

Consultation

Electricity retail market-wide half-hourly settlement: consultation

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Response deadline: No deadline is being set at this time. When we set one, we will publish an update on the Ofgem website, and give at least 10 weeks notice

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We are consulting on issues relating to the introduction of market-wide half-hourly settlement (**MHHS**) across the electricity retail market. 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. We would like views from all parties with an interest in facilitating a smooth and efficient transition towards a flexible, decarbonised electricity sector. We particularly welcome responses from electricity suppliers, supplier agents, code administrators, the Data Communications Company, electricity network businesses and consumer representatives. We would also welcome responses from other stakeholders and the public.

Accompanying the consultation document is a draft impact assessment (**IA**) of the introduction of MHHS. The IA sets out the potential impact of Ofgem's preferred option for implementation, as well as the other options we have considered. We have also published a separate paper on the consumer impact of MHHS. Once the consultation is closed, we will consider all responses carefully. We will publish any non-confidential responses alongside a decision on next steps on our website. If you would like any part of your response to be considered confidential, please let us know in your response alongside an explanation of why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, place the confidential material in separate appendices to your response.

Please note, the analysis that underpins the draft IA and consultation document was carried out before the onset of the COVID-19 pandemic in GB. We are publishing it now in the interests of transparency. We will take account of the impacts of the developing public health situation on the project as we move forward. We are seeking views as part of the consultation on what impact stakeholders think the pandemic will have on the project timescales.

Due to the public health emergency, no deadline for consultation responses is being set at time of publishing. When we set one, we will publish an update on the Ofgem website, and give at least 10 weeks notice.

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Executive summary

Context

Ofgem is committed to paving the way for the energy sector to decarbonise. We need to make sure this happens at the lowest cost to consumers. Smart meters and elective half-hourly settlement (**HHS**) already enable suppliers to offer innovations, like time of use tariffs which can be combined with storage or Electric Vehicle (**EV**) smart charging, which encourage more flexible use of energy. Market-wide half-hourly settlement (**MHHS**) will build on this, ensuring 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. In combination with reforms 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 minimising the need for investment in generation and network capacity and making it easier to incorporate intermittent renewable generation into the network, reducing costs and enabling a lower-carbon system.

Scope of the consultation

In our Outline Business Case (**OBC**), 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.¹ Our draft Impact Assessment (**IA**) continues to support this view, presenting total net benefits for GB consumers of £1.607bn to £4.557bn (2018 prices, 2018 NPV).² We seek stakeholder views to test these figures, as well as our proposals on how and when to introduce MHHS. This includes consideration of the Target Operating Model (**TOM**), data aggregation, the settlement timetable, settlement arrangements for export-related meter points, transition time to the new settlement arrangements, some questions relating to data access and privacy, and programme governance arrangements.

Target Operating Model and data aggregation arrangements

The TOM sets out services to be provided under the new settlement arrangements. We propose to introduce MHHS on the basis of the preferred TOM, as recommended by the Design Working Group (**DWG**).³ Accordingly, non-aggregated data would be available to the Balancing and

¹ Link to the [Outline Business Case](#) on the Ofgem website.

² Link to the [Impact Assessment](#) here.

³ The Design Working Group, chaired by ELEXON, included industry representatives from suppliers, Distribution Network

Settlement Code (**BSC**) central settlement systems. This is different to the current market arrangements, where data is aggregated by supplier agents and then submitted in aggregated form to central settlement systems, where it is aggregated again to calculate the settlement imbalance.

It will be more cost-efficient for data aggregation for settlement purposes to take place solely in central settlement systems. It will also allow greater flexibility in the types of data aggregation for settlement that can be carried out, and facilitate adaptation if further changes are needed in future. Our preferred option is the DWG TOM where non-aggregated data is available to central settlement systems. We seek views on this.

Settlement timetable

We propose changes to the settlement timetable to improve its efficiency: the Initial Settlement (**SF**) Run to be 5-7 working days after the settlement date; the Final Reconciliation Run (**RF**) to be 4 months after the settlement date; and the post-final (**DF**) settlement run to be 20 months after the settlement date if required, with ratcheted materiality thresholds so that, as time goes by, only the most serious errors can be raised as disputes. We think these changes will reduce industry costs and boost financial certainty for BSC parties.

Export-related meter points

We propose to introduce MHHS for both import and export Meter Point Administration Numbers (**MPANs**) and with the same transition period. Including export MPANs increases the potential benefits from MHHS. Implementing it at the same time as import MPANs should bring efficiency gains.

Transition period

We want to secure the benefits of MHHS at the earliest opportunity while ensuring that the new arrangements are robust and work well for market participants and consumers. We have taken into account the fact that industry resources are already engaged in significant change programmes. The analysis for this draft IA and consultation document were carried out before the COVID-19 pandemic. We are publishing the analysis now for transparency, but will be

taking the pandemic into account and reassessing our project and proposed implementation timescales in due course.

At the time of our analysis, we preferred an approximately 4-year transition period with an end-date of end-2024. We had proposed to expect industry and ELEXON to prepare, build and start to test their systems, up to mid-2022, when central systems will be ready for external testing. During 2023, we had proposed to expect suppliers to finish testing systems and ensure business readiness, while supplier agent qualification takes place. During 2024, we had proposed to expect customers to be migrated to the new systems. This was challenging but, with appropriate governance, we believed that it was achievable. However, in the light of the COVID-19 pandemic, we are reviewing the project timelines. We will be looking at the impact on the start date for implementation and the length of the transition period. We recognise that the start date will likely need to be pushed back. We still consider a 4 year transition period realistic, but recognise that there may well be factors arising from the COVID-19 situation which could impact this. We are asking for stakeholders' views on the impact the COVID-19 pandemic will have on the project's timescales.

Data access and privacy

Achieving the benefits of MHHS relies on half-hourly (**HH**) data being available for settlement. In terms of access to data policy, this requires striking a balance between the right to privacy of individual consumers and the system benefits that accrue to all consumers as a result.

Our decision letter on access to data⁴ confirmed that domestic customers would be able to opt out of sharing their HH data for settlement and forecasting purposes.⁵ We are now considering the granularity of consumption data to be collected from these domestic customers that exercise their right to opt out of this processing. We seek views on our proposal that these consumers should have their data collected for these purposes at daily resolution. We are also asking for views on what would be a proportionate arrangement for existing customers who already have their smart meters.

It is in the wider interests of all consumers that this opt-out rate should be minimised and it is important that customers have confidence in the data-sharing arrangements and understand

⁴ Link to the [Access to data decision paper](#) on the Ofgem website.

⁵ Microbusinesses will not be able to opt out of this processing.

the benefits. We are therefore also seeking views on the potential need for central consumer messaging around the concepts of settlement / forecasting, and consumer data sharing choices.

Programme management

MHHS is a major and complex change programme involving many organisations across the industry. Effective governance will be required to ensure that the transition period runs smoothly and efficiently. We set out a number of options, ranging from us managing the programme to assigning the core roles to industry, as well as a combination in-between. Under whichever model we choose, we want to assure a high quality and timely implementation of the new settlement arrangements. We welcome comments on the different proposals.

Draft Impact Assessment

Accompanying this consultation is a draft IA setting out the potential impacts of our preferred option for introducing MHHS and the other options that we have considered, including retaining the existing elective settlement arrangements for domestic and smaller non-domestic electricity customers.⁶ The draft IA sets out that the quantified benefits of introducing MHHS are potentially far greater than the costs, and concludes that these benefits would not be achieved without introducing MHHS. We therefore reject the 'do nothing' option.

We considered introducing MHHS for import-MPANS only over a 5 year transition period but concluded at the time of our analysis that this option would reduce the scale of potential benefits, and would unnecessarily delay the realisation of those benefits. We also considered a 3-year transition period, but concluded that it would not be practicable due to over-stretch of industry resources. At the time of our analysis our proposed option was based on the DWG preferred TOM, including both import and export over an approximately 4-year transition period.

Next steps

We will continue to engage with stakeholders during and after the consultation period. We plan to hold stakeholder workshops at an appropriate time. Given the ongoing COVID-19 pandemic, we expect to conduct these remotely (eg via webinar). The Architecture Working Group and Code Change Development Group will work on detailed design issues and both groups will keep

⁶ Link to the [Impact Assessment](#) here.

stakeholders well informed of their progress. We had planned to publish a final decision on MHHS as part of our Full Business Case and Final IA in autumn 2020.

COVID-19

Please note, the analysis that underpins the draft IA and consultation document was carried out before the onset of the COVID-19 pandemic in GB. We are publishing now in the interests of transparency. We will take account of the impacts of the developing public health situation on the project as we move forward. We are seeking views as part of the consultation on what impact stakeholders think the pandemic will have on the project timescales. Due to the public health emergency, no deadline for consultation responses is being set at time of publishing. When we set one, we will publish an update on the Ofgem website, and give at least 10 weeks notice.

Associated documents

- [BEIS, Delivering a smart system: a Smart Meter Policy Framework post 2020 \(September 2019\)](#)
- [Catapult Energy Systems, Energy Data Taskforce: A Strategy for a Modern Digitalised Energy System \(June 2019\)](#)
- [ELEXON, Code Change and Development Group Work Plan \(December 2019\)](#)
- [ELEXON, Consultation on the DWG's Target Operating Model for Market-Wide Half-Hourly Settlement \(February 2019\)](#)
- [ELEXON, Design Working Group Consultation on approach for transitioning to MHHS Target Operating Model \(June 2019\)](#)
- [ELEXON, Design Working Group: Final Stage 2 Report to Ofgem \(August 2019\)](#)
- [ELEXON, Market-wide Half-Hourly Settlement Design Working Group Consultation on Skeleton Target Operating Models: Collated Responses and Themes \(June 2018\)](#)
- [ELEXON, The Design Working Group Terms of Reference \(DWG01/01\) \(May 2018\)](#)
- [ELEXON, TRADING DISPUTES REVIEW – PROJECT INITIATION DOCUMENT \(PID\) \(October 2019\)](#)
- [ELEXON, proposed code modification P390](#)
- [ELEXON, proposed code modification P398](#)
- [Energy Data Taskforce, A strategy for a Modern Digitalised Energy System set out its key recommendations for achieving a modernised, net zero energy system \(June 2019\)](#)
- [Ofgem, Call for Evidence: Potential impacts for consumers following market-wide settlement reform \(February 2019\)](#)
- [Ofgem, Consultation on access to half-hourly electricity data for settlement purposes: Ofgem decision and response to stakeholder feedback \(July 2018\)](#)
- [Ofgem, Consultation on supplier agent functions under market-wide settlement reform \(September 2018\)](#)
- [Ofgem, Consumer Vulnerability Strategy \(Oct 2019\)](#)
- [Ofgem, Data Best Practice Guidance \(January 2020\)](#)
- [Ofgem, Data Exchange launch statement \(September 2019\)](#)
- [Ofgem, Decarbonisation Action Plan \(February 2020\)](#)
- [Ofgem, Decision for agent functions under market-wide settlement reform \(May 2019\)](#)
- [Ofgem, Design Working Group preferred TOM report \(February 2019\)](#)
- [Ofgem, Forward Work Programme consultation 2020-2022 \(December 2019\)](#)
- [Ofgem, Market-wide Settlement Reform: Outline Business Case \(August 2018\)](#)
- [Ofgem, Open letter on DWG final report and proposed new governance structure \(October 2019\)](#)

- [Ofgem, Opening Statement - Strategic Review of the microbusiness retail market \(May 2019\)](#)
- [Ofgem, Policy decisions for Settlement Reform – Least-regrets steer to the Design Working Group \(November 2018\)](#)
- [Ofgem, Request for Information for Electricity Settlement Reform \(August 2019\)](#)
- [Ofgem, Target Operating Model Design Principles \(January 2018\)](#)
- [Ofgem, Targeted charging review: decision and impact assessment \(December 2019\)](#)
- [Ofgem, Upgrading our energy system: smart systems and flexibility plan \(July 2017\)](#)

1. Introduction

1.1 What are we consulting on?

1.1. The purpose of this consultation is to seek views on how and when to implement market-wide half-hourly settlement (**MHHS**) in the electricity retail market. In places, this consultation builds on decisions already made following previous public consultations. We welcome views about any aspect of our proposals. We are particularly keen to seek feedback on aspects of:

- the Target Operating Model (**TOM**), including data aggregation arrangements
- proposed changes to the settlement timetable
- settlement arrangements for export-related meter points
- the length of the transition to the new settlement arrangements
- data access / privacy issues and associated consumer messaging approaches, and
- Programme governance arrangements.

1.2. Accompanying this consultation document is a draft impact assessment (**IA**) setting out the potential impact of introducing MHHS as compared with retaining the existing elective settlement arrangements.⁷ The draft IA sets out the options we have considered and the impacts associated with them, including our preferred option. We welcome views on the draft IA.

Chapter 2: The Strategic Context for Settlement Reform

1.3. This section sets out the strategic context for settlement reform, including the need to increase system flexibility to enable the most cost-effective transition to Net Zero. It outlines some of the work we are doing under our Decarbonisation Action Plan to meet this challenge.

Chapter 3: Target Operating Model for Market-wide half-hourly settlement

⁷ Link to the [Impact Assessment](#) here.

1.4. This section outlines the main features of the TOM and invites views on whether it should be implemented in the form recommended by the Design Working Group. This includes discussions on whether half-hourly (**HH**) electricity consumption data should be made available to the Balancing and Settlement Code (**BSC**) central settlement systems in aggregated or non-aggregated form. This TOM is Ofgem's preferred position.

Chapter 4: Settlement timetable

1.5. This section summarises the industry discussions about changing aspects of the settlement timetable that have already taken place. It also sets out our proposals, which we believe will increase efficiency, reduce costs and boost financial certainty for industry parties.

Chapter 5: Export-related meter points

1.6. This section examines whether MHHS should include export-related Meter Point Administration Numbers (**MPANs**) as well as import MPANs. We propose that it should. We further propose that export-related MPANs should transition to MHHS over the same period as import-related MPANs.

Chapter 6: Transition period

1.7. This section considers the length of the transition period for moving from the current elective settlement arrangements to MHHS. It outlines our proposed two-phase approach, and sets out what industry participants will need to do during each stage of the transition. At the time of our analysis we had proposed an approximately 4-year transition period up to the end of 2024.

Chapter 7: Data access and privacy

1.8. This section discusses key outstanding issues in relation to data access and privacy in the new settlement system. This includes some aspects of the design of the data access framework, specifically the resolution of data to be collected from opt-out domestic consumers, and a question around consumer messaging approaches. The section also summarises a number of other issues we are considering separately to this consultation.

Chapter 8: Consumer impacts

1.9. This section outlines the potential impacts of MHHS on electricity consumers, including potential distributional effects. For more details, see a separate consumer impacts paper that we are publishing alongside this consultation and draft IA.⁸

Chapter 9: Programme governance

1.10. This section sets out our thinking to date on how best to programme manage the delivery of MHHS. We welcome views on the alternative delivery options we have set out.

1.2 Consultation questions

1.11. The table below lists all the questions in this consultation.

Questions
Target Operating Model (chapter 3)
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.
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.
Settlement timetable (chapter 4)
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.
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.

⁸ Link to the [Impact Assessment and consumer impacts paper](#) here.

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.

Export-related meter points (chapter 5)

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

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.

Transition period (chapter 6)

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.

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.

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

Data access and privacy (chapter 7)

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.

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.

<p>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.</p>
<p>Consumer impacts (chapter 8)</p>
<p>14. Do you have additional evidence which would help us refine the load shifting assumptions we have made in the Impact Assessment?</p>
<p>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.</p>
<p>Programme management (chapter 9)</p>
<p>16. Do you agree we have identified the right delivery functions to implement MHHS? We welcome your views.</p>
<p>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.</p>
<p>Other (chapter 10)</p>
<p>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?</p>

Please provide supporting evidence wherever possible.

We look forward to considering your views on these questions, and on any other aspect of this consultation document and draft IA.

1.3 Context and related publications

1.12. We consider that it is in the interests of consumers for settlement to be carried out using HH consumption data from smart and advanced meters. In 2017, Ofgem launched a Significant Code Review (**SCR**) on electricity settlement reform. In 2018, we published our

Outline Business Case (**OBC**) which set out that the benefits of MHHS were likely to be substantially greater than the costs.

1.13. Suppliers can already choose to settle consumers half-hourly through our elective half-hourly settlement (**HHS**) work. However, the evidence suggests we will have to require that all suppliers do this in order to maximise consumer benefits. Given this, we are now consulting on when and how to introduce MHHS across the electricity retail market.

1.14. Introducing MHHS is a key building block for Ofgem's Decarbonisation Action Plan. MHHS will place incentives on retailers to develop and offer new tariffs and innovations, such as battery storage, that encourage more flexible use of energy. We would like views from all parties with an interest in facilitating a smooth and efficient transition towards a flexible, decarbonised electricity sector.

