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

24 September 2020 Joint DCUSA Working Group – Meeting Summary

Attendees

Attendee	Organisation
Ali Beard	SECAS (Chair)
Holly Burton	SECAS (Meeting Secretary)
Bradley Baker	SECAS (Lead Analyst)
Abhay Soorya	Gemserv
Joachim Brandt	Gemserv
Ben Cattermole	BEIS
Dennis De Cala	BEIS
Derek Weaving	British Gas
Kit Fitton	Bulb Energy
Alex Travell	BU UK
Rajni Nair	Citizens Advice
David Walsh	DCC
Terry Carr	E.ON
Paul Barnfather	EA Technology
Peter Dennis	Ecotricity
Paul Saker	EDF Energy
Elliot Firth	ElectraLink
George Dawson	ElectraLink
Richard Colwill	ElectraLink
Kevin Spencer	Elaxon
Peter Frampton	Elaxon
Symon Gray	Energy Assets
Joseph Cosier	Energy UK
Donna Townsend	ESP Electricity
Claire Addison	Flexitricity
Elias Hanna	Landis & Gyr
Chris Allanson	Northern Power Grid
David Sykes	Octoenergy
Francesca Barrick	Ofgem

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Tim Ellingham	RWE
Paul Farmer	Shell Energy
Bob Hopkins	SSE
Emslie Law	SSE
Eric Taylor	SLS
Megan Coventry	SSE
Paul Fitzgerald	SSE
Richard Hartshorn	SSE
Rustam Majainah	SSE
Richard Wiles	Trilliant
Evie Trolove	UK Power Networks
Steve Halsey	UK Power Networks
Lisa Waters	Waters Wye Associates
Richard Brady	Western Power
Sven Hoffmann	Western Power

Welcome and introductions

The Smart Energy Code Administrator and Secretariat (SECAS) Chair welcomed attendees to the meeting and reiterated the “Competition Law Guidance”.

LW expressed concerns regarding the request for attendees to sign a ‘confidentiality agreement’ ahead of this joint Working Group. The Chair confirmed that it was actually an agreement which was required to be signed by all Smart Energy Code (SEC) Working Group attendees to agree to abide by the SEC Panel Information Policy. The Chair further confirmed that all the documents associated with this modification are currently WHITE and therefore public.

RC advised in light of previous media coverage around this SEC Modification, Distribution Connection and Use of System Agreement (DCUSA) are reviewing the proposals and are incorporating feedback where necessary.

Statement by the Proposer

The Proposer stated their concern around recent media and social media stories which inaccurately described the discussions around the SECMP0046 Solution. The Proposer has also confirmed they have circulated updates in response to questions previously raised by Ofgem and are considering what additional engagement is required across the modification process to make sure the issue is clearly identified and that the Proposed Solution is a viable option.

Outcomes

The Chair highlighted proposed outputs from today’s joint session include confirming an understanding of why the SEC Proposed Solution was selected, to confirm an understanding of what DCUSA governance is required to support the SEC Proposed Solution and, to agree some minor amendments.

Overview

SECAS recapped on the solutions discussed at previous SEC Working Groups while reiterating that the Proposed Solution for [SECMP0046 'Allow DNOs to control Electric Vehicle chargers connected to Smart Meter infrastructure'](#) should only be used as a last resort when all other available tools fail to prevent Low Voltage (LV) feeders overloading. Tools available to prevent overloading currently include:

- Time Of Use (ToU) tariffs (where Suppliers offer incentives for customers to use electricity at times of low demand);
- Vehicle to Grid (V2G) as Ancillary Services (where electricity can be transferred back onto a network);
- Suppliers setting a load limit for whole meters through Supplier load control (which Suppliers already have the capability to do so); and
- Use of other Ancillary Services such as flexibility provision.

CA suggested that V2G technology should be placed at the bottom of the list as there is still some work on the technical solution before this becomes a viable option. SECAS agreed to re-order the list.

