Department for Business, Energy & Industrial Strategy

Department for Business, Energy & Industrial Strategy
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London SW1H 0ET
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28 October 2019

The Authority (Ofgem), the SEC Panel,
SEC Parties, and other interested parties

Dear Colleague,

Response to Consultation on Smart Metering System Proportional Load Control

This document constitutes a response to our consultation of 2 August 2019 on the proposal to add proportional load control functionality to the Smart Metering System. The consultation included proposed drafting changes to the SMETS2 technical specification to deliver this outcome.

The proposal was for a small and incremental change to build on existing Auxiliary Load Control Switch (ALCS) and Home Area Network (HAN) Connected Auxiliary Load Control Switch (HCALCS) functionality, to enable more precision and flexibility in the control of load than is currently possible.

This enhanced functionality was intended for use in effective management of significant loads such as electric heating systems and the smart charging of batteries and electric vehicles. The proposal was cognisant that smart meters provide a key platform for a smart and flexible energy system, which has potential cumulative benefits of up to £40 billion by 2050. It also recognised the smart metering system has been designed to provide a secure and interoperable means for consumers to manage demand in an automated manner.

The proposal was broadly supported by respondents. A summary of consultation responses and our response to the consultation can be found at Annexes A and B of this document respectively. As a next step, we have issued a further consultation today[1] on changes to the Great Britain Companion Specification (GBCS) and the Communication Hub Technical Specifications (CHTS) to implement the proportional load control functionality set out in the SMETS2 technical specification previously consulted on. We have also asked DCC to complete a full impact assessment during this consultation period.

Yours faithfully,

Duncan Stone

Deputy Director and Head of Delivery,

Smart Metering Implementation Programme

[1] https://smartenergycodecompany.co.uk/latest-news/beis-response-to-consultation-on-proportional-load-control-and-associated-smets-drafting-new-consultation-on-gbcs-and-chts-drafting/

Annexes:

Annex A – Summary of Consultation Responses

Annex B – Response to Consultation

Annex A – Summary of Consultation Responses

The consultation closed on 20 September 2019 and we received a total of 24 written responses from the following organisations:

Category	*Respondents*	
Energy suppliers (6)	Centrica EDF Energy E.On	NPower Scottish Power SSE
Manufacturers (5)	Chameleon Technology EDMI Landis+Gyr	SLS Utiligroup
Associations (5)	BEAMA Citizens Advice ENA	Energy UK Smart Energy GB
DNOs (4)	Northern Powergrid SSE Networks	UK Power Networks Western Power Distribution
Others (3)	DCC Gemserv	National Grid
MAPs (1)	Calvin Capital	

The following questions were posed in the consultation:

Section 3. Proposed SMETS2 changes	
Q3.1	Do you agree that this proposal adds value over existing smart metering load control functionality? Please provide supporting rationale including, if you disagree, explanation of how the use cases in the annex could be met with existing functionality or are not relevant.
Q3.2	Do you agree with our intention to enable a broad range of devices e.g. both ones that can control flow of power and ones that send a signal to set output power at different levels? If you disagree please explain why, and what your preferred way of delivering proportional load control is.
Q3.3	Do you agree that the maximum output should be configured as a percentage rather than another unit such as a kW value? Please provide supporting rationale for any alternative suggestions.
Q3.4	Do you agree that no further functionality is required to allow smart metering to control and support provision of frequency response services? If not, please suggest what additional functionality you think would be required and provide supporting rationale for its inclusion in your response.
Q3.5	Do you agree the inclusion of the override functionality is a prudent future proofing measure? Please set out your rationale.
Section 4. Detail on changes to the technical specifications	
Q4.1	Are there other SMETS changes that could further maximise implementation potential of APC functionality i.e. provide greater flexibility to industry in manufacturing, installing and operating devices?

Q4.2	Do you agree that having two forms of APC (meter integrated, and HAN connected) allows valuable flexibility and is worthwhile given no additional system cost?
Q4.3	Do you agree with the proposed approach to maintain the new SMETS2 alongside the existing SMETS2 versions?
Q4.4	Do you agree that no further changes to the specifications should be implemented to deal with change of supply events, meaning that suppliers can decide how to handle APC functionality on churn? Please provide your rationale.
Q4.5	Do you agree that proposed drafting delivers the intended outcome? Do you have suggestions on how SMETS2 changes could be drafted to more effectively deliver this?
Q4.6	Are there other requirements or functionality related to load control that should be added at this stage? Please provide supporting rationale for any additional suggestions.

