

Date: 4th January 2021

Competition and Markets Authority
The Cabot
25 Cabot Square
London
E14 4QZ
United Kingdom

Subject: Competition and Markets Authority: Electric vehicle charging market study

Dear Sir/Madam,

Please find EVA Scotland's response to the invitation to comment on the Competition and Markets Authority electric vehicle charging market study below.

Yours sincerely,

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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?

There are numerous charge point network operators in Scotland in rapidly evolving and expanding networks. Network operators include Osprey, bp pulse, ChargePlace Scotland, Charge Your Car, GeniePoint, InstaVolt, LiFe, Swarco E.Connect, Zap-Home, Zap-Work, CitiCharge, Citreon Dealerships, E.ON Drive, Ecotricity, EV.Charge Online, Fastned, Hyundai Dealerships, Ionity, NewMotion, Nissan Dealerships, Pod Point, Renault Dealerships, ScottishPower Recharge, Shell Recharge, Tesla Destination, Tesla Supercharger, VendElectric and Zeronet (data from Zap-Map). At present, apart from the Tesla Supercharger network and one or two other exceptions, the maximum charge rate is 50 kW. There is scope for higher powered chargers at key locations across the Scottish road network. The largest and most comprehensive network is the ChargePlace Scotland network. Although Dundee was named the most visionary European city for electric vehicle policy in 2018 winning the World Electric Vehicle Association's e-Visionary Award for Europe, most other major towns and cities in Scotland do not yet have adequate public charging, in particular on-street charging. This situation should improve in the next few years under the Scottish Government's Switched On Towns and Cities Fund. It should be noted that the global pandemic resulting from the SARS-CoV2 virus has delayed the plans of some Scottish towns and cities. Dundee leads innovation in Scotland and is home to The Mill, Scotland's smart mobility test bed, established by Dundee City Council with the Scottish Cities Alliance.

There needs to be more capacity at workplaces, shopping centres, leisure parks, car parks and park & ride facilities. Dumfries & Galloway Royal Infirmary is a good example of workplace charging with around 40 3 kW workplace chargers in a large car park. The use of 3 kW chargers is particularly appropriate as workers are likely to be on site for a shift of 8 hours or more. There is a case to be made for low power charging (e.g. 3 kW) where there is a long

dwell time, for example at park & ride facilities for commuter use. Twice as many 3 kW chargers can be installed as 7 kW chargers for the same power budget.

Smart technologies can help with load balancing and offer variable tariffs and optimisation for cost. A technologically more diverse charging ecosystem will offer more consumer choice.

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)?

There are at least 28 charge point network operators in Scotland offering effective competition, mostly in the rapid or journey charging sector. There is considerable scope for offering power delivery at rates above 50 kW. There is a need for a sensible tariff structure based upon power delivered (kWh) and tiered so that cost reflects the rate of power delivery (i.e. a 7 kW charge point should be cheaper to use than a 50 kW charge point). There is also a need for uniformity across networks (the ChargePlace Scotland tariff is dependent upon local host, for example, and there are 250 local hosts). Connection fees should be avoided, but an overstay fee is required to encourage the driver to move the vehicle once charged.

There is less competition at lower power points, for example destination charging, but the advent of workplace charging provided by energy suppliers that we see coming for example should increase the diversity of provision.

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?

The choice of a particular charge point usually comes down to a combination of the following factors: connections available, location, cost, maintenance record, availability, performance, personal safety, other nearby options and adjacent facilities.

The GRIDSERVE electric forecourt in Braintree in Essex shows what the future of electric vehicle charging might look like, but a similar type of experience might be provided by siting charging hubs next to locally owned amenities. For example, a charging hub on the outskirts of a small town or village may encourage EV drivers to visit local amenities and spend money in the local economy, rather than money being taken by large major chains in the GRIDSERVE model. In this way, local small business owners thrive and more money stays within the local economy. This model more closely aligns with the ChargePlace Scotland model.

EVA Scotland recommends that resilience is designed into the network such that, on main routes for journey charging, a single point of failure will never leave a driver stranded. A driver arriving with a low state of charge at a remote journey charger is in a very vulnerable position if the charger does not work, there is no mobile phone signal and they get wet trying to get the charger to work, for example. With no heating in the car and no means of communication, life is at risk.

