

Ofgem Position Paper: Regulatory Priorities and Approach to DSO

1 October 2019

Smarter Grid Solutions welcomes the opportunity to further engage with Ofgem and stakeholders on the topic of DSO and to respond to the [‘Position paper on Distribution System Operation: our approach and regulatory priorities’](#).

We believe that certain DSO functions and operating models are critical to the timely transition to a lower carbon, more flexible system. We generally agree with the priorities and proposals set out by Ofgem and provide specific responses to the questions and topic areas below.

There is clearly a need for prioritisation of DSO outcomes and enablers (and therefore work programmes) as Ofgem seek to do and we welcome that focus as a means of enabling progress on the necessary DSO transition.

Smarter Grid Solutions is a DER Management System (DERMS) software vendor. Our software is widely used in the UK to deliver Active Network Management (ANM) systems. Our products and services are targeted at smart, efficient integration of distributed generation (DG) and distributed energy resources (DER) into power systems to create value for multiple stakeholders in each power system timeframe from investment planning to real time control. We also provide independent consultancy on a broader range of topics in the power sector in the UK and internationally.

Smarter Grid Solutions has spent over fifteen years researching, developing, deploying, proving and now supporting our approach to managing flexible, smart grids. We have delivered a number of flagship ANM projects in the UK and overseas and worked with UK DNOs to disseminate key learning outcomes. We are recognised as leaders in this domain and have worked with, and learned from electricity distribution companies, national regulatory authorities, university research teams, generation developers, SCADA/DMS suppliers, grid edge device manufacturers, national labs and many others.

We bring that wide and long view of the decentralisation, decarbonisation and digitalisation of the energy system into our views on the DSO transition which joins the three D’s together.

We would be pleased to discuss any of these areas further.



Graham Ault

Director – Smarter Grid Solutions

Q1: Do you agree with our strategic outcomes?

The strategic outcomes for DSO are clearly stated by Ofgem and we provide some comment on each below.

1. ***Clear boundaries and effective conflict mitigation between monopolies and markets***
 - We think that it is essential to have clear boundaries and effective conflict mitigation between monopolies and markets to underpin efficient, accessible and fair markets without cross subsidy or other unfair advantage (e.g. arising from exclusive access to information, access to capital, preference for home grown solutions) for monopoly actors and natural monopoly infrastructure.
2. ***Effective competition for balancing and ancillary services, and other markets***
 - We think that competition is the correct basic principle and assumption but also note that functional, capability and local specifics may mean that something less than optimal/efficient outcome might be the natural market outcome in some circumstances (e.g. for constraint relief in a very specific network and geographical location) so a number of special and/or transitional measures will likely be required.
 - Coordination has proven difficult to achieve. There are few examples yet of flexibility services product designs and management mechanisms working in a truly coordinated manner across markets and network companies. For example, there seems to be unclear boundaries for responsibilities across the transmission and distribution boundary and little coordination of services between the ESO and DSOs. Effective competition and efficient markets require much more clarity in these areas.
3. ***Neutral tendering of network management and reinforcement requirements, with a level playing field between traditional and alternative solutions***
 - We agree with the principles of neutral tendering and note that it is challenging to develop and implement the processes to undertake neutral assessment and delivery of solutions. Creating transparency over those neutral processes and outcomes while providing adequate information to alternative solutions providers is crucial to an efficiently planned and operated system.
 - Flexible (with customer participation) and smart operation of the existing network assets is required. Those flexible operations have to be valued on an equal basis to investment in network reinforcement and this brings significant challenges:
 - Methods to achieve the fair and balanced consideration of all solutions (noting that alternative solutions will perform better than conventional solutions in some cases but that the reverse is also true)
 - Transparency over the application of the methods for fair assessment as well as transparency of the proposed outcomes and the rationale.
 - DSOs may have greater incentives and preferences for some solution types so will be in a conflicted position to be the assessor and final arbiter of the

decisions which will have different commercial and financial value to DSOs. Mechanisms to achieve true fairness in this area are required.

4. *Strongly embedded whole electricity system outcomes*

- We identify three significant challenges with the wholly appropriate aim of efficient whole system outcomes:
 - Identifying the best whole system outcomes
 - Coordinating the implementation of the whole system solutions
 - Fair allocation of costs and benefits of implementing the whole system solutions
- Each of these challenges has particular methodological/analytical, effective co-working across organisations and monopoly/competitive market and new regulatory/market rules factors.
- These issues (and others) need to be addressed to move effectively towards whole system optimisation.

Q2: Do you agree that our work programme will help to deliver the strategic outcomes?

Yes. Each of the areas identified are important.

