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

Working Group Meeting 6

20 March 2019

Gemserv

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.

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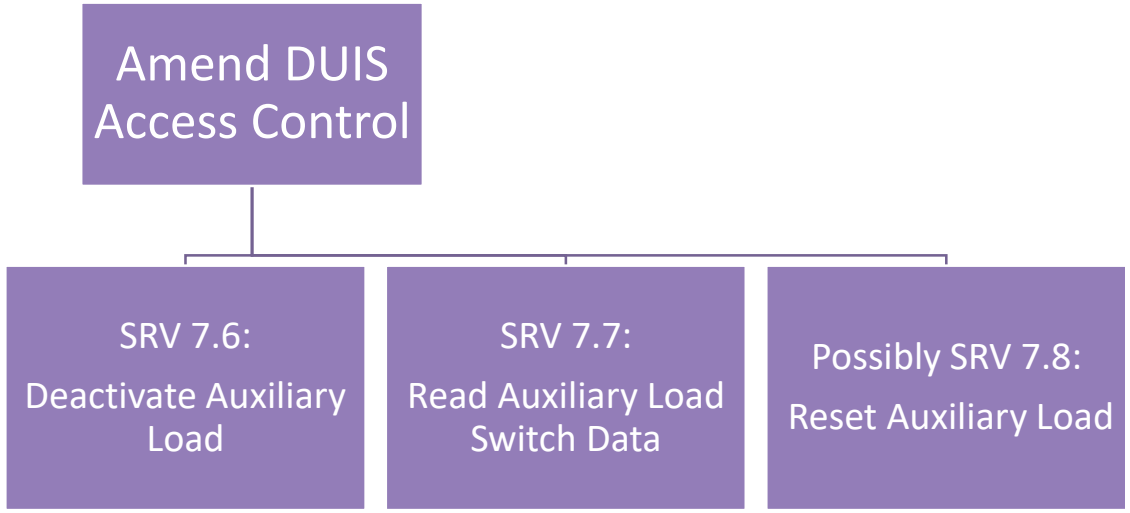

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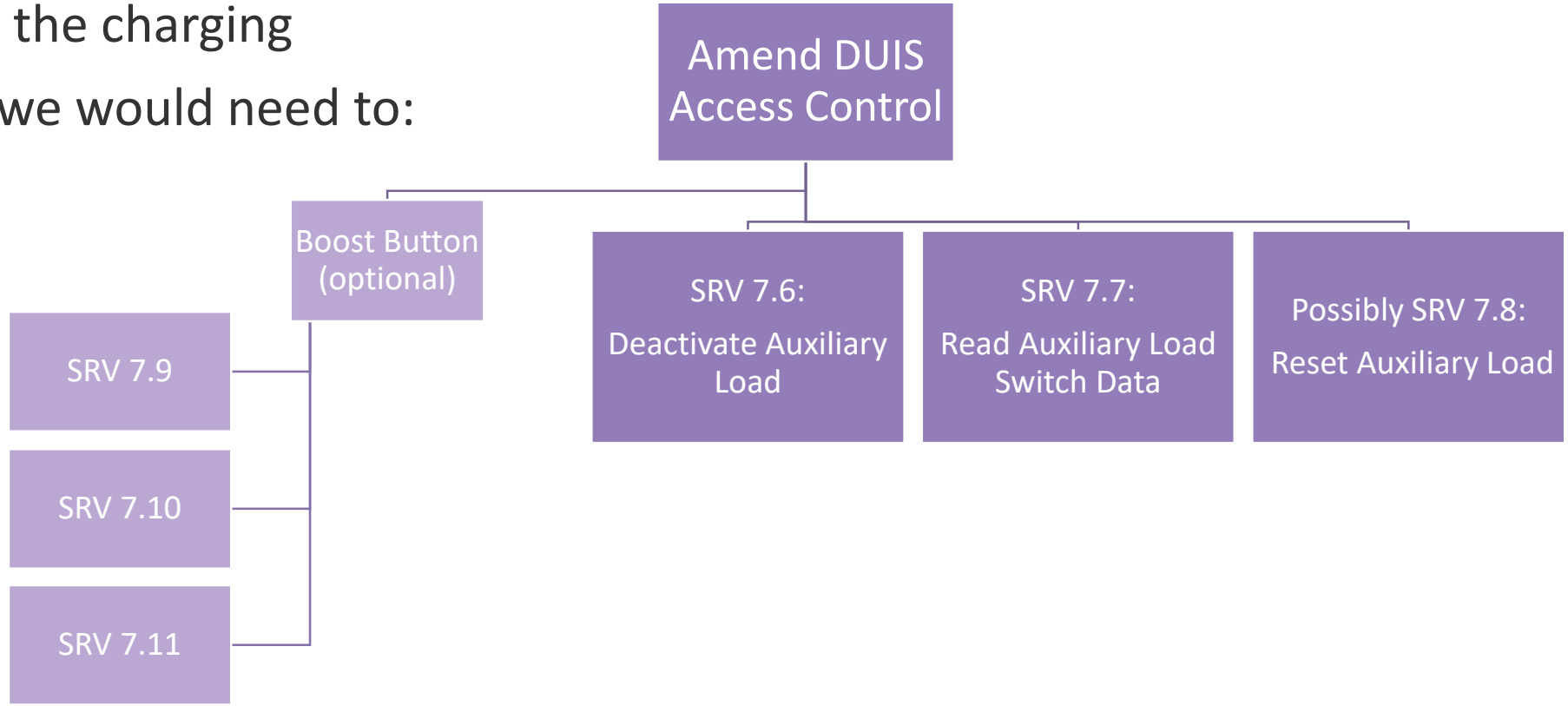