There needs to be more than a single journey (rapid) charger at every location. A destination (slow/fast) charger should be co-located as a last resort and ideally, a second journey charger. A dependable repair service with quick turnarounds should be guaranteed. A minimum level of provision and service is required.

Journey charging should also have a mix of high power charging units, up to 350 kWh, along with standard 50 kWh unit. Other factors such as larger towns and cities where a fair percentage of dwellings have a lack of off-street parking and are left with a lack of facilities for overnight parking/charging - such factors like school car parks, work place charging could remedy this if utilised well.

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

Any EV charging provider needs access to a grid connection of suitable capacity combined with land and associated planning permission at a suitable location adjacent to the road network.

Project PACE is an example of a Distribution Network Operator (DNO) led delivery model that is delivering a strategic network of ChargePlace Scotland chargers across North and South Lanarkshire at lower cost.

Other potential models include local authority and commercial operators co-operating, an example of which is the ...[redacted]... which includes a new 1 MW substation, 11 x 50 kW and 1 x 150 kW journey chargers and will include automatic number plate recognition, a food truck and provision for charging the local electric taxi fleet.

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

The market for EVs is expanding rapidly with many innovations from manufacturers and new market entrants. While battery capacity is increasing, it is not yet evident whether EVs with large capacity batteries will dominate the market. As most drivers in Scotland travel less than 20 miles per day on average, a smaller battery capacity would suffice if the vehicle could be easily charged on a regular basis. Such vehicles may be significantly cheaper to buy or be used as a city car. The provision of high quality public charging may influence the consumer's choice of EV for those without access to charging at home.

The issue of peak demand causes queueing in Norway for example, particularly on Fridays as city residents escape to their cabins for the weekend, and there will be issues of too much or too little charging capacity as EV adoption spreads here. Charging installations can be fitted with ducting for future expansion at the time of first installation to speed up expansion.

Vacant spaces for overnight charging (e.g. school playgrounds where not used as a play space, multi storey car parks overnight) especially in built up areas, using smart technology and smart charging to ease the burden on the local electricity grid and allow flexible tariff structures.

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?

There are obvious gaps in the market in Scotland. High powered journey charging (more than 50 kW) is one example and provision of charge points where local authorities are lagging (the Edinburgh area being a prime example). Although provision of charging infrastructure in Scotland is higher than the rest of the UK based on chargers per 100,000 of population (<http://maps.dft.gov.uk/ev-charging-map/>), there is obviously still plenty of scope for increasing provision. The metric used here is not particularly helpful in areas with a large area and low population density (Highland region for example).

Workplace charging is another example where provision is inadequate. There is anecdotal evidence of small and medium scale renewable electricity generators in Scotland moving into this space.

Domestic EV charging grant support in Scotland is more generous than the UK wide OLEV grant including additional monies for remote properties.

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?

Public support or cross subsidy will be needed in remote areas with low population densities and low traffic densities. This applies to the vast majority of Scotland other than the central belt. Provision of charging infrastructure should be universal independent of where you live. In some ways it should be like the provision of First Class post where a letter posted anywhere will arrive at any UK destination within a day. The ChargePlace Scotland network seeks to meet this requirement.

There will be competition between suppliers in more population dense areas such as the central belt of Scotland where location, cost, performance, user experience etc will be what drives competition.

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

Provision of a public charging service, ChargePlace Scotland, fulfils the role of meeting the requirements of rural / remote communities in Scotland. For those without of-street parking, charging hubs with journey or rapid chargers can provide one solution. With EV ranges in excess of 150 miles, the average driving distance of 20 miles per day can be met with one charge per week. Alternatively, on street charging provision can play the same role.

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

In Scotland, local authorities are 32 of the over 250 hosts on the ChargePlace Scotland network. Local authorities may work in partnership with the commercial sector to provide innovative charging solutions. The example of East Lothian Council and Glasgow City Council

working with Octopus energy and others in a UK Government BEIS funded project, Agile Streets, to offer variable tariffs for an on-street charging trial shows one example of this. Another example is the ...[redacted]... commercial hub in co-operation with ...[redacted]..., due to open in ...[redacted]... in April 2021.