1.15. We have published a series of documents examining the case for reform and looking closely at several different aspects of policy development and delivery. The following documents may provide useful context for responding:

[Ofgem's Decarbonisation Action Plan, February 2020](#)

[Ofgem's Forward Work Programme Consultation 2020-2022, December 2019](#)

[Access and Forward-Looking Charges Significant Code Review – Winter 2019 working paper, December 2019](#)

[Governance for Target Operating Model Development Phase, December 2019](#)

[Preliminary decision on the Target Operating Model, October 2019](#)

[ELEXON, Design Working Group: Final Stage 2 Report to Ofgem, August 2019](#)

[Ofgem, Request for Information for Electricity Settlement Reform, August 2019](#)

[Summary of responses to our Call for Evidence on MHHS consumer impacts, July 2019](#)

[Ofgem's Strategic Narrative 2019-2023, July 2019](#)

[Ofgem decision letter on access to data for settlement purposes, June 2019](#)

[Access to data for settlement purposes: data protection impact assessment, June 2019](#)

[Ofgem response to feedback on the Outline Business Case, June 2019](#)

[Supplier agent functions under MHHS, May 2019](#)

[Market-wide Settlement Reform: Outline Business Case, August 2018](#)

[Market-Wide Settlement Reform: Strategic Business Case, February 2018](#)

[BEIS-Ofgem Smart Systems and Flexibility Plan, July 2017](#)

[BEIS-Ofgem Smart Systems and Flexibility Plan, 2018 update, October 2018](#)

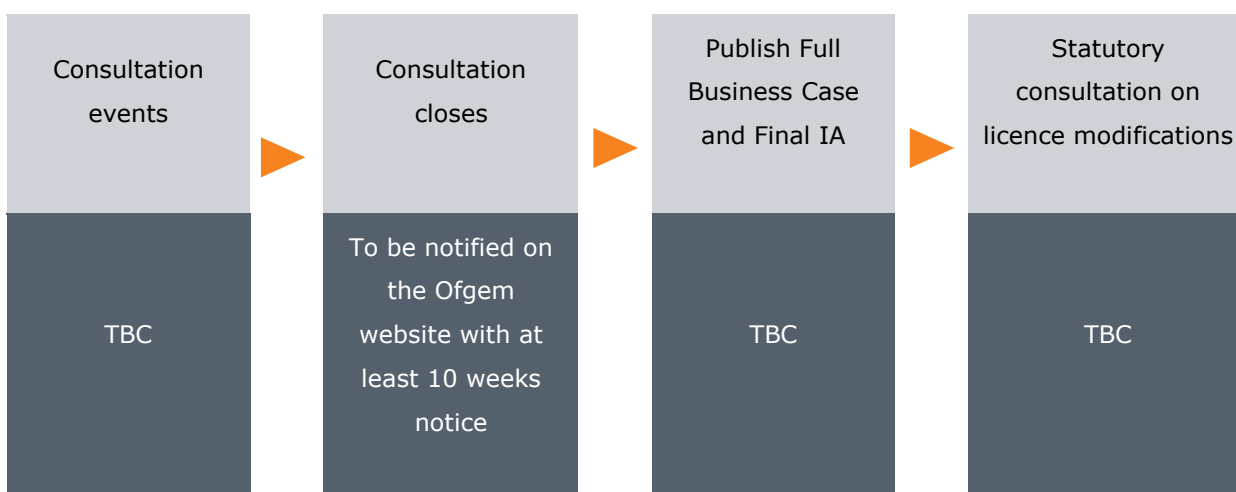
[Ofgem Electricity Settlement Significant Code Review launch statement, July 2017](#)

1.4 Consultation stages

1.16. We are now consulting on when and how to introduce MHHS. Alongside the consultation we are publishing a draft IA setting out the potential impact of the options we have considered. The analysis for this draft IA and consultation document were carried out before the onset of the COVID-19 pandemic. We are publishing the analysis now for transparency, but will be taking the pandemic into account and reassessing our project and proposed implementation timescales. At an appropriate point during the consultation process, we will hold webinars or workshops for stakeholders to ask questions and express views on our proposals and any other aspect of settlement reform.

1.17. No deadline for responses is being set at this time. When we set one, we will publish an update on the Ofgem website, and give at least 10 weeks notice. We will consider all responses carefully and, in due course, publish non-confidential responses on our website. The responses will inform the drafting of our Full Business Case (**FBC**) and Final IA. At the time of our analysis we had planned to publish these documents in autumn 2020.

1.18. Following this, we will issue any necessary draft licence modifications for statutory consultation. At the time of our analysis we had expected that, subject to responses, the first tranche of licence conditions, including those related to the access to data framework, would be amended in the first half of 2021.



***Note, we will keep these timescales under review as the public health situation develops.**

1.5 How to respond

1.19. We want to hear from anybody who has a view on any of the questions set out in this consultation. Please send your response to halfhourlysettlement@ofgem.gov.uk. Please respond to each one as fully as you can, providing supporting evidence wherever possible. We will publish non-confidential responses on our website.

Your response, data and confidentiality

1.20. You can ask us to keep your response confidential, either in part or as a whole. If you do want us to keep your response confidential, please clearly mark this on your response and explain why. We will treat your responses accordingly, subject to obligations to disclose information. For example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose.

1.21. If you wish us to keep part of your response confidential, please clearly mark those parts of it that you do wish to be kept confidential and those that you do not wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary we will contact you to discuss which parts of the information in your response should be kept confidential and which can be published.

1.22. If the information you give in your response contains personal data under the General Data Protection Regulation 2016/379 (**GDPR**) and domestic legislation on data protection, the Gas and Electricity Markets Authority (**GEMA**) will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, in Appendix 1.

1.23. If you wish to respond confidentially, we will keep the response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We will not link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.

1.6 General feedback

1.24. We welcome any comments regarding any aspect of this consultation, particularly the following:

1. Do you have any comments about the overall process of this consultation?
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. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

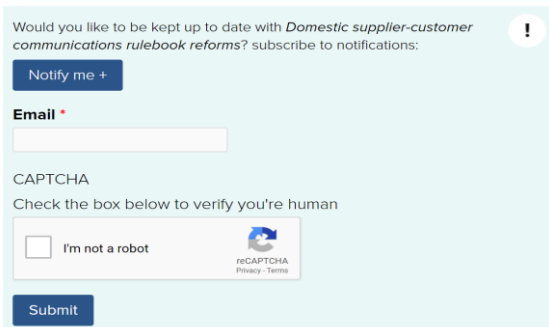
Please send any general feedback comments to stakeholders@ofgem.gov.uk.

1.7 How to track the progress of the consultation

1.25. You can track the progress of a consultation, from 'upcoming' to 'decision' status, using the 'notify me' function on a consultation page when published on our website:

[Ofgem.gov.uk/consultations](https://www.ofgem.gov.uk/consultations).

Notifications




Would you like to be kept up to date with *Domestic supplier-customer communications rulebook reforms*? subscribe to notifications: !

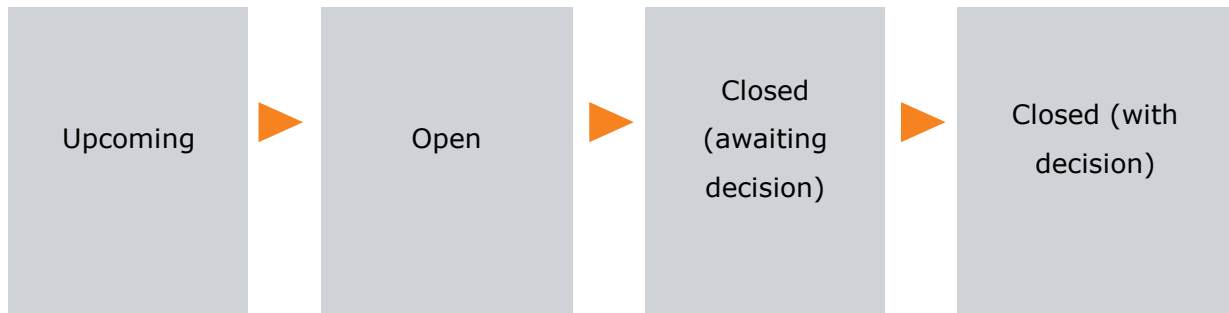
Email *

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Check the box below to verify you're human

☐ I'm not a robot 

1.26. Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:



2. The Strategic Context for Settlement Reform

Section summary

This section sets out the strategic context for our reform of the settlement system, including the need to increase the flexibility of the electricity system so that we can decarbonise the energy sector in the most cost-effective way. It outlines the programme of work that we are undertaking in order to meet the UK's Net Zero commitment, and other work to improve the retail energy market in Great Britain.

The draft impact assessment (**IA**) contains a discussion of the interlinkages between our Access and forward-looking charging reform project and settlement reform. See especially section 4 of the IA, which considers the calculation and attribution of benefits between separate but related projects.

2.1 The Net Zero challenge

2.1. In 2019, the UK and Scottish Governments legislated for net zero greenhouse gas emissions targets by 2050 and 2045 respectively.⁹ To achieve net zero will require a huge increase in renewable and low carbon electricity, especially to meet new sources of demand such as electric vehicles (**EVs**). We will also need an energy system that can continue to reliably supply energy when consumers need it. Given the need for new investment, we must build an energy system that is as efficient as possible.

2.2. Companies will need to do things differently if we are to meet the challenge of net zero: to rewire the electricity system, to move away from natural gas (without carbon capture and storage), to operate and plan differently, and develop new approaches to provide energy and energy services to consumers, especially those that enable consumers to use less energy and to use it at different times. How and when energy is used must change. This

⁹ These are 'net zero' rather than 'zero' targets because it is expected that some emissions will remain, but they will be at least fully balanced by carbon removal through the use of removal technologies or land use changes.

opens up opportunities for a consumer-led transition, enabled by new technologies, better use of data and the development of artificial intelligence (**AI**).

2.2 Promoting flexibility in an era of uncertainty

2.3. Ofgem too must rise to the challenge. Our regulation aims to facilitate the most effective path to net zero at the lowest cost to consumers. We have set out in our Decarbonisation Action Plan what we intend to do to help the UK meet its Net Zero commitment.¹⁰ We expect there will be additional costs in the short term as our energy system decarbonises. We will continue to work to ensure that these costs are as low as possible, are shared as fairly as possible, and that vulnerable consumers are protected.

2.4. There is no one agreed route to net zero. In many areas, the most cost-effective pathways to net zero are still uncertain and so the investment needs are unclear. The energy system will therefore need to be more flexible to balance supply and demand. Flexibility will ensure a reliable system and keep costs down. Greater flexibility will help smooth peaks in electricity demand, for example by incentivising people to charge their EVs at times when electricity is cheaper to generate and transport. Batteries, whether industrial scale or those in EVs, and other technologies can store energy when it is not needed, releasing it onto the system when demand is high. Such flexibility will reduce the need for more generation and other new infrastructure, potentially saving billions of pounds in network reinforcement costs and helping to save consumers money on their energy bills.

2.5. Our regulatory frameworks will enable this flexibility. We will ensure that consumers are offered low-hassle ways to participate, and are rewarded for contributing flexibility to the system where they can. In 2017, the Department for Business, Energy and Industrial Strategy (**BEIS**) and Ofgem jointly published our Smart Systems and Flexibility Plan.¹¹ Since then we have been working together to implement the actions in the plan, of which settlement reform is a key part.

2.6. Building on earlier reforms to require half-hourly settlement (**HHS**) in the medium and large business market and enable elective HHS in the small business and domestic market, market-wide HHS (**MHHS**) will enable significant benefits for consumers by putting incentives on retailers to develop and offer new tariffs and innovations, including battery

¹⁰ See the [Decarbonisation Action Plan](#).

¹¹ See the [Smart Systems and Flexibility Plan and the 2018 update](#).

storage, that enable and encourage more flexible use of energy. If this happens at sufficient scale, decarbonisation can be achieved quicker and at lower cost compared to, for example, building new network and generation capacity.

2.3 Innovation and digitalisation

- 2.7. A successful energy transition will require continued innovation, empowered consumers, and a fair distribution of costs and benefits. This includes innovation in business models, which may include new ways of incentivising consumers to help provide system benefits such as flexibility; local or peer-to-peer trading of electricity; or providing 'energy services' rather than supplying energy. This includes using 'vehicle to grid' technology to share energy from EV batteries to the electricity grid when it is needed, smart charging, home energy systems and grid scale storage.
- 2.8. Digitalisation is playing an increasingly important role. It is already changing how we control our energy systems, for example by enabling people to control their home heating on their commute. Greater complexity and volumes of data from smart meters, appliances, trading and flexibility platforms are opening up new opportunities and new business models.
- 2.9. Good data availability and use provide better visibility of system usage, spare capacity and constraints. This knowledge will inform investment needs and enable strategic coordination. Several innovations to support a low carbon future, such as smart vehicle-to-grid flexibility services, peer-to-peer energy trading and new demand-side response services rely upon the energy system's data architecture. AI could help with complex tasks in real time, such as managing millions of connected devices to balance the grid.
- 2.10. Detailed, accurate and up-to-date data on the energy sector is essential for us to make effective decisions on decarbonisation. We are modernising our data capability and external-facing data exchange services at Ofgem. In September 2019, we launched the Data Exchange, which will minimise the burden for companies exchanging their data with Ofgem.¹² We will shortly publish our full Digital, Data and Technology & Cyber Strategy. Through the 'Modernising Energy Data' programme we are facilitating the digitalisation of the energy sector, coordinating our portfolio of data-related regulations and promoting

¹² See our [Data Exchange launch statement](#).

common working practices and interoperability of data across the energy sector and other sectors too.¹³

2.4 Consumer empowerment and protection

2.11. Consumer empowerment, supported by technology, can increase public acceptability of the lifestyle changes that net zero requires, and ensure that those changes are tailored to individual circumstances. Good customer service, supported by robust regulation, will always be important. More radical changes to how consumers interact with the energy system could also have a profound impact, for instance through buying heat as a service and selling energy services routinely to the grid or directly to other consumers.

2.12. We will design and facilitate markets so the correct market signals are created to enable decarbonisation through the whole system – from the consumer up to the generators. We will need to ensure that consumers are protected as new services are developed and as the way consumers interact with the energy system changes. We will also need to ensure that consumers in vulnerable situations are not left behind or disadvantaged by the changes.

2.5 Ofgem's Decarbonisation Action List

2.13. The Decarbonisation Action Plan contains an Action List summarising what we are doing to facilitate the energy transition. Alongside settlement reform, this work includes:

- building adaptability into the **RIIO-2 network price controls** to ensure that the network businesses invest efficiently, respond flexibly to changes in technology, and deliver the infrastructure that will support a decarbonised future
- setting up a **regulatory fund to unlock investment** in innovative solutions to tackle climate change
- creating a more **flexible electricity system** to ensure that consumers will benefit from the lowest cost transition to a reliable net-zero system
- developing a **regulatory strategy on EVs** to support roll out and maximise the benefits to consumers

¹³ For example, see our ongoing work developing [Data Best Practice guidance](#).

- supporting **innovation and experimentation**, particularly in the retail market, to create low carbon products and services that will directly benefit consumers, and
- becoming **more adaptive in the way we work** and in our regulatory approaches.

2.6 Targeting Charging Review and Access and forward-looking charging reform projects

2.14. Our Future charging and access reforms consider how network costs should be recovered so that the networks are used flexibly and efficiently, reflecting users' needs and allowing consumers to benefit from new technologies and services. This includes reducing distortions to forward-looking charging signals and improving the fair recovery of residual charges.¹⁴

2.15. We expect to publish a decision and final impact assessment on our Electricity network access and forward-looking charging Significant Code Review (**SCR**) (Access and forward-looking charging reform) in spring 2021, with a view to implementation in 2023. Before then, code modifications will implement our Targeted Charging Review (**TCR**) SCR decision to reform embedded benefits and residual charging for generation and demand.¹⁵

2.16. We are supporting the development of markets for flexibility services at transmission and distribution levels. We will encourage networks companies to tender for flexibility services. With others, we will also promote the standardisation of products and processes and better management and sharing of data.

2.7 Modernising energy data

2.17. In June 2019, the Energy Data Taskforce set out its key recommendations for achieving a modernised, net zero energy system.¹⁶ We are working with BEIS and Innovate UK on these recommendations and other changes to facilitate better data use while ensuring appropriate protection of consumers' personal data.

¹⁴ This includes the Access and forward-looking charging reforms, the Targeted Charging Review and the Balancing Services Task Force. See [further information](#) here.

¹⁵ Further information on the [TCR SCR](#) is available here.

¹⁶ The full Energy Data Taskforce [strategy document](#).

2.18. Additionally, the midata in energy (midata) service will allow consumers to easily and quickly share their energy data digitally with accredited third parties. Midata will allow accredited TPIS to access consumption and tariff data, with the appropriate lawful basis, so they can deliver innovative new products and services for consumers.^{17 18}

2.8 Retail market innovation

2.19. New energy service business models will be needed to deliver the transition. We are considering how to enable innovation in products and services that will, in turn, allow consumers to change behaviour and benefit, whilst appropriately safeguarding them (for example, with price protection measures). We will be exploring, potentially through trials, what consumers need in order to be empowered and engaged in the future market.

2.20. The retail market is already undergoing significant change. Faster and more reliable switching is on the way. The Switching Programme has reached the 'Design, Build and Test Phase' as parties deliver a Retail Energy Code alongside building and testing the new Central Switching Service before proposed full implementation in 2021 (please note however, the Switching Programme is now subject to a 6 month planned delay in response to the ongoing COVID-19 situation).¹⁹ Suppliers will also continue to roll out smart meters and BEIS have consulted on proposals IA for delivering a market-wide roll-out in the period after 2020.²⁰ The combination of smart meters and MHHS will strengthen incentives on retailers to develop innovative products and services that help and encourage consumers to change their energy consumption behaviour.

2.21. In the meantime, we have updated our strategy for achieving the best outcomes for consumers in vulnerable situations.²¹ The strategy sets out how we will prioritise suitable support and interventions for these consumers until 2025. Finally, we are reviewing the microbusiness retail market with a view to making it simpler and more transparent.²²

¹⁷ Details of the [Midata in energy project](#).

¹⁸ Ofgem has paused the midata programme for the current financial year (2020/21). Ofgem's retail market programmes, particularly the Switching Programme and MHHS, will have considerable impacts on the retail data landscape over 2020 and 2021. Given the synergies and potential overlaps, we have paused our work temporarily; however we are still committed to delivering midata and enabling consumers to realise the benefits of midata. More information about the [Midata in energy project](#) is available on the Ofgem website.

¹⁹ Details of the [Switching Programme](#).

²⁰ The BEIS [Smart meter policy framework post 2020 consultation](#).

²¹ Details of the [Consumer Vulnerability Strategy](#).

²² Details of the [Strategic Review of the Microbusiness retail market](#).

2.22. For further details about our programme of work, see Ofgem's Decarbonisation Action Plan and our Forward Work Programme consultation 2020-2022.²³ We will continue to adapt and develop our programme of work, as opportunities arise and to reflect changes in government policy and circumstances in the energy market

²³ Our [Forward Work Programme consultation](#) and [Information](#) about our immediate priorities during the COVID-19 crisis.

3. The Target Operating Model for Market-wide Half-Hourly Settlement

Section summary

This section outlines the main features of the Target Operating Model (**TOM**) and invites views on whether the TOM should be implemented in the form recommended by the Design Working Group (**DWG**). This includes discussions on whether half-hourly (**HH**) electricity consumption data should be sent to central settlement systems in aggregated or non-aggregated form. This TOM is Ofgem's preferred position. This section also discusses where and how non-aggregated data could be stored and the benefits to the market of being able to access this non-aggregated market-wide consumption data.

