these will positively impact the sector by encouraging all players to meet the highest standards of technology set by market leaders like ChargePoint. Some companies will be able to invest in these improvements themselves, others will merge or be acquired by larger companies with the resources to make these necessary improvements.

1.6 These technological developments are essential to ensure the charging industry continues to provide the best and most reliable consumer experience.

Smart charging

1.7 All home charging infrastructure that is installed today must be 'smart', which according to The Office for Zero Emission Vehicles (OZEV)'s definition of December 2018 means "chargepoints must be able to be remotely accessed, and capable of receiving, interpreting and reacting to a signal."[2] All OZEV-approved workplace charging equipment must also meet this definition. Further to this, PAS 1878[3] and 1879 currently in development by BSI will lay down as a standard which gives the industry a more detailed technical definition of 'smart'.

1.8 OZEV-defined smart-ness positively impacts the consumer experience of charging. For example it allows the driver to control the rate of charge, remotely stop or start the charge, and adjust the charge rate according to the price of electricity. In short, smart charging gives drivers (when home charging) and facilities managers (when charging at a workplace or depot) more control over how they charge their vehicles, should they want it.

1.9 The only consumers who will not be able to access the positive impact of smart charging are those with older generation chargers which are not connected – a basic plug socket unit attached to the wall for example. ChargePoint has never developed such equipment.

Managed charging

1.10 The definition of 'smart' referred to in paragraph 19 of the Invitation to Comment (ITC) is not the same as OZEV's definition of smart and is what UK charging industry tends to refer to as 'managed charging'. Managed charging is a level of connectivity and third-party control in excess of OZEV's definition of 'smart'.

1.11 Managed charging as defined in the ITC may be a long-term necessity to ensure energy management at a system level. When and how it is deployed is ultimately a matter for the wider energy industry to determine, but if done appropriately it will not directly affect the consumer's experience of charging, nor will it affect competition as all charging providers will be subject to managed charging as dictated by regulation. The charging industry is a stakeholder in the process of deploying managed charging, ultimately subject to the decisions of the government, regulators and wider energy system.

[1] https://www.chargepoint.com/engineering/peek-inside-chargepoints-advanced-test-facility/
[2] https://www.gov.uk/government/news/government-funded-electric-car-chargepoints-to-be-smart-by-july-2019
[3] https://standardsdevelopment.bsigroup.com/projects/2019-01576#/section

2. How well is competition between EV charging providers working at present in the different sector segments and what are the key risks to effective competition (including any emerging competition concerns)?

Charge Point Operators (CPOs)

2.1 ChargePoint is not a CPO but provides hardware and software solutions to them, and how we design those solutions helps CPOs deliver a best-in-class consumer experience.

Maps

2.2 ChargePoint welcomes the ability for drivers to choose a map that suits their preferences and needs. This may be on their mobile device or on the in-vehicle display and may display all charging stations in a geographical area or a speed of station the driver prefers to use.

2.3 In 2017 and 2020 ChargePoint announced app integrations with Apple Watch[4] and Apple CarPlay[5] which not only enable the driver to locate a station via the ChargePoint app on those devices, but can also start or end the charging event through those devices. These integrations simplify and improve the consumer experience of charging. It is vital that the industry retains the freedom to be able to innovate and push these innovations out to the growing population of drivers so they have a choice of how they find and use their preferred chargers.

2.4 However sitting above these privately-developed products should be a publicly owned, agnostic 'master list' of all public charging stations in the UK. Previous attempts to develop a National Chargepoint Registry (NCR) were unsuccessful but it is vital that the current effort, informed by OZEV's OPCD Policy Alpha project, are successful.

Local authorities

2.5 Local authorities are obliged to procure EV charging infrastructure via the Crown Commercial Service's (CCS) Vehicle Charging Infrastructure Services Dynamic Purchasing System (VCIS DPS). The rest of the public sector (NHS, emergency services and so on) and public sector-adjacent organisations (such as universities and other educational establishments) is able but not required to use CCS's VCIS DPS.

2.6 CCS is currently developing the Transport Technology and Associated Services (TTAS) Framework due to go live in Summer 2021 which will offer more choice of reliable procurement tools available to the public sector and public sector-adjacent organisations.