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

The ChargePlace Scotland network is a unique and highly significant example of a publicly funded EV charging network and has given EV drivers in Scotland universal access to EV charging largely irrespective of location. EVA Scotland has played a role in shaping policy towards the implementation of the charging network over many years, acting as the voice of the EV driver in Scotland and feeding back issues to Transport Scotland in face-to-face meetings on a regular basis. EVA Scotland members have helped identify locations for new chargers, provided testing for charge points and new apps for example. EVA Scotland run an annual survey of members to highlight issues associated with the charging network amongst other things, and feedback to stakeholders via the media, social media, our annual general meeting and survey report.

Theme two: effective consumer interaction with the sector

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

Convenient access to charging. Home or workplace charging are generally the most convenient, but many people do not have access to these facilities. Provision of public charge points helps overcome this issue. There is always a concern around access to public charge points, whether they will be working and whether they will be available at the required time. The number of charge points needs to keep up with demand on an ongoing basis. Monitoring of charge point use and increased provision as capacity becomes an issue is critical. Maintenance is key with short downtimes in the event of a failure to maintain user confidence and continued support.

Charging time is an issue for some. Filling up with petrol or diesel is a relatively quick process whereas charging from a 7 kW charger for example is not. This is being overcome with the provision of EVs and chargers with higher power delivery above 50 kW for example. This may also not be as big an issue as some considering switching perceive, especially if access to domestic overnight charging is available.

Disabled drivers may find handling charging cables and manoeuvring around the vehicle difficult. This may be overcome with the provision of wireless charging in a suitably adapted EV.

Personal safety at charge points is an issue. Charging at a dimly lit park and ride facility in the middle of winter can be a lonely and frightening experience. While the provision of good

lighting, shelter from the weather and CCTV is a help, it is probably still not enough to encourage some people that they will be safe.

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

At present there is frustration around adequate provision of charge points in certain locations in Scotland, the performance of the charge point network operator (CPNO), maintenance and network resilience.

Edinburgh, for example, has a dearth of public charge points and many properties without off-street parking making home charging impossible. This is slowing uptake of EVs in the capital city of Scotland. While there has been delay in planned provision due to the SARS-CoV2 virus and associated pandemic, even the planned implementation for completion by March 2022 is too little.

Remote charging locations subject to issues relating to single point of failure cause much distress in the Scottish EV driver community. Building a resilient network is key. Communication between charger and the back office can be an issue in remote locations, and implementation of a whitelist and a cached vend when communications are down is the way to resolve this issue for chargers using an app or RFID card. When communications are restored, the cached transactions can be forwarded to the CPNO. Ensuring charge points are equipped to use multi-network SIM cards for data transfer is important when individual networks are down. In some locations, more sophisticated communication strategies may be required (e.g. satellite or dedicated).

The performance and relationship between the CPNO, charge point host and charge point equipment supplier is key to operational performance and ultimately therefore consumer confidence. A new contract for the CPNO for the ChargePlace Scotland network is due to be in place by April 2021 after being delayed by EU exit and the pandemic. There has been considerable discussion about the terms and conditions of the contract with key stakeholders including Transport Scotland and EVA Scotland after issues and considerable experience with the current operation of the network. The performance of the telephone helpline is critically important. It should be available 24 hours a day, 7 days a week. Helpline operators should be well trained and have a good script. A robust mechanism to log and deal with faults is key to providing a resilient network.

Provision of a maintenance contract with maximum permitted down times is key. A stock of replacement parts should be held locally in order to prevent long lead times for equipment coming from far afield. This issue may be further exacerbated by EU exit. Local, well trained service engineers are also key to a rapid maintenance response.

The charge point host should have a dashboard to show high level performance of their chargers and any outstanding issues including maintenance or downtime. The overall performance of the network should be similarly visible to the EV driver.

The provision of a roaming platform by an e-mobility service provider allows EV drivers to access charge points offered by a number of different operators providing agreements are in

place overcoming the requirement to be members of multiple different networks with multiple different access mechanisms.

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

Consumers will use a charge point service based upon individual requirements and use case. While a new EV driver will have given some thought to how to recharge the vehicle, oftentimes the thought process may not have been comprehensive as there are many other issues to consider when taking ownership of an EV. Making charge points as accessible as possible across multiple networks with the minimum of fuss is therefore important. An EV driver should be able to get 'fuel' from any charge point using a single access mechanism without having to be a member of multiple networks.