Questions:

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.

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.

3.1 Background

3.1. In our Significant Code Review (**SCR**) launch statement,²⁴ we set out that a Design Working Group (**DWG**), comprising settlement industry experts and led by ELEXON,²⁵ would develop options and recommendations for the design of the TOM for Market-Wide Half-Hourly Settlement (**MHHS**). The DWG's remit, as set out in its Terms of Reference,²⁶

²⁴ The [SCR Launch statement](#) can be found on the Ofgem website.

²⁵ ELEXON is known as the Balancing and Settlement Code Company, and they administer the Balancing and Settlement Code.

²⁶ The [DWG's Terms of Reference](#) can be found on the ELEXON website.

was to develop a TOM covering the 'Meter to Bank' process for all Supplier Volume Allocation (**SVA**) Settlement Meters. The DWG was also tasked with developing the Transition Approach for moving from the current settlement arrangements to the new TOM.

3.2. The DWG TOM design comprised two stages. In Stage 1, the DWG developed and assessed a set of five skeleton TOMs. These were consulted on in May 2018.²⁷ The consultation responses showed that all five TOMs were viable options and that no other viable option had been missed. The DWG took all five skeleton TOMs forward to Stage 2. In Stage 2, the DWG developed the high-level service requirements for the TOMs. The DWG evaluated the TOMs and delivered a single preferred TOM in January 2019,²⁸ noting a single DWG minority view against the preferred TOM.²⁹ In February 2019, the DWG consulted on its preferred TOM.³⁰ Between January and May 2019, the DWG developed its high-level approach for transitioning from the current settlement arrangements to the TOM. This was consulted on in June 2019.³¹ In August 2019, the DWG submitted their final report to Ofgem setting out the DWG preferred TOM and Transition Approach.³²

3.2 MHHS based on the Design Working Group's TOM

3.3. The DWG preferred TOM sets out the design for new market-wide settlement arrangements when most meters will be smart and advanced meters. It also sets out the services required to deliver settlement period (ie HH) level data from a meter to a central settlement body.

3.4. The diagram below illustrates the key features of the DWG preferred TOM. In this TOM, there are two types of metering services, one for smart and non-smart meters and another for advanced meters, as well as an unmetered supplies operator service. There are three data services that collect data and supporting information. These services output settlement period level data to the Balancing and Settlements Code (**BSC**) Central Settlement Services.

²⁷ The DWG Stage 1 [consultation](#) and [responses](#) can be found on the ELEXON website.

²⁸ The [DWG Preferred TOM report](#) can be found on the Ofgem website.

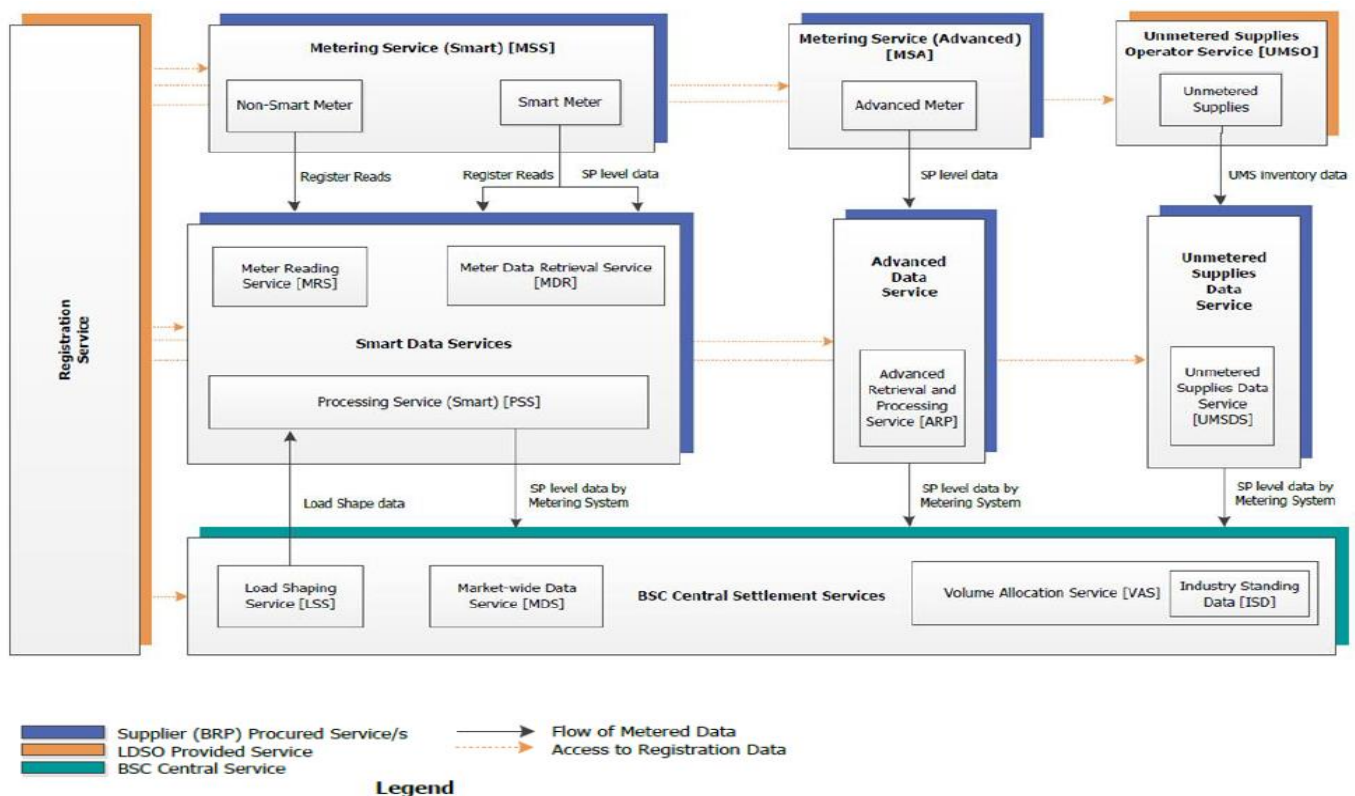
²⁹ The minority view against the DWG preferred TOM can be found in paragraph 3.7.

³⁰ The DWG Preferred TOM [consultation](#) and [responses](#) can be found on the ELEXON website.

³¹ The [DWG Transition Approach consultation](#) can be found on the ELEXON website.

³² [The DWG Preferred TOM and Transition Approach Final Report](#) can be found on the Ofgem website.

Figure 1: The Design Working Group Preferred Target Operating Model³³



3.5. These services are the Smart Data Services (which is for both smart and non-smart meters), the Advanced Data Service and the Unmetered Supplies Data Service. Retrieval and processing of the relevant settlement period level data sits within these services. The settlement period level data made available from the Smart Data Services will be used by the Load Shaping Service, which forms part of the BSC central settlement services. The Load Shaping Service will derive load shapes from the settlement period level data for use where settlement period level data is not available for meters in the Smart Data Services (for instance, where non-smart meters are installed or the consumer has opted out of sharing their HH data). The settlement period level data from meters, or the settlement period level data derived from load shapes, will be aggregated in the Market-Wide Data Service and then used in settlement calculations in the BSC Volume Allocation Service (both of these services form part of the BSC central settlement services). More detailed information on the TOM services can be found in paragraphs 3.16 - 3.18 and the DWG TOM report service summary guides.³⁴

³³ The DWG TOM diagram has been produced by the DWG and provided to Ofgem.

³⁴ Pages 18-31 of the [DWG Preferred TOM report](#).

- 3.6. The DWG designed the TOM to be technology-neutral, and not dependent on any particular IT systems architecture. Following the delivery of the DWG-preferred TOM, two new industry working groups were set up to progress the development of the TOM.³⁵ One of these industry working groups, the Architecture Working Group (**AWG**),³⁶ will develop and make system architecture recommendations for the TOM to the Ofgem Senior Responsible Owner (**SRO**). During subsequent, more detailed implementation planning, decisions on the architecture may determine the timing of activities. The TOM is set out in full detail in the DWG's Preferred TOM report for Stage 2 of the SCR.³⁷
- 3.7. It is important to note however, that there is a DWG minority view on the TOM, which argues that data aggregation should continue to occur competitively outside central settlement systems. The view was also echoed in industry responses from supplier agents on the DWG consultations. This is different to the preferred TOM where aggregation of settlement period level data would no longer occur outside of central settlement services, and instead central settlement services would receive non-aggregated settlement period level data for use in settlement calculations.
- 3.8. As set out in the draft impact assessment (**IA**), we have considered several options for reforming the settlement arrangements. Using the responses to Ofgem's MHHS request for information³⁸ (**RfI**), the draft IA gives details of the costs, benefits and impacts of the DWG preferred TOM. This chapter also sets out the arguments for and against the preferred TOM, specifically focusing on the views for and against the submission of non-aggregated data to central settlement systems. Feedback from this consultation and the comments on the draft IA, as well as the further work being undertaken by the AWG, will be used to make a final decision on the TOM. In particular, our Full Business Case (**FBC**) will set out the transition period and a decision on the final TOM, including on whether settlement period level data should be submitted to central settlement systems in aggregated or non-aggregated form.

³⁵ The [governance structure](#) for this Phase of the TOM work, which also sets out the two industry working groups can be found on the Ofgem website.

³⁶ Details of the [Architecture Working Group](#) can be found on the ELEXON website.

³⁷ The [DWG Preferred TOM report](#) can be found on the Ofgem website.

³⁸ Ofgem's [Request for Information](#).

3.3 Background to policy decisions on supplier agent functions

3.9. As part of our work on electricity settlement reform, we looked at whether to centralise functions currently performed by supplier agents.³⁹ Following consultation,⁴⁰ we decided that our work on MHHS should not include centralisation of supplier agent functions,⁴¹ and we thought that there may well be a case for future models where data is not aggregated before being submitted to central settlement systems.

3.10. Prior to us taking a decision on supplier agent functions, we provided the DWG a “least regrets” steer,⁴² which allowed them to progress with designing a TOM in the absence of a decision on supplier agent functions. The DWG was asked to assess the different options and design the most appropriate TOM that will deliver on the design principles⁴³ and the objectives of the electricity settlement reform SCR.⁴⁴ The DWG provided a final report on the preferred TOM for MHHS in August 2019,⁴⁵ noting a DWG minority view against the preferred TOM that data aggregation should continue to occur competitively outside central settlement systems. In the sections below we have set out the current supplier agent functions and the functions defined under the preferred TOM. We have set out the arguments for and against providing non-aggregated data to central settlement systems and have come to a minded to decision based on this information and the information set out in our draft IA. Feedback from this consultation and the comments on the draft IA, as well as the further work being undertaken by the AWG and CCDG will be used to make a final decision on the TOM, which will be set out in our Full Business Case. We would be interested in your views on the minded to decision on the TOM.

3.11. This chapter also discusses where and how non-aggregated data could be stored and the benefits to the market of being able to access this non-aggregated market-wide consumption data. It will be down to the AWG⁴⁶ to assess and design the most appropriate solution, taking into account the security implications of any solution, the viability, cost and

³⁹ Electricity suppliers appoint supplier agents to carry out certain functions required for the calculation of settlement. These functions are in accordance with Section S of the BSC.

⁴⁰ The [consultation on agent functions](#) can be found on the Ofgem website.

⁴¹ The [decision on agent functions](#) can be found on the Ofgem website.

⁴² A [least regrets steer](#) was provided to allow the progression of the TOM design work, but it did not imply a final favoured approach. The least regrets steer can be found on the Ofgem website.

⁴³ The [TOM design principles](#) can be found on the Ofgem website.

⁴⁴ The [SCR objectives](#) can be found in the SCR Launch statement on the Ofgem website.

⁴⁵ [The DWG Preferred TOM and Transition Approach Final Report](#) can be found on the Ofgem website.

⁴⁶ Link to the [AWG page](#) on the ELEXON website.

future-proof of the system. The AWG will consult on their recommendations prior to submitting them to the Ofgem SRO for decision, which is due later this year.

3.4 Current market status

3.12. Under the BSC, electricity suppliers appoint supplier agents to carry out certain functions in accordance with Section S of the BSC.⁴⁷ Some larger business customers contract with their own agents, but it is the supplier who retains responsibility for compliance with the BSC, under the supplier hub principle.⁴⁸

3.13. There are currently three supplier agent roles for metered supplies.⁴⁹

- **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.
- **Data Collector (DC)** – responsible for collecting, validating and estimating data generated by electricity meters. Also responsible for providing reports and maintaining relevant standing data.
- **Data Aggregator (DA)** – responsible for receiving meter data from the data collector, validating and providing reports and maintaining relevant standing data and line loss factors (where required). Also responsible for entering data into the relevant aggregation system and aggregating the metered data into MWh in the relevant aggregator system and providing this to the Supplier Volume Allocation Agent,⁵⁰ which is in central settlement systems.

3.14. Under this current model, supplier agents generally also offer suppliers additional services, which we refer to as “Value-Added Services”. These are not services required to be carried out under the BSC. This is often bundled into the DC and DA functions provided

⁴⁷ Full roles and responsibilities of supplier agents can be found in the [BSC Section S](#).

⁴⁸ The supplier is responsible for its metering systems and appointing its supplier agents. This supplier-led process is known as the Supplier Hub principle.

⁴⁹ It is likely that under the new Target Operating Model for MHHS there will be new roles and definitions for functions supplier agents carry out, however the definitions set out the current day arrangements. Note, there are additional roles in relation to unmetered supplies.

⁵⁰ The Supplier Volume Allocation Agent aggregates the supplier’s metered volumes to determine the allocation of energy volumes to suppliers in each settlement period of the day.

by supplier agents, and is often an area of differentiation for the supplier agents. Some examples of Value-Added Services that supplier agents currently carry out are:

- Carrying out interim aggregation runs to allow a supplier to understand their settlement performance prior to settlement runs. This can also lead to the supplier agent targeting their meter read efforts to optimise the suppliers' settlement performance for the runs.
- Estimating what the BSC bills will be following the settlement runs.

3.15. A single supplier agent is only able to provide these Value-Added Services for the meters they are contracted to cover, as they only have access to the data from these meters. As suppliers often contract with a number of supplier agents, the provision of Value-Added Services by one supplier agent would generally not cover the whole of a supplier's portfolio.

3.5 The DWG preferred TOM

3.16. Under the preferred TOM, the MOP, DC and DA would be replaced with the following competitive roles:

- **Metering Service** (a separate service each for smart/non-smart meters and advanced meters⁵¹) – the principal function of this service is to install, commission, test, maintain and energise metering equipment and to remove faults in it. Also to maintain and make available meter asset information. These services will be procured by the balancing responsible party (see paragraph 3.107 for an explanation of this term).
- **Data Service** (a separate service each for smart / non-smart meters, advanced meters and unmetered supply) – includes meter data retrieval (ie data collection) and processing of the meter data (for smart services, it includes validating/estimating/applying load shapes). This includes sending valid HH level data to central settlement systems. These will be procured by the balancing responsible party.

⁵¹ The Unmetered Supplies Operator Service is currently not a competitive supplier agent service, and will also not be a competitive service under the preferred TOM.

3.17. It will be the balancing responsible party who will be required to provide, or contract for these services. Currently, under the supplier hub principle, this is the role of the supplier. However, it is recognised that in future the role of the supplier may change and new market participants could take on the role traditionally undertaken by the supplier. Therefore, this role is referred to as the balancing responsible party.

3.18. The new roles in the BSC central settlement systems would be:

- **Market-wide Data Service (MDS)** – this is a service that will be carried out within the central settlement systems and managed by BSC Company (**BSCCo**).⁵² This service will process consumption data for each settlement period from the smart, advanced and unmetered supplies data services. The MDS will also calculate the distribution line loss values and, as such, will apply the line loss factors to the data. The MDS will aggregate the data by Grid Supply Point Group and balancing mechanism unit. Aggregated data will be clock changed from Coordinated Universal Time (**UTC**) to Clock Time. Data processed by MDS will be passed to the Volume Allocation Service (**VAS**) where the imbalance settlement calculations will take place.
- **The Load Shaping Service (LSS)** – This service will calculate the energy consumption load shapes for a number of defined categories of metering systems. This service uses validated actual settlement period level data from the smart data service to create the load shapes that will be used to convert register reads, or daily consumption values into settlement period level data. This will be required for any meters being processed in the Smart Data Service that are not smart or where the consumer has opted out of sharing their HH data for settlement purposes.

3.19. Under the preferred TOM, the act of aggregating data for the purposes of providing it to central settlement systems would no longer be required. The data would be shared with central settlement systems in a non-aggregated form at settlement period level. It would then be aggregated within the MDS, which is within BSC central settlement systems.⁵³ Under the preferred TOM, it is intended that Value-Added Services currently provided by supplier agents would continue to be able to be offered competitively outside of the BSC central settlement systems. We have been gathering evidence from our RfI, our supplier agent functions consultation and wider industry engagement to identify both the impacts

⁵² ELEXON is known as the Balancing and Settlement Code Company, and they administer the Balancing and Settlement Code.

⁵³ Note, ELEXON has stated they would run a competitive procurement process for the central settlement services.

and benefits of having central settlement systems accessing and aggregating consumption level data. Below, we have assessed this aspect of the preferred TOM and set out the costs and benefits of non-aggregated data being provided to central settlement systems.

3.20. The main question to answer when coming to a minded-to decision on the most appropriate TOM for MHHS is whether BSC central settlement systems should use aggregated on non-aggregated data. Under the DWG's preferred TOM, non-aggregated data will be provided to BSC central settlement system. The majority of the DWG agreed that central settlement systems should use non-aggregated Meter Point Administration Number (**MPAN**)-level HH data. The DWG did not agree where the non-aggregated data would be held or how it would be accessed, but they considered that it could be held either in multiple stores or in a single data hub.

