

Digitalisation and Decentralisation and Energy Systems Management and
Security Teams

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Octopus Energy's response to Ofgem's call for input on the future of distributed flexibility

We thank Ofgem for the opportunity to respond to this consultation. Octopus Energy has won contracts with all GB DNOs and are actively delivering services to three DNOs - enabling us to share value with our customers for the flexibility they provide to the system. We have gone through the procurement process with all DNOs and contracting with most, and therefore our contributions to this consultation are predicated on our actual experience to date.

We agree that issues around market access and coordination are preventing DERs and CERs from offering services to the system and being remunerated for doing so. However, these are not the only issues. Retail enablers; like the pace of the smart meter rollout and market wide half hourly settlement are crucial unlockers of DER and CER flexibility. Additionally, a poor reflection of locational value in wholesale markets, as well as limited access to wholesale markets for aggregated domestic flexibility, are other reasons that explain why the value that DERs and CERs have provided to the system has been limited historically.

We agree that in the long term, a common digital energy infrastructure will reduce friction and lower barriers to entry for prospective new market participants. However, effective implementation of a number of enablers is essential before any of the more radical archetypes will be possible. In our view, the most important enablers which must be achieved before any common infrastructure can be introduced, are as follows:

- **Complete standardisation of current DNO flexibility products** - including contracts, pre-qualification processes, data standards and dispatch methods
- **Introduction of a central digital asset register by the end of 2023** - to improve visibility and transparency for DNOs, regulators and market

participants, to reduce the risk of duplication and conflicts, and to ease entry into new markets

- **A standardised approach to baselining** - to ensure payments for the provision of services are as accurate as possible, noting this gets more difficult with smaller sample sizes

Whilst there is ongoing work to achieve the above objectives, through the ENA Open Networks (ON) project and Government's Automatic Asset Register (AAR) programme - progress has been slow. In order to ensure the objectives of the ON project are achieved, we would like to see Ofgem use its regulatory powers to hold DNOs to account and clearly demonstrate progress under ON in Ofgem's annual DSO Incentive Reports. **Ofgem should set stretching targets for the ON ensuring full project deliverability and completion by the end of 2024, at the latest.**

We see the greatest potential with the medium and thick archetypes of the common digital energy infrastructure. However, we would only support the thick archetype if it was built out from existing infrastructure - the time and cost to deliver a new build solution are highly likely to outweigh the benefits. Across all the archetypes, it is essential that adaptability is not overlooked. Whilst DNOs are currently using explicit approaches (committed, dispatchable flexibility) to procure and contract flexibility, we believe that there could be more enduring alternatives to better deal with the unpredictable nature of constraints in the longer term. Therefore, it is **essential that any common digital energy infrastructure is able to adapt as the energy system changes, and as the tools that DNOs and the ESO use to manage network constraints and other system services evolve.**

Finally, in order to truly measure progress in this space, it is imperative that DESNZ (BEIS at the time of publication) delivers on its commitment under the Smart System and Flexibility Plan - **to start tracking the uptake of CERs and DERs as well as the number of assets actively participating in energy markets.**

Questions

Q1. What do you think distributed flexibility could contribute to the energy system?

The use of distributed flexibility can contribute a number of benefits to the energy system. These include:

- A reduction in peak demand and therefore a reduction in costs for additional generation, large-scale storage and network build to meet this demand, as well as avoided carbon emissions
- Reduced risk that network constraints hold up decarbonisation by allowing new DERs to connect sooner
- Deferral of network reinforcement costs - buying network companies valuable optionality
- Reduced balancing costs by enabling the integration of renewable energy as distributed flexibility allows the consumption of energy to be shifted in time

It is now well proven that these technologies are highly flexible in their operation, especially through automation and responsiveness to [market signals](#). Therefore, with the correct markets, we can avoid the costs and delays of a highly inefficient, overbuilt network.

Given electricity demand is forecasted to grow by ~50% from today by 2035 (FES EC.02), the degree to which this new demand contributes to peak demand is of great consequence. If we don't manage EVs and heat pumps intelligently, FES forecasts that EV charging and heating demand will require an additional 22GW of peak power by 2040, which will come at a huge cost to consumers. Ensuring that this growing pool of assets can provide value to the energy system, in the same way that large traditional assets do, is of huge importance to keep the costs of the transition low for everyone. Under National Grid ESOs Demand Flexibility Service, we shifted over 120MW per event, and the capacity under our automated EV tariff, Intelligent Octopus, is growing at pace - with over 200MW under control as of May 2023. This proves that residential demand is already providing significant flexibility to the electricity system, and the scale of participation and provision of services will grow exponentially as adoption of these technologies becomes widespread.

Therefore, we view that distributed flexibility has a huge role to play in our future energy system and we appreciate the work that Ofgem is doing to look at ways to increase the participation of CER and DER in our energy system. Finally, in order to truly measure progress it is imperative that DESNZ (BEIS at the time of publication) delivers on its commitment under the Smart System and Flexibility Plan to start tracking the uptake of CERs and DERs as well as the number of assets actively participating in energy markets.