Proposed Solutions

Solution 1: Smart EV charger/Load

The first solution discussed proposed the use of Data Communications Company (DCC) Systems to pass a message from the Distribution Network operator (DNO) to the Home Area Network (HAN)-connected smart charger/load. The charge would then vary the rate of charging/load in response to a parameter passed to it via the DCC. This solution was not progressed as a new Electric Vehicle (EV) charging device would need to be developed and Commercial Products Assurance (CPA) approved which would incur high costs. Due to the costs involved, it was felt that this would prevent innovation of EV chargers/load controllers.

There were no comments on this solution.

Solution 2: HCALCS connected to EV charger/Load

Solution two has been selected for progression by the Proposer as this uses existing smart systems. This will work by using a HAN Connected Auxiliary Load Control Switch (HCALCS). The HCALCS which (are required to be CPA approved) will be used to decrease domestic EV charger/load by allowing the DNO to have permission to send signals when an overload event is detected. ET requested clarification that there was no intent for power to be turned off at a Consumer's property and should be made explicit as part of the solution. DNOs will use the Proposed Solution to curtail EV charging as a last resort in a feeder overloading event.

There were no comments on this solution at this stage.

Solution 3: Supplier Management of Whole-Meter Load

This solution notes that in the case of an overloading event, the DNO would inform the relevant Supplier using a Service Request via the DCC. The Supplier would then send a Service Request (SRV 6.4.1) to curtail load on the Electricity Smart Metering Equipment (ESME). This technical solution was discounted as information being passed through the DCC would take too long. It was pointed out that the discussions in the SEC Working Group did not relate to wider flexibility options. Specifically DNOs contacting Suppliers through a system outside the DCC to provide a flexibility solution was not discussed in detail, however it was believed by the SEC Working Group that the

response time by Suppliers would be too long (from a DNO identifying an imminent feeder failure to a power outage was expected to be around 5 minutes).

The Working Group questioned the 30 second timescale. It was confirmed that 30 seconds refers to one of the three DCC SLA response times (either 30 seconds, 5600 seconds or 24 hours). Any DCC Service Requests would ideally need to be one of these three timescales and in the situation any technical solution would need to be 30 seconds as the others are too long. DS noted the 30 second timescale was important therefore, would be keen to understand the DCC's actual limit. AB replied this was the DCC's technical option where, the DNO would identify the risk then need to identify the MPANs and send a message to the DCC, the DCC would then need to forward the message to the correct Supplier for each of those MPANs and the Supplier would then need to curtail the load via a DCC Service Request. The process was therefore deemed too long and that the timeframe was too short to identify and contact the Supplier based on the DCC's SLAs. However, it hasn't yet been discussed whether the DNO can contact the Supplier directly, via email for example, for flexibility services.

One attendee noted that this solution was discussed at a time prior to any outages on the feeders or sub-stations. Subsequent discussions have noted that this solution would be implemented once a feeder has an outage. LW suggested the SEC modification refers to EVs only whereas, the DCUSA modification references Low Carbon Technologies (LCT). In response BB noted that a discussion was held as part of the SEC Working Group regarding how far the scope should be extended, and that as a result, discussions are being held with the Proposer to change the title of the modification. To confirm, SECMP0046 is not explicit to EV chargers, but is also relevant to other Low Carbon Technologies (LCTs). Another member was keen to seek previous written documentation of the messaging route being considered under option 3 and to also understand why a Supplier solution was written off from a technical perspective. ST informed Working Group members that previous concern was not just around the DCC response time but that of the Supplier response times as, not all Suppliers will have the infrastructure to action the solution in a restricted timeframe.

Solution 4: Electricity Distributor contract with Ancillary Services Provider

A contract would be agreed between Ancillary Service Providers (ASPs) and a DNO; and then the ASP would then manage the load locally to stabilise load on the LV network. This solution was not progressed as part of the SEC Modification as this is something that can take place already. The SEC Working Group re-iterated that it was expected that DNOs will make an attempt to secure flexibility before using the proposed solution.

There were no comments on this solution.

Solution 5: Pulse Width Modulation

Pulse Width Modulation (PWM) would allow the modification of EV charger/load if an overloading event is detected however, in order for this to be connected to a smart metering system, it would require the development of a new Smart Metering Equipment Technical Specifications 2 (SMETS2) Device which would need to be CPA approved. This option was also dismissed due to similarities with the initial proposed solution of a smart EV charger/load controller and the associated high CPA costs.

