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Re: The Smart EV Consultation on the Interim Solution for Domestic Managed Electric Vehicle Charging by EA Technology on behalf of SSEN

Citizens Advice provides free, independent, confidential and impartial advice to everyone on their rights and responsibilities. Since 1 April 2014, the Citizens Advice service took on the powers of Consumer Futures to become the statutory representative for domestic and small business energy consumers across Great Britain.

In summary:

- We agree that the managed electric vehicle (EV) charging solution could benefit electricity consumers. It is in the best interest of consumers to prevent a blackout if possible, which this solution tries to do. Without any intervention, the actions of a small number of EV owners could potentially put the reliability of the electricity supply of their neighbours at risk, including people in vulnerable situations.
- We want to stress that the proposed solution should only ever be an emergency measure and a last resort. Twenty-eight percent of the average person's electricity bill goes towards the transmission and distribution network.[1] For this money, electricity distribution network companies should aim to keep their customers on full supply, all day, every day, apart from essential repairs and in severe weather.
- We would like to see electricity networks being more proactive and seek to avoid the need for EV charge controllers to be used in the first place. Companies should explore cost-effective solutions to network constraints including energy efficiency measures and establishing markets through which end-consumers can offer their flexibility as a paid service.

[1] Infographic: Bills, prices and profits, Ofgem, April 2018
https://www.ofgem.gov.uk/publications-and-updates/infographic-bills-prices-and-profits

- The installation of an EV charge controller on a consumer's property should be optional and require their consent. Network companies need to conduct more research to understand to what extent the interim solution is acceptable to their customers and what measures or conditions would make it more acceptable.
- Electricity network companies need to give more thought to the needs of vulnerable individuals that live in a household that solely relies on an EV. In terms of the managed EV charging solution, we argue that such households should have the ability to provide consent for every single managed charging event - not just for the installation of the EV charge controller.
- The governance arrangements for the managed EV charging solution need more consideration and justification. The evidence base on which current modelling rests is thin. We would also like Ofgem to explore the need for financial disincentives to prevent networks from using the managed EV charging solution too often and for too long.
- For now we do not believe that there is a strong case for compensating consumers for the use of managed EV charging in emergencies, but there may be in the future. Networks should also conduct more customer research and trials to understand to what extent compensation is seen as necessary and what role it plays in increasing acceptability of managed charging.

The Interim Solution

Q1 Do you agree that the interim solution, deployed within the use cases and governance arrangements described, would be in customers' best interest?

Yes we agree that the managed electric vehicle (EV) charging solution could benefit electricity consumers but only with their consent and in specific circumstances. To ensure the proposed solution is used to the best effect, we would like to see the use cases tightened up and the governance arrangements enhanced, as we set out below.

Overall, it is in the best interest of electricity consumers to prevent a blackout if possible, which this solution tries to do. The alternative would be to let a fuse burn through and consumers wait for hours for it to be fixed. Without the managed EV charging solution, the actions of a small number of EV owners could potentially put the reliable electricity supply of their neighbours at risk. Reducing the charge levels for vehicle owners temporarily appears an acceptable price to pay given it could prevent loss of supply for many, possibly vulnerable consumers.

However, we want to stress that this interim solution should only ever be an emergency measure and a last resort. An electricity distribution network operator (DNO) should aim to keep its customers on full supply, all day, every day, apart from essential repairs and in severe weather. Using energy consumers' assets to balance the network should occur only with their consent and ideally as part of flexibility markets that reward participants for their services.

Q4 Do you believe that the interim solution is technically feasible to provide a robust method to manage demands on local networks?

The solution may be technically feasible but we would caution that it must also be socially acceptable, especially if consumers have to provide consent for it to be implemented.

Network companies need to conduct more research to understand to what extent the interim solution is acceptable to their customers and what measures or conditions would make it more acceptable.[2] Thus far trials have worked with very small numbers of consumers, who are all early adopters and may not be representative of the general population. The trial environment may have also influenced the decision and views of these customers given some had their EV charger paid for and installed by their electricity network, and having their charging levels adjusted was likely a condition of the trial.

