SEC
Smart Energy Code

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MP116
‘Service Request Forecasting’

Modification Report

Version 0.8

23 November 2021

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About this document

This document is a Modification Report. It currently sets out the background, issue, solution, impacts, costs, implementation approach and progression timetable for this modification, along with any relevant discussions, views and conclusions. This document will be updated as this modification progresses.

Contents

This document also has three annexes:

- **Annex A** contains the redlined changes to the Smart Energy Code (SEC) required to deliver the Proposed Solution.
- **Annex B** contains the Data Communications Company (DCC) User Guidance document that accompanies the proposed legal text changes.
- **Annex C** contains the full responses to the Refinement Consultation.

Contact

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1. Summary

This proposal has been raised by Graeme Liggett from the DCC.

Currently, for each quarter of the year, DCC Users must submit to the DCC an eight-month forecast of the number of Service Requests that the User anticipates sending. The Proposer has stated that each forecast takes an average of two days for each User to complete. These forecasts are intended to assist in managing demand on the DCC User Interface Services. The DCC has raised a concern that the accuracy of the forecasts does not meet the level required to produce useful data that will improve the management of demand on the DCC User Interface Services.

The Proposed Solution is to remove the obligation on DCC Users to submit their quarterly Service Request forecasts and for the DCC to provide a quarterly report based on actual data. Accuracy will be increased through DCC Users updating the DCC with current trends such as firmware updates and Device installation.

This modification will have a positive impact on SEC Parties as there will be a reduction in resource requirements. It will benefit the DCC and the industry as a whole as more accurate forecasts of system usage will be provided. This modification requires no DCC System changes and if approved, is targeted for the February 2022 SEC Release. This is a Self-Governance Modification.

2. Issue

What are the current arrangements?

SEC Section H3.21 requires that by the 15th Working Day of January, April, July and October, each User must provide the DCC with a forecast of future traffic. The forecast must include the number of Service Requests that the User will send in each of the eight months following the end of the month in which the forecast is provided (e.g. in January the forecast would cover February to September). This forecast is intended to provide accurate figures to assist in managing demand for DCC User Interface Services.

What is the issue?

The DCC estimates that each User forecast requires two days of effort per User to produce. However, as the forecasts provide a monthly estimate of Service Requests due to be sent, the level of granularity hinders the accuracy of each forecast.

The DCC believes that the obligation on Users to provide these forecasts should be removed, as the level of accuracy each forecast provides is insufficient. It has suggested that there are more detailed methods of capturing the data required by the DCC to provide worthwhile assistance in DCC User Interface Service management.

The DCC intend to use 12 or more months of actual historical usage data to provide short-term load forecasts (STLFs), medium-term load forecasts (MTLFs) and long-term load forecasts (LTLFs) for load and system performance prediction. Using actual usage data as opposed to forecasted data will enable the DCC to make better use of capacity compared to what is currently in place, as the forecasts will deliver an enhanced level of accuracy.

DCC Load Forecasting types	
Forecasting	**Description**
Short-term load forecasting (STLF)	In this context, STLF handles predictions of 24 hours (next-day predictions) to 168 hours (next-week predictions) and typically relies on time series analysis and modelling. These methods consider variables such as the date (for example, day of week and minute of the day), weather events and, most importantly, historical load.
Medium-term load forecasting (MTLF)	MTLF uses the same information as STLF and handles predictions from one week up to one year.
Long-term load forecasting (LTLF)	LTLF provides predictions over multiple years. These are produced by the regression on input variables, which in addition to historic load, typically incorporate installation and commission projections as well as industry events (for example, the energy price cap).

What is the impact this is having?

If nothing is changed, Service Users will continue to expend resources to submit Service Request Forecasts despite them not providing the accuracy and granularity required, while modelling based on actual usage is a better indication over multiple timescales of future traffic.

Impact on consumers

The issue identified has no impact on consumers.

