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By email: flexibility@ofgem.gov.uk

Victoria Low
Head of DSO Governance
Ofgem

7 June 22

Dear Victoria,

Re: Call for Input: Future of local energy institutions and governance

Thank you for the opportunity to respond to the consultation. We have provided answers to the thirteen questions set out in the Call for Input document, and where necessary, have raised some questions for consideration.

The Data Communications Company (DCC) is licenced by the Government and regulated by Ofgem to connect homes and businesses across Britain to a single secure, smart metering network. DCC provides the national network, systems and ongoing operations that underpin the roll-out of gas and electricity smart meters. Our secure data network is a once-in-a-generation project, a catalyst for the most significant transformation of the energy sector in decades which will help Britain become a global leader in smart energy and clean growth.

A significant investment has been made by end-consumers in building the DCC infrastructure and we have proven we can work at scale on a 24/7 basis, with availability to over 99% of premises across Britain. The superior reach, connectivity and security of our network makes us a unique asset that can be reused by our customers, Government and Regulators, to implement policy interventions that aid the energy transition and deliver public benefits and wider social value.

We understand the challenge of the transition to net zero with rapid decarbonisation and decentralisation of generation and demand. We agree that it is important that energy system functions are performed by institutions with the relevant competence, skillset, and incentives. We therefore seek to align with BEIS ambition and support the DNO-DSO transition by helping simplify the complexities it will raise in redesigning the market and network to achieve resilience and deliver consumer value.

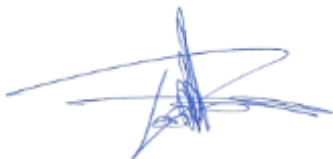
In the preparation of our response, we have identified a few themes that form the basic principles that underpin our answers and we have set them out below:

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- **System architecture:** There is a need to design and maintain a clear architecture for the energy sector throughout the transition process with defined roles and relationships between participants, along with a robust communication channel to enable effective coordination of activity for consumers at a network and market-level.
- **Consumer support:** Consumer support and buy-in will be integral to this transition piece and consumers input will be a key contributor. There is a need to recognise who will be ultimately responsible for holding the relationship with the end consumer throughout the transition concerning supply, quality, reliability, and flexibility.
- **Consumer demand:** In the coming two decades, consumers will change the way in which they use energy and will require an understanding of how the market operates when alternative sources are used. Consumers will also require a fallback position in the event alternative sources are unavailable.
- **Logical progression:** When reviewing the four options laid out in the consultation document, we viewed these as a continuum progressing from Model 1 to Model 4 as the market matures. Our thinking is to apply learnings from each proposed model before transitioning onto the next.
- **Resources:** A key requirement will be the ability to upskill and train individuals given the technical skillsets required by each energy system function.
- **Data:** The urgent need for a shared data model and revised data strategy (including GDPR) to create a foundation for the transition.

We welcome further engagement in relation to the points made in our response. If you have any further questions, please contact Hajira Ali (Hajira.Ali@smartdcc.co.uk) in the first instance, or myself.

Yours Sincerely,



Tom Notman
Director of Policy and Market Analysis



Question 1. Are the three energy system functions we outline (energy system planning, market facilitation of flexible resources and real time operation of local energy networks) the ones we should be focusing on to address the energy system changes we outline?

We would agree that the three energy system functions being considered are key to making the transition to a DSO model, however we would highlight that the interface with the end-consumer and subsequent consumer perception needs consideration. At present, DNOs have little or no direct relationship with end-consumers and there is a question of how this will work in practice. Will DNOs be expected to develop this capability, or will they remain as distinct organisations, interacting instead with intermediaries who hold the consumer relationship? Or indeed, do you envisage the new entrant DSO supply chain providers having local relationships with consumers in relation to the commissioning of new generation assets, for example?