Overview of responses

1. There was broad support for the proposal from the respondents, in particular that it will support consumer uptake of Electric Vehicles (EVs) and contribute to grid stability in a secure and interoperable way. Most of the proposals in terms of technical drafting received overwhelmingly positive responses.
2. A large majority of respondents (83%) agreed that the proposed changes add value over existing smart metering load control functionality. There was also strong support for:
    - Enabling both devices that control the flow of power and ones that send a signal to set output power at different levels (75%);
    - Future proofing to include override functionality (71%);
    - Having both a meter integrated and a Home Area Network (HAN) connected form of Auxiliary Proportional Controller (APC) (79%);
    - Not making any additional changes to the specifications to deal with Change of Supplier (CoS) (67%).
3. The proposal that the maximum output should be configured solely as a percentage received less support (42%) and was challenged by some respondents (21%); the rest neither supported nor challenged this proposal. A majority (58%) agreed that the new Smart Metering Equipment Technical Specifications 2 (SMETS2) should be maintained alongside the existing SMETS2 versions. 58% of respondents also agreed that no further functionality is required to allow smart metering to provide frequency response services. A number of suggestions were made which were considered necessary by respondents in order for the proposed changes to deliver the intended outcome. As a result, only 42% of respondents agreed that the drafting does deliver the expected result (and 8% disagreed; the rest neither agreed nor disagreed). These comments were related to the need to add functionality rather than clarity of the drafting.
4. There was also a question raised by 7 respondents on the business case for this proposal, as well as other aspects including:
    - Interdependencies with smart meter load control demonstration projects and the EV smart charging consultation;
    - The Data & Communications Company's (DCC) capacity to deliver the changes given other priorities;
    - Applicability to SMETS1 devices;
    - How costs will be shared across DCC Users.

Overview of Government response

5. After reviewing responses to this consultation, Government concludes that it should proceed with the implementation of proportional load control functionality. This functionality is justified by engagement with industry which has revealed demand for it in the context of large loads, and by the ability of the smart metering system to deliver both interoperability and cyber security. In addition, considering the use cases we have provided and the absence of any evidence to question their relevance, it is our view that the proposals add value to the existing smart metering load control functionality. Given the evolving shape of likely DCC releases in 2020, we are now targeting the November 2020 release.
6. We would like to emphasize that where the proposed Standalone Auxiliary Proportional Controller (SAPC) device needs to be installed alongside an existing SMETS1 system, it is possible to achieve this without replacing the SMETS1 meter, through installation of an SAPC with a DCC Communications Hub (CH).
7. We do not propose to make changes to the charging methodology as part of this proposal.
8. We will maintain the new SMETS2 alongside the existing SMETS2 versions to ensure the optional nature of this new proportional load control functionality at this stage.
9. We consider that the industry should decide what is the best implementation form for the proposed devices. We will therefore provide flexibility by enabling both devices that can control the flow of power and ones that send a request signal to set output power at different levels. We will also specify an output configuration based on a percentage, but which could be interpreted differently in various situations in a way that best suits the application. Furthermore, we are allowing scope for implementation of two forms of APC, a meter integrated APC and a HAN connected one.
10. It is our view that no additional functionality is required to allow smart metering to support the provision of frequency response services, nor to ensure continuity of load control services on Change of Supplier (CoS). This is based on the potential use of consumer access devices to allow more frequent power monitoring – required for frequency response services – than currently permitted by smart metering equipment. For CoS, it seems apparent that any incoming supplier who wishes to provide load control could do so as long as they support the relevant new DCC service requests associated with proportional load control.
11. We conclude that the override functionality should be implemented as a future proofing measure but remain dormant. We note that appropriate governance requirements would need to be in place and further DCC changes would need to be made before the override functionality could be enabled.

Annex B – Response to Consultation

SECTION 3. PROPOSED SMETS2 CHANGES

Q3.1	Do you agree that this proposal adds value over existing smart metering load control functionality? Please provide supporting rationale including, if you disagree, explanation of how the use cases in the annex could be met with existing functionality or are not relevant.

Summary of responses

12. A significant majority (83%) agreed that the proposed changes add value over existing smart metering load control functionality. A small number expressed reservations on whether the proposed functionality adds value or potential risks it posed.

Reservations on the functionality itself

13. A concern mentioned in some responses was that the proposed functionality may duplicate existing solutions for proportional load control, and that implications for coexistence with other load control mechanisms should be considered.
14. A respondent recommended extending the definition of Auxiliary Load Control Switch (ALCS) and HAN Connected Auxiliary Load Control Switch (HCALCS) to include APC functionality rather than introducing new device types, to ensure that ALCS/HCALCS devices already deployed may be used to perform proportional load control.
15. One respondent was unable to confirm the added value of the proposal without having sight of the associated Great Britain Companion Specification (GBCS) and DCC User Interface Specification (DUIS) changes.

Government response

16. The proposed changes to implement proportional load control do not in themselves rule out use of other solutions. Respondents should however be aware of the EV smart charging call for evidence[2] which explains that the Government's current lead option for EV smart charging is to use the smart metering system.
17. ALCS/HCALCS which are already installed will not be able to perform proportional load control as this would require a hardware upgrade. The proposed SMETS now defines Auxiliary Controllers of which there are three types: ALCS, HCALCS and APC.
18. This consultation sought to collect views from stakeholders on proposed SMETS changes only. Government is now consulting on associated GBCS and DUIS changes alongside this consultation response.

Reservations related to potential risks

19. A reservation concerned consumer risks and requested that protections are in place to ensure that the proposed functionality may not be used to restrict a consumer's standard electricity supply.

[2] https://www.gov.uk/government/consultations/electric-vehicle-smart-charging

20. Another risk raised was that additional traffic due to the increased flow of load control messages may exceed the current DCC infrastructure's capacity.

Government response

21. The proposed devices are intended to manage particular loads rather than the whole property and could only be wired to the whole property with consumers' consent, which we consider unlikely. There is a precedent for this being possible with an ALCS switch, and this has never happened. Also, the 'Boost' functionality in SMETS could be used by a consumer to override any existing schedules.
22. The volume of messages will be dependent upon the usage model, and, with published known business cases, it is not expected that usage will be significantly different from today as the majority of actions will be via the use of remotely configurable calendar functionality. Also, any increase in traffic is likely to be gradual, and there are mechanisms in place to increase DCC's capacity if this looks like it might be required.

