SEC
Smart Energy Code

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Smart Energy Code

MP162

‘SEC changes required to deliver MHHS’

Modification Report

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About this document

This document is a draft 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.

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This document also has three annexes:

- **Annex A** contains the business requirements for the solution.
- **Annex B** contains the Data Communications Company (DCC) Preliminary Assessment response[1].
- **Annex C** contains the DCC's current design principles and assumptions.

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[1] To access the embedded Excel workbook included within this document, please download the Word version available on the MP162 webpage.

1. Summary

This proposal has been raised by Richard Vernon from the DCC.

As the smart metering rollout continues, there will be more and more premises with Electricity Smart Metering Equipment (ESME) installed capable of recording consumption in each half-hour period. Ofgem's Electricity Settlement Reform Significant Code Review (SCR) has concluded that settling all consumers on a half-hourly basis would bring net benefits of up to £4.5bn by 2045[2]. It has therefore concluded that Suppliers should be mandated to settle their customers on a half-hourly basis (if that consumer has not opted out). Delivering the full solution for market-wide half-hourly settlement (MHHS) will require changes to the Smart Energy Code (SEC) and to the DCC Systems. Ofgem requested the DCC raise a SEC modification to progress and deliver these changes.

MP162 proposes to introduce all the expected changes needed under the SEC and the DCC Systems for MHHS, which will include:

- Introducing a new User Role for Parties other than Suppliers who will be carrying out the Meter Data Retrieval (MDR) service.
- The User Entry Process requirements for the new User Role.
- Defining the relevant Service Requests the new User Role will have access to and the associated Target Response Times (TRTs) and testing scenarios.
- The associated security and data privacy arrangements that will apply to the new User Role.

This modification is expected to directly impact Suppliers and the DCC and may have indirect impacts on other SEC Parties. The estimated DCC implementation costs are between £29m and £59m excluding Systems Integration Testing (SIT) and User Integration Testing (UIT) costs – these costs will be assessed in the DCC Impact Assessment. This modification is targeted for the November 2023 SEC Release.

2. Issue

What are the current arrangements?

Generators and Suppliers trade electricity in the wholesale market for each half-hourly period in the run-up to the period of actual consumption. This is based on Suppliers' forecasts of how much energy its customers will consume. The actual amount of energy generated or consumed is then measured, along with any further actions taken by National Grid in real-time to keep the system balanced (the amount of generation at any given time matches the demand from consumers). Settlement reconciles any differences between the electricity a participant buys or sells, and the actual generation or demand realised. Any surplus or shortfall in a participant's position in each half-hour period is subsequently determined through the settlement process, and this difference is charged accordingly. These arrangements are governed and managed under the Balancing and Settlement Code (BSC).

The largest consumers, such as industrial sites, are already required to be settled on a 'half-hourly' basis, and have the metering already equipped to measure consumption in each half-hour period.

[2] Please see Ofgem's final business case and decision to implement market-wide half-hourly settlement for more details.

Suppliers can also choose to settle consumers half-hourly through Ofgem's elective half-hourly settlement work. However, most smaller businesses and households continue to be settled on a 'non-half-hourly' basis. For these consumers, periodic meter reads are taken, usually at intervals of weeks or months. Profiles of average customer usage are then used to allocate the customer's consumption to the half-hourly periods between the meter reads. It is these estimates that are then used in settlement.

Smart Metering Equipment Technical Specification (SMETS) compliant ESME (both SMETS1 and SMETS2+) can record the amount of energy consumed or exported within every half hour period. This provides an opportunity to improve both the speed and the accuracy of settlement. This can also help to enable new products and services, for example in supporting the use of electric vehicles, heat pumps or making use of smart appliances. These can deliver positive outcomes for consumers through lower bills, reduced environmental impacts, enhanced security of supply and a better quality of service.

What is the issue?

As the smart metering rollout continues, there will be more and more premises with ESME capable of recording consumption in each half-hour period. Ofgem has considered whether the whole electricity market should be settled on a half-hourly basis, and in July 2017 it launched its Electricity Settlement Reform Significant Code Review.

Ofgem's analysis has predicted that settling all consumers on a half-hourly basis would bring net benefits of between £1.6bn and £4.5bn over the period 2021-2045. In April 2021, Ofgem published its final business case and decision to implement market-wide half-hourly settlement, confirming the decision to move forward with MHHS.

During the SCR, Ofgem has developed its target operating model (TOM) for how MHHS should be implemented. Changes to the SEC and to the DCC Systems will be required as part of the full solution. Most of the changes being made to the impacted Codes are being managed by the Code Change and Development Group (CCDG).

However, Ofgem has recognised that the changes required for the SEC and the DCC Systems are technical in nature and therefore should progress under the governance of a SEC modification. High level requirements will initially be defined by Ofgem and then refined via the SEC modification framework. This will allow proper scrutiny of the different options and costs by the SEC Panel, its Sub-Committees, and the wider industry. On 27 April 2021, Ofgem issued a request to the DCC to raise the SEC modification.

What is the impact this is having?

Implementing the full TOM for MHHS will require changes to the SEC and to the DCC Systems. Without these changes, the full MHHS solution cannot be delivered.

Impact on consumers

Ofgem has predicted that settling all consumers on a half-hourly basis would bring net consumer benefits of between £1.6bn and £4.5bn over the period 2021-2045. Ofgem considers that the full

benefits will only be realised if all Suppliers are required to settle their consumers on a half-hourly basis[3].

3. Solution

MHHS TOM – SEC requirements

During the SCR, Ofgem has developed its TOM for how the full MHHS solution should be delivered. The SEC and the DCC Systems changes will need to deliver the requirements set out in the TOM. This modification will cover all the SEC changes required to deliver the MHHS solution, not just those impacting the DCC Systems.

Proposed Solution

The MP162 solution will cover all the expected changes needed under the SEC and the DCC Systems for MHHS, which will include:

- The introduction of a new User Role for Parties carrying out the MDR service.
- The User Entry Process requirements for the new User Role.
- Defining the relevant Service Requests the new User Role will have access to and the associated TRTs and testing scenarios.
- The associated security and data privacy arrangements that will apply to the new User Role.

However, the full MHHS solution is still being developed under the wider MHHS Programme and this is not expected to complete before April 2022. The SEC solution developed has been based on delivering the TOM as it is currently proposed; there is a risk that this changes as the end-to-end solution is refined. It is also possible that further consequential changes to the SEC could arise later, which would likely be progressed under separate modifications.

The DCC is seeking to validate its current assumptions on the intended use of the MDR User role, the scheduling of Service Requests specifically in relation to half-hourly settlement data, and the associated TRTs. The DCC recognises that this is earlier in the process than normal but an accurate view from all parties will help support the delivery timeline.

The full business requirements for this modification can be found in Annex A. The DCC's Preliminary Assessment providing more details on the DCC's solution can be found in Annex B. The DCC's design principles and assumptions can be found in Annex C.

Introduction of the MDR User role

A new DCC User Role, 'MDR User', will be created.

[3] Domestic consumers can opt out of sharing their import half-hourly data for settlement purposes. In this case, the Supplier would settle these consumers using either their daily or monthly consumption and an appropriate load shape to estimate their half-hourly consumption.

The identity of the Meter Data Retrieval Agent (MDRA) appointed for a given Meter Point Administration Number (MPAN) and the effective dates for this appointment will be registered in the Meter Point Administration Service (MPAS). This information will be passed to the DCC Systems via the Central Switching Service (CSS) and stored in the Registration Data. The DCC will perform any validation for an MDR User against this data.

User Entry Process requirements

A new Party Category for 'MDR Users' is proposed be established under the SEC, which will be treated the same as the existing 'Other SEC Party' Party Category.

A Supplier who elects to operate as an MDRA will not need to register under the new 'MDR Party' Party Category or the MDR User role and may continue to operate under the SEC as a 'Large Supplier' or a 'Small Supplier' as applicable.

Any Supplier agent operating as an MDRA on behalf of a Supplier will be required to accede to the SEC under the new 'MDR Party' SEC Party Category if it has not already acceded under the 'Other SEC Party' Party Category. It will also be required to register as a DCC User in the new MDR User role. An MDR User will be required to undergo appropriate User Entry Process Testing (UEPT) for the role; new Test Scenarios will be defined for MDR Users undertaking the User Entry Process.