We are aware that DNOs are already conducting trials which further emphasises a need for consumer understanding and buy-in. For example, when it concerns activities, such as load control, balancing, network flexibility or over-capacity connections, the DNO/DSO language and where responsibility sits for each is potentially difficult for a consumer to interpret and needs to be clearly set out in each locality. To a consumer, the perception could be that profitable energy companies are investing and carrying out activities that they are not familiar with and maintaining previous local arrangements. Energy companies will need to think carefully about the narrative for net zero and how best to explain the new model to the end-consumer.

Energy system planning will be crucial to effective local system operation. Under existing arrangements, DNOs undertake electricity network planning as a core activity. As it is, local spatial planning is often speculative and of variable quality so if energy system planning is to be reliable, that spatial planning will need to improve significantly in quality, consistency, and reliability.

In addition, the energy system at a regional level and associated planning will become increasingly complex as domestic demand, storage and generation become commonplace. Extending system planning to accommodate other energy vectors will require a significant step-up in skills, planning processes and systems.

Furthermore, there will need to be a harmonisation of the local planning processes and timelines to ensure a joined-up approach.

Question 2. Do you agree with the criteria we have set out for assessing the effectiveness of institutional and governance arrangements?

We agree but would add the following suggestions:

“Simplicity”, whilst laudable as a criterion, may be difficult to implement. For example, for reasons such as energy mix, density of population, presence of heavy industry etc, it may be that different regions require different approaches to system planning and operation, leading to inherent complexity.



Separately, there could be an addition to the criteria of measuring the risk of "conflicting interests" and any mitigation in place to avoid this, particularly with the proposed separation of DNO and DSO activity. To ensure independence of activity, there needs to be an alignment of all with the wider policy, ambition, and subsequent consumer interest.

GDPR and associated requirements also need to be revisited – are the requirements for the next 25 years for energy companies going to be different to the ones we have now? It is important to note the pending overhaul of the data protection regime, led by DCMS, so alignment with any proposed changes will be key.

Additionally, the 'Balancing Privacy and Access to Smart Meter Data'¹ paper highlights the need for a new data model when you have an increased number of parties handling customer data. Customer willingness to share data depends on who has access to the data. The paper outlines customers are more likely to trust institutions like Ofgem and DCC but trust levels for suppliers and third parties are significantly less. Trust and transparency should therefore be key considerations when implementing a transition in institutional and governance models.

Question 3. Do you agree with our assessment of how far the current institutional arrangements are, or are not, well suited to deliver the three key energy system functions?

We believe there is more work to be done here as the assessment does not consider whether existing geographical boundaries are appropriate. For example, London is split roughly 80:20 between two DNOs. Would a single electricity DSO in a highly dense urban area such as London therefore be more appropriate? This situation becomes more complex if one adds the GDNs with two gas networks covering London but operating on very different boundaries to the DNOs.

Local DSO operation will take place at a sub-licence level determined by the existing and future network designs. This needs a new network map determined by (possibly) local network segments serving 'x' number of consumers.

This leads to the next question of whether the same model can or should apply everywhere – is there a common unit of geography this fits to (regional boundaries) or is it a common unit of political control (local authorities and councils)?

Finally, skillsets and capabilities of institutions and organisations are vital to delivery of these energy system functions and will need to be accounted for in the overall assessment.

Question 4. Overall, what do you consider the biggest blocker to the realisation of effective energy system planning and operation at sub-national level?

During the transition, there must be a clear and consistent network and market architecture within the energy sector that shows the various roles and relationships between national and regional participants, as well as other stakeholders. This clarity needs to be maintained throughout each stage of the transition to

¹ [Balancing Privacy and Access to Smart Meter Data | Energy Futures Lab | Imperial College London](#)



achieve coordination between bodies which is key to deliver effective energy system planning and operation.

There is also a lot more information required at this stage when considering the overall control of the network. This will be an area of complexity should there be any attempt to combine networks which have historically adopted different design and technical standards. Also, with any design of a network, there is a need for creation of a local, high resolution, shared data model. We consider it imperative that the mechanisms of a data model are considered when looking at system planning and operation of the network.