BEIS' decision

23. Based on our analysis, the use cases we have provided, and the absence of any evidence submitted which calls these into question, we conclude that the proposals do add value to the existing smart metering load control functionality.

Q3.2	Do you agree with our intention to enable a broad range of devices e.g. both ones that can control flow of power and ones that send a signal to set output power at different levels? If you disagree please explain why, and what your preferred way of delivering proportional load control is.

Summary of responses

24. There was broad agreement (75%) with our intention to enable both devices that can control the flow of power, and ones that send a request signal to set output power at different levels. There were also a number of requests that more clarity is given on ways to confirm a load control command has been implemented, as well as a few responses opposed to the implementation of devices controlling the flow of power.

Information back to DCC User and confirmation of action of load control commands

25. Some respondents suggested that the APC should have the capability of transmitting information from the load-controlled device back to the DCC User sending the load control command. This is so that the DCC User sending the load control request can confirm that the load has been altered by the specified amount.
26. Other respondents requested more clarity on the proposed device's behaviour in the situation where the load-controlled device would fail to respond appropriately to a load control signal.

Government response

27. The potential to transmit information back to the DCC User already exists both within and outside the smart metering system:
    - Confirmation that a command has been received by the APC is included in the proposed drafting – which offers a basic level of assurance;

- Alerts can be used to provide the DCC User with bespoke information (without the need to specify in the specifications), for example “request actioned” or “request failed – load not connected” or “request failed – consumer override”. Those procuring and designing APC devices will be able to define these alerts via a GBCS defined functionality commonly known as a ‘data wrapper’;
- If metered verification of load management is required e.g. for audit purposes this is possible by taking an ad hoc reading of real time power consumption from a dedicated measuring element, via the DCC before and after the load control command has been sent;
- Alternatively, real time consumption data from a dedicated measuring element is available over the HAN at intervals of better than 10 seconds via a consumer access device. These may interface to communications systems outside the smart metering system to send consumption data e.g. via the web to the party controlling the load;
- There is potential to include further functionality e.g. metering and communications outside the smart metering system if this is required.

28. The required resulting behaviour of the load-controlled device should be left to the industry and innovation to decide. The load control command would only be a request, with the effect of that request being agreed between the load controller and consumer.

<u>Responses opposed to devices solely controlling the flow of power</u>

29. Some respondents were opposed to drafting the specification in a way which allows potential for devices which control the flow of power. Reasons given included:
    - The most common method for power flow limitation is based on resistive load applications which generate heat loss and waste energy, having adverse effects on the system's energy efficiency;
    - Power flow limiting may be detrimental to the load receiving the limited power, for instance batteries;
    - Power flow limiting solutions remain very costly and are limited in scope of installation.

Government response

30. We consider that the reasons given above constitute commercial questions, and we consider it appropriate to leave it to the industry to decide the best implementation form for proportional load control functionality.

<u>Other individual comments and BEIS’ responses</u>

31. One respondent suggested inclusion of a broadcast mechanism for load control commands to allow large numbers of devices to be controlled with a single message. A broadcast mechanism is not being considered in the current scope of the solution, as load control messages need to be unicast to mitigate security risks. This was considered and determined in the original smart metering system design.
32. Another respondent requested a clarification on whether both capping and setting the load value will be enabled, and whether 'Limit APC [n] level' and 'Set APC [n] level' commands correspond to these two different types of command. We note that the two commands referenced above are both for setting the maximum value that the load can draw. The ‘Set APC level’ command is for supplier usage only,

while the 'Limit APC level' command is for Distribution Network Operator (DNO) usage only, but further DCC system changes will be required for DNOs to be able to use it.

33. It was also suggested that the specifications are made flexible enough to allow the load control signal to be sent through both wired and wireless means from the APC/SAPC to the load-controlled device, to future proof APC functionality. We have allowed for both, and we leave it to the industry to decide whether the load control signal should be sent to the load through wired or wireless means or the SAPC functionality is implemented as part of the load-controlled device.
34. Finally, it was suggested that the standards for the proposed APC and SAPC should align with the new Energy Smart Appliance (ESA) Publicly Available Standard (PAS) which are sponsored by the Department for Business, Energy & Industrial Strategy (BEIS) and the Office for Low Emission Vehicles (OLEV), and are being developed by the British Standards Institution (BSI). We agree that the standards for the proposed devices should align with the PAS standards. There is representation of smart metering interests, from both Government and industry, in the industry led PAS development process to ensure it is developed in a way which allows scope for compatibility with the smart metering system. When developing the standards for the APC and SAPC, we will engage with BSI to determine the technical requirements necessary to achieve alignment with the PAS standards. We believe that alignment can be achieved by specifying the APC and SAPC so that they can provide information to the appliance which can then be interpreted in an application specific manner. The ESA Programme and PAS development started in March 2019 and the two PAS standards are due to be published in June 2020. It is also worth mentioning that in the EV smart charging consultation, we propose that smart charge points will be required to comply with BSI standards before they can be installed.