Q2. Will a focus on CER flexibility also help enable other forms of flexibility, especially distributed flexibility?

Broadly we agree with this bottom-up approach as so often CERs have been considered as an afterthought in designing markets and policy frameworks - which has resulted in having to unwind market rules and processes to be suitable for this asset class. That being said, there are some key differences that are worth bearing in mind between DERs and CERs. For example, far more rigorous customer protection rules are likely needed for CERs than DERs. CERs are also much more distributed than conventional generation or even DERs - metering standards need to focus on what is possible via domestic smart meters, which while less accurate than grid-scale metering are not significantly less so (e.g. smart meters offer once per 10s reads and $\pm 2.5\%$ vs. once per second and $\pm 1\%$ for BM standard).

Q3. Is there a 'case for change' and a need for a common vision for distributed flexibility?

At large we agree with the case for change and that a common vision may help to reinvigorate the enablers and the progress being made under the ONs project. However, we note that there are incentives within the RIIO-ED2 framework which reward DNOs for coordination and flexibility market development, as well as obligations (although weak) as part of the Standard Licence Condition 31E on coordination engagements undertaken with the ESO and other DNOs/iDNOs, so we do not agree with the statement "each individual actor is only incentivised to improve their respective monopoly". Therefore, we urge Ofgem to ensure these new tools are utilised effectively under the next price control to encourage and highlight the respective progress of each DNO in coordinating with each other and with the system operator.

Whilst we agree with the majority of market failures that Ofgem outlines, it is also worth noting that current retail rules have added to the problem and may explain why we haven't seen much wider participation of DERs and CERs in markets that do already exist. Here we specifically mean the slow rollout of smart meters and that most retail consumers are still not settled half hourly, greatly reducing the incentive on suppliers to offer time-of-use tariffs and to encourage load shifting outside of peak periods. Aggregated domestic assets are not yet able to participate in the Balancing Mechanism and provide valuable locational services, which demonstrates that beyond DNO flexibility markets there are still large barriers to entry for DERs and CERs restricting the value that these assets are able to provide to the system.

That being said, we do agree that it is helpful to align and set out a clear vision of the ideal end state to ensure there is a common vision for DNOs and for the industry to drive forward progress. However, in defining the end state this must not come at the expense of retaining flexibility and the ability to course correct if the market environment changes in the future. Our views on the sequencing of the building blocks to get to this vision are included in our response to Question 4.

We strongly agree that the solution must be digital, in order to best utilise an increasing number of distributed assets and ensure transparency in all dispatch decisions that system operators take.

Q4. What is your vision for how to accelerate the delivery of accessible, coordinated and trusted markets for distributed flexibility?

Our vision is:

- Markets with granular, cost-reflective and easily accessible price signals which value the benefits that distributed flexibility can offer at any given time and in any given location.
- Market-wide half-hourly settlement will more accurately price the cost of consumption in any given time period and will increase the incentives on suppliers to offer smart products and time-of-use tariffs to manage this new load more intelligently.
- The procurement through to dispatch of flexibility service products will be completely standardised, meaning participation in *all* DNO markets has the same entry threshold as participation in just one.
- And, finally, a code of conduct will be finalised to ensure consumer protection keeps abreast with market innovation in domestic flexibility.

To get to this vision, the following steps are needed:

1. Expedited implementation of the ENA's ON objectives - to completely standardise products, contracts and dispatch APIs
2. Finalise and introduce a common asset register to the point of automatic validation of eligibility
3. Decisions must be taken by Government on REMA, specifically in relation to Locational Marginal Pricing, and by Ofgem on DUoS reform regarding the granularity and locational specificity of price signals
4. Ofgem must continue to make progress on mandatory market-wide half-hourly settlement and the smart meter rollout programme to ensure we do not fall behind on meeting targets for implementation in 2025.

To expedite the progress of the ENA's ON project, we recommend the following steps are taken:

- Ofgem to set stretching targets and work plans under the programme - with complete delivery of project objectives by 2024
- Define standardisation between DNOs as the core objective of the project - where any deviations must be justified and if not satisfactory, adopted
- Ofgem must use its regulatory powers (licensing conditions and the DSO Incentive) to hold DNOs to account - penalising networks for any non-compliance, and measuring performance by outputs rather than outcomes
- Review governance and funding arrangements for the ONs project, giving flexibility service providers greater representation on the ON Steering Group and allocating more resource to guarantee project delivery

Q5. Will certainty of an end vision help accelerate enabling work and make it cohesive?

Yes, clarity on the end vision is critical to ensure agreement over the enablers necessary to get there. That being said, whilst explicit approaches to procuring flexibility are prevalent now, and there will likely always be a need for some pre-contracted services, we do not view that DNO flexibility tenders will necessarily be the most enduring approach to manage all constraint issues in the future. As constraints become less predictable dynamic congestion pricing, or other implicit approaches to flexibility (consumers action to price signals), could be a more effective tool to manage many constraints in the long term. Therefore, it is crucial that the common infrastructure remains agile and can adapt as the tools that DNOs may use to manage constraints change with time.