Once in use, networks should monitor to what extent the interim solution is rejected by their customers and for what reasons, and how many reject it after being affected by having their charging levels reduced.

More fundamentally though, to our knowledge there has been no research to understand whether EV owners perceive their EV to be different from any other electric appliances they own. As a result they may think differently about how much they value reliable electricity supply, what service level they expect from their DNO, and to what extent they would be happy to provide demand-side response.

[2] For example, findings from *My Electric Avenue* suggest that being alerted to the fact that managed charging is in operation could help make it more acceptable to customers. http://myelectricavenue.info/sites/default/files/documents/9.6.pdf

Q5 Do you agree that DNOs should be able to deploy the interim solution, or a variant of it, as described in the use cases in section 2.1?

We agree that the managed EV charging solution should only be implemented "where the risk of overload is severe" (quote from consultation document). Reducing consumers' electricity supply must be an emergency measure only. The use of EV charge controllers must also be temporary, otherwise reduced supply levels may become the "new normal" for consumers who happen to live in a constrained area of the network. Network companies must be obliged to keep on searching for a viable, cost-effective alternatives.

We have some concerns about the use cases as they are set out in the consultation document. We believe that the installation of EV charge controllers should be the last resort for a DNO where other solutions have failed or are not (yet) available. The consultation suggests that only once "the risk of overload is severe" will network companies start looking for alternative solutions such as " permanent reinforcement or other smart/market-led solutions". We would like to see network companies being more proactive and seek to avoid the need for EV charge controllers to be used in the first place.

Under their obligation to manage their network in a proactive manner, DNOs should - and some have started to - explore solutions to network constraints including energy efficiency measures, offering or encouraging EV owners to buy a solar panel to reduce the demand they put on the network, and establishing markets through which consumers can offer their flexibility as a paid service.

Flexibility markets have potential to deliver great benefits to consumers. If designed well, flexibility markets should give consumers the choice of whether, how and how much they wish to participate in the balancing of the network. They should reward participants for offering their flexibility to the network, thus providing consumers with more value for their assets and behaviour change. Australian DNOs already harness the flexible, distributed power from domestic solar panels and batteries in Australian homes and reward their customers for it[3]. In Great Britain, the first Vehicle-to-Grid chargers are in operation[4], DNOs are starting to partner with businesses that provide flexibility trading platforms, and BEIS is running a domestic DSR competition. DNOs should continue to push the development of flexibility

[3] Reposit's GRIDCREDITS® scheme (2018) https://repositpower.com/gridcredits/
[4] Ovo launches suite of electricity flex products with battery, vehicle-to-grid and heat control options, (19 April 2018) https://www.newpower.info/2018/04/ovo-launches-suite-of-electricity-flex-products-with-battery-vehicle-to-grid-and-heat-control-options/

markets as a solution to network constraints that sees consumers as the solution, not as threat that needs to be controlled.

Q 6 Do you agree that the interim solution should be optional, even in emergency situations, i.e. that the customer should give consent to its use?

Yes we agree that the interim solution should be optional for EV owners for several reasons. Forced installations could erode consumers' trust in their DNO to provide reliable electricity supply, and in EVs as a viable form of transport. DNOs will need to get access to and make a permanent installation on consumers' private property which the consumer should consent to.

More broadly though, the image of an empowered domestic consumer who makes informed choices is one that is being repeatedly painted by industry and regulators in different sections. But it is unlikely that EV sellers are informing their prospective customers about the impact they could be having on their local electricity network, and that they may need to have their charging levels controlled. It is therefore important that, at least when it comes to EV charge control installations, EV owners are given all necessary information and choice. Even though the possibility of managed charging to affect them negatively is slim, consumers should be given the chance to assess this risk themselves.

Q7 Do you believe there should be any additional safeguards for customers, other than those cited in section 2.2? Do you have any comments on the governance arrangements outlined?