3.6 Arguments for the use of non-aggregated data by central settlement systems

3.21. A number of benefits have been identified if central settlement systems can use non-aggregated data. These include:

- **Efficiency and cost-effectiveness:** There would be no need to aggregate data for settlement purposes both at the supplier agent level and in central settlement systems, as it is the case today. Additionally, changes to settlement calculation rules would be more simple and timely to implement (as they only need to change in one system).
- **Greater potential for flexibility** in the aggregation of data for settlement. For instance, siloing of aggregated data would no longer occur within different supplier agents systems by supplier and GSP Group. Instead, aggregations could occur across suppliers, GSP Groups and other metrics. This will also allow greater flexibility in the types of data aggregation for settlement that can be carried out, and facilitate adaptation should further changes be required in the future.
- **Data quality benefits for settlement:** the reconciliation run process could have data drip fed into it as it becomes available, therefore giving earlier sight of completeness and issues before scheduled settlement runs are undertaken. Duplicates/missing/erroneous data can be identified across the whole of the system if all MPAN level data is compared, and final dispute runs would only be run with the data involved in an authorised trading dispute. This removes the opportunity for unauthorised revised data to be re-submitted after the final reconciliation run.

- **Competition benefits:** If non-aggregated data used for settlement is also made available to third parties (in accordance with data protection rules) this could enhance competition, not only in Value-Added Services, but also by making it easier for businesses to offer innovative new services to suppliers and/or consumers.

3.22. The DWG noted that removing the requirement for separate aggregation outside central settlement calculations would not prevent supplier agents from offering the Value-Added Services they currently offer, subject to ensuring they continue to have access to the data required to carry them out (See paragraphs 3.44 to 3.48. for more discussion on this).

3.7 Arguments against the use of non-aggregated data by central settlement systems

3.23. The views against the submission of non-aggregated data to central settlement systems are:⁵⁴

- It is not proven that carrying out data aggregation in one place will deliver greater **quality, efficiency, cost-effectiveness** or **innovation** than a competitive data aggregation service carried out by supplier agents. There could also be a significant set up and administration cost, and passing non-aggregated data through the system may cost more than sending aggregated data. Additionally, there would be a single point of failure for aggregation.
- **Competition impact:** removing the DA role removes an opportunity for data aggregation to be an area for greater differentiation between agents in the future, and there is no evidence of market failure and therefore no justification for removing competition. Stakeholders felt this would be a disproportionate extension of BSCCo's existing monopoly, which could have an impact on the market of Value Added Services.
- **Economic impact** of submitting non-aggregated data to central settlement systems – in both the impact on changing existing contracts and the impact on the removal of an income source (from the aggregation of data) to supplier agents. Additionally, submitting non-aggregated data to central settlement systems could affect supplier

⁵⁴ Including a DWG minority view against the preferred TOM.

agents' end-to-end business model and make providing Value-Added Services harder and/or more costly if the same level of information is not available to them.

3.24. Below we have addressed each argument for and against central settlement systems using non-aggregated data for settlement purposes. Our response is included under each section.

3.8 Efficiency, flexibility, quality and innovation

3.25. Arguments against the removal of data aggregation as a competitive service, which have been expressed largely by supplier agents, are that it is not proven that carrying out data aggregation in one place will deliver greater quality, efficiency or innovation than a competitive service.

Innovation, efficiency and flexibility:

3.26. In general, supplier agents thought that central systems are less receptive to innovation and change and that they are always a second best option in relation to competition in terms of innovation and efficiency. They provided us with examples of types of innovations that are and/or could be delivered under the current model where data aggregation takes place outside of central settlement systems. For example, one supplier agent cited the concept of multiple suppliers,⁵⁵ whereby multiple suppliers can compete for the supply or export of electricity through a single meter without the need to establish a formal agreement between the suppliers involved. The supplier agent thought that innovations to aggregation for settlement may be required to support the new methodologies and business models that would enter the market to facilitate this. They thought if aggregation continued competitively these new methodologies could be trialled, developed and implemented faster than they would if the changes were needed to be made on aggregation processes in central settlement systems.

3.27. Supplier agents argue that the process to amend central systems is slow and it is subject to modification of the BSC, impact assessment etc. They believe that the pace of change would be restricted if aggregation were to be performed within central settlement systems, and industry would be held to the speed at which central settlement systems could change.

⁵⁵ [MOD P379](#) is currently under workgroup discussion. More information can be found on the ELEXON website.

However, an alternative view provided by a stakeholder is that, with the preferred TOM, industry changes should become easier, as changes to calculations rules would be simple and timely to implement.

DWG majority:

3.28. The majority of DWG members considered that the current system is inefficient by design and questioned why a separate entity should be needed to add up data before passing it to settlement.

Ofgem response:

3.29. We do not agree that innovations such as the ones described by supplier agents would not occur if aggregation was no longer required by the supplier agent. Much of this innovation could occur during the collection and processing of the data, prior to it being accessed by central settlement systems. This view is supported by the fact that some of the current solutions proposed in a BSC modification relating to multiple suppliers competing for supply to, or export from, a single meter involve the DC, and not the DA.⁵⁶ We know that access to data will be an important part of enabling this innovation (particularly for arrangements across suppliers and/or supplier agents). Paragraph 3.69 discusses the benefits of access to non-aggregated data further.

3.30. We agree that changes to central settlement systems often have to go through a number of stages before being implemented. This is to ensure all changes are introduced in a controlled and auditable manner, and that changes do not have any undesirable impacts. However, we agree with the alternative view that required changes to calculation rules should be easy and timely to implement. More individual or specific innovations, such as multiple supplier arrangements, could and would still happen at the supplier agent level, and so those organisations wishing to innovate would not have to wait for changes to happen in central settlement systems first.

3.31. We think that there would also be efficiency gains in settlement. Currently, settlement systems have to further aggregate the aggregated data they receive from DAs and so we would be removing the need for aggregating data for settlement purposes in two separate

⁵⁶ More information on the BSC modification ([MOD P379](#)) can be found on the ELEXON website.

systems. This would remove a step in the settlement process, as it would be done in one system rather than two.

3.32. The current data aggregation approach gives rise to siloing of data. Under the existing data aggregation model, meter data tends to be siloed by supplier agents, by supplier and by GSP Group. Being able to aggregate across all the non-aggregated data from all supplier agents, suppliers and GSP Groups would eliminate this barrier and allow greater flexibility in aggregation for settlement. For example, in the future it could be possible to aggregate certain customer groups (for instance those with electric vehicles) and thereby provide more accurate load shapes to use for those customers in that group who have opted out of sharing their HH data for settlement purposes. This in turn would increase the accuracy of settlement and pass on the true cost of supplying customers (even those who may have opted out of sharing HH data) to the supplier. Under the preferred TOM, summations of different data could also be done for purposes such as network charging and for the settlement of flexibility offerings, such as demand side response (subject to data protection rules, and if required).

Quality:

3.33. In general, supplier agents thought that central systems are less receptive to customer needs and to managing their issues, relative to competition. One supplier agent noted that the BSCCo does not consider how to improve settlement performance – rather, they are good at reporting settlement performance. They thought that this was because the BSCCo cannot see or influence the way systems and processes of DCs and meter operators are run. However, they also added that they thought that this expertise should not be in the BSCCo's remit.

3.34. Other arguments put forward against the submission of non-aggregated data to central settlement systems are that the supplier agents offer an end to end service, using data aggregation, data collection and data retrieval to provide a managed settlements service to resolve and fix issues for their customers. Without data aggregation, supplier agents believe they will no longer be able to provide this quality of service. Additionally, if aggregation only occurred in one place, there is a central point of failure for errors, that may be harder to pick up, and a central point for catastrophic failure of systems.

3.35. One supplier agent explained that the DA function was used as the final validation check before data entered central settlement systems, and this check picks up on processing and validation errors within the DC. Without this check, either the errors would not be picked

up, or additional time and resource would be needed to identify, communicate and resolve errors between the supplier agent and central settlement systems. The supplier agent thought that if this was done on a market wide basis using central settlement systems as the DA, this would be prone to inefficiency and difficulties in prioritisation.

DWG majority:

- 3.36. The majority of the DWG argued that the preferred TOM design should reduce the need for exceptions and ensure that validation rules are in the right place.
- 3.37. The DWG also noted benefits to the reconciliation run process, as data could be drip fed as it becomes available and therefore giving earlier sight of completeness and issues before undertaking scheduled settlement runs.
- 3.38. The DWG noted that one of the issues with the current Final Dispute run process is that participants can submit revised reads into that run even if these are not part of an authorised trading dispute, as there is no way of knowing what data has been changed if it is provided to central settlement systems in aggregated form. The preferred TOM presents an opportunity to prevent this occurring, since only the meter data that is part of the dispute will be provided to central settlement systems for the Disputes Final run.

Ofgem response:

- 3.39. On the design of the DWG preferred TOM and on the basis of the evidence we have seen, we consider that the proposed new settlement system, where the settlement period level data is processed and validated in the competitive data services before being passed non-aggregated to central settlement systems, would deliver greater data quality than the current competitive data aggregator service. Our reasons are:
- 3.40. Data will continue to be processed and validated at the supplier agent level before being passed to central settlement systems. Once in central settlement systems, an additional market-wide check across all the non-aggregated data can be carried out. This additional market-wide check for duplications or omissions should allow better data quality across the whole system. It will be for the BSCCo to set up and run the system in the most effective and cost efficient way, but we would expect appropriate service level agreements to be put in place to ensure any issues are quickly and effectively resolved.

3.41. Only allowing the data involved in a trading dispute to be re-submitted for the Disputes Final run would ensure parties are properly incentivised to identify and address settlement issues within the required timeframe, as there would be no further opportunity to submit the information, unless part of an authorised trading dispute.

3.42. 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). We do not expect central settlement systems to manage customer issues and under current BSC rules would not expect them to take on this role (see paragraphs 3.46 and 3.47 for more information on restrictions around BSCCo's ability to take on additional functions). It is however important that central settlement systems report on performance and if exceptions are found across the data, this information is quickly passed on so BSC parties can act appropriately.

3.43. We would expect the BSCCo to have business continuity plans to deal with any single catastrophic failure to ensure that at least the minimum level of settlement is carried out. The aggregation calculations will also be set out in the BSC, so all parties will have a view and the calculations methods will be transparent.

Competition and Value-Added Services:

3.44. Supplier agents told us that a removal of competition in the DA role would remove data aggregation as a potential area of differentiation between supplier agents in the future, thus hampering competition. However, we have also had representations to suggest that the existing DA model does not really provide competition in data aggregation as a service, as the DA role became a *de facto* part of the DC role (although not formally joined as a defined market role) due to the data dependency between DAs and DCs. Therefore, it was suggested by some stakeholders that it is the competition in DCs, rather than DA's, that is the key driver for competition in the supplier agent market.

3.45. In response to our RfI, we received additional representations to support the view the actual process of aggregating data does not drive value (and so competition), but instead it is the access to the information that is used in data aggregation. The information from the DA is used to prioritise data collection and meter operation activities to improve supplier performance. Supplier agents have emphasised that it is this end-to-end service that allows issues to be fixed and settlement targets to be met, that differentiates them from other players in the market.

3.46. A number of respondents noted a need to have access to the registration system (Meter Point Administration System - **MPAS**), and that, currently, only the DA has this visibility. The respondents thought that if supplier agents, in their new roles under MHHS, were able to access the MPAS then they should still be able to offer commercial services on a similar basis to today's DC/DAs.

3.47. Supplier agents thought that by requiring non-aggregated data to be submitted to central settlement systems we would be extending BSCCo's existing monopoly to include the provision of data aggregation services for the purpose of settlement. They also argued that this would be disproportionate to achieve our objectives and would negatively impact competition. With the removal of data aggregation from supplier agent functions, supplier agents thought that their current customers might choose to contract directly with the BSCCo (which would carry out data aggregation under the preferred TOM), take their business elsewhere, or insource all settlement activity. They said this would have very significant impacts on their business if it were to happen.

Ofgem response:

3.48. We agree with the view that there is little competition in the actual act of aggregating data, but instead the differentiation (and hence competition) between supplier agents comes from the ability to provide the Value-Added Services, for which access to the information used for data aggregation is required.

3.49. We understand that having access to the right information in order to carry out Value-Added Services is vital. All of the services described in the preferred TOM are intended to interact with the registration system (**MPAS**). We agree that it is essential that the various parties provided for in the preferred TOM have access to the right information in order to continue to carry out these Value-Added Services and are able to use these services to improve settlement performance and differentiate themselves in the market. We therefore understand that it is not the actual process of aggregating data that drives the competition and value, but instead the Value-Added Services that can be provided due to the access to the information that is used by the DA. If aggregation were no longer to be carried out by supplier agents we would still require a TOM design enabling supplier agents to be able to access the information they need in order to continue to carry out Value-Added Services and develop new services.

3.50. Under the preferred TOM, supplier agents, and any other party in the market (who had access to the right data), would still be able to aggregate consumption data if they see

value in that, for example if needed to offer Value-Added Services. In fact, we think that facilitating the access to non-aggregated consumption data for parties such as supplier agents or new innovative businesses (in compliance with data protection rules) might result in greater competition in the market for Value-Added Services. For example, more products could be developed and offered to suppliers, using the opportunities of a wider quantity of non-aggregated data being accessible to supplier agents and other potential players in the market. We expect that this would boost the innovation and efficiency that we would expect to result from healthy competition in the market for Value-Added Services. We have seen no evidence to suggest that suppliers would no longer want the same or similar services to be carried out for them, and therefore we do not expect the removal of competitive data aggregation from the supplier agents to impact the provision of other services by supplier agents. Under the preferred TOM, these services will still be competitively provided as supplier agents will still have access to the information they need, and potentially to even more consumption data in a non-aggregated form increasing the potential for the offer of new services (subject to data protection rules).

3.51. We do not agree that we would be extending a monopoly by allowing central settlement systems to work with non-aggregated data. Central settlement systems already have to aggregate the aggregated data they receive from DAs.⁵⁷ This is done by the Supplier Volume Allocation Agent. The difference would be that central settlement systems would be aggregating the non-aggregated data rather than aggregated data. In addition, ELEXON already receives some non-aggregated data as part of processes developed to facilitate wider access to the balancing mechanism. The same processes will be also be used when project TERRE (Trans European Replacement Reserve Exchange) goes live in GB in June 2020. For this, HH DAs are required to provide MPAN level data to ELEXON's central settlement system for customers participating in the Balancing Mechanism through a party that is not their supplier.⁵⁸ The number of customers for which DAs have to provide this data is expected to increase after TERRE goes live, and as the ESO further increases access to balancing services.⁵⁹

3.52. We do not expect central settlement systems to take on the role of providing Value-Added Services to suppliers, nor do we think they are well suited to do so. As described above (in

⁵⁷ Under the current market status central settlement systems aggregate the aggregated data they receive from supplier agents. Suppliers can have multiple agents which means central systems aggregate the data they receive from supplier agents by supplier, in order to calculate the consumption attributable to each supplier in a Grid Supply Point Group.

⁵⁸ This will allow any non-delivery to be calculated and ensure that the balancing actions do not effect the supplier's position.

⁵⁹ Further information on wider access to the balancing mechanism and the implementation of Project TERRE in GB can be found on the [ELEXON website](#).

paragraph 3.19.) central settlement systems will not have access to all the information which appears to be required for the provision of such services, such as in the areas of meter operators, data collectors or through data validation. The central settlement systems therefore would not be able or well placed to provide the end-to-end Value-Added Services that supplier agents provide. In addition, regarding the argument that central settlement services 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 than supplier agents, we note the restrictions in place around the BSCCo's ability to take on additional functions (over and above the ones currently provided by the BSC), provides sufficient guarantees and safeguards against this scenario. Not only does the BSC provide rules around data ownership, and the use around that data, the BSCCo also needs Ofgem's consent to take on additional activities. Currently this has to be proposed through a BSC modification, which we would have to approve.

3.53. We are aware of the BSC modification proposal P390 which aims at 'allowing extensions to ELEXON's business and activities, subject to additional conditions' and was raised in August 2019 before the BSC Panel.⁶⁰ We are monitoring the work on this modification proposal. When this modification is presented to the Authority for approval, we will consider carefully the potential impact of this proposed modification on the energy markets, including on the MHHS reforms.

3.54. The potential benefits (and the potential impact) of the preferred TOM appears proportionate and in line with the objectives of this reform, and more generally the Authority's statutory principal objective of protecting the interests of current and future energy consumers. Supplier agents, and any other party in the market, would still be able to aggregate consumption data if they see value in that, for example, for the provision of added value services to suppliers.

Economic impact:

3.55. In our RfI, we asked suppliers and supplier agents how much data aggregation costs them to carry out or procure. We also asked about the impact on their business models of sending non-aggregated data into central settlement systems and what the costs, or cost savings would be of this. Finally, we asked ELEXON the costs of ingesting, holding and

⁶⁰ More details on the proposed [BSC modification P390](#) can be found on the ELEXON website.

aggregating HH data for settlement. The text below has been split into sections to determine the different types of costs and economic impacts.

Cost to aggregate:

- 3.56. From supplier agents and suppliers with 'in-house' agents, we received responses covering a range of costs for the actual aggregation of Non Half-Hourly (**NHH**) data. Many of the responses noted the bundled nature of DA and DC services and so cited difficulty in splitting out the costs individually. However, we were provided with some estimates for data aggregation only, which led us to conclude that costs vary considerably, but overall are low. These costs are explained to be quite low due to the largely automated process and because the software is developed and tested centrally. Costs mentioned included the necessity to maintain databases, update Oracle licences, store and operate the software and manage operations. Manual intervention, exception handling or specific hardware costs associated with data aggregation were not considered to be material costs.
- 3.57. The costs associated with data aggregation were explained in some of the responses as relating to operating, updating and managing the BSCCo-provided software. We have estimated, based on evidence received, DA costs but are not setting them out in this document due to considerations of commercial sensitivity.
- 3.58. The information we received around costs for HH data aggregation shows that HH data aggregation comes at a much greater cost than NHH data aggregation. However, it is important to note that we did not receive the same breadth of responses on costs for HH data aggregation then we received for NHH data aggregation. However, from the evidence we received, the average cost per MPAN per year for HHDA is significantly higher than for NHHDA. We understand that this in part is due to the systems for HH data aggregation not being standardised.

Ofgem response:

- 3.59. We recognise the costs for aggregating NHH data are relatively low, although generally it is the same overall cost per organisation (no matter the number of MPANs being aggregated). This is due to the main costs coming from maintaining databases, licenses and operating the software. Therefore, where this happens in multiple organisations, this is a duplication of cost. We understand the cost of aggregating HH data is much higher, and this in part is due to the smaller number of agents that provide this service, but also because there is no standardised aggregation software (like that in NHH DA). If data

aggregation continued to happen outside of central settlement systems once the market has moved to MHHS, we would expect the costs for aggregating HH data would be lower per MPAN than today's costs for this function as we would expect the market to become more efficient as it adapts to the new volumes. We would expect that there would likely be some sort of standardisation of aggregation for the smart/non-smart segment. Therefore we expect the cost to aggregate this data would be closer to that of the NHHDA today.

