

Sent by email to flexibility@ofgem.gov.uk

9 May 2023

Dear Ofgem

Future of local energy governance - Thermal Storage UK response

We welcome Ofgem's consultation on the future of local energy governance. Ofgem is right to encourage people to "harness the smart features of modern consumer goods to access cheap abundant renewable electricity when there is more wind or sun". We strongly recommend that the transformation of the energy system directly benefits people and businesses who purchase these flexible products.

Encouraging heat flexibility at distribution level

Thermal Storage UK represents manufacturers working to decarbonise heating through smart thermal stores. This response considers how Ofgem's proposals encourage heat flexibility. Heat flexibility is the potential of low carbon electric heating products to provide flexibility from hot water and space heating to the electricity system. These products include smart thermal storage working with or instead of heat pumps, as well as heat pumps preheating buildings.

Distributed flexibility assets such as smart thermal storage will improve the operation of the electricity network and make the most of renewable energy. Thermal Storage UK research with LCP Delta in October 2022 indicates that smart thermal storage could reduce peak electricity demand on the coldest day by 1.6GW by 2030 through shifting when we produce heat and storing that heat for later use. This peak demand reduction from smart thermal storage could increase to 4.1GW if the benefits of flexibility to electricity networks were reflected in pricing. This is based on 2.4 million homes adopting smart thermal storage, with or

instead of heat pumps. The benefits would be higher still if the UK achieves a net zero-emission electricity system by 2030.

The magnitude of heat flexibility outlined above is within plausible parameters. For instance, the business plans for the ED2 price control for Distribution Network Operators (DNOs) suggests that, by the end of 2028, there could be up to 3 million heat pumps operating with thermal stores in Britain.

However, electric heating systems installed today often focus entirely on heat provision within the building. Heating systems are installed with little consideration of flexibility potential during peak demand or the impact on the wider electricity system. This shows the urgency and importance of Ofgem's work on local energy governance and distributed flexibility, as the UK seeks to maximise the flexibility potential of electric heating and renewable generation. We recommend that Ofgem works with the UK government as it develops standards for Energy Smart Appliances and reforms Energy Performance Certificates to consider flexibility.

In taking this work forward, we recommend that Ofgem recognises that the value of flexibility can stem from sources other than revenue stacking. For instance, there is value in products that can consistently, predictably and smartly reduce peak demand. This value stems in part from a long-term, permanent reduction in the need for building and maintaining network infrastructure. As we electrify heat, these peaks will increasingly occur in the winter months, so there may be additional seasonal value to heat flexibility. Dedicated flexibility such as smart thermal storage may also hold more value to the system than less firm options such as pre-heating buildings.

Updating governance at pace

We agree that Ofgem has established a case for changing the existing governance arrangements.

Ofgem needs to move quickly. There is a real risk that electrification of transport and heat demand will outstrip the capacity of parts of the low

voltage network during the ED2 price control. If Ofgem proceeds, we recommend that Ofgem adopts an ambitious deadline for these reforms to be in place. As with DESNZ's work on the Review of Electricity Market Arrangements (REMA), Ofgem needs to juggle reform with encouraging (or not dissuading) ongoing investment. We agree with the proposal to introduce a sixth criteria that the governance framework should be dynamic.

To maximise the potential for investment and reduce costs for market participants, we need an approach to flexibility that is consistent for flexibility aggregators and people to engage with. It would be unhelpful for each Distribution System Operator (DSO) to adopt its own approach to encouraging and procuring flexibility. This scenario would increase overheads for those operating distributed flexibility and favour larger market participants, distorting competition.

The Ofgem consultation is clear that DNOs and Gas Distribution Networks (GDNs) must improve their coordination. We agree and would welcome a shift towards a whole system approach. However, we disagree with Ofgem that this coordination is primarily a role for DNOs and GDNs (and the Future System Operator) to improve upon. Ofgem as the energy regulator has a critical role in ensuring this coordination takes place. Without Ofgem providing a whole system overview, DNOs and GDNs may have limited commercial rationale to coordinate in the necessary fashion. Such coordination will increase in importance when a decision is made to start decommissioning parts of the existing gas grid.

