

# SEC Modification Proposal

- **DCC Impact Assessment (IA) - FINAL**
- **Mod Proposal Ref: SECMP 0023**
- **Mod Proposal Title: Correct Units of Measure for Uncontrolled Gas Flow Rate**
- **Mod Path: Path 2 - Authority determination**



<b>Version:</b>	<b>1.0</b>
<b>Date:</b>	<b>02/01/18</b>
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<b>Classification:</b>	<b>DCC PUBLIC</b>

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# 1 Introduction

## 1.1 Document Purpose

The purpose of this DCC Impact Assessment (IA) is to provide the relevant Working Group with the information requested in accordance with SEC Section D6.9 and D6.10.

## 1.2 Previous information provided by DCC

This IA is provided further to a DCC Preliminary Assessment (PA), which was returned to the Working Group on 31<sup>st</sup> March 2017. This document builds on the information previously provided as part of the PA, clarifying and refining the impact of this SEC Modification on DCC.

This DCC Impact Assessment was requested of DCC on 18<sup>th</sup> May 2017.

## 1.3 DCC Contact Details

Please raise any queries regarding this DCC Impact Assessment using the contact details provided below.

Name	DCC - SEC Modification queries
Contact email	<a href="mailto:Mods@smartdcc.co.uk">Mods@smartdcc.co.uk</a>

## 1.4 Modification description

The Proposer of this modification summarises the change as follows:

*SMETS requires that GSME have an Uncontrolled Gas Flow Rate (UGFR) configuration data item. Its function relates to Supply being Enabled on the User Interface of the GSME. Specifically, when Supply is Enabled, the GSME has to check that the flow rate does not exceed the UGFR. If it does exceed the value set, then the Supply is disabled.*

*Currently GBCS requires that the UGFR is set in whole numbers of meters cubed per hour.*

*This modification is to require in GBCS that the UGFR can be set on GSME in ten-thousandths of meters cubed per hour, so in tenths of a litre per hour.*

## 1.5 Requirements

The requirements for this modification have been developed by the Working Group during the Refinement phase. The impact on DCC has been assessed against the Business Requirements and the corresponding draft legal text set out in the Solution Design Document – SECMP0023 Solution document v0.4 effective 21st December 2016.

Based on the discussions at the Working Group, DCC considers the requirements for SECMP 0023 to be **STABLE** (low risk of change). DCC is not aware of any Working Group discussions relating to changes to requirements or assumptions. Where the requirements set out in the Solution Design Document above change, DCC will be required to carry out further impact assessment.

## 2 Impact on DCC's Systems, Processes and People

This section describes the impact of SECMP 0023 on DCC's Services and Interfaces that impact Users and/or Parties.

### 2.1 Summary

- This Modification Proposal is to require in GBCS that the Uncontrolled Gas Flow Rate can be set on the GSME in ten-thousandths of meters cubed per hour (m<sup>3</sup>/hour). It is also required that DCC Data Systems perform anomaly detection packet inspection to ensure that the 'Uncontrolled flow threshold' is greater than a specified value.
- Impacted Systems, Processes and People:
  - Primary impacts on DSP Systems (multiple components) within the DCC ecosystem:
    - Service Request Processing including DCC User Interface Specification
    - Anomaly Detection

## 2.2 Impacts on DCC Services and Interfaces

The following table describes the detailed impacts of SECMP 0023 on DCC's Systems and Processes.

Ref	Impact on DCC	User or Party Impact
001	<p><b>Service Request processing – Additional GBCS use case GCS24a</b></p> <p>Updates to add a new GBCS use case (GCS24a) which is expected to replace the existing GBCS Use Case GBCS24;</p> <ul style="list-style-type: none"><li>In the new Use Case the Divisor parameter of the Set Uncontrolled Flow Threshold command changes to 10,000 from the existing value of 1 in order to improve the granularity of the value of the UGFR</li></ul>	<p>New version of the DUIS and MMC SEC Subsidiary Document (SSD) and associated DUIS and MMC XML Schemas to be created by DCC and implemented within both the DCC Systems and User Systems (where required) to support the new Use Case.</p>

