

Decision

Electricity Retail Market-wide Half-hourly Settlement: Decision Document

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On 30 April 2020 we published (initially for information) a consultation on issues relating to the introduction of market-wide half-hourly settlement (**MHHS**) across the retail electricity market, and on 17 June 2020 we opened the consultation period. The consultation closed on 14 September 2020.

MHHS will place the right incentives on retailers to develop and offer new tariffs and innovations that encourage and enable more flexible use of energy, for example, time of use tariffs, automation, vehicle to grid solutions and battery storage.

The consultation was published alongside our draft Impact Assessment (**Draft IA**), which set out the potential impact of our preferred option for implementation, as well as the other options we have considered.

We sought views from stakeholders on a total of 18 questions, covering a range of issues across the project. We received a total of 49 responses. We published the 46

non-confidential responses on our website.¹ This Decision Document sets out an analysis of the views and evidence received, and the subsequent policy decisions we are making in response.

We are publishing this Decision Document alongside our Full Business Case (**FBC**). The FBC, informed by our impact assessment, outlines a detailed economic assessment of the introduction of MHHS. It uses the commercial, financial and management cases to set out arrangements for implementation.

The rest of this Decision Document summarises the responses to the questions on which we consulted as part of our April 2020 consultation, and sets out and explains our final position on those questions.

Final Decisions

Our Final Decision, supported by our Full Business Case and Final Impact assessment, is to introduce half-hourly settlement (**HHS**) on a market-wide basis. We confirm the following decisions in order to achieve this and realise the full benefits of settlement reform.

We confirm our decision to **introduce Market-Wide Half-Hourly Settlement (MHHS)** on the basis of the Design Working Group's Target Operating Model (**TOM**).²

We confirm our decision that **the Initial settlement run (SF)** should take place at 5-7 working days after the settlement date and that this should ultimately be based on the shortest duration within this range that the constraints of the new system would reasonably allow. The **Final settlement run (RF)** should take place at 4 months after the settlement date and, the **Post Final settlement run (DF)** should

¹ See the Ofgem website for access to the [published responses](#).

² This DWG TOM is explained and described in pages 10-13 of the [DWG final report](#), August 2019, and Sections 5, 6 and Annex A of the DWG Preferred TOM, February 2019. If there is any contradiction between those documents and this current Decision Document, the Decision Document takes precedence. For details of the recommendation see the [DWG preferred TOM](#).

take place at 20 months after the settlement date (if required), and should include ratcheted materiality, in line with the DWG's recommendation.

We confirm our decision that **MHHS will be introduced for export-related as well as import-related MPANs**, and that **the transition period to the new settlement arrangements should be the same for import- and export-related MPANs**.

We have set out our decision on the **transition timetable**. We expect implementation to full MHHS to take 4 years and 6 months, with completion in October 2025. We have published a baseline plan which sets out how we expect this to be achieved. That plan has a review date in it for October 2021. Any changes to the length of the transition plan proposed as a result of that review or any subsequent such changes recommended will have to be approved through the programme governance set up to deliver MHHS. We propose to establish a threshold of 3 months beyond which any changes to the length of the plan would be subject to Ofgem approval.³

For details regarding previous policy decisions setting out the **access to data framework**, please refer to our 2019 decision letter and our 2020 open letter.^{4,5} The headline decisions we set out in those documents were as follows:

- There will be a legal obligation on the party responsible for settlement to process domestic consumers' HH electricity consumption data for settlement purposes, unless the consumer opts out. Microbusiness consumers will not be able to opt out.
- Existing customers will retain the data sharing framework that was in place when they had their smart / advanced meter installed, until they decide to change supplier or contract.⁶ For settlement purposes, this includes domestic

³ We will be consulting on these proposals shortly, including key principles for decisions which will be taken by Ofgem. These key principles are set out in the Management Case of the Full Business Case.

⁴ See our [decision letter on the access to data framework](#), June 2019.

⁵ See our [open letter on the access to data framework](#), April 2020.

⁶ See our [open letter on the access to data framework](#), April 2020.

customers only sharing HH data on an opt-in basis, and microbusiness customers on an opt-out basis.

- Where parties are required to process data for settlement purposes, they will also be able to use this data for forecasting.

We have also set out our decisions on **the opt-out granularity for domestic customers** in this document, as follows:

- If a domestic consumer opts out of HH processing, the party responsible for settlement must instead process data at daily granularity from these consumers. Existing customers will retain the right to opt-out to monthly until they decide to change electricity supplier or contract, at which point they will be subject to the new data sharing framework as noted above.

With regard to implementation, we are setting out here some key decisions in relation to how **implementation** will be taken forward. We have taken account of the responses received to our consultation on implementation in January, and we will be consulting further shortly on the issues raised in that consultation and the responses to it.

- Industry will be responsible for implementing MHHS in accordance with the decisions set out above.
- Elexon, as the code administrator for the BSC will be responsible for the overall programme management of MHHS implementation and will be SRO.
- In undertaking their SRO role Elexon will be required to procure an independent System Integrator function and a Programme Party Coordinator Function. Elexon will also be required to ensure that the programme management function is adequately resourced and has the expertise and experience required to successfully manage a programme of this scale.
- Ofgem will undertake the procurement of an Independent Assurance Function to ensure transparency and confidence in the management and reporting of the programme.

We will consult shortly on the detail of the requirements to be placed on Elexon and other parties with regard to implementation, and the governance arrangements to be

put in place to ensure that implementation is achieved in a timely manner and in a way that takes account of the interests of all programme parties and consumers.

In relation to **funding for implementation**, we have today approved the P413 alternative code modification proposal. This modification provides that MHHS programme management costs will be recovered from suppliers on a per meter point basis. For further information see Ofgem’s P413 Decision Letter, which we have also published today.⁷

For details regarding previous policy decisions regarding **agent functions**, please refer to our 2019 decision letter.⁸

⁷ See our [decision on BSC modification P413](#), April 2021.

⁸ See our [decision letter on agent functions](#), May 2019.

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Executive summary

On 30 April 2020 we published a consultation on issues relating to the introduction of market-wide half-hourly settlement (**MHHS**) across the retail electricity market.⁹ We initially published the consultation without a deadline for responses due to the emerging COVID-19 situation, in the interests of transparency. We then republished the documents on 17 June 2020, with a deadline for responses set twelve weeks later on 14 September 2020.

MHHS is a vital enabler of flexibility. It builds on changes already made requiring half-hourly settlement (**HHS**) for medium to large non-domestic consumers, and elective HHS for domestic and smaller non-domestic consumers. MHHS will send accurate signals to suppliers about the cost of serving their customers throughout each day. This will place incentives on suppliers to offer new tariffs and products that encourage more flexible use of energy and help consumers to lower their bills, for example time of use tariffs, automation, vehicle to grid solutions and battery storage. Making best use of existing infrastructure should reduce the need for future generation and network investment. This will help decarbonise the sector cost-effectively, which will benefit all consumers and wider society.

The consultation was published alongside our draft Impact Assessment (**IA**), which set out the potential impact of our preferred option for implementation, as well as other core options we have considered.¹⁰ In addition we also published a separate paper detailing the potential consumer impacts that may result from MHHS.

We sought views from stakeholders on a total of 18 questions, covering a range of issues across the project. We received a total of 46 non-confidential responses which have been published on our website.¹¹ This Decision Document sets out an

⁹ See our [MHHS Draft IA consultation document](#), June 2020.

¹⁰ See our [MHHS Draft IA](#), June 2020.

¹¹ See the [Ofgem website](#) for access to the [published responses](#).

analysis of the views and evidence received, and the subsequent policy decisions we are making in response.

We are publishing this Decision Document alongside our Full Business Case (**FBC**).¹² The FBC, informed by our impact assessment, outlines a detailed economic assessment of the introduction of MHHS. It also uses the commercial, financial and management cases to describe our expected arrangements for implementation.

The questions asked in the consultation are addressed in turn in the subsequent sections, along with a discussion of the responses received and the resultant policy decisions made. For clarity, we have also set out our decisions here as follows.

Target Operating Model
<p>1. We propose to introduce MHHS on the basis of the Target Operating Model recommended by the Design Working Group last year. Do you agree? We welcome your views.</p> <p>We confirm that MHHS will be introduced on the basis of the Design Working Group’s Target Operating Model.¹³</p>
<p>2. Ofgem’s preferred position is that HH electricity consumption data should be sent to central settlement services in non-aggregated form. Do you agree? We welcome your views.</p>

¹² See the [Full Business Case](#) (this links to all the MHHS documents published on 20 April 2021).

¹³ This DWG TOM is explained and described in pages 10-13 of the [DWG Final Report](#), August 2019, and Sections 5, 6 and Annex A of the DWG Preferred TOM, February 2019. If there is any contradiction between those documents and this current Decision Document, the Decision Document takes precedence. See also the [DWG preferred TOM recommendation](#), February 2019.

We confirm that, in line with the DWG’s TOM, HH electricity consumption data should be made available to central settlement services in non-aggregated form.

Settlement timetable

3. We propose that the Initial Settlement (SF) Run should take place 5-7 working days after the settlement date. Do you agree? We welcome your views.

We confirm that the Initial Settlement (SF) Run should take place 5-7 working days after the settlement date. This should ultimately be based on the shortest duration within this range that the constraints of the new system would reasonably allow.

4. We propose that the Final Reconciliation Run (RF) should take place 4 months after the settlement date. Do you agree? We welcome your views.

We confirm that the Final Reconciliation Run (RF) should take place 4 months after the settlement date.

5. We propose that the post-final (DF) settlement run should take place 20 months after the settlement date, with the ratcheted materiality proposals described in chapter 4 of the consultation document. Do you agree? We welcome your views on this proposal, and in particular about its potential impact on financial certainty for Balancing and Settlement Code parties.

We confirm that the post-final (DF) settlement run should take place 20 months after the settlement date (if required), and should include ratcheted materiality, in line with the DWG’s recommendation.

Export-related meter points

6. We propose to introduce MHHS for both import and export related MPANs. Do you agree? We welcome your views.

We confirm that MHHS will be introduced for both import- and export-related MPANs.

7. We propose that the transition period to the new settlement arrangements should be the same for import and export related MPANs. Do you agree? We welcome your views.

We confirm that the transition period to the new settlement arrangements will be the same for import and export related MPANs. It is expected that suppliers will need to register export MPANs for existing export customers before the mandatory migration period begins and, subject to our consultation on implementation and governance arrangements, that this will form part of suppliers' migration plans that will be monitored by the programme party coordinator.

Transition period

8. We propose a transition period of approximately 4 years, which at the time of analysis would have been up to the end of 2024. This would comprise an initial 3-year period to develop and test new systems and processes, and then 1 year to migrate meter points to the new arrangements. Do you agree? We welcome your views.

We expect implementation to full MHHS to take 4 years and 6 months, with completion in October 2025. We have published a baseline plan which sets out how we expect this to be achieved. That plan has a review date in it for October 2021. Any changes to the length of the transition plan proposed as a result of that review or any subsequent such changes recommended will have to be approved through the programme governance set up to

deliver MHHS. We propose¹⁴ to establish a threshold of 3 months beyond which any changes to the length of the plan would be subject to Ofgem approval.

9. We have set out high-level timings for the main parties required to complete a successful 4-year transition to MHHS. Do you agree? We welcome views, particularly if your organisation has been identified specifically within the timings.

Following discussion with stakeholders and external advice, we have developed and published a baseline plan, including identification of level 1 programme milestones, which sets out how we expect a successful transition to MHHS to be achieved. That plan has a review date in it for October 2021. Any changes to level 1 programme milestones proposed as a result of that review or any subsequent such changes recommended will have to be approved through the programme governance set up to deliver MHHS. We propose¹⁵ to establish a threshold of 3 months beyond which any changes to the length of the plan would be subject to Ofgem approval.

10. What impact do you think the ongoing COVID-19 pandemic will have on these timescales?

We agree with most stakeholders that the impacts of the COVID-19 pandemic are likely to be indirect, rather than direct impacts on the transition to MHHS. We will expect the delivery functions to keep the transition plan under review and to take account of any further effects of the COVID-19 pandemic which have the potential to change the milestone dates. We expect that any subsequent changes proposed that delay level 1 programme milestones will have to be approved through the programme governance set up to deliver MHHS. We propose to establish a threshold of 3 months beyond which any such delays would be subject to Ofgem approval.

¹⁴ We will be consulting on these proposals shortly, including key principles for decisions which will be taken by Ofgem. These key principles are set out in the Management Case of the Full Business Case.

¹⁵ We will be consulting on these proposals shortly, including key principles for decisions which will be taken by Ofgem. These key principles are set out in the Management Case of the Full Business Case.

Data access and privacy

11. We propose that there should be a legal obligation on the party responsible for settlement to collect data at daily granularity from domestic consumers who have opted out of HH data collection for settlement and forecasting purposes. Do you agree that this is a proportionate approach? We welcome your views.

We confirm that there will be a legal obligation on the party responsible for settlement to collect data at daily granularity from domestic consumers who have opted out of HH data collection for settlement and forecasting purposes.

12. Existing customers currently have the right to opt out to monthly granularity of data collection. We are seeking evidence about whether it is proportionate to require data to be collected at daily granularity for settlement and forecasting purposes for some or all of these consumers. We welcome your views.

We confirm that the opt-out granularity for these customers, in respect of data sharing for settlement and forecasting purposes, will remain as in the existing Data Access and Privacy Framework. These customers will retain the right to opt-out to monthly until they decide to change electricity supplier or contract, at which point they will be subject to the new data sharing framework.

We will monitor opt-out rates during the transition period to ensure that the data sharing framework remains proportionate.

13. Should there be a central element to the communication of settlement / forecasting and associated data sharing choices to consumers? For example, this may be a central body hosting a dedicated website or webpage to which suppliers may refer their customers if they want more information. If yes, what should that role be and who should fulfil it? We welcome your views.

We intend to work closely with industry to formulate clear and effective customer communications which can be used consistently across all consumers.

Whilst we expect these coordinated messages to be of use to parties responsible for customer communications, we do not intend to mandate in the regulatory framework that they must adopt them.

In addition, we think that there could be real value in a central website or information page to which suppliers can refer their customers for more information. We will continue to work through considering who would be best placed to host this information.

Consumer impacts

14. Do you have additional evidence which would help us refine the load shifting assumptions we have made in the Impact Assessment?

We received limited new quantified evidence from stakeholders to help refine our load shifting assumptions, which remain unchanged. We have carried out an extra sensitivity analysis in light of comments that we had been overly optimistic with regard to small non-domestic consumers' ability or willingness to load shift. This analysis showed that it remains the case that introducing MHHS can be expected to bring substantial net benefits for GB consumers, even in the absence of load shifting from small non-domestic consumers. We have set out our conclusions in the Economic Case section of the Full Business Case.

15. Do you have any views on the issues regarding the consumer impacts following implementation of MHHS? Please refer to the standalone paper we have published for more detailed information.

We are grateful for stakeholders' further views regarding consumer impacts, and have identified further research and trial evidence around customer engagement with flexibility and load shifting. We present this in this Decision Document, and in the qualitative assessment presented in the Final Impact Assessment.

Programme management

16. Do you agree we have identified the right delivery functions to implement MHHS? We welcome your views.

We consider that the functions set out in the consultation will need to be undertaken, and the detailed definition of them will be determined in accordance with the programme governance framework. We will consult further on implementation and governance arrangements shortly.

17. We have set out some possible options for the management of the delivery functions, and a proposal on how these would be funded. We welcome your views on this.

Having carefully considered responses to this consultation, and our consultation on implementation principles¹⁶ we have decided that:

- Industry will be responsible for implementing MHHS in accordance with the decisions set out above.
- Elexon, as the code administrator for the BSC will be responsible for the overall programme management of MHHS implementation and will be SRO.
- In undertaking their SRO role Elexon will be required to procure an independent System Integrator function and a Programme Party Coordinator Function. Elexon will also be required to ensure that the programme management function is adequately resourced and has the expertise and experience required to successfully manage a programme of this scale.
- Ofgem will undertake the procurement of an Independent Assurance Function to ensure transparency and confidence in the management and reporting of the programme.

¹⁶ See our [Consultation on Programme Implementation Principles](#), January 2021.

We will consult shortly on the detail of the requirements to be placed on Elexon and other parties with regard to implementation, and the governance arrangements to be put in place to ensure that implementation is achieved in a timely manner and in a way that takes account of the interests of all programme parties and consumers.

The funding for the programme's implementation will be recovered through the BSC. We have today approved the P413 alternative code modification proposal, which provides that MHHS programme management costs will be recovered from suppliers on a per meter point basis. For further information see Ofgem's P413 Decision Letter, which we have published today.

Other

18. Do you have any comments on the Impact Assessment published alongside this document, or any additional evidence you think we should take into account?

Alongside this Decision Document we have published our Full Business Case and, as part of the Economic Case for MHHS, our Final Impact Assessment (Final IA). The main changes in the Final IA relate to the transition period and the programme delivery arrangements, and the impacts associated with these changes. We also carried out an extra sensitivity analysis of the benefits of MHHS assuming no load shifting by small non-domestic consumers. As noted above, the Final IA confirms our view that MHHS is vital for supporting decarbonisation at lowest cost and that our chosen option will deliver substantial net benefits for GB energy consumers.

Next steps

As noted, we are publishing this Decision Document alongside our Full Business Case, which outlines our plan for implementing MHHS. We are therefore now entering the implementation phase of the project, and will proceed in accordance with the programme as set out in the FBC. We will shortly be consulting on implementation and governance arrangements for this next phase of the project.

1. Introduction

Context

- 1.1. Ofgem is committed to paving the way for the energy sector to decarbonise.¹⁷ We need to make sure this happens at the lowest cost to consumers.
- 1.2. Smart meters and elective half-hourly settlement (**HHS**) already enable suppliers to offer innovations, like time of use (**ToU**) tariffs, which can be combined with storage or Electric Vehicle (**EV**) smart charging, encouraging more flexible use of energy.
- 1.3. Market-wide half-hourly settlement (**MHHS**) will ensure that electricity suppliers and other retailers face the true costs of serving all of their customers, further incentivising the development and offering of new tariffs and services. The evidence suggests MHHS is necessary in order to maximise consumer benefits, which would likely not be realised to the same extent under elective HHS.
- 1.4. Introducing MHHS is a key building block for both Ofgem’s Decarbonisation Action Plan, and the joint Ofgem/BEIS Smart Systems and Flexibility Plan.¹⁸ In combination with other reforms, such as those to access and charging arrangements which will set the right price incentives for suppliers, and network tendering for flexibility services, MHHS is expected to enable system-wide benefits by incentivising a more efficient use of existing and future electricity infrastructure. This would, for example, help to integrate intermittent renewable generation into the system and reduce the need for expensive new investment.
- 1.5. In our Outline Business Case (**OBC**) published in 2018, we said the expected benefits of MHHS considerably exceeded the expected costs, so we anticipated that the decision would be how and when, not whether, to introduce MHHS.¹⁹ Our draft

¹⁷ See Ofgem’s [Decarbonisation Programme Action Plan](#), February 2020. The plan sets out the initial actions required on the journey towards achieving net zero by 2050.

¹⁸ See the [BEIS/Ofgem Smart Systems and Flexibility Plan](#) published in 2017 and [updated](#) in 2018.

¹⁹ See the [MHHS Outline Business Case](#), August 2018.

Impact Assessment (**IA**) continued to support this view, presenting total net benefits for GB consumers of £1,559m to £4,509m (2018 prices, 2018 NPV).²⁰

- 1.6. We sought stakeholder views to test these figures, as well as our proposals on how and when to introduce MHHS.

What did we consult on?

- 1.7. We asked a total of 18 questions across eight chapters in the consultation document. The questions covered a range of issues including TOM design, settlement timetable, arrangements for export, the transition period, data access issues and programme implementation. The questions were grouped into chapters according to theme.

Related publications

- 1.8. Publications related to this document are as follows:
- Ofgem’s [Forward Work Programme 2021/22](#), March 2021
 - Ofgem’s [consultation on programme implementation principles](#), January 2021
 - Ofgem’s [MHHS Draft Impact Assessment consultation document](#), June 2020
 - Ofgem’s [MHHS Draft Impact Assessment](#), June 2020
 - Ofgem’s [Open letter on access to data for settlement and forecasting purposes](#), April 2020
 - Ofgem’s [paper on the potential consumer impacts of MHHS](#), April 2020
 - Ofgem’s [Decarbonisation Programme Action Plan](#), February 2020
 - Access and Forward-Looking Charges Significant Code Review [open letter on short-listed policy options](#), March 2020
 - Ofgem, [Governance for Target Operating Model Development Phase](#), December 2019
 - Ofgem’s [Open letter on DWG Final Report](#), October 2019
 - Elexon, [Design Working Group: Final Stage 2 Report to Ofgem](#), August 2019
 - Ofgem, [Request for Information for Electricity Settlement Reform](#), August 2019

²⁰ See the [MHHS Draft Impact Assessment](#), June 2020.

- Ofgem’s [Strategic Narrative for 2019-23](#), July 2019
- Ofgem’s [Decision letter on access to data for settlement purposes](#), June 2019
- Access to data for settlement purposes: [data protection impact assessment, version 2](#), June 2019
- Ofgem [response to feedback on the Outline Business Case](#), June 2019
- Ofgem [Decision on supplier agent functions under MHHS](#), May 2019
- Market-wide Settlement Reform: [Outline Business Case](#), August 2018
- Market-Wide Settlement Reform: [Strategic Outline Case](#), February 2018
- BEIS-Ofgem [Smart Systems and Flexibility Plan](#), July 2017 and [Update](#), October 2018
- Ofgem [Electricity Settlement Significant Code Review launch statement](#), July 2017

Your feedback

1.9. We believe that consultation is at the heart of effective policy development. We are keen to receive your comments about this report. We’d also like to get your answers to these questions:

1. Do you have any comments about the overall quality of this document?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Are its conclusions balanced?
5. Did it make reasoned recommendations?
6. Any further comments?

Please send any general feedback comments to Half-HourlySettlement@ofgem.gov.uk

2. Target Operating Model

Question 1: We propose to introduce MHHS on the basis of the Target Operating Model recommended by the Design Working Group. Do you agree? We welcome your views.

Question 2: Ofgem’s preferred position is that HH electricity consumption data should be sent to central settlement services in non-aggregated form. Do you agree? We welcome your views.

Question 1 – TOM design

2.1. In our draft impact assessment consultation we asked stakeholders for their views on our proposal to introduce Market-wide Half-Hourly Settlement (**MHHS**) on the basis of the Design Working Group (**DWG**) preferred Target Operating Model (**TOM**). In the consultation we outlined the main features of the DWG preferred TOM and the arguments for and against it, specifically focussing on the views for and against the submission of non-aggregated data to central settlement systems.

Stakeholder views:

2.2. The majority of the responses agreed with the proposal that MHHS be introduced on the basis of the TOM recommended by the DWG. Those that agreed with the proposal included suppliers, DNOs, IDNOs, central bodies and non-supplier agent industry bodies. These respondents were supportive of the work completed by the DWG and agreed it was a good way to move the market from its current position into the future one. A number of these stakeholders also noted that they recognised that there was still a need for more granular detail which may result in a requirement to adapt the DWG TOM in some areas, and some went further to say that there should be a willingness to make reasonable changes when additional detail is made available and that any variation is properly assessed and communicated to parties. Some responses supportive of the DWG TOM also made reference to areas they thought might have the potential to impact the TOM (and

potentially the timelines on which the market should transition to it).²¹ These areas included:

- The outcomes of the Architecture Working Group (**AWG**) and Code Change and Development Group (**CCDG**): once available there may be areas of the TOM that require review and/or adaptation.
- The Data and Communications Company (**DCC**): some respondents thought that the retrieval and transfer of Half-Hourly (**HH**) data will place significant pressure on DCC infrastructure capacity.
- Smart meter rollout and accuracy of the Load Shaping Service (**LSS**): the percentage of smart meters across area, customer and user types could have an impact on the effectiveness of the load shaping service and therefore impact suppliers and/or consumers.
- Other change programmes: Respondents felt that there needs to be consideration for the TOM to deliver the capability for network charging purposes, and so the design process may need to consider the outcomes of the Access and Forward-Looking Charges Significant Code Review (**SCR**). As noted in the Forward Work Programme 2021/22, Ofgem plans to consult on an early 'minded to' position in the spring. We will feed our initial findings into our work with BEIS on the new joint Smart Systems and Flexibility Plan (to be published later this spring).²²

2.3. The responses we received that did not agree with the proposal that MHHS should be introduced on the basis of the DWG preferred TOM were primarily from supplier agents and supplier agent industry bodies. Several of these responses said they saw many benefits of the proposed TOM and agreed with many of the groupings of services that had been formed, however they did not agree with data aggregation for settlement being carried out within central settlement systems. A number of these responses referred to an alternative TOM collaboratively created by the Association

²¹ See section 5 for further information on the transition timetable.

²² See the [Access and Forward-Looking Charges SCR page](#) on the Ofgem website.

of Independent Meter and Data Agents (**AIMDA**).²³ The AIMDA alternative TOM identified three key differences to the DWG preferred TOM. These were:

- Each Data Service has a data aggregation function within it. This function would aggregate data for submission into central settlement systems for settlement and load shaping purposes.
- There is no longer a Market-wide Data Service (**MDS**) in central settlement systems, as consumption data would be provided in aggregated form to the Supplier Volume Allocation Agent (**SVAA**).
- A new service has been included to allow non-aggregated data to be requested and shared with central systems for settlement purposes and other interested parties.

2.4. Overall, the AIMDA alternative TOM would mean that for settlement purposes, consumption data is only transferred in aggregated form, but data would be accessible in non-aggregated or different configurations depending on the requirement. AIMDA, and the majority of its members noted they have already expressed their views on the importance of the data aggregation role and the benefits (in terms of services and competition) they consider it brings to suppliers and consumers (you can see these views in our draft Impact Assessment consultation and Decision on Agent Functions).²⁴ Many members stated their support for the AIMDA proposal and believed it would deliver the benefits of MHHS without reducing competition and at a lower cost.

2.5. A separate supplier agent response questioned how the 'behind the meter' meter type would be processed under the DWG preferred TOM. They stated this was a key area within the industry and must not be restricted by the TOM, and as such proposed some changes to the DWG preferred TOM.²⁵

²³ The [AIMDA alternative TOM](#) can be found on the AIMDA website.