BEIS' decision

35. BEIS noted that a few respondents were opposed to the implementation of devices controlling the flow of power. Nevertheless, we consider that the industry should decide what is the best implementation form. We will therefore provide flexibility by enabling both devices that can control the flow of power and ones that send a request signal to set output power at different levels.

Q3.3	Do you agree that the maximum output should be configured as a percentage rather than another unit such as a kW value? Please provide supporting rationale for any alternative suggestions.

Summary of responses

36. The proposal that the maximum output should be configured as a percentage received less support than for previous questions (although there were twice the number of responses in support for it - 42% - than opposed to it - 21%; the rest being neither in support for nor opposed to it), and was challenged by some respondents. A large number of respondents suggested that additional requirements are necessary for setting an output based on percentage, others preferred output configurations based on power units (e.g. in kW), while some

respondents were in favour of a more flexible system where the output could be configured either as a percentage or in power units e.g. kW.

Mandatory description labels

37. A number of respondents suggested that description labels detailing the load capacity should be prescribed and made mandatory, as without them suppliers and in particular gaining suppliers do not have any way to evaluate the impact of a load control command configured as a percentage.
38. Other respondents suggested that there should be a requirement that description labels, where they exist, can be read remotely by those sending load control commands.

Government response

39. Although we understand the importance of the availability of detailed information about the load, our view is that there are commercial incentives to use the description labels and industry is better placed in the first instance to collectively decide how to use them. In the event where a description label has not been set, there are other ways to obtain relevant information, e.g. obtaining device details through DCC and verifying against other sources. There will be around 10 months between the Government decision to add the functionality and the DCC systems going live, in which time industry could initiate a process (e.g. using existing SEC governance to agree a guidance note) to determine a taxonomy of label descriptions. However, we will continue to engage with industry and keep the need for mandating label use under review.
40. The SMETS already allow description labels, where they exist, to be read remotely by relevant users.

Output configured in power units

41. A few responses were opposed to having an output configured as a percentage and suggested that this should be configured in power units instead, for instance kW. The first reason given was that only a power configuration may help determine the load limit on the network, and that it may be difficult to relate a percentage to the desired end result to protect the network infrastructure.
42. The second reason respondents gave was that it would be fairer to consumers to only cap the loads that exceed a maximum demand, rather than decrease all the loads by the same percentage value, regardless of their actual power demand.
43. The third and last reason given was that EV owners will need to understand charging values in kW and Amperes to be able to determine whether they will have sufficient charge.

Government response

44. Although we are proposing to set output level as a percentage, this, in conjunction with the load capacity provided in the description labels, could be used to also set the load using power units.
45. It would be for the load controller and consumer to agree together how much reduction they are prepared to accept and in which circumstances.
46. An EV will be able to process the maximum power that can be drawn via the EV to charger interface, and therefore determine the expected charge time. There is nothing in the specifications that would limit the communication of these details between the charger and EV and to the consumer.

Output configurable in both percentage and power units

47. Some respondents supported a more flexible solution, that would allow the configuration of output in percentage and power units depending on the circumstances. One response in particular suggested that both percentage and power units should be enabled given that which is the best approach depends on who is issuing a load control command for instance a charge point operator or a DNO. Another respondent added that the most flexible approach would be to have an output defined by a generic value associated with a meter unit, so that it can be used as a percentage or power.

Government response

48. As mentioned previously, the above suggestions would not be necessary given that the power output may be derived from the percentage and load capacity from the description labels.

BEIS' decision

49. Considering the above responses, BEIS will adopt an output configuration based on a percentage. We note that there are different views on how the output configuration should be interpreted. In essence, the Set APC parameter is a number between 0 to 100 that could be interpreted differently in different applications, either as a percentage or absolute value or potentially as a more complex power profile. We therefore propose to leave the designer of the load controlling equipment free to choose how to interpret this parameter in a way that best suits the application.

Q3.4	Do you agree that no further functionality is required to allow smart metering to control and support provision of frequency response services? If not, please suggest what additional functionality you think would be required and provide supporting rationale for its inclusion in your response.

Summary of responses

50. A majority of respondents (58%) agreed that no further functionality is required to allow smart metering to provide frequency response services. A few respondents however, suggested that additional functionality should be considered.

More frequent power monitoring

51. One respondent mentioned in particular that power imported to/ exported from the controlled device would need to be monitored more frequently than half-hourly to support frequency response services contracted by the ESO.

Government response

52. Consumer access devices could be used for monitoring power more frequently than currently permitted by smart metering equipment, which would not require any additional smart metering functionality.

Threshold configurations

53. Another respondent suggested that there should be a means to configure thresholds for frequency deviation, for instance by adding them to the existing 'Update Device Config' Service Requests.

Government response

54. We agree that this would be new functionality and will consider whether to include it in the future.

Other individual comments and BEIS' responses

55. A few respondents added that any device performing frequency response must meet with the EU Demand Connection Networks Codes and EU Requirements for Generators. We note that details of frequency response implementation are outside the scope of this consultation and as such any such additional requirements do not have any impact on our proposals to simply configure functionality on or off.

BEIS' decision

56. Having considered the above suggestions, it is our view that no additional functionality is required at this stage to allow smart metering to support the provision of frequency response services.

Q3.5	Do you agree the inclusion of the override functionality is a prudent future proofing measure? Please set out your rationale.