2.7 We welcome OZEV's work in seeking to ensure that CCS is the procurement tool of choice for all public sector organisations. It is desirable for all public bodies to use this single tool for charging procurement because CCS has consultatively designed it to be inclusive to the widest range of charging products, solutions and services.

3. How can competition in the different sector segments be strengthened as the sector develops, either by building on current policies and/or through other approaches?

3.1 Competition in this sector is strengthening as it grows. OZEV's approach is appropriate; that policy is not necessarily the answer to the question of how to strengthen competition in a sector where technology and business models are evolving quickly.

[4] https://www.chargepoint.com/about/news/chargepoint-first-simplify-electric-vehicle-charging-empowering-drivers-charge-any-ev/

[5] https://www.chargepoint.com/about/news/chargepoint-announces-integration-apple-carplay-revolutionizing-driver-experience-ev/

3.2 In this fast-changing market, policy's role is to ensure that the UK remains an attractive market for global EV charging businesses to expand and invest, and an attractive market for start-ups to establish and scale.

3.3 It should also be noted that a market which attracts investment in EV charging is a market with a growing number of EVs. Put simply, there is no EV charging sector unless there are the vehicles to drive demand for charging services. So rather than focusing on the charging market itself, policy-makers should design policies to guarantee the manufacture, import and sale of EVs which will in turn drive demand for charging services.

3.4 The 2030 phase-out of ICE vehicles is a prime example, but if we are to meet that phase-out date then other complementary policies will be necessary, such as a ZEV mandate (which sets a progressively higher baseline for the number of EVs to be sold in the UK), and progressively tightening city-level restrictions on the movement of ICE vehicles, such as the Ultra-Low Emission Zone in London.

4. What are the main existing and potential barriers to entry and expansion for EV charging providers and how can these be addressed?

4.1 The UK has always been and remains an attractive market for international charging businesses to expand into because of the growing market for EVs, enabled by the government's 2030 phase-out date of the sale of ICE vehicles.

4.2 ChargePoint entered the UK market in 2017 and has expanded quickly. In 2018 we opened our first UK engineering lab and office and in 2021 we will employ over 50 sales people, managers and engineers.

5. How can chargepoints be effectively deployed to ensure there is sufficient supply to meet future demand? What factors need to be taken into account?

5.1 Charging companies are already installing chargers ahead of demand on the strategic road network and in workplaces.

5.2 ChargePoint also welcomes that in its 2019 consultation *Electric Vehicle charging in residential and non-residential buildings,* the government proposes a minimum number of chargers to be installed in new and refurbished commercial premises, mandating businesses by law to install ahead of demand. We also welcome the initiative taken by local authorities like Edinburgh in their planning guidance to exceed the EPBD's baseline.

5.3 However it is vital to note that the number of charging stations does not need to grow proportionately to the number of EVs. Analyses which cite concern over the widening 'ratio' of chargers to vehicles are misguided for two reasons:

5.3.1 On the SRN the 'ratio' is misguided because today's EVs travel significantly longer and chargers charge significantly faster, meaning much less time is spent charging and the time demand per charger is lower.

5.3.2 In the workplace the 'ratio' is misguided because of technologies such as ChargePoint's waitlist, a virtual queue which sets each vehicle's time connected to a workplace charger, notifies the driver when their time is up and notifies the next driver in line when it is time to move their vehicle onto the charger.

Home

5.4 Installing domestic chargers ahead of demand has been proposed by government in its 2019 consultation *Electric vehicle chargepoints in residential and non-residential buildings,* where the stated aim was for every new home to be equipped with a home charger.

5.5 ChargePoint believes homes should come equipped with the necessary cabling and ducting to have a home charger fitted. **But on competition grounds we strongly disagree with the government's proposal that the charger should be supplied with the property** because:

5.5.1 Requiring the house-builder to install a home charger will result in race to the bottom for construction companies who will seek to procure the cheapest chargers to comply with the bare minimum requirements. This will be to the detriment of the consumer experience, as drivers will miss out on the latest features and functionalities.

5.5.2 Today's market includes many opportunities for consumers to procure chargers with a vehicle purchase, vehicle lease, or energy tariff. The chargers themselves are increasingly diverse in their features, specification and price points, reflecting a wide range of consumer preferences from how they would like their domestic charger to interact with their home and vehicle. Mandating new chargers in properties would prevent consumers from selecting the charging software or contract of their choice.