3.60. From the information we received through our RfI, we estimate that the ongoing operational cost of sending non-aggregated data to, and the running of, the BSC central systems (which would include the aggregation of the data from all market segments) would together be lower than the cost of just NHH data aggregation today. We think that if the BSCCo were to aggregate all consumption data, this would remove the need for the duplication of costs on licenses and software operation. There would also be a single method by which data was aggregated, which in turn would make the process more efficient and less onerous.

3.61. As noted above, from the costs we have received we believe that it will be more cost effective for the aggregation of data for settlement purposes to be carried out by a single organisation.

Economic impact on supplier agents:

3.62. Looking at the cost of aggregating is not the only economic metric to measure. We are aware that if data aggregation is no longer needed to be carried out by supplier agents, they may lose a proportion of their business. In our RfI, we asked what the impact on their organisation would be if non-aggregated data was to be made available to central settlement systems. We received some quantitative responses from supplier agents, which included both one off costs (for changes in contracts, for example) and also ongoing revenue losses, as they would no longer provide and charge for data aggregation as a service, and some felt that the proposed arrangements could lead to loss of supplier take-up of Value-Added Services and/or other supplier agent services. Both in-house supplier agents and independent supplier agents cited changing contracts as a one off cost if the DA function was removed. Estimated time required to change contracts ranged from a few weeks up to 5 years (if contracts were only changed when they came up for renewal).

Ofgem response:

3.63. The evidence that we have gathered demonstrates that, because the process by which data is aggregated for settlement is mandated, using standardised software provided by ELEXON for NHH aggregation, there is little scope for commercial differentiation and added value within the DA role itself. This, together with the comparatively low cost of running this service (see para 3.56. above), suggests that the economic value to supplier agents of aggregating data for the purposes of settlement is low. Nonetheless, as contracts for DC and DA are often bundled, it could be that removing part of this bundle may have a detrimental impact on some parties' business models. Although we received responses to suggest there could be a loss of revenue to supplier agents, we received no compelling evidence to suggest that supplier agents would no longer be able to operate within the market if the data aggregation role was no longer required to be carried out by them.

3.64. The evidence that we have gathered suggests that requiring non-aggregated data to be submitted to the BSCCo will improve the functioning of the settlement process by increasing efficiency, the quality of the data, opportunities for competition and innovation to occur and cost-effectiveness, as described above. Such improvement will promote the interests of current and future energy consumers. It is also likely to create commercial opportunities for businesses who are capable of innovating to meet consumers' and the industry's needs, which would include supplier agents.

3.65. We consider that the potential loss of revenue to parties carrying out this function currently is a proportionate result where the overall efficiency of the market will be improved.

3.9 Minded to decision on use of non-aggregated data by central settlement systems:

3.66. Under the DWG preferred TOM, non-aggregated data would be made available to BSC central settlement systems for the purpose of calculating the settlement imbalance. As a result, the role of aggregating data for the purpose of submitting it into central settlement systems would no longer be competitively provided at the supplier agent level. It is important to emphasise that the DWG preferred TOM design has not set out where the non-aggregated data would be held or how it would be accessed. It is envisaged it could either be held in multiple stores, or in a single data hub. With this in mind, the decision being consulted on here only relates to whether aggregated or non-aggregated data should be available to central settlement systems for the purpose of calculating the settlement imbalance.

3.67. Based on the responses we have received through our previous consultation and RfI, and following the submissions set out above, **our minded-to position is that under MHHS, non-aggregated data should be made available to BSC central settlement systems for the purpose of calculating the settlement imbalance.** We have come to this minded-to decision based on the following:

- Allowing central settlement systems to use non-aggregated data for settlement purposes would allow greater flexibility, quality and efficiency in settlement.
- Aggregating data in central settlement systems for the purpose of settlement will be more cost effective than if it were to be carried out at the supplier agent level.
- We have seen no persuasive evidence to suggest that the actual act of aggregating data for the purposes of settlement drives competition in the market and is in itself an area of differentiation for supplier agents.
- We are only considering the actual act of aggregating data for settlement purposes and, so, we would not expect the proposal to hamper competition or innovation in the Value-Added Services market if those services are demanded by suppliers.
- The BSCCo is limited by the BSC as to what activities it can undertake. The BSC provides rules around data ownership and restrictions in use of data. As such, the BSCCo will remain unable to offer Value Added Services without Ofgem's further consent and we would expect supplier agents to continue to provide these services competitively if suppliers see value in them. (Para 3.53. above notes the position in respect of code modification P390).
- The final TOM will include supplier agents' access to the information they need in order to continue to carry out Value-Added Services and develop new services.

3.10 Where and how non-aggregated data should be stored

3.68. Following on from this minded-to decision it is important to fully determine how this non-aggregated HH consumption data will be held and accessed. It is clear that having access to the right data and information is fundamental in ensuring that supplier agents can continue to carry out the Value-Added Services they currently provide and, thus, help ensure settlement performance is met. It is also essential that the legal requirements around the protection of personal data are complied with.

3.69. There are a number of benefits, for industry and consumers, if supplier agents are able to access non-aggregated market-wide consumption data. These include:

- Providing access to non-aggregated data more widely within the industry, subject to data protection rules, is likely to facilitate competition, innovation and efficiency in the market for Value-Added Services as well as facilitate flexibility and innovation in other aspects, such as peer-to-peer trading, “behind the meter” settlement and the ability to support potential changes to network charging.
- Introducing a separate regime for authorised third party access to the non-aggregated data. Subject to data privacy rules this could be used for public policy purposes, price comparison tools and used by third party intermediaries. The ability for these approved parties to access the data from smart meters without having to go through the Data Communications Company (**DCC**)⁶¹ each time would also reduce the burden and capacity on the DCC systems, from retrieving the same data multiple times.
- Having a market-wide view of non-aggregated data could also help, for example, in providing more accurate forecasting activities for suppliers and improve DNO investment decisions on network reinforcement.
- Having greater transparency between suppliers and supplier agents could allow for improvements to industry-wide data cleansing activities, which could reduce errors and ultimately reduce customer costs to serve.
- The ability to aggregate the data in different ways would allow suitably aggregated (and thus less sensitive) data to be shared with interested parties, for instance for public policy purposes. This would follow the Energy Data Task Force (**EDTF**)⁶² principle⁶³ that energy system data should be presumed open.

3.70. It is important to note that any access to this data would be subject to privacy safeguards and would have to be in compliance with data protection legislation, including the General Data Protection Regulation (**GDPR**). Data privacy solutions such as anonymising or aggregating data could also be explored. The Ofgem guidance for Data Best Practice that is currently being developed includes provisions for this, such as anonymising or aggregating

⁶¹ DCC provides the smart metering communications infrastructure which sends and receives information from smart meters in homes and small businesses to energy suppliers, network operators and other authorised third parties such as energy service companies.

⁶² The EDTF, which has been commissioned by Government, Ofgem and Innovate UK was established to provide a set of recommendations on how data can assist with unlocking the opportunities provided by a modern, decarbonised and decentralised energy systems, at the best value to consumers. Although the EDTF has steered away from including specific reference to personal data (which MPAN's are considered to be), it is important to take account and follow the general principles for energy data set out in the EDTF paper.

⁶³ [The EDTF recommendations](#) can be found on the ORE Catapult website.

data.⁶⁴ Allowing any such additional use of data collected for settlement purposes will require further consideration.

3.71. There is general agreement within industry that there should be no gatekeepers to data, and those that should, or want to access that data (subject to appropriate data privacy, security and governance controls) should be able to do so quickly and easily. There are a number of proposed methods by which non-aggregated data can be shared with both central settlement systems and other interested parties. Some options which have been suggested by stakeholders are:

- A central data store: The non-aggregated data could be held in a single location
- Distributed ledger technology (**DLT**): Where data is held in a number of ledgers which all interested parties have access to, for example a blockchain solution.⁶⁵
- In individual systems with data sharing agreements/instant access interfaces: Data is held within individual industry systems with a requirement to share that data with those who request and need it (either through a code of conduct or under governance of a code). This could be further enhanced by the facilitation of solutions that promote interoperability. Once set up the data could be pulled by the requestor when needed.

3.72. It will be down to the AWG,⁶⁶ to assess and design the most appropriate solution, taking into account the security implications of any solution, the viability, cost and future-proof of the system. The AWG will consult on their recommendations prior to submitting them to the Ofgem SRO for decision, which is due later this year.

⁶⁴ See our ongoing work developing [Data Best Practice guidance](#).

⁶⁵ Blockchain is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. Each ledger contains a growing list of records, called blocks that are linked using cryptography. Each block contains a description of the previous block, a timestamp, and transaction data. It provides a reliable, difficult-to-hack record of transactions – and of who owns what, securely recording information across a peer-to-peer network. Although it was originally created for trading Bitcoin, blockchain's potential reaches far beyond cryptocurrency. Blockchain ledgers can include land titles, loans, identities, logistics manifests – almost anything of value. Around the world, there have been attempts to create local, peer-to-peer energy trading networks using blockchain technology, to support distributed and decarbonised generation.

⁶⁶ [Details of the AWG](#) can be found on the ELEXON website.

4. Settlement timetable

Section summary

This section summarises the industry discussions about changing aspects of the settlement timetable that have already taken place. It also sets out our proposals on changes to the settlement timetable.

Questions:

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.

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.

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.

4.1 Background

4.1. The Settlement Timetable sets out the period over which BSC parties' financial position, based on their metered and traded electricity, is reconciled with ELEXON.⁶⁷ It applies to the Central Volume Allocation (**CVA**) market, which is mostly made up of large transmission-connected generation, and the Supplier Volume Allocation (**SVA**) market which is distribution-connected households and businesses, and distributed generation.

⁶⁷ ELEXON is known as the Balancing and Settlement Code Company, and they administer the Balancing and Settlement Code.

4.2. When we launched the Settlement Reform Significant Code Review (**SCR**), we published a set of detailed design principles to provide strategic direction for designing the Target Operating Model (**TOM**).⁶⁸ These included the following paragraphs about the settlement timetable:

*"2.1. The TOM design work provides an opportunity to consider how to reduce the settlement timetable to maximise the opportunities provided by smart metering and achieve the strategic goals of Market-wide Half-Hourly Settlement (**MHHS**). In particular, consideration should be given to the extent to which a reduced settlement timetable would reduce credit cover costs for existing suppliers and new entrants.*

2.2. Full consideration is to be given to how reduced timings (including post reconciliation disputes run if needed) of each settlement run and a reduced number of runs will create a settlement system which benefits all parties and maintains robust performance assurance."

4.3. The Design Working Group (**DWG**) consulted on a proposed new settlement timetable in February 2019 and again in June 2019.⁶⁹ In light of those consultations, the responses to our Request for Information (**RfI**), and subsequent further discussions with industry, we set out our preferred settlement timetable below.

⁶⁸ The [TOM design principles](#) can be found on the Ofgem website.

⁶⁹ The [DWG preferred TOM and transition approach consultations and responses](#) can be found on the ELEXON website.

Table 1: Ofgem's Preferred Settlement Timetable

Run Name	Purpose of Run	Current Timing ⁷⁰	Preferred Timing
Interim Information (II) Run	CVA error detection and correction	4 WDs	4 working days (WDs)
Initial Settlement (SF) Run	First financial run. Up to this point, parties must lodge credit cover for estimated positions	16 WDs	5-7 WDs ⁷¹
1 st Reconciliation (R1) Run	Reconciliation against previous run as more SVA meter reads are available	39 WDs (~2 months)	33 WDs (to be renamed Interim Reconciliation Run)
2 nd Reconciliation (R2) Run	Reconciliation against previous run as more SVA meter reads are available	78 WDs (~5 months)	Would not exist
3 rd Reconciliation (R3) Run	Reconciliation against previous run as more SVA meter reads are available	148 WDs (~7 months)	Would not exist
Final Reconciliation (RF) Run	Final financial run. Reconciliation against previous run based on final SVA meter reads. After this point, trading positions can change only after a Dispute	14 months	4 months

⁷⁰ Timings here refer to the time after the settlement date, rather than time from the previous settlement run.

⁷¹ The timing of the SF run will be driven by the time taken to create and apply the load shapes to register read data as part of the load shaping and smart data services, which have yet to be finalised.

Post-Final Settlement (DF) Run ('Disputes Final' Run)	Settlement corrections where errors could not be detected and/or resolved before the RF Run (subject to criteria)	28 months – if required	20 months with ratcheted materiality ⁷² - if required
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4.4. Changing the settlement timetable has impacts on industry beyond just BSC parties as other industry processes are sometimes linked to BSC settlement runs. For example, the Low Carbon Contracts Company (**LCCC**)⁷³ has highlighted that their timetable may need to change as it is currently aligned to the BSC settlement timetable. In line with the DWG's recommendation, we propose that the new settlement timetable should come into effect after all Meter Point Administration Numbers (**MPANs**) are being settled under the new TOM.

4.2 Initial Settlement Run (SF) through to Final Reconciliation Run (RF)

4.5. In response to the DWG consultation, several stakeholders argued that the SF and RF Runs should be kept at the current timings in order to allow for manual meter reads. Some noted that obtaining manual meter readings every four months, even for a proportion of domestic customers, would be costly and inefficient.

4.6. On the other hand, several other stakeholders said the proposed timetable was realistic if smart meter penetration is high, the data is reliably accessible from the Data Communications Company (**DCC**), and so long as the load shapes created by the Load Shaping Service where half-hourly data is not available are sufficiently accurate. One stakeholder added that the new timetable, once successfully established, should be reviewed again with a view to reducing timescales further.

4.7. Six stakeholders said the proposed new timetable would provide a range of benefits. It would reduce credit cover requirements, increase certainty of suppliers' final settlement position, reduce financial volatility, and thereby reduce market entry barriers. It would also

⁷² This means the financial threshold for triggering a dispute would increase between the RF run at 4 months and the DF run at 20 months. Thus, only the most significant disputes can be successfully raised near the end of the disputes window. For more details see the [Design Working Group's Transition Approach consultation](#).

⁷³ LCCC was set up by BEIS to deliver key elements of the Electricity Market Reform.

reduce industry invoice processing. One supplier agent said most of the benefits would go to suppliers and that benefits to other industry parties would be modest (but would include reduced information systems requirements for data storage).

Ofgem's position

4.8. We agree with stakeholders that shortening the timing of the SF Run to 5-7 working days will reduce the amount of credit cover that BSC parties need to lodge with ELEXON.⁷⁴ Our preference is for 5 working days but we await a recommendation from the Architecture Working Group of what is technically possible for the load shaping and smart data services. Abolishing the second and third reconciliation runs, and shortening the timescale for the RF Run to 4 months, will mean that liabilities are settled faster. This will bring earlier certainty about charges and enable quicker market exit.⁷⁵

4.9. After cutover, manual reads of smart and advanced meters should be an exception and the load shaping service will provide more accurate estimates for traditional meters. The frequency of manual meter reads of the remaining traditional meters in the smart and non-smart segment will continue to be driven by suppliers' preferences and their obligations. Our view is that the new settlement timetable should not be built around exceptions. The proposed timing of the SF and RF Runs reflect this view. Therefore, our preferred timings of the SF through to RF settlement runs is as laid out in the table above. We expect the BSC Performance Assurance Framework (**PAF**) to flexibly set performance targets, taking into account factors such as the number of traditional meters remaining and a reasonable level of meter faults.

4.3 Post Final Settlement Run (DF)

4.10. The DWG consulted last year on whether the post-final settlement run should be 12 months, or more, after the settlement date.⁷⁶ In response, several stakeholders stated that a 12-month deadline would result in significant uncorrected settlement errors that would

⁷⁴ In our Supplier Licensing Review we are consulting on proposals to ensure that the cost mutualisation arrangements do not encourage inefficient entry or expansion of poorly-prepared suppliers. Our aim is to improve supplier standards of financial resilience without presenting any undue barriers to entry, innovation or expansion. The reduction in settlement collateral requirements would reduce any such barriers irrespective of the cost mutualisation proposal we take forward.

⁷⁵ Parties cannot exit the market until the RF run has been completed for the final settlement day for which they were trading, which currently happens after 14 months. This can lead to difficulties for the party during the 14 month period as investors and potential buyers can be deterred by the perceived risk of their financial position with the BSC not being finalised.

⁷⁶ Link to the [Design Working Group Preferred TOM Report](#).

negatively impact parties. Four suppliers said the DF run should remain at 28 months. They were especially concerned about being able to correct issues in the CVA market, issues affecting all parties and issues affecting a party that had not caused it. However, one supplier agent supported a 12-month deadline.

4.11. In light of this feedback, the DWG decided to reconsider the timing of the DF Run. It consulted on reducing the DF Run from 28 to 20 months after the settlement date.⁷⁷ To balance the need to allow material errors to be corrected, but also incentivise parties to identify and resolve errors promptly, the DWG recommended that disputes should have a ratcheted materiality. Under this mechanism, the financial threshold for raising a dispute would increase between the RF and DF runs. Towards the end of the disputes window, therefore, only the most significant errors could be raised (in line with the PAF). Respondents to the consultation were largely supportive of these proposals.

Ofgem's position

4.12. We accept the recommendations of the DWG. Our preferred option is for the DF Run to be completed after 20 months with disputes subject to a 'ratcheted materiality' threshold. We believe this strikes a reasonable balance between incentivising greater efficiency and allowing parties enough time to identify and resolve material errors. It also maintains incentives to deliver robust, high standards of settlement performance.

4.13. In its final report, the DWG agreed that the Trading and Disputes Committee (**TDC**) should examine whether ratcheted materiality could be integrated into the current disputes framework.⁷⁸ The TDC held a workshop on 5 December 2019, where they decided to integrate ratcheted materiality in the way disputes data are presented, so the TDC can become comfortable with the concept and set appropriate thresholds.⁷⁹ The decision was made that dispute materiality calculations would be introduced after the proposed settlement timetable.

4.14. We recognise that the DF Run timing at 20 months might have implications in terms of financial uncertainty, especially for smaller parties. The responses to our RfI did not include

⁷⁷ Link to the [Design Working Group Transition Approach consultation](#).