Summary of responses

57. We noted broad agreement (71%) from respondents that the inclusion of the override functionality is a prudent future proofing measure. Indeed, some of them mentioned that current user arrangements (aggregators[3] need to partner up with suppliers to provide load control services) have limitations, for instance the need to forge commercial arrangements with every supplier or the loss of ability to control load on CoS, and that including override functionality as part of the proposed changes is necessary to allow users other than suppliers to perform load control in the future.

Enable override functionality now

58. A large number of respondents suggested that the override functionality should be enabled for DNOs in emergency situations, and required DCC changes included as part of the proposed SEC changes. DNO respondents also requested that they are given the opportunity to work with BEIS to refine the requirements for DNO emergency override use cases.

Government response

59. Although we are proposing some future proofing functionality which would allow the potential for APC/SAPC to act on a message from a DCC User other than an aggregator to curtail load, the DCC changes required to enable this override

[3] In this context, an aggregator is an entity that controls load in order to sell demand side response services.

functionality are outside the scope of this proposal. However, the proposed APC functionality is future proofed at the device level for the DNO use cases outlined.

Include override functionality in SMETS (at device level) later

60. One respondent mentioned that the override functionality should only be included once current user arrangements have been changed to allow users other than suppliers to become signatories to the DCC system.
61. Another respondent suggested that it should be possible to include the override functionality in the future given that the proposed devices support firmware upgrades.

Government response

62. The reason why we propose to include the override functionality now, and leave any potential changes to user arrangements until a later stage, if these are determined to be required, is the marginal cost difference to do so. Additionally, it may not be possible to retrofit the override functionality at a later stage due to the need for additional hardware memory and processing capacity rather than just firmware updates.

Rules and requirements for roles and responsibilities

63. A number of responses mentioned the need to establish rules and regulatory requirements for roles and responsibilities and consumer protection before the override functionality is included, e.g. in the Retail Energy Code. This would be necessary for instance to address contention/ prioritisation issues brought by multiple party access.

Government response

64. We agree that wider rules and governance would need to be developed before the new functionality becomes usable. This should address issues around user permissions that would result from the introduction of the override functionality.

Insufficient evidence on additional cost

65. One respondent suggested that not enough information had been gathered to justify the additional cost related to the inclusion of the override functionality in the proposed changes. Another one added that there was a lack of evidence that override functionality would be at insignificant cost.

Government response

66. As mentioned previously, it may not be possible to retrofit the override functionality in the future without having to make complex hardware changes e.g. replace devices, therefore there is a risk that adding this functionality will incur more significant costs at a later stage.

Other individual comments and BEIS' responses

67. Some respondents requested the inclusion of override functionality for consumers. The current specifications already provide for 'Boost' functionality, which may be used by consumers to override any other load control command.
68. A respondent suggested that a new classification should be developed for new types of users who wish to control load, rather than simply include them in the

'Other User role' profile. We can confirm that this consultation does not propose to make changes to the 'Other User role' profile.

69. Another respondent commented that an appropriate risk assessment analysis should be produced to evaluate the potential for cyber-security risks due to opening load control to a wider number of players. We agree that cyber-security risks should be carefully considered when implementing any new functionality into the smart metering system, and confirm that the risk raised will be considered as part of the next steps that incorporate drafting of GBCS, DUIS, CPA Security Characteristics, etc.
70. We also noted the suggestion that load control commands should be qualified as critical throughout the system.

BEIS' decision

71. After reviewing responses to this question, including those suggesting that the override functionality should be implemented at a later stage (e.g. after user arrangements have been changed, or once access rules are established), BEIS concludes that the override functionality should be included in the specification as a future proofing measure, but remain dormant until industry, Ofgem and/or Government determines it desirable or necessary following further consultation. Appropriate governance requirements would need to be in place and further DCC changes would need to be made before the override functionality could be enabled.

SECTION 4. DETAIL ON CHANGES TO THE TECHNICAL SPECIFICATIONS

Q4.1	Are there other SMETS changes that could further maximise implementation potential of APC functionality i.e. provide greater flexibility to industry in manufacturing, installing and operating devices?

Summary of responses

72. There was a limited number of additional SMETS changes proposed by respondents. These mainly concerned the addition of new types of devices such as a programmable SAPC or a HAN connected APC.

Programmable SAPC

73. Some respondents suggested the inclusion of an Enhanced APC (EAPC), which would be a programmable SAPC with specific routines for each control regime and load type. It was suggested that adding programmability (e.g. ability to define new appliance specific functionality and routines) would increase interoperability as new routines could be uploaded and used when changing load device or supplier.

Government response

74. We note that the proposed functionality allows for firmware upgrades, and the APC setting to be interpreted on a device-by-device basis, therefore an additional device type would not be necessary.

HAN connected APC

75. Other respondents suggested the addition of a HAN connected APC (HCAPC), which would be connected to the HAN but driven by the switching calendar in the ESME (whereas an SAPC would have its own calendar).

Government response

76. It is our view that a HAN connected APC driven by the switching calendar in the ESME should not be included for a number of reasons. While an SAPC could be fitted alongside an existing SMETS meter without the need for replacing that meter, this would be impossible for a device driven by the ESME calendar. Also, such a device would add complexity to the ESME and increase HAN traffic more than with an SAPC which has its own calendar. In addition, the same benefits are realised by an SAPC as a 'HAN Connected APC' but at less cost and complexity.