6. What incentives are there for private investment in EV charging infrastructure including within the different sector segments? How might incentives need to change for the future growth of the sector and development of competition?

6.1 ChargePoint's experience is that the EV charging sector is already an attractive market for growing investment and is not in need of intervention or future incentives to facilitate future growth or competition.

6.2 As the world's leading manufacturer and vendor of charging solutions for home, workplace, fleet and en-route, ChargePoint is a global category leader setting a precedent for investability in this sector.

6.3 Since our establishment in 2007 we have secured investment through eight rounds, the last of which was in November 2018. Our Series H funding raised USD240m, the largest funding round in our history, and the investors across all rounds have been diverse in scale and origin, ranging from oil and gas, private wealth, automotive and technology.[6]

6.4 In September 2020 ChargePoint was the first player in the EV charging sector to announce it would be going public via a SPAC and listing on the New York Stock Exchange[7], further underlining the attractiveness of this sector for investors today and in the future.

7. What impact does public subsidy have on private investment incentives; are there any areas/gaps where public support is most likely to be needed?

EVHS

7.1 Originating in 2014, EVHS was designed around a business model where drivers purchase a home charger with a new EV and the company selling the charging station also installs it. The grant is processed at the point of vehicle sale, the station is installed and then the installer (also the manufacturer/retailer of the charger) is reimbursed in arrears. For the very early market this model was broadly appropriate.

[6] https://www.chargepoint.com/about/news/chargepoint-secures-240-million-series-h-funding-electric-mobility-revolution/
[7] https://www.chargepoint.com/about/news/chargepoint-inc-become-public-company/

7.2 However the market has evolved to a point that EVHS does not fit the way charging companies and installers operate, nor how drivers procure vehicles.

7.2.1 Processing of the grant application at point of vehicle sale is not an appropriate means of claiming the grant for all drivers, such as those who buy a second or third hand car direct from a previous owner, those taking a short-term lease, or for fleet drivers using pool cars and do not retain keepership of a vehicle for longer than a few weeks.

7.2.2 The grant cashflow from OZEV to the installer best supports a business model where the same company sells and installs the charging station. Today different business models prevail – such as manufacturers like ChargePoint who keep costs down by working with third party specialist installers. EVHS is known for payment arrears to installers in excess of six months. For small installer businesses these payment delays create critical cashflow problems.

WCS

7.3 ChargePoint's workplace solutions have a suite of unique features which set them apart from other offerings, such as the ability to book charging slots and text users when their time slot is ending, and the ability to identify different drivers and guarantee them times of use or vary the price paid for the charge.

7.4 One practical manifestation of this technology is in a workplace, where a business may restrict charger usage to employees during the week and not charge those drivers for the electricity they use. At weekends private vehicles may use the chargers and would be charged different rates of electricity. Indeed, private vehicles may face an increased charge after an hour's usage to incentivise them not to stay charging for too long.

7.5 WCS is well-structured for companies purchasing charging stations and the online voucher system is simple for businesses and installers to obtain. At a cap of £14,000 it also represents a significant and much-needed support to businesses seeking to invest in electrification.

7.6 However because WCS can only be claimed against stations that are purchased, businesses cannot take advantage of other ways of procuring stations, like leasing and financing. For example, WCS cannot be claimed against ChargePoint as a Service (CPaaS), which offers businesses a capex-light bundled lease of hardware, installation, maintenance and software over a period of 3-5 years with a single monthly payment.

7.7 WCS, albeit unintentionally, rewards businesses who have the funds in place to purchase workplace chargers outright, and denies a grant to those who want to lease charging equipment, because they may be more unsure about EVs or unable to fund a large infrastructure investment.

ORCS

7.8 ORCS does not represent value for money for the government and prevents the private sector from developing competitive business models for public charging. ORCS has experienced low uptake and the correlation between it and increased EV uptake is unproven.

7.9 ChargePoint's view is that the best consumer experience is not delivered when the local authority is the installer, owner or operator of charging equipment. ChargePoint sees the role of the local authority as helping to deliver long-term strategies for EV charging to be carried out by the private sector, and facilitating EV charging projects as part of wider regeneration.

Rapid Charging Fund

7.10 ChargePoint welcomes the government's commitment of a ringfenced £950m to invest in the grid connections and site make-ready required to ensure that CPOs can install chargers on the strategic road network.