002

**Service Request processing – Modify the definition of existing SRV 6.7 Update Device Configuration (Gas Flow)**

1. Modify the definition of SRV 6.7 with a choice to specify:

- a. the UGFR without decimal places (transforms to GCS24 – the existing mechanism); and
- b. the UGFR with decimal places (transforms to GCS24a

This would allow the existing SRs to continue to be available for use with Devices which do not support the new GBCS Use Case GCS24a.. This choice of parameters for old or new use cases allows the Service User to fill in whichever one they wanted and:

- if they fill in the parameter a from the list above then it only works with the old use case (GCS24).
- if they fill in the parameter b from the list above then it only works with the new use case (GCS24a), regardless of whether there are any digits after the decimal point.

2. The DCC Data Systems shall reject a Service Request targeted at a device that supports the new GBCS Use Case but submitted using the old DUIS definition. To handle this a new error code E060701 is introduced:

- a. If SRV 6.7 is targeted at a device that supports the new GBCS Use Case (GCS24a), but the value of UGFR within the SRV is specified using the parameter that does not support decimal places.
- b. If SRV 6.7 is targeted at a device that supports only the old GBCS Use Case (GCS24), but the value of UGFR within the SRV is specified using the parameter that supports decimal places.

New version of the DUIS and MMC SEC Subsidiary Document (SSD) and associated DUIS and MMC XML Schemas to be created by DCC and implemented within both the DCC Systems and User Systems (where required) to support the new Use Case.

Ref	Impact on DCC	User or Party Impact
003	<p><b>Service Request Processing – Anomaly Detection</b></p> <p>The existing attribute limit check (for the upper limit) for the Use Case GCS24 shall be modified to a lower limit check, and the same shall be extended to the new Use Case GCS24a - as both Use Cases affect the same parameter.</p> <p>These attribute limits are set only by DCC. Since there are no new SRV's there is no need for the Service Users to set volume thresholds, and therefore for the Service Users perspective there are no changes to the anomaly detection interface.</p> <p>It is not expected that this will have an impact on the ADA file as there will be no new attributes. There will be an impact on Appendix B of TADIS to list the additional GBCS use case in which the existing attributes will be used.</p>	No User or Party Impact
004	<p><b>DCC System Processing – System Updates and associated design documentation updates (new)</b></p> <p>Updates to DSP Internal System processing to support the additional GBCS Use Case and Service Request Processing as noted above.</p> <p>Updated DCC Systems design documents to reflect the changes requested by this modification</p>	No User or Party Impact



Ref	Impact on DCC	User or Party Impact
005	<b>Parse and Correlate</b> <ol style="list-style-type: none"><li>1. Replace existing GBCS Use Case 'GCS24 Set Uncontrolled Gas Flow Rate and Supply Tamper State on the GSME' with the new Use Case 'GCS24a Set Uncontrolled Gas Flow Rate at greater resolution and Supply Tamper State on the GSME'</li><li>2. Support new DUIS/MMC Schema</li><li>3. Provide support for existing GBCS Use Case on previous DUIS/MMC Schema</li></ol>	New version of Parse and Correlate

Ref	Impact on DCC	User or Party Impact
<b>006</b>	<b>GFI/RTDS</b> <ol style="list-style-type: none"> <li>GFI will be impacted as follows: <ul style="list-style-type: none"> <li>Support encoding and decoding of command and response messages for the new use case GCS24a.</li> <li>Support the new use case on the GSME emulator component.</li> <li>Add a new test case to exercise the new use case.</li> <li>Documentation updates and release tasks.</li> </ul> </li> <li>RTDS will be impacted as follows: <ul style="list-style-type: none"> <li>Create example GBCS payloads for GCS24a commands, responses and pre-commands.</li> <li>Create example DUIS requests.</li> <li>Create example MMC responses.</li> </ul> </li> </ol>	New versions of GFI and RTDS
<b>007</b>	<b>Service Management – Additional Support Calls</b> <p>The implementation of this Change Request is estimated to result in an initial additional two support calls per month.</p>	Support for the new functionality will be provided.