Other individual comments and BEIS' responses

77. One comment suggested that Device Language Message Specification (DLMS) certification for the SAPC would considerably limit the scope for new entrants and innovation, and therefore should not be used. Zigbee Demand Response & Load Control (DRLC) mechanisms and supporting clusters would however be more open to third parties as only one certification would be required. APC functionality is built on the ESME platform and as such DLMS is an integral part. To define the functionality without using DLMS would require significant rework in the specifications and existing devices.

Q4.2	Do you agree that having two forms of APC (meter integrated, and HAN connected) allows valuable flexibility and is worthwhile given no additional system cost?

Summary of responses

78. There was broad agreement (79%) that having two forms of APC allows valuable flexibility. Reasons provided include:
    - A meter integrated APC (e.g. twin element ESME) could be used to monitor and confirm the result of a proportional load control command;
    - An ESME could also use its relay to cut power to the load-controlled device if required;
    - An SAPC will ensure that the solution can also be installed in premises where there are larger distances between equipment;
    - An SAPC may be added to existing SMETS2 smart metering systems, to avoid having to install a new meter.

RF range should be considered

79. It was also noted that radio frequency range may be an issue in some premises as the SAPC may not be within the range of the CH.

Government response

80. In order to mitigate connectivity risks, the SAPC can be implemented as a 2.4GHz (working in at least 70% of GB premises) or 868MHz (working in at least 95% of GB premises) device.

BEIS' decision

81. BEIS will go ahead with implementing two forms of APC, including a meter integrated APC and a HAN connected one.

Q4.3	Do you agree with the proposed approach to maintain the new SMETS2 alongside the existing SMETS2 versions?

Summary of responses

82. A majority of respondents (58%) agreed that the new SMETS2 should be maintained alongside the existing SMETS2 versions. However, a number of respondents were opposed to having concurrent SMETS2 versions, due to the additional complexity and costs that this would incur to the DCC system and DCC Users.

Concurrent SMETS2 versions would increase DCC system complexity and costs

83. A number of respondents raised the risk that multiple concurrent versions of specifications could result in challenges for DCC in managing versioning and Parse & Correlate, and could also bring additional significant DCC costs to provide regression testing.
84. These respondents also mentioned that DCC Users have expressed a preference to have all their devices aligned with as few specification versions as possible to minimise complexity and cost.
85. Additionally, respondents requested that clarification is provided on the impact of having different SMETS versions on the number of DUIS versions, given that the amount of DUIS versions to support should be reduced according to SEC Mod 83.
86. Finally, these respondents mentioned the risk that concurrent SMETS2 versions lead to increased complexity for the Technical Specifications Applicability Tables (TSAT) and Compatibility Matrix and requested that Government provides an example of TSAT.

Government response

87. The concern around challenges and costs for DCC is noted, however the DCC system is designed to operate with multiple versions of technical code specifications simultaneously. Also, specification changes will be designed to minimise variation in functions between devices and as such limit the extent of testing required.
88. Energy suppliers have the freedom to upgrade Devices as and when they see fit and as such it is for them to decide how many versions of specification they operate.
89. There is no correlation between supported SMETS/GBCS versions and DUIS versions. Also, DUIS provides backwards compatibility for all supported SMETS/GBCS versions. Therefore, no impact is expected on DUIS versions as a result of having multiple versions of SMETS.
90. A version of TSAT will be provided as part of the consultation for the implementation date of these specifications.

IRPs/CRPs

91. One respondent said that it would be beneficial to choose outstanding IRPs/CRPs that affect ALCS/HCALCS functionality and are yet to be tagged to a SMETS2 version, to group them together with the APC functionality in the new SMETS2 version.

Government response

92. Government has incorporated a number of IRPs into GBCS that are required to enable APC functionality.

BEIS' decision

93. Having carefully reviewed responses to the above question, BEIS has decided to adopt the proposed approach for the medium term. However, we note that the two concurrent versions of SMETS2 may merge in the future.

Q4.4	Do you agree that no further changes to the specifications should be implemented to deal with change of supply events, meaning that suppliers can decide how to handle APC functionality on churn? Please provide your rationale.

Summary of responses

94. There was broad agreement (67%) from respondents that no further changes to the specifications should be implemented to deal with CoS.
95. A majority of respondents were in favour of Option 2 set out in the consultation document, where no further SMETS changes would need to be made, but any gaining suppliers would need to support the new DCC Service Requests.
96. One respondent noted that Option 3, that consists in implementing calendar clean-up functionality, is likely to have a detrimental impact on consumers.

Risk of loss of APC functionality on CoS

97. A large number of respondents raised the risk that consumers may lose APC functionality on CoS and suggested that a reliable CoS process and operating model should be developed including rules introduced in an industry code such as the Retail Energy Code.
98. DNO respondents also mentioned that in the situation where APC functionality is lost on CoS, DNOs will need to be made aware of this to trigger a review of their planning assumptions.

Government response

99. We note the above suggestions around developing reliable CoS process and rules, and that industry can use existing codes to bring any changes in effect.
100. DNOs would have the ability to read the operational status of the APC, which will help manage their planning assumptions.

Other individual comments and BEIS' responses

101. A respondent suggested that for Option 1, a manufacturer set default configuration should be defined for the APC calendar in SMETS. This would mitigate the risk that if the ESME needs to be replaced, the new device may not support the calendar configured by the losing supplier. We note that this would not need to be done in

SMETS, as suppliers and DNOs manage default manufacturer settings in a number of ways during procurement.