Tariff information including minimum charge (if any), price per kWh and overstay fees should be readily available to the driver before arriving at the charge point. There should be clear signage at the charge point indicating the tariff structure and cost.

The provision of a roaming platform by an e-mobility service provider allows an EV driver to charge on multiple networks with minimal fuss on their part.

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

There are around 250 hosts on the ChargePlace Scotland network and in theory, each host can have a different tariff. Although tariffs are advertised on the ChargePlace Scotland map and on the charger itself, expecting the average EV driver to be aware of each tariff is unreasonable.

Tariffs often have different structures, for example a tariff that has a connection fee is difficult to compare to a tariff that does not and incentivises the driver to charge for as long as possible to minimise excess cost per kWh. A certain amount of arithmetic and mental agility is required. EVA Scotland support a tariff structure that places a lower per kWh tariff on a slow (say 7kW) charger compared to a journey (or rapid) charger (delivering say 50 kW). Our policy on tariffs

(https://www.eva.scot/assets/documents/EVA_Scotland_Tariff_Guidance_for_Scotland_2019_Issue_1-1.pdf)

has been taken up by local authorities in Scotland, most recently by East Lothian Council. The tariff guidance is recognised as being fair and avoids a major pitfall in the circumstances where a charging session once commenced, subsequently fails. The structure also provides a behavioural nudge to vacate the charge point once charging is complete in the form of an overstay fee.

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

There is a danger that high priced tariff structures disincentivise the transition to EVs. Charging should be available at a price close to the average price of domestic electricity and those without home charging should be able to access discounted time of day tariffs on the public network.

Disabled drivers may find handling charging cables and manoeuvring around the vehicle difficult. This may be overcome with the provision of wireless charging in a suitably adapted EV.

Personal safety at charge points is an issue. Charging at a dimly lit park and ride facility in the middle of winter can be a lonely and frightening experience. While the provision of good lighting, shelter from the weather and CCTV is a help, it is probably still not enough to encourage some people that they will be safe.

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

There are a number of web sites and apps that help the driver. The WattsUp app allows route planning with journey chargers and their availability displayed. Further information to indicate that the bay is actually empty would be a useful addition to this service. Sometimes bays can be used as parking spaces blocking access for EV charging.

More generally, use of a charge point registry with public application programming interfaces for use by charge point hosts to upload data and in car navigation systems, websites and apps to download data should be available and organised on a continental (European) scale. Information such as specific location (including for example which floor on a multi-storey car park or where in a large car park), charger power level, charging interface standards (CHAdeMO, CCS, AC etc), opening hours, helpline contact telephone numbers and tariffs should be available. This will allow the development of tools for the driver to aid navigation and charge point usage.

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

Provision of battery warranties is relatively new and we have seen one example of a manufacturer failing to honour these, leaving the consumer in a very difficult position. While we have no specific recommendations, this is an area that needs careful consideration to maintain consumer confidence.

The use of charging bays for parking rather than charging causes difficulties at charge points. In some extreme cases, people have been known to leave their car on a public charge point and go off on holiday preventing anyone else from using the charge point. While tariff structures can dissuade this behaviour, it may be that further regulations are required. Similarly, parking a conventional vehicle in a charging space should be illegal.

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

Use of a charge point registry with public application programming interfaces for use by charge point hosts to upload data and in car navigation systems, websites and apps to download data should be available and organised on a continental (European) scale in association with OEMs. Information such as specific location of charge points (including for example which floor on a multi-storey car park or where in a large car park), charger power level, charging interface standards available (CHAdeMO, CCS, AC etc), current availability, opening hours, helpline contact telephone numbers and tariffs should be available. This will allow the development of tools for the driver to aid navigation and charge point usage.

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

In order for a successful transition to electric vehicles to be successful, the provision of charging should be universal and affordable. The Scottish model of public support for the ChargePlace Scotland network, although not without its own issues, has been highly successful in this regard while still leaving room for competition and provision by 28 commercial operators. This, together with the earlier more ambitious targets for the transition has resulted in a higher penetration of both charge points in Scotland per head of population (37.3 per 100,000 compared to 29.2 for the UK) and journey (or rapid) chargers (9.3 per 100,000 compared to 5.3 for the UK).

<http://maps.dft.gov.uk/ev-charging-map/>

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