### 3 Impact on Security

This section describes the impact DCC considers SECMP 0023 will have on Security of DCC's Total System.

DCC has carried out a security risk assessment for SECMP 0023 and determined that **there are no material security risks** associated with the implementation of DCC's proposed solution.

## **4 Testing Considerations**

This Impact Assessment includes the cost to develop and deliver this SEC Modification up to and including Pre-Integration Testing (PIT). The cost for Systems Integration Testing (SIT) and User Integration Testing (UIT) will be determined once the full scope of the release that this SEC Mod is allocated to is finalised; the cost will apply to the release and not to an individual SEC Modification.

## **5 Implementation Timescales and Releases**

### **5.1 Change Lead Times**

From the date of approval (in accordance with Section D9 of the SEC), to implement the changes proposed DCC requires a lead time of: **13 months.**

## 6 DCC Costs and Charges

Implementation Costs							
Implementation Phase:	Design	Build	Pre-Integration Testing	System Integration Testing	User Testing	Implementation to Live	Total
SECMP0023	Included	Included	Included	Not included	Not included	Not included	£414,393
Implementation costs – supplementary Information							
Implementation cost assumptions	<p>A. Costs are exclusive of VAT and any applicable finance charges</p> <p>B. The majority of the costs above represent labour costs</p> <p>C. Costs provided for Design, Build, and Pre-Integration Testing are quotes provided by the Service Providers and assuming there is no scope change can be considered the final costs. DCC have reviewed and challenged the costs from the Service Providers to ensure this reflects best price to date.</p> <p>D. Service Providers were asked what the costs for System Integration Testing would be. Their initial estimate was provided and is reflected above. DCC considers that further reduction in these costs may be possible as part of final contract negotiations.</p> <p>E. Costs provided for User Testing and Implementation to Live are an initial estimate created by DCC and may differ from final costs provided by the Service Providers as part of a contracted solution for the approved release.</p>						

	<p>F. A reduction of circa 20% in costs can be assumed for Systems Integration Testing and User Testing and a reduction of circa 33% in costs can be assumed for Implementation to Live</p> <p>G. User Testing estimates provided above represent an incremental cost to the existing testing arrangements that are in place and provided for by DCC as part of the existing cost base. The testing environments that the DCC provides as part of Testing Services will be open to all User Roles and multiple Users within each User Role to ensure that any Users wishing to test this SEC Modification are able to do so. These cost estimates have been provided on the assumption that the test environment would be made available for a minimum of 15 working days to enable Users to test the changes associated with this SEC Modification. The User Testing costs assume there will be 15 days of User Testing with up to 10 Users undertaking testing.</p> <p>H. The split of costs between Design, Build and Pre-Integration testing phases has been derived by DCC from the Service Provider submissions.</p>
Explanation of Implementation Phases	<p>DCC's implementation costs are provided by Implementation Phases. The following describes the purpose of each phase:</p> <ul style="list-style-type: none"> <li>• <i>Design: The production of detailed System and Service designs to deliver all new requirements.</i></li> <li>• <i>Build: The development of the designed Systems and Services to create a solution (e.g. code, systems, or products) that can be tested and implemented.</i></li> <li>• <i>Pre-Integration Testing: Each Service Provider tests its own solution to agreed standards in isolation of other Service Providers. This is assured by DCC.</i></li> <li>• <i>Systems Integration Testing: All Service Providers PIT complete solutions are brought together and tested as an integrated solution, ensuring all Service Provider solutions align and operate as an end-to-end solution.</i></li> <li>• <i>User Integration Testing: Users are provided with an opportunity to run a range of pre-specified tests in relation to the relevant change.</i></li> <li>• <i>Implementation to Live: The solution is implemented into production environments and ready for use by Users as part of a live service. This service is subject to implementation costs.</i></li> </ul>

## **6.1 On-going Operational Costs**

None identified.

## **6.2 Impact on Charges**

The following section describes the potential impact on Charges levied by DCC in accordance with the SEC.

