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Monday, 14th September 2020

Anna Stacey
Head of Settlement Reform
Ofgem
10 South Colonnade
Canary Wharf
London
E14 4PU

Dear Anna,

Re: Electricity retail market-wide half-hourly settlement: consultation

Thank you for the opportunity to comment on your electricity retail market-wide half-hourly settlement.

I agree in general that 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. My response is in Annex 1 attached. This response is not confidential and I am happy for you to publish it on your website.

Please do not hesitate to contact me using the details above if you have any questions on this response.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'X.P. Zhang', written in a cursive style.

Professor Xiao-Ping Zhang, PhD, IEEE Fellow, IET Fellow

Annex 1: Questions and Response

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.

Response: I agree.

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.

Response: I agree.

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.

Response: I agree. Will take place 5-7 working days. I was thinking that with modern computing systems, this could happen much quicker.

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.

Response: Why will it take such a long time? Would it be better to take place in a few weeks rather than 4 months.

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.

Response: Why will it take such a long time? Would it be better to take place in a few months rather than 20 months.

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.

Response: I agree.

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.

Response: I agree.

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.

Response: Why will it take such a long time? Would it be better to reduce this to 2 years.

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.

Response: Why will it take such a long time? Would it be better to reduce this to 2 years.

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

Response: In my views, COVID-19 pandemic would convince us to make such system happen sooner and quicker in order to support the implementation of the net-zero targets very timely.

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.

Response: Yes, this sounds a good approach. However, it depends on how to implement such systems. There are varieties of technologies available, and hence it is well possible that the privacy issues could be overcome. Also it depends on how to engage and encourage our consumers.

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.

Response: In terms of market operations, monthly granularity of data collection may have very little value. While hourly granularity of data collection will fundamentally contribute to the flexibility. With the ICT technologies available, I would like to suggest to move down to the time scale of 10-15 minutes in the next few years, which would bring some fundamental changes and values to the balancing markets.

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.

Response: If we want to encourage small consumers/end-users to participate in energy markets, I would like to propose a two-level market structure, namely national whole sale market and several regional distribution markets in line with the regional distribution operators. Larger consumers and generation supplies as well as larger market aggregators basically participate in the national whole sale market. While local individual small scale generation sources and consumers participate in one of the regional distribution markets.

Consumer impacts (chapter 8)

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

Response: I generally agree that the assumptions are well thought out. However, there are a few factors that may need to be considered:

- (1) What are the market structures? Would this take place via the national whole scale market or the regional distribution energy markets?
- (2) What is the frequency of data available? Is it in the time scale of half hour or 15-min?
- (3) Would we consider the interdependence between electricity, transport and heat?
- (4) How much does it cost to implement the functions?

In real systems, with the uncertainties of load shifting, it may be the case the impact assessment is over positive.

In order to deal with the uncertainties of load shifting, load aggregators should be encouraged to establish, and there would be a number of load aggregators in each distribution system operator.

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.

Response:

I highly appreciate the comprehensive assessment carried out by Ofgem. In the following I would like to take the opportunity to provide some reflections.

In regarding "Educating and empowering consumers regarding their energy usage", we would not need to educate consumers, instead we could encourage them and provide transparent business cases and simple tools for them to make a decision.

"TPIs such as price comparison websites (PCWs), brokers and auto-switching websites are already increasingly active" is fundamental important for consumers to make switching decisions. I personally benefited such comparisons websites provided by the local city council.

"Using communication tools and technology to influence consumer usage behaviour" looks fine. In the past we have emphasized too much on how to change consumers' behaviour and this has proved to be impractical. The key is to provide them the opportunities, i.e. cheap automatic digital control system to help consumers to manage their demands automatically.

"Offering consumers increased choice in a future retail energy market" and "Consumer protections in a future energy retail market" are very good points.

"Community-based solutions" is absolutely a good idea as "Community-based solutions" are considered to be integrators or aggregators at community. In the meantime, new services like peer-to-peer (P2P) trading may look very fancy in concept but I suspect that the concept of integrators or aggregators at community would be better in practice. Economics of scale speak.

"Implementing MHHS, alongside the smart meter rollout, can help facilitate solutions to address these issues" are good, but I would like to point out that smart meters basically provide the data flows and MHHS provides the financial flows. In order to make the flexible energy systems take place, we will need to localised control systems to control washing machines, EV charging facilities

and energy storage devices, etc.

In summary, smart meters + **localised control systems** + MHHS would change the energy “world”. Without localised control systems, flexibility provided by local consumers would be very limited. I would like to prefer consumers’ choices or decisions rather than behaviour changes as the former is much more important than later.

Programme management (chapter 9)

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

Response: I agree that the right delivery functions to implement MHHS have been identified.

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.

Response: I agree that the right delivery functions to implement MHHS have been identified.

Other (chapter 10)

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

Response: I appreciate the well prepared assessment document and great efforts made. I have a few suggestions:

1. The structure should be flexible and it would be possible to add on further functionalities later.
2. Cost benefits should be carried out to choose the most effective technologies (a few) to roll out first.
3. One thing missing is that there is a lack of discussions on the potential flexibility and services that could be provided by renewable energy sources such as wind turbines¹ and PVs.
4. National level, we will need to do more detailed long-term studies on EV deployment scenarios and how different ownerships and automatic driving technologies would impact the EV deployment and hence the flexibility provided by EVs.
5. Although battery technologies are very promising, the framework for whole life cycle assessment considering recycling costs should be established and how this is going to affect the battery deployment?
6. Last but not at least flexibility from generation sources and active demands would bring significant economic benefits but we must be aware that such a flexibility will need to be supported by power grid flexibility and hence we will need to consider the appropriate long-term power grid investment in order to implement the net-zero targets.

¹ X. Zhao, Y. Xue and X. Zhang, "Fast Frequency Support From Wind Turbine Systems by Arresting Frequency Nadir Close to Settling Frequency," *IEEE Open Access Journal of Power and Energy*, vol. 7, pp. 191-202, 2020, doi: 10.1109/OAJPE.2020.2996949. [bit.ly/32rybbQ](https://doi.org/10.1109/OAJPE.2020.2996949)