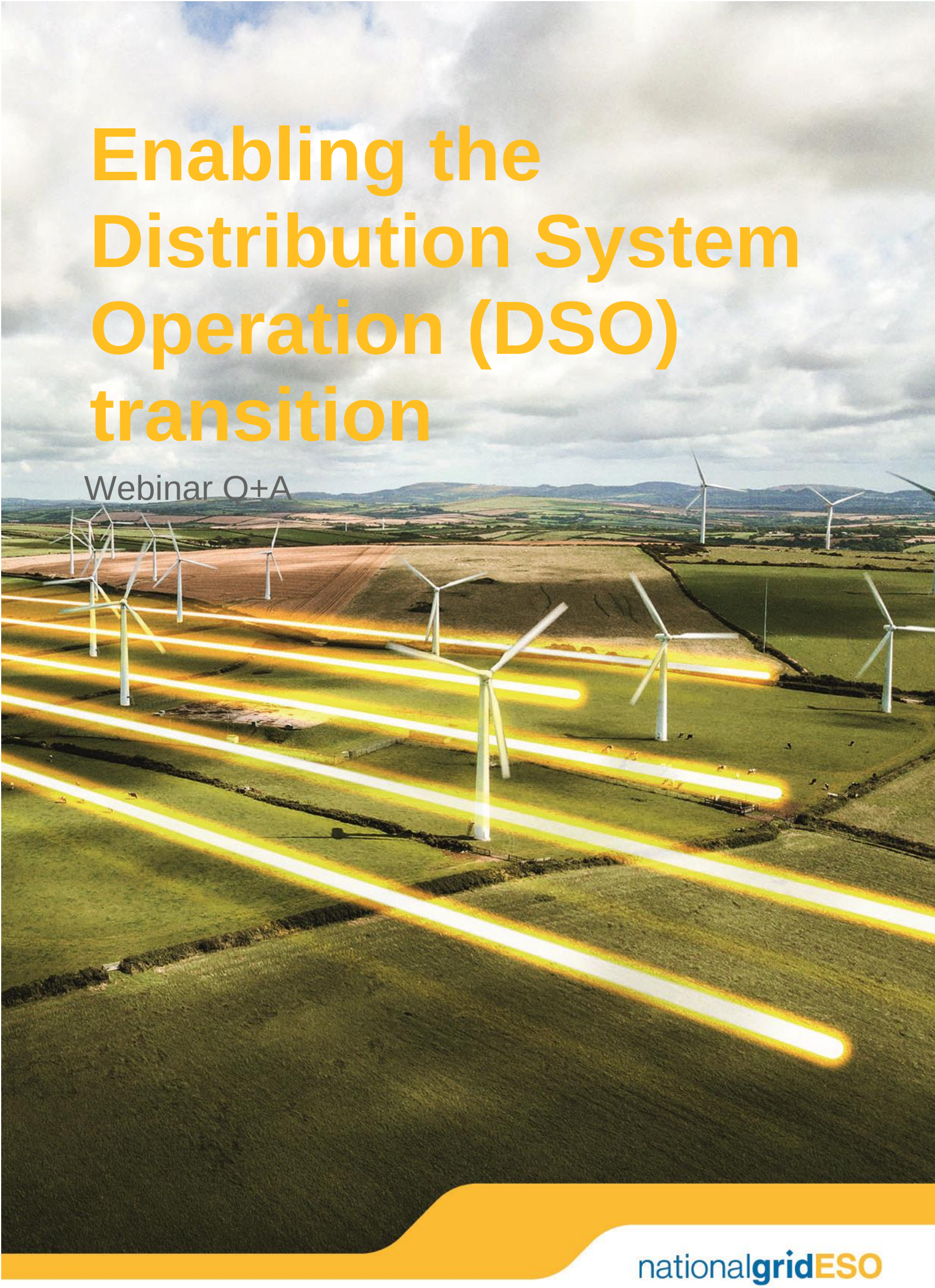
Enabling the Distribution System Operation (DSO) transition

Webinar Q+A



nationalgridESO

Thank you for joining our webinar on 6th May 2021. This document includes all the questions and comments submitted by participants and our responses.

On 26th March 2021, DSO transition was also discussed at T*he road to net zero electricity markets launch* webinar which you can listen to here.

We've combined all questions and responses in this document as they may be of interest to you.

Questions from *Enabling the DSO transition webinar* on 6th May 2021.