Areas of clarification

We welcome Ofgem's open engagement on their proposals and recognise that their thinking is still evolving. While we have spoken with the Ofgem team, we do not fully understand the proposal for Regional System Planners (RSPs) in three distinct areas. We ask for clarification on these issues in Ofgem's response to this consultation:

1. **Requirement for legislation.** The consultation suggests that the RSPs are new regulated entities (or a single regulated entity with regional

branches). We suspect that legislation would be necessary to allow Ofgem to undertake this regulatory role or amending the Energy Security Bill to amend the scope of the Future Systems Operator (FSO). We request clarification on whether the RSP role would be grounded in new or existing legislation.

2. **Criteria for local planning.** It is unclear from the consultation what criteria the RSPs would use to plan and whether they would duplicate planning activities carried out by the DNOs and local authorities. For instance, if the RSP and the DNO disagreed on the assets required in a region, how would such a disagreement be resolved? We are also conscious that responsibility for deciding on the deployment of some assets may sit with the Secretary of State rather than the DNO or RSP or local authority. We ask for more information on how the RSP may work with other organisations.
3. **The role of DSOs versus RSPs.** We are unclear how the consultation proposal for RSPs fits with the ED2 framework for DNOs to develop separate DSOs. We ask Ofgem to clarify whether the consultation proposal trumps the ED2 framework or if Ofgem envisions the RSPs starting in 2028 when the next price control starts.

Finally, it is difficult to understand how the proposals in this consultation interact with other Ofgem consultations, requirements in the current price controls for DNOs, the creation of the FSO and government activities such as REMA. We encourage Ofgem to publish a schematic showing the proposed governance of the system, including the likely interaction between consumer energy resources (CERs), flexibility providers, the FSO, DNOs and energy suppliers.

We provide answers to some of Ofgem's consultation questions below. This response is not confidential and may be published by Ofgem.

Best wishes

Tom Lowe

Founding Director
Thermal Storage UK

More about Thermal Storage UK

Thermal Storage UK represents companies who have developed modern thermal storage products. We promote the use of smart thermal storage in buildings in the United Kingdom and other countries to achieve net zero. Our mission is to take the carbon out of heating buildings.

You can find out more about Thermal Storage UK at www.thermalstorage.org.uk

Questions

1. **Do you agree with our proposal to introduce Regional System Planners as described, who would be accountable for regional energy system planning activities? If not, why not?**

We do not fully understand the proposal for Regional System Planners (RSPs) in three distinct areas:

1. **Requirement for legislation.** The consultation suggests that the RSPs are new regulated entities (or a single regulated entity with regional branches). We suspect this would require legislation to allow Ofgem to undertake that regulatory role or amending the Energy Security Bill to amend the scope of the Future Systems Operator (FSO). We request clarification on whether the RSP role would be grounded in new or existing legislation.
2. **Criteria for local planning.** It is unclear from the consultation what criteria the RSPs would use to plan and whether they would duplicate planning activities carried out by the DNOs and local authorities. For instance, if the RSP and the DNO disagreed on the assets required in a region, how would such a disagreement be resolved? We are also conscious that responsibility for deciding on the deployment of some assets may sit with the Secretary of State rather than the DNO or RSP or local authority. We ask for more information on how the RSP may work with other organisations.
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We would welcome Ofgem providing more clarity on their thinking.

2. **What are your views on the detailed design choice considerations described?**

It is unclear from the consultation how the RSP or RSPs would be funded. We ask Ofgem for more information on the funding arrangements and recommend that this is captured in the impact assessment.

3. Do you have views on the appropriate regional boundaries for the RSPs?

We recommend that the RSP boundaries match the existing DNO regions. This would ensure that those installing and operating distributed assets at a particular site can engage with entities with overlapping responsibility.

We also recommend that Ofgem and the FSO are adequately resourced to provide oversight and minimise the risk of gaming at the boundaries.

In the unlikely event that locational pricing is introduced, the RSP regions should, as far as possible, match any changes to zones created by locational pricing.

4. Do you agree that the FSO has the characteristics to deliver the RSPs role? If not, what alternative entities would be suitable?

It is unclear to us if the FSO as currently proposed in the Energy Security Bill could take on this role. We request clarification on whether any legislative changes are required for the FSO to take on this role.