⁷⁸ The recommendation can be found in [the DWG's final report](#).

⁷⁹ Further information about the TDC workshop can be found on [the ELEXON website](#).

concerns from small parties around uncertainty due to the Post Final Settlement Run, but we are happy to consider new information about this matter.

5. Export-related meter points

Section summary

This section examines whether Market-wide Half-hourly Settlement (**MHHS**) should include export-related Meter Point Administration Numbers (**MPANs**), rather than only include import meter points. It also seeks views on whether, if we do introduce MHHS for export MPANs, the transition period should be the same as for import MPANs.

Questions:

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

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.

5.1 Background

5.1. Currently, installations where the maximum generating capacity at the boundary is more than 30 kW must be settled half-hourly (**HH**). For small-scale installations of 30 kW or less, exported electricity does not have to be settled. Where it is settled, it can be settled non-half-hourly (**NHH**). Most small-scale installations that export onto the distribution system are not registered in settlement. In our Outline Business Case (**OBC**), we said that settling the exported electricity from these sites on a HH basis, whether it be from generation or energy storage, would result in better network management data, better supplier forecasting and more accurate settlement.⁸⁰ Stakeholders agreed in principle, but said we

⁸⁰ The [Outline Business Case](#) and Response can be found on the Ofgem website.

should seek to establish the costs involved. They also said that it may take time to raise export MPANs for small-scale installations that do not currently have them.

5.2. Currently, small-scale generation (under 30 kW) does not require an export MPAN to receive Feed-in Tariff (**FIT**) benefits. In 2018-19, FIT installations reported 1,200 GWh of exported electricity that is not metered.⁸¹ Currently, a total of 832,473 FIT installations export but do not have a registered export MPAN and are therefore not settled.⁸² Settling this unsettled exported generation would make settlement more accurate. Currently, such generation from FIT installations is not metered and 'spills' into the network. It cannot be attributed to a supplier, so it is accounted for through the Grid Supply Point Group Correction Factor (**GSP GCF**).⁸³ The GSP GCF spreads these volumes across all suppliers with customers in that area regardless of what proportion of their customers can export electricity. This can create a forecasting risk for suppliers, the cost of which is passed on to consumers. Settling these customers would mean that supplier's charges reflect the costs of their customers, and that issues such as theft and errors could be more easily exposed in the GSP GCF.

5.3. The FIT scheme closed to new applicants in April 2019 but we expect the trend of increasing numbers of small generation installations to continue. From January 2020, suppliers with over 150,000 domestic customers must offer tariffs for export to small-scale, low carbon generation under the Smart Export Guarantee (**SEG**). To be eligible for a SEG tariff, there must be a registered export MPAN. However, there is currently no requirement for the exported electricity to be settled HH. This could mean that by the time we transition to MHHS, many of the customers that install generation after January 2020 will already have an export MPAN registered.

5.2 Settlement of Export

5.4. In our Request for Information (**RfI**), we asked stakeholders to assess the costs and benefits of registering and settling small distributed generation HH. The majority of respondents stated that there would be no difference in cost between implementing MHHS for export and import MPANs. The detailed costs by stakeholder type can be found in

⁸¹ Link to the [Ofgem Feed-in Tariff \(FIT\): Annual Report 2018-19](#) on the Ofgem website.

⁸² As set out in the [FIT installation report](#) dated 31 December 2019. Found on the Ofgem website.

⁸³ The GSP GCF also accounts for undetected theft, errors and inaccuracies that lead to a difference in the metered energy and the load measured on the transition system.

chapter 3 of our draft impact assessment (**IA**).⁸⁴ Network operators identified that, depending on the type of data and how it was made available to them, there could be improvements in network management. Many network operators who responded felt the portion of this benefit coming from existing smart meter customers was attributable to the smart meter roll out rather than MHHS, as network operators can already access aggregated smart meter data if they have submitted and received approval for their data privacy plan.

5.5. Several suppliers, large and medium, mentioned that a benefit of mandating settlement of export would be the development of new, innovative tariffs. Some large suppliers felt there would be benefits to mandating settlement of export including more accurate settlement and levelisation, better alignment with billing (which would be dependent on uptake of SEG tariffs), and improved forecasting which one supplier felt had the potential to be a significant benefit. Others agreed that there would be the identified benefits, but thought that the magnitude of the benefits would not be significant. All large suppliers stated that the costs would not be significant. One supplier stated that they believed they would benefit from unsettled, exported energy no longer being smeared across parties through the GSP GCF.

Ofgem's position

5.6. We agree with stakeholders that mandating half-hourly settlement for export from installations smaller than 30 kW would produce benefits in terms of improved network management, more accurate settlement and better forecasting for suppliers. This would lower system costs and lead to lower costs for consumers. In addition, RFI responses do not suggest that settling export MPANs half-hourly would impose significant costs. Consequently, we propose (as part of our preferred option described in our IA) to require that all exports from small-scale installations, including both generation and energy storage, including vehicle to grid (**VTG**), must be settled and that all such exports must be settled on a HH basis.⁸⁵

5.7. While network operators, large suppliers and ELEXON mostly felt that the cost of settling export MPANs was not significantly different than for import, we acknowledge that this may

⁸⁴ Link to the [Impact Assessment](#) here.

⁸⁵ Note that in Section 6 of [our decision on access to half-hourly data for settlement purposes](#) we set out our position that the opt-out available for domestic customers in respect of sharing their half-hourly consumption data for settlement and forecasting purposes should not be available in respect of sharing their half-hourly export data.

not be the case for some independent suppliers.⁸⁶ We note that mandatory SEG licensees are obliged to offer at least one SEG compliant tariff to any eligible generators (and voluntary SEG licensees may choose to do so), and under our proposal would therefore be required to settle the associated export on a HH basis. Similarly, any suppliers that are voluntary or mandatory FIT licensees will be required to register the exported electricity of FIT installations where they are the responsible supplier in settlement and ensure that the export is settled on a HH basis.

5.8. Other, smaller suppliers may choose to serve export customers. If they do, they must also settle them on a HH basis. Others may continue to choose not to serve export customers. Smaller suppliers who must, or choose to, serve export customers may see higher costs than larger suppliers if they do not currently have systems to settle export. We did not receive many responses from independent suppliers and are seeking further evidence of the impact of mandatory settlement of export on their businesses.

5.3 Export Implementation Timing

5.9. We have sought views on the potential impact of introducing MHHS for export up to 2 years later than for import MPANs. We discuss the cost differences between our options in our IA. In response to our RfI, most suppliers and network operators said there was little to no cost difference to them if MHHS for export was implemented at the same time as for import. ELEXON agreed. Some suppliers said it would be less complicated, and marginally cheaper, to align the implementation timelines.

Ofgem's position

5.10. Stakeholder responses indicate that implementing MHHS for export at the same time as for import would not impose significant additional costs. We also note the point made about avoiding unnecessary complexity. Delaying implementation for export MPANs would also delay the benefits of doing so. In addition, we expect many existing FIT installations will have a smart meter, and likely have a registered export MPAN by the time the transition to

⁸⁶ For more information see chapter 3 of the draft Impact Assessment which describes small supplier costs of introducing MHHS for export.

MHHS is complete.⁸⁷ For all these reasons, **we propose to implement MHHS for export at the same time as for import.**

5.11. We also considered an import-only regime. See the draft IA for an assessment of the impact of our MHHS preferred option and this alternative MHS option.

⁸⁷ Deemed export payments are allowed only when it is not possible or practical to meter the export.

6. Transition period

Section summary

This section considers the length of the transition period for moving from the current elective settlement arrangements to market-wide half-hourly settlement (**MHHS**). It outlines our proposed two-phase approach and sets out what industry participants will need to do during each stage of the transition.

Questions:

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.

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.

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

6.1. In our Request for Information (**RfI**) we asked stakeholders to assess the costs and benefits of a 2, 3 and 4-year implementation timetable, plus a one-year migration period, taking into account the Design Working Group's (**DWG**) high-level transition approach.⁸⁸

⁸⁸ The [DWG's Transition Approach](#) can be found on the Ofgem website.

- 6.2. The majority of responses we received did not identify significant differences in costs between the different implementation periods, but we did receive responses highlighting the number of major industry change programmes that are currently underway.
- 6.3. Our aim is to balance the desire to deliver the benefits of Market-Wide Half-Hourly Settlement (**MHHS**) as soon as possible, with the need to ensure that the new arrangements are robust. At the time of our analysis, our preferred option was to complete the transition to MHHS over approximately 4 years, ending at end-2024. We considered this timeframe to be realistic and achievable with appropriate programme governance. However, in the light of the COVID-19 pandemic, we are reviewing the project timelines. We will be looking at the impact on the start date for implementation and the length of the transition period. We think that the start date will likely need to be later than we had estimated. We still consider that a 4 year transition period is likely to be realistic, but we do recognise that there may well be factors related to the COVID-19 situation which could impact this. We welcome your views on the impact that COVID-19 will have on the project timescales.
- 6.4. The transition period would comprise of two phases. The first phase would be a 3-year 'implementation period' and the second phase would be a one-year 'migration/adoption period'.
- 6.5. In line with the DWG's transition approach to the preferred Target Operating Model (**TOM**), the 3-year implementation period would be for making the governance, code and system changes, and running the qualification process for providers of the new TOM services. In this 3-year implementation period, suppliers, BSC central settlement systems and other industry parties (such as supplier agents, the Data Communications Company (**DCC**) and registration systems) would be expected to prepare and test their IT systems ready to implement the TOM.
- 6.6. The one-year migration/adoption period is the period in which the Meter Point Administration Numbers (**MPANs**) will move from the current market roles into the new market roles. It will involve the parallel running of the new TOM services and existing agent functions, allowing for smooth and managed transition between old and new market roles. This means there will be no big bang implementation and therefore allows for appropriate testing and managed migration to mitigate the risk of large-scale malfunction.
- 6.7. We expect it to be possible for migration and/or adoption to begin before the end of the implementation period if the systems, processes and qualified parties are ready. For

example, suppliers may wish to move advanced meters that are already mostly half-hourly settled to the new arrangements more rapidly. In this instance, we would expect migration and/or adoption to begin as soon as the relevant systems and processes were ready. They would not have to wait until the end of the implementation period.

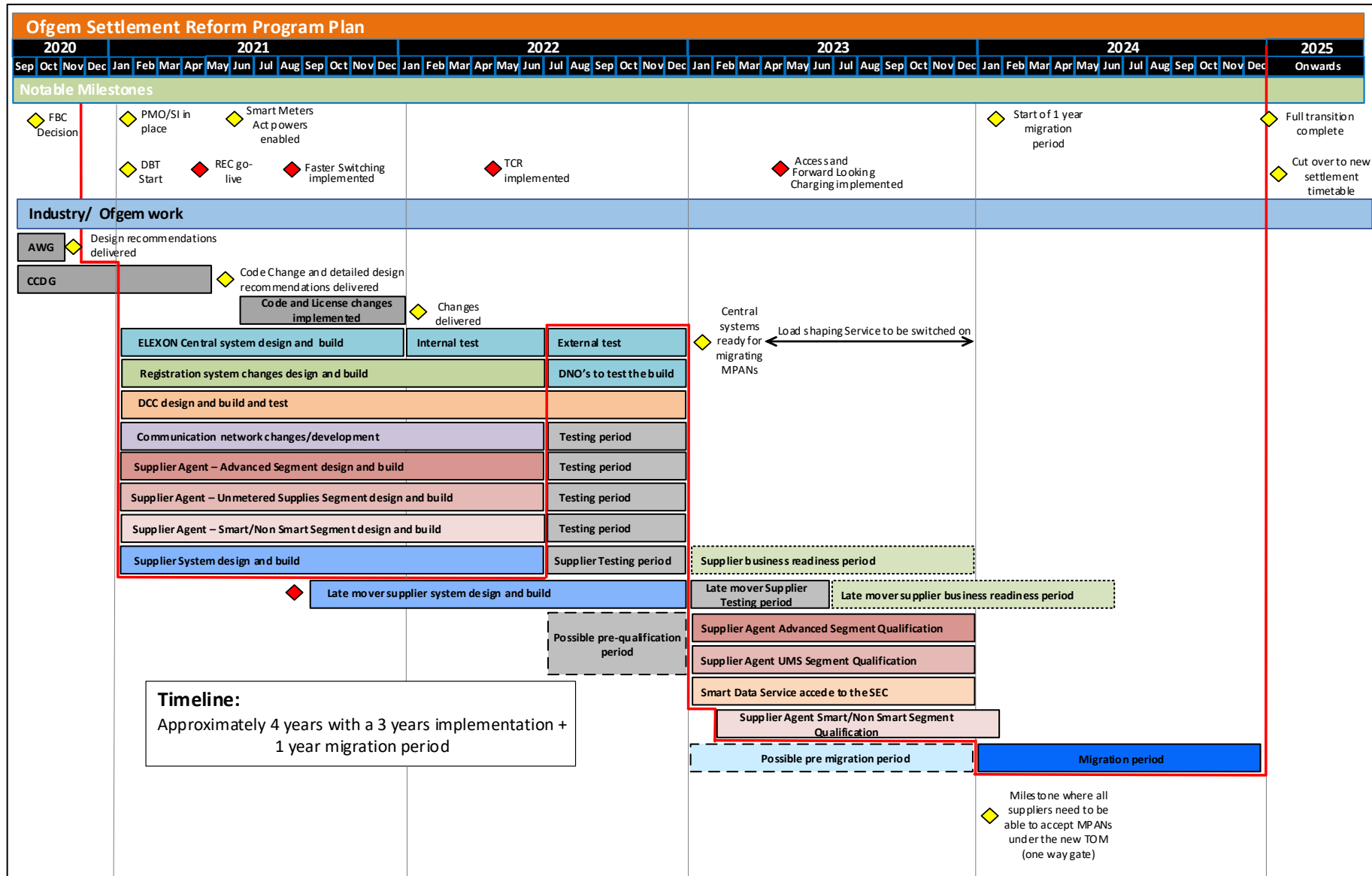
6.8. The end of migration (in other words, the point by which all MPANs are settled under the TOM) would occur one year after the start of the migration/adoption period. Cutover to the new settlement timetable would occur after all MPANs are being settled under the MHHS TOM.

6.9. The DWG transition approach set out the following key deliverables:

- Code and Governance Changes
- BSC central systems and Registration changes
- Qualification of service providers
- Migration/adoption and parallel running
- Migration to the full TOM and cutover to the new settlement timetable.

6.10. The development of the deliverables can in the most part run concurrently. See Figure 2 below for a view of our preferred timings at the time of analysis.

Figure 2 – Ofgem Settlement Reform Programme Plan at time of analysis



- 6.11. At the time of our analysis we had planned to publish our Full Business Case (**FBC**) and final decision in autumn 2020. Under our preferred transition timetable at the time of analysis this would mean that industry would have needed to develop new TOM-compatible systems by January 2024 and migrate or adopt all MPANs into these new systems by end-2024. Cutover to the new settlement timetable would occur after full migration.
- 6.12. To progress the development and quick transition to the TOM we have set up two industry working groups, the Code Change and Development Group (**CCDG**) and the Architecture Working Group (**AWG**).
- 6.13. The CCDG is tasked with developing the changes required in the impacted industry codes and subsidiary documents in order to implement the TOM. Based on their work plan⁸⁹ at the time of analysis we expected the recommendations on the changes to the industry codes and subsidiary documents to have been consulted on and delivered to us by May 2021. We then expect to use our Smart Meters Act powers to bring these changes into force.
- 6.14. The AWG's objective is to develop the solution architecture recommendations to implement the TOM. Based on their work plan at the time of analysis we expected their recommendations to have been consulted upon and delivered to us by November 2020. This would have meant industry would have had the design requirements ready for them to start implementing the TOM by the end of 2020.
- 6.15. Once the AWG recommendations have been delivered and approved by Ofgem, industry will be able to move into implementation phase. In order to achieve a 4 year transition deadline, ELEXON would have to be ready to start their design and build of the new central settlement services at the start of transition (under the original analysis this would have been January 2021). This is needed in order to meet the testing period 18 months later (originally mid-2022). We would expect the majority of the DNO's to be ready to test with the registration system around 18 months after the start of transition (originally by mid-2022). Also at this point, the DCC solution should be in its final stages to allow the participants of the new market segments to test the settlement system through from meter to bank. Additionally, 18 months after the start of transition Ofgem will have directed the required changes to be made in the Codes and subsidiary documents. Once testing and qualification of the new market segments has occurred, which we expect to be 2 years into

⁸⁹ The [CCDG workplan](#) can be found on the ELEXON website.

transition (originally in 2023), MPANs can begin to be migrated/adopted across from the old market roles to the new market roles. We expect suppliers may need a period of 'business readiness' to ensure their procedures and forecasting operations are ready for the new settlement arrangements, and at 3 years into the transition (originally January 2024) we envisage there to be a one way gate, and all suppliers will be expected to have the systems and services in place to be able to accept MPANs that have already migrated to the MHHS TOM. There will have to be a managed migration of MPANs during the migration period, to ensure no single shock to the new settlement systems or to suppliers/TOM service providers. By the end of the 4th year of transition all MPANs should be settled under the TOM (under the original analysis this would have been by the end of 2024). Once all MPANs are being settled under the MHHS TOM the new settlement timetable will be implemented. The DWG recommended that the decision to move to the new settlement timetable would likely be based on market monitoring against trigger points, such as the penetration of smart meters.

6.16. We intend the transition period to be carefully managed, through the use of a system integrator, party coordinator and overall project management function. This will ensure all industry parties are kept on track and keep to timelines. More information on the different project management options are discussed in chapter 9.