As referenced above in answer to question two, a GDPR review could also potentially create a blocker as it may impact timescales significantly.

Question 5. Do you agree with the opportunities of change we outline and the potential benefits they may create?

We agree with the opportunities of change outlined and recognise it is hard to define further opportunities without greater detail on how they might work in practice. The opportunities, associated costs and the risks need to be much better understood before some key decisions can be made.

For example, there is a significant opportunity whereby consumers will be able to manage the way they use energy. Consumers could potentially take themselves off the grid and serve and supply their own energy use through wind, solar, hydropower, etc. However, there are associated risks with this too as there will be a demand for a fallback position in the event alternative energy use is compromised, for example, lack of wind. Risks like such and associated costs need to be considered and understood a lot more.

With consumers managing the way energy is used, there is another question to consider around the network model versus market model. How will the use of alternative energy sources work from a billing perspective? Will a consumer be charged at the standard rate plus an additional charge, or will it be a 'one bill' approach with the costs socialised to all?

Question 6. Are there additional opportunities for change and benefits that we have not set out?

We agree with the opportunities the paper sets out but also recognise that this thinking will evolve with time. With a transition like such, there will be new learnings and opportunities that arise once a new model is effectively in place. We welcome the opportunity to be part of future discussions around this.

Question 7. We set out a number of risks associated with change. Do you agree with these risks and the potential costs they create? Are there additional risks of change and costs that have not been set out?

We agree with the risks that are set out in the consultation. There are additional risks that require consideration set out below:

- Consumer perception is a significant risk, particularly when considering the current energy crisis and the impact it has had on consumers. With any change, consumer perception should be at the forefront of consideration as it will be a sensitive matter in the current climate.
- There is an opportunity for transition for all consumers, but it does carry a risk in that not all consumers will have the skillset, technology, or capital to access the future energy system in the same way. This could result in some consumers being 'stranded' on the core legacy network and unable to participate in the more sophisticated arrangements. Should large numbers of consumers prove able to move off-grid, then the fixed costs of the network could be borne by a reduced number of consumers, many of whom are likely to be fuel-poor and least able to shoulder this burden.
- The risk to vulnerable consumers when making the transition
 - What will this mean for vulnerable consumers on low income in rental accommodation with prepayment meters?
 - The DNO has a capability to manage the vulnerable consumers register on the current model. What happens when there is an energy outage on the new model and is there a subsequent plan in place to deal with vulnerable consumers on the register?
- There will be significant costs in building up the knowledge of the existing DNO network assets at the lower voltage levels such that meaningful choices could be made as part of the planning processes.

Question 8. For each model, we have set out the key assumptions which need to be true for the model to offer the right solution. Which of these assumptions do you agree with?

We propose that it may be more appropriate for different models to be in operation in different regions due to the different starting points and historic differences in network design. Therefore, the assumption that is true for one region may not be the same for another at the same stage in transition. We would see the transition supporting localised energy balancing from an early stage and therefore the data flows that are needed to support it would also have to reflect the local differences.

It is worth noting that there are areas of the country where there is little in the way of a gas grid and hence the role of SO will be largely focussed on electricity. Could this be a case for a mix of different models in operation i.e., model 2 in areas which are largely 'electricity only' but model 3 in others?

The assumptions also need to reflect the potential for the gas grid to be in one of three states in a locality:

- 100% methane
- Methane/hydrogen blend
- 100% hydrogen

These will require different whole system technical solutions and different local market models. The same will also apply where heat networks are present.

Question 9. Out of the framework models we have developed which, if any, offer the most advantages compared to the status quo? If you believe there is another, better model please propose it.

We believe that the transition needs to be viewed as continuous change and not a series of discrete steps. Therefore, we see the framework models as forming a continuum through which the local SO role might develop. We see the adoption of model 1 as being an important first step in the development of local system operation. Developing and implementing the basic processes and systems required for the effective operation of model 1 will be highly beneficial in informing the scope and specification of model 2. The adaptation and implementation process should be staged as part of a phased approach.