This part of the solution is still being fully developed with the Working Group, and more detail will be provided later in the Refinement Process.

Service Requests and TRTs

An MDR User will be able to use the following Service Requests (SR):

Valid Service Requests for an MDR User			
DCC SR ref.	**Service Request name**	**On Demand?**	**DCC Scheduled?**
4.1.1	Read Instantaneous Import Registers	Yes	No
4.2	Read Instantaneous Export Register Values	Yes	*Yes*[4]
4.6.1	Retrieve Import Daily Read Log	Yes	Yes
4.6.2	Retrieve Export Daily Read Log	Yes	Yes
4.8.1	Read Active Import Profile Data	Yes	Yes
4.8.3	Read Export Profile Data	Yes	Yes
4.17	Retrieve Daily Consumption Log	Yes	Yes
5.1	Create Schedule	Yes	No
5.2	Read Schedule	Yes	No
5.3	Delete Schedule	Yes	No
8.2	Read Inventory	Yes	No

The DCC will use Access Control to validate any Service Request sent by an MDR User against the Registration Data.

[4] SR 4.2 is not currently able to be scheduled. This will be made schedulable as part of MP162.

A new flag will be added to the Service Requests above for the User to denote whether the Service Request is being sent for MHHS purposes. Suppliers will be expected to denote any Service Request sent solely for MHHS purposes with this flag, for the longer TRTs to be applied. The existing TRTs can continue to be used by Suppliers for all existing purposes. MDR Users will have any Service Requests automatically marked as being for MHHS purposes.

The TRTs below will be applied to these Service Requests depending on whether they are marked as being for MHHS purposes:

TRTs for Eligible Users for MHHS data retrieval Service Requests								
DCC SR ref.	SR sent to support existing services *Eligible Users[5]: IS, ES*				SR sent to support MHHS service *Eligible Users[5]: IS, ES, MDR*			
	SMETS2		SMETS1		SMETS2		SMETS1	
	Scheduled	On Demand	Scheduled	On Demand	Scheduled	On Demand	Scheduled	On Demand
4.1.1	N/A	30 secs	N/A	16 secs	N/A	24 hrs	N/A	24 hrs
4.2	N/A	30 secs	N/A	16 secs	N/A	24 hrs	N/A	24 hrs
4.6.1	24 hrs	30 secs	24 hrs	16 secs	24 hrs	24 hrs	24 hrs	24 hrs
4.6.2	24 hrs	30 secs	N/A	N/A	24 hrs	24 hrs	N/A	N/A
4.8.1	24 hrs	5,600 secs	24 hrs	16 secs	24 hrs	24 hrs	24 hrs	24 hrs
4.8.3	24 hrs	30 secs	24 hrs	16 secs	24 hrs	24 hrs	24 hrs	24 hrs
4.17	24 hrs	30 secs	N/A	N/A	24 hrs	24 hrs	N/A	N/A
5.1	N/A	24 hrs	N/A	24 hrs	N/A	24 hrs	N/A	24 hrs
5.2	N/A	24 hrs	N/A	24 hrs	N/A	24 hrs	N/A	24 hrs
5.3	N/A	24 hrs	N/A	24 hrs	N/A	24 hrs	N/A	24 hrs
8.2	N/A	30 secs	N/A	*30 secs*[6]	N/A	30 secs	N/A	30 secs

The DCC is proposing to schedule Service Requests submitted for MHHS across the day, in line with the 24-hour TRTs. This will help to smooth any demand peaks on the DCC infrastructure and maximise capacity re-use wherever possible. The DCC scheduling time periods would apply to **all** scheduled requests from Suppliers and **all** requests (on demand, future dated and scheduled) submitted by MDR Users, in line with the above TRTs.

Users will be expected to issue the correct Service Requests for the data granularity required for a given customer; the DCC will not validate whether a customer has opted out of half-hourly settlement.

Security and privacy arrangements

Suppliers will continue to be subject to the existing User Security Assessments and will continue to not need to undergo Privacy Assessments if they elect to perform the MDRA role in-house. No changes to these are expected due to MHHS.

[5] IS = Import Supplier; ES = Export Supplier; MDR = MDR User

[6] The current SMETS1 TRT of 16 seconds for SR 8.2 is an anomaly. The process for reading Device details from the Smart Metering Inventory (SMI) is the same for both SMETS2 and SMETS1 Devices with processing of such requests limited to the DSP systems. This TRT will be amended to 30 seconds for all Users as part of this modification for alignment with other DCC-Only Service Requests.

Any other Users who register in the MDR User role will be required to undergo User Security Assessments and Privacy Assessments:

- MDR Users will need to undergo an initial Full User Security Assessment (unless they have already undergone an equivalent assessment as an Other User), which will form part of the User Entry criteria They will then be required to adhere to the same SEC Section G 'Security' obligations as an Other User and undergo annual User Security Assessments. MDR Users will also need to declare relevant Anomaly Detection Thresholds (ADTs) in line with the existing provisions.
- MDR Users will need to undergo an initial Full Privacy Assessment (unless they have already undergone an equivalent assessment as an Other User), which will form part of the User Entry criteria. They will then be required to adhere to the same SEC Section I 'Privacy' obligations as an Other User and will need to undergo annual Privacy Assessments.

Privacy Assessments for MDR Users will be based on a gap analysis carried out between the SEC Panel's requirements and the requirements that will be implemented under the BSC. Any outstanding requirements not met under the BSC will be fully contained in the SEC. The detail of these assessments will be developed as the wider MHHS solution is developed.

This part of the solution is still being fully developed with the Working Group and the Security Sub-Committee (SSC), and more detail will be provided later in the Refinement Process.

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

Breakdown of Other SEC Party types impacted			
✓	Shared Resource Providers		Meter Installers
	Device Manufacturers		Flexibility Providers

Suppliers will be directly impacted by the changes being introduced for MHHS. Under the MHHS TOM, Suppliers will be able to choose, for each MPAN, whether to collect half-hourly data for settlement themselves or whether to appoint a third-party agent to perform this activity.

- If Suppliers elect to collect the data themselves, it is likely that their systems will need changing to set up the additional schedules and manage the additional data that will be received to facilitate the MHHS requirements. This will likely be in addition to any existing data they currently receive.

- If Suppliers elect to appoint a third-party agent, they will need to undergo the process to appoint this agent. They may also want to liaise with this agent to manage any potential duplication of data collected.

Shared Resource Providers may be impacted if they carry out any relevant activities on behalf of a Supplier. Other Party Categories are not expected to be directly impacted by MP162 but may be indirectly impacted by the increased volume of traffic that the MHHS solution is expected to generate.

Further details and confirmation on the expected impacts on Parties will be sought via the Refinement Consultation.

DCC System

The DCC will create a new User Role within the DCC Systems for MDR Users.

The DCC will accept and action Service Requests from the new MDR User role, as well as the existing Supplier roles, to retrieve import consumption data and, where configured, export generation data from specified SMETS1 and SMETS2 ESMEs enrolled within the DCC Systems. All Service Requests received from MDR Users will use the existing DCC User Gateway and be subject to Access Control authentication against the identity of the MDR User stored and provided to the DCC within the Registration Data. This authentication will ensure that only registered MDR Users can retrieve the relevant data from each ESME. Where data is successfully retrieved from both SMETS1 and SMETS2+ ESMEs, this data shall be returned across the Smart Metering communication networks to the requesting User.

All authenticated data requests from Suppliers and MDR Users shall be retrieved from each ESME using the Data Service Provider (DSP) scheduling services wherever possible. The DCC expects Users to set up a schedule for all applicable Service Requests, with any on-demand requests kept to a minimum. This will allow the DCC to maximise efficiencies across its systems and minimise the impacts of any demand spikes that could be caused by many on-demand Service Requests being sent at once. Any on-demand requests will be processed in line with the TRTs specified in Section 3 above.

The expected impacts on DCC Systems and the DCC's proposed testing approach can be found in the DCC Preliminary Assessment response in Annex B.

SEC and subsidiary documents

The changes required to the SEC are still being developed. These will be issued and consulted upon later in the Refinement Process.

Technical specification versions

The full impacts on the technical specification documents are still being assessed.

In the Preliminary Assessment, the DCC noted that updates to the DCC User Interface Specification (DUIS) schema and the DCC User Gateway Interface Design Specification (DUGIDS) are anticipated to incorporate the new attribute to indicate dedicated MHHS reads, additional error codes and responses. A new DCC Alert for schedule deletion resulting from MDR appointment changes may be required, subject to clarification.