²⁴ These are set out in the [Draft IA consultation](#) and the [Decision on Agent Functions](#) on the Ofgem website.

²⁵ The 'behind the meter' alternative TOM can be found in the [Siemens response](#) on the Ofgem website.

- 2.6. One supplier also did not agree with the implementation of the DWG preferred TOM, however this, in the main was due to them not supporting the decision to move to MHHS, they instead felt elective half-hourly settlement (**HHS**) should continue to be supported while the smart meter rollout completes.

Ofgem response:

- 2.7. With the exception of a group of supplier agents, on the whole the remainder of the responses we received were in support of the DWG preferred TOM. We are further re-assured of the suitability and the appropriateness of the DWG TOM as it has been collaboratively created by an industry led design working group and consulted upon with industry at each major milestone of the design.²⁶
- 2.8. We recognise and agree with the view that there is still a need for more granular detail and that this may require changes to the DWG TOM in some areas. However, the decision we are making in this document relates to the DWG TOM, as set out in the DWG Final Report (August 2019) and the DWG preferred TOM (February 2019), and provides a decision on the high-level design and set-up of the future settlement system.²⁷ Following the delivery of the DWG TOM in August 2019 we set up two new industry working groups to further develop the TOM. These groups were the Code Change and Development Group (**CCDG**) and the Architecture Working Group (**AWG**). As the CCDG and AWG continue to develop the DWG TOM, this additional detail will be consulted on with industry.²⁸ Any changes resulting from the CCDG and AWG further work will be subject to approval through programme governance. If there are further details that become available which mean the high-level design of the DWG TOM is impacted then this will be a material change to the design and if this meets the threshold for Ofgem involvement, then those changes would require

²⁶ See paragraph 3.2 of the [Draft Impact Assessment consultation](#) for a description of the TOM design stages and consultations.

²⁷ This DWG TOM is explained and described in pages 10-13 of the [DWG Final Report](#), August 2019, and Sections 5, 6 and Annex A of the [DWG preferred TOM](#), February 2019. If there is any contradiction between those documents and this current Decision Document, the Decision Document takes precedence.

²⁸ We note the CCDG have already carried out a consultation in January 2021, and have set out the [main conclusions from the consultation](#) on the CCDG page of the Elexon website. We do not see these conclusions as constituting a material change.

Ofgem approval. We will consult on detailed programme governance proposals and thresholds for Ofgem involvement shortly. The key characteristics of the proposed governance are set out in the Management Case of the Full Business Case.

- 2.9. In relation to views expressed regarding DCC capacity, we are working closely with the DCC and SECAS to ensure they design the most optimal solution to deliver the DWG TOM. We also have representatives from DCC and SECAS on the TOM development working groups to ensure that any solution being proposed is fully evaluated against the DWG TOM design, with any changes being made if the evidence supports this. We are aware of the dependencies and interactions with other change programmes currently taking place (specifically the access and forward looking charges significant code review), and are working with the appropriate Ofgem teams so we can ensure the DWG TOM is either able to incorporate the outcomes, or if they are not available in time for the finalisation of the design, that any changes needed to be made in the future can be included. As explained above, we will be consulting shortly on the governance process for making design decisions. Our proposed key principles are set out in the Management Case of the Full Business Case, including the principle that Ofgem approval will be required for any material divergence from the DWG TOM. In relation to the smart meter rollout and the implications some respondents thought this could have on the Load Shaping Service: at this time, we do not consider this to be a significant risk and expect there to be enough coverage of smart meters across the load shape profiles to provide an accurate shape. We expect that this will be monitored as transition progresses and the risk will be assessed by the programme manager.
- 2.10. In relation to the views expressed by stakeholders that were opposed to the DWG TOM, we have responded more fully to the alternative TOM proposed by AIMDA in the Ofgem response to Question 2.
- 2.11. In regards to the response which raised concerns around how the DWG TOM would process 'behind the meter' meters the DWG TOM is able to accommodate the solution identified in BSC modification P375.²⁹ The P375 solution proposes that all BSC qualified Meter Operator Agents (**MOA**) can be appointed as the MOA for an

²⁹ [BSC modification P375 'Metering behind the boundary point'](#) is a BSC modification aiming to introduce the use of metering equipment 'behind' the defined boundary point specifically for the settlement of balancing service provision that was approved in February 2021.

'asset meter' behind the settlement boundary, and that HHDCs can be appointed for an 'asset meter' provided they undertake the similar proving processes as with other meters to demonstrate their ability to communicate with an 'asset meter'. Under the DWG TOM we would expect that Metering Services and Data Services would similarly be able to be appointed for 'asset meters' provided they have undertaken the appropriate proving processes. The CCDG will need to incorporate the 'behind the meter' provisions into the TOM and the legal text changes required to implement this will form part of the package of red lining delivered by the CCDG in their final report.

Question 2 – Aggregation

2.12. In our draft impact assessment consultation we asked stakeholders for their views on our preferred position that HH electricity consumption data should be made available to central settlement systems in non-aggregated form. In the consultation we outlined the arguments for and against the submission of non-aggregated data to central settlement systems.

Stakeholder views:

2.13. As with Question 1, generally, the responses were again split by stakeholder type. Those that agreed with our preferred position included suppliers, DNOs, IDNOs, central bodies and non-supplier agent industry bodies. Those against the preferred position were the majority of the supplier agents, a supplier agent industry body and one supplier.

2.14. The respondents that were supportive of the proposed position that HH consumption data be made available to central settlement systems in non-aggregated form noted benefits of efficiency, cost effectiveness, improvements in data quality and settlement runs, in comparison to the current approach of aggregating at both supplier agent level and in central settlement systems. Respondents also thought that by removing the data aggregation function, this would remove a set of flows and handoffs and therefore reduce the volume of exceptions, which in turn would deliver an efficiency in the industry. One supplier also said there was no clear benefit to the settlement process in aggregating data before it is provided to central settlement systems, and they thought that by removing the need for separate aggregation this should simplify the target architecture and reduce the number of systems and interfaces required to support the end-to-end process.

- 2.15. A mix of stakeholders identified the benefit of providing more flexibility going forward, both for settlement purposes and (in line with data protection rules) for potential wider uses of this data e.g. public policy. A number of respondents noted they would likely see the benefits of this flexibility materialise in new ways to charge for networks and in new and innovative ways to settle, enabling future settlement processes. One respondent went further to note that moving to arrangements of greater granularity now will reduce the chances of a further fundamental change being required in the future. Other benefits that were mentioned included better system visibility and understanding, which in turn would enable better investment decisions.
- 2.16. In the supplier responses, one supplier thought that the original reasons for data being aggregated in a de-centralised manner have now been surpassed by technological advances. Another said there is little competition and innovation in the act of data aggregation, as all data aggregators use the same systems. A third also said that they recognise the future arrangements should reduce suppliers' costs over time, not least because they estimate that 30% of their existing collection and aggregation costs are allocated to data aggregators, solely for them to deliver data to central settlement services in aggregated form.
- 2.17. Of those respondents who agreed with our preferred position that HH electricity consumption data should be made available to central settlement systems in non-aggregated form, some felt that there needed to be a clearer view on how data would be available to third parties and that there would need to be strict governance and controls in place to avoid misuse or sharing of data with third parties. A couple of respondents also noted that it was critical that systems and processes need to be designed to be secure, scalable and flexible, and one supplier's key ask from the AWG is that the solution be cost-effective, secure and transparent.
- 2.18. There were some supplier agents that were broadly supportive of the proposal, and most of these noted that they believed the greatest benefits are from the availability of this data for aggregations for uses beyond the imbalance settlement calculations. They gave examples such as use for innovations (eg peer to peer trading) and also for use in network charges, analysis and assurance. One of the supplier agents in support of the proposal stated that they broadly support the Ofgem preferred position, noting that whilst they are generally against the further centralisation of supplier agent functions, they have direct experience of the consolidation of aggregation functions across the world. All of the supplier agents who were

supportive of the proposal agreed that non-aggregated data should be made available to the wider market participants and that there should be no centralisation of value-added services, where competition is key to facilitating innovation, rapid time to market and cost effectiveness.

- 2.19. Of those respondents who did not agree with our preferred position that HH electricity consumption data should be made available to central settlement systems in non-aggregated form, all but two referred to the AIMDA alternative TOM.
- 2.20. AIMDA, and its members in support of the alternative TOM do not agree that daily, market wide transfer of non-aggregated HH data should be made available to central settlement systems. They are however supportive of the principle of open data in the energy market and do agree that non-aggregated consumption data should be accessible by central settlement systems for required settlement purposes, but say it does not need to be held by the central services or systems. AIMDA go on to say that the DWG preferred TOM is not the optimal solution, as it would require the delivery of HH data to central settlement systems for all 30 million meter points. They argue central settlement systems only need to know about the HH data on a very small percentage of sites at any one time, and therefore it is highly wasteful and costly in terms of data transport and storage costs as well as creating a single vulnerability from a security and privacy perspective. To mitigate what they consider to be an inefficiency and additional cost AIMDA have proposed an alternative TOM. The AIMDA TOM proposes that for settlement purposes, consumption data is only transferred in aggregated form, but data would be accessible in non-aggregated or different configurations depending on the requirement (see paragraphs 2.3 and 2.4 for further information on the AIMDA alternative TOM).
- 2.21. Within their response AIMDA replicate the arguments set out in the draft Impact Assessment (**IA**) consultation and provide a response and reason why they consider that the AIMDA TOM better satisfies these points. These arguments can be summarised as follow:
- Efficiency and cost effectiveness: AIMDA note that total aggregation in one place under the DWG TOM appears efficient, however it requires the daily transfer of settlement period data for 30 million meter points. They argue the same data would be stored twice in separate locations and the costs of non-aggregated data transfer and storage will be much greater. Under the AIMDA TOM non-aggregated data would only be stored in one location and data

transfers occur at an aggregated level for settlement purposes. AIMDA argue it is therefore more efficient and cost-effective.

- Greater potential for flexibility: AIMDA stated the aggregations described in the Draft IA consultation cannot be for core settlement. They go on to say that any real variables that might benefit from future adaptations can be managed just as effectively across multiple systems as in a singular one, and changes to load shape categories can also be easily implemented. They note there could be benefits through increased access to non-aggregated data for purposes outside of core settlement, however they consider it to be unnecessary and disproportionate for data aggregation for settlement to be carried out in central systems. They believe that under the AIMDA alternative TOM, non-aggregated data can still be accessed by central systems, but in a much more targeted way.
 - Data quality benefits for settlement: AIMDA state the data quality benefits described in the Draft IA consultation, already happens at the supplier agent level. Introducing an additional layer to this process will not provide any benefit and could cause inefficiency. They argue the proposed improvements to the registration service should eliminate the occurrence of duplicate or missing data and this reduces the potential benefit of an additional market-wide validation step. In the case of dispute runs, under the AIMDA TOM, data specific to the dispute could be accessed by the service allowing access to non-aggregated data.
 - Competition benefits: AIMDA agree the access to non-aggregated data by third parties would foster competition in one area but consider that the mechanism proposed by the DWG TOM would hamper it in another. The same access arrangements to non-aggregated data can be made under the AIMDA TOM without removing competition in data aggregation services.
- 2.22. One respondent who did not agree with the preferred position and did not refer to the AIMDA alternative TOM, stated their main objections to passing non-aggregated data to central systems were that suppliers would still want aggregations to be carried out locally, so the supplier will ultimately pay for aggregation in both the supplier agent system but also in central settlement systems. They consider there would be a considerable uplift in charges of sending non-aggregated data to central settlement systems and that there are multiple other solutions that exist that would

deliver the benefits described for making non-aggregated data available to central settlement systems.

- 2.23. Once again, one supplier did not agree with the preferred position, stating the approach would be system intensive, and that they were not confident suppliers and/or central settlement systems would be able to process the required volume of data within reasonable timeframes and cost. They thought a detailed investigation was required into the most cost-effective solution, and a robust cost-benefit analysis should be completed before the arrangements are progressed further.

Ofgem response:

- 2.24. Throughout the design of the DWG TOM, the TOM has been designed and assessed against a set of principles (the 'Design Principles'), which were set out in the SCR launch statement.³⁰ These Design Principles have provided guidance and strategic direction to the industry working groups and the Design Advisory Board (**DAB**), whose respective roles are to develop and review products for the TOM to realise the reforms towards MHHS. Throughout the design process, we have considered the degree to which different TOM proposals meet the Design Principles and have used them to help inform our decision-making when considering whether to accept or reject the proposed DWG TOM.
- 2.25. As well as looking at the Design Principles in order to determine the most appropriate TOM for MHHS, we also considered questions which have an impact on the degree to which the Design Principles can be met. AIMDA have told us that they consider their alternative TOM meets the Design Principles, however when taking into consideration the additional questions set out in our analysis of whether or not to centralise agent functions³¹ (and specifically the arguments for and against the use of non-aggregated data by central settlement systems, which have been set out in our Draft IA consultation), we think the AIMDA TOM is less effective than the DWG

³⁰ See the [TOM Design Principles](#) on the Ofgem website.

³¹ There were a number of reasons why we were considering whether or not to centralise agent functions, one of them being the recommendation from the [CMA's Energy Market Investigation Final report \(2016\)](#), paragraph 20.28(a)(iii).

TOM in respect of several key aspects including promoting competition, enabling innovation and minimising the cost of settlement processing.

- 2.26. When we made our decision on agent functions (meter operators, data collectors and data aggregators) we concluded that our work on MHHS should not include the centralisation of agent functions. However, we did say that we thought there may well be a case for future models where data is not aggregated for submission into central settlement systems, and so the data aggregator role may no longer be required in its current form. We questioned whether submitting aggregated data into the central settlement systems was inherently desirable, particularly as the data aggregator role may partly reflect the technology which existed at the time it was introduced, and that the available technology may have limited the ability of central systems to cope with non-aggregated data. We also reflected on whether by having data in non-aggregated form this could provide more flexibility to implement future changes, and could be a way of future proofing the TOM.
- 2.27. Whilst we were still considering the question on whether agent functions should be centralised, the DWG were continuing to progress the design of the TOM. To enable the design to continue without a confirmed policy decision, we published a least regrets steer,³² which allowed the DWG to progress the TOM design work. In this least regrets steer we asked the DWG to consider the view that there may well be a case for a TOM that did not include the submission of aggregated data to central settlement systems, as well as a number of detailed design questions that would flow from any changes to data aggregation.³³ All but one member of the DWG agreed that central settlement services should receive non-aggregated data, and this was reflected in their choice of the DWG preferred TOM.
- 2.28. Having received the DWG preferred TOM, which included the submission of non-aggregated data to central settlement systems, we wanted to consider further the arguments for and against the use of non-aggregated data by central settlement

³² See the [Least-regrets steer to the Design Working Group](#), November 2018.

³³ See paragraphs 3.14 – 3.16 of the [Supplier Agent Functions consultation](#), September 2018.

systems. We set these out in our Draft IA consultation,³⁴ focussing on the arguments of efficiency and cost effectiveness, flexibility, data quality and competition.

- 2.29. The majority of the responses to our consultation questions on the preferred TOM and whether non-aggregated data should be made available to central settlement systems were supportive, and agreed with the arguments on efficiency and cost effectiveness, flexibility, data quality and competition that we had set out in support of the proposed decision. Supplier agents, although supportive of the principle of open data in the energy market, did not agree with the arguments set out that central settlement systems should receive non-aggregated data on a market-wide basis. They therefore did not think the DWG TOM was the optimal solution. A summary of their arguments is set out in paragraph 2.21. Below we have set out our response to each of the points they raised.
- 2.30. **Efficiency and cost effectiveness:** AIMDA and the responses that supported the AIMDA TOM, thought that having aggregation in one place under the DWG TOM appears efficient, however, they argue that the costs of non-aggregated data transfer and storage would be much greater than aggregated data and therefore did not agree that when taking into account the transfer and storage of market-wide non-aggregated data, the DWG TOM would be more cost effective and efficient.
- 2.31. In regards to aggregation happening in one place; we still consider this to be more efficient and cost effective than aggregation happening in multiple systems. We also see a benefit that changes to settlement calculation rules would be more simple and timely to implement. AIMDA have raised a valid challenge to the costs of transferring and storing market-wide non-aggregated data and therefore we have considered this further as to whether this would impact the overall efficiency and cost effectiveness of the DWG TOM.
- 2.32. No recommendation has yet been made by the AWG on the most appropriate communications solution for the transfer of data under the TOM, however, we have the costs provided by ElectraLink and set out in our Final IA.³⁵ If the DTN were the chosen transfer solution for MHHS we do not think the costs that have been provided

³⁴ The arguments for and against the use of non-aggregated data in central settlement systems are set out in Sections 3.6 – 3.8 of the [MHHS Draft IA consultation document](#).

³⁵ See paragraphs 3.75 – 3.83 of the MHHS Final Impact Assessment for more detail.

by ElectraLink are so significantly greater than the current costs of sending aggregated data that they would outweigh the benefits that have been identified (through flexibility, data quality and competition). We also note that accessing at least some non-aggregated data is required by central settlement systems for the purposes of settlement imbalance calculations, and that AIMDA agree there are benefits of making access to non-aggregated data open (as shown through their Data Request Service (**DRS**) in the AIMDA alternative TOM). It would therefore be likely that any solution which maintained the submission of aggregated data to central settlement systems would also need to provide access to and transport of at least some non-aggregated data, which would have a cost associated to it.

2.33. To ascertain if other solutions to transporting non-aggregated data (not via the DTN) would be significantly more costly than transporting aggregated data we have carried out some provisional high-level estimates for costs of sending and storing aggregated and non-aggregated data through an Application Programming Interface (**API**). From this internal analysis we have been able to determine that sending data once it has been aggregated is less costly than sending it in non-aggregated form. However, if non-aggregated data is sent in batches, then the cost difference between the two is marginal. The AWG set out a number of principles by which it would design the new system.³⁶ In these, the AWG stated up front that a primary concern was to ensure that the architecture allows for a cost effective solution. As the AWG and subsequent workgroups progress, cost will be a key consideration of the architectural solution. At this time we have no substantiated evidence to suggest that sending non-aggregated data is prohibitively more expensive than sending aggregated data. However if new information came to light, or if an alternative solution was recommended by the AWG, then this would be considered at that time.

2.34. The AWG is currently working on their recommendation for the most appropriate architectural solution to deliver the DWG TOM, i.e. how data will be held and transported within that TOM model. The AWG will consult ahead of making a final recommendation. Once they have recommended a model, we will consider the proposed solution for transfer and storage of market-wide non-aggregated data. We will think about security and privacy issues, the TOM Design Principles and the TOM

³⁶ These can be found in the [AWG Meeting 2 documents](#) (January 2020) on the Elexon website.

Development Principles, which include ensuring the system design does not act as a barrier for the potential future uses of data, for example, by facilitating third party access.³⁷ We will be consulting shortly on our proposals for implementation and governance arrangements. However, until these new arrangements are in place, Ofgem will continue to make decisions (including on the AWG’s recommended model) under the current SCR governance framework. The new framework will be designed to ensure the decisions are non-discriminatory and that potential conflicts of interest are properly addressed. We expect that where decisions reach a threshold for Ofgem intervention, they will be taken by Ofgem. We see no reason at this stage to discount the DWG TOM, or making market-wide non-aggregated data available to central settlement systems, due to cost. In light of this further analysis, and in combination with our previous arguments set out, we confirm our view that allowing central settlement systems to use market-wide non-aggregated data for settlement purposes will be **more cost effective and efficient** than continuing with aggregation in the supplier agent services, for example by using the AIMDA TOM.

- 2.35. **Greater potential for flexibility:** AIMDA and the responses that supported the AIMDA TOM argue that the aggregations given in our consultation document as examples of beneficial flexibility cannot be for core settlement and that any real variables that might benefit from future adaptations can be just as effectively managed across multiple systems.
- 2.36. We acknowledge the AIMDA point that the aggregations described are not currently required for core settlement. However, it is possible and desirable to see such aggregations being required for settlement purposes, for example for more granular network charging.³⁸ Aggregating data before it is accessed reduces its utility (such as by lowering the resolution of series of data). This can make it impossible to gain certain insights, which can be beneficial to settlement. We also anticipate wider applications of this data as the energy market continues to digitalise the energy system and its associated services. Enabling these wider applications, including those which can be challenging to identify upfront, was one reason why the Energy

³⁷ The [TOM Development Principles](#) can be found on the Ofgem website.

³⁸ The definition of data for settlement purposes is set out on page 9 of the [DWG Stage 2 Report on the DWG Preferred TOM](#), February 2019.

Data Taskforce report recommended data is treated as “presumed open”.³⁹ We recognise the AIMDA TOM would provide one way for aggregation outside of central settlement services and allow access to non-aggregated data, when required. However, it has already been identified that the move to a modern, digital energy system is often hindered by poor quality, inaccurate, missing or hard to find data.⁴⁰ We therefore see no reason to reduce the visibility of data for central settlement services (or for other applications) or the need to raise barriers to data access through increasing the number of steps needed to be taken before data can be used for settlement imbalance calculations. As we move to a market where how we use data can transform our energy system, we consider that a system where central settlement systems use market-wide non-aggregated data is necessary to achieve a modern, digital, settlement and energy system, and is proportionate and beneficial overall. We see this solution as consistent with the 11TH principle of Data Best Practice guidance, which expects data to be treated as open by default in the absence of compelling evidence to do otherwise (for example data privacy considerations).⁴¹

2.37. In addition, one of the key priorities for the design of the TOM is the need for it to be forward-looking, to avoid the need for expensive and time-consuming system re-designs as the market and technology develop. The TOM must be able to accommodate future changes and not act as an impediment to new energy technologies, products and services which may arise.⁴² We agree with a number of the respondents who noted the use of non-aggregated data in central settlement systems would likely lead to benefits from new and innovative ways to settle, which may well arise in future. We also agree with the respondent that thought that moving to arrangements of greater granularity now will reduce the chances of a further fundamental change being required in the future.

2.38. Following this further assessment, we therefore confirm our views that allowing central settlement systems to use market-wide non-aggregated data for settlement

³⁹ See recommendation 2 in the [Energy Data Task Force: A strategy for a Modern Digitalised Energy System](#), June 2019.

⁴⁰ As set out in the [Energy Data Task Force: A strategy for a Modern Digitalised Energy System](#), June 2019.

⁴¹ [This is the latest draft of the Data Best Practice guidance \(version 0.21 at time of publication\)](#). During spring 2021 we will launch a consultation on the guidance to formalise its content.

⁴² As set out in the Innovation Design Principle in Ofgem’s [TOM Design Principles](#), January 2018.

purposes will allow **greater potential for flexibility**, than continuing with aggregation in the supplier agent services.

- 2.39. **Data quality benefits for settlement:** AIMDA and the responses that supported the AIMDA TOM argue that the data quality benefits described in the Draft IA consultation already happen at the supplier agent level and therefore introducing an additional layer will not provide any benefit and could cause inefficiency.
- 2.40. The DWG TOM is currently being further developed by the CCDG, and we agree that the outcomes of this development, combined with the changes proposed to the registration service, should reduce the occurrence of duplicate or missing data. The processing requirements set out for the MDS in the recent CCDG consultation⁴³ demonstrate this through the few processing requirements placed on the MDS. The defaulting arrangements proposed to be carried out by the MDS will however ensure complete data will be provided for each settlement period, and that the central settlement services will have the visibility of where and how much data is defaulted for their performance assurance purposes. The amount of processing proposed by the CCDG ensures there is no duplication of processes and therefore does not introduce any unnecessary layers or inefficiencies, whilst ensuring visibility and completeness of the data for settlement.
- 2.41. We have considered this further representation from AIMDA and the work carried out on the MDS processing by the CCDG, and we think the right balance has been struck between ensuring accurate data for settlement, whilst reducing any unnecessary duplication in processing and therefore adding inefficiencies. By enabling central settlement systems to carry out the defaulting requirements across the market wide non-aggregated data, there will be a better view of the accuracy of the information provided to settlement and therefore the BSCCo will be able to act more appropriately through their performance assurance functions, which will ultimately improve data quality and settlement processes. We therefore confirm our views that allowing central settlement services to use market-wide non-aggregated data for settlement purposes will provide greater **data quality benefits for settlement**, then continuing with aggregation in the supplier agent services.

⁴³ The [CCDG consultation](#) can be found on the Elexon website.

- 2.42. **Competition benefits:** AIMDA and the responses that supported the AIMDA TOM agree with our view that allowing access to market-wide non-aggregated data (in accordance with data protection rules) could enhance competition in value added services and also make it easier for businesses to offer innovative new services to suppliers and/or consumers. However, they argue it would hamper it in another area (as it removes competition in data aggregation services).
- 2.43. As we have set out previously, we are of the view that there is little competition or value in the actual act of aggregating data.⁴⁴ We did not receive any further information or evidence to change this view, but did receive further representation from suppliers, which support it.⁴⁵ For the purposes of central settlement systems, we see aggregation to be the adding up of the consumption data for settlement purposes, as opposed to the supplier agent activities relating to data quality and value-added services (which we have said would still be provided in the market). Under the DWG TOM, supplier agents and any other parties in the market (who have access to the right data), would still be able to aggregate consumption data if they see value in it. We do not expect central settlement systems to take on the role of providing value-added services. We also note that they would be unable provide such services in line with the current requirements of the BSC, which provide limitations to the set of activities it can undertake, and which provides for rules around what the data can be used for.⁴⁶ As a result, we do not agree that central settlement systems would be able to unfairly capitalise from aggregating non-aggregated data across the market in order to provide more attractive value added services to suppliers. We consider the change to allow market-wide non-aggregated data to be used in central settlement systems for settlement purposes to be consistent with the BSCCo's responsibilities to ensure a level playing field in contestable markets. We further note that any potential competition law concerns which may arise in the future would be considered seriously if evidence of anti-competitive behaviour were to be brought to our attention.

⁴⁴ See paragraphs 3.44-3.65 of the MHHS [Draft IA consultation](#) for details.

⁴⁵ See paragraph 2.14 of this document.

⁴⁶ We note that BSC modification P390 relates to potential future activities of affiliates of the BSCCo, not the BSCCo/central settlement systems themselves. We note that modification allows such affiliates to tender for new activities more quickly, but that we will retain a veto and, in any event, the affiliate must engage on arm's length terms and have no preferential access to data or other services managed by the BSCCo.