Q6. When should a common digital energy infrastructure be in place? And therefore, when should development begin?

We believe that a digital asset register should be implemented by the end of 2023 to greatly reduce friction and conflicts emerging in terms of asset ownership. This is essential to:

- Improve visibility and transparency for DNOs, ESO, Ofgem and market participants about the type/volume of CERs connected - in turn, this will improve forecasts for energy demand and associated network planning
- Simplify signup of assets - to the point of automatic validation of eligibility
- Reduce conflicting claims on ownership of assets

- Ease aggregator switching processes - as interoperability will enable better competition

However, there are some potential risks of introducing a central asset register if it is not done effectively, such as; data privacy and security, risks from inaccurate data provision and increased administrative burdens. Therefore, to combat these risks it is essential that this register is inherently digital and automated as much as possible to avoid any possibility of human error. The register must have strict security requirements, with all personally identifiable information removed and a restricted access list. Finally, to minimise costs we should build off projects already underway that are looking at such services (for example, the Automatic Asset Register programme).

In terms of when complete common digital energy infrastructure should be in place, this will only be possible once many of the enablers are complete - and we view that given industry and Ofgem resource is limited the immediate focus should be on achieving complete implementation of the enablers. We believe Ofgem should first start by setting full implementation dates for the enablers and are confident that it should be possible to deliver these in full by the end of 2024, at the latest. Only once the enablers have been implemented should the focus shift to what is needed to achieve the desired common digital energy infrastructure.

In parallel, Ofgem must work to make open standards for APIs and integrations to assets.

Q7. What should a common digital energy infrastructure look like, and why? Please consider the archetypes or develop your own proposition.

We believe the more involved archetypes require greater investigation. From a market coordination and access perspective we agree with Ofgem's qualitative assessment that these archetypes would fare better than the more evolutionary or business-as-usual archetypes. We view that there could be some significant efficiency gains achieved through centralising some of the end-to-end functions for DNO flexibility products. This could allow market participants to carry out some of these functions once rather than six times as is currently the case. For instance, type testing could be done for each new asset with one DNO and once this is complete it can be used by all DNOs, saving cost and time. One central platform would also simplify the participation process and reduce the processes and personnel required to participate.

That being said, we are concerned by the time and cost that such large infrastructure projects often involve. Therefore, to mitigate the lengthy design and delivery risk we should first look to expand the role of existing systems where possible. For example, with the facilitation of greater access to the BM, this system could provide the fundamental control and dispatch for most flexibility markets, which would also force far greater coordination between ESO and DNOs than any primacy rule workshops have achieved thus far. Leveraging an existing system will greatly reduce delivery and design risk. Starting from scratch and spending years developing a central platform poses great implementation risks and could serve to be very costly for something that quickly becomes obsolete.

If it proves not to be possible to evolve and adapt existing systems, then instead we would favour the medium archetype. While the potential benefits in terms of usability and market access may be slightly lower than the central market platform approach, we agree that this scores more highly from a feasibility perspective and that this outweighs the marginal gains of the monolithic central platform. In addition, we view that the exchange approach may be more able to adapt as distributed flexibility markets and approaches to manage congestion evolve with time.

Q8. What is your view on the desirability and feasibility of the archetypes or your own alternative proposition?

As stated in our response to Question 7, we agree with the categorisation of the archetypes against the desirability and feasibility assessment assuming the thick archetype involves building this central platform from scratch. However, we would not advocate for this design approach and believe there are existing platforms and programmes (eg. the ESO's Single Markets Platform, Piclo etc.) that could be evolved to deliver what is required of this common market platform. In that case, i.e. assuming that existing platforms and systems could be built upon, this archetype would certainly score better against the 'time and cost to deliver' category under the feasibility assessment.

Q9. Should a common digital energy infrastructure be new-build, or should it build out from existing infrastructure?

A common digital energy infrastructure should be built out from existing infrastructure in order to save scarce industry time and cost.

Q10. What are the important areas for consideration when designing institutional delivery models for a common digital energy infrastructure?

It is essential that Ofgem oversees the development of any common digital energy infrastructure. Ofgem could begin to explore what governance and funding arrangements may be suitable across the different delivery models that have been proposed.

Of equal importance to the design of the institutional delivery model is the pace of delivery and adaptability as the energy system continues to evolve. Within Ofgem's related consultation on local energy governance, there is a preference to transfer the market facilitator role to the Future System Operator (FSO). We support this position over the long-term. In the short-term, the bulk of the enablers under the market facilitator role are necessary (and should be possible) to complete before the FSO is due to be created in 2024. Therefore, given the need for speed in this area, we view that a revamp of the ON project, with more active involvement and oversight from Ofgem, is likely to make the furthest progress here at least in the short term.

Q11. What are the important areas for consideration when designing financial delivery models for a common digital energy infrastructure?

Ofgem has identified the key areas for consideration. We do not have any additional considerations to add at this stage.