3. Solution

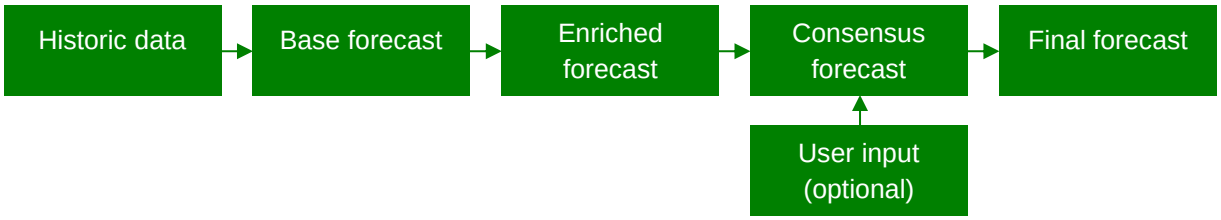
Proposed Solution

The Proposed Solution will remove the obligation for DCC Users to have to provide quarterly eight-month Service Request forecasts to the DCC. Instead, the DCC will produce its own forecasts internally. To maintain a high level of accuracy, the DCC requests that Users provide input into the forecasting process as set out within the DCC User Guidance document, though there is no obligation to do so. The DCC has agreed that it will be responsible for the final sign-off for each forecast.

Producing forecasts

The DCC will use 12 or more months of data relating to Service Requests, installation, and enrolment and adoption to help build a base forecast. The next step will be to apply machine learning to identify and capture key trends and seasonal data which will result in an enriched forecast. Following this, the DCC will investigate extreme data points in the enriched forecast to produce the consensus forecast.

At this point DCC User input will be required. The DCC will incorporate DCC User guidance to bolster forecast accuracy. This will add visibility of trends, the use of previously unused or rarely used Service Requests and changes in Device installation levels. Once complete, the DCC will sign-off the final forecast.



Reporting

The DCC will produce two reports that will be issued to the Panel or a delegated Sub-Committee for review and comment, as well as being made available on the DCC SharePoint for all DCC Users to access.

The first report (Service Request Forecast) will be provided by the 15th Working Day of the months of January, April, July and October. This will set out a forecast of the number of Service Requests that the DCC expects Users will send collectively in each of the six months following the end of the reported month.

The second report (Service Request Forecast Variance Report) will be produced by the 10th Working Day of the months of February, May, August and November, where the DCC shall set out the aggregate number of Service Requests sent by all Users collectively during the previous three months (in total and broken down by reference to each Service Reference Variant (SRV) listed in SEC Appendix E 'DCC User Interface Services Schedule'). This will include a comparison of the actual number for each of the previous three months sent against the numbers most recently forecast for the applicable month. The DCC will provide commentary on any identified reasons for the failure in meeting the expected accuracy.

The second report will also set out the current value (as of the end of the month) for every Monthly Service Metric and a comparison of the current value against the relevant Monthly Service Threshold (the values of which can be found in SEC Appendix E 'DCC User Interface Services Schedule').

User input

The DCC will ask that Users support the production of the Service Request forecasts through their insight, guidance, and cooperation to maintain the monthly target Service Request forecast accuracy of ±10%. The DCC will ask Users to notify it of expected future changes in their own Service Request profile, as well as any changes to their meter installation capacity of a 10% or more increase or decrease from current levels. There will also be an annual DCC-led workshop where Users can capture the assumptions and trends for inclusion into the 48-month Service Request forecast. This is set to take place in October each year.

Please note that although the DCC will ask Users to support the forecast process, there will be no SEC obligation obliging them to do so. Full details are set out in the DCC User Guidance document (Annex B).

4. Impacts

This section summarises the impacts that would arise from the implementation of this modification.

SEC Parties

SEC Party Categories impacted			
✓	Large Suppliers	✓	Small Suppliers
✓	Electricity Network Operators	✓	Gas Network Operators
	Other SEC Parties	✓	DCC

This modification will have a positive impact on Large and Small Suppliers as they will no longer have to provide quarterly eight-month Service Request forecasts. This will result in resource requirements being reduced. SEC Parties will however have the option to provide input into the DCC reports to ensure they remain accurate.

This is also the case for Network Operators as they will no longer need to provide quarterly eight-month forecasts. Once again, the DCC may request input to ensure accuracy levels remain satisfactory.

DCC System

This modification has no impact on the DCC System.

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Section G 'Security'
- Section H 'DCC Services'

The changes to the SEC required to deliver the proposed solution can be found in Annex A.

Consumers

This modification will have no impact on Consumers.

Other industry Codes

This modification will have no impact on other industry Codes.

Greenhouse gas emissions

This modification will have no impact on greenhouse gas emissions.