There were no comments on this solution.

Solution 6: Use of Type 2 Devices

This solution considers the use of Consumer Access Devices (CADs)/Type 2 Devices which would be relatively simple to implement and would use a one-way signal to a domestic EV charger/Load controller. It was however identified that this solution would not be suitable in an overloading event as the Device cannot receive external signals and would only be able to alter load based on predefined parameters.

There were no comments on this solution.

It was noted that the proposed solution had an estimated cost of around £550,000 for Design, build and pre-integration testing.

Auxiliary Proportional Load Controllers (APCs) and Standalone Auxiliary Proportional Load Controllers (SAPCs)

The Working Group noted that BEIS have been running a trial to develop APCs/SAPCs and will be designating this functionality into the SEC as part of the November 2020 SEC Release. These technical specification changes are due to go live on 29 November 2020. ET clarified this was the original design intent of the HCALCS in that, this would replace radio tele-switches. However, the implementation of these Devices allows proportionate control to be delivered innovatively via the technical specifications.

DS questioned if it was the expectation for every LCT in the UK will sit in front of an HCALCS or is it down to the Customer/installer to determine whether one is needed. A Working Group member noted there are challenges as to whether consumer load is connected to HCALCS which was previously discussed at the Working Group.

ST noted that the proposed solution would not work unless there is a mandated requirement to connect EV chargers (and other LCT) via HCALCS. At no point during previous Working Groups has it been established how Suppliers can get to a position where the infrastructure exists to support this as a backstop solution. ET believed that it may exist in future as a Large Supplier is currently installing ESME Devices connected to HCALCS as part of the Smart Meter rollout.

RN noted it would be beneficial to have assumptions based on data from EV charge points and other LCT, such as Heat Pumps, collected to help inform the business case. In addition, the HCALCS installation costs have not been captured in figures and associated costs, these should be updated to make sure the solution is valid and useful to Suppliers. The Proposer noted that the costs of HCALCS were included in their business case which has been circulated as part of the meeting materials.

Summary of Proposed SEC Solution

The Working Group noted the roadmap provided by the Proposer, detailing the process to reach a last resort situation, and requiring the proposed solution.

- The first step is monitoring load on feeders and substations automatically. If load reaches a predetermined level (90%) then the flexibility services tender will be issued.
- If the load begins to increase, the contract can be re-negotiated.
- In the case where an overloading event occurs (hence flexibility has failed), a new provider will either be appointed or customers with EV Charging equipment will be contacted and asked to confirm participation in the proposed solution.
- The proposed solution will be implemented for a maximum of 12 months before the DNO investigates a permanent solution to the situation (reinforcing the Low Voltage infrastructure).

The Chair highlighted several steps are required in advance of reaching the 'last resort' and the proposed solution being deployed.

A Working Group member questioned how the 90% levels were determined as the point at which flexibility should be sought. The Proposer commented that this would be determined by the DNO based on topography and age of the network and other factors. The Proposer further advised that they have undertaken a vast level of modelling and analytical work alongside other DNOs and projections have been provided by third parties to identify where the uptake of EVs is expected on the network. In addition, there appears to be a limited level flexibility at low voltage level.

Comments were received suggesting that 12 months is too long to wait before considering a longer-term solution. The Proposer confirmed that they would anticipate works such as reinforcement to be completed in a shorter timeframe, however if a feeder was in an urban area such as a town or city, 12 months is more realistic in terms of obtaining planning permission and scheduling the works required.

A Working Group member suggested that the longer-term solutions should start to be considered at an earlier stage, for instance when the first power outage occurs. The Proposer was happy to consider this and amend the roadmap to reflect the discussions.

Business Requirements Update

Since receiving the DCC Preliminary Assessment, there was a request to add two additional business requirements.

The first additional requirement (to display the Party requesting the curtailment on the consumers In-home display) has been discarded by the Proposer with DCC input as it is deemed to add significant cost to the modification.