2.44. We recognise this is a change to the status quo, and will be the reduction of a task currently carried out by supplier agents, and as a result will have an impact on supplier agents and their business. However in light of our consultation and analysis we consider that the proposed changes will enable wider access to HH data, which, in regards to supplier agents in particular, should increase competition and open up new opportunities for them to innovate and carry out additional services.⁴⁷ We also expect there will be wider benefits to data quality, greater potential for flexibility and for efficiency and cost effectiveness. In broad terms, our principal objective is to protect the interests of existing and future energy consumers, wherever appropriate by promoting competition. In our view, changing the market arrangements in the way described in this decision does that.

2.45. As previously discussed, we see there to be little intrinsic value and little competition in the straightforward task of adding up consumption data for the purposes of calculating the settlement imbalance. There are a number of identified benefits as to why aggregation should occur in one place, and as the original reason for aggregation in a decentralised manner has now been surpassed by technological advances, it is no longer necessary for it to continue to be provided as separate competitive services. In addition, we see the aggregation of data for settlement a required step to calculate the settlement imbalance and for the BSCCo to fulfil its duties under the BSC. It is therefore rational to confer this task to the BSCCo. The BSCCo have previously stated they would run a competitive procurement service for the new central settlement services outlined in the DWG TOM (the MDS and the LSS) and we would therefore expect the BSCCo to undertake an effective procurement process that delivers these services cost-effectively. We consider that this is the right level at which competitive procurement should take place, and that it would be inefficient to separate out one small element of this (the task of aggregation for central settlement), even though this element has previously been separated.

⁴⁷ See Paragraphs 3.62-3.65 of the [MHHS Draft IA consultation](#).

2.46. Taking the bigger picture into further consideration, we stated in our Forward Work Programme 2021/22 that we will conduct a review of new and growing data and digital monopolies across the market.^{48,49}

Ofgem Decision:

2.47. From the responses we have received to the Draft IA consultation, and in taking into account all the representations that have been provided in previous consultations, RFIs, workshops and bi-lateral engagements, we consider the DWG Preferred TOM is the most appropriate TOM to deliver MHHS. We note that it is subject to further development, which must be approved under the governance framework. We will be consulting on this shortly, however our proposed key principles are set out in the Management Case of the Full Business Case, including the principle that Ofgem approval will be required for any material divergence from the DWG TOM. We therefore **confirm our decision to introduce MHHS on the basis of the DWG TOM** and that **HH electricity consumption data, should be made available on a market-wide basis to central settlement systems in non-aggregated form.**⁵⁰

⁴⁸ See “Point 6” of Ofgem’s [Forward Work Programme 2021/22](#), March 2021.

⁴⁹ Our latest [Draft of the Digitalisation Strategy and Action Plan guidance](#). This will be updated and then consulted over jointly with our Data Best Practice consultation in spring 2021.

⁵⁰ This DWG TOM is explained and described in Pages 10-13 of the [DWG final report](#), August 2019, and Section 5, 6 and Annex A of the [DWG preferred TOM recommendation](#), February 2019. If there is any contradiction between those documents and this current Decision Document, the Decision Document takes precedence.

3. Settlement timetable

Question 3: We propose that the Initial Settlement Run (SF) should take place 5-7 working days after the settlement date. Do you agree? We welcome your views.

Question 4: We propose that the Final Reconciliation Run (RF) should take place 4 months after the settlement date. Do you agree? We welcome your views.

Question 5: We propose that the post-final (DF) settlement run should take place 20 months after the settlement date, with the ratcheted materiality proposals described in chapter 4. Do you agree? We welcome your views on this proposal, and in particular about its potential impact on financial certainty for Balancing and Settlement Code parties.

Question 3 – Initial settlement run (SF) timing

3.1. In our draft impact assessment consultation we asked stakeholders for their views on our proposal for the Initial Settlement (**SF**) run to take place 5-7 working days after the settlement day, instead of the current 16 working days. This was based on the settlement timetable developed by the Design Working Group (**DWG**), as part of their recommendations to Ofgem which were delivered in 2019.⁵¹ We set out in our draft impact assessment consultation that further work needs to be carried out to understand the capability of the TOM services to develop and apply load shapes to register read data, and therefore what timeframe within 5-7 working days was appropriate. We stated that our preference was for 5 working days if this was possible.

⁵¹ [The DWG final report](#) is available on the Ofgem website.

Stakeholder views:

- 3.2. All but one of the responses we received that provided a view agreed with the proposal for the initial settlement run to happen at 5-7 working days after the settlement date. In their responses some parties stated that they agreed with the benefits we identified in our consultation, and others highlighted specific benefits of reducing the timescales for SF including improved certainty on settlement positions and therefore a reduction in cash flow volatility. The stakeholder who did not agree said the appropriate timing for the SF run cannot be decided until a greater level of detail is developed on the proposed TOM, and the key question is how long is required to ensure that all metering points without half-hourly data can have data estimated through the new load shaping service.
- 3.3. Suppliers also identified dependencies on circumstances they felt would need to be in place before the timing of the SF run could be reduced. These included reliable retrieval of settlement period level data via the Data Communications Company (**DCC**), sufficient half-hourly (**HH**) data from all TOM Market Segments to create the load shapes, and a sufficient level of smart meter penetration across GB.
- 3.4. Several suppliers and independent supplier agents also stated a preference for the SF run to take place at 7 working days rather than 5. Some of the reasons stated for this preference were to allow for data from manual downloads to reach Central Services, and to allow time for system or metering outages.

Ofgem response:

- 3.5. The responses from stakeholders to our consultation further support our view that the SF settlement run should occur 5-7 working days after the settlement day. The DWG were confident that the LSS can produce the required data within 7 days and that the timing would depend on the availability of smart meter data.
- 3.6. We have considered the responses from stakeholders highlighting what they believe would need to happen before the settlement timetable could be reduced. In their recommendation on the Transition Plan, the DWG said that the simplest approach to implementing the revised settlement timetable is to wait until all MPANs are being

settled under the TOM.⁵² The DWG recommended that the decision of when, after transition is complete, the settlement timetable should be reduced should be taken nearer the time, and on market monitoring against trigger points. We believe that when the decision is made, as part of the industry-led delivery phase, the factors highlighted by respondents to this consultation should be taken into consideration, for example being included as part of the market monitoring. We think that industry should ensure that the new settlement timetable is introduced as soon as practicable after the end of migration to realise the full programme benefits.

3.7. The decision on what the appropriate exact timing for the SF run should be will be taken in accordance with the governance framework.⁵³ This decision should be taken when the technical design has progressed to a point where more is known about the capability of the TOM processes to receive metering data from the meter, validate and process this data (including applying load shapes where required), and use it in the settlement calculations. The timing should be set at a point that represents the quickest this can be done for customers where meter data is available daily. The SF run should not be delayed to allow for manual meter downloads and communication outages as we believe these shouldn't be the norm under the TOM. The later settlement runs will feed data from manual downloads and where there has been a communication fault into the settlement system. The load shaping service should also improve the quality of estimated data at SF for customers in the smart/non-smart segment where meter data is not available daily.

3.8. **Ofgem's decision is that the Initial (SF) settlement run should take place at 5-7 working days after the settlement date. The decision on this should be based on the shortest duration within this range that the constraints of the new system would reasonably allow.**

⁵² The DWG's recommendation on the settlement timetable can be found in their [Transition Approach report](#) on the Ofgem website, August 2019.

⁵³ As set out in our [Consultation on Programme Implementation Principles](#) (January 2021) we will be consulting on the governance framework shortly.

Question 4 - Final settlement run (RF) timing

3.9. We also asked stakeholders whether the Final settlement run (**RF**) should take place at 4 months after the settlement day, rather than the current 14 months, based on the settlement timetable recommended by the DWG. We believe this would allow liabilities to be settled faster, which would bring earlier certainty about charges and enable quicker market exit. In response to our Request for Information (**RFI**) some stakeholders felt 4 months would not be long enough to allow for manual reads of traditional and advanced meters. In our consultation we set out that we felt that manual reads should be the exception after the cut over to the reduced settlement timetable, and that the Balancing and Settlement Code (**BSC**) Performance Assurance Framework (**PAF**) should take the number of manual reads expected into account when setting performance targets.

Stakeholder views:

- 3.10. The majority of stakeholders agreed with our view that the RF settlement run should take place at 4 months. Several stakeholders, both those that agreed and those that disagreed, set out that it would only be possible for RF to be reduced to 4 months if the proportion of meters capable of being read remotely was sufficiently high, with some suppliers highlighting the dependency with the smart meter rollout.
- 3.11. Of the stakeholders who did not agree with our preferred timing for the RF settlement run a number cited concerns around how long communications issues can take to resolve, especially in large industrial sites. Some examples provided were a supplier agent who said they currently experience regular instances of late appointments notified after the current R2 run (which occurs at approximately 4 months after the settlement date), and one industrial consumer who said their experience would suggest it tends to take longer than 10 weeks to resolve a communications fault. A further concern raised by stakeholders was that the larger the number of customers without a communicating Smart or AMR meter, the costlier it will be for suppliers to more regularly visit non-communicating or traditional meters to manually obtain register reads every 4 months. Furthermore, a supplier and a supplier agent said that if RF were to take place at 4 months, the number of post-final (**DF**) settlement runs may increase and there is a risk that the DF run becomes the de facto final reconciliation.

- 3.12. One industrial customer stated that the RF run should continue to take place at 14 months, while two suppliers stated that final settlement should not be run if the amount of energy which is not based on a reading (i.e. actual half-hourly data or profiled based on an actual register read) is less than 97%, and that this threshold should be used to determine the appropriate timing for the RF settlement run.
- 3.13. Other respondents felt that 4 months was sufficient time to allow for faults to be corrected, with one supplier agent stating that they have observed that at industry level there is little variation in overall energy and proportion of actual to estimated volumes between each Reconciliation Run under the existing timetable for half hourly settlement. They said this appears to support reducing the RF Run to 4 months as in most cases settlement positions are final within a month of consumption. An IDNO stakeholder agreed, stating that three months seems a reasonable time to resolve issues and therefore a four month final settlement run makes logical sense. A trade body felt that the settlement timetable changes will trigger some interesting challenges for the industry to improve the speed of response to metering equipment faults.

Ofgem response:

- 3.14. As stated in paragraph 3.6. above, we agree with the DWG's recommendation that the settlement timetable should only be reduced after the migration to MHHS is complete, and the timing should consider when market monitoring against trigger points suggests it would not be detrimental to the accuracy and integrity of settlement to do so, including the extent of the smart meter rollout. Monitoring against a target for actual meter reads, or load shaped estimates where this is the best data available, should also be included in the considerations.
- 3.15. In our draft IA consultation we set out our view that the new settlement timetable should not be built around exceptions and that we expect the BSC PAF to flexibly set performance targets to strike a balance between incentivising suppliers to take meter readings promptly and recognising that there are a proportion of sites for which data is difficult to access. This should include taking into account factors such as the number of traditional meters remaining and a reasonable level of meter faults. We maintain this position as the benefits of the reduced settlement timetable also need to be considered, and agree with the majority of stakeholders that 4 months should be sufficient time to correct most issues as it allows for 4 (monthly) attempts, and that the more ambitious settlement timetable should incentivise

parties to fix issues in a more timely manner when they do arise. We also believe that if PAF performance targets are set correctly suppliers should not incur excessive costs for obtaining meter readings from customers with a traditional meter, and that load shapes from the load shaping service should make estimates applied to these customers more accurate than the current profiles. The proportion of meters that cannot be ready by RF is expected to be small, and any errors would be spread across suppliers via the Grid Supply Point (**GSP**) Group Correction process. Ofgem expects the industry led design and implementation process to take into consideration the impact on consumers of all types, and take a proportionate approach, as set out in section 7. Alongside other domestic and non-domestic consumers, this also includes industrial customers in sectors with above-average incidences of advanced meter communication issues.

- 3.16. We have not seen evidence that having the RF run take place at 4 months would lead to an increase in the number of post-final settlement runs. We expect that this would only occur if the cut over to the new settlement timetable happens before the industry is sufficiently prepared. Industry should therefore be preparing for the reduced settlement timetable during the course of transition.
- 3.17. **Ofgem’s decision is that the Final settlement run (RF) should take place at 4 months after the settlement date, in line with the DWG’s recommendation.**

Question 5 – Post-final settlement run (DF) timing

- 3.18. As part of our draft impact assessment we set out our preferred timing for the post-final settlement run (**DF**), which is 20 months after the settlement day, if such a run is required. This is a reduction from the current 28 months, in line with the DWG’s recommendations. We also stated that we agree with the DWG’s recommendation to introduce ‘ratcheted materiality’ where the materiality a dispute would be required to achieve would increase over time after the RF run to ensure only the most material disputes can be raised near the end of the disputes window. We asked stakeholders for their views on whether they agreed the DF run should take place at 20 months with ratcheted materiality.

Stakeholder views:

- 3.19. The majority of responses agreed that the DF run should take place at 20 months and include ratcheted materiality. One supplier said the proposal strikes an appropriate balance between providing enough time to allow material errors to be corrected and incentivising the prompt identification and resolution of errors, and other responses from supplier agents and network companies agreed. A different respondent stated that they felt the proposals would not be any more appropriate than current arrangements. One trade body representing non-domestic suppliers said they do not support the current limitation of 28 months for correcting known errors, and that shortening the process to 20 months will exacerbate the issues they feel exist with the extra-settlement determinations process.
- 3.20. A supplier said they anticipate that the length of time between the Final Settlement Run (**RF**) and the Post-Final Settlement Run (**DF**) could create challenges for smaller suppliers who have identified an error but need to wait 20 months before this is recoverable. They suggested an alternative where a pre-DF run which would be allowed in defined circumstances to allow some settlement errors to be corrected at an earlier date. A further supplier suggested an alternative where an “interim” DF window should be available at 12 months in line with the back billing rules to allow quicker resolution of issues that only just cross the RF boundary.
- 3.21. Elexon mentioned in their response that the BSC Trading Disputes Expert Group (**TDEG**) supports the DWG’s proposals for the DF timetable, and specific recommendations will be published when it completes its review.⁵⁴ We encourage industry to continue take forward any recommendations they feel would improve the current BSC disputes processes.

Ofgem response:

- 3.22. We agree with stakeholders that the DF run taking place at 20 months if required, with ratcheted materiality, strikes the right balance between allowing material errors to be corrected while incentivising parties to identify and correct errors in a timely manner. This proposal gives parties earlier financial certainty while still allowing time for material errors, especially on the CVA side of the market, to be identified and
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⁵⁴ [More information](#) on the Trading Disputes Review can be found on the Elexon website.

corrected. While we understand the concerns raised around the financial impact of errors not being able to be corrected in settlement after this date, the extra settlement determinations process exists to address these cases, and we encourage parties to discuss any concerns about this process with Elexon.

3.23. With RF at 4 months after the settlement day, and DF at 20 months after the settlement day, the time between RF and a DF run if one is required is 16 months. Under the current settlement timetable the time between the RF and DF runs is 14 months, so while the disputes window is longer under our proposals it is not considerably longer, and the overall timetable including disputes would be 8 months shorter. We note that the proposal of an interim DF run, as suggested by two supplier responses in paragraph 3.20 is one of the options identified by the TDEG.⁵⁵ We expect the BSC Trading and Disputes Committee (**TDC**) to fully consider this, along with the TDEG's other recommendations when they set out how the new disputes timetable will be implemented.

3.24. **Ofgem's decision is that the Post Final (DF) settlement run should take place at 20 months after the settlement date if required and should include ratcheted materiality, in line with the DWG's recommendation.**

⁵⁵ For more details on the options considered by the TDEG, [the meeting papers](#) can be found on the Elexon website.

4. Export-related meter points

Question 6: We propose to introduce MHHS for both import and export-related MPANs. Do you agree? We welcome your views.

Question 7: We propose that the transition period to the new settlement arrangements should be the same for import and export-related MPANs. Do you agree? We welcome your views.

Question 6 – Inclusion of export MPANs

4.1. In our draft Impact Assessment (**IA**) Consultation, we asked stakeholders for their views on our proposal to introduce Market-wide Half-Hourly Settlement (**MHHS**) for export as well as for import (as part of our preferred option described in our draft IA).⁵⁶ In the same document, we explained the rationale of our position, based on the expected benefits and relatively small costs of including export-related MPANs in the reform, as reported by stakeholders through our Request for Information (**RFI**). We also made clear that the reform would require all export from small-scale installations (including generation, energy storage and vehicle to grid (**VTG**)) be settled, and settled on a HH basis.⁵⁷ More detailed information on the proposal of including export MPANs in the reform can be found in chapter 5 of draft IA Consultation.⁵⁸

Stakeholder views:

4.2. The vast majority of stakeholders that answered this question agreed with our proposal to introduce MHHS for both import and export related MPANs. The majority of them recognised various benefits of including export in the reform with a few suppliers pointing out that there would be little additional cost for them.

⁵⁶ See the [MHHS Draft Impact Assessment](#), June 2020.

⁵⁷ Installations smaller than 30kW.

⁵⁸ See the [MHHS Draft Impact Assessment](#), June 2020.

- 4.3. Some stakeholders thought that this would make the process of settlement more efficient and accurate by using actual data and avoiding spill onto the system. A few responses pointed out that it could increase the accuracy of small-scale generation forecasting. Some DNOs raised that it would improve network management and planning, as it would increase visibility of small-scale local generation, with one DNO saying that this visibility was vital as export continues to grow. A few respondents thought that it would promote and enable innovation (for example battery storage, VTG and ToU tariffs). One consumer charity said that HHS was needed to allow appropriate cost signals to be sent, and also noted that export is increasingly important.
- 4.4. However, some stakeholders, while supportive of the proposal, raised some concerns, which we discuss in the following paragraphs.
- 4.5. The Data Communications Company (**DCC**) noted that the proposal would require a change to their service provider contracts, as export is out of scope for the ISFT5 forecasts for DCC traffic. They initially felt that the impact could be significant if penetration of export rises so as to effectively increase the total traffic above the 100% baseline they are designed to support for import consumption. Further modelling by DCC of scenarios with export penetration reaching 10%, 30% and 50% of homes showed that the impact of this increase in volume of data is small, as the majority of the DCC costs to support MHHS are fixed costs.
- 4.6. A trade body and a small number of suppliers said that there were a few export MPAN related issues with the Smart Export Guarantee (**SEG**) and Feed-in-Tariff (**FIT**) schemes that would need to be solved first in order to best facilitate MHHS for export. These concerns are discussed in more detail and answered in next question (Question 7 – Transition period for export MPANs).
- 4.7. One large supplier thought that export should only be settled where there is a commercial relationship between the customer-generator and the supplier, until such time when EVs with the capacity to export energy and/or storage become wide spread.

Ofgem response:

- 4.8. We welcome all the feedback received from stakeholders and note the wide support for our proposal to mandate half-hourly settlement for export from installations smaller than 30kW.
- 4.9. We think that the benefits raised by the respondents largely validates the rationale for our proposal, which we discussed in the draft IA Consultation document (section 5). Notably, that this reform would produce benefits in terms of improved network management, more accurate settlement, better forecasting for suppliers and innovation, with little additional cost. It is worth noting that in our draft IA Consultation we acknowledge that while network operators, large suppliers and Elexon mostly felt that the cost of settling export MPANS was not significantly different than for import, this may not be the case for some independent suppliers. We have not received any further feedback in this respect.
- 4.10. We acknowledge some concerns from a few stakeholders regarding the implementation of MHHS for export-related MPANS, and discuss them below.
- 4.11. Regarding the concerns raised by the DCC that MHHS for export related-MPANS could significantly increase their costs, we have further engaged with them to understand the issue. As referenced in paragraph 4.5, further modelling by their service providers showed that the overall impact on the total DCC costs is expected to be small. We have updated the Impact Assessment to reflect these costs. The DCC costs are discussed in section 3 of the Final IA for MHHS.
- 4.12. In relation to the concerns around the capacity of the SMETS1 to support the full inclusion of export, further discussions with DCC have clarified that the number of service requests available for export data from SMETS1 meters is more limited than for SMETS2 meters, which means fewer types of metering data are available, but the export metering data available from SMETS1 meters is sufficient to for a data service to be able to fulfil their requirements under the TOM. The rest of concerns raised by stakeholders do not question whether MHHS for export-related MPANS should be implemented, but rather when it should be implemented. Therefore, we think these are best considered in the next question (Question 7 - Transition period for export MPANS).

4.13. **Ofgem’s decision is to introduce MHHS for both import and export-related MPANs.**

4.14. We note the proposal from a stakeholder in paragraph 4.7 on how the obligation to settle exported electricity could be implemented in practice. Ofgem expects industry to develop a proposal for how best to include mandating the settlement of export in MHHS, and how this can be implemented as part of the industry-led delivery phase. If the proposed solution requires changes to the standard licence conditions, industry can recommend that Ofgem make these changes.

4.15. Our 2019 decision letter on the MHHS data access framework set out that the opt-out available for domestic consumers in respect of their HH consumption data should not be available in respect of their HH export data.⁵⁹ This was largely based on our view that HH export data is less personally sensitive than HH consumption data. We note the fact that a consumer’s ownership of export-capable technology (such as solar panels etc.) is deducible from the fact that they are exporting at all, and is not specifically linked to the granularity of the data collected.

4.16. **We therefore confirm our decision that MHHS will be introduced for export-related, as well as import-related, MPANs.**

Question 7 – Transition period for export MPANs

4.17. In our draft IA Consultation, we asked stakeholders for their views on our proposal to implement MHHS for export at the same time as for import.

⁵⁹ See paragraph 6.7 of the [Access to data decision letter](#), June 2019.

Stakeholder views:

- 4.18. The vast majority of stakeholders that answered this question agreed with our proposal in principle. A significant number of respondents thought that transitioning both import and export related MPANs at the same time was more time and cost efficient. For example, one supplier said that aligning both transition periods would make delivery simpler and would prevent duplication of tasks and processes.
- 4.19. Other respondents thought that it was important that import and export settlement processes were aligned as closely as possible. For example, a consumer group thought consistency between import and export would benefit consumers. One DNO said this consistency was vital for network management as export continues to grow. Another DNO thought that alignment would reduce the risk of confusion over timelines for each settlement process.
- 4.20. However, a number of stakeholders thought that, while the alignment between import and export transition was desirable, this might not be possible under certain circumstances. We discuss this concern below.
- 4.21. As mentioned in Question 6 above, a few stakeholders thought that there were some issues with export related processes, notably with the SEG and FIT schemes, that would need to be solved before an efficient transition to export MHHS was possible.
- 4.22. In particular, one large supplier had concerns that the progress being made to embed and refine the SEG industry processes was not fast enough, which, according to them, would result in a greater volume of export meters not having an MPAN, meaning that an early move to MHHS for export would require additional time and costs. They also thought that because the SEG requirements were new to industry, there were some fundamental issues. For example, they raised that when the export-only supplier is not the lead supplier for a metering point, it can be difficult to obtain the required information in the meter technical details data from the meter operator appointed by the import supplier, ultimately meaning that readings cannot be received and used for settlement. Nevertheless, they said that they continue to work with other suppliers to resolve these fundamental issues. The supplier recommended that migration should be split in two stages, with import MPANs migrating first, followed by export MPANs when the issues identified through the SEG are solved.

- 4.23. Another large supplier said that export related MPANs could require a longer transition period as these sites move into settlement, if there is not enough data available for the Load Shaping Service (**LSS**) to create accurate load shapes. However, they suggested that this risk could be reduced if industry was incentivised to progress faster by registering export-related MPANs prior to the switching on of the LSS.
- 4.24. Another large supplier thought that industry needs to be confident that all parties can maintain the service required to ensure consumer satisfaction, and had some concerns about the DCC capacity to support export.
- 4.25. One supplier agent agreed with aiming for the same transition period for both export and import, but that any delays relating to settling export half-hourly should not delay half-hourly settlement of import.

Ofgem response:

- 4.26. We acknowledge the general support among stakeholders for our proposal to align implementation of export related MPANs with import related MPANs and the validation of our rationale. We agree that this would be the most efficient solution as we explained in our draft IA Consultation document.
- 4.27. We also recognise the importance of consistency between import and export. We agree that this consistency would benefit consumers, by for example, avoiding unnecessary complexity with different temporary arrangements for export and import, and network management.
- 4.28. We note the concerns raised by some stakeholders that aligning the implementation of export and import related MPANs might not be possible or desirable in certain cases. We discuss these concerns in the following paragraphs.
- 4.29. In relation to the comment that delays with the transition of export should not delay the transition of import, we consider this to be a question for the implementation governance to manage if and when the situation arises. We expect that any changes proposed that delay level 1 programme milestones will have to be approved through the programme governance set up to deliver MHHS. We propose to establish a

threshold of 3 months beyond which any such delays would be subject to Ofgem approval.⁶⁰

Issues with the SEG and FIT schemes

- 4.30. We are aware of a number of issues regarding MPANs and the SEG and FIT schemes raised by different stakeholders with Ofgem. In particular, concerns that the processes were not in place to support data collection, swapping out meters and issuing export MPANs.
- 4.31. We expect industry to make sure industry processes are in place to support these existing schemes. We understand that some progress has been made in this regard. Notably, MRA change proposal MAP CP 0324 has been recently implemented to create a single procedure for requesting the creation of new MPANs, and BSC Issue 91 has been raised to look into registration and settlement of SEG sites.⁶¹ Given the length of the transition period set out in section 5, we believe this gives industry ample time to identify and resolve issues with export processes before migration to MHHS begins.
- 4.32. Therefore, we do not think it would be reasonable to delay the implementation of MHHS for export related MPANs based on these concerns. We will, however, notify BEIS of the issues raised with us.

Issues with the LSS

- 4.33. We acknowledge that if accurate load shapes cannot be provided by the LSS for export related MPANs due to a low number of export MPANs being settled under the TOM, this could potentially delay the transition for export-related MPANs for customers with a meter that cannot provide HH data. As part of the transition plan, we expect that suppliers will need to ensure they have registered export related MPANs for their existing export customers before the mandatory migration period

⁶⁰ We will be consulting on these proposals shortly.