DCC notes that SECMP 0023 does not propose any changes to the charging arrangements set out in SEC Section K. DCC has assumed that, in the absence of an agreed alternative arrangement by the Working Group, the costs associated with the implementation of SECMP 0023 will be allocated to DCC's fixed cost base and passed through to Parties via Fixed Charges.



## 7 RAID

The detail below provides a summary of the risks, assumptions, issues, dependencies and clarifications observed during the production of a DCC Impact Assessment. DCC requests that the Working Group considers this section and considers any material matters that have been identified during this Impact Assessment phase. Any changes may impact the proposed solution, implementation costs and/or implementation timescales.

### 7.1 Risks

Ref	Risk Description	Probability	Impact
R-001	<p><b>DUIS XML versioning and backwards compatibility</b> - DCC would strongly recommend to the SEC panel, Working Group and Wider Industry to fully consider the impacts of this change upon backwards compatibility requirements for DUIS. DCC has within our impact assessment assumed that the DCC solution should continue to be made available to Users who do not choose to upgrade their DUIS XML Schema to reflect the changes for this SEC modification and wish to continue sending the existing service requests as per the DUIS XML Schema v1.0.</p> <p>Support for previous DUIS versions enables Users to continue to use the DCC Systems without having to update their User Interfaces and so limit the cost of change associated to this modification for any parties not impacted by the change or wishing not to upgrade their DUIS version. Although not directly asked for within the Working Group's business requirements DCC believes that offering this is important as its aligns with the DCC solutions design principles and DCC Licence objections of delivering efficient solutions for industry.</p>	Medium	Medium

### 7.2 Assumptions

DCC would like to confirm the validity of assumptions listed below with the Working Group. These assumptions have been used in the creation of this DCC Impact Assessment. Any changes to the assumptions may require DCC to undertake further assessment, prior to the contracting and implementation of this change.

Ref	Assumption Description	Assumption Accepted
A-001	<p><b>Charging methodology</b> - No changes will be made to Section K of the Smart Energy Code as part of this Modification Proposal. The costs associated with this change will be recovered through Fixed Charges to SEC Parties.</p>	

Ref	Assumption Description	Assumption Accepted
A-002	The existing attribute limit check on the UGFR value for GCS24 is against an upper limit. But the SECAS solution design recommends the same attribute to be checked against a lower limit for GCS24a. This IA assumes that it is acceptable to use the lower limit check for both the use cases rather than requiring separate limits per use case, which in itself would be a bigger change.	
A-003	It is unclear if the meters are shipped with an acceptable UGFR value set on them. If not, there is a potential demand spike as suppliers use SR 6.7 Update Device Configuration (Gas Flow) to update the UGFR for their devices after this change goes live. It is assumed that the DSP will not need to provide any special handling in this scenario and that the expectations will be managed by the DCC & SECAS in order to spread out the load voluntarily. We presume that if deemed appropriate there will be SEC wording regarding obligations about fair use in this area.	
A-004	This Impact Assessment has assumed an 'as is' baseline of the R2.0 specifications.	
A-005	DUIS XSD – Request and Response schemaVersion attributes will be used to indicate the change to the schema	
A-006	MMX XSD – Response schemaVersion attribute will be used to indicate the change to the schema	
A-007		

### 7.3 Issues

Ref	Issue Description	Severity	Priority
I-001			

### 7.4 Dependencies

Ref	Dependency	Dependency Accepted
D-001	Published updates to GBCS containing the changes required for SECMP0023 will be required before design and implementation work can commence.	
D-002	There is a dependency on the implementation of generic approaches to DUIS versioning and GBCS versioning being implemented in the same release or an earlier release of the DSP.	