SECMP0019 & SECMP0025

SECMP0019 (ALCS/HCALCS labels)

Standardised non-mandatory list

Allows flexibility in changing list

Should SECMP0046 make list mandatory?

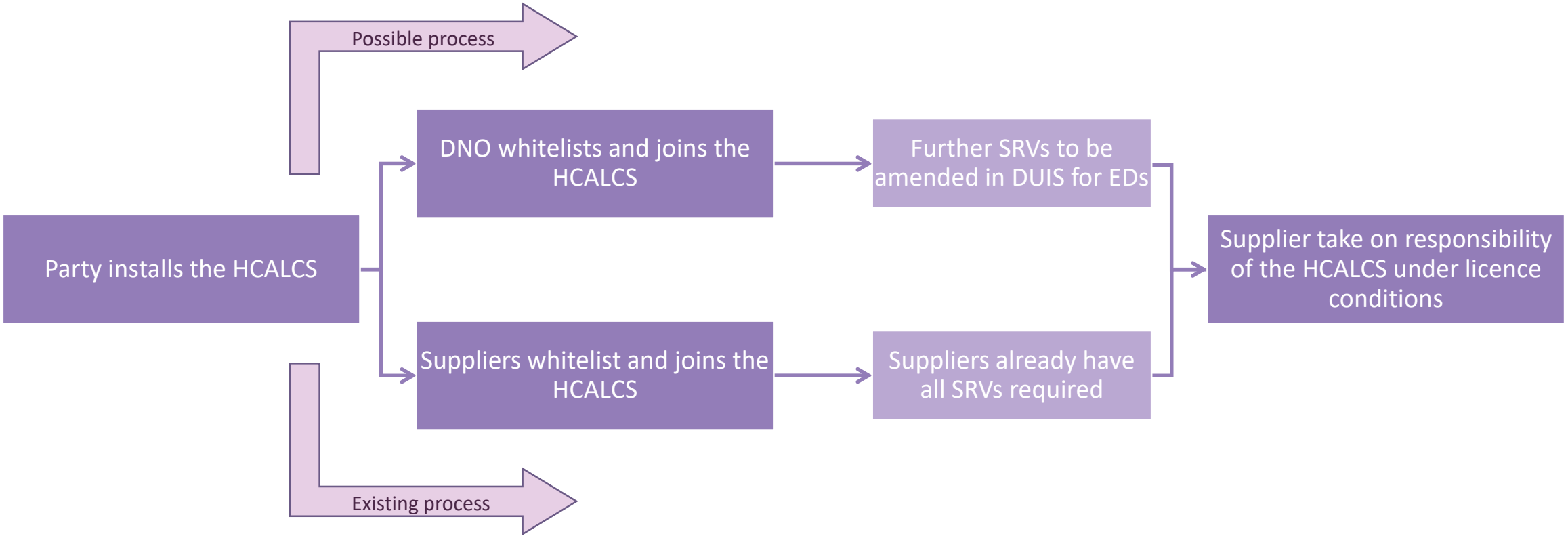
Or should SECMP0046 make labelling general mandatory?