No Message Mapping Catalogue (MMC) XML changes have been identified.

Subject to the SMETS2 Great Britain Companion Specification (GBCS) issues noted regarding Service Request Variant (SRV) 4.1.1 'Read Instantaneous Import Registers' being used only for SMETS1 Devices (see Section 7 below), no changes to the GBCS have been identified

Consumers

Consumers are not expected to be directly impacted by this modification but are expected to benefit from the full MHHS solution once implemented.

Other industry Codes

This modification forms part of the full MHHS solution, which will impact on several Codes including the SEC. The full MHHS solution and the changes required to the other Codes are being assessed and developed as part of the wider MHHS programme.

Greenhouse gas emissions

This modification is not expected to impact on greenhouse gas emissions.

5. Costs

DCC costs

The estimated DCC costs to implement this modification is between £29m and £59m. This estimate includes the costs up to the end of Pre-Integration Testing (PIT) and the ongoing Application Support costs. Post-PIT costs and any further ongoing costs will be assessed as part of the full Impact Assessment.

The DCC has assessed several scenarios to assess these rough order of magnitude (ROM) costs, which are summarised in the table below. Full details of these costs can be found in Section 8 of the DCC's Preliminary Assessment response in Annex B.

At this stage there is a significant range for these costs. This is due to the level of variability that exists in expected User behaviour, affecting message volumes and over what time these will be processed. The DCC is working with the Working Group to refine its understanding of expected User behaviour, which will better enable the DCC to provide a more accurate cost in the Impact Assessment.

The breakdown of these costs are as follows:

Breakdown of DCC implementation costs			
Service Provider	**Cost type**	**ROM lower costs**	**ROM upper costs**
SMETS2	Fixed	£7.0m	£7.0m
	Variable	£1.5m	£5.3m
SMETS1	Fixed	£6.1m	£6.1m
	Variable	£14.5m	£40.6m
Total		**£29.1m**	**£59.0m**

Fixed costs refer to the costs of all changes required to support the MHHS requirements, irrespective of the Service Request or data volumes that are sent from Users to the DCC. This includes:

- **Design**: production of detailed designs.
- **Build**: development of the designed systems and services to create a solution (e.g. code, systems or products).
- **PIT**: testing in isolation of other Service Providers.

Variable costs are influenced by the MHHS requirements that increase or decrease Service Request volumes sent from Users to the DCC. This may include infrastructure upgrades to support additional volumes. These variable costs are split into indicative scenarios for ROM costing purposes to provide a range of costs based on variable User demand levels.

More information can be found in the DCC Preliminary Assessment response in Annex B.

SECAS costs

The estimated Smart Energy Code Administrator and Secretariat (SECAS) implementation cost to implement this as a standalone modification is two days of effort, amounting to approximately £1,200. 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

Information on Parties' estimated costs will be sought through the Refinement Consultation.

6. Implementation approach

Recommended implementation approach

SECAS is recommending an implementation date of:

- **2 November 2023** (November 2023 SEC Release) if a decision to approve is received on or before 31 May 2022.

Ofgem is requesting that all changes for MHHS are in place by 1 April 2024. The November 2023 SEC Release is the last scheduled SEC Systems Release that these changes can be included in to meet this deadline. The DCC's initial assessment of the solution has estimated the total lead time at around 18 months. A final decision on this modification will be required no later than May 2022 to allow this modification to be included in this SEC Release.

Information on Parties' expected lead times will be sought through the Refinement Consultation.

7. Assessment of the proposal

Observations on the issue

Due to the extensive discussions that had taken place on the issue under the SCR, which is looking at the full MHHS solution, the Development Stage was kept short. Each relevant Sub-Committee was consulted to provide any initial comments on the modification before it was advanced to the Refinement Process.

Change Sub-Committee

The Change Sub-Committee (CSC) was supportive of progressing the modification to the Refinement Process quickly. A member noted it is highly important that the Refinement Process accounts for the large amount of work that has been done by the CCDG.

One member believed that some inaccurate assumptions have been made under the SCR on how smart metering works. The Working Group will need to be careful that the smart metering arrangements are not adversely impacted in trying to incorporate half-hourly settlement. They felt that MHHS has been primarily looked at from a settlement perspective and has focused mainly on obtaining data from Devices, as opposed to thinking about how Devices operate. This was considered out of scope of the CCDG work so this will require SEC Parties to define this in the end-to-end solution. Another member highlighted previous issues caused where only high-level detail had been provided under a modification and stressed that more detail around the solution will be needed to support Parties.

SECAS will strive to meet Ofgem's overall timetable; however, this should not come at the expense of making sure the smart metering arrangements are not compromised. If any major issues or concerns are identified as part of the Refinement Process, SECAS will raise these with Ofgem and Elexon as a priority, to assess how these affect the wider solution and timetable. The DCC also noted it has engaged with its Service Providers and is aware of the issues raised. It is using all possible resources to fully prepare for this change.

Operations Group

The Operations Group (OPSG) highlighted that the modelling and design assumptions within the DCC's solution will need to account for current performance. The DCC acknowledged that projections and assumptions over capacity will be crucial.

The OPSG queried at what stage it would see how the solution will operate and elements such as traffic patterns and use of the updated provisions. SECAS noted this should be developed and understood as the Refinement Process progresses. The OPSG also encouraged the DCC to test the solution using live Devices rather than emulators, as it has done with other recent changes, as this will reduce costs. The DCC will determine this when the modification is approved and expects that a mix of established Devices and emulators for Devices not available at the time of testing will be used. A member considered the DCC needed to consider how the implementation of the MHHS changes would interact with the planned DSP Re-procurement timescales.

TABASC

The Technical Architecture and Business Architecture Sub-Committee (TABASC) noted the expected requirement for a new MDR User Role. A member queried what the difference between this and the Supplier User Role was. Another member clarified that the MDRA role was planned to be competitive and so an MDR User may not always be a Supplier.

The TABASC queried how this solution would be implemented in the DUIS, for example through new Service Requests, and how it would be identified whether a Service Request had been sent by a Supplier or an MDR User. It also asked whether Suppliers should be able to request this data from ESME every half hour if they wanted. The TABASC requested these questions be examined as part of the modification. The initial business requirements propose that the existing Service Requests are re-used, with no new Service Requests expected. Any limit on the frequency of data retrieval will also be established as the modification progresses.

One member noted that while SMETS meters can record the consumption in each half-hour period, they considered they had not been designed to be half-hourly meters and would always be treated as non-half-hourly. They echoed previous comments that the end-to-end solution needed to look at the impact of MHHS across the wider smart metering arrangements and ensure that the changes do not have a negative impact on these.

SSC and SMKI PMA

The SSC and the Smart Metering Key Infrastructure (SMKI) Policy Management Authority (PMA) had no comments on the Draft Proposal. They both requested to be consulted on the security and privacy parts of the solution.

Requirement to comply with the MHHS implementation provisions in the BSC

During the Development Stage, Ofgem issued a consultation seeking to require the DCC to comply with the MHHS implementation provisions within the BSC. Sub-Committee members queried how the BSC would place obligations on the DCC and how the DCC would be obliged to comply with other Codes. The TABASC was also concerned how the impacts on the smart metering architecture from any BSC-led change impacting the DCC would be assessed.

BSC Section C12 will set out the high-level governance and co-operation requirements of the MHHS programme for MHHS Participants. The content of this BSC Section were consulted on as part of Ofgem's consultation on the MHHS implementation and governance arrangements. The new licence conditions make the DCC a 'MHHS participant' and require it to comply with this BSC Section. An equivalent requirement on SECAS has been added to the SEC through MP180 'Market-wide Half Hourly Settlement Implementation'. These MHHS programme requirements are high level and are intended to sit alongside established Code governance and will not contain operational or detailed requirements.

How could MHHS impact on DCC System capacity?

In its assessment of MP162, the DCC has highlighted this is expected to significantly increase the amount of traffic on the DCC Systems.

In its Preliminary Assessment, the DCC performed a high-level assessment of the additional capacity that would be needed to accommodate the traffic generated through MHHS. While the current capacity is not 100% utilised, the DCC considered it prudent to begin by assessing the additional amount of capacity required for MHHS, decoupling this from the existing capacity. A more detailed assessment will be performed as part of the DCC Impact Assessment, which will account for current spare capacity.