6.17. In reaching this position, we have carefully considered stakeholder views, including on the availability of resources to deliver the changes at a time when other reform programmes (such as the faster and more reliable switching programme) are under way. We believe that a 4-year transition period comprising a 3-year implementation period and one-year migration is achievable, particularly if recognised best practices are followed for delivering digital services, for example those of Government Digital Service.⁹⁰

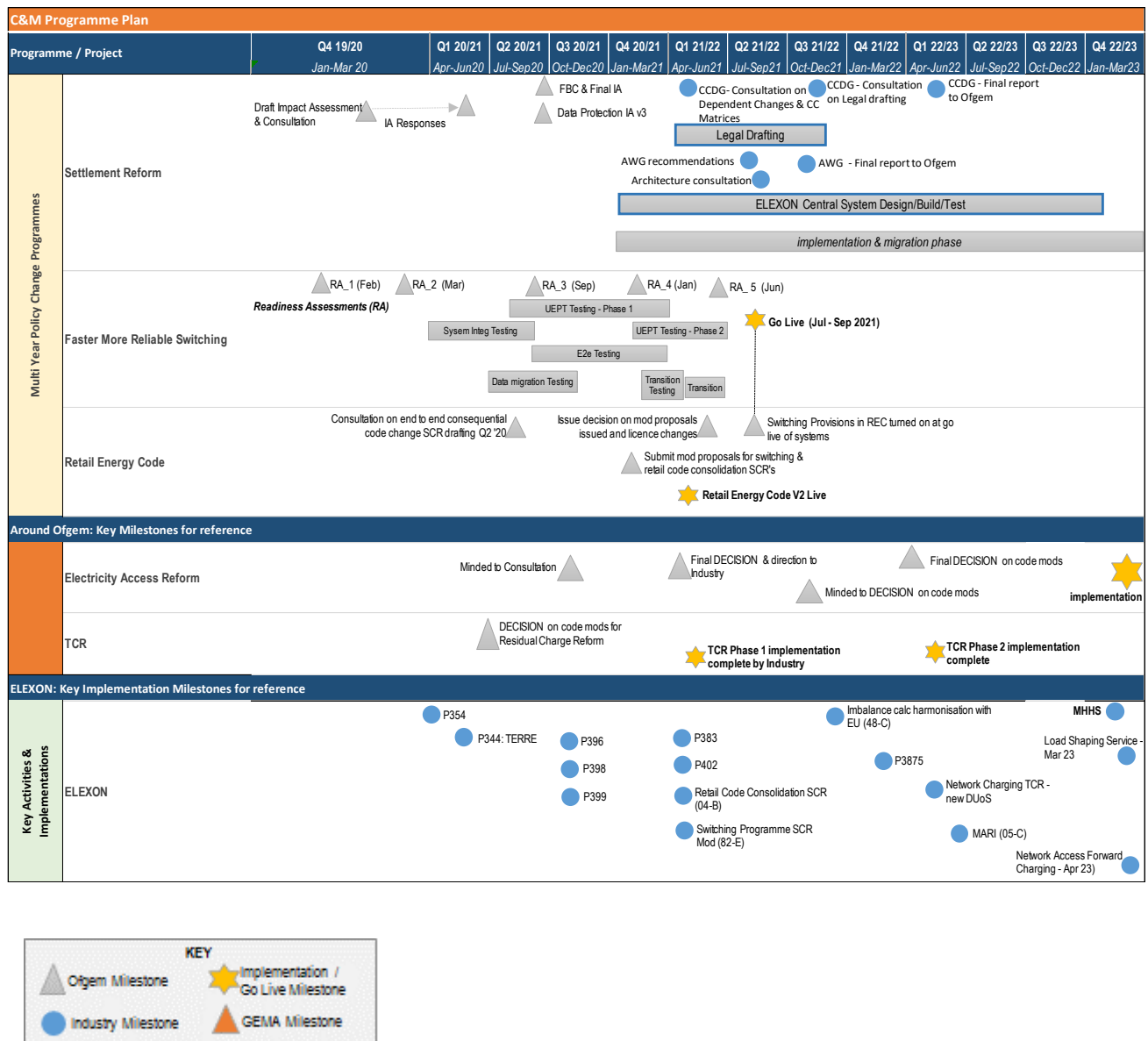
6.18. Figure 3 below sets out timelines for various programmes currently under way which are closely related to our Settlement Reform project. A more comprehensive view of Ofgem change programmes can be found in the Summary of Ofgem Programmes published from the Independent Suppliers forum held Dec 2019.⁹¹ We have reviewed our work plans for 2020 in light of the COVID-19 crisis. The priority now is to protect customers and those who work in the industry. This means focussing on maintaining Britain's secure and reliable

⁹⁰ See guidance and information on the [Government Digital Service website](#)

⁹¹ The [programme plan](#) can be found on the Ofgem website.

energy supplies and addressing customers' needs, particularly the most vulnerable. The outcome of our review is available [here](#).

Figure 3 – Related programme timelines at time of analysis



6.19. We have considered shorter (3-year) and longer (5-year) timescales. See the draft Impact Assessment (**IA**) for an assessment of the impact of our preferred option and these variants.

6.20. We recognise that the current public health situation may require adjustment of our timelines. We will assess this as the situation develops, as well as in light of responses to this consultation.

7. Data access and privacy

Section summary

This section discusses key outstanding issues in relation to data access and privacy in the new settlement system. This includes some aspects of the design of the data access framework, including the data sharing process and consumer messaging approaches. In addition to the questions we have set out for stakeholders, we have also summarised some other remaining issues we are considering out with this consultation.

We continue to engage with stakeholders on these issues. We will provide a further update and an updated Data Privacy Impact Assessment as part of the Full Business Case **(FBC)**.

Questions:

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.

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.

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.

7.1. Smart meters allow for electricity consumption and export data to be transmitted remotely at up to half-hourly (**HH**) resolution. In order for Market-wide Half-Hourly Settlement

(MHHS) to deliver the wide-ranging benefits we expect it will, it is important that the access to data framework that sets out who is permitted to access this data, at what resolution and for what purpose, is designed appropriately. We need to ensure that as much high resolution data as possible is entered into the settlement system to allow it to function effectively and maximise the achievable benefits, whilst ensuring appropriate data privacy controls are in place.

7.2. On 10 July 2018, we published a consultation on access to HH electricity data for settlement purposes.⁹² Following analysis of the responses and associated engagement with stakeholders, we published our decision document on 25 June 2019.⁹³ The decision document set out seven key decisions on the access to data rules under MHHS.

7.3. Alongside this consultation document and draft Impact Assessment (**IA**), we have also published an open letter on access to data issues.⁹⁴ The purpose of the letter is to ensure that stakeholders and other interested parties are clear on what the access to data decision document means, including in terms of expected timelines, obligations on licensees and the choices that consumers have around access to their HH data, now and in the future. The letter is also intended to clarify some other points related to MHHS data issues.

7.4. Whilst the decision document set out the overall access to data framework, there are still a number of additional design issues to consider ahead of MHHS being implemented. We will work through these issues during the Development phase of the TOM, engaging with stakeholders as required. We will publish an updated Data Protection Impact Assessment (**DPIA**) alongside the FBC.

7.5. For clarity, discussion of the options for storage of disaggregated data is covered in chapter 3.

7.1 Data privacy – granularity of data collected from opted-out domestic consumers

7.6. In our decision letter on access to data for settlement purposes, we said that we recognised that existing domestic consumers accepted their smart meters on the basis of

⁹² Link to the [consultation](#) on the Ofgem website.

⁹³ Link to the [decision document](#) on the Ofgem website.

⁹⁴ Link to the [open letter](#) on the Ofgem website.

the data sharing rules in existence at that time. We said that we think they should be subject to that regulatory framework, until they change their contract or supplier.⁹⁵ Under that framework, domestic customers may 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.⁹⁶

7.7. We had also set out earlier in our decision letter that we agreed with the view raised by some respondents that, where a consumer has opted out of sharing their HH data for settlement and forecasting purposes, their data should instead be accessed for these purposes at daily resolution. We did not specifically consult on that issue but felt it was appropriate to set out our view on it given that it was raised by stakeholders during the consultation process.⁹⁷

7.8. To clarify, our intention when publishing that statement in the decision letter (see para 7.6 above) was to set out the headline decision that, under the new framework, existing smart meter customers should still only share HH data for any purpose if they provide explicit opt-in consent.⁹⁸ This is in contrast to new customers who would be sharing HH data for settlement and forecasting by default, with the ability to opt out of this processing to a lesser resolution if they chose. The decision letter was not intended to set out the resolution of data collection that existing smart meter customers would be entitled to opt out to for settlement and forecasting purposes under the new framework.

7.9. Based on the evidence we have seen so far, we think that processing daily data for settlement purposes gives rise to a number of advantages over the processing of monthly data for the same purpose. Usage of daily data will lead to a more accurate allocation of consumption to HH settlement periods, particularly for special days such as weekends, bank holidays and days around the clock changes. It would also allow for outages to be more accurately accounted for, as it would be easier to attribute the zero consumption to the correct time period instead of smearing it across the month. The inclusion of more accurate data into settlement at an earlier stage will improve the overall efficiency of the system and reduce costs. Finally, as suppliers will then be charged on a more accurate

⁹⁵ Link to the [decision letter](#) on the Ofgem website, paragraphs 4.8 and 4.9.

⁹⁶ Such as in order to provide an accurate bill, and to investigate suspected theft/fraud.

⁹⁷ Link to the [decision letter](#) on the Ofgem website, paragraphs 1.31 and 1.42

⁹⁸ Note, a separate gateway exists in the licence whereby HH data can be collected by suppliers for the purposes of a trial approved by the Secretary of State, unless the consumer opts out ([Electricity Supply SLC 47.9](#)).

basis for the consumption of their customers, they will be further incentivised to help them to shift or reduce their consumption.

7.10. We also note that customers must already share daily resolution data for certain regulated purposes, so believe collecting this same resolution of data for settlement and forecasting purposes to be consistent with existing provisions.⁹⁹

7.11. We are now considering this issue in order to strike an appropriate balance between consumer data privacy and the system-wide benefits that we expect to result from the reforms, which is dependent on quality data being entered into the system. We recognise the need to ensure that as much high-resolution data as possible is available to achieve the benefits of the reforms. However, we also want to ensure that existing smart meter customers are treated proportionately with respect to the granularity of data collection to which they are permitted to opt out for settlement and forecasting purposes.

7.12. We are therefore seeking evidence on what would be a proportionate arrangement for these existing customers who have not opted in to HH resolution of data collection. As an example, this may be the collection of data at daily granularity, with the exception of those who had already opted-out to monthly resolution of data collection on the date that the new MHHS data-sharing framework enters into force. We recognise that it may be fair that those consumers who had already exercised their right to opt out to monthly should retain that arrangement, until they change supplier or contract.

7.13. We would like to hear views from stakeholders on what they feel would be a proportionate approach, including any relevant supporting information/evidence that you may have.

7.14. We think that this issue needs to be resolved from the beginning of the new MHHS data sharing framework to ensure we maximise the achievable benefits of the reforms, rather than for example waiting for the review of data sharing arrangements to be carried out once they are established.

7.2 Settlement and forecasting – customer messaging

7.15. We have decided that there should be a legal obligation on suppliers to process a domestic customer's HH data for settlement purposes, unless the customer has opted-out

⁹⁹ Such as in order to provide an accurate bill, and to investigate suspected theft/fraud.

of this processing. As discussed later, the supplier will also be allowed to use this data for forecasting purposes.¹⁰⁰ Ahead of the data being collected therefore, consumers must be made aware of how their data will be accessed and used, and afforded the right to opt out of this processing if they wish. It is important that they are provided sufficient information regarding what purposes their data can be processed for in order that they can make an informed choice as to their data sharing preferences.

7.16. We recognise that there are different possibilities for how suppliers communicate the concepts of settlement and forecasting to consumers. However, we also recognise that they are difficult concepts to explain to consumers in an effective and engaging way.

7.17. We think there may be value in a central body playing a role in this process, in order that a consistent message is provided to all consumers using common and comprehensible language. We also recognise that individual suppliers may prefer to tailor their own messaging, consistent with their brand and informed by their own knowledge of the characteristics of their particular customer base. There are options that facilitate both approaches, for example a website hosted by a central body, to which suppliers could refer their customers for more information.

7.18. We have set out a question for stakeholders (Question 13) regarding customer communications. We will work through the evidence to understand what we think the best approach will be, in terms of informing consumers and allowing them to feel empowered to make decisions regarding access to their data.

7.3 Other remaining access to data issues

7.19. There are some further detailed access to data framework design issues that we need to work through, but are not specifically seeking feedback on as part of this consultation document. We will continue to engage with stakeholders on these issues in order to address them. In the meantime, if you are interested in helping us shape our policy development around these issues, and/or if you have any relevant information or evidence to support this process, please let us know in your response to this consultation. We have set out some of the key remaining issues below.

¹⁰⁰ Data collected for settlement will only be able to be used for settlement and forecasting activities. All other uses of the data remain subject to the [Data Access and Privacy Framework](#), which was reviewed by BEIS in November 2018.

Opt-out process

7.20. When a customer for whom HH data is being collected subsequently provides an opt-out notice to a supplier, there may be a period of time before the notice takes effect during which the HH data will still be processed. Similarly, when a consumer switches supplier, the onboarding supplier may not have been able to collect consent choices from their new customer before day one, when there will be a legal obligation on the supplier to process the HH data unless the customer has opted out. It is important that suppliers operate the opt-out scheme in a way that is fair and reasonable to consumers. We will consider how this can most appropriately be provided for in the legislative framework.

7.21. We also recognise the need to ensure that, if a customer has opted out, there is a mechanism through which they can reverse that decision and permit their HH data to be processed. Again, we will continue to work with industry to design this process.

7.22. We would also take the opportunity to remind stakeholders that parties in possession of personal data are obliged to comply with data protection legislation, including the General Data Protection Regulation (**GDPR**).¹⁰¹

Forecasting

7.23. We said in our decision document that, where a party is required to collect and process HH data for settlement purposes, they would also be permitted to use this non-aggregated HH data for forecasting purposes, in order that they can predict as accurately as possible their future purchasing liabilities based on the needs of their customers.

7.24. We will discuss with stakeholders how the new licence requirements should define what constitutes forecasting. To be clear, data collected for settlement and forecasting purposes cannot be used for any other use, such as for tailored marketing or for deciding how much to charge customers.

Existing Customers

¹⁰¹ [The EU General Data Protection Regulation 679/2016.](#)

7.25. In our decision letter we set out that we think that 'existing customers', ie those customers who accepted their smart / advanced meters on the basis of the current data sharing rules, would continue to be subject to that framework until the point at which they changed supplier, or made an active decision to change contract with their existing supplier.¹⁰²

7.26. The new access to data framework, as outlined in the decision letter, will enter into force at some future point in time (when we carried out our analysis we expected this would most likely be in the first half of 2021). Given that some consumers will be underway within the smart meter installation journey at this point, we recognise that we may need to set out how far along the process a consumer should be on the rule change date in order to class as an 'existing' customer. For example, this may be once the installation appointment has been booked, once the installation itself has taken place, or when information on data access choices is provided to the customer (whichever is earlier).

7.27. We recognise that we may need to set out exactly what constitutes an 'active choice' to change contract with an existing supplier. We have been clear that a regular switch to another supplier or a choice to change tariff with their existing supplier would class as active choices, whilst 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. We will work through other examples to understand if any further clarifications are required.

Data / GDPR

7.28. Data protection legislation, including the GDPR, provides for the conditions under which personal data can be processed. It is therefore important that the MHHS system is designed in such a way as to allow all parties processing personal data to be able to do so in a way that complies with the various requirements, for example that personal data is stored no longer than necessary/required.

7.29. Stakeholders have also raised with us scenarios such as with rented properties, where the tenant (and therefore the data subject) may not be the bill payer and would therefore not necessarily have control over data sharing consent decisions. We will work with stakeholders to explore where responsibilities should lie in such circumstances.

¹⁰² Under the current rules, data can only be collected on an opt-in basis for domestic customers.

Switching and Supplier of Last Resort events

- 7.30. We will need to define the framework by which onboarding suppliers should process data from their new customers following a switch or SoLR event.
- 7.31. The data sharing choices of customers will not be transferred to the onboarding supplier as part of the regular switch process. We therefore expect the new supplier to make data sharing options clear to prospective customers as part of the recruitment/onboarding process, such that the customer is able to make an informed choice about data sharing in advance of their HH data being processed for settlement (and forecasting) purposes by the supplier, in accordance with the legal obligation upon them.
- 7.32. As part of the detailed design process, we recognise that consideration needs to be given to the treatment of data sharing consent choices in relation to the Supplier of Last Resort process, to find a proportionate solution which is fair to suppliers and customers.
- 7.33. We are also giving further thought to the process for those customers who switch suppliers as part of an automated switch event.

Future Review

- 7.34. In our decision letter we stated that, in order to ensure our policies remain proportionate, we will be reviewing the evidence once the system is in operation to ensure that it is functioning effectively in terms of facilitating the realisation of the benefits, or whether any policy intervention relating to access to data is required.
- 7.35. We will continue to work through the details of what form we expect the review to take and will provide as much information as possible within the FBC, including what evidence we will be using to inform the review and how we expect to collect it. We have indicated in the IA that the review is likely to be no later than 3 years after the end of the transition period. However, we will only undertake the review when we feel we have sufficient evidence to do so.
- 7.36. Amongst others, we expect the review will assess issues such as:

- how many customers are remaining on the existing rules and the impact this is having on the realisation of benefits;
- whether there is an issue with a number of high-peak users, such as electric vehicle owners, not sharing their data and potentially distorting the settlement process;
- how effective the consumer messaging is being in operation, in terms of ensuring consumers are able to make informed choices around data sharing, and
- continued alignment of the MHHS data expectations with our work on modernising energy data (see section 2.7)

8. Consumer impacts

Section summary

This section outlines the potential impacts of market-wide half-hourly settlement (**MHHS**) on electricity consumers. For more detail about these potential impacts, see chapter 6 of the draft impact assessment (**IA**) and the paper on consumer impacts, published alongside this document.

Questions:

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

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

8.1 Potential consumer impacts resulting from implementing MHHS

8.1. Implementing **MHHS** should enable and facilitate a smarter, more flexible and low carbon energy system by placing incentives on those in the market to develop and offer new tariffs and innovative propositions that also increase consumer choice (which are direct benefits of MHHS). Taking up innovative solutions may, in the longer term, encourage more consumers to engage in the market, directly or indirectly, as they take up products which reward them for shifting usage away from peak times. Consumers with existing load shifting capacity or future flexibility potential could benefit financially by saving on their energy bills and, in some cases, generating revenue, while others may need help to do so. Some consumers could benefit financially without changing their existing usage behaviour. However achieved, these financial benefits would be additional to any direct overall system savings facilitated by MHHS which would benefit all consumers.