⁶¹ In June 2020, [MAP28](#) (The MRA Agreed Procedure for Raising Export MPANs) was removed and merged into [MAP27](#) (The Procedure for Requesting Additional Import Export MPANs Using ECOES) to support the SEG and FIT schemes. The latest information about BSC Issue 91 can be found on the [Elexon website](#).

begins, and that this will form part of their migration plans. We believe this will mitigate the risk to the LSS providing accurate load shapes for export-related MPANs when they have migrated to the TOM.

Ofgem’s decision

4.34. **Ofgem’s decision is that the transition period to the new settlement arrangements should be the same for import and export-related MPANs. As noted in para 4.29 above, we expect that any changes proposed that delay Level 1 programme milestones (including transition dates for import- and export-related MPANs) will have to be approved through the programme governance set up to deliver MHHS. We propose to establish a threshold of 3 months beyond which any such delays would be subject to Ofgem approval.⁶²**

⁶² We will be consulting on these proposals shortly.

5. Transition period

Question 8: We propose a transition period of approximately 4 years, which at the time of analysis would have been up to the end of 2024. This would comprise of an initial 3-year period to develop and test new systems and processes, and then 1 year to migrate meter points to the new arrangements. Do you agree? We welcome your views.

Question 9: We have set out high-level timings for the main parties required to complete a successful 4-year transition to MHHS. Do you agree? We welcome your views, particularly if your organisation has been identified specifically within the timings.

Question 10: What impact do you think the ongoing COVID-19 pandemic will have on these timescales?

Question 8 – Length of transition period

5.1. In our draft Impact Assessment (**IA**) Consultation, we asked stakeholders for their views on our proposal to transition to Market-wide Half-Hourly Settlement (**MHHS**) over a period of approximately 4 years.⁶³ This was to comprise of an initial 3 year period to develop and test the new systems and processes and then a 1 year period to migrate meter points to the new arrangements, and took into account the Design Working Group’s (**DWG**) high-level transition approach.⁶⁴ In the same document, we set out a plan on a page which identified the different market participants involved and the main tasks, order and timings that would need to be undertaken for transition.

⁶³ See section 6 of the MHHS [Draft Impact Assessment consultation](#), June 2020.

⁶⁴ The DWG’s Transition Approach is set out in the [DWG final report](#), August 2019.

Stakeholder views:

- 5.2. Responses on the length of the transition timetable were generally split into two predominant views. The first, which most central industry bodies, DNOs, IDNOs and supplier responses supported, was that they agree with the 4 year transition period and that in theory it sounded reasonable. However, although noting that they would be able to deliver their own changes in the proposed timeframe, many felt that there were key dependencies on a number of variables and that these would need to be fully understood, communicated and managed in order to maximise the chances of a successful delivery. In addition a number of responses noted the high-level nature of the plan and that it would be more appropriate to consider what each phase needs when the detail of what is going to be implemented is available and has been assessed – such as what is required for qualification and migration.
- 5.3. The second set of views was that a 4 year transition period was not long enough. This set of views was mainly supported by supplier agents, and one supplier. A number of supplier agents went further to say they thought a 5 year transition period would be more realistic, as this allowed for contingency to be built into the plan.
- 5.4. There was a final, less dominant set of views that thought the transition to MHHS should be shorter. Generally, there was little evidence to back up this reasoning, or suggestions on where the timetable could be brought in. However, one supplier did suggest that more emphasis should be on iterative development. They thought that by getting to a minimum viable product sooner, the suppliers who could move faster could de-risk the transition for those moving later.
- 5.5. Nearly all responses went on to identify specific areas of concern within the plan and/or dependencies outside of the plan which may impact the timings. Those areas identified have been split into the subheadings below.

Other industry change impacts

- 5.6. A number of responses noted the length of transition should take into account other industry-wide programmes (such as Faster and More Reliable Switching, the Retail Energy Code and Access and Forward Looking Charges etc) and they thought that it was almost certain that the same skilled resources would be involved in the design, delivery and testing of the solutions across these programmes. One response went

further to highlight lessons learnt from other change programmes and that resource constraints and demands have been highlighted as contributing factors to issues and delays.

Adoption/Migration length

- 5.7. A number of responses noted a concern with the 1 year migration period, with many citing P272 as an example where the migration of a smaller number of MPANs took longer than the one year proposed for MHHS. One supplier said, that while a one-year migration seems reasonable, they have concerns that it may not be long enough, and that it will not be evident until the initial 3-year development and testing phase is complete. They suggested aiming for a 1 year migration period, with a recognition that it may change once the development and testing phase is complete.
- 5.8. A number of supplier agents thought contingency needed to be built into the 1 year migration/adoption phase. One said that mass migration will give rise to unexpected issues that will need to be identified, analysed and resolved by industry whilst continuing to progress towards the compliance deadline, and thought that a 2 year migration period would be more realistic. There was one supplier who also thought a 2 year migration period would be more appropriate.
- 5.9. A few responses questioned whether a one year migration period was necessary and/or even desirable, given the duplication of effort it would involve. They thought a hard cut over should be reconsidered when more detailed specification is available, as this would negate the need to run two systems for a year. One supplier went on to say that a hard cutover would eliminate customers being potentially blocked from transferring to their chosen supplier if they are registered into the new arrangements by their current or previous supplier. This supplier saw this as being a temporary detriment to competition. On the theme of the 'one way gate' at the start of the migration/adoption period, a couple of responses questioned how this would work, particularly for the late mover suppliers or in the 'possible pre-migration period'. They thought this could be detrimental to competition and consumer choice (if a customer was migrated in the pre-migration period they may then be unable to switch to a supplier who had not yet got their systems and processes in place to accept the migrated customers).

- 5.10. A consumer group thought the 12 month migration/adoption period was appropriate, because they felt a long period of migration could lead to distributional impacts.

Smart meter rollout

- 5.11. Many respondents noted the reliance on the smart meter rollout and asked whether there was a minimum level of smart meter coverage necessary to deliver a positive cost benefit analysis result. They also highlighted the impact COVID-19 has had on smart meter installation rates.

Code and governance changes

- 5.12. Some responses noted the delay already occurring in the industry Code Change and Development Group (**CCDG**) and the Architecture Working Group (**AWG**), and that the design recommendations from these groups were essential for service providers and parties to commence the 3 year design, build and test phase. One supplier also noted the need for industry engagement across codes to determine what is needed to successfully complete activities such as change of supplier, service and meter etc. They thought this was essential to ensure these types of activities continue to work with no detriment to the customer.

Ofgem response:

- 5.13. The plan is a significant and important part of the Business Case and will define, at least in relation to timing and high-level milestones, what the transition to MHHS will look like. Having taken into account the consultation responses, commissioned external consultants to test and interrogate the timetable and validated our revised plan and assumptions with a broad sample of stakeholders, we have decided on the transition timetable that will form a baseline for implementation. This resulting baselined transition timeline, including the main milestones (including the identified Level 1 programme milestones), activities, and critical path is set out in Figure 1.⁶⁵ For the baselined plan we have set the start of transition from the publication of our

⁶⁵ The Level 1 Programme Milestones are identified in red in Figure 1. The Programme Milestone descriptions and written identification of the Level 1 Programme Milestones can be found in Appendix 1. The activity descriptions and associated dependencies can be found in Appendix 2. An excel version of all this information has also been published alongside this document.

final decision (this document), and we expect implementation to full MHHS to take 4 years and 6 months, with completion in October 2025. The plan shows a scheduled review of the implementation plan in October 2021, when the industry-led delivery functions and independent assurance provider are in place. Any changes recommended as part of that review (or subsequent changes proposed) would have to be approved through the programme governance. We expect that any changes proposed that delay Level 1 programme milestones will have to be approved through the programme governance set up to deliver MHHS. We propose to establish a threshold of 3 months beyond which any such delays would be subject to Ofgem approval. We propose to consult on programme implementation and governance arrangements shortly. Further information on our proposals is given in the Management Case of the Full Business Case. Further information on this revised transition timetable can be found in our response to Question 9.

- 5.14. In relation to the responses on the 1 year migration/adoption period, we have requested that the CCDG include an additional deliverable to specifically work through the transition requirements for what needs to happen during qualification and migration. This should provide further information on the logical order of the major milestones for migration and will provide a greater level of detail and understanding on what needs to be done, as well as addressing what would be needed for an MPAN to be migrated back to the old settlement system (for example if they were migrated before the one-way gate was imposed). This is due to be completed by August 2021 and will therefore feed into the review of the overall transition plan, which is scheduled for this October.
- 5.15. In relation to a hard cut over/big bang approach to migrating meters, the Design Working Group discussed the principles for transition and it was agreed that a phased transition would minimise impacts and risks.^{66,67} Additionally, in a big bang scenario, the whole of the industry will have to be ready at the same time, and therefore there is a risk transition can only occur at the speed of the slowest mover. With a phased migration the faster movers can go first and this should encourage the slower movers to keep pace.

⁶⁶ The DWG was the first industry-led working group who developed the design for the preferred TOM. [More information](#) on this group and their work can be found on the Elexon website.

⁶⁷ The DWG high-level transition principles can be found in the [DWG final report](#), August 2019.

5.16. In relation to the one-way gate, under the revised transition plan the 'late mover supplier business readiness period' ends at the point migration begins. We therefore expect all suppliers to be ready to start migration at this point. Under the revised transition plan we expect the one-way gate to be in place at the point the qualification activity has concluded (February 2025). We expect that suppliers will comply with their regulatory obligations and work to meet the project deadlines which have been tested and are reasonable, and will be kept up to date within the governance process as implementation progresses. We also note the greater potential for confusion and customer harm the longer dual systems exist in a migration period as well as being mindful of the significant benefits to consumers from swift and effective implementation of these settlement reforms. We therefore consider such a one-way gate to be appropriate in this instance. We will be shortly consulting on the detailed governance arrangements which will support the one-way gate along with other governance and implementation issues. We do not see the introduction of a one-way gate as a competition issue if a supplier is not meeting their regulatory obligations.

5.17. We recognise the concerns highlighted around the length of the migration/adoption period. We intend the extended testing period in the revised transition plan to incorporate an end-to-end test with a subset of MPANs. This should expose issues early and allow time to resolve any problems experienced before full migration occurs. In addition, we think, many of the smart domestic and smart non-domestic MPANs are relatively homogenous, and therefore with a prescribed and tested migration plan, these MPANs should be able to migrate in large numbers. We also think it will be possible for different segments to migrate at different times, and under the revised plan the advanced and UMS segments will be starting migration one month earlier, therefore extending the mandatory migration period across all market segments to 13 months. As further information and detail surrounding the method to migrate an MPAN becomes available from the CCDG, this will be used to further inform and flesh out the transition plan when it will be reviewed by the delivery functions later this year.⁶⁸

5.18. In relation to comments on the smart meter rollout, please see section 9 below.

⁶⁸ We expect the delivery functions to also take into account the lessons learnt from P272, details of which can be found in section 3 of the Full Business Case.

Question 9 – Transition timings

5.19. In our draft Impact Assessment (**IA**) Consultation, we asked stakeholders for their views on the high-level timings we had set out for the main parties required to complete a successful 4-year transition to MHHS.

Stakeholder views:

5.20. The responses to this question raised a number of key points where stakeholders had concerns. We have split the responses by stakeholder type, as individual stakeholders were commenting on their own areas under the plan.

Suppliers

5.21. A key theme from the supplier responses was around the start of the design and build segment, and how this interacted with the work that was happening in the CCDG and AWG. A number of suppliers noted the design and build for suppliers will be dependent on having enough detail to start the work, and that if the interfaces required to interact with central systems are still being designed by the central service providers then suppliers will have to wait until they can start their own design and build. This would either truncate the development time for suppliers, or push out the date at which they will be ready. Many suppliers see the start of transition, and the beginning of the 4-year period, being the point at which the detailed design is ready. A couple of responses noted the importance of publishing the design documents and proposed code changes when they are ready (rather than waiting for a big drop), so industry knows what they have to develop in advance and help them manage the design, build and test phases.

5.22. Some responses noted the need to stagger the transition across different parties, and one identified the simultaneous delivery of eight separate design and build activities, for which they think its likely specific design, build and test tasks will need to be sequenced.

5.23. As with the responses to question 8, a number of suppliers have noted the interactions with other large industry change programmes and some have identified resource risks in front-ending supplier milestones due to the interaction with these other projects.

Supplier Agents

- 5.24. As with the supplier responses, many supplier agents noted the need for more detailed design information in order for them to be able to start their own system design and build. Supplier agents also noted the concurrent nature of the plan, but highlighted this as a particular risk as supplier agents will likely want to provide for a number of services under the Target Operating Model (**TOM**), and will therefore need to design, develop, test and implement systems and processes across all roles to the same timetable, together with the expectation to maintain existing processes and systems.
- 5.25. Another specific area highlighted in supplier agent responses was the time set out for qualification. As with the design, build and test, supplier agents noted the concurrent nature of qualification happening across all parties and services over the same time period, and some responses noted this period was very tight given the high number of organisations expected to go through the process. Some responses questioned whether qualification to the TOM would be the same for all parties, or whether those who are currently qualified in the current market could go through a less onerous process, which may speed the process up. Another supplier agent suggested that the qualification process could run in parallel with 'development drops'.⁶⁹ Many responses noted the need to understand detailed qualification requirements in order to fully assess the impact.
- 5.26. As per question 8, supplier agents also highlighted their concerns around the 1-year migration/adoption period.

DNO's and IDNO's

- 5.27. The main theme of the responses from the DNO's and IDNO's was in relation to the interactions with other large change programmes. Particularly, they were concerned around changes to systems and processes in relation to Faster and More Reliable Switching, the Targeted Charging Review and the Access and Forward Looking Charges SCRs, which are all expected to introduce significant changes to their systems and processes during the design, build and test stage of MHHS. Given the
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⁶⁹ We understand this to mean in parallel with system testing.

potential conflict and volume of concurrent change, they see this as a risk in running numerous projects in parallel, and think that this challenge will be something the implementation team will need to recognise.

Central and industry bodies

5.28. Generally central and industry bodies did not have a view on this question. However, those that did, noted the interaction with other change programmes. One response suggested it may be beneficial if any changes required for the implementation were aligned with those changes as part of other industry reforms (such as Access and Forward Looking Charges), as it could then be dealt with as one development piece and so avoiding the need for rework and potential further costs being incurred.

5.29. One response highlighted the need to consider the timing of the DCC changes to align with the renewal of the DCC Data Service Provider contract, so to ensure that any changes required to support MHHS are captured as part of the contract renewal process to avoid incurring nugatory costs.

Ofgem response:

5.30. As set out in Paragraph 5.14, above, we have taken the responses into account and brought in external consultants to test and interrogate the proposed timetable, and then further tested the revised timetable with a broad sample of stakeholders. This resulted in a revised transition timetable and critical path of transition for industry that will form a baseline for implementation.

5.31. This resulting baselined transition timeline, detailing the main milestones (with identified Level 1 programme milestones), activities, and critical path, is set out in Figure 1.⁷⁰ This plan represents our best informed expectations on what can realistically be delivered by the industry. For the baselined plan we have set the start of transition from the publication of our final decision (this document), and we

⁷⁰ The Level 1 Programme Milestones are identified in red in Figure 1. The Programme Milestone descriptions and written identification of the Level 1 Programme Milestones can be found in appendix 1. The activity descriptions and associated dependencies can be found in appendix 2. An excel version of all this information has also been published alongside this document.

expect implementation to full MHHS to take 4 years and 6 months, with completion in October 2025.

5.32. In coming to this revised timeline, the key areas that were reviewed, and the resulting outcomes were:

- Set up of programme management functions: additional time has been added upfront to allow the setup and mobilisation of the new programme functions and governance arrangements. (PM1-PM3 in Figure 1)
- Review of design details required for industry to start their design and build: stakeholders have told us an additional industry-wide design activity is required before they can start their own design and build. This has been included once the AWG recommendations have been delivered. (ID5 in Figure 1)
- Review and expansion of testing phases: additional structure and phasing has been added to the testing period. This has been included in response to stakeholder feedback and experience from other large change programmes. (TE1 – TE19 in Figure 1)
- Qualification period: The qualification period is now running concurrently with the overall system proving and end-to-end testing period, with the pre-qualification period taking place any time from the end of the design and build. The Advanced and UMS segment qualification period has been shortened to 7 months, as it is expected the process would be less onerous and should be able to be done quicker. The Smart/Non-smart Qualification period remains at 1 year, but overlaps with the start of the Smart/Non-smart migration period. Under the revised transition plan we expect the one-way gate, (the point where an MPAN that has migrated to the new TOM cannot be migrated back) to be in place at the point the qualification activity has concluded (February 2025). (MT4 – MT7 in Figure 1).
- Migration/adoption period: The migration period has been split into two, with the Advanced and UMS segments being able to start the formal migration one month earlier. This results in the overall migration/adoption period for the whole of the market to be 13 months. (MT9 and MT10 in Figure 1).

- Interaction with other change programmes: The start of the industry design and build segment has been moved back, resulting in a smaller overlap between the end of Faster and More Reliable Switching and the start of the design and build for MHHS. We are aware of the dependencies and interactions with other change programmes currently taking place and as the detail of these programmes become clearer, the MHHS delivery functions in place will need to ensure they are taken into account when transitioning to MHHS.

5.33. We recognise this is a top down plan, and as more detail becomes available on specific activities (such as testing, qualification and migration) we expect a greater level of detail to be added and more granular information on activities and timings to be included. The plan includes a full review of the plan in October 2021 (PM2 in Figure 1), when all the industry-led delivery functions are in place. We expect the more granular information to feed into this review process. Any changes recommended as part of that review (or subsequent reviews) would have to be approved through the programme governance. If the recommended changes meet the threshold for Ofgem involvement, they would be subject to Ofgem approval. We will be consulting on the thresholds for Ofgem involvement shortly, and our proposed key principles are set out in the Management Case of the Full Business Case. We are proposing that Ofgem approval will be required for any extension to key project milestones of more than 3 months.

5.34. Our aim remains to balance the desire to deliver the benefits of MHHS as soon as possible, with the need to ensure that the new arrangements are robust and can be implemented in the time set out. We think it is important to learn from previous large-scale change programmes and ensure an achievable timeline is set from the start. We think the extra scrutiny, and the additional detail that has been added to this plan makes it much more robust and we expect industry to deliver on these revised timelines. We will consult shortly on proposed obligations on industry parties in respect of implementation. These will include an obligation to deliver in line with the baselined plan, as amended through programme governance. We are conscious of the impact re-planning and revising milestones and go-live dates have on the industry, and the additional cost and complexity this can add to an already large programme of change. We therefore believe the revised timeline balances the need to bring in this reform as soon as possible with the complexity and realistic assessment of the time this large-scale change will take to implement. Following the publication of the Full Business Case, and during the transition from policy development to implementation, we will look further at whether there are blockers to

the use of elective half-hourly settlement and what can be done to remove them and help deliver the benefits of half-hourly settlement for more consumers, prior to full implementation of MHHS.

Question 10 – Impact of COVID-19 on timescales

5.35. Finally, in our draft IA consultation we asked stakeholders for their views on the impact that COVID-19 would have on the timescales set out for transition.

Stakeholder views:

5.36. Nearly all respondents thought there would be some sort of impact in relation to the COVID-19 pandemic, however many thought the impacts would be indirect. Many noted the impacts the pandemic will likely have on other large change programmes (such as Faster and More Reliable Switching and the smart meter rollout), and that this in turn could then have a knock on impact on MHHS. If COVID-19 created the need to delay, or re-plan Faster and More Reliable Switching or the smart meter rollout, stakeholders then thought that these knock on impacts should be reflected in the MHHS timetable.

5.37. Some supplier agents noted the impact COVID-19 may have on the qualification process, noting that qualification is generally a lengthy process involving site visits and witness testing by Elexon and their auditors. The reduction in site visits, travel restrictions and local lockdowns could therefore result in qualification taking much longer than expected.

5.38. Some respondents thought that the pandemic has further supported the case for bringing in MHHS and therefore that its implementation is even more pressing.

Ofgem response:

5.39. We recognise there are likely to be lasting impacts from the COVID-19 pandemic, and agree with most stakeholders that these are likely to be indirect, rather than direct impacts on the transition to MHHS.

5.40. In relation to the point regarding qualification, we think it likely that by the time we expect qualification to be taking place as part of transition, the effects of the COVID-19 pandemic should no longer be felt and we would hope that we would no longer be

under the same controls that would prevent site visits from occurring. If, however, this is the case, we would expect new processes to have been put in place by Elexon and their auditors in order to allow the continued qualification of agents in the market, as qualification for the new services under the TOM is not needed until 2023/2024 under the revised transition timetable.

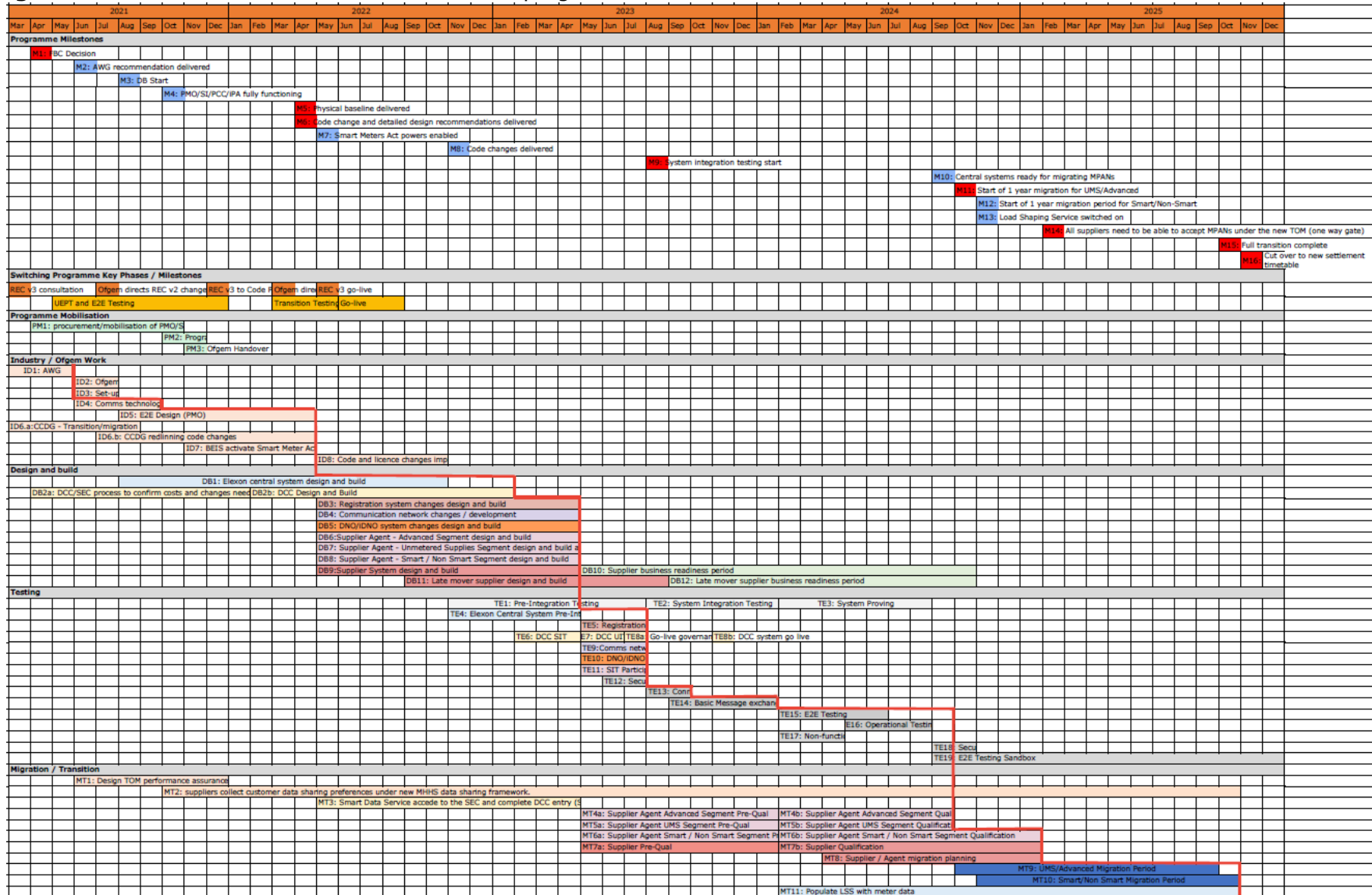
5.41. We will expect the delivery functions to keep the transition plan under review and to take account of any further effects of the COVID-19 pandemic which have the potential to change the milestone dates.

Ofgem decision on transition timetable

5.42. Ofgem’s decision is that the **transition to MHHS should take place over 4 years and 6 months**, with a full transition deadline of October 2025. The plan (shown in Figure 1) shows a scheduled review of the implementation plan in October 2021, when the industry-led delivery functions and independent assurance provider is in place. We will be consulting on programme implementation and governance arrangements shortly, and our proposed key principles are set out in the Management Case of the Full Business Case. One of those key principles proposed is that Ofgem approval will be required for any extension to Level 1 programme milestones of more than 3 months.⁷¹

⁷¹ The Level 1 Programme Milestones are identified in red in Figure 1. The Programme Milestone descriptions and written identification of the Level 1 Programme Milestones can be found in Appendix 1. An excel version of all this information has also been published alongside this document.

Figure 1: MHHS Transition Timetable: Level 1 programme milestones are shown in red.



6. Data access and privacy

Question 11: We propose that there should be a legal obligation on the party responsible for settlement to collect data at daily granularity from domestic consumers who have opted out of HH data collection for settlement and forecasting purposes. Do you agree that this is a proportionate approach? We welcome your views.

Question 12: Existing customers currently have the right to opt out to monthly granularity of data collection. We are seeking evidence about whether it is proportionate to require data to be collected at daily granularity for settlement and forecasting purposes for some or all of these consumers. We welcome your views.

Question 13: Should there be a central element to the communication of settlement / forecasting and associated data sharing choices to consumers? For example, this may be a central body hosting a dedicated website or webpage to which suppliers may refer their customers if they want more information. If yes, what should that role be and who should fulfil it? We welcome your views.

Question 11 – Opt-out granularity for domestic consumers

- 6.1. We set out in our access to data decision letter that, under the new market-wide half-hourly settlement (**MHHS**) data sharing framework, domestic consumers would have the right to opt-out of half-hourly (**HH**) data collection for settlement and forecasting purposes.⁷²
- 6.2. We are therefore considering the granularity of data that should be collected from these consumers for such purposes.