7.11 There is significant demand from CPOs to identify eligible locations for rapid chargers and the £950m will help improve grid connections to make yet more sites eligible for rapid chargers to be installed. However further rounds of funding will be necessary in order for all potential locations on the SRN to be viable to host high speed charging.

8. What is required in order to ensure that rural / remote communities and those without off-street parking are well served by charging infrastructure?

Rural and remote communities

8.1 Rural and remote communities can be adequately served by the private sector if the government or local authority tenders for charging 'corridors' - lots containing high traffic locations and rural low usage locations grouped together.

Drivers without off-street parking

8.2 Drivers without off-street parking do not need on-street charging at home if they have access to workplace charging or neighbourhood charging hubs such as at local retail destinations.

8.3 For those who are reliant on destination charging and neighbourhood hubs, local authorities should procure charging technology like ChargePoint's which allows them to identify different user groups and charge different prices for those user groups – a lower tariff for residents of a Controlled Parking Zone for example – so that those without off-street parking are not over-charged compared to other drivers who have driveways.

8.4 It should also be noted that drivers with off-street parking pay 5% VAT on charging events as their electricity is from a domestic source. Those without off-street parking who use the public network pay the standard rate of 20% VAT on their charging events. ChargePoint has made representations to HM Treasury about the inequity of VAT applied to EV charging, and how this inadvertently discriminates against drivers who do not have the facility of off-street parking.

9. What role should local authorities play to help deliver EV charging in a way that promotes competition? What support would they need?

9.1 Please refer to paragraphs 2.8-2.11.6, 7.9-7.10 and 8.1-8.6.

10. What can be learned from the different policy approaches taken in the devolved administrations for the EV charging market's development?

Scotland

10.1 The Scottish funds its own network, ChargePlace Scotland, which is accessed via an RFID card. When it was established in 2013 it was a first mover in EV charging but ChargePlace Scotland has failed to keep pace with the market in four key areas:

10.1.1 **Interoperability:** ChargePlace Scotland operates as a 'closed network' in isolation to other networks in Scotland. The driver's experience is that they cannot use their ChargePlace Scotland card to charge on any other network and cannot use, for example, their ChargePoint app on a ChargePlace Scotland station. There is no ChargePlace Scotland app and its online map shows missing data regarding which stations are working.

10.1.2 **Technology:** ChargePlace Scotland's public investment model means that it has not updated its charging technology as frequently as if a private company were running the network for profit. In rural and remote areas ChargePlace Scotland chargers are older, slower, not regularly maintained because they are not equipped with modern remote diagnostics.

10.1.3 **Pricing:** ChargePlace Scotland has not universally updated its pricing strategy. Many (but not all) ChargePlace Scotland stations are free to use. In the early days of the EV charging sector many stations were free to use but this was quickly phased out because as well as not being commercially sustainable for private CPOs, EVs are now significantly cheaper over a three to five-year period[8] so fuel does not need to be subsidised. Giving away fuel is not a long-term strategy for a sector seeking to become profitable and sustainable.

10.2 Publicly-owned and -managed charging networks are not sufficiently agile to keep up with the pace of technology development. Networks which do not offer drivers the latest available technology will negatively impact the consumer experience. This in turn impacts driver confidence in all charging and prevents the mass transition to EV.

Wales

10.3 ChargePoint welcomes the Welsh Government's EV charging strategy published in November 2020. We note with concern that the ambition of the strategy lags some way behind the rest of the UK and emphasises the deployment of physical hardware over the long-term provision of a future-proof technology-led solution that can serve a future population of EVs.

10.4 ChargePoint was disappointed that very little reference was made to mandating contactless payment, mandating at least 98% uptime for CPOs or ensuring networks were interoperable with one another, all of which are key to delivering a seamless consumer experience. ChargePoint will be responding to the Welsh Government in due course.

THEME TWO: EFFECTIVE CONSUMER INTERACTION WITH THE SECTOR

11. What challenges or difficulties related to chargepoints might act as a barrier to consumers switching from a conventionally fuelled passenger vehicle to an EV and how might these be overcome?

11.1 There are several perceived challenges acting as a barrier to consumers seeking to switch to an EV. Many, but not all, of these are overcome when the driver uses their EV regularly.