5. Costs

DCC costs

There are no DCC System costs to implement this modification. Any ongoing costs associated with the DCC providing resource will be accounted for through the DCC's price control.

SECAS costs

The estimated SECAS implementation costs to implement this modification is one day of effort, amounting to approximately £600. This cost will be reassessed when combining this modification in a scheduled SEC Release. The activities needed to be undertaken for this are:

- Updating the SEC and releasing the new version to the industry.

SEC Party costs

The majority or Refinement Consultation respondents stated they will not incur any costs as a result of this modification's implementation. One respondent stated it's costs would be less than £100,000, though it is unclear how much manual work is required to carry out the functions specified. Please note that following the Refinement Consultation, the DCC agreed to remove the obligation for Users to input into the forecast process to maintain a high level of accuracy.

6. Implementation approach

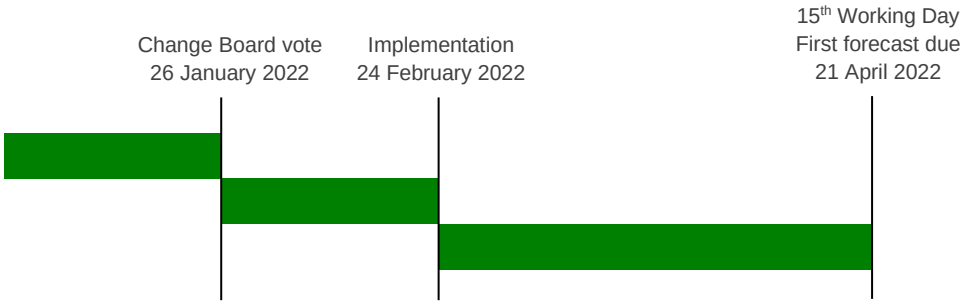
Recommended implementation approach

SECAS is recommending an implementation date of:

- **24 February 2022** (February 2022 SEC Release) if a decision to approve is received on or before 10 February 2022; or
- **30 June 2022** (Jun 2022 SEC Release) if a decision to approve is received after 10 February 2022 but on or before 16 June 2022.

The earliest SEC Release this modification could be implemented in is the February 2022 SEC Release. This modification does not have any DCC System impacts so if a decision is received after the cut-off date, it could be implemented in the June 2022 SEC Release.

The below timeline shows how MP116's implementation will impact the Service Request forecasts following the February 2022 SEC Release.



7. Assessment of the proposal

Observations on the issue

The proposal was presented for initial discussion at the Change Sub-Committee (CSC). CSC members approved of the proposal and were supportive of the obligation of DCC Users to submit quarterly forecasts being removed.

The proposal was presented to each SEC Sub-Committee and received positive feedback. Each Sub-Committee was happy for the proposal to progress, and the Operations Group (OPSG) wished to be kept up to date with the progress of the proposal.

CSC members were happy with the progress made and wanted to make sure it will be clear if the DCC will be adding new requirements to the SEC as well as removing the obligations of DCC Users. One CSC member queried if the changes suggested under this proposal could create new issues later that would need further modifications to resolve. They wanted to ensure that whatever solution is developed is designed to be enduring. Another member supported the proposal to remove forecasting but queried what the DCC was going to put in its place. Members agreed these questions needed to be answered during the Refinement Process.

Solution Development

Measuring Service Request volumes

The DCC informed the Working Group that to increase the level of accuracy of the forecasts it is using a machine learning approach while exploring the use of advanced data recording computer programs.

A Working Group member requested clarity on how the reporting will work as they have been involved in initial testing and have seen a disparity between the Service Requests they have sent and those recorded by the DCC. The member went on to state that the difference can be very large and has taken this to the Distributor Issues Group (DIG) for discussion. It was added that reporting on critical commands have been found to be more accurate.

The DCC confirmed that this was caused by filtering attributes from the DCC perspective. The DCC confirmed that its numbers are significantly closer to those of DCC Users once filtering has been

removed. Critical Commands were discussed as the DCC applies these in two parts once received from the relevant User. The DCC confirmed that it only counts this as one Service Request.

The Working Group highlighted a key point that although approximately 20 SRVs cause 90% of traffic, this will not always be the case and so the DCC should not solely focus on these SRVs. Currently unused SRVs may well be used in high volumes in the future and so should not be discounted.