⁷² See the [Access to data decision letter](#), June 2019.

- 6.3. Under the existing framework as set out in the Supply Licence Conditions (**SLCs**), domestic customers must provide opt-in consent for their HH data to be processed for settlement and forecasting purposes. Whilst daily data can be processed by default from these customers, they may opt out to monthly, unless the data is required for a regulated purpose.⁷³ We have proposed that, under the new MHHS framework, data should be collected from opted out domestic consumers for the purposes of settlement and forecasting at daily granularity. We set out the reasons why we think this is a proportionate approach in the consultation document.⁷⁴
- 6.4. To be clear, this section is intended to set out the arrangements for what we propose to term “new system customers” under the new MHHS framework. New system customers refer to those customers who had their smart / advanced meters installed or decided to change supplier / contract after the new framework entered into force.⁷⁵
- 6.5. Our 2019 decision letter recognised that separate arrangements were needed for customers who had their smart / advanced meters installed before the new framework enters into force and have not decided to change supplier or contract since.⁷⁶ These customers, which we propose to term “old system customers”, will remain on the opt-in framework described in paragraph 6.3. We discuss the granularity of data to be collected from these customers below under question 12.⁵⁹
- 6.6. Note also, the arrangements set out in this section are applicable only to the new data sharing framework under MHHS, and not to elective HHS.

Stakeholder views:

- 6.7. The vast majority of stakeholders agreed with our proposal. Many stakeholders felt that it represented a proportionate approach by adequately striking the balance

⁷³ Such as in order to provide an accurate bill, and to investigate suspected theft/fraud.

⁷⁴ See paragraphs 7.9 – 7.10 of the MHHS [Draft IA consultation](#).

⁷⁵ We intend to set out further details about how we propose to differentiate “new system customers” and “old system customers” as part of the licence amendment process for the MHHS data sharing framework. We expect this process to take place over the next few months.

⁷⁶ See the [Access to data decision letter](#), June 2019.

between consumers’ rights to privacy over their data and ensuring enough granular data is available to the settlement system to achieve the benefits of the reforms.

- 6.8. Some stakeholders noted their agreement with the benefits of this approach as set out in the consultation document. In addition, one industry body highlighted the benefits of being able to limit mis-allocation to within-day. They noted that this, coupled with the fact that the new load shapes will account for in-day temperature and illumination variability, means that the HH allocation for opted-out consumers based on daily consumption data will be far more accurate and beneficial to the settlement system than monthly granularity data would allow. They go on to note that suppliers will then in turn also be able to forecast their purchasing liabilities more accurately, reducing imbalance volumes.
- 6.9. A number of stakeholders felt that, as a framework that allows consumers to opt-out from HH collection will already compromise settlement data quality, daily data from these customers would represent a sensible and proportionate fallback.
- 6.10. A small number of stakeholders disagreed with our approach. One consumer group considered that we do not have clear evidence to support the need to collect daily data relative to monthly from these customers. They noted their concern that a change from monthly to daily would represent a change to the provisions of the Data Access and Privacy Framework (**DAPF**) without, in their view, being able to demonstrate why the change is necessary.⁷⁷
- 6.11. Another stakeholder felt it would be preferable to let the system run with monthly opt-out and analyse what the impact of the data gaps in settlement are, before introducing any changes relating to the opt-out granularity.

⁷⁷ BEIS’s [Data Access and Privacy Framework](#) was established to complement (but not replace) existing data protection legislation by providing sector-specific provisions, that enable proportionate access to energy consumption data whilst ensuring that appropriate privacy safeguards are in place. The provisions of the DAPF are enacted through Licence Conditions and the Smart Energy Code (SEC).

Ofgem response / decision:

- 6.12. MHHS will introduce new requirements for smart / advanced meter data over and above the regulatory purposes currently defined in the DAPF. BEIS’s 2018 review of the DAPF set out that consideration of the use of data for settlement purposes was out of scope, given Ofgem’s ongoing Settlement Reform Significant Code Review (**SCR**).⁷⁸ Given the expected benefits we see of daily data over monthly for the settlement system, we think it is proportionate to enable greater access to consumer data for the purposes of settlement and forecasting relative to other requirements for data as described in the DAPF, such as marketing. Access to daily data would be consistent with the permitted level of access to data for other regulated purposes that deliver benefits to the system as a whole, such as investigating suspected theft / fraud. We do not feel it would be proportionate to allow the system to run with monthly opt-out before reviewing the framework, due to the impact it may have on achieving the benefits of the reforms in the short to medium term.
- 6.13. Whilst we acknowledge the views of stakeholders who disagree with our proposal, we do not feel that we have received evidence to warrant changing our position. **We therefore confirm our proposed position that there will be a legal obligation on the party responsible for settlement to collect data at daily granularity from new system domestic consumers who have opted out of HH data collection for settlement and forecasting purposes.**
- 6.14. A number of stakeholders highlighted that they would like the new framework to enter into force as soon as possible. As we set out in our access to data open letter published last year, we are keen to introduce the new framework in as timely a manner as possible following publication of the FBC in order to maximise the quality of data entering settlement when we reach implementation.⁷⁹ We expect that the licence amendment process to introduce the new framework will take approximately 6 months following publication of the FBC.

⁷⁸ See the [DAPF review](#) on the BEIS website, November 2018.

⁷⁹ See the [Open letter – Clarification on issues around access to data for settlement/forecasting purposes](#), April 2020.

Question 12 - Opt-out granularity for existing customers

- 6.15. As noted in paragraph 6.3, customers may currently opt out of having their data collected from their smart meter at any resolution finer than monthly, unless the data is required for a regulated purpose.⁸⁰
- 6.16. Following on from question 11 which proposed that daily granularity data should be collected for settlement and forecasting purposes from new system domestic customers, question 12 asked whether it is proportionate for daily data to also be collected from some or all “existing”, or old system consumers. As set out above, old system consumers are defined as those who had their smart meter installed before the new framework entered into force and have not subsequently chosen to change supplier or contract, therefore remaining on the current opt-in framework.
- 6.17. We recognised in the consultation document that it may be fair for certain old system consumers to have the right to opt-out to monthly collection for settlement and forecasting, for example those who had already exercised their right to opt-out to monthly collection for non-regulated purposes on the date the new MHHS data-sharing framework enters into force. We were keen to hear stakeholder’s views.

Stakeholder views:

- 6.18. The majority of stakeholders felt that, if the framework was to set out that daily data would be collected from opted-out domestic consumers, this should apply to all consumers, both old and new system. Many stakeholders felt this was the proportionate approach to take in terms of balancing consumers’ right to privacy against ensuring enough granular data enters the settlement system to achieve the benefits of the reforms. Some considered that robust messaging to ensure customers are duly informed and educated about why their data sharing rights are

⁸⁰ The [DAPF](#) was established to complement (but not replace) existing data protection legislation by providing sector-specific provisions, that enable proportionate access to energy consumption data whilst ensuring that appropriate privacy safeguards are in place. The provisions of the DAPF are enacted through the Supply Licence Conditions (SLCs) and the Smart Energy Code (SEC).

being defined in this way would act to further increase the proportionality of collecting daily granularity data from all opted-out domestic customers.

- 6.19. Some stakeholders noted that this would be consistent with the existing requirements for daily granularity data to be collected for certain regulated purposes.
- 6.20. As with the responses to question 11, a number of stakeholders in support of daily data collection for these customers re-iterated the benefits that daily data provides to settlement and forecasting relative to monthly granularity data (see paragraph 6.7).
- 6.21. Some suppliers noted the additional complexity that allowing old system customers to opt-out to monthly would bring to consent management and forecasting processes. This additional complexity was noted as twofold:
- 1) in terms of new and old system customers being on different frameworks and the complexity this creates at change of contract events, and
 - 2) the need to manage three tiers of data granularity for HHS purposes (HH, daily and monthly) as opposed to just HH and daily, assuming daily was to be the policy decision for opted-out new system customers. We note however that suppliers are already required to manage three tiers of data granularity for other purposes.
- 6.22. Two suppliers noted the risk of a significant number of old system customers retaining the right to opt-out to monthly if they do not subsequently choose to change supplier or contract after the new framework entered into force, which may have a long-term negative impact on settlement accuracy.
- 6.23. One supplier noted that, if old system customers were allowed to opt-out to monthly, they would be settled using estimated reads in both the SF and potentially R1 settlement runs, which would materially impact accuracy.
- 6.24. One supplier cautioned against new and old system customers being on different frameworks, as it may result in a barrier to switching for any old system consumers who wish to retain their right to opt-out to monthly data collection for settlement and forecasting purposes. They argued instead that opt-out should be to daily for all customers to remove this risk.

- 6.25. Some suppliers noted that it would be preferable for both sets of customers to be on the same framework to avoid further complicating the consumer messaging process around their data sharing choices, which will already be a challenge for suppliers.
- 6.26. However, some stakeholders felt that opt-out to monthly should be permitted for all old system customers, to remain consistent with the framework that was in place when their smart meter was installed.
- 6.27. One stakeholder noted that stipulating daily opt-out for old system customers would have to be justified by the benefits that would result. Given that it will not be possible to quantify the benefits before the system is implemented, the argument was made that we should first assess the impacts that any data gaps in the system are having before changing the opt-out granularity from monthly to daily.
- 6.28. One stakeholder stressed that, whilst there is need for granular data to be processed in order to achieve the benefits of the reforms, it is important to recognise that some consumers will have concerns relating to data privacy. Their own research has indicated that approximately 6% of the GB population who do not currently have a smart meter have concerns over data privacy.
- 6.29. One stakeholder noted that, whilst they recognise the arguments for collecting daily data relative to monthly, it must be cost effective and the benefits of doing so must be clear beforehand to justify the approach.
- 6.30. One consumer group expressed concern that withdrawing the ability for an existing customer to opt-out to monthly in relation to data for settlement and forecasting purposes effectively removes the incentive on suppliers to offer something in return to consumers for allowing more detailed data access, which they note was a key consideration of the DAPF.

Ofgem response:

- 6.31. We do think it is critical that sufficient granular data is available to the settlement system, and recognise the risk that allowing old system customers to opt-out to monthly granularity may impact the realisation of benefits if a critical mass choose to do so. We note that a number of the stakeholder responses took the view that the opt-out granularity should be daily for all customers, for the reasons set out above.

- 6.32. However we also note the argument that consumers should retain the data sharing rights that were in place when they accepted their smart meters.
- 6.33. In summary, we do not consider that we received evidence to support the position that it would be proportionate for all old system customers who opt-out of HH data collection for settlement / forecasting purposes to have daily granularity data collected instead. **We therefore confirm that the granularity for these customers will be in line with the existing DAPF rules.** These customers will retain the right to opt-out to monthly until they decide to change electricity supplier or contract, at which point they will become new system customers and will be subject to the new data sharing framework.
- 6.34. We do not know how many customers will be on the old framework and have opted-out to monthly when we reach implementation. Whilst we do have some data on current opt-out to monthly rates amongst smart meter customers, these choices were made by consumers based on a different set of incentives in return for sharing their data to those we expect to be in place in future, when MHHS has incentivised the development of new products and services. We also note that half-hourly settlement will represent a new requirement for the data, and that sharing choices for these purposes will be presented to the consumer with a different framing of the personal and system benefits that will arise. We are therefore cautious of making predictions on future opt-out rates under the MHHS data sharing framework on the basis of current opt-out data.
- 6.35. We also recognise the importance of clear and consistent messaging for consumers in terms of mitigating against concerns around data sharing for these purposes. We discuss this in more detail in the response to question 13. We do expect consumers' understanding to evolve over time, and will be monitoring the impact this is having on opt-out rates.
- 6.36. As noted, we are keen to introduce the new data sharing framework as soon as possible, expecting it to enter into force approximately 6 months after publication of the Full Business Case (**FBC**). Beyond this, monitoring subsequent consumer opt-out rates for settlement purposes, coupled with data we expect to collect from suppliers on reasons why some consumers are opting out, will give us a much more informed view of what the proportionate approach to the data sharing framework for old system customers should be going forward. We need to ensure we appropriately

balance consumers' right to privacy over their data with the need to ensure enough granular data is entered into the system to achieve the benefits of the reforms.

Question 13 – Customer communications

- 6.37. As discussed, under the new MHHS system there will be a legal obligation on suppliers to collect HH data from domestic consumers for settlement purposes, unless the customer opts out. Ahead of the data being collected therefore, consumers must be duly informed as to how and why their data will be processed, such that they can make an informed choice as to whether they wish to opt-out of this processing or not.
- 6.38. As noted in the consultation, we recognise from discussions with industry parties that effectively engaging consumers on these subjects is likely to be difficult. We also recognise that there are several different possibilities for how suppliers may approach these communications, particularly in terms of the language and terminology used.
- 6.39. Given this, we think there may be value in a central body playing a role, such that a consistent message can be formulated and adopted by suppliers for use with their customers. However, we also note from discussions with suppliers that some may prefer to tailor their own messaging, consistent with their brand identity and the types of communications they already provide to their customers. We therefore asked for stakeholders' views on this in the consultation.

Should there be a central element to the communication of settlement / forecasting and data sharing choices to consumers? If so, what should the role be?

Stakeholder views:

- 6.40. The vast majority of respondents were in favour. A number highlighted that settlement is a difficult concept to explain to consumers. It was recognised that clear and consistent consumer communication will be necessary to minimise confusion and misunderstanding, and to achieve consumer buy-in to help realise the benefits of MHHS.

6.41. With that in mind, respondents provided a number of views on the form and content of message that they felt should be provided to consumers:

- Messages should be short, clear and simple
- Use of impartial, consumer friendly language
- Convey the system / societal benefits, as well as the individual / personal benefits
- Clear about the environmental benefits
- Clearly explain how any data shared for these purposes can and will be used
- Rebut any misleading claims about how the data will be processed (ie be clear on how the data cannot be used)
- Include details of the data protection and security measures that will be in place.

6.42. One supplier noted that consistency of message across industry would be particularly helpful for change of supplier events, to prevent customer confusion if they were to receive differing messages on why their data was being processed.

6.43. It was noted that any consumer facing information around the new data sharing framework should be available as soon as possible, in order to prevent the issues faced with P272 where some stakeholders felt that consumer-facing supporting information was not provided early enough in the process.

6.44. One supplier suggested that Ofgem set up a working group to design the messaging in good time ahead of implementation.

6.45. However, some stakeholders did not think that there should be any form of central coordination. They considered that messaging should be the responsibility of the supplier, who are ultimately more in touch with their customer base.

6.46. One supplier felt that suppliers should have the freedom to tailor the messages themselves and deliver them through whichever media they choose. Another respondent noted that, even if the initial messages were cross-industry coordinated, suppliers should still be able to offer additional support to their customers if they feel they have anything additional to offer.

6.47. One respondent believed that customers were only likely to engage with their key parties, such as their supplier or meter installer. Similarly, another respondent

believed that tasking a separate (non-supplier) entity to deliver messages to consumers would confuse customers. Finally, one respondent cautioned against the involvement of a separate body, believing it not to be a good use of resources.

- 6.48. Some stakeholders responded that, even if there was a central element to the formulation of customer communications, it should be delivered by the supplier in the first instance.
- 6.49. In addition to the idea of a central element to the communication of settlement/forecasting, a number of stakeholders also favoured some form of central website or webpage that sets out key information about settlement, forecasting and data sharing, to which suppliers could refer their customers.
- 6.50. Some stakeholders felt the best approach would be for a two-tier system, where the supplier would be responsible for delivering the initial communications to their customers, but with the option to then refer them to a central source of information such as a website if they require more information. It was noted that the website could go into more detail than the initial communication provided.
- 6.51. Some respondents noted that the website should be accessible for all, be current in content and should be clearly signposted for ease of access and visibility to consumers.
- 6.52. Several stakeholders suggested that the messaging should not be confined to informing consumers about data sharing for settlement and forecasting purposes. One stakeholder believed that it could represent an opportunity to inform and educate consumers more widely around the move towards a smarter energy market, including raising awareness of ToU tariffs. Another respondent felt an infopage could be coordinated with other sources of information for consumers around data privacy.
- 6.53. One consumer group went further, suggesting that the infopage could be combined with an interface to allow consumers to manage their data sharing preferences centrally. It was felt that having one common tool for both functions would make it clear to consumers as to the benefits, opportunities and protections associated with data sharing for different purposes and allow them to define their preferences in response.

Who should fulfil it?

Stakeholder views:

6.54. Respondents in favour of a centralised coordination role put forward a number of suggestions as to who should perform it, including:

- An existing body that consumers trust
- An industry body, with some form of clear Ofgem endorsement / approval
- Should be easily recognisable to consumers
- A point of authority, who would be best placed to temper privacy concerns
- Should be independent, as would likely increase consumer engagement and acceptance
- It should not be a new organisation, which would be uneconomic and disproportionate

6.55. A number of respondents named particular organisations who they felt would be best placed to perform the role.

6.56. A number of respondents suggested Ofgem would be the appropriate body to adopt this role. Reasons included that as the regulator we hold the highest level of authority in the eyes of consumers, that we are a trusted and independent third party, and that we are familiar to most consumers, unlike other potential candidates. Additional reasons were that we could ensure that the messaging is consistent, and be able to demonstrate to consumers that sharing HH data is necessary to achieve the benefits of the reforms.

6.57. A number of stakeholders responded that Ofgem could fulfil a central consumer messaging role in conjunction with another party. Recommendations included Citizens Advice, as they are a trusted source of information for consumers. Others felt it would be preferable for Citizens Advice to be solely responsible.

6.58. One stakeholder suggested that the role be defined within an existing industry code and delivered using external contracts, potentially as an extension of the CSS arrangements.

6.59. Additionally, some respondents felt that the appointed party be impartial and not be part of the industry. One added that lessons learned from the smart meter rollout

showed the importance of the appointed body being an impartial third party that consumers can trust.

Ofgem response:

- 6.60. We agree with the majority of stakeholders that there would be benefits to some form of central coordination to the messaging for domestic and microbusiness customers around the concepts of settlement and forecasting and their associated data sharing choices. We think that the use of clear and consistent language and terminology across suppliers will aid consumer comprehension and make clearer the benefits of sharing data for these purposes, thereby reducing opt-out rates and ensuring we are able to achieve the benefits of the reforms.
- 6.61. In terms of the content of the messaging, we agree that these are complex concepts that will be challenging to explain in an understandable way to consumers. We recognise that there is a balance to strike between giving consumers enough information that they can understand why they are being asked to share their HH data, and providing too much information which may potentially lead to misunderstanding and confusion. It is critical that consumers are sufficiently educated to enable them to make an informed choice with regards their data sharing choices.
- 6.62. **We therefore intend to work closely with industry to formulate clear and effective customer communications which can be used consistently across all consumers.** We are already progressing our own consumer research to understand what language and formulation may resonate best with consumers, in terms of duly educating them to allow them to make an informed choice, and to clearly communicate the benefits to encourage them as to the value of sharing their data, both individually and for the overall system. We are working with suppliers and other industry stakeholders on this research.
- 6.63. We agree that it would be appropriate for suppliers to deliver the communications around data sharing to their consumers in the first instance. We also recognise the advantages of a supplier's position in respect of their relationship with their customers, and the familiarity of those customers with their suppliers' style of messaging. We appreciate that suppliers may want to deliver these messages in a way that is consistent with their overall brand and style of communications, and

through whichever media they deem appropriate. We recognise the benefits of ensuring consistency of messaging but in a way that is flexible for industry parties to adopt as they feel appropriate. We also note that, whilst we are keen to support the provision of clear and effective communications to customers, the responsibility for complying with the provisions of the licence and wider data protection legislation rests with suppliers.

- 6.64. **We therefore do not intend to mandate in the regulatory framework that suppliers or other parties responsible for customer communications must adopt the central messages.** Based on the responses to the consultation and through discussions with industry, we do think that many suppliers will adopt agreed common messaging even if not required to do so. We do however encourage suppliers to consider sharing any research findings and best practice guidance with one another around the effectiveness of different messaging approaches.
- 6.65. In addition to consistent messaging, we agree with stakeholders that there could be real value in a central website or infopage to which suppliers can refer their customers for more information. This would allow for the presentation of more detailed and in-depth messaging than the initial communications could provide, for those consumers who require it. We note that this information should also be provided in other formats, such as via an offline medium for the benefit of those consumers without access to the internet.
- 6.66. We appreciate the different perspectives on who should undertake the role of hosting the website, and will continue to consider how this could be delivered.
- 6.67. We believe this two-tier approach, with industry-consistent messages being delivered in the first instance by suppliers with the possibility to refer customers to additional information if required, will act to aid consumer comprehension, reduce confusion / misunderstanding and ensure enough granular data is entered into the settlement system to enable the benefits of the reforms to be achieved.

Remaining issues and next steps

- 6.68. We intend to proceed with the licence amendment process to introduce the new access to data framework over the next few months, beginning with the statutory consultation on the proposed text.

- 6.69. We recognise that we will need to set out some further details as part of that process, including more precise definitions of how we propose to differentiate “old system customers” and “new system customers”, and defining what circumstances would constitute a customer making a choice to change supplier or contract which would lead to them becoming a new system customer. For example and, as set out in the consultation, we have been clear that a regular switch to a different supplier or a choice to change tariff with their existing supplier would constitute a consumer choice, but that a simple change of T&C’s, an auto-rollover onto a default tariff, or defaulting to a new supplier via the Supplier of Last Resort (SoLR) process would not.⁸¹
- 6.70. We also need to work through the finer details of the consumer messaging approach, including defining who should undertake any supporting role as noted in paragraph 6.65.
- 6.71. One additional point we are setting out here is the relationship between consumers’ rights around data sharing for billing purposes relative to sharing for settlement/forecasting. As we set out in our original 2018 consultation on the access to data framework, our aim with the MHHS data sharing framework is to achieve a solution that strikes a proportionate balance between realising the intended benefits of MHHS and consumer’s rights to privacy.⁸² This was the key consideration in our decision to allow domestic consumers the right to opt-out of sharing their HH data for settlement purposes.
- 6.72. With that in mind we think that, where a customer is sharing HH data for the purposes of a ToU tariff, there should be a legal obligation on the party responsible for settlement to process that consumer’s HH data for settlement purposes with no opt-out available. However if the customer then withdraws their consent to share their HH data for the purposes of a ToU tariff, they would then once again have the option to opt-out of sharing HH data for settlement. Our thinking is based on two key factors:

⁸¹ See paragraph 7.27 on page 79 of the [MHHS Draft IA consultation](#), June 2020.

⁸² See paragraph 3.41 on page 26 of the [Access to half-hourly electricity data for settlement consultation](#), July 2018.

1) The opt-out framework was designed to allow for privacy-minded consumers to opt to not share their HH data for settlement purposes if they had particular and significant privacy concerns. However, by sharing HH data for billing purposes, we consider that those consumers have shown that they do not have those significant privacy concerns, and it is therefore reasonable that they should share this same HH data for settlement purposes.

2) To prevent any unintended consequences arising from situations where the customer was being charged for their time of use consumption, but the supplier was being settled for that same customer against an average load profile.

6.73. We intend to set out further details in the statutory consultation on the proposed licence amendment.

7. Consumer Impacts

Question 14: Do you have additional evidence which would help us refine the load shifting assumptions we have made in the Impact Assessment?

Question 15: Do you have any views on the issues regarding the consumer impacts following implementation of MHHS? Please refer to the standalone paper we have published for more detailed information.

Question 14 – Evidence to refine load shifting assumptions

7.1. We asked stakeholders to consider the quantitative and qualitative analysis set out in the draft Impact Assessment (**IA**), including the load shifting assumptions we used to demonstrate the benefits of Market Wide Half-Hourly Settlement (**MHHS**). We also asked them for any further relevant evidence they may have to help us refine our assumptions. The draft IA also provided our analysis of the potential distributional impacts across different domestic consumer groups, and specific impacts on rural consumers, on those with protected characteristics under the Equality Act 2010, and on small non-domestic consumers. We asked for stakeholder views of this analysis.

Stakeholder views:

7.2. A number of respondents thought our load shifting assumptions overstated MHHS benefits. However, they presented little further evidence alongside their views. One supplier thought that assessing the scale of MHHS benefits in isolation ignores the cumulative effect and outcomes for consumers of MHHS and other policies, such as the smart meter rollout and Ofgem’s access and charging reform. Some network operators pointed to the results from previous consumer trials testing the ability and willingness of consumers to change energy usage behaviour if given appropriate incentives.⁸³ They noted that consumers involved in the trials were enthusiastic

⁸³ They referred to the [Low Carbon London](#) and [Customer-Led Network Revolution](#) trials.

about Time-of-Use (**ToU**) tariffs but that no evidence is generally available suggesting this would result in significant and enduring consumer behaviour change.

- 7.3. Several respondents thought that small non-domestic consumers would prioritise lowering their energy usage over load shifting to save money and to budget for their energy costs. In their view, our assumed upper boundary for load shifting by these consumers is too optimistic, since, in the respondents' opinion, they are relatively inflexible energy users due to set business operating hours, generally time poor and would have limited capacity to interact with load shifting messages. They highlighted the diversity of small non-domestic consumers in terms of size and sector, making a general load shifting message difficult for them to absorb and react to. They considered the possible cost of installing flexibility technology as a further disincentive to significant load shifting by these consumers.
- 7.4. One supplier was concerned that unregulated third-party intermediaries (**TPIs**), like flexibility providers, engaging directly with consumers in the future energy market could adversely affect suppliers' ability to forecast their customers' demand accurately and settle volumes for them. In their view, this could be due to more new and inexperienced market entrants interacting with settlement than previously. Lack of automation of consumers' demand could also affect suppliers trying to offer firm demand-side response (**DSR**) to network operators.
- 7.5. A consumer campaign body wanted us to strengthen protections for inflexible and vulnerable consumers who could face higher costs in a future energy market. They thought proactively protecting these consumers could prevent their exclusion from sharing in MHHS benefits, and that their needs require consideration when designing the future settlement arrangements.
- 7.6. A consumer group encouraged us to develop a MHHS benefits realisation strategy encompassing consumer protections, data sharing options, tariff changes and encouraging behaviour change. They noted a lack of up-to-date data about potential load shifting. They also noted that limited consumer engagement now, such as low switching rates, may translate into low levels of future load shifting, for instance if consumers cannot compare smart tariffs. In their view, market failures, such as a current lack of price comparison tools for smart tariffs, could also adversely affect their take-up by consumers. They and another stakeholder also highlighted the potential for load shifting outside the smart meter and settlement systems without MHHS which they asked us to take account of in the IA benefits case.