5. Do you agree with our proposal for a single, neutral expert entity to take on a central market facilitation role? If not, why not?

While we agree that the market facilitation role should be neutral, it is important to recognise that not all flexibility is equally valuable to the system. In considering future flexibility markets, we recommend differentiating between different types of flexibility. Flexibility may be very short or long duration, widely distributed or a single source, and firm or weak.

We recommend that the market facilitator recognises that flexibility from a dedicated source is more certain and therefore more valuable to the system. For instance, heat flexibility could come from a dedicated thermal store (firm) or a heat pump pre-heating a building (weak). Similarly, electro-chemical flexibility could come from a dedicated battery (firm) or flexible use of an EV (weak).

We also caution against overly focusing on facilitating revenue stacking. While this is currently possible for large scale electro-chemical batteries, it is expected that some or even most of the value of revenue stacking will cannibalise as more assets are deployed. Other types of demand-side response (such as heat flexibility) are less likely to stack revenues. Instead, their value comes from consistently, predictably and smartly reducing peak demand. This value also partly stems from a long-term, permanent reduction in the need for building and maintaining network infrastructure.

6. Do you agree with the allocation of roles and responsibilities set out in Table 2? If not, why not?

No comment.

7. Are there other activities that are not listed in Table 2 that should be allocated to the market facilitator or other actors?

No comment.

8. What are your views on our options for allocating the market facilitator role?

We would welcome more information from Ofgem on how they foresee this role working. From the consultation, we are unclear whether Ofgem envisages that the market facilitation role would sit with the RSP or a separate third party. We are also unclear whether that party would be regulated as a monopoly.

Ofgem suggests that the FSO could perform the market facilitation role, though recognises that the FSO may not be impartial as it will procure flexibility.

9. Are there other options for allocating the market facilitator role you think we should consider? If so, what advantages do they offer relative the options presented?

No comment

10. Do you agree that DNOs should retain responsibility for real time operations? If not, why not?

Yes, we agree that DNOs should retain responsibility for real-time operations. However, our agreement is conditional on Ofgem ensuring improved transparency. During the 2023 - 2028 price control, we recommend that Ofgem requires ongoing transparency from the DNOs and DSOs on:

- how they procure flexibility,
- the volume of flexibility procured,
- the type of flexibility procured (e.g. heat, transport or batteries) and
- the infrastructure investment avoided

We also recommend that Ofgem encourages DNOs and DSOs to transparently set out how they value flexibility versus investment in infrastructure.

11. What is your view on our proposed approach to the undertaking of an impact assessment as outlined in Appendix 1?

We agree that Ofgem should undertake an impact assessment. Ideally, Ofgem would have published this impact assessment alongside this consultation. To comply with its statutory duties, we strongly recommend that Ofgem publishes and consults on the impact assessment before any decision is taken later this year. We recommend that the impact assessment considers the costs and benefits by 2035 and by 2050.

It is unclear from the consultation how the RSP or RSPs would be funded. We ask Ofgem for more information on the funding arrangements and recommend that this is captured in the impact assessment.

12. What is your view on the most appropriate measure of benefits against the counterfactual?

We broadly agree with the benefits against the counterfactual proposed by Ofgem for the impact assessment. We recommend that the value of flexibility, including heat flexibility, is considered as part of the impact assessment. We have separately provided the analysis we conducted with LCP Delta in October 2022 outlining the benefits of heat flexibility.

13. How should we attribute these benefits between the governance changes in the proposed option, and other changes required to achieve the benefits? We particularly welcome analysis from bodies that have undertaken an assessment of benefits, specifically how those benefits might be attributed to different policy reforms that are required to achieve those benefits.

We have separately provided the analysis we conducted with LCP Delta in October 2022 outlining the benefits of heat flexibility. One major conclusion of this work is that much of the value of flexibility is not currently reaching people and businesses.

14. What additional costs might arise from our governance proposals? We welcome views both on the activities that may arise and cause additional costs to be incurred, as well as the best way to estimate the size of the costs associated with those activities.

No comment.

15. What additional costs may arise from sharing functions with several interacting organisations? We welcome views on set up cost, lost synergies, and implementation barriers.

No comment.