The DCC assessed three possible high-level scenarios:

- **Scenario A:** 75% of MHHS data is collected by Suppliers, with the remaining 25% collected by an independent MDRA; all data collected is re-used for other purposes
- **Scenario B:** 50% of MHHS data is collected by Suppliers, with the remaining 50% collected by an independent MDRA; half of the data collected by Suppliers is re-used for existing purposes
- **Scenario C:** All MHHS data is collected by an independent MDRA; Suppliers will continue to collect half-hourly data themselves where needed for existing purposes

Scenario A was used to derive the lower cost estimate set out in Section 5, and Scenario C was used to derive the upper cost estimate.

The DCC is proposing to initiate its solution design based on Scenario A. Further input from SEC Parties that give a considered view of the likelihood of adopting the new MDR User role will help guide the solution. The DCC's design assumptions which it has used in its assessment can be found in Annex C. The DCC seeks confirmation through the Refinement Consultation on whether these are appropriate to use as the basis for the Impact Assessment.

The DCC noted the fixed costs were relatively low compared to the variable costs, as it currently has a good understanding about what changes are needed within its systems. However, expected User behaviour is less clear, particularly the number and timings of additional requests that will be submitted. The three scenarios above cover increasing size and complexity but essentially as more Service Requests are issued per day, the capacity needed to service these increases. Smoothing out requests over a longer period will help to reduce costs, as can using capacity and infrastructure in a more efficient way.

The DCC has only assessed the increased capacity needed for MHHS under MP162. Network Parties have yet to begin obtaining data in earnest, which will also increase traffic over time, and use cases for other User Roles also collecting data are also expected. There is nothing preventing these Parties from requesting this data now. The DCC's working assumption is that these wider use cases are outside the scope of MP162, although it has commenced a wider piece of work looking at capacity.

How will User behaviour change and how may this impact the capacity needed?

The DCC noted the large variability in its cost estimates in the Preliminary Assessment. This is largely due to not knowing how much extra capacity may be needed, which will be driven by Users' behaviour. The DCC wants to understand the assumptions around User behaviour and how much additional traffic is expected. If the DCC's assumptions are radically different to what Users are planning, then the costs the DCC provides for this modification won't be reflective. The DCC is seeking to align expectations with Users to ensure everyone is moving in the same direction.

The DCC needs to be able to support all the different options, but it wants to better understand how likely or unlikely each given scenario is. The DCC would like all MHHS traffic to be scheduled, but

highlighted subtleties in these assumptions, such as Suppliers following existing processes. While some of the potential scenarios, such as all Suppliers using a third-party agent versus all Suppliers performing the function in-house, may seem trivial, these will have big implications for the DCC's solution. Other factors, such as how many customers choose to opt out of having their half-hourly data collected, will also have impacts.

Working Group members noted design work for MHHS is still in the early stages and participants may not know their expected behaviours. Any assumptions could also change as participants build their solutions. However, members considered it reasonable for the DCC to ask Suppliers what their intentions are, to better enable the DCC to build the system to meet Users' requirements.

TABASC members considered that Suppliers would likely not make any decisions around this until 2022.

A Working Group member queried if the whole system needs to be reviewed and redesigned to meet future needs, before it reaches a point where it cannot cope with the demand, though conceded this would likely be outside the scope of MP162. They asked whether the DCC had a view on when a full review of the current model would be needed, due to the pipeline of expected changes that will impact on demand. The DCC confirmed wider work is taking place on this. TABASC members also queried whether there is value in reconsidering the end-to-end architecture in light of future capacity expectations.

Can existing capacity be better utilised?

A Working Group member noted the DCC System has a known demand now and considered that the DCC should know how much of this is currently being used. They believed the DCC should be seeking to make maximum use of the current system, utilising existing troughs in demand, and enhancing business processes, rather than seeking additional capacity. They asked how the DCC's assessment of traffic under MHHS would compare to current usage. The DCC considered that depending on how Users behaved, the total traffic could be more than double what is seen today.

The member considered that if the DCC is only using 50% of current capacity, and it could make better use of the periods of low demand, a doubling of traffic could be catered for within the current capacity. They considered this implies that better management of Service Requests over time is the best way forward. However, another member believed that any solution shouldn't be entirely driven by making use of existing troughs in demand, as spare capacity is needed in case of unplanned or unexpected events.

When the DCC originally assessed the required capacity to meet the industry's requirements for smart metering, MHHS was not included in that. The requirements had not included the expectation that all meters would need to provide half-hourly data, or that export data would need collecting. The MDRA is also additional party that can submit Service Requests that was not considered in the original requirements. The DCC does understand the profile of its current service and has modelled expected future changes, but the MHHS changes are further additions that need to be modelled.

Another Working Group member agreed with the DCC's comments. When Suppliers originally fed in their requirements to the DCC, they had not been expecting to need to collect all the half-hourly readings for every day. Given the charging model was based on a cost per Service Request, Suppliers opted for the minimum amount of requests needed to meet their obligations.

The member noted the risk that the DCC isn't set up to handle this capacity had been highlighted to Ofgem at the beginning of the MHHS project; the view back had been that the DCC should have been expecting this change. The member noted there is no requirement under this modification to change

or curtail current usage or apply any restrictions to this. As such, this change will add additional demand to the DCC Systems which will need a corresponding increase in capacity.

Could consumption data be stored in a cache?

A Working Group member noted the DCC does not store consumption data, and queried if it should, given the number of requests for this data that will be sent to meters. The DCC confirmed this had been investigated. The key constraint is with the security model regarding confidential data. SMETS2 consumption data is encrypted so only the intended recipient can access it, meaning the DCC couldn't reuse it. The DCC has looked at whether this could be changed, but it is a fundamental requirement of the smart metering security model that consumption data from SMETS2 meters is encrypted end-to-end. There is more leeway with SMETS1 Devices though. However, the DCC has worked to a design principle that it doesn't store this data or create another repository.

The DCC developed a proposed caching solution for SMETS1 meters. Under this, when a User requests data from the meter, this data will also be stored in a cache held by the DCC. If any other Users subsequently requested the same data, this can be provided from the cache without needing to query the meter. This approach could reduce traffic to these Devices. However, this approach will only provide benefit if more than one User is requesting the half-hourly data.

A Working Group member queried the setup between the Dual Control Organisation (DCO) and the Communications Service Providers (CSPs) and how the cache will be managed. They sought clarification on whether the DCO could manage traffic to multiple cohorts in parallel or whether requests are managed sequentially. The DCC confirmed the DCO doesn't interact with the CSPs, only with the SMETS1 Service Providers (S1SPs). Requests are managed sequentially but the three different cohorts can be supported in parallel. The Working Group requested the DCC mitigate any impact on the DCO. The DCC confirmed this solution would not affect the DCO. It also highlighted that an increase in the number of Service Requests will have a bigger impact on the DCO as it handles requests in real time.

Another member noted the cache option also only works if there is no reuse of data outside of the DCC, such as through the MDRA passing data on to the Supplier (see below). The DCC noted it is important to futureproof the solution in case further use cases arise generating requests for half-hourly data. It also confirmed the cryptographic design for SMETS1 allows for the cache to be added without affecting Users' processes or experience, but the DCC will work with the SSC to ensure security is maintained.

A Working Group member asked whether it was possible to have a solution where the system could push data out to the MDR User during times of low system demand. The DCC noted that due to the security requirements on encrypting SMETS2 consumption data, it cannot collect and store this data to push out to Users; it must be collected from the meter as requested and sent only to the requesting User. The DCC also noted any solutions around having a Device push the data during quiet times would need changes to those Devices. One of the DCC's key design principles for any MP162 solution is for it not to need any changes to Devices.

The TABASC considered whether this provided an opportunity to rethink how scheduled reads are managed. Members asked whether it could be more efficient for the DSP to pool the schedules for a given Device, and only collect the data once. Members acknowledged the constraint currently posed by the security model but felt this could be an avenue worth exploring.

Could the data collected be reused?

