

SECMP0046 'Allow DNOs to control Electric Vehicle chargers connected to Smart Meter infrastructure'

Working Group Meeting 5

31 January 2019



What is the issue?



Electric Vehicles (EV) ownership increasing across Great Britain

Increasing numbers of domestic EV chargers at domestic premises

Electrical rating of EV chargers is increasing for more rapid charging

Potential to lead to power outages due to fuses blowing or cables supplying homes overheating

What is the solution?



- The Modification Proposal has identified two possible solutions to address this issue, both of which involve electricity DNOs utilising DCC Systems to regulate load and the Working Group identified four others:
 - **Option 2** proposes the use of Home Area Network (HAN) Connected Auxiliary Load Control Switches (HCALCS) to temporarily disconnect EV chargers from supply, or use of HCALCS to provide a binary “signal” to inform a smart charger to reduce the charging;
 - **Option 1** requires the DCC Systems to be used to pass signals to a HAN-Connected Smart Charger which can vary the rate of charging in response to a parameter passed to it. This is the option preferred by the Proposer, however is the less practical of the two;

Options 3 (Supplier sets load limit for whole meter), 4 (Ancillary Services), 5 (Use of Power Width Modulation), and 6 (EV chargers treated as CADs) have been discounted in previous Working Group discussions

Where are we now?



Tools to prevent overload:

- Time of Use Tariffs
- V2G as ancillary services
- Option 3 can already be used (Suppliers control load)
- Option 4 can already be used (Use of Ancillary Services)

These tools should help reduce high energy demand, however in a case where these are not sufficient, further measures may be required.

What is the solution?



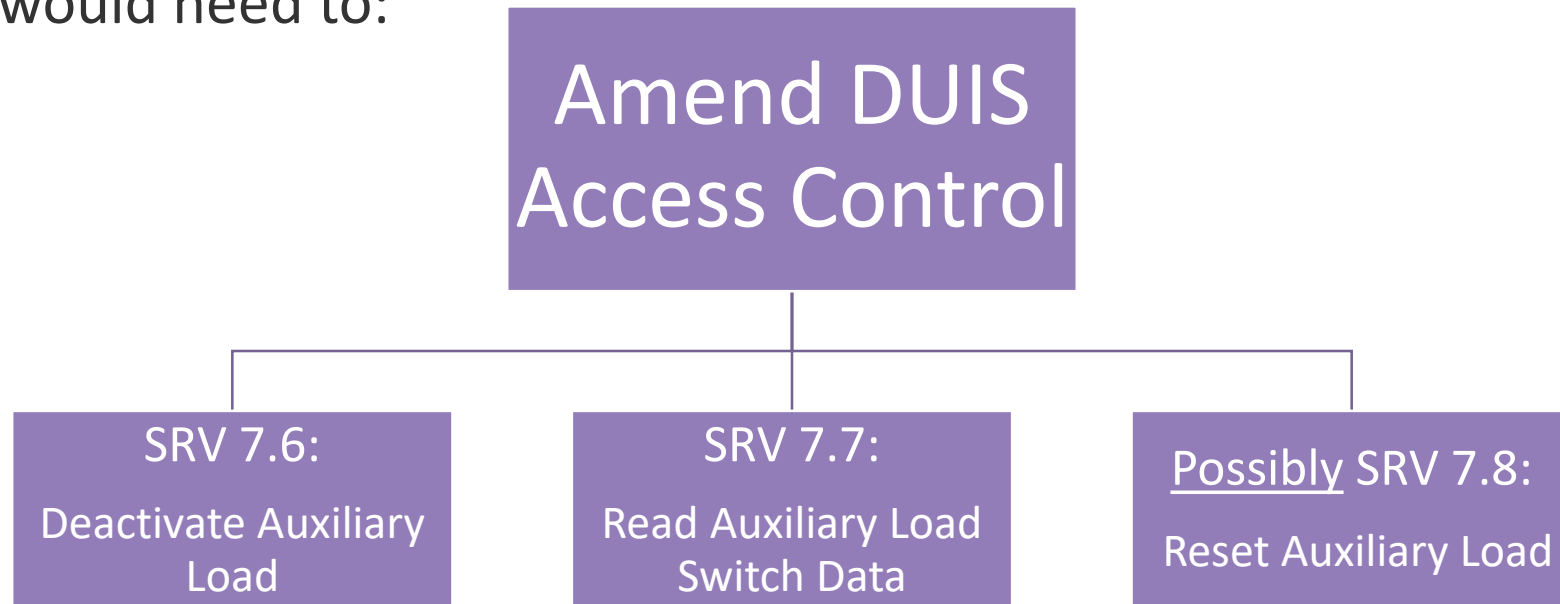
The Modification Refinement Process has narrowed down the solutions to the most practical to implement:

- **Option 2** proposes the use of Home Area Network (HAN) Connected Auxiliary Load Control Switches (HCALCS) to temporarily disconnect EV chargers from supply, or use of HCALCS to provide a binary “signal” to inform a smart charger to reduce the charging.