The prioritisation and scheduling of the specific tasks in the timeline work plan diagrams appear slightly arbitrary (roughly one item per year per workstream) so should be defined and scheduled more clearly.

Q3: Do you have anything to add to the thinking and analysis that informs how we propose to deliver our programme of work?

We have added a comments to each aspect of the programme of work presented to support its development and delivery.

1. *DNOs and new contestable services*

- There is a potential conflict between the strategic outcomes of clear boundaries between monopoly and market activities (DNOs/DSOs should not ordinarily compete in markets unfairly) and efficient whole system outcomes (using existing network assets and customer provided solutions including flexibility to provide needed services efficiently to the whole system). The conflict might arise if DSOs require to step into competitive markets to achieve the whole system benefit. Ofgem state that they have to develop their thinking in this area so the detailed proposals for approaches to balance these strategic objectives will be challenging but highly important.

- Perhaps the right balance could be achieved if DSOs are not allowed to be a direct commercial beneficiary of delivering new system services but be incentivised to provide enabling platforms for their customers to deliver those services and be subject to price control with clawback in the use of network assets to provide those services.
- In the CLASS example, the DSOs would receive incentive through price controls for enabling an effective and efficient demand response mechanism for customers to participate in. Direct participation and remuneration of customers is difficult in this case as all customers are affected by voltage regulation action to reduce system demand. So the DSO would be incentivised for any enabling of demand response for whole system benefit while being subject to price control with clawback over the use of any network assets and, in this case, customer flexibility in delivering the demand response service.
- In the case of EV charging, DSOs should provide enablement for smart charging (as much as required beyond what EV smart charging infrastructure could deliver natively) and enter commercial arrangements with charge infrastructure owners, charge point operators, EV owners and others to procure flexibility services for distribution network operational purposes (e.g. constraint relief) and, separately, enable other stakeholders to buy flex services for non-distribution network uses. The DSO should not be a direct beneficiary of aggregating flexibility from EV charging for the benefit of other system actors, receiving their own benefit from incentivised enablement and price control outperformance through efficient use of EV charging flexibility as an alternative to network reinforcement.

2. **Key enablers for DSO functions**

- Our view is that developing the required technology, data, engineering competences, standards and capabilities is a significant challenge given the degree of urgency now emerging from the energy transition and the scale of the new capabilities required. This is not solely the responsibility of the DNOs as there are wider sector roles and responsibilities and a general technical skills and knowledge backdrop to this issue.
- Ensuring progress now (i.e. no delays in doing what can and should be done before ED2) and to creating policy optionality are crucial. It is not clear what significant, coordinated DSO-enablement investment plans are underway across DNO (and other) organisations at present – there are specific examples of investments in monitoring, control and enterprise system of course. Enablers for smart grid were identified in the ED1 preparatory modelling and business plan submissions but not enough seems to be happening in sufficient timescales to create the necessary environment for the early stages of the DSO transition.
- We have provided brief comments on each of the five enablers and believe that these five are a good starting point for the sector to focus on since they have clear and

obvious potential to enable several new DSO functions and network user value streams:

i. Forecasting and planning enablers

- We note that forecasting is not just for network investment planning (as suggested). Operational forecasting is a significant enabler for flexibility services activation and to inform customers participating in any form of flexibility (e.g. flexible connections) or value stacking with existing flexibility products. The data sets, techniques, platforms, DSO users and relevant customers are different for planning forecasts and operational forecasts so work on operational forecasting must proceed with related but different processes.

ii. Network monitoring and visibility enablers

- We agree this is important and note that there is a diverse range of network and customer data from a range of sources and monitoring devices for different uses in DSOs, their customers and network stakeholders.
- We anticipate that the security, confidentiality but open access presumption requires a lot of development to achieve workable, secure and fair access to open data.

iii. Flexibility trading enablers

- We agree that the ability of trading flexibility (of various sorts from various sources and for various purposes) is a key enabler for DSOs.
- Market and trading platforms should be for neutral facilitation purposes (as per DSO underpinning principles) and for wide network management and customer use. Flexibility trading enablers have the potential to create customer value and optionality while avoiding lock-out. The current early stage of flexibility market implementation by DSOs points to an appropriate short-term focus on exploration through innovation, with accompanying optionality. However, medium-term wide-scale implementation should not be compromised by inappropriate extension of this short-term exploration, trial or commitments to single/multiple trading platform providers. The multiple threaded value to customers of an early move to flexibility solutions in planning, connections and operations should not be underestimated.
- It should be noted that flexibility trading goes far beyond data to include the algorithms and platform technologies to compute, arbitrate and stack flexibility value with notification, settlement and reporting. This is an IP-rich area and consideration should be given to

the provenance, performance, test, scalability, security and other key features of these flexibility trading enablers.