Working Group members noted an ambition of the MHHS TOM is for half-hourly data submitted for settlement to be more readily available to others. This could be a route for Parties to obtain this data outside of the DCC, which could reduce the impacts on capacity. Additionally, an MDRA that collects the data could then pass this on to the relevant Supplier or to other parties as required. This could reduce the expected demand and therefore the capacity needed. The DCC noted another scenario where if the Supplier appoints a third-party MDRA the Supplier may not collect any of its own data. Conversely, there is a risk that both the Supplier and the MDRA collect this data, creating duplication. Members felt there shouldn't be both a Supplier and an MDRA collecting the data, and that if an MDRA is in place they should be supplying the data to the Supplier. However, such reusing of data would be a question for the TOM and is outside the scope of MP162.

A Working Group member noted that having Suppliers collect data centrally rather than collecting it for themselves would require business process changes. If such behavioural changes weren't legislated for, they believed that Suppliers would not change their behaviours, considering a Supplier would not wait to receive data from an agent if they could collect it themselves faster and cheaper. Another member considered that legislation to prevent duplication would be beneficial, rather than seeking to place reliance on participants to not duplicate data collection.

A Working Group member asked if there would be any difference between the scenarios assessed in the Preliminary Assessment if there is more re-use of collected data. There are a lot of input parameters and assumptions in its modelling which will form layers. The DCC will perform more sensitivity analysis on this one it has a better understanding of the broader assumptions.

The TABASC noted the question of re-using data collected for MHHS for other uses. Members queried if there would be any security issues associated with that but felt this would sit outside the scope of MP162. Members considered that other Parties, such as Network Parties, could be interested in there being a central repository for half-hourly data, and that having multiple Parties collecting the same data via the current DCC Systems was not optimal.

How many Suppliers will appoint independent MDRAs?

One of the DCC's key questions for its modelling is the proportion of MHHS data collection collected by Suppliers and by independent MDRAs.

The Working Group considered whether the DCC's model could be broken down further into small, medium, and large Suppliers, and assume which way each type could go. Members considered that larger Suppliers would likely carry out the MDRA role in-house, while smaller Suppliers may be more likely to outsource this.

A Working Group member considered that Suppliers collecting this data themselves would place less strain on the system. They would want to encourage Suppliers to collect MHHS data themselves, to reduce the load on the system. However, they also wanted to ensure there is a balanced playing field for independent MDRAs too. If collecting MHHS data is equally onerous for all Users, this could make it more likely Suppliers outsource this to an agent. Another member felt this approach could be unfavourable to independent MDRAs, and that Ofgem's requirements was for equality between the roles.

The Working Group noted the dilemma, as the solution will likely be less expensive if Suppliers were to collect their own data, but by making it possible for independent MDRAs to do so too adds complexity and cost. It queried what could be done to balance this without negatively impacting existing Users. The DCC considered this would require a 'trust model', with ways of operation written

into the SEC. The member noted that the current load on the DCC Systems is varied, and Users have had to work together to manage this in a form of trust model, which works well when seeking to resolve problems.

The TABASC cautioned that any information obtained now on expected behaviours will likely change before MHHS goes live due to the dynamic nature of the current environment. It considered the DCC should focus its design on the assumption there will be a varying mix of Suppliers and independent MDRAs collecting the data. Instead, the DCC should focus on how best to manage and optimise capacity. Members noted the DCC appeared able to accommodate any capacity increase needed, and that the key question is the cost of doing so.

Will Parties need to collect reconciliation data?

The Working Group queried the requirement for collecting reconciliation data and the rules for collecting reconciliation data for smart meters under the TOM. The MHHS Programme representatives noted the TOM is proposing Parties collect a total register read, and there is a requirement for MDRAs to carry out a meter advance reconciliation once a month.

A Working Group member queried if this would be mandated and where this requirement had come from, as it is not an activity currently carried out. The Programme representatives confirmed this requirement has come from the CCDG but could be further refined as the detail under the TOM is developed. They also confirmed this is a requirement for the Smart Data Service (SDS) to manage. The Working Group noted concern that this requirement could have many implications for Suppliers' processes. It queried who is looking at this and what participants would need to do to meet this.

A member asked whether the reconciliation meter reads would be daily or monthly, and whether this could be collected at the same time as the half-hourly data. For meters where the customer has opted out, this would be the data collected for MHHS anyway. They also highlighted there is a chance the meter may not return the data.

The DCC had included an assumption that validation data would be collected monthly. A member was concerned whether Suppliers would want to wait that long to confirm if any data had been missed. The Working Group also queried if validating less frequently would result in larger files when validation was carried out.

A Working Group member highlighted existing constraints with trying to collect a month's worth of half-hourly data at once. Another member flagged that Users would be collecting data for other uses too, and that this would need to be overlaid with the data collection for settlement. The Working Group also noted constraints on the Communications Hub and that there is a requirement for a Device to hold 13 months' worth of data. While Devices do hold this data, some Devices won't populate a SRV 4.8.1 'Read Active Import Profile Data' response with more than 10 days' worth of data.

A member noted that where data is not returned, an Alert would be returned instead explaining the reason why. In some cases, this may be because the data is genuinely missing from the meter. They sought clarity on whether the MDR User will receive Alerts. The DCC confirmed that any DCC Alerts will be sent to the originator of the request, which could be the MDR User. This would include if the MDR User sends an on-demand Service Request which times out – the MDR User would receive the subsequent Alert. However, any Alerts generated by the meter will be returned to the Supplier regardless of who sent the request, as the Device would not recognise the MDR User.

Will the number of customers opting out affect the capacity needed?

A member queried whether the DCC's assessment of the opt-out rate had been based on data. The DCC confirmed this had been based on conversations with Elexon and Ofgem, and that empirical data had been hard to obtain. The DCC was asked if it could determine opt-outs from the SR 5.1 'Create Schedule' requests sent. The DCC confirmed it could see if a schedule had been set up, but not why, so could not tell if this was due to opt-out or not.

Another member highlighted customers must actively opt in now but will have to actively opt out under MHHS. They considered the DCC's initial assumptions to be reasonable ones based on Ofgem's work. Another member noted the inclusion of collecting export data through the DCC will add a further million MPANs.

Should the existing scheduling window be changed?

The DCC queried whether Users had any constraints over changes to the existing scheduling windows, or whether doing so would be an issue to Users, to help inform design options. Allowing the DCC more freedom to make full use of the TRT for all Service Requests would allow the load to be better spread across the day, but the DCC wanted to ensure doing so would not impact on any existing User processes.

A Working Group member's organisation currently schedules relevant Service Requests and considered that other organisations would too. They would not move away from scheduling for MHHS. They also want to avoid the return traffic affecting other processes during working hours, such as Install & Commission (I&C). An independent MDRA may be able to schedule requests across the whole day, but Suppliers likely couldn't.

Another member considered the impacts of this would depend on what the data currently collected is used for. If data is spread too far across the day, this may affect some services Suppliers provide to customers. Ideally, the member would not want to change anything in their systems, though could agree to a small cost in one area to avoid a larger cost elsewhere.

The DCC noted the TRT for scheduled requests is currently 24 hours, even though the service often delivers more quickly. The member noted that their current scheduling is set up based on the information being returned as quickly as it is now. If that was to change, even if it was still within the TRT, that could drive changes in User behaviour to meet customer expectations.

Another member noted the TRT for scheduled requests has always been 24 hours, and so Users' expectations should be based on this. The DCC would be within its right to make full use of the TRT. Another member noted that they are already seeing the return of data sought overnight creeping into working hours and did not want to make this worse.

The MHHS Programme representatives noted that the decision to collect data daily from all 30 million meters had been a DCC recommendation and not one from the TOM. Under the TOM, it had originally been considered to collect data for a whole month from one million meters each day.

A TABASC member noted that for some services offered to customers, it is important to obtain the previous day's data before the customer wakes up. If there is a day's delay, then this data becomes less valuable. Customers have also become used to having real-time data now, and that the current schedules obtain most of the data needed overnight. In contrast, MHHS data is less time-critical and can be obtained later in the day.

A TABASC member considered that if Suppliers are processing half-hourly data for settlement, they may want to also use that to offer value-add services for customers, who may be more interested in

the data if it is available. The DCC noted around one-third of meters currently have a schedule set up for half-hourly data, but that requests are processed in a 'first in first out' method. TABASC members also noted that data can be collected locally by Devices on the Home Area Network (HAN), such as In-Home Displays (IHDs). Members wondered if this would allow alternative approaches for providing data to customers without passing the data through the DCC Systems.

What reporting is required for MHHS?