- 8.2. Our draft **IA**, published alongside this paper, shows significant benefits to consumers which are expected to arise from MHHS. These arise due to the economic incentive on suppliers to develop and offer new products and services which reward customers for moving their energy consumption or export in ways which benefit the system. Realisation of these benefits relies on consumers taking up these options, and the draft Impact Assessment explains the reasoning behind the figures we have used for this load shifting behaviour.¹⁰³
- 8.3. We have considered evidence provided to us by stakeholders¹⁰⁴ about previous and ongoing research and trials into consumers' attitudes towards saving energy and load shifting, and actions they took, to try and better understand whether consumers will take advantage of the flexibility opportunities we expect MHHS to open up, for example, taking up a smart Time-of-Use (**ToU**) tariff. Much of this evidence is qualitative and the final results are, in a number of cases, yet to be produced. We have also more specifically considered evidence, through a literature review, about the potential level of load shifting following consumer take up of ToU tariffs. We would like to refine these estimates if additional evidence is available, and would be interested to hear from stakeholders if they know of sources of such evidence.
- 8.4. In February 2019, we issued a Call for Evidence (**CfE**) on potential consumer impacts to help us explore how consumers are likely to react to the new environment facilitated by MHHS, and what consumer protection issues may arise. We have used the evidence stakeholders shared with us to inform our thinking. More detailed information about this evidence appears in the consumer impacts paper published alongside this consultation document,¹⁰⁵ and there is further information on Ofgem and Government actions in the Smart Systems Flexibility Plan and Ofgem's Decarbonisation Action Plan.¹⁰⁶ Below, we summarise the main points in the paper, as they relate to benefits realisation and potential consumer protection issues. We have considered these impacts with respect to both domestic and small non-domestic consumers.¹⁰⁷

8.2 Educating and empowering consumers regarding their energy usage

¹⁰³ In Annex 2 of draft [Impact Assessment](#).

¹⁰⁴ We gathered this evidence by undertaking a [Call for Evidence on the potential consumer impacts following implementation of MHHS](#) in February 2019, and through further follow-up stakeholder engagement.

¹⁰⁵ Link to the [consumer impacts](#) paper.

¹⁰⁶ See the [Smart Systems Flexibility Plan](#) and our [Decarbonisation Action Plan](#).

¹⁰⁷ Small non-domestic consumers includes SMEs, microbusinesses and smaller public sector consumers.

8.5. Market participants (energy suppliers and others offering energy related services) could develop various communication tools to help consumers understand better how they currently use energy, which may lead some consumers to increase their engagement in the energy market to benefit financially from varying their consumption patterns.¹⁰⁸ Amongst domestic and small non-domestic consumers, there is a diverse range of consumer types, who will respond differently to different forms of communication, ie there is no 'one size fits all' solution. The level of realisable benefits may depend on effective communication with consumers and how responsive they are to it.

8.6. Market participants may also develop and use suitable tools to identify, offer solutions and better support those consumers who otherwise may struggle to engage.¹⁰⁹ For small non-domestic consumers in particular, suppliers may need to demonstrate a clear business benefit that does not adversely affect the consumer's core activity.

8.3 Offering consumers increased choice in a future retail energy market

8.7. In order to facilitate appropriate behaviour change and load shifting by consumers, new and existing market participants may need to develop and offer them new 'flexible' products and services. These may be based on developing technologies such as electric vehicles and 'heat as a service' that reflect consumers' preferences for comfort and convenience instead of price, and which are intended to encourage flexibility. Storage batteries could offer consumers both flexibility and revenue generation opportunities as 'prosumers'. Market participants may also need to consider if improving existing energy efficiency of buildings could offer consumers a baseline from which to tap into further flexibility options.

8.8. Third Party Intermediaries (**TPIs**) will play an increasing role in the future retail energy market, especially where consumers may choose a third party to manage their energy products and services as a 'hassle-free' option. Price comparison websites will ideally expand the range of tools they offer to include comparison of TOU tariffs and utilise half hourly consumption data, for those consumers who consent to share it with them.

¹⁰⁸ It is worth noting that not all consumers may act if prompted by the communication tools offered by their energy provider. Some consumers may benefit without making any behaviour changes at all, ie they are already mainly off-peak users. However, we expect that increased consumer engagement, directly or indirectly, may prompt higher load shifting where this is beneficial for consumers.

¹⁰⁹ Provided this is done in line with the relevant regulations, eg the relevant provisions in the [Electricity Supply Licence](#)

Aggregators could challenge traditional suppliers by offering consumers the financial benefits of flexibility as an indirectly managed proposition. How TPIs operate in a future energy market may affect levels of consumer engagement, trust in providers, the breadth of tariff and service choice offered, and the scale of market penetration of new technology solutions, and may need further consideration.

8.9. Ofgem will need to work with others to identify whether existing consumer protections are robust enough to help consumers navigate a potentially more complex future energy retail market, while also maintaining and stimulating innovation opportunities by new and existing market participants. We will consider if new products and services, eg bundling, create potential new risks and liabilities that may need further protective measures for consumers.

8.4 Community-based solutions

8.10. Consumers may have choices to participate in local or national community solutions that could help them become flexible while sharing the costs with others in that community. New services like peer-to-peer (**P2P**) trading may emerge that allow some consumers to share the benefits of flexible energy usage. We envisage routine monitoring of which new business models may emerge, if they are likely to engage more consumers, and whether they prompt more load shifting by them to help deliver increased benefits following MHHS.

8.5 Specific impacts on small non-domestic consumers

8.11. Undertaking an effective analysis of the impacts on small non-domestic consumers is limited by how much data is available about these consumers' attitudes and due to the diversity (in size and by range of sector) of these consumers. Many of the issues affecting domestic consumers, eg inability to shift load at peak times, may be more pronounced for at least some small non-domestic consumers because they operate set business hours, though others could benefit without behaviour change depending on their current usage profile. Identifying and facilitating flexibility may depend on the levels of energy intensity for individual businesses and whether a clear business benefit exists from unlocking that flexibility without detrimentally affecting the consumer's core activity.

9. Programme management

Section summary

This section sets out our thinking to date on how best to manage the implementation of any decision to introduce Market-Wide Half-Hourly Settlement (MHHS).

Questions:

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.

9.1 Overall approach

9.1. In our Strategic and Outline Business Cases (**SBC** and **OBC**), we noted that delivering **MHHS** would involve major changes both to market participants' systems and to the market rules. Ofgem will not own or procure the new systems. Rather, we expect industry to undertake an effective procurement process that delivers these changes cost-effectively. Central oversight will be required to ensure that system changes are completed on time and to the requisite quality. Accountability for successful delivery of the programme objectives will remain with the Ofgem Senior Responsible Owner (**SRO**).

9.2. If industry parties are not appropriately held to account and managed effectively, the changes involved could have a negative impact on consumers' experience of engagement with the retail energy market, and associated processes such as billing, charging, and switching. Coordinating the changes to deliver MHHS in a multi-party environment will be especially challenging, given the other large-scale programmes of change, such as the smart meter rollout and faster switching that are running at the same time. Failure to manage this effectively could cause delays and increase costs.

- 9.3. The Smart Meters Act 2018 gives Ofgem powers to amend licences and industry codes where these are required to deliver MHHS. The powers are available to us for five years once they have been activated, or 'switched on', by the Secretary of State. We expect to make a request for the powers to be switched on after we publish our Full Business Case (**FBC**) and decision on MHHS.
- 9.4. Work on systems and process design, regulatory requirements, commercial arrangements and delivery planning will progress in parallel. Each will need to function together as a coherent package. Putting in place effective governance structures, reporting requirements and communication channels will be essential. Governance arrangements should be responsive to new issues and include appropriate mechanisms for seeking timely input from all relevant stakeholders on potential solutions, including industry parties not directly participating in working groups.
- 9.5. Settlement reform is integral to the successful operation of the future electricity market. All relevant parties must have confidence that the new arrangements will work when they go live. Potential solutions should, therefore, be thoroughly tested. Effective testing and quality assurance mechanisms are essential to ensure the new arrangements work as intended. Decisions should be disseminated promptly to all interested parties.
- 9.6. Settlement reform will affect the operations of many stakeholders. Maintaining the engagement of these stakeholders over the course of the programme will be a challenge. Additionally, detailed understanding of different aspects of the settlement processes, knowledge of regulatory requirements, and expertise in large-scale programme delivery could potentially sit in a range of different organisations.
- 9.7. We want to make sure we have the right expert resource involved in the programme so that the final design, delivery approach, commercial arrangements and new regulatory framework are fit for purpose. We have ensured this initially through the broad representation of stakeholders on the Design Working Group (**DWG**) and now on both the Code Change and Development Group (**CCDG**) and Architecture Working Group (**AWG**). We also want to make sure that strong, industry-wide commitment to the programme is maintained throughout its various phases.

9.2 Objectives

9.8. Accountability for successful delivery of the programme objectives will remain with the Ofgem SRO, and as the programme sponsor, Ofgem will therefore retain responsibility for ensuring that the consumer benefits of the programme are realised. Through our programme sponsorship we want to ensure that:

- the design of any new settlement systems and processes delivers the objectives of MHHS;
- settlement systems and processes are robustly designed so that they function as intended, and align with other non-settlement-related systems and processes;
- each affected party understands in sufficient detail what the design means for them in terms of changes required and service capability;
- flexible governance enables prompt identification and resolution of issues, including effective arrangements to ensure timely input from all relevant stakeholders, whether or not participating in working groups, and prompt the dissemination of new and updated information to them;
- relevant parties have confidence that the new arrangements will work before moving to live operation;
- a robust testing regime is put in place with clear entry and exit criteria, through which parties can check that their own systems and processes are functioning as intended, and that individual systems can communicate with others; and
- a clear set of governance and decision-making arrangements is established, along with clear escalation thresholds so that decisions are made at the right level.

9.3 Delivery functions

9.9. Implementation of the new arrangements will require changes to ELEXON, the Data Communications Company (**DCC**) and registration systems, as well as changes to all supplier and supplier agent systems and potentially the communications systems currently used, to provide the information required for MHHS to operate. Given the extensive number of parties involved, we anticipate that it will be necessary for there to be a substantive programme management function. We expect that we will need a number of roles to oversee the transition to MHHS. We currently expect these to be: an overall programme coordinator, a system integrator and a programme party coordinator. We are currently considering where those roles should sit and have set out some possible

examples of how we think we think they could be delivered (see paragraphs 9.14 to 9.17). Below, we outline the key responsibilities for each of the roles identified.

Programme Management Office (PMO)

9.10. The PMO will create and manage the overall programme delivery plan. This will involve end-to-end project coordination, including:

- monitoring code and licence change progress
- monitoring stakeholders' progress against milestones (including suppliers, agents and others)
- overseeing the System Integrator and Programme Party Coordinator progress
- managing the change control process
- managing risks, issues, dependencies and interdependencies across parties and work streams to ensure a successful programme outcome, and
- managing communications with all stakeholders, including providing timely and informative programme progress reports that facilitate wide stakeholder participation in systems and process development.

The System Integrator (SI)

9.11. The System Integrator will oversee, coordinate and manage the integration, testing and transition to live operations of the new central settlement system and service components. The System Integrator will also provide integration and testing services for the wide range of market participants who will interface with the new system and/or who will have to implement new or changed interfaces with the existing systems and services.

Programme Party Coordinator (PPC)

9.12. The Programme Party Coordinator will monitor and track progress of all parties. They will provide the programme parties with information and updates relevant to the programme, scrutinise the programme parties' self-assessments and report on party readiness to the PMO.

Assurance function

9.13. Ofgem will need to be satisfied that these arrangements are operating effectively. We will require assurance that each party to these arrangements (namely, the PMO, SI and PPC) is adequately resourced to achieve, and in practice does achieve, their delivery plans (and that robust systems of accountability are in place to incentivise this), as accountability for successful delivery of the programme objectives will remain with the Ofgem SRO.

Sample of Possible Delivery Options

9.14. We are currently considering where responsibility for management and operation of the programme management functions should sit. Whilst experience of Project Nexus and the Switching Programme has shown that there are advantages in Ofgem taking an active sponsorship role and leading on PMO and programme party coordination functions, we consider that there are equally advantages in industry bodies taking responsibility for these functions.

9.15. We are looking into the different options available. One option would be to have an industry party with relevant knowledge and capability to take responsibility for some or all the programme management functions, reporting to governance that remains accountable to the Ofgem SRO. Under this model, Ofgem would remain engaged with the programme but would not take such a hands-on role as was the case in the final stage of Project Nexus or as is currently the case in the Switching Programme.

9.16. On the other hand, one of the learnings from Project Nexus was that there is a risk associated with an industry party integral in the delivery of the change also having responsibility for wider programme management and programme party coordination, as there can be conflict of interest when difficulties arise. A third option therefore would be to identify a third party who could take on these roles on behalf of Ofgem.

9.17. A further question is how the delivery functions will be paid for. Our current proposal is that costs would be met by BSC parties under the current funding structure. We will be doing further work to determine more precisely what this would look like, and will provide further information in our FBC.

9.4 Wider stakeholder engagement

9.18. Through our current and future programme governance structure, we aim to make sure that a wide range of stakeholders have the opportunity to review and provide input into the

design of the new settlement reform arrangements. The Architecture Working Group, Code Change Delivery Group, Design Advisory Board, etc. are all designed to capture the experience and expertise of a wide range of interest parties, at varying levels of seniority throughout different organisations.

9.19. We recognise, though, that many stakeholders may be constrained in their ability to proactively contribute to the programme. We have sought to address this by engaging with stakeholders through our teleconferences and newsletters as well as existing forums, such as Ofgem's Independent Supplier Forum, and stakeholder workshops and bi-lateral meetings. We have engaged closely with consumer groups such as Citizens Advice, and with the Department of Business, Energy and Industrial Strategy, in regular bilateral meetings to seek views on key policy issues, and to provide updates on upcoming deliverables.

9.20. In general, our ability to effectively engage with relevant stakeholders will be a key part of the successful delivery of the programme. Given that the implementation phase of the project is proposed to run for 3 years plus 1 year for migration (see Chapter 6 for more information on this), maintaining stakeholder momentum will be challenging, therefore ongoing regular engagement will be essential to ensure that senior stakeholder representatives remain bought into the programme throughout its lifetime.

9.21. Stakeholders were given the opportunity to provide direct input via the Request for Information which was issued August 2019. We will hold another stakeholder event or webinar at an appropriate time for stakeholders to feed in their views.

9.22. We expect that the programme structure will undergo an assurance review at an appropriate juncture to ensure we are effectively set up to achieve our objectives. This review will involve interviews with a wide range of stakeholders to gauge the extent to which they feel effectively engaged with the programme and have sufficient opportunity to provide input.

9.23. Note, all project timelines and proposed implementation timelines are under review as a result of the ongoing COVID-19 pandemic.

10. Other / Next steps

Questions:

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?

Impact Assessment

As noted, we have published our draft Impact Assessment (**IA**) alongside this consultation.¹¹⁰ The IA sets out the potential impact of Ofgem's preferred option for implementation, presenting total net benefits for GB consumers of £1,607m to £4,557m (£2018, 2018 NPV). The IA also sets out the potential impact of the other options we have considered. Our draft IA continues to support this view. We welcome any comments on the IA as well as any additional relevant supporting evidence.

Please note, the analysis that underpins the draft IA and consultation document was carried out before the onset of the COVID-19 pandemic in GB. We are publishing now in the interests of transparency. We will take account of the impacts of the developing public health situation on the project as we move forward. We are seeking views as part of the consultation on what impact stakeholders think the pandemic will have on the project timescales.

Next steps

We want to hear from anybody who has a view on any of the questions set out in this consultation. Please send your response to halfhourlysettlement@ofgem.gov.uk. Please respond to each one as fully as you can, providing supporting evidence wherever possible.

Due to the public health emergency, no deadline for consultation responses is being set at time of publishing. When we do set a deadline for responses, we will publish an update on the Ofgem website, and provide at least 10 weeks notice.

¹¹⁰ The draft [Impact Assessment](#) can be found here.

We will consider all responses carefully and publish non-confidential responses on our website. The responses will inform the drafting of our Full Business Case (**FBC**) and Final IA. At the time of our analysis we had planned to publish these documents in autumn 2020.

We thank you for your engagement so far. We look forward to your continued participation in this work, when it is appropriate for you to do so in light of the public health emergency.

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Appendix 1 – Privacy notice on consultations

Personal data

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation (**GDPR**).

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally) not the content of your response to the consultation.

1. The identity of the controller and contact details of our Data Protection Officer

The Gas and Electricity Markets Authority is the controller, (for ease of reference, "Ofgem"). The Data Protection Officer can be contacted at dpo@ofgem.gov.uk

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

3. Our legal basis for processing your personal data

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest ie a consultation.

4. With whom we will be sharing your personal data

We will not share your personal data with any organisation outside Ofgem, unless we are required to do so to fulfil a legal obligation.

5. For how long we will keep your personal data, or criteria used to determine the retention period.

Your personal data will only be held for as long as is necessary for the purposes of the Market-wide Settlement Reform project.

6. Your rights

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete
- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data
- get your data from us and re-use it across other services
- object to certain ways we use your data
- be safeguarded against risks where decisions based on your data are taken entirely automatically
- tell us if we can share your information with 3rd parties
- tell us your preferred frequency, content and format of our communications with you
- to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at <https://ico.org.uk/>, or telephone 0303 123 1113.

7. Your personal data will not be sent overseas

8. Your personal data will not be used for any automated decision making.

9. Your personal data will be stored in a secure government IT system

10. More information

For more information on how Ofgem processes your data, click on the link to our "[Ofgem privacy promise](#)".

Appendix 2 – 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
FBC	Full Business Case

Acronym	Definition
FIT	Feed-in Tariffs
GDPR	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	Photovoltaic

Acronym	Definition
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 3 – 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. As of March 2020 we have published two iterations of our Settlement Reform DPIA. We expect to publish iteration 3 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 will outline a detailed economic assessment of the introduction of MHHS to complement the final Target Operating Model. It will use the commercial, financial and management cases to set out arrangements for implementation. It will be informed by an Impact Assessment.

G

General Data Protection Regulation

A regulation in EU law which provides for the protection of personal data in relation to processing and sharing.

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.

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.

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.

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).

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, eg 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.

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 customer, 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

[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.