Treatment of customers in vulnerable circumstances

The consultation is silent on additional safeguards for domestic electricity consumers in vulnerable circumstances. We believe that DNOs need to give more thought to the needs of vulnerable individuals that live in a household that solely relies on an EV, i.e. that has no petrol or diesel car. Vulnerability for domestic energy consumers in case of a power or gas supply interruption is well explored since the obligation on network companies to have a Priority Services Register. But it is less clear how the definition of vulnerability[5] changes once a household relies on

[5] Bearing in mind that vulnerability can be a fluid state that affects people at different times in their lives or it can be long term. Citizens Advice Bureau (2014) "Tackling consumer vulnerability: regulators' powers, actions and strategies" https://www.citizensadvice.org.uk/Global/Migrated_Documents/corporate/tackling-consumer-vulnerability.pdf

electricity for its mobility. Suddenly vulnerability could include having poor mobility that prevents a person from taking public transport, or having a critical health condition whilst living in an area with little public transport or living far away from a hospital. This area needs further thought both to understand vulnerability as well as explore what priority services DNOs should offer to such vulnerable customers in case of a power cut, for example taxi vouchers or a replacement vehicle during a prolonged blackout.

In terms of the managed EV charging solution, we would argue that households that rely solely on an EV and have a person in vulnerable circumstances living with them should have the ability to influence every single managed charging event - not just for the installation of the EV charge controller. This would ensure that they always have necessary charge levels in their car in case of emergencies. Even if the managed charging events are very limited in occurence and length, households with vulnerable customers need the peace of mind that their vehicle has enough charge in case of emergency.

This could take the simple form of households having the ability to override the managed charging instruction (i.e. an opt-out regime). However, a more sophisticated communication solution is preferable such as giving households the ability to specify their preferences for when and how they would like their vehicle to be charged. Such interactive solutions are being trialled[6] and are often described by industry members as the target state. We would encourage DNOs to roll them out to households with vulnerable members first.

Further requirements related to information provision

An EV purchase is a window of opportunity that closes quickly[7] but that should be used to educate and inform EV owners. This cannot be done by DNOs alone, especially since they are not always made aware of EV purchases on their network. But the installation of an EV charge controller is an opportunity that DNOs could use to deliver important messages and information.

[6] Electric Nation (2018) http://www.electricnation.org.uk/about/the-project/
[7] Nicolson, M., Huebner, G., Shipwirth, D., Elam, S. (2017) "Tailored emails prompt electric vehicle owners to engage with tariff switching information", *Nature Energy*, Vol. 2, article number 17073 https://www.nature.com/articles/nenergy201773.epdf?author_access_token=FiJPZZ6NvLP_CoHkzZd8YNRgN0jAjWel9jnR3ZoTv0NN8CZPaF5rE9pl9YEjOATN5kFmZ5JcMrKyCE-DN5DGhwUMhSwQan0D2WcRf21zAKf3T3ELOdjWwIdLbARm5khqPVcN1eKFloVIXQSxDRn9yw==

Customers should be given sufficient information, verbally and in writing, relating to the proposed installation of an EV charge controller on their property. The research done by EA Technology on a customer messaging strategy[8] gives some insight into what this should contain. In addition we would like to see DNOs providing information about any data privacy implications the interim solution has (even if there are none). Research done by us and Citizens Advice Scotland[9] shows that energy consumers like to have control over their energy usage data and appreciate transparency about who has access to their data and for what purposes. Secondly, it is essential that EV owners are informed of their rights to reject the EV charge controller, even retrospectively, and how they can get access to advice and redress. As is common practice on supplier and DNO complaints procedures, consumers should be given the contact details of the Energy Ombudsman and the Citizens Advice consumer service website and phone number.

The governance arrangements

We believe the governance arrangements proposed on page 10 of the consultation document need further consideration and justification. Given the findings of the Smart EV project's modelling[10], the proposed limitations for the use of manage charging seem generous. In addition to defining the maximum length and frequency of managed charging events, it could also be explored whether to set a minimum rate of charge that should be available to an EV owner during a managed charging event, e.g. never less than 30%.