SECMP0025 (SRV 7.7)

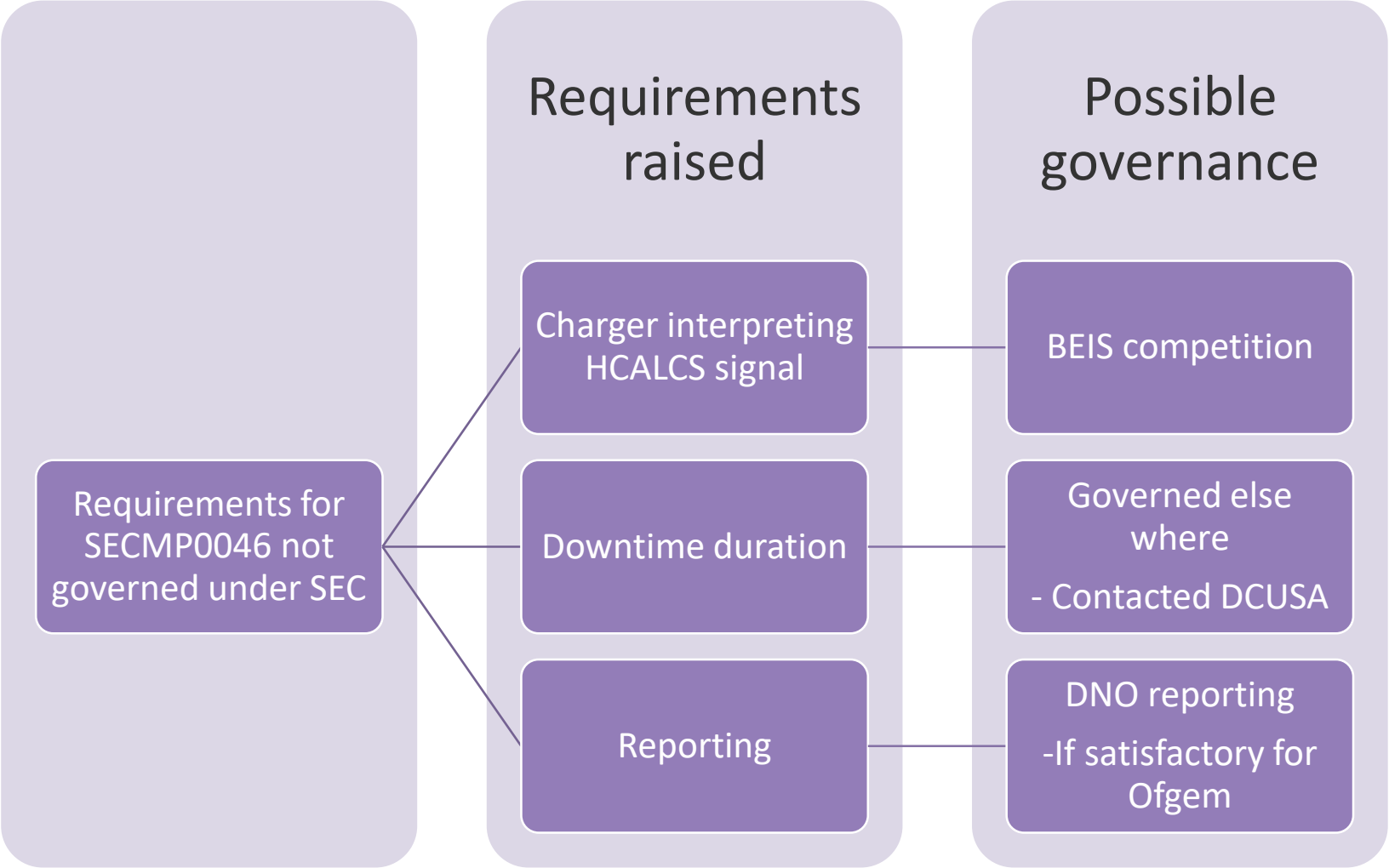
Recommended to be rejected by Change Board

Currently with the Authority for decision

HCALCS installation process



Direction of SECMP0046- enable DNOs to use HCALCS



Consumer consent

DNO to gain consent from consumer

Is consent governed under the SEC?

If so, should it be set out in the SEC in a similar fashion to User Obligation in Section I of the SEC?

Should consent for other ALCS/HCALCS connected devices be sought after i.e. those outlined in SECMP0019?

How is DNO notified of change of property ownership?