The TABASC considered that there was no reporting on MHHS included in the Preliminary Assessment. The DCC acknowledged that this will be covered further in the Impact Assessment.

How can data collected for MHHS purposes be identified?

Being able to distinguish where Service Requests are being sent for MHHS purposes would enable to DCC to better schedule these requests. There is currently no mechanism for identifying the purpose of a Service Request.

Initial proposal – all Users collect MHHS data using the MDR User role

The DCC proposed to the Working Group that a new User Role for 'MDR Users' should be established for the collection of half-hourly data for use in settlement. It initially proposed that anyone seeking to collect this data would need to register in this role. The benefit of this approach is that longer TRTs could then be applied to the corresponding Service Requests, allowing the DCC to better manage traffic through the DCC Systems. If all Users accessed half-hourly data using the current 30 second TRTs daily, the DCC's infrastructure capacity will need to be increased significantly to manage the extra demand.

Supplier concerns over needing to register as an MDR User

A Working Group member queried if the new User Role would have any impact on how Suppliers would interact with the DCC, and the impact of using the role for different purposes. The group noted the need for wider guidance on the impact of conforming to the longer TRTs; while the processes may not change, guidance on what Users would need to do may be needed.

A Working Group member sought clarity on how the MDRA and Supplier roles would interact. They were concerned if this could mean Suppliers would no longer be able to obtain half-hourly data from smart meters under the Supplier role and would only be able to obtain it using the MDR role. The DCC confirmed this would not be the case, and that existing User Roles would be unaffected by MP162. Another member considered that the Supplier would be able to retrieve data for billing purposes and other consented uses through the Supplier role. However, for settlement data, they would need to create a separate schedule using the MDR User role.

The Working Group believed that if the calendar function was used to schedule the delivery of half-hourly data, there is a greater than 90% likelihood this pattern will be followed so considered the chances of the system being overloaded should be small. A member also queried why MDR Users would need to submit on-demand requests if a schedule had been set up. The DCC noted that ad-hoc requests may be needed if a schedule failed to carry out or if something had gone wrong with the data retrieval.

The MHHS Programme representatives clarified that a Supplier or an MDRA would be able to submit partial data (half-hourly values for only part of a day) into settlement and then catch the remaining values up later. The DCC noted that data collected via a scheduled request would collect what it could at that time. If it only collected partial data, the User would need to submit an on-demand request to obtain the rest.

The Working Group noted clarity would be needed on which role a Supplier would use in each scenario, and what would prevent a Supplier using its Supplier role to obtain half-hourly data for settlement. It agreed that any overlap between the roles needed clarifying and how it can be proved the right data is being collected for the right purposes. Members queried what role a Supplier would use if it wanted to obtain half-hourly data for both settlement and billing purposes.

The TABASC Chair noted that from an architectural perspective, it would seem odd to force a Supplier to retrieve data it has already obtained just because it needed to submit it for settlement. This would also create unnecessary traffic through the DCC Systems.

Revised approach – Users tagging their Service Requests as being for MHHS

The DCC acknowledged the comments and concerns raised by the Working Group. It subsequently developed an alternative approach which would not require a Supplier to register in the MDR User role but would instead introduce different TRTs for different uses of the data.

If a Supplier was collecting the data for non-MHHS uses, such as for billing or a customer query, the existing TRTs would apply. For data retrieval related to MHHS, the DCC would want the User to state the Service Request is related to MHHS. The relevant Service Requests would be flagged as being for MHHS purposes by default when submitted by an MDR User. The DCC could then use its scheduling service to deliver the data within 24 hours. If a Supplier was collecting data both for settlement and for other uses, the shorter TRT would be used. The DCC confirmed that the processes behind this will be mapped out as the solution is developed but confirmed that any existing smart processes will be unchanged by MP162.

A Working Group member noted that SRV4.1.1 and SR4.2 don't bring back profile data. Suppliers need different data for profiling from that for billing, and these two Service Requests relate to billing. Furthermore, members felt Suppliers would likely be seeking billing information on a different frequency to settlement and considered Suppliers would be setting up schedules for these as needed. They also agreed there was several reasons why a Supplier may want to obtain a meter read, particularly if there had been issues affecting the half-hourly data or if the customer had opted out of half-hourly settlement. In the latter case, the Supplier would need to use the reading to calculate an advance which would be applied to a load profile to obtain half-hourly values.

A Working Group member asked how Suppliers' correct notification of a Service Request's purpose would be governed. The DCC proposed to add direction on this into the SEC but would not aim to enforce it; this would therefore be reliant on Users' honesty in tagging the request as being for MHHS. Suppliers could choose to ignore the request to mark MHHS data collection as such, and the DCC would then have to expand its capacity to cater for that. The DCC is not looking to force Suppliers on this, but to place the onus on them to specify whether the data is for MHHS or not.

The alternative approach would be for the DSP to build in some complex validation rules and provide significant, and costly, infrastructure upgrades. The Working Group considered that applying such filters and logic would be undesirable.

The TABASC noted the proposal to introduce this flag and queried whether Suppliers would use this if they weren't mandated to. Members sought clarification over whether this would be codified and were unsure if or how this could be enforced.

How could MHHS impact on Parties' systems and processes?

The DCC noted there will be an impact on Parties from MHHS. They will need to set up their systems in response to this or arrange for an MDRA to manage this. The DCC also noted that Users have other scheduled reads during the overnight period.

A Working Group member noted the biggest constraint for Suppliers is their own infrastructure and the impact collecting MHHS data may have on other processes such as I&C. Suppliers will also need to consider how to manage an increase in the data they receive and whether to do this as they do now or via a third party, as this will impact their infrastructure too. The member highlighted conversations from other forums raising concerns that the overnight processing of reads is already creeping into the following working day even without the half-hourly data requests for settlement.

The Working Group noted the expectation for Users to be able to carry on with what they currently do, and for this to continue to happen within current time windows. Members felt there does not appear to be anywhere under the MHHS work that is looking at how businesses are currently operating more generally and how these will be affected by MHHS. They considered that MHHS would be in addition to existing processes but should not affect them.

The DCC agreed that the industry needs to work together to make sure the impacts are mitigated on both the DCC and on Users, noting Service Providers have expressed the same concerns. The DCC noted that a 'one size fits all' solution was its working assumption, but this will be further explored as the modification develops.

What TRTs should be applied to MDR Users?

The DCC proposed that all TRTs associated with collecting MHHS data should be 24 hours, regardless of whether the Service Request was scheduled or issued on-demand. As data for settlement is not needed until five Working Days after the relevant day, there is less urgency to collecting this data. Using the 24-hour TRT would also mimic existing schedules, which have a 24-hour TRT regardless of who has set them up.

The Working Group noted that Suppliers would still be able use the shorter TRTs through using their Supplier role. Supplier agents were concerned this could give an advantage to Suppliers, which could be bad for competition. Members felt the same standards should apply to both Suppliers and independent MDRAs, and that these should be the same that Suppliers get now. They acknowledged the large cost for such changes but considered it didn't seem level across different User types. They also queried why MDR Users couldn't also be given the option to flag Service Requests as being for MHHS purposes, rather than this being automatically marked as such.

A Working Group member asked what would happen if an independent MDRA needed the option for a quicker response. Other members queried what scenarios there would be for an MDRA needing a faster response. Supplier agents noted such scenarios could include:

- Extracting data from a meter before it is exchanged, which may need to happen within-day to ensure the last half-hourly reading is obtained before the old meter is removed.

- Retrieving any missing data before the relevant settlement run times, which could require up to two days' worth of data within-day.
- Collecting historic data if a customer fails to specify a collection frequency within seven days following a change of Supplier (CoS) or a new meter installation.

These scenarios would facilitate accurate and timely settlement. Supplier agents were keen to avoid a solution that could be potentially harmful to settlement because the MDRA could not access the data it needed when it needed to.

A Working Group member queried whether an MDR User may need to retrieve data for its first day of appointment on-demand if it couldn't set up a schedule beforehand. The DCC confirmed that an MDR User would be able to set up future-dated schedules in advance of its effective from date if those schedules don't begin before that date.

A Working Group member acknowledged that these were scenarios where an on-demand Service Request would be needed but was not sure why a response was needed in less than 24 hours. Another member acknowledged that maybe this was the case for the second and third scenarios noted above, but felt a faster response was needed for the first scenario. The Working Group queried how an MDRA would know a meter is being exchanged. It confirmed this would build upon existing communications about a meter exchange to ensure all relevant agents were notified ahead of time.