Option 2

- **Option 2** proposes the use of Home Area Network (HAN) Connected Auxiliary Load Control Switches (HCALCS) to temporarily disconnect [EV chargers] from supply, or use of HCALCS to provide a binary “signal” to inform a smart charger to reduce the charging

For this we would need to:



Considerations and Clarifications- Security



Taken to SSC for the security changes that would be required for updating the Critical SRVs they can send. DNOs User CIO assessment would need to be reviewed for updating these commands.

Also suggested by the SSC is the creation of a new user type, a load controlling user. This may be of benefit for future cases where other uses may request the ability to alter load via HCALCS.

Considerations and Clarifications



- HCALCS is a binary switch, which for the purposes of option 2, this will be set 'High' and 'Low'.

What is
'Low'?

Is this predefined in this modification?

Is this set by the DNO?

Is this an absolute value or a percentage?

What input do parties have on the design of the HCALCS EV charges?

Considerations and Clarifications



- In such an event that HCALCS is used to alter charging rates, this will be for a set period of time.

How long
is this
period?

Is this predefined in this modification?

Is this set by the DNO?

Considerations and Clarifications



- The Boost Button allows a consumer to override the ALCS/HCALCS on connected devices. This is currently only set by the Import Supplier.

Should the DNO be able to alter usage of the Boost Button?

Access to all service requests, if any?

- Reset
- Add
- Remove
- Read

Reporting



Working Group consideration of Reporting from SSEN/ straw man reporting from WG4

Working Group consideration of DCC reporting requirements

Update on the Interim Solution Governance Arrangements.

January 2019



Scottish & Southern
Electricity Networks

Recap

- SSEN consulted on interim solution, use cases and governance as part of Smart EV project;
- Agreeable responses received to proposals;
- Minimal modifications since;
- Value in reviewing now with fresh perspective following various initiatives and plans across industry;
- Drafted specification document for interim solution, will be reviewed by other DNOs QTR 1 2019

Update on the Interim Solution Governance Arrangements.

- At the SEC modification meeting in December 2018 it was generally agreed the governance arrangements relating to the interim solution required clarification.
- This is primarily a discussion between the DNOs and Ofgem.
- The parties met in early January 2019 and this update is provided to inform the SEC Modification parties as to the current status.

Consumer protections and governance

We believe the governance arrangements for the interim solution's use should be covered through transparent parameters and publicly reported KPIs, with a further review once the solution has actually been deployed.

The interim solution will have the following 'activity' parameters of use:

- **Max amount of charge management in 24 hours:** no more than the equivalent of each charger being switched off for 2 hours;
- **Max amount of charge management in 30-days:** no more than the equivalent of each charger being switched off for 8 hours;

Where the solution exceeds these limits we will expediate a market/smart or asset-based solution while utilising mobile generation or energy storage to maintain supply;

- **Review stages:** The DNOs will be required to assess implementations every 30 days to review whether activity warrants reinforcement or a market-led solution being implemented, or leaving in place until the next review stage. At times of high EV uptake we will use the 'activity' parameters to prioritise investment;

Consumer protections and governance

- **Maximum period of operation:** once consistently managing EV demand (i.e. charge management activity every month) the DNO would have a maximum of 6 months of its continuous active use to find a suitable market-led solution or choose to reinforce, with a subsequent 12 month period to then implement the market/smart or reinforcement solution. This ensures the flexibility market and customers can have confidence DNOs will seek longer-term solutions where a persistent network constraint materialises. Where the interim solution is in a supervisory status (i.e. installed but not has not actively managed charging more than once a month) it shall be able to remain in place indefinitely until triggered by overload and the above conditions are met;
- **Thresholds:** The overload protection solution will only activate when an asset has reached its capacity, within the limits of granularity of control.
- **Reporting:** DNOs will publicly report on the use of the interim solution every 6 months, as well as providing customers who consent to its use with updates every 3 months providing detail of how often and long the system has been used on their network and how it has impacted them. We also seek to allow customers to access relevant information regarding the operation of the system via a convenient means such as a web portal.

Customer support and complaints

We will establish a phone and web-based support desk to avoid issues escalating to point of becoming complaints. We anticipate offering two numbers, one will be covered by the DNO, the other will be covered by the service provider – although personnel within both will be able to answer all key questions.

We will provide customers with updates communications every 3 months providing detail of how often and long the system has been used on their network and how it has impacted them. We also seek to allow customers to access relevant information regarding the operation of the system via a convenient means such as a web portal. Data to be reported to customers will include (but not limited to):

- Total managed duration (within week, within day)
- Number of operations (within week, within day)
- Current status (to include: if unit has power; if there is an error / operating normally; if charge management is operational)
- Current opt-in/opt-out status

Compensation

The use of initiatives such as teleswitching and tariffs have been used for many years to successfully manage demand for the purposes of network management and supply, and we will look to continue to use these style arrangements for this initiative.

