Smart Energy Code

SEC
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SEC Modification Proposal Form

Mod Title

Service Request Traffic Management

Submission Date

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Details of Proposer	
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1. What issue are you looking to address?

This SEC Modification is proposed to provide the DSP with the technical capability to manage Service Requests received from Service Users, such that DSP System is protected from accidental or deliberate overload. Without any such mechanism there is a risk that the DSP and CSP systems could become temporarily overloaded by a concentrated burst of Service Requests. This temporary concentrated burst of traffic could lead to a deterioration in service performance and in extreme cases a failure in the service.

2. Why does this issue need to be addressed? *(i.e. Why is doing nothing not an option?)*

While the DCC will work with Service Users to scale to meet forecast demand and to make effective and efficient use of System capacity, this System has a finite capacity and is unable to scale dynamically to meet accidental or unexpected bursts of Service Requests (e.g. due to the anticipation of extreme weather or a disaffected employee maliciously causing DoS).

While the network infrastructure already has a mechanism in place to protect the System under load, whereby the F5 Load balancer responds with an HTTP 503 if it is unable to forward a transaction to the Message Gateways, this applies to all Service Users and Service Requests irrespective of the importance of the Service Request or which Service User or Service Users are responsible for the excess load.

This proposal is designed to provide reliable and predictable System behaviour under extreme conditions, enable the service to deliver Service Requests identified as priority even under extreme load and control the Service Requests of only those Service Users whose use of the service exceeds their fair share, potentially crowding out other Service Users use of the service.

3. What is your Proposed Solution?

Summary

This proposal defines a maximum system capacity, an operating threshold, and Service User allocations. When the system reaches the operating threshold, Traffic Management would become active. When Traffic Management measures are active Service Users who exceed their allocated capacity would be controlled back down to their allocation or back to the operational threshold, whichever is greater.

An operating threshold is required to provide capacity to accept priority Service Requests when Traffic Management is active. This operational threshold will be periodically reviewed to ensure that it is set as close as possible to the maximum system capacity.

When Traffic Management is active, Service Users who exceed their allocation will be have their non-priority Service Requests controlled until the system falls back below the Operating Threshold (rather than being throttled back to their allocation) – thus ensuring that the system is used to the maximum capacity available.

As a design principle, the DCC will aim to reduce complexity wherever possible.

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Description

The DSP System will have a stated agreed capacity for processing Service User Service Requests. This agreed capacity shall be stated as a value in *"Service Requests per second"* and will be updated as additional capacity is added to the service.

Service Users shall be notified of the DSP System Capacity by the DCC and each Service User will be allocated a proportion of the available capacity based on an agreed algorithm.

The DCC shall notify the DSP of the agreed DSP System Capacity and Service User Capacity settings via the upload of a configuration file in a similar fashion to that used for DCC System Wide Anomaly Detection Thresholds. Service User Capacity settings will be expressed as a percentage of the total capacity, thus allowing the overall DSP System Capacity to be increased without the need for new Service User Capacity settings to be uploaded.

In addition, the DCC shall also set amber and red threshold percentages for each of the DSP System Capacity and Service User Capacity which shall form the basis of the invocation of traffic management.

- If the DSP System usage exceeds the red threshold for DSP System Capacity and any Service User usage exceeds the red threshold for Service User Capacity then a Service User Overload event will be recorded for each Service User and notified to the DSP monitoring solution. Any Service User who has exceeded capacity will be marked as subject to Traffic Overload.

(Note that this includes DSP Scheduled Service Requests but these will be subject to existing DSP load management features to ensure these are processed at a controlled rate.)

The processing at the DSP boundary within the Message Gateway will check whether a Service User is marked as subject to Traffic Overload and if so then the following action will be taken:

- Any Service Request with an SRV which is identified as being subject to Traffic Management will not be accepted and a http503 System Busy response will be returned.
- Any Service Request with an SRV which is identified as NOT being subject to Traffic Management will be processed as normal.

The list of which SRVs are subject to Traffic Management will be a configurable list held within the DSP solution.

The processing under Traffic Management conditions will continue until the DSP System usage returns below the red threshold for DSP System Capacity.

If a Service User who is subject to Traffic Overload returns below the red threshold for Service User Capacity before the DSP System usage returns below the red threshold then that Service User will be cleared of being subject to Traffic Overload.

Otherwise, when the DSP System usage returns below the red threshold for DSP System Capacity then any Service User who is above the red threshold will be cleared of being subject to Traffic Overload.

For the purposes of Operational Monitoring, the current state of DSP System usage and Service User usage shall be made available on the Operational Dashboard within the SSMI.

In addition, the current state of DSP System usage and Service User usage shall also be made available to the DSP Monitoring solution so that it can be displayed and, if

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required, exported to other systems. (Note that integration to other systems is not in scope of this CR and is expected to be covered under a general mechanism for operational Monitoring integration.

4. What SEC objectives does this Modification better facilitate?

We consider that this Modification better facilitates the following applicable SEC objective (Section C1.1):

(a) the first General SEC Objective is to facilitate the efficient provision, installation, and operation, as well as interoperability, of Smart Metering Systems at Energy Consumers' premises within Great Britain;

(e) the fifth General SEC Objective is to facilitate such innovation in the design and operation of Energy Networks (as defined in the DCC Licence) as will best contribute to the delivery of a secure and sustainable Supply of Energy;

This solution will help protect the smart metering service by providing more certainty, more transparency, and a better overall quality of experience for service users during periods of high alert volumes.

5. What is the requested Path type?	Path [2 /]

[Please provide rationale as to why you are requesting one of the following Paths:

- Path 2: Authority Determined
-

6. Are you requesting that the Modification Proposal be treated as Urgent?	No

Does not meet criteria

7. What is your desired implementation date?

To be discussed by working group. As soon as possible within releases

8. Which SEC Parties are expected to be impacted? (Please mark with an X)

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Large Supplier Parties	X	Small Supplier Parties	X
Electricity Network Parties	X	Gas Network Parties	X
Other SEC Parties	X		

Supplier parties will need to consider how to respond to the http 503. The HTTP 503 response from DCC is already included in DUIS.

9. Which parts of the SEC will be impacted?

Appendix E (DCC User Interface Services Schedule)

10. Will there be an impact on Central Systems? (Please mark with an X)

DCC Systems	X	Party interfacing systems	X
Smart Metering Systems	X	Communication Hubs	
Other systems			

DCC systems will need to be able to deliver the solution.

11. Will there be any testing required?

Testing will be required to ensure that there are no unintended consequences from introducing this solution.

12. Will this Modification impact other Energy Codes?	No

No other Energy Codes are expected to be impacted.

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13. Will this Modification impact Greenhouse Gas Emissions?	No
Greenhouse Gas Emissions will not be impacted.	

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