102. Another respondent noted that APC functionality is integrated into a SMETS2 meter and therefore will follow the rules set out for CoS but asked how the SAPC will be tracked on CoS if DUIS is optional. The DCC inventory will indicate that the SAPC is present at that site.
103. A respondent suggested that there should be a requirement that suppliers provide clear information to their consumers about how their meter will operate before switching. This is a service that could be provided by other users such as Citizens Advice.
104. Finally, it was mentioned that consideration should be given to the operation of devices on Change of Tenancy (CoT). We have considered this and no further functionality is required. This is an operational issue similar to how ALCS are managed on CoT.

BEIS' decision

105. Considering the above comments, in particular that there should not be additional changes to the specifications to deal with CoS, BEIS has decided not to include any further functionality to ensure continuity of load control services on CoS.

Q4.5	Do you agree that proposed drafting delivers the intended outcome? Do you have suggestions on how SMETS2 changes could be drafted to more effectively deliver this?

Summary of responses

106. Half of respondents could not decide whether the proposed drafting delivers the intended outcome or not. Respondents related this to various concerns around compatibility of the proposed devices with SMETS1 equipment, financing the required DCC changes and potential conflicts with the EV smart charging consultation. These concerns are addressed in more detail in the further Section outlining 'Specific concerns not directly addressing the consultation questions'. Among the other half, a majority of respondents answered positively to the question (42% of all respondents).

Individual comments and BEIS' responses

107. A respondent mentioned that SAPC communication links are currently constrained to CH and Type 2 devices and asked whether these could be opened out to include PPMIDs as combined devices exist, and whether they should also include connection to meters to gather information about supply status and pricing. Where the SAPC includes the relevant ESME functionality (e.g. consumption data), then it has the ability to support PPMID and IHD. It is possible to incorporate functionality to read information such as pricing from the meter, within an SAPC (it could for example include the same functionality as a consumer access device) without the need to mandate this.
108. Some respondents requested more clarity on the nature of the interface between the APC/SAPC and the load-controlled device. We do not intend to specify this as it may stifle innovation. Manufacturers will develop their own specifications for how the charge point or load makes use of APC signals provided.

109. It was also suggested that SAPC devices should operate on both 2.4GHz and 868MHz, to increase connectivity in premises with a large distance between the CH and the load. We agree that both 2.4GHz and 868MHz should be enabled. We will work with DCC to establish what changes would be required to Communications Hub Technical Specifications (CHTS) and CHs.

BEIS' decision

110. Respondents made a number of suggestions, which after consideration do not necessitate additional changes to the SMETS2. BEIS will therefore proceed as proposed in the consultation.

Q4.6	Are there other requirements or functionality related to load control that should be added at this stage? Please provide supporting rationale for any additional suggestions.

Summary of responses

111. A large number of respondents (63%) suggested additional requirements or functionality related to load control.

Future proof bi-directional power flows (import/export) e.g. for V2G/DG

112. Some respondents suggested the need to consider whether the APC can be used to manage bi-directional power flows, with the aim to future proof Vehicle-to-Grid (V2G) and Decentralised Generation (DG). They also mentioned the absence of any mandatory requirements within SMETS2 to display export consumption data in addition to import consumption data.

Government response

113. There is already a SMETS requirement to have an export register that shows the total cumulative energy exported. There is also a profile data log in the meter that stores 3 months of half-hourly export data, but there is no requirement to display that half-hourly data (which is available over the HAN, along with the export register). The proposed devices could be configured to support control of export to the grid. At this stage, the method of controlling export has not been agreed as standards are still being developed, however we have inherent capability that would allow an instruction to export to be sent.

Other individual comments and BEIS' responses

114. A few respondents mentioned that APC/SAPC should have the capability of measuring the load of the controlled device separately to the total load of the premises, to manage the device load more effectively. An ESME with APC could do this with a secondary element, or this could also be done with a second ESME. It is up to the installing supplier to decide whether they want to include a measuring element in an SAPC. In many applications, the load of a controlled device could be available as a look-up table without needing an extra measuring element at all.
115. A respondent said that some loads expect to consume power up to the limits imposed by the electrical wiring and could reset or stop working when subject to a lower power limit by an APC as the voltage of the power supplied to the load may fluctuate. The APC settings will be available via DCC to DCC Users, who will be

able to set the load's power consumption in line with APC limits and any load specific requirements.

116. Finally, a respondent mentioned the need to consider how consumer consent can be managed, including how it's given and withdrawn, and how consumers can identify and track devices and services that are load controlled. Management of APC is no different to ALCS/HCALCS and as such, the existing consumer consent frameworks in place cover it.

Specific concerns not directly addressing the consultation questions

Business case

117. 7 respondents requested a clarification of the business case including where demand for this functionality originated from. Some respondents also suggested that Government should develop strong use cases with industry for proportional load control functionality.

Government response

118. Engagement with industry players in the EV and demand side response sector has revealed demand from the industry for proportional load control functionality, which is in part demonstrated by the ready availability of charging solutions (outside of smart metering) which do provide for proportional load control. Industry has cited the binary nature of existing load control in smart metering as a barrier to its use.
119. As set out in Annex B of the consultation document, Government has already developed three use cases for proportional load control, including both situations where an energy supplier/aggregator would send a command to control load and situations where a network operator would need to reduce charging at periods of high demand. No concern was raised with the use cases provided or any suggestion made as to why they were inappropriate.