However, to reward customers for their engagement and for any inconvenience we will provide customers with a £20 payment at the point of consenting to the initiative.

Reporting requirements

Every 6 months we will produce a publicly available report on the use of the system – with reporting on KPIs at a customer, feeder and licence area level.

The following KPIs will be used, reported both per month and cumulative/to date:

- Total number of deployments of overload protection equipment;
- Number of pre-fault deployments, number of post-fault deployments;
- Number of customers on affected networks;
- Number of customers signed up and with interim solution in place;
- Total number of requests for/incidents of overload protection;
- Number of opt-outs;

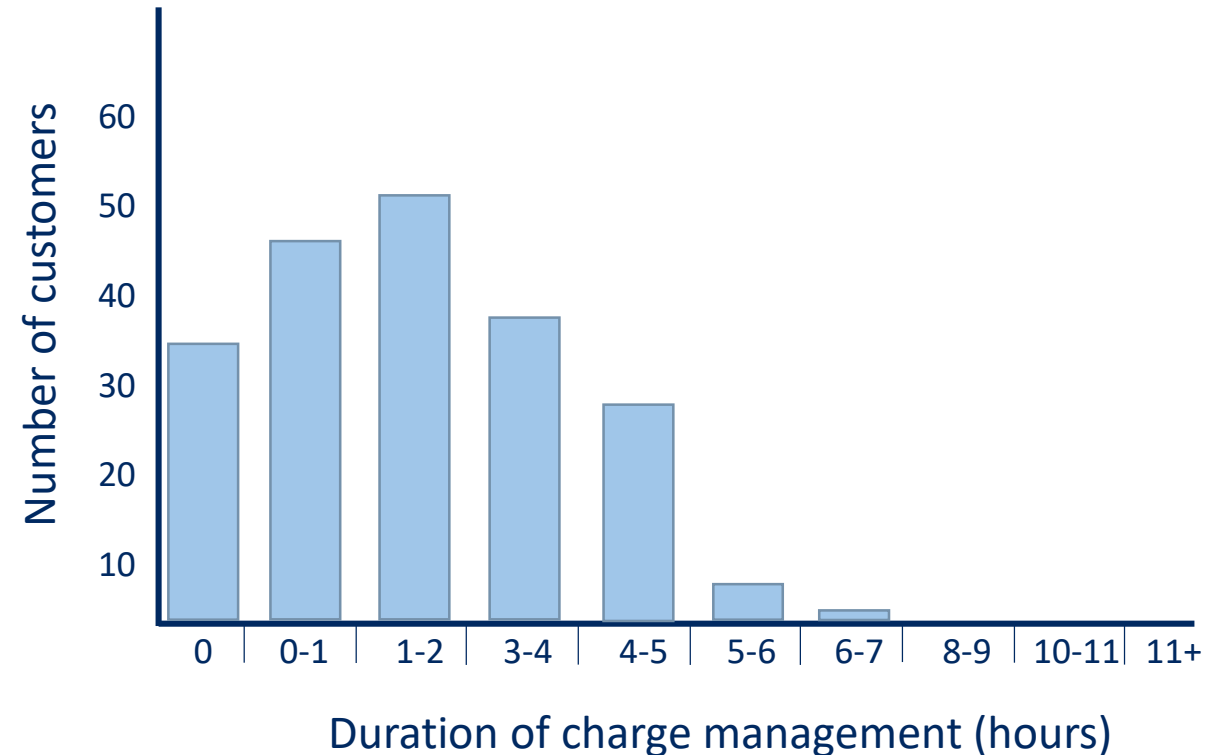
Reporting requirements

- Distribution of duration of overload protection; see mock up
- Length of time deployments have been in place since first overload protection incident, percentage in active status and percentage in supervisory status.

We will provide customers with updates communications every 3 months providing detail of how often and long the system has been used on their network and how it has impacted them.

We will also contact customers who have the interim solution installed every 3 months to carry out a satisfaction survey to assess any impact to customers, and determine if any changes are needed from a customer experience perspective (not just from an engineering perspective), with a forum once a year for users who have been part of the initiative.

Monthly impact distribution
chart – May 2020



Next steps

Once reviewed by other DNOs we will be taking this position on the interim solution to customers who currently drive an EV (to ensure unbiased views and engagement from customers who can input from experience) and seeking their views, before updating and presenting back to Ofgem.

Longer-term solution

The technical capabilities are being investigated through the SEC Modification process.

Thank You



Demand Side
Management



Energy
Storage



Active
Network
Management



Constraint
Managed
Zone



Low Voltage
Strategy



Distribution
System
Operator



Customer
Benefits

Next Steps and Timelines