Ofgem response:

- 7.7. We note stakeholder concerns about our load shifting assumptions and whether consumers will change behaviour at the levels we have modelled. However, we received little new supporting evidence from them about load shifting potential or about whether consumers would consider load shifting, particularly in relation to small non-domestic consumer impacts. We note that some respondents did direct us to some more research that is relevant to load shifting potential in general and which we discuss below (see paragraph 7.21 onwards).
- 7.8. We did not see any new research indicating that our load shifting assumptions are an inappropriate basis for modelling future consumer load shifting and behaviour change, with or without consumer take-up of certain technologies such as electric vehicles (**EVs**) or heat pumps. Results from some previous trials and surveys suggest there is some consumer appetite for load shifting and behaviour change with the right incentives. Nevertheless, we acknowledge that there is uncertainty around the levels and timing of load shifting by consumers in the future and how much of that will be attributable to MHHS.
- 7.9. We have sought to address this uncertainty by taking two different approaches. Firstly, we have used a wide range of load shifting assumptions attributable to MHHS, applying a conservative lower boundary to recognise load shifting that may happen without MHHS. Secondly, in the counterfactual (elective HHS), we have included significant levels of load shifting from EVs and heat pumps, meaning that less load shifting is attributed to MHHS. For example, we have assumed high levels of load shifting from heat pumps under the counterfactual but no additional shifting with MHHS. Furthermore, in response to stakeholder comments about the potential for load shifting by small non-domestic consumers, we have carried out further sensitivity analysis to quantify the benefits of MHHS assuming no load shifting at all by that sector of the market (for more detail see para 9.25 below). Finally, while we recognise the potential for load shifting outside of the metering and settlement systems, in our view, this would not realise the full value of flexibility or deliver the system-wide benefits expected from MHHS.

Question 15 – Consumer impacts issues

7.10. We published a separate detailed paper alongside the draft IA about potential consumer impacts following MHHS implementation.⁸⁴ The paper highlighted specific issues we identified through previous stakeholder engagement and from earlier research and trial evidence into consumers’ attitudes about their propensity to load shift. Our draft IA consultation asked stakeholders about these issues.

Stakeholder views:

7.11. Two suppliers stated that innovation in energy products and services should develop unhindered and without prescriptive regulation that may stifle it, so consumers can choose from a range to suit their needs at any one time. Another supplier challenged us to implement stable and robust industry processes to avoid possible future costs to consumers and ensure that they clearly understand the benefits of sharing their half-hourly (**HH**) data, so that more ToU tariff options are accessible to them.

7.12. A consumer group noted that certain groups of consumers may suffer detriment following MHHS implementation, for example if they cannot have a smart meter or have limited/no flexibility to shift away from peak use. They wanted consumers to receive clearly communicated offers from suppliers, backed by proactive consumer protection measures, through the transition to MHHS and beyond, to help them identify any load shifting potential, reduce consumer detriment and boost smart tariff take-up. The consumer protections suggested included allowing consumer switching to MHHS and back to non-half-hourly settlement (**NHHS**) without undue delay, timely and transparent communications with consumers about the data collected about them and its use, and supporting consumers suffering bill shocks.

7.13. A supplier agent suggested that all consumers could share equally in MHHS benefits if providers are able to access their metered data to low levels of granularity and with the development of tools allowing innovative tariffs and consumer choice.

7.14. Two network operators identified information, education and choice for consumers as fundamental to their ability to engage with and flex their energy use and, in their

⁸⁴ The [consumer impacts paper](#) was part of the draft IA suite of documents published in June 2020.

view, regulation and government policy would need to support and facilitate flexibility. Another asked us to note that MHHS cost impacts on unmetered customers need to be understood and managed.

7.15. One stakeholder identified energy efficiency, coupled with smart meter data, as a driver of future consumer flexibility. Another stakeholder suggested our distributional impacts analysis was focused on 'average' impacts, instead of identifying potential 'winners' and 'losers' across, and within, consumer groups. They wanted us to assess these impacts in more detail, especially on vulnerable consumer groups. They highlighted smart electric storage heating as a low-cost flexibility option for such consumers instead of higher-cost technology, such as heat pumps.

Ofgem response:

7.16. We welcome the feedback we have received about the potential impact of MHHS on consumers. As stated in our Forward Work Programme 2021/22, we will deliver a future retail market with innovative new retail products that, for example, enable consumers to benefit from the flexibility they can provide, while ensuring that protections are in place for all. Ofgem aims to enable a future retail market that can deliver the technological and behavioural changes needed to support decarbonisation at lowest cost, while ensuring that the interests of consumers remain protected.⁸⁵ MHHS is a key enabler of this.

7.17. We are currently developing our Future of Retail Strategic Change Programme, focusing on areas of greatest potential consumer detriment or opportunity, with the following high level objectives:

- an energy transition that works for all energy consumers, harnessing innovation and flexibility, with effective protection for consumers
- fair energy prices, with or without the price cap
- a better deal for consumers in vulnerable circumstances.

⁸⁵ We note that the [Energy White Paper 'Powering Our Net Zero Future'](#) (December 2020) states that the government will be assessing what market framework changes may be required to facilitate the development and uptake of innovative tariffs and products that work for consumers and contribute to net zero.

- 7.18. We expect to begin this Strategic Change Programme in the summer. Consumers will need to have confidence that they will be sufficiently protected in order to engage with new energy products or services. Consumers will also need to be confident about engaging with their energy provider when things go wrong and, if they remain dissatisfied, about using redress mechanisms to put things right. For our part, we believe principles-based regulation is appropriate for regulating the new products and services that we expect MHHS to encourage. However, we will keep this under review if evidence emerges that any specific new protections may be needed. As set out in our Decarbonisation Action Plan, we will ensure that consumers who cannot provide flexibility are not unduly disadvantaged.
- 7.19. We agree with stakeholders about the need for further detail regarding the MHHS cost impact on unmetered customers so this can be understood better and addressed appropriately, as industry develops the further detail of the Target Operating Model (**TOM**). We expect industry to ensure that their solution regarding treatment of unmetered customers is proportionate and addresses the potential cost impact. More information on the potential impacts on unmetered customers and how Ofgem expects these to be addressed can be found in paragraphs 3.68-3.72 of the Final Impact Assessment.
- 7.20. In the remainder of this section, we highlight some further recent research around smart options and consumer awareness that could encourage increased engagement. In paragraph 9.26 below, and in section 6 of the Final IA, we say more about the potential distributional impacts of MHHS.

Further research: Smart electric storage heating options

- 7.21. Some stakeholders pointed us to the role electric storage heating could play in load shifting, helping low-income and vulnerable consumers provide flexibility. These consumers, who may live in social housing, flats or off the gas grid, may struggle to access or afford heat pumps. Smart controls to re-purpose existing storage heating or affordable new smart storage heating could address these consumers' comfort needs and help them save money through flexible use. Stakeholders referred us to smart electric heating solutions trials showing the benefits in terms of cost, control,

comfort and care.⁸⁶ They also highlighted consumer detriment issues associated with storage heating which need addressing, for example by helping consumers understand ToU tariffs better and by ensuring consumers receive simple and clear information about heating controls so they can operate them optimally.

7.22. We welcome the evidence provided about smart heating solutions. They could help more vulnerable consumers engage and offer flexibility in a future energy market facilitated by MHHS.

Further research: Smart ToU tariffs and customer awareness/engagement

7.23. Recent research we commissioned into different energy consumers' perceptions of smart ToU tariffs provide a number of relevant findings.⁸⁷ Those most satisfied with smart ToU tariffs are highly engaged consumers with suitable technology like an EV. However, they find it hard to compare these tariffs or discover how much they have saved on bills. EV owners not on a ToU tariff have low awareness of this tariff choice and of the potential to save money. Non-EV owners on a smart ToU tariff may struggle to capitalise on off-peak periods, affecting their ability to save money. Static ToU tariffs are popular as they are simple and low effort to apply for consumers, fitting into their existing energy use routines. Automation could open up more complex dynamic smart ToU tariffs to consumers, although many engaged ToU consumers associate it with a loss of control over their energy use.

7.24. This research has its limitations. For example, the sample size is not meant to represent the wider energy consumer population. However, it offers an insight into potentially more consumer engagement with smart tariffs in the future. It suggests that providers may need to focus on making smart tariffs simple to understand, comparable, low effort to apply, and to clearly show consumers the achievable bill savings if, for example, they adopt a technology.

⁸⁶ The [RealValue Project](#) trialled smart electric heating across Ireland, Germany and Latvia.

⁸⁷ See the Ofgem website for PwC's [Energy consumers' experiences and perceptions of smart 'Time of Use' tariffs](#), October 2020. Smart ToU tariffs are tariffs where the price of energy varies across the day.

- 7.25. BEIS will soon publish research with consumers gauging consumer reactions to a potential smart tariff price comparison tool, awareness of smart tariffs and interest in them.⁸⁸
- 7.26. Ongoing research into smart tariffs and how to access them provides insights into how consumers may engage in the future energy market following MHHS implementation. It suggests there are opportunities for providers to offer consumers innovation to help realise MHHS benefits by helping them to shift load away from the peak, with or without technology, with support for consumers who may otherwise struggle to unlock flexibility benefits.

Further research: Small non-domestic consumer awareness/engagement

- 7.27. A recent BEIS innovation competition suggests that, with the right features and design, smaller non-domestic consumers can be engaged with innovative smart energy management tools and services.⁸⁹ The Non-Domestic Smart Energy Management Innovation Competition (**NDSEMIC**) piloted such tools in three sectors (smaller retail, hospitality, and schools). Tracking of energy usage by time of day was found to be a helpful feature, which gave participants better ability to negotiate tariffs. In other cases, the tools led to participants changing the time of day of their consumption, such as schools amending the timing of tablet charging to coincide with lower tariff charges. The evaluation also identified future potential for the bundling of tools that help non-domestic consumers manage or control energy use with other products such as smart tariffs.
- 7.28. Results suggested that the tailoring of tools and features to different organisational contexts was particularly beneficial in engaging non-domestic consumers. In some schools, smart meter data was embedded within online management tools (dashboards) and learning resources used in classrooms, or pupil-based activities were run to create friendly competition between schools to incentivise savings. One of the tools piloted – Energy Sparks - contributed to energy savings of between 10%

⁸⁸ This follows BEIS's commissioning and funding of the [Smarter Tariffs - Smarter Comparisons project](#), aimed at developing a [prototype smart tariff comparison tool](#) which can be used by smart meter customers with SMETS2 smart meters.

⁸⁹ See BEIS's [Non-Domestic Smart Energy Management Innovation Competition \(NDSEMIC\) final report](#), November 2020.

and 20% in some schools. Across all sectors, providing consumers with timely and granular data proved an important driver of outcomes, as did presenting data in simple to understand and relevant formats, and providing ongoing support to users of the data tools. Participants were motivated to take part by financial (cost saving), operational and environmental concerns, with educational motives a key driver in schools.

8. Programme Management

Question 16: Do you agree we have identified the right delivery functions to implement MHHS? We welcome your views.

Question 17: We have set out some possible options for the management of the delivery functions, and a proposal on how these would be funded. We welcome your views on this.

Question 16 – Identification of delivery functions

Question 17 – Management and funding of delivery functions

- 8.1. In our consultation on issues related to the introduction of Market-Wide Half-Hourly Settlement (**MHHS**) in June 2020, we set out our expected approach to the management of the implementation phase of the programme.⁹⁰ We articulated a number of objectives to be met by implementation management, and set out a number of programme roles that we thought should be established to support the effective implementation of the programme. We also said that Ofgem would remain both Programme Sponsor and the programme Senior Responsible Owner (**SRO**).
- 8.2. Following further reflection on the requirements for implementation, and consideration of the responses to the implementation management questions in the June 2020 consultation, Ofgem considered that it would be better to clearly place responsibility for management and delivery of the programme with industry, with Elexon in its existing role in relation to settlement as the Balancing and Settlement Code (**BSC**) manager acting as SRO for the programme. We set out this intention in

⁹⁰ See the [MHHS Draft IA consultation](#), June 2020.

our consultation of 22 January 2021, together with an assessment of the challenges and risks that this would entail.

- 8.3. Our January 2021 consultation provided a summary of the responses to the implementation questions from the June 2020 consultation, and sought stakeholder views on the risks and mitigations Ofgem identified in relation to an industry-led delivery.⁹¹ It also pointed out that we have had initial discussions with Elexon about how they could successfully perform this central role for settlement reform, and are developing that through further governance and assurance work which we will consult on shortly.
- 8.4. We have considered the responses to the January consultation, and the non-confidential responses have been published on our website. We have also considered views on these issues expressed in response to Elexon’s consultation on proposed BSC modification P413. The responses are summarised in our consultation on implementation and governance arrangements which we will be publishing shortly. We note that many of those responses raised concerns about the suitability of Elexon as SRO of the programme. These concerns primarily reflected a view that Elexon’s current role does not give them experience of the full range of working across BSC and non-BSC parties, cross-code coordination and consumer facing outcomes that will be necessary for the successful implementation of the programme. All of the concerns or issues raised in the responses to the January consultation were in line with the broad areas of focus that we had already identified, around Elexon’s capability, capacity and independence. We are developing governance and implementation proposals to address those issues and build industry confidence in Elexon as the programme SRO.
- 8.5. We note, however, that MHHS implementation fundamentally revolves around making changes to the systems and processes required for settlement, and as such Elexon will naturally have accountability for ensuring that implementation is managed efficiently. We continue to consider that it is right for Elexon to be SRO for the programme and to have responsibility for ensuring the timely and efficient implementation of MHHS. This reflects Elexon’s expertise in all settlement matters, including the Target Operating Model (**TOM**) to be implemented, its understanding of

⁹¹ See the [MHHS Consultation on Programme Implementation Principles](#), January 2021.

the wider market context and experience in delivering change to the settlement system in the past and, fundamentally, its responsibility for ensuring the ongoing accuracy and reliability of the settlement system under the new arrangements. **We have therefore decided that Elexon will be the SRO for the MHHS**

Implementation. All of the concerns or issues raised in the responses to the January consultation were in line with the broad areas of focus that we had already identified, around Elexon’s capability, capacity and independence. We are developing governance and implementation proposals to address those issues and build industry confidence in Elexon as the programme SRO. We will be consulting on those proposals shortly.

8.6. In particular, Elexon’s position as SRO will not give them the unilateral ability to make decisions on implementation. We will shortly publish a consultation on all aspects of MHHS implementation and governance. Key elements of our governance proposals are:

- the need for a governance structure that is appropriately representative of all programme participants,
- the need for full transparency and co-development with industry of all programme design material, documents, and plans etc,
- The need for consensus-based decision making with the ability for areas of material disagreement to be referred to independent assurance or, where particularly significant, to Ofgem.

8.7. We noted in the January consultation that we still felt that the programme roles that we had outlined in June were correct and necessary for the successful implementation of the MHHS. **Here we confirm our view on those programme roles and how they are to be procured.** Our forthcoming implementation and governance consultation will have more detail on the roles themselves.

8.8. Programme Management Office (**PMO**): A strong, expert, independent PMO function is necessary if MHHS implementation is to be a success. We note that many respondents to the January consultation argued that the PMO function for the programme should be competitively procured to ensure that it has the necessary expertise and can be demonstrably delivered in a cost-effective manner. Elexon will have the responsibility to provide a programme management function that is adequately resourced, has the expertise and experience required to successfully manage a programme of this scale and is independent of Elexon’s BSC system

operation role. **We expect that in order to meet this requirement Elexon will need to independently procure the programme management function, or key elements of it,** and that this will address respondents' concerns. We will address this issue in more detail when we consult on governance and implementation arrangements shortly.

- 8.9. System Integrator (**SI**): Respondents to the June consultation agreed that an SI function was required and no strong views were provided about who should be responsible for this. **We therefore conclude that in undertaking their SRO role Elexon will be required to procure an independent System Integrator function.**
- 8.10. Programme Party Coordinator (**PPC**): Respondents to the June consultation agreed that a PPC function was required. There were no strong views about who should be responsible for the provision of the PPC. **We therefore conclude that in undertaking their SRO role Elexon will be required to procure an independent Programme Party Coordinator function.**
- 8.11. Independent Programme Assurance (**IPA**): We set out in our January consultation our view that it is essential to have a strong independent Programme Assurance function to ensure transparency and confidence in the management and reporting of the programme. Many respondents to the January consultation saw a risk of conflict of interest if Elexon, as SRO, were to procure the Programme Assurance function. We agree with that view, and **Ofgem will therefore take forward the detailed specification and procurement of the independent Programme Assurance function.** Our forthcoming consultation on implementation and governance will include a proposed set of Assurance Principles that would define that function and form the basis for procurement.
- 8.12. As noted above, this section has set out our high-level decisions on the programme management functions for the MHHS implementation. We will consult shortly on the detail of the requirements to be placed on Elexon and other parties with regard to implementation, and the governance arrangements to be put in place to ensure that implementation is achieved in a timely manner and in a way that takes account of the interests of all programme parties and consumers.
- 8.13. In our June 2020 consultation, we proposed that central implementation management costs would be met by BSC parties under the current funding

structure, and there was strong agreement from respondents that this funding approach would be appropriate.

8.14. As outlined in our FBC, the P413 BSC code modification addresses the cost recovery mechanism for the programme management costs of MHHS implementation. Ofgem has approved the P413 alternative code modification proposal. This modification provides that **MHHS programme management costs will be recovered from suppliers on a per meter point basis**. For further information see Ofgem’s P413 Decision Letter, which we have also published today.⁹²

⁹² See the [decision on BSC modification P413](#), April 2021.

9. Draft Impact Assessment

Question 18: Do you have any comments on the Impact Assessment published alongside this document, or any additional evidence that you think we should take into account?

Question 18 – Impact assessment

9.1. We set out below the main issues raised in response to question 18, and our views on those issues. Many respondents did not comment specifically on this consultation question. We have taken comments on all the questions into consideration in the process of finalising the Impact Assessment (**IA**).

Stakeholder views:

9.2. Several suppliers commented on the estimated net benefits to GB consumers from our preferred Market-wide Half-hourly Settlement (**MHHS**) option. All of them agreed that the net benefits from MHHS would be substantial even if supplier costs turned out to be higher than estimated in the draft IA. One large supplier took the view that there might be price control implications if that were the case. Another large supplier said they would like to see how the costs would be integrated into the price cap allowance. One respondent considered that the range of expected net benefits to GB customers was wide and said that, though the lower end was reasonable, the upper end was unrealistic.

9.3. Several supplier agents, and their representative body, said that the draft IA did not appear to have considered all the potential options, such as implementing MHHS based on existing elective Half-hourly Settlement (**HHS**) arrangements with a 5-year transition period for all MPANs, or continuing with elective HHS whilst making non-aggregated consumption data more widely available. They said the rationale for not considering these options should be transparently set out in order to improve confidence in the overall assessment. Several other respondents thought, however, that the elective arrangements would not deliver sufficient load shifting to achieve the strategic carbon emissions objectives of the project.

- 9.4. The supplier agent trade body and some individual supplier agents said we should provide more information about the adjustments and uplifts that we made to supplier and supplier agent costs in the draft IA. For example, we should explain why we had chosen to uplift independent supplier agent costs by 25% rather than some other figure. They stated that this lack of clarity, combined with the fact that the Request for Information (**RFI**) cost submissions already included uncertainty margins, created ambiguity which undermined confidence in the assessment.
- 9.5. The supplier agent trade body said that other cost information was missing or too high-level to be useful. For example, they thought there should be a detailed breakdown of the 'central costs' element of table 4, and more detail about the organisations, such as Elexon and the DCC, that will play a central role under MHHS. The trade body was concerned that industry would not have sufficient opportunity to scrutinise these costs and that this would hamper Ofgem's decision making.
- 9.6. The same trade body expressed concern that by treating data aggregation as a transitional cost and not as an ongoing cost in table 1, Ofgem was suggesting a cost saving that would be unlikely to materialise. This respondent also observed that the estimate in table 4 of £31 million for annual ongoing net costs seemed extremely low in comparison to current system costs. It recommended that Ofgem map the costs against the specific services and functions in the Target Operating Model (**TOM**) on a per meter and system basis to ensure that no cost category is omitted.
- 9.7. Two trade bodies and some large and medium suppliers noted the risk (which they considered was made significantly more likely by Covid-19) that smart meter penetration at the start of 2025 might be lower than originally anticipated and that this could affect the costs and benefits estimated in the IA. The supplier agent trade body said it would be prudent to include an assessment of the impact of lower penetration rates on costs and benefits. One supplier thought that, while there would be an impact on the business case, it would not be sufficient to make the costs of MHHS outweigh the benefits.
- 9.8. Some respondents used this question to comment on our load shifting assumptions. The main views were that our upper bound was too optimistic and that little load shifting would occur in the time-constrained and diverse small non-domestic market. Little quantified evidence was provided in support of these views. Two stakeholders said load shifting outside the smart meter and settlement systems could occur even

without MHHS and that this possibility should be properly reflected in the IA benefits case. For a full summary of stakeholder comments on load shifting see question 14.

- 9.9. Finally, two stakeholders wanted the Final IA and our related documents to provide more information about how we would protect vulnerable consumers and those who cannot use electricity flexibly from price volatility and price increases in the smarter market that will be facilitated by MHHS. A consumer group called on Ofgem to develop a benefits realisation strategy for MHHS.

Ofgem response:

- 9.10. In the light of consultation responses and further stakeholder discussions, we have made some changes to the estimated costs and benefits, and net benefits to GB consumers, of introducing MHHS. However, the changes do not alter our conclusion that MHHS can be expected to produce substantial net benefits for GB consumers even under our low load shifting scenario (and, indeed, if there were no load shifting at all in the small non-domestic sector).
- 9.11. In relation to supplier costs, the default tariff cap (which will expire by 2023 at the latest) includes an allowance for operating costs, and a headroom allowance for residual uncertainties. However, if a supplier subsequently considers that the cap level is proving insufficient to take into account the costs of MHHS, it may make representations to the price cap team. In so doing, the supplier should explain why MHHS has led or is leading to a material increase in its operating costs, and why this increase would not be covered by the existing cap allowances, bearing in mind our stated position in relation to potentially offsetting cost trends.
- 9.12. The evidence we have received indicates strongly that we will not achieve the objectives of the settlement reform project if we rely solely on the elective HHS arrangements. As set out in the Outline Business Case (**OBC**), the rationale for MHHS is in part predicated on delivering a significant aggregate level of load shifting which leads to a more efficient use of existing and future electricity infrastructure. This for example, would help to integrate intermittent renewable generation into the system and reduce the need for expensive new investment
- 9.13. Elective HHS is unlikely to deliver the levels of half-hourly settled customers to achieve this scale of load shifting, even if HHS data were to be made more widely available than it is at present. Therefore, a move to MHHS is required to incentivise

the market to deliver a significant level of load shifting. The Competition and Markets Authority recognised this in its 2016 Energy Market Investigation and concluded that, under elective HHS, individual suppliers might make cost savings by cherry-picking certain consumers, but overall system costs would be unlikely to fall and the potential benefits of HHS would not be realised.⁹³

- 9.14. Our chosen option for MHHS includes a longer transition period than we had previously thought necessary. In making this important change, we have taken account of stakeholder views about the inherent complexities of the transition, the need to avoid overstressing scarce industry resources (especially given the additional uncertainty caused by Covid-19), and the need to ensure that sufficient contingency is in place to deal effectively with any unanticipated difficulties that may arise during the transition. We assess and summarise the impact of this change in the Final IA. The Full Business Case (**FBC**) describes the transition period in more detail and this Decision Document sets out in full the reasons for our decision.
- 9.15. Ofgem has made extensive efforts to understand the cost drivers, and quantify the costs to industry, of implementing and operating the new MHHS arrangements. We have engaged formally and informally with a wide range of stakeholders. Nonetheless, we have not been able to secure quantified data from all affected parties about the impact of MHHS.
- 9.16. In line with established practice, where we have received quantified data from some market participants but not from others, we have extrapolated the data across similar businesses to form a view of the total impacts across those sectors of the market. For example, we received quantified data from independent supplier agents, but not from the whole of the market. Based on estimates of the market shares in relation to HH and NHH markets, we considered that a 25% uplift to their total reported costs would be a conservative estimate for the costs of MHHS for all independent supplier agents.

⁹³ See pages 54-56 of Ofgem’s Outline Business Case (2018) and page 696 of the [CMA’s Energy Market Investigation 2016 report](#) which, in particular, concludes that “elective HHS is unlikely to be an effective substitute for full, mandatory HHS. This is because, under mandatory settlement, all suppliers bear the full costs that their customers impose on the electricity system.”

- 9.17. Similarly, to account for the suppliers from which we did not receive data or only partial data, we sought to estimate the cost of MHHS per MPAN for the different sectors of the market and for different categories of cost. We then uplifted the costs accordingly. We also engaged with some of the software companies that provide settlement-related services to suppliers to help us estimate the costs to suppliers. We made all these adjustments in order to minimise the risk of underestimating the direct costs of implementing MHHS. As stated in the Final IA, we believe this is a proportionate and conservative approach.
- 9.18. Table 4 in the draft IA summarised the estimated net direct costs of our preferred option for MHHS by stakeholder type. In order to maintain the confidentiality of individual companies' commercially sensitive data, we presented aggregated costs for suppliers, supplier agents and DNOs/IDNOs. For the same reason, we bundled up the costs for the DCC, Elexon, ElectraLink, the ESO and the LCCC into a 'central costs' category that included programme delivery and post-implementation costs. We have taken the same cost reporting approach in the Final IA. At the same time, we have provided more information about the delivery arrangements and associated costs, and have separately identified the costs that we expect Ofgem to incur.
- 9.19. Table 1 of the draft IA reported £3.3 million of transitional data aggregation costs for suppliers but no ongoing costs. In the draft IA we accounted for the ongoing data aggregation costs as part of Elexon's costs. We have taken the same approach in the Final IA. We also note that the ongoing net costs of £31.8 million reported in tables 4 and 5 refer to the additional costs per MPAN that would be imposed by MHHS compared to the counterfactual, not the total costs per MPAN.
- 9.20. We note the comments from stakeholders about the possibility that smart meter penetration at the start of 2025 might be lower than originally anticipated, and that this could affect the costs and benefits estimated in the IA.
- 9.21. The Government response to its 2019 consultation confirmed that, in light of the Covid-19 situation, the smart meter targets and potential tolerances around them would be subject to further consultation.⁹⁴ We expect that suppliers will comply with

⁹⁴ See the Government's response after consulting on [delivering a smart energy system post-2020](#), June 2020.

any new regulatory obligations that are placed upon them, which should reduce the risk of low smart meter penetration in the long term.