We note that the data available for modelling the frequency of managed charging and their possible duration over a year is very limited. Any findings coming out of such modelling should be treated with caution. Theories and assumptions made on the basis of this modelling need to be tested, also in different regions of Great Britain, and further modelling should be conducted as new data becomes available.

Finally, there is an outstanding question around how any limitations and governance arrangements will be policed and enforced. Ofgem as the regulator for networks should be closely involved in setting the governance arrangements and

[8] Smart EV Customer Messaging Strategy (2017) https://www.eatechnology.com/projects/smart-ev/
[9] Fairness and Flexibility: Making personal data work for everyone (2016) Citizens Advice https://www.citizensadvice.org.uk/Global/CitizensAdvice/Consumer%20publications/Fairness%20and%20flexibility%20data%20expectations%20final%20report.pdf
Personal data empowerment: Time for a fairer data deal (2015) Citizens Advice Scotland https://www.citizensadvice.org.uk/Global/Public/Corporate%20content/Publications/Personal%20data%20empowerment%20report.pdf
[10] Smart EV Managed EV charging use case and customer impact report (2017) https://www.eatechnology.com/projects/smart-ev/

developing a system for reporting and enforcement. Any quality assurance processes, guidelines and protections for domestic and SME consumers should be in place before managed EV charging is deployed.

Q8 Do you believe that customers should be compensated for the installation and/or operation of an interim managed charging solution? If so, please comment on how you believe the compensation could be applied, for example, whether the compensation should be a one-off "inconvenience" sum or perhaps more directly related to the amount of charge management applied.

Compensation for affected consumers

Based on the information provided in the consultation document, we do not see a case for consumer compensation at the moment. However, there may be a case for it in the future. Networks should also conduct more customer research to understand to what extent compensation is seen as necessary and what role it plays in increasing acceptability of managed charging.

It is useful to consider what regulation is currently saying about the acceptability of loss of supply and appropriate compensation levels. The Guaranteed Standards of Performance (2015)[11] spell out what minimum service levels electricity consumers can expect from their DNO and what compensation is due if it fails to deliver. The two most relevant Standards relating to the issue of managed charging are summarised in the table below. In summary:

- The Standards give recognition to the fact that there will be circumstances when supply needs to be interrupted to protect or fix the system.
- The number of hours off supply that are deemed to be acceptable before compensation should be paid indicate that the suggested limitations for managed charging (i.e. 2 hours a day; 8 hours a month), would not necessitate compensation.
- Compensation here relates to loss of supply and the associated inability to use any electronic devices. The interim solution only affects one device - an EV - and should ideally not prevent customers from using it.

[11] Statutory Instrument 2015, No. 699, The Electricity (Standards of Performance) Regulations 2015, http://www.legislation.gov.uk/uksi/2015/699/pdfs/uksi_20150699_en.pdf

Standard of Performance	Description	Compensation level
Standard 8: Supply restoration after rota disconnection	A rota disconnection is a "deliberate disconnection of customers' electricity supplies by the relevant electricity distributor for a set duration on a rota basis so as to reduce the demand for electricity to the level of capacity that is available." Customers who are off for **24 hours or longer** are eligible for compensation.	£75 for domestic customers and £150 for non-domestic customers.
Standard 10: Supply restoration: multiple interruptions	"…successive interruptions are caused by or arise during actions taken by any electricity distributor to effect temporary or permanent restoration of the supply to those premises or to other premises affected by the event that caused the interruption of supply to the premises. " Customers who are off supply for **three hours or more, on at least four different occasions in a 12 month period** are eligible for compensation. DNOs are exempt from this standard if they gave customers prior warning.	£75 for domestic and non-domestic customers.

However, these regulations are from 2015, and technology and customer expectations are changing the rules of the game. As DNOs move to performing the role of DSOs, as flexibility markets mature to help fix network constraints, and as monitoring of the lower voltage network improves, Ofgem will have to review what Guaranteed Standards we should expect our networks to deliver and what compensation is appropriate.