A Working Group member considered that the need for an MDR User to send an on-demand request should be rare, so usage should not spike. They noted a meter typically lasts for 10-20 years so meter exchanges should not be common. For both User types, they questioned why Users would send on-demand requests when scheduled requests are easier. However, they considered that if the meter read takes place when requested, a delay in the subsequent response back should be acceptable. The DCC agreed there should be a low usage of on-demand requests, but there would be no technical control to stop an MDR User sending more. There is the risk of Suppliers sending an increased number of on-demand requests using the shorter TRTs; however, the existing use cases for these still apply.

The DCC noted that the more requests that can be scheduled, the more efficient the system will be, while more on-demand use creates unpredictable behaviour. Its concern is that if Users have the option to issue on-demand requests, it is not certain Users won't issue more of these, with the corresponding impact this has on capacity needs.

A Working Group member asked why the relevant Service Requests couldn't be forced to be scheduled. This is an option but there will be edge cases where an on-demand request may be needed. Furthermore, on-demand requests are available to existing Users for other uses under the SEC, and a key DCC design principle is for the MHHS solution to not impact on existing arrangements. This means MP162 should not change or remove the on-demand options for these Users. Another member also considered that Suppliers had already paid for the smart metering infrastructure. If there is a need for expanding the system's capacity to cater for uses it hadn't been originally built for, they queried who should pay for that. It will be Suppliers and other SEC Parties, rather than independent MDRAs, who will need to pay for MP162, and the member asked if MDRAs would be benefitting from this for free.

The DCC queried who would own the service requirements for MHHS and queried whether the request for faster response times for Supplier agents would be in response to a service requirement. The MHHS Programme representatives noted it is up to the SDS to tell the MDRA the sites, data required and relevant dates to allow the MDRA to schedule requests. The SCR will be drawing these

processes up with the requirements set out as part of the relevant Balancing and Settlement Code Procedure (BSCP).

At this time, the TRTs for MDR Users will be set at 24 hours for both on-demand and scheduled requests.

Are the current TRTs appropriate?

A Working Group member noted that work under MP122B 'Operational Metrics – Part 2' had shown the current response times can't be met. They thought the most likely outcome of the MP122B work is recognition that the very quick response times are unachievable without massive investment, while the 24-hour response times may feel pessimistic. They asked if this is leading to excessive caution over response times, and whether there were any wider improvements to response times that could be made.

The DCC highlighted that the main aim of scheduling is to take reads during the quieter parts of a given 24-hour window. If all Users had the 30 second TRT then if one User requests data at a given time this will usually be fine. However, if several, or all, Users requested the data at the same moment, the system would not be able to manage that. The DCC also stressed that the 24-hour TRT is the worst-case scenario, and response times would usually be much quicker, subject to the volume of traffic on the system.

Is SRV 4.1.1 needed for MHHS purposes?

The DCC noted an issue around permissions for SRV 4.1.1 relating to the Access Control Broker Remote Party Role. Currently, for SMETS2 Devices, the use case doesn't allow this role to use this Service Request, meaning that an MDR User would not be able to use this. The Working Group was asked for views on whether to remove the use of SRV 4.1.1 for SMETS2 Devices or whether a future GBCS version should enable DCC to support this. The DCC noted that SMETS1 Devices don't support this SRV as they don't store the relevant data.

A Working Group member queried if the use case for SRV 4.1.1 was just as a check, and whether a User could schedule a SRV 4.6.1 'Retrieve Import Daily Read Log' monthly instead. The DCC considered the primary use case for SRV 4.1.1 seems to be reading the log, so could be an edge case. The only difference between these two requests is that SRV 4.1.1 provides an instantaneous read while SRV 4.6.1 provides a midnight read.

A Working Group member considered the main use of SRV 4.1.1 for Suppliers is as part of customer contact around billing, where a reading would need to be taken as part of any interaction with that customer. Other than that, they would likely use midnight reads. Another member felt it would not impact them if this was not available.

The Working Group noted the principle of not impacting the GBCS, as otherwise it could take several years for the version to be implemented, and even then, some meters could never be updated to this version. One member considered consistency between SMETS1 and SMETS2 Devices would be beneficial. Representatives from the MHHS Programme felt not having an instantaneous read wouldn't be an issue, as a midnight read would work for settlement.

The TABASC queried why the instantaneous read would be needed for MHHS, considering the midnight reads should suffice. One member considered that the main use for instantaneous reads is in diagnosing issues. If the MDR User is not expected to be involved in fault-finding, not being able to

use SRV 4.1.1 shouldn't be an issue. Members also had little appetite to introduce any changes to the GBCS for this, as doing so would likely require a retrospective change across all versions.

The TABASC queried who would be responsible for data investigation. An independent MDRA wouldn't have the ability to investigate if it discovered a discrepancy between the half-hourly data and the reconciliation reads. The understanding, based on the TOM, is that the MDRA is expected only to collect the data from smart meters and pass this on into settlement; any investigation would be carried out by other roles later in the process.

The Working Group felt that SRV 4.1.1 was not needed for SMETS2 Devices but agreed to ask a question on this in the consultation.

Should SR 4.2 be schedulable?

The DCC also noted that SR 4.2 'Read Instantaneous Export Register Values' is not currently able to be scheduled. It sought the Working Group's views on if this should be changed, noting there could be an increase in the use of SR 4.2.

A Working Group member felt these likely don't need to be scheduled. Another member noted this would change the existing requirements, and it would depend on the costs. A further member noted the cost-savings around capacity from being able to schedule these requests would likely outweigh the costs of introducing scheduling for these. The DCC agreed that would likely be the case.

A Working Group member was not clear on the rationale for needing ad-hoc SR 4.2 requests and felt Users would use SRV 4.8.1 for MHHS. The DCC's assumption was that Users would collect interval data daily, then take a monthly meter read to validate advances.

The MHHS Programme representatives reminded the Working Group that MHHS is not just about collecting half-hourly data. There will be cases where Parties cannot obtain half-hourly data. In these scenarios, register reads can be used to derive half-hourly values through profiling. In these cases, a midnight reading will suffice.

The Working Group asked what scheduling SR 4.2 would mean for TRTs. In these cases, the User would receive the read at some point in the following 24 hours, but the alternative would be a spike of on-demand requests at midnight.

The TABASC noted the advantages of scheduling SR 4.2, to reduce peaks in traffic. Additionally, this only needs a wording change in the SEC to allow the DCC to schedule these Service Requests.

The Working Group felt it would be sensible to make SR 4.2 schedulable but agreed to ask a question on this in the consultation.

What customer permission is needed to collect this data?

A Working Group member sought clarity on whether Suppliers needed permission to obtain half-hourly data. The MHHS Programme representatives noted that domestic import customers would be able to opt out of this. The member then queried how data separation would work if a Supplier had the new MDR User role but was also acting as an Import Supplier, and what the data could be used for in each case.

Another member asked whether customers would need to give consent for an agent to collect data on their Supplier's behalf. Such consent would be obtained through the Supplier and the corresponding Licence changes are being drafted for this under the SCR.

A Working Group member queried, if a new Party was set up on the MDR User role and was then requesting half-hourly data, what certificates and credentials would it need. The DCC clarified that it would be treated like an Other User in this scenario. The DCC would use its DCC credentials to obtain the requested data from the Device. It would then wrap this in further credentials before sending it on to the MDR User so that only intended recipient could read it.

How would a change of MDRA be managed?

The MHHS Programme representatives queried how far in advance of its appointment going live a new MDRA would be able to set up schedules. The DCC considered that it would depend how far in advance the registration data is received and highlighted this sequence of events still needed to be clarified by the wider project. A Working Group member noted that next-day switching should be the default by the time MHHS goes live, so this is likely to be a moot point.

Initially, the TOM did not propose Effective To Date be provided for inclusion in the registration data. The DCC believed including this would be the best approach for data matching, but it can work without this information if required. A Working Group member was concerned if this could result in an MDR being appointed indefinitely, and another member queried how this would work if a Supplier was carrying out the MDR activities in-house. The DCC considered work on the wider processes that MP162 is dependent on is still outstanding. They did not believe it was yet clear how this would work if a Supplier did not appoint a separate MDR.