## 7.5 Clarifications Required

Ref	Clarification	Status
C-001		

## 8 Appendix B – Design Specification Updates

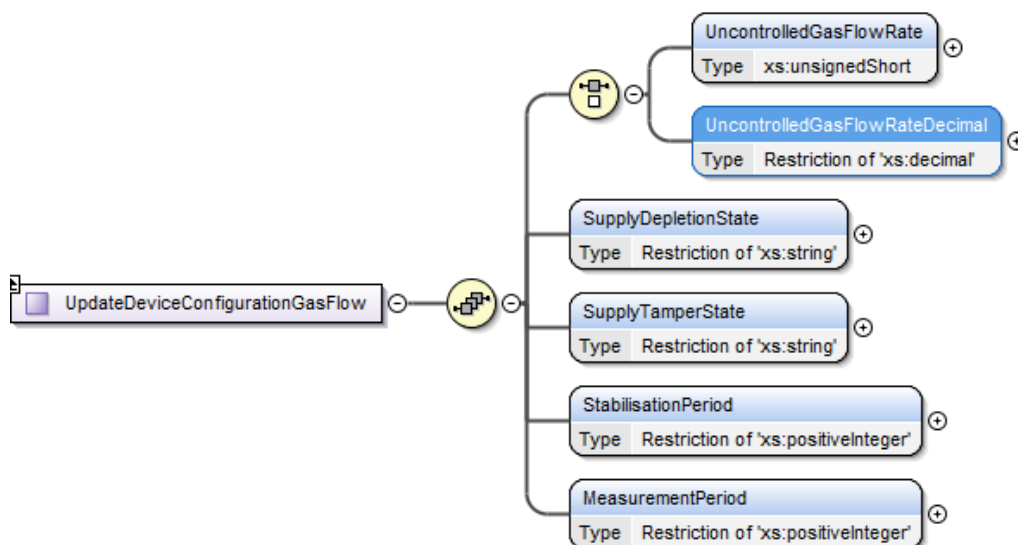
This section sets out DCC's proposed changes required to DUIS because of this Modification Proposal. The changes are indicative and are designed to support the Working Group Consultation.

**Version – The changes described below are against DCC User Interface Specification version 2.0 draft 3. The use of 'vn.0' indicates the implementation version for this change.**

### DUIS Changes

#### 8.1 SR 6.7 Update Device Configuration (Gas Flow)

The ServiceRequest Body XML element of the XSD defines the structure of all of the Service Requests. Its UpdateDeviceConfigurationGasFlow XML element defines this Service Request and contains the Uncontrolled Gas Flow Rate, the Supply Depletion State, the Supply Tamper State, the Stabilisation Period and the Measurement Period.



DUIS Section 3.8.59, Table 164 shall be updated as shown below:

#### ***3.8.59.1 Service Description***

<b>Service Request Name</b>	UpdateDeviceConfiguration(GasFlow)
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<b>Service Reference</b>	6.7	
<b>Service Reference Variant</b>	6.7	
<b>Eligible Users</b>	Gas Supplier (GS)	
<b>Security Classification</b>	Critical	
<b>BusinessTargetID</b> - <b>Device Type applicable to this request</b>	Gas Smart Meter (GSME)	
<b>Can be future dated?</b>	No	
<b>On Demand?</b>	Yes	
<b>Capable of being DCC Scheduled?</b>	No	
<b>Command Variants applicable to this Request - (Only one populated)</b>	For Service Request 4 - Transform  For Signed Pre-Commands 5 - Send (Critical) 6 - Return for local delivery (Critical) 7 - Send and Return for local delivery (Critical)	
<b>Common Header Data Items</b>	See clause 3.4.1.1	
<b>Data Items Specific to this Service Request</b>	See Specific Data Items Below	
<b>Possible responses from this Service Request</b>	These are the possible responses applicable to this Service Request. Please see clause <b>Error! Reference source not found.</b> for more details on processing patterns <ul style="list-style-type: none"> <li>• Acknowledgement</li> <li>• Response to Transform Request - PreCommand Format</li> <li>• Service Response from Device – GBCSPayload</li> <li>• Response to a Command for Local Delivery Request - LocalCommand Format</li> </ul> Also see Response Section below for details specific to this request	
<b>Response Codes possible from this Service Request</b>	See clause 3.5.10 for Common Response Codes	
<b>GBCS Cross Reference</b>	Electricity	Gas
<b>GBCS v1.0 MessageCode</b>	N/A	0x007D
<b>GBCS v1.0 Use Case</b>	N/A	GCS24
<b>GBCS v1.0 Use Case Name</b>	N/A	Set Uncontrolled Gas Flow Rate and Supply Tamper State on the GSME
<b>GBCS n.0 Message Code</b>	N/A	0x00FC
<b>GBCS n.0 Use Case</b>	N/A	GCS24a
<b>GBCS n.0 Use Case Name</b>	N/A	GCS24a Set Uncontrolled Gas Flow Rate at greater resolution and Supply Tamper State on the GSME