iv. Flexibility dispatch and control enablers

- We think that an efficient, effective and secure approach to flexible approaches to DSO operations requires some form of hierarchy working from:
 1. Open information to provide all system participants with adequate investment, decision and operational quality information to act appropriately and efficiently.
 2. Tariffs to incentivise flexible and efficient use of the networks by the widest possible network user groups and their proxies
 3. Markets to purchase the residual flexibility requirements to keep the network within limits efficiently and to contribute to whole system outcomes in a coordinated way.
 4. Real time monitoring and control to track system operation, ensure operational integrity, monitor flexible service delivery and quickly take any remedial actions to ensure supply security and whole system performance.
- The innovation and investments in ANM already made by DNOs support this final monitoring and control requirement. We note the current UKPN ANM roll-out project as a positive example of a single ANM platform linking a set of DSO functions and enablers (e.g. flex DG connections, monitoring, markets, flex services, etc.) while leveraging the innovation learning of the last decade. The blending of data/information with market interactions, all secured by real time monitoring and control, enables DSOs to fulfil several functions and enable customer interactions with a flexible grid in numerous ways.

v. Data exchange enablers

- This is an essential area for efficient, secure network operation and to serve customers through open access networks, market places and services to and from DSOs and network users. General data and information capture, exchange and access also enables several other enablers as well as DSO functions.
- Data exchange itself has a number of ‘sub-enablers’ such as the wide array of interoperability and open standards, interfaces, security, internet/web based access, etc. These areas form a significant extension of existing DNO systems.
- We note that Ofgem has placed an emphasis on data exchange specifically as this aligns with wider energy data strategies (e.g. the

recent Energy Data Task Force recommendations) and to emphasise the fundamental need for mechanisms of data transit to appropriate users. We note, however that data handling, cleansing, management, storage, processing, etc. (as well as exchange/transit) will require investment by DSOs and their stakeholders to provide a genuinely enabling and secure data platform on which DSO and network user functions and business models will be constructed.

- Data is required to support control systems, intelligence, meet customer expectations on transparency and to facilitate markets through information provision. The sheer volume of data moving through the network (not only that associated with network monitoring) will require significant investment in new systems and organisational changes. Considerations must be given to how this information is managed and curated, and how it is made available to key system and human users. The increased volume of data from the field, could increase vulnerability and therefore, investment in cyber security will be another critical consideration. As evidenced from the August 2019 significant supply loss incident, the economy and society are increasingly reliant on electricity, and with heat and transport shifting towards electrification, resilience has to increase not decrease. The quality of data and communications will be crucial to operating flexibly and responding to critical situations appropriately – data may become just as valuable as a metric of DSO performance as prices and CIs/CMLs are currently.

3. *Development of coordinated markets*

- We view this as essential to create the most efficient way for all network operators to secure the services they need to operate their networks but also to enable all network users and energy market participants to access the full range of different energy and services market places throughout the system without undue hindrance of poorly designed flexibility products, inappropriate exclusivity or lack of systems sophistication to achieve coordination. Much of the development of new flexibility services by the ESO and DSOs has resulted in separate arrangements for different services, services providers and network company service recipients. Power Responsive, SNAPS and Open Networks are tackling the issues of coordination of system operation generally and flexibility markets specifically and we note the urgency and importance of tangible outcomes from these processes for the development of the next stages of DSO and flexibility markets.

Other areas:

- **DSO Organisational Issues and Challenges:**

- While the Ofgem position paper is focused on the what (regulations, markets, technology enablers) we think the questions of 'how' will quickly become important for DSOs. We recognise that some of these questions of how the DSO organisation will structure itself and operate depend on the outcomes of the 'what' questions but it is worth noting some of these organisational challenges here to complement the current focus for Ofgem. While Ofgem are naturally focused on the tangible outcomes, the processes and organisations that will deliver those outcomes will have a strong influence on what is delivered, in what for that delivery happens and when that will occur.
- DNO organisational structures, roles, skills, processes, etc. are focused and optimised to the DNO functions that they are required to deliver today. For example, control rooms with highly skilled professionals monitor, switch, coordinate outages, manage faults, deal with emergency conditions, and interact with customers for operational purposes. The same is true for the current DNO functions of customer connections, planning, system development, major and minor capital delivery programmes, and other technical areas of the DNO businesses today. Developing, implementing and operating the new DSO functions and integrating these with the existing DNO functions comes with very significant organisational change and capabilities development requirement. Change programmes will have to be adequately resourced to support the new functions and the transitional challenges. This is something that Ofgem should consider to ensure that a timely DSO transition is achieved through adequate resourcing of the effort required to make significant technical, commercial and organisational changes.