The MHHS Programme representatives highlighted a Supplier could change but the new Supplier could use the same MDR as the old Supplier, which may mean no change in schedules. A Working Group member confirmed that following a change of Supplier, the old Supplier would de-appoint the old MDRA then the gaining Supplier would re-appoint the MDR. This would be the case even if the Supplier was appointing itself as the MDRA or if the MDRA was to remain unchanged after the switch. This means there will be an end-date for anyone fulfilling this role. The CCDG subsequently agreed to include the Effective To Date in the registration data.

Should Export Supplier schedules be automatically deleted?

The Working Group considered the potential for automatically deleting schedules for Export Suppliers under MP162. Part of the TOM relates to mandating half-hourly settlement for export energy and improving processes around this. Members felt that if MHHS is looking at improving export processes generally, they would be keen to see a requirement around this under MP162. They considered this would be a positive move and would be in scope of this work. It would also be good to resolve any inconsistencies with Import Suppliers.

The DCC queried what the triggers would be for automatically deleting a schedule, noting this needs to be visible. There is currently no trigger for the DCC to know of a change in Export Supplier as SR 6.23 'Update Security Credentials (CoS)' is only for Import Suppliers due to their having Device certificates to update. The requirements would need to be fully clarified around when and how such deletions would take place.

A Working Group member queried if this would apply following a CoS or more generally. They noted that old schedules are not deleted from a Device until it receives SR6.23. However, in some cases following a CoS the gaining Supplier may not issue a SR6.23 for months, during which time the losing Supplier's schedules would continue to run, and would continually fail, generating unnecessary traffic. Rather than using the Service Request as the driver for completion, they considered whether the DCC

could use the information around who is the responsible Supplier at that point to delete old schedules. This may also be useful for other processes that need updating following a CoS. Another Working Group member considered Device switching could be another trigger. They also noted the CSS will speed up this process.

The DCC was concerned that this additional requirement could expand significantly, and the Working Group needed to be clear how far any requirement here would need to be extended. SECAS noted a risk that the time and effort required to clarify this requirement could jeopardise the timely delivery of the core MHHS solution. The Proposer considered this aspect should be picked up under a separate modification.

Are SMETS meters designed to be half-hourly?

A TABASC member noted that while SMETS meters can record the consumption in each half-hour period, they considered they had not been designed to be half-hourly meters or to be used in settlement and would always be treated as non-half-hourly. The decision to record data at half-hourly granular was decided upon because that was how available Devices at the time had been built. They had highlighted this to Ofgem and Elexon early in the MHHS Programme and is concerned that the TOM had been developed based on incorrect assumptions regarding SMETS meters.

The DCC noted all SMETS1 and SMETS2 meters have the functional requirement to record consumption and generation data every 30 minutes. By design they are designed to support the measurement and recording and retrieval of half-hourly data. However, half-hourly data was not considered to be the primary data source for Supplier billing or for settlement as part of the SMETS2 design. This was expected to be the Register Read data, and hence by design the read is scheduled to be pushed out to the registered Supplier for efficiency.

If half-hourly interval data is to be the driving data set in future, the DCC considers it would be beneficial to have the ESME schedule the sending of this data directly and send Alerts as per the existing register read. This would be more efficient architecturally but making such changes would likely incur high cost.

8. Case for change

Views against the General SEC Objectives

Proposer's views

The Proposer believes this will facilitate the following SEC Objectives:

- **Objective (b)**[7], as implementing the changes needed to deliver MHHS will allow the DCC to comply with the requirement introduced into the DCC Licence to facilitate the implementation of MHHS.

[7] Enable the DCC to comply at all times with the General Objectives of the DCC (as defined in the DCC Licence), and to efficiently discharge the other obligations imposed upon it by the DCC Licence

- **Objective (c)**[8], as the delivery of MHHS will enable consumers to benefit from more accurate allocation of their consumption within settlement.
- **Objective (g)**[9], as delivering the SEC and DCC changes for MHHS will enable the wider programme to be delivered as planned.

Views against the consumer areas

Improved safety and reliability

This modification will be neutral to this area.

Lower bills than would otherwise be the case

Ofgem has predicted that settling all consumers on a half-hourly basis would bring net consumer benefits of between £1.6bn and £4.5bn over the period 2021-2045. Ofgem considers that the full benefits will only be realised if all Suppliers are required to settle their consumers on a half-hourly basis. The changes proposed under MP162 are needed to deliver the full MHHS solution.

Reduced environmental damage

This modification will be neutral to this area.

Improved quality of service

This modification will be neutral to this area.

Benefits for society as a whole

This modification will be neutral to this area.

Appendix 1: Progression timetable

The DCC's Preliminary Assessment response and technical solution have been discussed with the Working Group and with Sub-Committees. A Refinement Consultation has now been issued to seek wider views and an impact assessment from SEC Parties.

The remaining parts of the solution, such as the security and privacy arrangements, will be further developed and discussed with the Working Group and Sub-Committees in the coming weeks. These will be the subject of a further Refinement Consultation, along with the legal text for the full modification.

[8] Facilitate Energy Consumers' management of their use of electricity and gas through the provision to them of appropriate information by means of Smart Metering Systems
[9] Facilitate the efficient and transparent administration and implementation of this Code

The timetable below has been developed to meet the targeted decision date needed for inclusion in the November 2023 SEC Release, as set out in Section 6, and will be kept under review as this modification progresses.

Timetable	
Event/Action	**Date**
Draft Proposal raised	7 May 2021
Presented to CSC for comment and recommendation	25 May 2021
Problem statement discussed with Sub-Committees	Early Jun 2021
Panel converts Draft Proposal to Modification Proposal	18 Jun 2021
Business requirements developed with DCC, Ofgem and Elexon	Jun 2021
Business requirements discussed with Working Group	7 Jul 2021
Business requirements discussed with Sub-Committees	Early Jul 2021
Business requirements updated for comments	Jul 2021
Updated business requirements agreed with Working Group	4 Aug 2021
Preliminary Assessment requested	18 Aug 2021
Preliminary Assessment returned	17 Sep 2021
Preliminary Assessment discussed with Working Group	Oct 2021
Preliminary Assessment and solution elements discussed with Sub-Committees	Oct-Nov 2021
First Refinement Consultation	29 Oct 2021 – 19 Nov 2021
Refinement Consultation responses and remaining solution elements discussed with Working Group	1 Dec 2021
Impact Assessment costs approved by Change Board	Early Dec 2021
Impact Assessment requested	13 Dec 2021
Second Refinement Consultation	Dec 2021 – Jan 2022
Impact Assessment returned	11 Feb 2022
Impact Assessment discussed with Working Group	2 Mar 2022
Impact Assessment discussed with TABASC	3 Mar 2022
Modification Report approved by CSC	15 Mar 2022
Modification Report Consultation	16 Mar 2022 – 5 Apr 2022
Change Board Vote	20 Apr 2022
Authority decision (anticipated date)	Late May 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
BSC	Balancing and Settlement Code
BSCP	Balancing and Settlement Code Procedure
CCDG	Code Change and Development Group
CoS	change of Supplier
CSC	Change Sub-Committee
CSP	Communications Service Provider
CSS	Central Switching Service
DCC	Data Communications Company
DCO	Dual Control Organisation
DSP	Data Service Provider
DUGIDS	DCC User Gateway Interface Design Specification
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
GBCS	Great Britain Companion Specification
HAN	Home Area Network
I&C	Install and Commission
IHD	In-Home Display
MDR	Meter Data Retrieval
MDRA	Meter Data Retrieval Agent
MHHS	market-wide half-hourly settlement
MMC	Message Mapping Catalogue
MPAN	Meter Point Administration Number
MPAS	Meter Point Administration Service
OPSG	Operations Group
PIT	Pre-Integration Testing
ROM	rough order of magnitude
S1SP	SMETS1 Service Provider
SCR	Significant Code Review
SDS	Smart Data Service
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SMETS	Smart Metering Equipment Technical Specification
SMKI PMA	Smart Metering Key Infrastructure Policy Management Authority

Glossary	
Acronym	**Full term**
SMI	Smart Metering Inventory
SR	Service Request
SRV	Service Request Variant
SSC	Security Sub-Committee
TABASC	Technical Architecture and Business Architecture Sub-Committee
TOM	target operating model
TRT	Target Response Time
UEPT	User Entry Process Testing
UIT	User Integration Testing