Perceived challenge	How to overcome
11.1.1 Lack of available charging infrastructure	Once drivers drive their EV regularly they become accustomed to the locations of chargers. Their mobile phone apps and in-car display help assure them that there is more charging infrastructure available than may be immediately apparent.
11.1.2 Chargers not working (poor operability/uptime)	Unfortunately a minority of charging networks have not invested in their hardware, back-office support and software which enables remote diagnostics and maintenance. This has affected confidence in all infrastructure.

[8] https://theicct.org/sites/default/files/publications/EU_vehicle_taxation_Report_20181214_0.pdf

	Industry – CPOs and manufacturers – must improve their practices to ensure better uptime. However government regulation to mandate uptime should also be implemented. ChargePoint has previously proposed to OZEV that an uptime baseline of at least 98% per CPO per year would be appropriate. Financial penalties should be imposed by government or the local authority on CPOs who do not comply with this level of uptime. Drivers would have more confidence in the infrastructure if they knew there were financial penalties for non-operating chargers.
11.1.3 No access to off-street parking at home	Many drivers without off-street parking at home have, or could have, reliable charging facilities at work. For those who are reliant on destination charging and neighbourhood hubs, local authorities must procure charging technology like ChargePoint's which allows them to identify different user groups and apply different prices to those user groups. For example, the local authority may wish to impose a lower price for residents of a Controlled Parking Zone, so that those without off-street parking are do not pay more than their neighbours with driveways. ChargePoint's technology could also enable the local authority to charge a higher price or a time-limited price for non-residents using the stations – increasing the price of the charge after an hour to prevent visiting drivers occupying chargers all day for example. These conditions should be written into local authority tenders for residential charging hubs and/or on-street charging.
11.1.4 ICE vehicles parked in EV charging bays	The Government's implementation of green number plates for electric vehicles will help overcome the issue of ICE vehicles occupying charging bays in the long term as it will be much easier for enforcement officers to identify EVs. However local authorities must also use appropriate powers so that enforcement teams are able to issue PCNs to ICE vehicles inappropriately parked in charging bays.
11.1.5 Too many apps/cards	The government must at the earliest opportunity mandate interoperability between all charging networks via a common open protocol like OCPI. There should be financial penalties issued to the CPO operating any station that is not interoperable with other networks. The inability of drivers to fully roam between networks – using any app of choice to unlock any station and see the relevant charging and payment information in that app – is directly impacting driver confidence in the charging network and putting drivers off transitioning to EVs.
11.1.6 Charger not accessible	OZEV has started to investigate how it can set accessibility criteria for chargers so that those with reduced mobility can get from the vehicle to the charger, lift the cable, secure the cable in the holster and clearly see the charger's display.

	ChargePoint has provided extensive evidence to the government on how its stations are designed to comply with ADA regulations in the USA and looks forward to continued work with the government on this matter to ensure that all drivers have the confidence charge an EV.

12. What are the key challenges for consumers already interacting with the sector and how might these change over time as the sector grows?

12.1 The same challenges face consumers already interacting with the sector as those considering buying an EV, please refer to paragraph 11.1.

12.2 The difference between new EV drivers and consumers already interacting with the sector is that many existing EV drivers are early adopters and so tend to be more forgiving of shortcomings in the charging network, excusing them as an early market issue. Nevertheless it is not satisfactory for this consumer group to experience difficulties with the essential need of refuelling their vehicle.

12.3 OZEV is aware of the barriers detailed in paragraph 11.1. Some are being addressed through, for example, the introduction of green numberplates. On interoperability, OZEV initially sought an industry-led solution but recently indicated its intention to intervene, which ChargePoint welcomes. We look forward to OZEV's consultation on consumer experience in 2021.

13. How do consumers decide which chargepoint services and providers to use? What information do consumers need to make this decision and at what stage in the decision-making process?

13.1 Each consumer decides differently which services and providers to use, depending on how they use their vehicle. Some examples are:

13.1.1 **Company car driver** who is given an RFID card or app with their company car and home charger. This brand familiarity will lead them to prefer their 'home' network (and other networks who roam with that network), although they may use several other networks depending on their other regular destinations.

3.1.1 **Commercial vehicle driver** who is given a home charger and a corresponding RFID card or app with their fleet vehicle, paid for by their employer. The card issued by the employer will only be able to access certain network/s which meet the price point the employer is willing to pay, or only the preferred network/s the employer is happy for the driver to use. So this driver will only use their employer's preferred network/s.