We also recommend taking international learnings on energy system planning to inform current thinking and assumptions around framework models.

Question 10. What do you consider to be the biggest implementation challenges we should focus on mitigating?

We propose that there are three main challenges that require focus:

- Taking the consumer on the journey: domestic consumers are already wrestling with unprecedented inflation in energy prices, as well as the introduction of new technologies such as smart metering, electric vehicles, heat pumps etc. If the mass of consumers are to become active participants in a local energy system, there will need to be considerable education and support available to them.
- Implementing necessary accountabilities and processes: will enable coordination, reskilling of DNOs and other key players, redefining the relationship with the end-consumer and then communicating it.
- Upskilling/Reskilling of workforce: with an increase in role capabilities and technical skillset required, a combination of upskilling and reskilling will be imperative for effective implementation of these models. As things stand, the existing system operators are the only centre of know-how in relation to system operation and so there will need to be a significant expansion of this capability. This could be aided through relevant university courses or apprenticeships, but these again will require major expansion with the funding requirements that come with this.
- Energy system interdependencies: need for a clear structure with defined roles and relationships between participants to enable effective coordination.

Question 11. Taking into account the varying degrees of separation of DSO roles from DNOs under framework model 1, do you consider there are additional measures we should consider implementing, in particular in the short term (e.g. changes in accountability etc)?

Additional measures that could be implemented in the short term are as follows:

- Independent assurance of internal governance measures to prevent conflict of interest
- Defining the roles of GDNs, LG, DNO, DSO, and FSO in the plan and making accountabilities for each role clear
- Adopting mandatory communication channels for GDN/LG/FSO/DNO for effective join up of institutions
- Developing a common specification for flexibility markets based on the existing ESO model and the local models established by the DNOs



- Freedom within the regulatory framework for ease of implementation – there is a need for a review of the current regulatory framework as the framework in 2050 will be very different to the one we have today. The framework needs to be developed to allow freedom of activity and avoid constraint on innovation and effective operation

Question 12. Are there other key changes taking place in the energy sector which we have not identified and should take account of?

Due to the geographic diversity of renewable generation, we believe it is likely that a critical mass of consumers in any given region will start to use energy differently. These changes in how consumers adopt new technologies and behaviours needs to be taken account of, particularly anything that changes demand on the system. As technology adoption changes, there will come a point when local networks need to accommodate mass adoption of the specific technologies such as heat pumps, EVs, etc. This will be particularly true in areas undergoing conversion to hydrogen due to the need for whole network conversion.

Consumers will have the option to become prosumers and control, and even forecast, their on/off grid times and days. The economic market will naturally become complicated as it will not be easy to predict. The more complex a market, the less you can forecast. This leads to the question: how will a DSO interact with a consumer changing the way energy is used? It also emphasises the importance of having robust and reliable mechanisms to collect and maintain comprehensive and timely information and data on assets which are connected to the distribution networks, whether generation, storage, or demand.

There are also current issues that need to be considered, namely the price cap mechanism which is set to rise further to £2,800 in October. This will undoubtedly play a significant role on consumer perception and the ways in which consumers use energy.

Lastly, we think it is appropriate to consider the implications of companies effecting change of use. For example, the Tesla battery farm and its undeniable success in supporting wind and solar power. The future implications are that they may run entirely outside of the network and thus largely unpredictable in nature. What is the scope of the DSO here and does the DSO have power to instruct where they can connect?

Question 13. What do you consider to be the most important interactions which should drive our project timelines?

- Establishment of the FSO and defining its role and scope. Preparatory work can be done in parallel with this, such as building the necessary interfaces/processes in stakeholders, such as local government, to support holistic energy system planning processes.
- Development of a detailed architecture for the energy system so that a proper assessment can be made over the new processes/systems/interfaces that need to be defined and implemented to enable the system to operate in a coherent fashion.



- Consideration of the skills gap which will need to be addressed and measures to be implemented to deal with this.
- Development of the regulatory framework