Disincentives and penalties for electricity networks

It may be necessary and appropriate to put in place financial disincentives for using managed EV charging to prevent it from being used ahead of other options. Network companies have the responsibility to run a reliable network that operates as far as possible without blackouts and with sufficient headroom. Managed EV charging, outside of flexibility markets, should not become a permanent feature in a network's management toolkit. A disincentive for every minute DNOs are managing customers' EV chargers would serve to encourage them to continuously look for smarter, more efficient solutions. It would also serve to even out the unfairness that EV owners could perceive when their charge is being managed whilst their DNO does not pay them compensation.

In addition, there should be penalties for DNOs if they exceed the maximum allowed time for the utilisation of managed charging. We would expect Ofgem to explore which performance targets, disincentives and penalties are appropriate, and consider how they fit within the RIIO-1 and RIIO-2 framework.

Q10 Would you like to offer any general feedback on the interim solution?

The interim solution and long-term option presumably will only be applied to chargers on domestic consumers' private property. This leaves out an increasing number of public charging stations which people without off-street parking will rely on heavily. We would like to understand how DNOs plan to manage peak demand from those charge points.

The Possible Longer-term Solution

Q10 Do you believe that the energy industry should make steps to implement the smart meter solution in the best long-term interest of energy consumers?

Yes, we agree that the energy industry should explore a smart meter solution for the long-term. This solution could offer simplicity and cost-effectiveness, given the existing infrastructure and governance arrangements in place.

The consultation document makes reference to the raised modification to the Smart Energy Code (SEC). We would expect some detailed information on cost and technical feasibility to emerge from this modification process. This information should feed into ongoing assessments of whether such a solution is most appropriate for energy consumers.

As with the interim solution, the use of the smart meter-enabled solution needs to be a positive experience for consumers. Otherwise it may give reason for consumers to opt out of having a smart meter, which is a key enabling device to making our energy system smarter and more flexible.

Q11 Do you have any comments of the technical feasibility of the described longer-term solution using smart meter infrastructure?

The proposed SEC modification suggests two options for how to use the smart meter infrastructure. One of the options makes use of the HAN (Home Area Network) Connected Auxiliary Load Control Switches (HCALCS), which are only available with SMETS2 meters.

The other smart meter solution for managing EV chargers will also require the use of the HAN. If these HAN connected smart chargers use the CAD (Consumer Access Device) functionality, industry will need to reflect on the limited ports available with SMETS1 meters, some of which only allow one CAD pairing. This may already be used by the consumer for their in-home display (IHD) or other products and services.

At the end of 2017, over 10 million SMETS1 meters had been installed in homes across the country[12], and we expect there will be many more installed before the SMETS1 end date. Industry should carefully consider how the proliferation of these meters will affect potential solutions.

Since both solutions will require the HAN, industry should also be mindful of any difficulties creating this network. There is work ongoing to create an Alternative Home Area Network (Alt HAN)[13] to address coverage gaps. This work should be followed closely to reflect on any impacts it may have on establishing a long-term solution. There should also be some reflection on what would happen if there is no HAN at a consumer's property.

[12] Smart Meters Quarterly Report to end December 2017 (2018) BEIS https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/694355/2017_Q4_Smart_Meters_Report.pdf

[13]The Alternative Home Area Network Company (2018) https://www.althanco.com/

Q12 It is considered that there could be significant benefits to using smart meter infrastructure (e.g. enhanced security, use of existing communication facilities, robust governance), however, there may be implications around fostering innovation and promoting other market-led alternatives. Do you believe the benefits of using smart meter infrastructure for managing EV charging outweigh any potential drawbacks?

As the consultation alludes to, there are many potential benefits of using the smart meter infrastructure. On principle, we would expect the benefits to outweigh potential drawbacks but this is dependent on how it is implemented. Especially, what impact it will have on costs and the consumer experience.

Industry should investigate this further to make an informed judgement.

Yours sincerely,

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