Links with smart meter load control demonstration projects and EV smart charging consultation

120. 2 respondents suggested delaying adding proportion load control until the outcomes of the EV Charger innovation trials are known, as the need for it may be impacted by the ability to provide some sort of proportional load control capability using existing functionality.
121. 2 respondents also considered that proportional load control functionality should not be implemented until the response to the EV smart charging consultation is published, as this may create interoperability risks or cause a lack of confidence for investment, and a Government view is needed on whether smart metering should be made mandatory for EV smart charging.

Government response

122. We do not feel it would be appropriate to wait until March 2021 to implement these changes, as these trials will demonstrate existing, HCALCS functionality and will not tell us much about proportional load control, which is already commonplace in non-smart metering solutions.
123. The EV smart charging consultation proposes a phased approach to determining policy on charging. Phase 1 is about device level requirements which are not

technology specific. Proceeding with the addition of proportional load control will allow smart metering to be a viable option for these device level requirements.

124. Phase 2 of the EV smart charging consultation and call for evidence proposes that a decision on a long-term solution for EV smart charging is taken between 2020 and 2022, with using the smart meter system put forward as the lead option. Government does not consider that it would be prudent to wait until this point to add proportional load control to the smart metering solution. Smart metering will remain an option for EV smart charging for industry to use regardless of the outcome of this decision.
125. Related to this, Government notes that the EV smart charging consultation discusses the potential of broadening access to load control within the smart metering system to actors other than electricity suppliers, reflecting the range of actors in the demand side response industry (e.g. charge point operators and aggregators) currently performing this function. Government's view is that the proposed SMETS drafting should allow potential for different actors to perform proportional control, if this is determined suitable in future, and without the need for equipment replacement, provided adequate system and firmware updates can be accommodated.

DCC delivery issues

126. It was also suggested by 4 respondents that DCC may not be able to deliver the proposed changes by the June 2020 SEC Release due to other priorities such as SMETS1 Enrolment & Adoption and future SMETS2 functionality like prepayment.

Government response

127. Given the evolving content of 2020 releases, we are now targeting implementation via the November 2020 SEC Release.

Compatibility with SMETS1

128. A concern raised by 3 respondents was that the proposed functionality will not be able to be used with SMETS1 equipment.

Government response

129. Where there is an existing SMETS1 system in a home and proportional load control is required, it will be possible to achieve this through installation of an SAPC with a DCC CH. In this case, it will not be necessary to replace the SMETS1 meter.

Cost of DCC changes

130. 3 respondents asked whether the required DCC changes would be offered by DCC as an elective service, or whether the costs associated with these changes would be smeared across all DCC Users.
131. 2 respondents also raised the concern that costs associated with DCC changes are likely to be higher than those costs presented in the consultation document, which were provided by DCC as part of a preliminary Impact Assessment, and requested more detailed information on what was covered by those costs.

Government response

132. There are no changes to the charging methodology as part of this proposal.

133. The costs quoted in the consultation document were for the changes to DSP systems alone. A more comprehensive Impact Assessment has now been initiated which will reflect the total DCC change costs.

Other comments raised by individuals or low numbers of respondents

134. It was suggested that BEIS should consider early engagement with the Security Sub-Committee (SSC) and the National Cyber Security Centre (NCSC), at the same time as GBCS changes are being considered. We can confirm that BEIS has already engaged with enduring governance on security aspects, and will continue this engagement, including with NCSC, to ensure the changes are understood and any security requirement is covered.
135. One respondent raised a potential issue that the proposal contradicts the conclusions from Elexon's work on Settlement of Dynamically Switched Meters. We are engaged with Elexon's work and we welcome any information on potential conflicts brought by the proposed functionality. However, we are unaware of any contradiction between our proposal and Elexon's work.
136. Another potential issue raised was the uncertainty around how changes brought by the joint BEIS and Ofgem Future Energy Retail Market Vision will affect the proposed functionality. Relevant teams within BEIS are engaged through the relevant governance groups. We are not currently aware of any conflicts or issues but will continue to engage. If there are more specific issues of concern we would welcome further information on these.

Next steps

137. As outlined earlier in this document, Government intends to proceed with the addition of proportional load control functionality to the smart metering system pending consultation on the technical documents and review of full impact assessment of DCC system changes.
138. Next steps will include:
    - The publication of updated SMETS drafting and a new consultation on GBCS and CHTS changes today, alongside this consultation response.
    - Initiating a full DCC Impact Assessment today, that will help further inform the extent and cost of DCC changes.
    - In reviewing the revised SMETS drafting published today, stakeholders may wish to note that as a result of additional comments received during consultation, the following areas of the drafting were clarified:
        - APC calendar will be available over the SMHAN to consumer devices;
        - SAPC can operate as a single band device in the 2.4GHz or Sub-GHz bands;
        - The number of switching rules has changed from 100 to 120;
        - Minor editorial changes.
    - We will make our final decision after this full DCC Impact Assessment is presented and we have received responses to the GBCS and CHTS consultation. Subject to consultation responses we aim to do this by the end of 2019.

139. If the decision is to proceed with the addition of proportional load control functionality, we will be targeting the November 2020 SEC Release to implement the DCC system functionality.