3.1.2 **A private EV driver** who chooses to join the networks which are prevalent where they live or where they usually travel to. In a city this 'few' networks may result in the driver having up to 10 different apps or RFID cards.

3.1.3 **An EV driver** who primarily uses one particular network because that network's RFID card was provided (free or discounted) with the sale or lease of their vehicle. An example of this is the offer of a Source London card at 30% discount with the sale of every new LEVC taxi[9], or the offer of six month's free charging with the purchase of a new Peugeot EV, but only on the Polar Plus network (now BP Pulse)[10].

[9] https://www.sourcelondon.net/partners
[10] https://www.peugeot.co.uk/about-us/latest-news/peugeot-offers-six-months-free-public-charging-subscription/

13.2 With full interoperability between charging networks, consumers would not need to 'decide which chargepoint services and providers to use'. Irrespective of the networks in their local area or the membership card issued by their employer, energy company or vehicle manufacturer, consumers would be able to locate, use and pay for any charging station using any card or app of their choice, without barrier or concern. Pricing information would be available before they started charging and information about the charging event would appear in their account as if they had used a charger on their 'home' network.

13.3 This is a superior consumer experience than ad hoc access with a contactless card. Ad hoc access means the driver (or their employer) receives no information about the charging event in their app. With apps and RFID cards drivers can access the full data relating to that charging event including price, time/date, location and energy used, in their preferred app. For company car drivers and commercial vehicle drivers this is vital.

13.4 Full interoperability would also allow vehicle manufacturers and energy companies the freedom to offer an introductory period of free charging as sales incentive without being bound to a particular network as a condition of that offer, such as those described in paragraph 3.1.4.

14. Can consumers easily understand and compare charging tariffs in this sector and what barriers, if any, do they face?

14.1 No. Consumers cannot easily understand and compare charging tariffs and this obstructs consumer confidence.

14.2 ChargePoint's in-house development of best-in-class software enables CPOs to structure pricing as they see fit (as a global company our software must facilitate any pricing structure), but in the UK it is clear that the consumer confidence will only be met with uniform pricing expressed in £/kWh. This allows drivers to easily compare price between networks while also helping them to understand the unit of measurement of energy helping to power their vehicles.

14.3 ChargePoint believes the government should seek powers to mandate the uniform expression of pricing in £/kWh for all charging events in public and private (for example for charging events appearing on a home energy bill), and should regulate to prevent 'hidden' charges such as separate connection charges. If other charges apply such as parking charges or entry to a car park they should be clearly listed in the relevant app.

14.4 However, CPOs need to retain the commercial freedoms to be able to set different pricing levels for members, roamers and non-members of their network, so long as that price is expressed in £/kWh. They should have the freedom to use price as a lever to attract drivers to join their networks. They should also be able to set pricing at whatever level they see fit, in the knowledge that market forces will level out outlier prices.

15. Do particular groups of consumers face additional challenges to interacting with the sector and if so, who and why? How might these be overcome?

15.1 Yes. Company car drivers, commercial vehicle drivers, taxi drivers and anyone who would like to see information about their charging event, perhaps for tax or expenses purposes, face additional challenges to interacting with the sector. Today these drivers cannot access this information in one place if they use several different charging networks.

15.2 The result is either that these drivers may feel bound to one network so they can see their charging data in one place, even if that network does not fully serve their needs, or that they have to process tax and expenses documents from data housed in several different apps, because they need to charge on several different networks.

15.3 These challenges can be overcome by implementing full interoperability between all charging networks, allowing drivers to roam between charging networks with their preferred app. Please refer to paragraphs 18.1-18.8 for a detailed explanation of roaming and its benefits.

16. Are there any technological developments or tools that could support consumers to navigate the sector, for example by helping to make more informed choices?

16.1 Yes. Full interoperability between charging networks, allowing drivers to roam between them with their preferred access method, can support consumers to make more informed choices. Common open protocols like OCPI are available today and being used to broker bilateral roaming agreements with different networks, like between ChargePoint and NewMotion.

16.2 The majority of market actors fully support the principle of interoperability and are taking steps to broker bilateral roaming agreements between networks, a process which necessarily takes time in order to agree the technological and legal exchange of data in compliance with the law and other regulations like GDPR.