### 3.8.59.2 Specific Data Items for this Request

UpdateDeviceConfigurationGasFlow Definition

Data Item	Description / Valid Set	Type	Mandatory	Default	Units
UncontrolledGasFlowRate	The flow rate in units of volume per unit time used in the detection of uncontrolled flow of gas on Enablement of Supply	xs:unsignedShort	Yes	None	m <sup>3</sup> /hour
UncontrolledGasFlowRateDecimal	The flow rate in units of volume per unit of time used in the detection of uncontrolled flow of gas on Enablement of Supply.  Accepts decimal places.	Restriction of  Xs:decimal  (minInclusive = 0,  maxInclusive = 6.5535,  fractionDigits=4)	Yes	None	m <sup>3</sup> /hour
SupplyDepletionState	A setting to control the state of the Supply in the case of loss of power to the Gas Smart Meter  Valid set: <ul style="list-style-type: none"><li>• Unchanged</li><li>• Locked</li></ul>	Restriction of xs:string (Enumeration)	Yes	None	N/A
SupplyTamperState	A setting to control the state of the Supply in the case of a Tamper Event being detected  Valid set: <ul style="list-style-type: none"><li>• Unchanged</li><li>• Locked</li></ul>	Restriction of xs:string (Enumeration)	Yes	None	N/A
StabilisationPeriod	Value indicating the time given to allow the flow to stabilize. It	Restriction of  xs:positiveInteger	Yes	None	10 <sup>th</sup> second

	is defined in units of tenths of a second	(minInclusive = 1, maxInclusive = 255)			
MeasurementPeriod	Value indicating the period over which the flow is measured and compared against the Uncontrolled Flow Threshold value. It is defined  in units of 1 second	Restriction of  xs:positiveInteger  (minInclusive = 1, maxInclusive = 65535)	Yes	None	Seconds

**Table 1 : UpdateDeviceConfigurationGasFlow (sr:UpdateDeviceConfigurationGasFlow) data items**

### Specific Validation for this Request

See clause 3.2.5 for general validation applied to all Requests.

Response Code	Response Code Description
E060701	<p>1. For the GSME Devices with a Firmware version certified to a GBCS version prior to vn.0</p> <p>i. If the value of uncontrolled gas flow rate is specified by using the XML tag UncontrolledGasFlowRate then the Service Request is mapped to GBCS Use Case GCS24</p> <p>ii.If the value of uncontrolled gas flow rate is specified by using the XML tag UncontrolledGasFlowRateDecimal then the Service Request is rejected with error E060701</p>
E060701	<p>For the GSME Devices with a Firmware version certified to GBCS vn.0 or later.</p> <p>i. If the value of uncontrolled gas flow rate is specified by using the XML tag UncontrolledGasFlowRate then the Service Request is rejected with error E060701</p> <p>ii.If the value of uncontrolled gas flow rate is specified by using the XML tag UncontrolledGasFlowRateDecimal then the Request is mapped to GBCS Use Case GCS24a</p>

### MMC Changes

Section 5.56 Update Device Configuration (Gas Flow) – Update Table 146 as per below:

Data Item	Gas Response
<b>GBCS v1.0</b> GBCSHexadecimalMessageCode	0x007D
<b>GBCS v1.0</b> GBCS Use Case (for reference - not in header)	GCS24
<b>GBCS vn.0</b> GBCSHexadecimalMessageCode	0x00FC
<b>GBCS vn.0</b> GBCS Use Case (for reference – not in header) <i>i</i>	GCS24a