Furthermore, the Working Group commented that there will be situations where Service Requests will need to be re-sent. This will result in inaccurate forecasts. For example, firmware upgrades can be unsuccessful across a large volume of Devices, which will then result in a second attempt which cannot be easily forecast.

The DCC stated that each Service Request forecast will predict the volume of distinct Service Requests (excluding retries), as indicated by their Service Request ID, sent over the time period covered by the forecast. There has been one identified exception to this which is SRV 11.1 'Update Firmware' as a single request results in the DCC sending multiple commands to Devices.

The quarterly SR variance report will present the monthly variance between actual and forecast volumes at an aggregate level. The criteria for an SRV to be included in the report is for the SRV to be more than 0.25% of aggregate SR volumes. Currently, this means that approximately 30 SRVs are included and account for 95% of SR volumes in total. Clarification was sought for several SRs. The forementioned SRV 11.1 will be tracked by the Transaction ID due to the nature of the SRV. SRV 2.1 'Update Prepay Configuration' and SRV 8.1.1 'Commission Device' were flagged as possible inclusions. The DCC stated that the current recorded volume of these SRVs means that they are not shown on the list. The DCC took an action to provide the list of SRVs and their respective volumes in a table that is now included within the DCC User Guidance document.

Accuracy of forecast

The DCC confirmed that the aim is to deliver forecasts with an accuracy tolerance of originally ±20% (this has since been altered to ±10%). The DCC commented further that a process will be developed to allow Service Users to feed in intelligence and foresight into the reporting for a higher level of accuracy.

The current SEC Section H 'DCC Services' legal text states that DCC User forecasts have to be accurate within ±10%. The DCC stated that it is confident it can meet this level of accuracy with the new mechanism.

A Working Group member queried what the consequences are for having accurate or inaccurate forecasts. They stated that the current method has become redundant because of its inaccuracy but this has not had an impact on network capacity. SECAS responded that accurately forecasting usage enables the DCC to introduce greater capacity and aids long-term planning. The DCC also stated it benefits Service Providers in helping them manage their own capacity from month to month by projecting usage at a component level.

It was further discussed that Users' forecasts have lacked accuracy for some time, but it has not impacted network capacity. This is due to the DCC developing and producing its own internal forecasts. The DCC reiterated that the intent of this modification is to formalise the new process for producing more accurate forecasts and have it codified into the SEC. SECAS also stated that the current obligation in the SEC does not fulfil its purpose and this modification aims to address this.

Input from Users

The DCC stated that to maintain a high level of quality, it would be advantageous to receive input from DCC Users. This is to give the DCC better foresight of firmware updates and meter installations as this data is not readily available to the DCC. Another element that would benefit from DCC User input would be understanding the actual and forecasted use of rarely used and previously unused Service Requests. In terms of identifying the use of rarely used Service Requests, or ones that have previously not been used, the Working Group commented that this may be because businesses are not currently in a position to use them. However, the DCC User should inform the DCC when it is going to initiate the use of these. This is to anticipate any increase in the use of Service Requests that are not frequently used. These include:

Previously unused Service Requests:

- Hand-Held Terminals (HHTs) and local commands
- Sequencing
- Customer Identification Numbers
- Service Opt-Out/Opt-In
- Twin rate Electricity Smart Metering Equipment (ESMEs)

Rarely used Service Requests:

- Disable/Enable supply
- Auxiliary Load Control
- Load Limiting
- Export
- Read Network Data (gas and electricity)
- Read active power import
- Voltage surveys

The Working Group was concerned with the role of the DCC User under the Proposed Solution, specifically that Users would be required to still submit information and forecasts around exceptional use (for instance if a new price cap was due to be implemented or if the User expected to perform a firmware upgrade). In the current solution, there is ambiguity around the details as to what is required of the DCC User once obligations are removed. The Working Group believed that the role of the DCC User in the Proposed Solution should be explicitly set out within a guidance document. It was suggested that it should be included within the DCC Anomaly Detection Threshold (ADT) and Forecasting Guidance document.

The Working Group suggested that the User's role should be included within the document before the modification progresses to the Refinement Consultation. This will allow for more informed consultation responses. It was also suggested to amend the legal text to include a reference to the guidance document. The legal text has since been significantly re-written. The DCC advised that the added guidance would have to be agreed by the Design Release Forum.