The second additional requirement has more viable associated costs. The Proposer has identified the need for DNOs to be alerted when a Supplier attempts to unjoin necessary Devices connected to the Electricity Smart Metering Equipment (ESME). This Alert is already sent to Suppliers and therefore will need to be duplicated and forwarded to DNOs.

The Working Group considered whether this should be consolidated through the [SECMP0062 'Northbound Application Traffic Management - Alert Storm Protection'](#) solution. This Alert could potentially be sent more than once and cause nuisance Alerts, therefore the ability to consolidate the Alerts being generated from the same Device would be beneficial. SECAS confirmed that the SEC Operations Group are responsible for agreeing which Alerts are consolidated. SECAS will discuss this with the SEC Operations Group during the Refinement Process.

Balancing and Settlement Code (BSC) Update

SECAS provided an update to the Working Group on a previous action to engage with the BSC Code Administrators to identify if it is necessary to raise a modification to address potential Balancing and Settlement implications. BSC have confirmed that at this time there is no need to raise a BSC Modification. They instead, highlighted that a solution will be required in the longer term to address issues regarding flexibility on a wider scale. BSC commented that when used, the SECMP0046 solution will not result in significant imbalance gains or losses for Suppliers.

A Working Group member noted that Suppliers are finding small amounts of imbalance here and there and were concerned that when all added together, they may result in Suppliers being materially out of Balance.

The Chair questioned when the project on wider flexibility issues was due to conclude. The BSC representative reported it will not be concluded until 2025.

BSC reiterated that anyone can raise a BSC Modification if they have identified an issue and the BSC will then progress the modification under the BSC Change process.

DCUSA discussions

Last Resort definition

At the last DCUSA led Working Group meeting, documentation from the Energy Networks Association (ENA) was circulated surrounding flexibility within the market. Page 13 provides information on market boundaries, market led solutions and market control solutions. This document was cited to provide a definition of 'last resort'. The Proposer agreed to provide a definition of 'last resort' as it was agreed that the one stated in the ENA document was too severe.

Liabilities

CA questioned where the responsibility lies if the proposed solution is used and this causes damage to the consumers equipment.

The Clean Energy Package

The Working Group noted content in relation to the Clean Energy Package, specifically noting a new License condition (31E) on the procurement and Use of Distribution Flexibility Services. This condition will require Suppliers to procure and use distribution flexibility services where it is economic and efficient to do so and in accordance with objective, transparent and market-based procedures. The Working Group suggested there needs to be a review of what is included in the Clean Energy Package to inform this DCUSA change.

Business Case and Cost Benefit Analysis

The Working Group queried the cost benefit analysis and business case which factored how many customer minutes lost (CML) and the comparison of the costs if there was a last resort solution in place. It was suggested that the 7% failure rate presented as part of the business case has been based upon voltage information as opposed to flexibility, the only project that a figure could be taken from was the Western Power Distribution project where flexibility failed at 7%. A Working Group member confirmed a previous question was raised around the availability of domestic flexibility and that, they have not procured domestic flexibility services to manage these situations.

ET noted UK Power Networks are trying to understand the level of flexibility that domestic Consumers can offer through smart metering mechanisms. This will in turn help Suppliers understand the scale of their portfolio in order to reliably provide a response. From that, UK Power Networks believed it would be able to understand the override rate and the percentage of customers opting out of responding.

Discussion was held around emergency provision of flexibility with Suppliers. It is intended that a workshop takes place, held by JC to look at these flexibility solutions.

Next steps

The following actions were recorded from the meeting:

- SECAS agreed to reorder the options for flexibility to make V2G lower in the order
- SECAS to provide previous Working Group minutes in order to provide clarity on ideas for how solution three was discounted and what the technical DCC constraints are
- SECAS to re-draft and expand the roadmap diagram ahead of the next joint working group session to ensure boxes are expanded to specifically highlight the governance arrangements
- SECAS and DCUSA to gather information on the Business Case and Cost Benefit Analysis
- Working Group attendees to register interest for a workshop being led by JC emergency provisions with contract flexibility.

Next Meeting Date:

Wednesday 14 October 2020