16.3 Today's EV drivers need to be able to access any charger wherever they are, without having to pre-register or think about what card or app is needed. And after they charge they should be able to see all the data relating to their charging event in the app of their choice.

16.4 In the UK today, no driver can do this. They may be able to access any station ad hoc, but this is not the same as being able to roam. Ad hoc access drivers cannot fully compare pricing or energy information between two charging networks so cannot make informed choices.

16.5 Until now, OZEV has rightly allowed industry to take the lead in advancing the technical process of enabling roaming between networks. However because several CPOs maintain a policy of not roaming, ChargePoint believes the lack of interoperability will not be resolved in the UK without government intervention to mandate roaming.

17. Are existing protections offered by consumer law and other measures (such as sector regulations) sufficient?

17.1 ChargePoint is not aware of any lack of protection in consumer law relating to charging infrastructure. ChargePoint's global experience is that by comparison with other global markets, UK sector regulations and consumer protections are appropriate. ChargePoint welcomes that when seeking to regulate any aspect of the UK sector there is extensive industry consultation and dialogue.

17.2 Areas where ChargePoint would like to see the government make progress on its regulation of the sector are mandating uptime (see paragraph 11.1.2), mandating interoperability (see paragraphs 18.1-18.7) and mandating the installation of chargers in new and refurbished buildings (see paragraph 5.6).

18. What, if any, open data measures are needed to support consumer interaction, such as through the growth of comparison sites and apps?

18.1 ChargePoint welcomed the recent OPCD Policy Alpha project which sought to establish the parameters and structures for open charging data that were satisfactory to industry, drivers, government and regulators. ChargePoint noted that the following open data measures were needed to support consumer interaction with charging infrastructure:

Interoperability/roaming data

18.2 Roaming is the means by which different charging networks communicate data between one another at the backend. It has the objective of providing a near-universal driver experience with a single card or app and the ability for drivers to access charging data in one place.

18.3 It is not the same as ad hoc access via a contactless card which only provides a universal means of access. Only roaming agreements can securely provide the additional information such as location, billing, data and price of a charging event on different charging networks, which drivers increasingly need to be able to access to have a seamless charging experience.

18.4 ChargePoint has advocated that charging networks should be open and interoperable by means of bilateral roaming agreements. We continue to build these agreements across the UK and would encourage regulation that mandates roaming as soon as possible.

18.5 This model, where roaming agreements are directly brokered between networks removes the need for an intermediary layer or clearing house into which price surcharges, security lapses or data miscommunications can occur. Please see paragraphs 2.13-2.16 for more detail.

Operability data indicating uptime

18.6 ChargePoint believes in the importance of open static charging station data indicating operability, or 'uptime'. Our software, app and cloud services are engineered in-house in order that we can ensure the security and quality of the data that we share with drivers, the cloud, other networks (where we have roaming agreements) and national registries. We do not deploy any third-party software and as such have complete control over the data we provide.

18.7 ChargePoint agrees with the OPCD Policy Alpha project that it is vital for drivers to know whether a station is working or not. This data can also help the Government see the overall 'uptime' on a charging network, particularly useful if they were to impose a minimum uptime requirement on CPOs, such as that described in 11.1.2.

18.8 ChargePoint's fault detection software identifies problems that affect station performance, even if the station is still working. It recommends if a fix is required, and if this fix can be done remotely or in person. Consequently, stations are less likely to go out of service and, when required, repairs are quicker. All manufacturers and operators should be required to seek a similar technology, and tenders for charging infrastructure should specify it.

Location data

18.9 ChargePoint agrees with the OPCD Policy Alpha interim findings that accurate location data is vital to the driver experience, and this should include not only the geographic coordinates of a charging station, but other anecdotal information such as how many stations are in that location, whether they are on the top or bottom floor of a car park, behind a barrier, whether the location has limited opening hours and so on.

18.10 ZapMap observed during the COVID-19 crisis that hundreds of stations which were listed as operational were in fact inaccessible because their locations (such as retail destinations) were closed to the public. This affected key workers who relied on EVs to travel to work.

19. What else is required to help ensure that the EV charging sector develops in a way that is responsive to consumer needs?

19.1 ChargePoint believes that without the ability for drivers to roam between networks the UK's charging infrastructure will inhibit EV uptake. The technology exists today to deliver full interoperability, it is only networks seeking to pursue a business model where they operate as a closed network that is preventing it.