Working Group members sought clarity regarding what will be expected of the SEC Party, to allow them to allocate resource accordingly. If they are still required to validate the DCC forecasts and

provide additional information as to any exceptional usage, they will still need to keep their forecasting resources in place and will not receive any benefits from the modification.

The DCC gave an overview of the 'Consensus Forecast' stage of the forecast process, which is where DCC User input will be required. The Working Group questioned the approach of gathering the DCC User input. The DCC suggested it would be through a focused group or via the OPSG. The Working Group advised that each type of SEC Party would need to provide feedback on expected behaviour, which could result in a large group of people providing input and that may present significant logistical issues, with regards to availability and commercial considerations.

Noting these discussions, the DCC agreed to remove the obligation on Users having to feed into the forecast process in order to maintain the required level of accuracy. Users will still be able to do this, but it is no longer an obligation.

Obligations in the SEC

The Working Group agreed that the obligation should be removed from the SEC for DCC Users to produce and submit eight-month Service Request forecasts each quarter. A Working Group member requested that an obligation should be placed in the SEC for the DCC to adhere to when producing the STLF, MTLF and LTLF. This will add transparency as to when the forecasts will be made available and where they will be discussed. It was suggested that the DCC should present the forecasts to the SEC Panel at its monthly meetings.

A Working Group member commented that removing the obligation on DCC Users results in less work for the DCC User to carry out, but that they would be happy to help to bolster forecast accuracy where needed. Another Working Group member stated that by the DCC taking the forecasting in-house, the DCC will be responsible for any inaccuracies found. This has been incorporated into the legal text as the DCC will have to provide commentary when reports to not include the desired level of accuracy.

Anomaly Detection Thresholds

The subject of ADTs was raised as the current DCC User forecasts are used to calculate a DCC User's volume of ADTs. The DCC confirmed that ADTs are currently outside the scope of this modification. During the Refinement Process, the legal text was amended to ensure that the DCC monitors any changes to a User's ADTs as this is a strong indication of an increase or decrease of Service Request volumes.

Use of SharePoint

A query was raised regarding the use of the DCC SharePoint. The Working Group member asked if the upload of the report would be done so manually or if automation could be introduced. This is due to frustrations where other reports (separate from Service Request forecasting) are not uploaded on time and in some cases uploaded incomplete. The DCC stated that the report will be uploaded manually, and they will endeavour to provide the report on the agreed day/time.

Legal text

SECAS informed the Working Group that it had engaged with the SEC Lawyer to help address previous comments raised by the Working Group. This resulted in a significant re-write of the legal

text. The SEC Lawyer has proposed amending SEC Section G 'Security' to remove the reference to Service Request forecasts when setting ADTs. A Working Group member queried the impact of this proposed change. They stated that ADTs fulfil a specific purpose, and a potential risk may arise if they are not linked to predicted volumes of traffic. The Working Group commented that the impact is hard to quantify without the Proposed Solution being implemented.

Views of the OPSG

Following the Working Group's review of the Refinement Consultation and subsequent amendments to the legal text, SECAS provided an update to the OPSG. The OPSG agreed that the Proposed Solution addresses the issue defined and agreed with the implementation approach. A member requested that a timeline was drafted to show how MP116's implementation would affect the forecasts after the scheduled implementation (24 February 2022). This has now been included in this Modification Report (see Section 6 above).

Views against the General SEC Objectives

Proposer's views

The Proposer believes that MP116 better facilitates SEC Objectives (a)[1] and (b)[2]. This is due to the updated forecasting process delivering an enhanced level of accuracy of forecasted Service Request volumes. This aids the efficient provision, installation, operation and interoperability of smart metering systems at energy consumers' premises and allows the DCC to comply with the objectives of the DCC licence while optimising DCC System capacity.

Industry views

Respondents to the Refinement Consultation felt that the modification better facilitates SEC Objectives (a) and (b) and agreed with the Proposer's rationale.

Views against the consumer areas

Improved safety and reliability

This modification will have a neutral impact on safety and reliability of the smart metering systems.

Lower bills than would otherwise be the case

This modification will have a neutral impact on the cost of energy bills.

Reduced environmental damage

This modification will have a neutral impact on environmental damage.

[1] Facilitate the efficient provision, installation, operation and interoperability of smart metering systems at energy consumers' premises within Great Britain.