- 9.22. As noted in section 7 of the Final IA, if suppliers were to undershoot their targets in the short term, this would delay some of the benefits. However, this delay would have no significant impact on the scale of benefits we expect from MHHS over the long term as suppliers respond to the ongoing economic incentives on them to innovate and offer new products and services. In addition, even if smart meter penetration were to be lower than expected over the long term, the direct benefits to be realised from MHHS might fall towards the lower end of our range, but not below it. This is for two reasons. Firstly, because we expect the main driver for uptake of time of use tariffs to be ownership of low carbon technology such as EVs, heat pumps and batteries rather than the rollout of smart meters per se. Secondly, because we took a consciously conservative approach to our lower bound scenario precisely to account for uncertainties such as the smart meter rollout.
- 9.23. So far as costs are concerned, we expect a somewhat lower smart meter penetration rate would have only a marginal impact on net costs presented in the monetised direct costs section in the Final IA (and that this impact would comfortably be captured within the cost ranges presented in that section). This is for two reasons. Firstly, because the supplier cost savings reported to us (mostly arising out of their having access to more detailed consumption data) were relatively small. Secondly, these cost savings were reported with high uncertainty margins and we factored that into the cost ranges in the IA.
- 9.24. We also acknowledge that it will be challenging for industry and consumers to achieve the maximum possible load shifting in our high load shifting scenarios. In response to stakeholder comments about the potential for load shifting by small non-domestic consumers, we have carried out further sensitivity analysis to quantify the benefits of MHHS assuming no load shifting at all by that sector of the market. This sensitivity analysis shows that, even without the benefits from the small non-domestic sector, the domestic-only benefits outweigh the costs under all scenarios. We report the results of this sensitivity analysis in the quantified benefits section of the Final IA. To be clear, we do not regard such a scenario (domestic-only benefits) as credible. Most of the dynamics that we expect would trigger domestic demand-side response (**DSR**) also hold true for small non-domestic consumers. That said, we acknowledge that not all small non-domestic consumers will be able or willing to offer DSR and the assumptions we have made in the Final IA reflect this.

- 9.25. Our analysis indicates that the benefits MHHS is expected to bring to the electricity system – in other words, the benefits that accrue to all consumers regardless of whether they themselves shift load - will substantially outweigh the costs. We have set out in section 6 of the Final IA the best information we have about the potential distributional impacts of MHHS. This includes the results from analysis considering the distributional impacts on household energy bills of both taking up specific Time of Use (**ToU**) tariffs and the system-wide benefits of introducing MHHS.
- 9.26. We recognise that MHHS will present different opportunities and risks for different sets of consumers. As noted in section 7, we have committed in our Forward Work Programme (**FWP**) 2021/22 to deliver a future retail market with innovative new retail products that, for example, enable consumers to benefit from the flexibility they can provide while ensuring that protections are in place for all. MHHS is a key programme in support of decarbonisation at lowest cost.

10. Significant Code Review (SCR) Process and next steps

- 10.1. This Decision Document and the accompanying Full Business Case (**FBC**) and final Impact Assessment (**IA**) confirm our main substantive decisions on how Market-wide Half Hourly Settlement (**MMHS**) should work. We will be consulting shortly on implementation and governance arrangements for the implementation stage of the project, and our proposals for the key principles for the governance framework are given in the Management Case of the Full Business Case. Included in those principles are the areas where issues will be escalated for Ofgem decision – for example, those with material market or consumer impact. We will make, and publish, those decisions individually at the appropriate time. This is therefore the last substantive document we expect to publish on the outcomes to be achieved through the Settlement SCR. We note that the Architecture Working Group (**AWG**) will soon be making recommendations to Ofgem in relation to the Target Operating Model (**TOM**) architecture. We will be consulting shortly on our proposals for the implementation and governance arrangements. However, until these new arrangements are in place, Ofgem will continue to make decisions (including on the AWG's recommendation) under the current SCR governance framework. The new framework will be designed to ensure the decisions are non-discriminatory and that potential conflicts of interest are properly addressed. We expect that where decisions reach a threshold for Ofgem intervention, they will be taken by Ofgem.
- 10.2. We have also published an implementation timetable, which we are baselining with this Decision Document. We recognise that there are concerns that this timetable is set at a high level and that it is not possible to be confident that it will be fully appropriate until later into the mobilisation stage, when service providers, including the System Integrator have been appointed and the physical design has been produced. The plan has a programmed re-baseline in October this year which should enable all those issues to be dealt with and reflected in the re-baselined plan. We will be setting out more detail on Ofgem's role in the implementation of MMHS in a consultation shortly, but we will want to make sure that momentum on delivery is maintained and that implementation is driven forward as quickly as possible in order to provide the important benefits of MMHS as soon as possible. Our proposals for the key principles for the governance framework are given in the Management Case of the Full Business Case, including one requiring that any changes of 3 months or

more to the level 1 programme milestones in the timetable would need Ofgem approval.

- 10.3. We have set out above our decision that **the implementation of MHHS should be industry led, with Elexon, as BSC code manager, acting as SRO, with Ofgem as the Programme Sponsor**. We have considered responses to the January consultation on the challenges and risks associated with the industry led approach. The consultation we will be publishing shortly on implementation and governance arrangements will respond to those points and propose ways of addressing them.
- 10.4. We expect that changes to the BSC and possibly other codes will be necessary to reflect the requirements for MHHS implementation. This would primarily take the form of obligations on Elexon in respect of governance and management of MHHS implementation, and obligations on BSC parties and their agents, DCC, and Licenced Distribution System Operators in respect of operating in accordance with the governance and management of MHHS implementation. There will also be obligations on all parties in respect of programme assurance. We will consult shortly on the text of those obligations, the governance structure and the principles for programme assurance. We will also set out in more detail how we expect the Ofgem role as Programme Sponsor to operate, as well as how we will develop the various modifications through the ongoing Settlement SCR.
- 10.5. Following that consultation, we expect to issue a decision document finalising all the issues covered in that implementation consultation. There will be further decisions (in addition to the ones set out here) in this ongoing Settlement SCR and our timeline in Annex 1 sets out our expectations of the various phases of future work, including developing code modifications. We will also consult on any necessary licence changes to be introduced in parallel with the code changes.
- 10.6. Implementing MHHS is going to require a number of substantive code changes over the coming years. Those code changes could be made using our Smart Meters Act powers, using normal code change processes or under SCR processes.
- 10.7. While we recognise the complexity of the changes involved, MHHS is a vital reform. By encouraging more flexible use of energy and making the most efficient use of existing infrastructure, it will help decarbonise the sector cost-effectively. Delivering MHHS is therefore essential to both ensuring that our future energy system is

affordable for consumers, and as a step on our path to net zero. We expect industry to rise to the challenge of implementing MHHS efficiently and effectively.

Appendices

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Appendix 1

Table 1: Transition Timeline - Programme Milestone Descriptions

Milestone Number	Milestone Type	Milestone Name	Date	Description
M1	Level 1	FBC Decision	Apr-21	Publication of the Final Business Case, which includes the transition plan and decision on the TOM.
M2		Architecture Working Group (AWG) Recommendation delivered	Jun-21	The AWG will deliver recommendations providing guidance for the solution architecture required to enable the DWG's TOM which will set the framework for subsequent IT system design.
M3		DB Start	Aug-21	The DB (Design and Build) phase will commence in August 2021 with Elexon's Central System, followed by DCC in Feb 2022 and other parties in May 2022.
M4		PMO/PC/SI/IPA fully functioning	Oct-21	PMO/SI/PC/IPA have stood up their team and are fully operational with all programme management processes and governance forums established
M5	Level 1	Physical baseline delivered	Apr-22	In order for the other parties to commence the DBT phase a complete Physical Baseline, aligning both technical and regulatory designs, will be delivered.
M6	Level 1	Code change and detailed design recommendations delivered	Apr-22	The CCDG will deliver the recommendations aimed at addressing any outstanding areas of the DWG's TOM design, and will deliver the recommendations for the changes to the Industry Codes and subsidiary documents necessary to enable the TOM.
M7		Smart Meters Act powers enabled	May-22	Time limited (5 year) powers in Primary Legislation for Ofgem to make changes to Industry Codes for the purposes of MHHS are activated.
M8		Code changes delivered	Nov-22	All changes to regulation (licences, industry codes (including BSC, SEC, REC, DCUSA) have been made setting out the regulatory baseline.

Milestone Number	Milestone Type	Milestone Name	Date	Description
M9	Level 1	System Integration Testing Start	Aug-23	System Integration Testing (SIT) will commence in August 2023. This test phase involves the central parties (Elexon, DCC, comms network providers and the registration system providers) along with a small number of agents and suppliers.
M10		Central systems ready for migrating MPANs	Sep-24	Following completion of the testing phase (excluding TE18 - Security Testing), the Central Systems (BSC central systems, registration, DCC and communication systems) will be ready to initiate migration of Meter Point Administration Numbers (MPANs) from the current market roles into the new market roles.
M11		Start of 1 year migration for UMS/Advanced	Oct-24	Start of migration window for suppliers to move all UMS and advanced meter points to be settled in the new arrangements.
M12		Start of 1 year migration for Smart/Non-smart	Nov-24	Start of migration window for suppliers to move all smart and non-smart meter points to be settled in the new arrangements.
M13		Load Shaping Service switched on	Nov-24	The LSS will be switched on after a period used to gather and validate settlement period level data from the smart meter data service.
M14	Level 1	All suppliers must be able to accept MPANs under the new TOM (one way gate)	Feb-25	Deadline by which all suppliers must have the systems and services in place to accept MPANs under the new TOM. From this point MPANs cannot be moved back into NHH regime on change of supplier.
M15	Level 1	Full transition complete	Oct-25	Completion of implementation activities including 1 year migration.
M16	Level 1	Cut over to new settlement timetable	Nov-25	The date of the cut over to the new settlement timetable will occur after the end of migration. The decision on when the settlement timetable should be reduced should be taken nearer the time, and on market monitoring against trigger points. We think that industry should ensure that the new settlement

Milestone Number	Milestone Type	Milestone Name	Date	Description
				timetable is introduced as soon as practical after the end of migration, but if this is longer than 4 months after the end of migration then this decision should be brought to Ofgem.

Appendix 2

Table 2: Transition Timeline - Activity Descriptions, Assumptions and Dependencies

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
PM1	Procurement/mobilisation of PMO/SI/PPC/IAP	Industry party/Ofgem recruits/procures PMO/SI/PPC and IAP functions and these functions then embed and bring themselves up to speed on MHHS and the plan.	- Elexon - PMO - SI - PPC - IAP		
PM2	Programme rebaseline	PMO-led process to review programme plan and rebaseline (and take ownership of new plan).	All programme parties	PM1	- Further detailed information is available (such as the transition and migration details from the CCDG and information regarding the architecture design) to enable a proper and evidenced based rebaseline.
PM3	Ofgem handover to central programme functions	Period of dual-running of Ofgem-led governance and new programme governance. Activity is designed to de-risk transition to new programme arrangements.	- Ofgem - PMO - PPC - SI	PM1	
ID1	Architecture Working Group (AWG)	Elexon-chaired working group producing reference architecture recommendation for the Target Operating Model.	AWG members	None	- Includes current work scope only. Does not include potential AWG follow-up activity if industry/Ofgem do not support the recommendation.
ID2	Ofgem decision on AWG recommendation	Ofgem reviewing AWG recommendations and deciding whether to accept them as the basis for further design for the implementation of the programme.	Ofgem	ID1	- Ofgem continues to take programme decisions during the handover of the programme to industry.
ID3	Set-up E2E Design Group	Ofgem or delivery party developing Terms of Reference for the group, including constituency model and running process to appoint members/representatives.	- Ofgem - delivery party	ID1	- Ofgem/delivery party is able to undertake activity on a "no regrets" basis in parallel to making a decision on the AWG recommendations to enable both activities to be undertaken at the same time.

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
ID4	Comms technology selection scope determined	Further detail determined on the AWG recommended reference architecture to set the scope for technology selection.	<ul style="list-style-type: none"> - All programme parties - PMO - SI 	ID2, ID3	<ul style="list-style-type: none"> - Decision making rights are granted through governance structure and Ofgem involvement in decision making process is not necessary unless they meet the thresholds for Ofgem involvement. - Ofgem give a "least regrets steer" post-AWG to enable this activity to start in parallel to establishing E2E Design Group.
ID5	E2E Design	PMO chaired process to agree a physical baseline, including comms technology choices, to provide detail necessary for all parties to commence design and build of systems.	All programme parties PMO	ID3, ID4	<ul style="list-style-type: none"> - Decision making rights are granted through governance structure and Ofgem involvement in decision making process is not necessary unless they meet the thresholds for Ofgem involvement. - Consultation and engagement is on an ongoing basis and time for formal consultations at the end of the process (as has been the case with AWG and CCDG) is not necessary - Activity can begin before comms technology choices are made but cannot finish before that is achieved
ID6a	Code Change and Development Group (CCDG) - Transition/Migration work	Elexon-chaired working group producing detailed information on the process for transition and migration (including qualification).	CCDG members	None	
ID6b	Code Change and Development Group (CCDG) - redlining code changes	Elexon-chaired working group producing detailed code drafting for all BSC changes and consequential changes to other Codes to implement the programme.	<ul style="list-style-type: none"> - CCDG members - Impacted code bodies 	None	
ID7	BEIS activate Smart Meter Act powers	BEIS prepare a notice to activate the Smart Meter Act sections that will give Ofgem time-limited powers to change codes and licences to implement the programme.	BEIS	None	

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
ID8	Code and licence changes implemented	Ofgem consult on and implement the package of changes to codes detailed by the CCDG to implement the MHHS.	Ofgem	ID6b, ID7	<ul style="list-style-type: none"> - The package of code changes accurately reflects the technical design and the TOM. - All industry codes are fully engaged in process and deliver a coordinated and integrated set of code changes. - Ofgem undertakes a sense check of the package of code changes to ensure they reflect the technical design and the TOM.
DB1	Elexon central system design and build	Elexon undertake detailed design and make changes to BSC central systems in line with Target Operating Model.	Elexon	ID2	
DB2a	DB2a: DCC/SEC process to confirm costs and changes needed	Governance process to detail out the change and scrutinise and approve the costs to enable DCC to start their design and build of the changes.	SEC DCC SEC parties Ofgem	M1	<ul style="list-style-type: none"> - Assumption is that all the required business requirements are known at the FBC. - the SEC process does not throw up any issues.
DB2b	DCC Design and Build	DCC makes changes to their systems (CSS and smart metering) in line with the Target Operating Model. This is for both SMETS1 and SMETS2 meters.	DCC	DB2a	
DB3	Registration system changes design and build	DNOs/iDNOs deliver changes to MPRS in line with Target Operating Model.	DNOs/iDNOs and their service providers	ID5	<ul style="list-style-type: none"> - Some work can start on the design following AWG recommendations, but the physical baseline from the E2E Design Group is needed for design work to progress beyond initial stages.
DB4	Communications network changes / development	Following a comms technology solution chosen they undertake the detailed design and build. Changes are also made to the DTN in line with Target Operating Model.	<ul style="list-style-type: none"> - comms technology solution - ElectraLink 	ID4, ID5	<ul style="list-style-type: none"> - AWG outputs provide clear recommendations on requirements for communications networks - E2E Design group decides on the interface specifications for the new system and the changes required for the DTN.

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
DB5	DNO/iDNO system changes design and build	DNOs/iDNOs design changes to their systems (e.g. DUoS billing) to support the new Target Operating Model	- DNOs/iDNOs and their service providers	- ID5 - Code modifications network access / charging are available	- Policy decisions on network access / charging continue to be aligned with Target Operating Model (e.g. granularity of charging and design of load shaping service).
DB6	Supplier agent - advanced segment design and build	Agents undertake detailed design work and make changes to their systems in line with the Target Operating Model.	Supplier agents	ID5	- Limited changes are necessary for existing HH agents as the design of the new TOM services are very similar.
DB7	Supplier agent - unmetered supplies segment design and build and data cleanse	Agents undertake detailed design work and make changes to their systems in line with the Target Operating Model. A data cleanse activity is needed as agents will need to consolidate multiple MPANs to a smaller number to be settled as part of the HH regime.	Supplier agents	ID5	- Limited changes (although more than for advanced meters) as design of the new TOM services are similar to the current approach.
DB8	Supplier agent - smart / non-smart segment design and build	Agents undertake detailed design work and make changes to their systems in line with the Target Operating Model.	Supplier agents	ID5	- Significant activity involved because the entirely new nature of the service is unlike current services operated by agents.
DB9	Supplier system design and build	Suppliers undertake detailed design work and make changes to their systems in line with the Target Operating Model. Applies to suppliers who will participate in Systems Integration Testing.	Suppliers / third party service providers	ID5	- Significant activity that will involve changing range of systems. - There will be a range between suppliers based on the complexity of their systems in how long this activity will take.
DB10	Supplier business readiness period	Suppliers undertaking business (not technical) preparations. This includes but is not limited to training, updating customer engagement protocols, improving forecasting (likely using half-hourly data) and trading functions.	Suppliers / third party service providers	- ID5 - DB9	- This period is a range and there will be a range in how long suppliers take to complete these based on the complexity of their systems.

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
DB11	Late mover supplier system design and build	Suppliers not involved in programme testing phase undertake detailed design work and make changes to their systems in line with the Target Operating Model.	Suppliers / third party service providers	Switching Programme go-live	<ul style="list-style-type: none"> - Significant activity that will involve changing range of systems. - There will be a range between suppliers based on the complexity of their systems in how long this activity will take.
DB12	Late mover supplier business readiness period	Suppliers not involved in programme testing phase undertaking business (not technical) preparations. This includes but is not limited to training, updating customer engagement protocols, improving forecasting (likely using half-hourly data) and trading functions	Suppliers / third party service providers	Switching Programme go-live DB11	<ul style="list-style-type: none"> - This period is a range and there will be a range in how long suppliers take to complete these based on their risk appetite and internal processes.
TE1	Pre-Integration Testing	This testing is conducted internally by each party. Testing is done against integration stubs that are created by the party, or potentially against a simulator created by the SI. The aim of the testing is to prove that systems are ready to enter the SIT testing phase with other parties. Appropriate test scope and criteria will need to be defined by the SI and/or Programme Manager.	<ul style="list-style-type: none"> - Elexon - Registration service providers - DCC - Comms network providers - DNOs/iDNOs - Agents - Suppliers - SI 	n/a - Umbrella activity in plan	PIT testing is not coordinated centrally, but clear exit criteria / requirements on each party are specified by the SI and assured against before parties can participate in System Integration Testing.
TE2	System Integration Testing	This test phase involves the central parties (Elexon, DCC, comms network providers and the registration system providers) along with a small number of agents and suppliers. There are two aims to the testing: (1) prove basic connectivity between systems (2) prove basic message exchange and functionality between systems (including error handling for malformed messages)	<ul style="list-style-type: none"> - SI/PPC/PMO - Elexon - Registration service providers - Comms network providers - DCC - DNOs/iDNOs - Agents (subset) 	n/a - Umbrella activity in plan	A selection of programme parties are involved in SIT - a process to select parties for participation will be developed and implemented.

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
			- Suppliers (subset)		
TE3	System Proving	These three test phases involve the central parties along with a small number of agents and suppliers. There are three phases: (1) E2E: prove more complex E2E scenarios (2) Operational Testing: prove operational processes (disaster, failover, SOLR etc, incident management etc.) (3) Non-Functional Testing: prove non-functional requirements of central systems (e.g. throughput, security etc.).	- SI/PPC - Elexon - Registration Service providers - Comms network providers - DCC - DNOs/iDNOs - Agents (subset) - Suppliers (subset)	n/a - Umbrella activity in plan	
TE4	Elexon central system testing	Testing of internal systems to ensure they deliver against the physical baseline. Passing this phase is a prerequisite for System Integration Testing.	Elexon	DB1	
TE5	Registration system testing	Testing of internal systems to ensure they deliver against the physical baseline. Passing this phase is a prerequisite for System Integration Testing.	Registration service providers	DB2	- Registration service providers will be responsible for all testing with the exception of non-functional and operational testing (these will be the responsibility of DNOs/iDNOs). Both parties may be involved in E2E testing.
TE6	DCC SIT	Testing of internal systems and in particular integration of DSP and CSP systems.	DCC	DB2a	

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
TE7	DCC UIT	Once DCC systems are tested internally, external parties perform a user acceptance test (User Integration Testing) to prove the DCC systems are error free and function in line with specifications.	- DCC - Agents - Suppliers	- TE6 - TE11	At least 2 MDR parties are ready to carry out UIT.
TE8a	DCC go-live governance	Formal SEC-led approvals process before DCC can declare go-live. Passing this phase is a prerequisite for System Integration Testing.	- SEC - DCC	TE7	
TE8b	DCC system go live	Formal SEC-led approval process before DCC can declare go live of the new system changes. This is to be included in their Nov go-live release. Once go live is complete the new user role functionality is available for use, but may not be used until the MDR systems are ready and tested and qualified.	-SEC - DCC	TE8a	
TE9	Comms network pre-integration testing	Testing of internal systems to ensure they deliver against the physical baseline. Passing this phase is a prerequisite for System Integration Testing.	- comms providers	DB4	
TE10	DNO/iDNO system pre-integration testing	Testing of internal systems to ensure they deliver against the physical baseline. Passing this phase is a prerequisite for System Integration Testing.	Registration service providers DNOs/iDNOs	DB5	- Registration service providers will be responsible for all testing with the exception of non-functional and operational testing (these will be the responsibility of DNOs/iDNOs). Both parties may be involved in E2E testing.
TE11	SIT participants pre-integration testing	Testing of internal systems to ensure they deliver against the physical baseline. Passing this phase is a prerequisite for System Integration Testing.	- Agents (subset) - Suppliers (subset)	- DB6 - DB7	
TE12	Security Testing	Independent penetration (pre-System Proving).			

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
TE13	Connectivity Testing	Basic testing of connections between parties.	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration Service Providers - Comms network providers - DCC - DNOs/iDNOs - Agents (subset) - Suppliers (subset) 	TE1	- Not all parties need to be ready for this to commence. Will need Elexon, comms network provider and Registration service providers ready at a minimum.
TE14	Basic Message exchange (inc. validation of error handling)	Basic testing of simple messages/transactions between multiple parties, including testing error handling processes.	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration service providers - Comms network providers - DCC - DNOs/iDNOs - Agents (subset) - Suppliers (subset) 	TE1	

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
TE15	E2E testing	Coordinated testing to prove more complex E2E scenarios. Likely to include complete runs of the settlement over both compressed and actual timelines.	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration service providers - Comms network providers - DCC - DNOs/iDNOs - Agents (subset) - Suppliers (subset) 	TE2	<ul style="list-style-type: none"> - Settlement runs are technically the same process which gets repeated at different intervals with additional data submitted/revise - Five month window allows for multiple R1 settlements (occurs at c.T+33WD), to reduce commercial risk (or perception of risk).
TE16	Operational Testing	Coordinated testing to prove operational processes (disaster, failover, SOLR etc, incident management etc.).	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration Service Providers - Comms network providers - DCC - DNOs/iDNOs - Agents (subset) - Suppliers (subset) 	<ul style="list-style-type: none"> - TE2 - TE15 	Operational testing cannot start before E2E testing has proved certain functionality but can commence before that activity finishes.

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
TE17	Non-functional testing	Coordinated testing of non-functional requirements (e.g. capacity, backup, recovery etc.).	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration service providers - Comms network providers - DCC - DNOs/iDNOs - Agents (subset) - Suppliers (subset) 	TE2	
TE18	Security Testing	Independent penetration (post-System Proving).		TE3	
TE19	E2E Testing Sandbox	During this period participants who have completed qualification testing can enter an E2E sandbox in which the central systems will be operating as live. This will allow participants to conduct any further testing beyond qualification that they wish to undertake.	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration service providers - Comms network providers - DCC - DNOs/iDNOs - Agents - Suppliers 	TE3	SI will run an approval process to grant access to the E2E Testing Sandbox. Support including error handling will be available from central parties.
MT1	Design TOM Performance Assurance Regime	Elexon-led process to define Performance Assurance regime for the TOM (including the migration period).	Elexon	ID2	
MT2	Suppliers collect customer data sharing preferences under new MHHS data sharing framework.	Suppliers update data access policies and processes and put in place new systems to agree customer preferences. The long activity reflects the need for suppliers to update the customer data consents, including on contract renewal.	Suppliers		

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
MT3	Smart data service accedes to SEC and completes DCC entry	Agents not already DCC users to complete SEC accession (and security) processes, obtain DCC connection and adapter services and complete DCC entry testing.	- Agents - SEC - DCC	ID9	- Agents are able to start SEC accession process before any HHS-related changes are made to DCC systems. - Agents are able to start SEC accession processes in Other User category and this will not be affected by HHS code changes (ie. no dependency). - No capacity constraints in SEC security assessment process.
MT4a	Supplier agent advanced segment pre-qualification	Preparatory activity by agents to prepare for qualification processes. This will include undertaking connectivity testing so that they can be ready to start qualification testing.	Agents	DB6	Some parties will have incentives to commence early preparations in order to be ready to begin qualification at the earliest opportunity. - This is BSC qualification, and not other code qualification.
MT4b	Supplier agent advanced segment qualification	Agents qualify in new services as per the Target Operating Model. This will include structured qualification testing. Tranching may be used to manage the number of parties undertaking testing at any one time.	- Agents - Elexon	TE15	No capacity constraints from Elexon (or BSC auditors) affect qualification processes. - This is BSC qualification, and not other code qualification - The start of TE15 is a dependency, but full qualification can begin as this progresses. - Qualification length is 8 months, and this is on the assumption the requirements for the Advanced segment is less onerous and reflects more of a 'requalification' process.
MT5a	Supplier agent UMS segment pre-qualification	Preparatory activity by agents to prepare for qualification processes. This will include undertaking connectivity testing so that they can be ready to start qualification testing.	Agents	DB7	Some parties will have incentives to commence early preparations in order to be ready to begin qualification at the earliest opportunity. - This is BSC qualification, and not other code qualification.