Requirements, 1-7

Ref	Requirement Description	System or Service	MoSCoW Rating	Notes
1	Electricity DNOs require the ability to control the load on the “last mile” low voltage circuits (known as feeders) from secondary substations to the individual properties	Whole System	Must	EV Chargers run a much higher load 7kW) compared to other devices.
2	The Electricity DNOs will measure demand and assess if and when load control is required at substations previously identified as “high risk”	Whole System	Must	
3	EV charge points shall have the capability to respond to external signals i.e. be ”smart", by modifying EV charging load within a household	Whole System	Must	
4	The solution shall permit DNOs, through the DCC, to issue a command (or signal) to the Comms Hubs, and hence an EV charger via the HAN	Control	Must	
5	This instruction would be transmitted through the DCC Systems to the communication hubs on the feeders.	Control	Must	
6	A signal would be translated into an instruction to curtail EV charging on the chargers connected to the feeder.	Control	Must	
7	The signal would change the status of the EV Smart Charger to reduce the charge rate	Control	Must	– thereby protecting the feeder and ensuring all customers on the feeder have their electricity supplies maintained.

Requirements, 8-14

8	Only communications from the DNO to the EV Charger are required, there is no requirement for two way communications	Communications	Must, Option 1	using HCALCs without feedback would not allow the DNO to monitor if a load had been reduced (They would not know if the appliance was drawing a load). They would only be able to tell if their actions had been effective by monitoring the local feeder.
9	Two way communications between the DSP and EV Charger shall be permitted to allow for both a control and a measurement device.	Communications	Must, Option 2	
10	Any instructions or commands sent to or from the EV Charger device must be secure and sent via secure network	Security	Must	
11	Any device included in Load Control must be CPA-compliant	Security	Must	
12	Load Control is a critical command, i.e. it has security implications for the network.	Security	Must	
13	Any Load Control activity may raise Anomaly Detection warnings	Security	Must	
14	A Load Control command for a specific MPAN will hold a start time, threshold, and duration	Message	Must	OR end time?

Requirements, 15-18

15	Any DNO actions should be notified to suppliers	Event Reporting	Must	
16	Inform Suppliers of load limiting event & post code / MPANs affected	Event Reporting	Must	
17	Reporting of the load control events to Ofgem is required	Reporting	Must	This will be handled through DNO systems, not this SEC Mod
18	The solution needs to only set the EV Charging at On or Off	Command	Must	Only two settings allows the use of HCALCS there are issues with fully switching chargers off where they may not start charging again – instead it could be switched to zero amps which is not the same as switching off It should be capable of being set to two non-zero loads rather than an 'on/off' choice

Non-Functional Requirements, 1-8

NF1	The solution shall apply to domestic customers only	Customer	Must	
NF2	Customers would be notified about a request to reduce their charge and customers have the option to reject a DNOs request to intervene.	Customer	Must	
NF3	If a Change of Tenancy (CoT) takes place, the DNO must engage with the customer and seek permission to Load Control	Customer	Must	
NF4	The DNO shall inform customers of a load limiting event via chosen communications channel	Customer Reporting	Must	
NF5	The solution should address more than EVs, but other high wattage devices	Device	Could	Future consideration
NF6	Load Control functionality must be available for SMETS2 Comms Hubs	Device	Must	
NF7	Load Control functionality must be available for Dual Band Comms Hubs	Device	Must	
NF8	Instructions shall be transmitted through the SM HAN and participating devices must be interoperable	Device	Must	

Non-Functional Requirements, 9-14

NF9	Control of the EV Charger should be on a real-time basis rather than sending scheduled or batch commands	Response Time	Must	
NF10	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.	Customer and Governance	Must	
NF11	The Maximum amount of charge management in 24 hours: no more than the equivalent of each charger being switched off for 2 hours	Customer and Governance	Must	Where the solution exceeds these limits the DNO will expediate a market/smart or asset-based solution while utilising mobile generation or energy storage to maintain supply
NF12	The maximum amount of charge management in 30-days: no more than the equivalent of each charger being switched off for 8 hours	Customer and Governance	Must	Where the solution exceeds these limits the DNO will expediate a market/smart or asset-based solution while utilising mobile generation or energy storage to maintain supply
NF13	The time of response from issuing a Load Control command to a reduction of charging shall be five (5) minutes or less	Performance	Must	
NF14	In cases where DNO contracts with Ancillary Services Provider (ASP) to manage load locally, any load balancing event is called off against the ASP	DNO Contract with Ancillary Services	Must	

Next Steps and Timelines

Business Requirements to DCC for PA

- Mid April – Mid May 2019

Monthly Working Group

- 5 June 2019

Update Panel

- 14 June 2019