[2] Enable the DCC to comply at all times with the objectives of the DCC licence and to discharge the other obligations imposed upon it by the DCC licence.

Improved quality of service

This modification will provide a positive impact on the quality of service as the Proposed Solution will allow the DCC to accurately forecast the number of Service Requests due to be sent in the short-term, medium-term, and long-term. This will enable the DCC to better control and balance the capacity, benefiting the whole industry.

Benefits for society as a whole

This modification will have a neutral impact on society.

Refinement Consultation responses

SECAS received a total of six responses (five Large Suppliers and one Network Party) to the MP116 Refinement Consultation.

The majority of respondents were generally supportive of the modification's intent, though felt that the legal text and DCC User Guidance document still needed further refinement and clarification. Four respondents felt that the solution put forward will effectively address the issue identified. SECAS has since worked with the Proposer and the SEC Lawyer to create updated versions of the documents, addressing where possible the respondents' comments and suggestions.

Respondents were satisfied with a targeted 2022 implementation, however one respondent suggested that the modification could be implemented sooner. SECAS advised that following further revisions of the legal text and DCC User Guidance document, the modification will not be voted upon until January 2021. This would mean that the soonest scheduled release would be the February 2022 SEC Release.

Respondents felt that there would be a positive impact on their organisations as there would be a time saving in not having to provide their own forecasts, however it was difficult to quantify as they will need to provide input into and validate the new forecasting process.

The majority of respondents agreed that MP116 better facilitates SEC Objectives (a) and (b), agreeing with the reasons set out within this Modification Report. A key point raised was that if MP116's implementation results in a higher level of forecast accuracy, the DCC will be able to better manage their services which will be of benefit to the consumer.

Three respondents felt that this modification should be approved, noting the costs and benefits of the Proposed Solution. Another supported the intent, but felt further work needed to be carried out.

One respondent felt that the DCC should instead be working towards maximising the required capacity as relying on forecasts is not enough. This is due to the market constantly developing and the use of current and historic data not supporting future trends. They also stated that there is no accountability in the DCC taking on board the information provided by Users. The DCC responded stating that if the current forecasting process remains in place, Users will still be required to submit forecasts that are deemed inaccurate. This would result in the DCC having to provide a service with a significant increase in capacity to facilitate inaccurate forecasts. The respondent believed that this would come at a high cost.

Appendix 1: Progression timetable

Following the Working Group's review of the Refinement Consultation responses, SECAS will provide the updated Modification Report to the CSC and request that MP116 enters the Report Phase. If the CSC agrees, this modification will be issued for Modification Report Consultation ahead of the Change Board vote under Self-Governance.

Timetable	
Action	**Date**
Draft Proposal raised	18 Feb 2020
Presented to CSC initial comment	25 Feb 2020
Presented to CSC for final comment and recommendations	31 Mar 2020
Panel converts Draft Proposal to Modification Proposal	17 Apr 2020
Proposed Solution developed with the Proposer	May 2020
Modification discussed with Working Group	1 Jul 2020
Legal text developed with the Proposer	Aug 2020
Modification discussed with Working Group	2 Dec 2020
Further refinement of the Proposed Solution	Dec 2020 – Feb 2021
Modification discussed with Working Group	3 Mar 2021
Guidance document produced by the DCC	Apr 2021
Modification discussed with Working Group	5 May 2021
Refinement Consultation	13 Jul – 9 Aug 2021
Refinement Consultation responses discussed with Working Group	6 Oct 2021
Modification discussed with the OPSG	2 Nov 2021
Modification Report presented to CSC	30 Nov 2021
Modification Report Consultation	1 Dec – 31 Dec 2021
Change Board Vote	26 Jan 2022

Appendix 2: Glossary

This table lists all the acronyms used in this document and the full term they are an abbreviation for.

Glossary	
Acronym	**Full term**
ADT	Anomaly Detection Threshold
CSC	Change Sub-Committee
DCC	Data Communications Company

Glossary	
Acronym	**Full term**
ADT	Anomaly Detection Threshold
DIG	Distributor Issues Group
ESME	Electricity Smart Metering Equipment
HHT	Hand-Held Terminal
LTLF	long-term load forecasting
MTLF	medium-term load forecasting
OPSG	Operations Group
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
STLF	short-term load forecasting
SR	Service Request
SRV	Service Reference Variant