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
MT5b	Supplier agent UMS segment qualification	Agents qualify in new services as per the Target Operating Model. This will include structured qualification testing. Tranching may be used to manage the number of parties undertaking testing at any one time.	- Agents - Elexon	TE15	No capacity constraints from Elexon (or BSC auditors) affect qualification processes. - This is BSC qualification, and not other code qualification. - The start of TE15 is a dependency, but full qualification can begin as this progresses. - Qualification length is 8 months, and this is on the assumption the requirements for the UMS segment is less onerous and reflects more of a 'requalification' process.
MT6a	Supplier agent smart/non-smart segment pre-qualification	Preparatory activity by agents to prepare for qualification processes. This will include undertaking connectivity testing so that they can be ready to start qualification testing.	Agents	DB8	Some parties will have incentives to commence early preparations in order to be ready to begin qualification at the earliest opportunity. - This is BSC qualification, and not other code qualification.
MT6b	Supplier agent smart/non-smart segment qualification	Agents qualify in new services as per the Target Operating Model. This will include structured qualification testing. Tranching may be used to manage the number of parties undertaking testing at any one time.	- Agents - Elexon	TE15	No capacity constraints from Elexon (or BSC auditors) affect qualification processes - this is BSC qualification, and not other code qualification - the start of TE15 is a dependency, but full qualification can begin as this progresses. - qualification length is 12 months, as it is thought the process is more onerous than UMS/advanced.
MT7a	Supplier pre-qualification	Preparatory activity by suppliers to prepare for qualification processes. This will include undertaking connectivity testing so that they can be ready to start qualification testing.	Suppliers	DB9	Some parties will have incentives to commence early preparations in order to be ready to begin qualification at the earliest opportunity. - This is BSC qualification, and not other code qualification.

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
MT7b	Supplier qualification	Suppliers qualify in new services as per the Target Operating Model. This will include structured qualification testing. Tranching may be used to manage the number of parties undertaking testing at any one time.	<ul style="list-style-type: none"> - Suppliers - Elexon 	TE15	<p>No capacity constraints from Elexon (or BSC auditors) affect qualification processes.</p> <ul style="list-style-type: none"> - This is BSC qualification, and not other code qualification. <p>The start of TE15 is a dependency, but full qualification can begin as this progresses.</p> <ul style="list-style-type: none"> - Qualification length is 12 months, as it is thought the process would include suppliers qualifying for all three market roles.
MT8	Supplier / Agent migration planning	Suppliers and agents discussing, preparing and making contractual arrangements for the migration process.	<ul style="list-style-type: none"> - Agents - Suppliers 		
MT9	UMS/Advanced Migration period	UMS and advanced Individual meter points are migrated to the new settlement arrangements.	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration service providers - Comms network providers - DNOs/iDNOs - Agents - Suppliers 	<ul style="list-style-type: none"> - MT4 - MT5 	

Ref.	Activity	Description	Parties Involved	Dependencies	Key Assumptions
MT10	Smart/Non smart Migration Period	Smart and non-smart individual meter points are migrated to the new settlement arrangements.	<ul style="list-style-type: none"> - SI/PPC - Elexon - Registration service providers - Comms network providers - DNOs/iDNOs - DCC - Agents - Suppliers 	MT6	
MT11	Populate Load Shaping Service with meter data	Settlement period data submitted to Elexon central systems is used to populate Load Shaping Service.	Elexon	TE8b	Load shaping service needs at least 3 months of data before it can be switched on.

Appendix 3

Table of acronyms

Acronym	Definition
AI	Artificial Intelligence
AWG	Architecture Working Group
BAU	Business As Usual
BEIS	Department for Business, Energy and Industrial Strategy
BSC	Balancing and Settlement Code
BSCCo	Balancing and Settlement Code Company (Elexon)
CBS	Consumer Behaviour Studies
CCDG	Code Change and Development Group
CEPA	Cambridge Economic Policy Associates
CFF	Central fossil fuel
CMA	Competition and Markets Authority
CPP	Critical Peak Price (tariff)
CPR	Critical Peak Rebate (tariff)
CVS	Consumer Vulnerability Strategy 2025
DAPF	Data Access and Privacy Framework
DCC	Data and Communications Company
DCUSA	Distribution Connection and Use of System Agreements
DDM	Department for Business, Energy and Industrial Strategy's Dynamic Dispatch Model
DF	The Disputes (post-final) settlement run
DG	Distributed Generation
DLT	Distributed Ledger Technology
DNM	Distribution Network Model
DNOs	Distribution Network Operators
DSR	Demand-Side Response
DTN	Data Transfer Network
DTS	Data Transfer Service
DWG	Design Working Group
EDTF	Energy Data Task Force
EMDH	Energy Market Data Hub
EUA	European Emissions Allowance
EV	Electric vehicles

Acronym	Definition
FBC	Full Business Case
FIT	Feed-in Tariffs
UK GDPR	UK General Data Protection Regulation
GSP	Grid Supply Point
GSPG	Grid Supply Point Group
HH	Half-hourly
HHDA	Half-hourly Data Aggregator
HHS	Half-hourly Settlement
IA	Impact Assessment
ICO	Information Commissioner's Office
IDNO	Independent Distribution Network Operator
IC surplus	Interconnector surplus
IM	Investment Model
IPA	Initial Project Assessment
LCCC	Low Carbon Contracts Company
LLF	Line Loss Factor
LSS	Load Shaping Service
MDS	Market-wide Data Service
MHHS	Market-wide Half Hourly Settlement
MOD	(Balancing and Settlement Code) modification
MPAN	Meter Point Administration Number
MPAS	Meter Point Administration System
NGET	National Grid Electricity Transmission
NHH	Non-Half-Hourly
NPV	Net Present Value
OBC	Outline Business Case
P2P	Peer-to-peer
PAF	(Balancing and Settlement Code) Performance Assurance Framework
PC	Profile Classes
PCWs	Price comparison websites
PFM	Power Flow Model
PMO	Programme Management Office
PPC	Programme Party Coordinator
PSRG	Profiling and Settlement Review Group
PV	Present Value

Acronym	Definition
PV	Photovoltaic
RF	Final Reconciliation Run
RFI	Request for Information
RIIO -2	Revenue = Incentives + Innovation + Outputs (price controls)
SCR	Significant Code Review
SEC	Smart Energy Code
SEG	Smart Export Guarantee
SF	The Initial Settlement Run
SI	The System Integrator
SMETS1 & 2	Smart Metering Equipment Technical Specifications 1 & 2 (respectively)
SoLR	Supplier of Last Resort
SRO	Senior Responsible Owner
SVA	Supplier Volume Allocation
SVT	Standard Variable Tariff
TCR	Targeted Charging Review
TDC	Trading and Disputes Committee
TERRE	Trans European Replacement Reserve Exchange
TOM	Target Operating Model
ToU	Time of Use (tariffs)
TPIs	Third Party Intermediaries
UMS	Unmetered Supply
UTC	Coordinated Universal Time
V2G	Vehicle to Grid
VAS	Volume Allocation Service
VPP	Virtual Power Plant
WDs	Working Days

Appendix 4

Glossary

These definitions relate to the meaning of the words as they are used in the documents and are to be used solely as an aid to understanding, not further to the text.

A

Advanced Meter

An electricity advanced meter which is capable of recording half-hourly consumption data and of providing suppliers with remote access to this data (and is not a smart meter). Advanced meters are largely used by non-domestic customers.

Architecture Working Group (AWG)

The Architecture Working Group is an Elexon-chaired group of industry experts developing, consulting on and recommending solutions for the system architecture design required to enable the Target Operating Model (TOM) designed by the Design Working Group (DWG).

B

Balancing and Settlement Code (BSC)

The Legal document setting out the rules for the operation and governance of the Balancing Mechanism and Imbalance Settlement. All licensed electricity generators and suppliers in Great Britain must sign up to the BSC and other interested parties may also choose to do so.

Balancing and Settlement Code Company (BSCCo)

A not for profit organisation responsible for managing the provision of the necessary central systems and services to give effect to the BSC rules and for managing the governance processes. Elexon is known as the Balancing and Settlement Code Company, and they administer the Balancing and Settlement Code.

Balancing Mechanism (BM)

The means by which the National Grid ensures that the level of demand on the transmission system is met by the amount of electricity being supplied in real time. It does this through paying / charging generators and / or consumers to either increase or decrease their generation / consumption.

Bundling/Bundle

Combining of, or a combination of, a number of different products or services into one unit for sale.

C

Code Change and Development Group (CCDG)

The Code Change and Development Group is an Elexon-chaired group of industry experts developing the further detailed areas of the TOM design as well as identifying and overseeing the drafting of the changes needed to the affected industry codes and subsidiary documents required to implement the TOM.

Comms hub firmware

The comms hub is the piece of hardware installed alongside a smart meter that allows for the transmission of data between the meter and the Data and Communications Company (DCC). The firmware is the permanent software installed on the comms hub.

Contracts for Difference (CfD)

A government scheme which incentivises investment in renewable energy by giving developers of projects with high upfront costs, long lifetime protection from volatile wholesale prices.

Critical Peak Price (CPP) tariff

These tariffs are generally comprised of flat price periods on most days but for a number of extreme peak days in the year, prices for specified periods within each day are far higher (usually 5-20 days that in a given year that are due to system stress periods).

Critical Peak Rebate (CPR) tariffs

CPR tariffs mirror CPP tariffs except that with CPR the consumer can get a rebate for load reductions during a specific period on relevant days relative to an estimated baseline consumption level. Those who cannot reduce demand will not pay any more for consumption during the peak period, while those who can will save.

Cutover

The point by which all Meter Point Administration Numbers (MPANs) must be being settled on the new settlement timetable.

D

Data Access and Privacy framework (DAPF)

The Government's data access and privacy policy framework determines the levels of access to energy consumption data from smart meters that suppliers, network operators and third parties have. It also establishes the purposes for which data can be collected and the choices available to consumers. The provisions of the DAPF are enacted through the Supply Licence Conditions (SLCs) and the Smart Energy Code (SEC).

Data Aggregator (DA)

As part of the settlement process, a DA is a party appointed by an electricity supplier in accordance with Section S of the BSC, responsible for receiving data from the data collector, validating and providing reports and maintain relevant standing data. The DA enters data into the relevant aggregation system, aggregates the metered data into MWh in the relevant aggregator system and provides this to the Supplier Volume Allocation Agent.

Data and Communications Company (DCC)

The DCC is the company that manages the data and communications to and from smart meters.

Data Collector (DC)

As part of the settlement process, a DC is a party appointed by an electricity supplier in accordance with Section S of the BSC, responsible for collecting, validating and estimating data (as required). Provides reports and maintains relevant standing data.

Demand-side response (DSR)

Actions taken by consumers to change the amount of energy they take off the grid at particular times in response to a signal, such as price.

Data Protection Impact Assessment (DPIA)

A Data Protection Impact Assessment (DPIA) is a tool to help organisations find the most effective ways of complying with data protection obligations and meet individuals' expectations of privacy. To date, we have published two iterations of our Settlement Reform DPIA. We are publishing an addendum to version 2 alongside the FBC.

Data Transfer Service (DTS)

An information exchange platform which allows participants in the electricity, gas and water markets to exchange information about their customers, enabling processes such as settlement and a customer changing supplier. The DTS is hosted by ElectraLink.

Design Working Group (DWG)

The Design Working Group is an Elexon-chaired group of industry experts who worked to design the Target Operating Model (TOM) and high-level transition approach for Market-wide Half-Hourly Settlement. The DWG has been succeeded by the Architecture Working group and Code Change and Development Group.

Direct load control tariff

A tariff where the consumer pays a lower than average flat rate but in return agrees to some direct load control by their supplier at specific time periods when load is turned down. The consumer would need a smart device installed which would be remotely operated by the supplier with customer consent or with their manual involvement.

Discounting

Discounting is a technique used to compare costs and benefits occurring over different periods of time.

Discount Rate

Discount rate is the annual percentage rate at which the present value of future monetary values are estimated to decrease over time.

Distributed ledger technology (DLT)

Distributed ledger technology enables a digital system in which records are held to be simultaneously maintained at multiple points throughout a network. Updates made to the ledger by a single party are replicated across all the ledgers. Transactions and changes are visible to all parties.

Distribution Network Operators (DNOs)

DNOs own, operate and maintain the distribution networks. They do not sell electricity to consumers, this is done by the electricity suppliers. There are 14 licensed DNOs in Britain, and each is responsible for a regional distribution services area.

Distributional impacts

The impact of a project across a range of consumer types in terms of the costs and benefits that accrue to specific categories of consumer groups.

DURABILL

The Distribution Use of System billing system, used for charging users of the electricity distribution networks in the GB market. The system is provided by St Clements.

Dynamic ToU tariffs

Dynamic ToU tariffs are similar to static ToU tariffs, but the time and/or costs of price periods are not fixed. These could vary on a week to week, day to day or even half-hour to half-hour basis.

E

Electricity Settlement Expert Group (ESEG)

The ESEG was an expert group of stakeholders convened by Ofgem with the objective of identifying options for using half-hourly data in settlement. Seven meetings took place between June and November 2014.

Electricity supplier

A company licensed by Ofgem to sell energy to and bill customers in Great Britain.

Elexon

Elexon is the organisation responsible for administering the BSC. They are also known as the BSC Company (BSCCo). The role, powers, functions and responsibilities of Elexon are set out in Section C of the BSC.

Economy 7 tariffs

Economy 7 tariffs charge lesser rates during night and greater rates during the day (or peak) time, however, this tariff does not need a smart meter but a specialised (and less advanced) Economy 7 meter.

End of migration

The point at which all Meter Point Administration Numbers (MPANs) have been migrated/adopted into the MHHS Target Operating Model (TOM).

Energy Data Task Force (EDTF)

The EDTF was commissioned by Government, Ofgem and Innovate UK to provide a set of recommendations on using data to maximise the opportunities for a decarbonised and decentralised energy system.

Energy Market Data Hub (EMDH)

The centre for ElectraLink’s products and services and solutions and a platform they use to allow innovators to develop new products and services for the utilities industry.

Electricity System Operator (ESO)

ESO is the System Operator for the electricity transmission system in Great Britain, with responsibility for making sure that electricity supply and demand stay in balance and the system remains within safe technical and operating limits.

Export

The transfer of electricity from a consumer and / or generator to the distribution grid.

F

Feed-in Tariffs (FIT)

The Feed-in Tariffs (FIT) scheme is a government programme designed to promote the uptake of renewable and low-carbon electricity generation technologies. Introduced on 1 April 2010, the scheme requires participating licensed electricity suppliers to make payments on both generation and export from eligible installations. The scheme closed to new applicants in April 2019.

Flexible/flexibility

The ability of the electricity supply system to respond by altering demand on the grid in order to accommodate the output of generators at a given time.

Forecasting

The activity undertaken by suppliers to predict the electricity demand of their customers in order to procure the amount that they require for supply.

Forward-Looking Charges (FLC)

The elements of network charges that signal to users how their actions can either increase or decrease future network costs. They typically provide signals about the costs or benefits of locating at different points on the network (sometimes called “locational charges”) and/or of using the network at different times.

Full Business Case (FBC)

The FBC outlines a detailed economic assessment of the introduction of MHHS to complement the final Target Operating Model. It uses the commercial, financial and management cases to set out arrangements for implementation. It is informed by an Impact Assessment.

G

General Data Protection Regulation (see UK GDPR)

Green Book

The Green Book is guidance issued by HM Treasury on how to appraise policies, programmes and projects. It also provides guidance on the design and use of monitoring and evaluation before, during and after implementation.

Grid Supply Point (GSP)

The point at which the Distribution and Transmission Networks intersect, and where Metering Systems measure how much electricity is imported to and exported from the Distribution Network.

Grid Supply Point Group Correction Factor

The mathematical adjustments made to the calculation of the total energy allocated to suppliers in each settlement period in each GSP Group, to ensure that it matches the energy entering the GSP Groups from the transmission system, adjoining GSP Groups and through embedded generation.

H

Heat-as-a-service

A type of business model which provides consumers with an agreed heating plan rather than consumers simply paying for units of fuel.

I

Interconnector costs

One of the components of the net welfare analysis calculated by the dynamic dispatch model (DDM). It is the cost of the electricity imported via the interconnectors minus the value of exports across the interconnectors, faced by the GB side of interconnection. If imports are greater or import prices are higher, the cost of imported electricity is increased. This is seen in the dynamic dispatch model as a reduction in net welfare.

(Change in GB) Interconnector surplus (IC surplus)

One of the components of the net welfare distributional analysis calculated by the dynamic dispatch model (DDM), consisting of changes in wholesale market costs, changes in capacity market revenue and changes in GB interconnector costs.

Imbalance charge

The charge that suppliers pay for any difference between contracted and metered volumes.

Impact Assessment (IA)

An Impact Assessment is a tool to help explain the effects and impacts of regulatory proposals on consumers, industry participants, society and the environment.

Import

The transfer of electricity from the grid to a consumer.

L

Line Loss Factors (LLF)

The mechanism by which the energy lost in the transportation of electricity through the Distribution Network system is calculated and accounted for.

Load shifting

The movement of electricity consumption to different times of the day, usually from peak to off-peak times, in response to a price or other signal.

M

Market Domain Data

The reference data (including Profile Classes and Grid Supply Point Groups) used by all suppliers, supplier agents and licensed distribution system operators in the electricity market to facilitate the operation of the Suppliers Volume Allocation Trading Arrangements.

Market-Wide Half-Hourly Settlement (MHHS)

Market Wide Half-Hourly Settlement will utilise the ability of smart meters to record a customer's usage during each half hour period to move domestic and small non-domestic customers to half-hourly settlement. Medium and larger non-domestic consumers have been settled half-hourly since BSC modification P272.

Meter Operator (MOP)

Responsible for installing, commissioning, testing, maintaining and rectifying faults in respect of metering equipment. Also responsible for maintaining Meter Technical Details and providing such details to the relevant Data Collector. As carried out by a party appointed by an electricity supplier in accordance with Section L of the BSC.

Meter Point Administration Number (MPAN)

A unique number assigned to electricity meter points for the purposes of identification.

N

Net Present Value (NPV)

NPV is a generic term for the sum of a stream of future values (that are already in real prices) that have been discounted to bring them to today's value. For clarity, in this document we only use the term NPV in relation to the final net benefits, and use present value (PV) for any other value that has been discounted to today's value.

Net Zero

In June, 2019 the UK legislated by amending section 1(1) of the Climate Change Act, which now provides that it is the Secretary of State's duty to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline, by reducing emissions from all sectors of the economy.

Network Access

Access is the nature of users' access to the electricity networks (for example, when users can import/export electricity and how much) and how these rights are allocated.

New system customer

Those customers who had their smart / advanced meters installed or decided to change supplier / contract after the new MHHS data sharing framework entered into force.

Non-half-hourly (NHH) settlement

As part of the settlement process, NHH settlement is the arrangement for estimating how much energy a supplier's customers use in each settlement period based on meter readings spanning longer intervals. These consumers are not settled using half-hourly consumption data.

O

Ofgem

The Office of Gas and Electricity Markets (Ofgem) is responsible for protecting gas and electricity consumers in Great Britain. It is governed by the Gas and Electricity Markets Authority (GEMA).

Old system customer

Those customers who had their smart meters installed before the new MHHS data sharing framework entered into force, and have not decided to change supplier or contract since the framework entered into force.

P

Performance Assurance Framework (PAF)

The BSC Panel and the Performance Assurance Board use the Performance Assurance Framework to manage settlement risks.

Peak consumers

Those consumers whose electricity consumption is primarily concentrated at the times of the day when there is greatest demand on the grid, for example 4pm-7pm on weekdays.

Peer-to-peer (P2P) energy trading

Trading energy through a platform where a network of computational entities or peer-to-peer (P2P) group is connected, each of which acts as a node for sharing data with the rest of the group rather than having a central server.

Present Value (PV)

PV is a generic term for a future value (that is already in real prices) that has been discounted to bring it to today's value.

Profile Class

There are four Profile Classes into which consumers are grouped, from which a load profile is created which estimates the consumption shape of the average consumer within that group. This load profile is used to determine the consumption in each half hour for all consumers assigned to the Profile Class where half-hourly data is not available. See also non-half-hourly settlement.

Profiling and Settlement Review Group (PSRG)

The PSRG was a sub-group of the Supplier Volume Allocation Group (SVG) from 2010-15. The PSRG reported to the BSC Panel and was tasked with maintaining the integrity of the settlement arrangements in the short to medium term as smart meters are rolled out.

Project Nexus

The project to develop the new UK Link IT system for supply point administration and other functions in the GB gas market, in which Ofgem had a sponsorship role.

R

Ratcheted materiality

Stepped increases in the threshold for which incorrect information will be considered of significance in decision-making.

Real price

Real price is the nominal price (i.e. current cash price at the time) deflated by a measure of inflation.

Real terms

Real terms is a reference to the value of expenditure at a specified general price level (calculated by dividing a nominal cash value by a general price index).

Residual charges

Supplementary to Forward-looking charges, residual charges are top-up network charges which ensure that the appropriate amount of allowed revenue is collected from demand users once forward-looking charges have been levied. The amount of revenue which needs to be recovered from residual charges does not change when individuals use the system differently.

Request for Information (RFI)

A Request for Information is a request to collect additional information, beyond the data collected in routine monitoring.

RIIO-2 (Revenue = Incentives + Innovation + outputs)

RIIO is the network price control model employed by Ofgem. The model adjusts a network company's allowed revenues depending on metrics related to incentives, innovation and outputs.

S

Settlement period

The period over which contracted and metered volumes are reconciled. This is defined as a period of 30 minutes. See also settlement process.

Settlement process

The method by which suppliers are charged / compensated for any difference between the volume of electricity that they buy and the volume that their customers consume within each 30 minute settlement period.

Significant Code Review (SCR)

The SCR process is designed to facilitate complex and significant changes to a range of industry codes. It provides a role for Ofgem to undertake a review of a code-based issues and play a leading role in facilitating code changes through the review process.

Smart Energy Code (SEC)

The Smart Energy Code (SEC) is a multi-Party agreement, coming into force under the DCC Licence, which defines the rights and obligations of energy suppliers, network operators and other relevant parties involved in the end to end management of smart metering in GB.

Smart Export Guarantee (SEG)

The Smart Export Guarantee is an obligation established by the government, imposed on electricity suppliers with at least 150,000 domestic electricity customers, to offer an export tariff and make payments to small-scale low-carbon generators for electricity exported to the grid. This came into effect in January 2020.

Smart meter

A meter which, in addition to traditional metering functionality (measuring and registering the amount of energy that passes through it), is capable of providing additional functionality (for example, recording consumption in each half hour of the day and of being remotely read) is known as a smart meter. It must also comply with the technical specification (SMETS).

Smart tariff

This is a catch all term that could refer to any tariff enabled by a smart meter but which specifically does not refer to tariffs available with traditional meters, including Economy 7 tariffs.

SMETS2 meters (Smart Metering Equipment Technical Specifications 2)

The second generation of smart meters in GB.

Solar PV (Solar photovoltaic)

Electricity generated by solar panels.

Standing data

Stored information which remains static for a sustained period of time, as it does not often change.

Static Time of Use tariff

A Time of Use tariff that fixes in advance the peak and off-peak periods for electricity consumption and the prices that apply at these times. This is where customers are charged a lower price at specified off-peak times that are consistent day to day or week to week, reflecting the fact that electricity is generally cheaper to generate and transport at these times. (Some static time of use tariffs could have different weekday and weekend rates).

Supplier agents

Supplier agents can carry out certain functions related to settlement on behalf of suppliers, including data collection, data aggregation and meter operation.

Supplier Volume Allocation (SVA) arrangements

Within the BSC, the SVA arrangements provide the mechanism for determining the allocation of energy volumes to suppliers in each half hour of the day.

Switching Programme

Ofgem's project for transforming the current arrangements by which customers change their energy supplier to make it faster and more reliable.

System Operator

The entity charged with operating the Great Britain high voltage electricity transmission system, currently National Grid Electricity Transmission Plc.

T

Targeted Charging Review (TCR)

The Targeted Charging Review has examined the 'residual charges' which recover the remaining costs of the electricity network that are not recovered through forward-looking charges, and the differences in charges faced by smaller distributed generators and larger generators (known as Embedded Benefits).

Target Operating Model (TOM)

The Target Operating Model is the settlement arrangements designed by the Design Working Group (DWG), and further developed by the Code Change and Development Group (CCDG) and the Architecture Working Group (AWG) that will facilitate Market-wide Half Hourly Settlement.

TERRE (Trans European Replacement Reserve Exchange)

TERRE is a European Union project which aims to develop a platform for market participants in participating European countries to trade energy with one-another.

Third Party Intermediary (TPI)

This refers to an organisation or individual that give energy-related advice, aimed at helping consumers to buy energy and/or manage their energy needs. TPIs include switching sites, energy brokers and any company that offers support with energy procurement.

Time of use (ToU) tariffs

This refers to time of use tariffs excluding Economy 7 tariffs. This is where customers are charged a lower price at off-peak times compared to peak times.

U

UK General Data Protection Regulation (UK GDPR)

Originally a regulation in EU law (Regulation (EU) 2016/679) providing for the protection of personal data in relation to processing and sharing, which has been retained in domestic law following the UK's withdrawal from the European Union.

Unpriced Carbon

This quantifies the difference between the European Emissions Allowance (EUA) carbon price and the societal value of carbon as defined by the Government's appraisal value.

V

Vehicle-to-Grid (V2G) services

Services that enable electric vehicle (EV) users to return energy stored in their EV batteries to the grid when electricity is in high demand.

Virtual Power Plant (VPP)

An interconnected network of decentralised, medium-scale power generating units (wind farms, solar parks), as well as flexible power consumers and storage systems. These can be dispatched from a central 'control room' with the aim of relieving the load on an electrical grid by smartly distributing the power generated by the individual units during peak load periods.