How can Distribution System Operation be a neutral market facilitator if they are also a market participant - with Project CLASS in STOR for example - as it's a clear conflict of interest?

How will conflict of interests be solved if you allow DSOs to provide commercial solutions to the ESO, if DSOs also help the ESO assess third party solutions?

The CLASS technology uses regulated distributed assets to provide balancing services. In 2020, Ofgem consulted on the proposed treatment on CLASS in RIIO-ED2 and we're currently waiting for their next steps.

The Energy Network Association's (ENA) Open Networks Project maintains a *conflict-of-interest register*. We contribute to this to highlight any gaps or anything we think is missing that can be taken forwards. The ESO and the ENA welcome feedback on this register which is a living document.

How will you manage conflicting requirements between DSO and ESO? For example, ESO bidding down generation in the Balancing Market (BM) but DSO needs it at Grid Supply Point (GSP) level. Who values it more?

Work on primacy rules will begin in the Open Networks Project in July. The ENA are aiming to develop principles and primacy rules by the end of 2021.

When will it be clear from the ESO side which of the DSO flexibility products are stackable in the same half an hour with the specific ESO products?

ESO recognise this is an important topic for our customers; to understand what they can and can't stack in adjacent periods and in the same half an hour. As we reform our own balancing services, we want to make sure that stacking is possible, where feasible, across DSO and ESO products.

As we build on our Market's Roadmap, we'll aim to share more information on which products can stack with other ones.

Why are you restricting T connected assets selling services to DSOs but allowing D connected to sell services to the ESO (as well as DSO)?

We're not aware of this particular issue and would welcome further context from any affected stakeholder to allow further investigation. Please contact; box.WholeElectricitySystem@nationalgrideso.com.

How will you recognise that although flexibility is important, that building infrastructure is equally valid for efficient long-term energy networks?

Flexibility has a big role to play now and, in the future, to help deliver the DSO transition, but there may be circumstances where infrastructure investment may be the more efficient option.

Asset Network Management (ANM) stops distributed energy resources (DERs) participating in ESO services. How is ESO's DSO transition vision addressing this issue?

ANM is a tool used on distribution networks to manage overloads on their systems. Some DERs have flexible connections which means during periods of high loads on those networks, their output could be restricted by an ANM system. Some ESO services require a level of certainty on their provision which becomes more challenging for such connections. The ESO recognises this is an issue and are working with the ENA through the Open Networks project to facilitate market access for flexible connections. This work is initially focused on the distribution level.

In the ESO DSO transition 2025 vision, this fits in two main areas:

- Service provision – ensuring the contractual arrangements facilitate appropriate provision on ANM connections.
- Operational liaisons – DNOs exchanging information with ESO to understand who is connected in the ANM zone, who is active in areas etc.
- Each product's terms & conditions need to be the same across all DSOs and the ESO. This will minimise costs and maximise market to get the lowest cost for the consumer.

We agree that technical and contractual specifications should be harmonised as much as possible across DSO and ESO system services markets. We will be working closely with the ENA and DSOs through the Open Networks forum to achieve this. Work is already underway within Open Networks to standardise and align contracting approaches for system services between the ESO and DSOs. We have and will continue to support this piece of work; sharing our experience in this area and learning from the DSO experiences in their emerging flex markets to deliver value for the end consumer.

Will DSO owned assets operating in the market, such as STOR, be paying network charges as well to ensure a level playing field?

Network charges (Use of System charges) are paid for by system users. These charging methodologies are codified and subject to open governance arrangements meaning parties can propose a change to the methodology.

How is this work going to feed into the BEIS Energy Codes Review on system governance?

Our DSO transition approach was developed with full awareness of the ongoing Energy Codes Review (ECR) being undertaken by BEIS. At this point we don't know the outcome or timing of the review and what it will mean for the industry codes and frameworks. But one of the elements that has been discussed is the potential rationalisation and consolidation of the codes.

One of the ambitions set out in our RIIO-T2 plan is the digitalisation of a whole system technical code. Including this in our DSO transition approach and vision too helps us to consider how the completion of this project could support better whole systems outcomes across the electricity system in Great Britain. It also joins the dots between our RIIO-2 plans and the DSO transition. Clearly there is more overlap in this deliverable with the potential consolidation element of the Energy Codes Review.

We also mention the potential need for more formalised DSO-ESO ways of working within our DSO transition approach. This could be achieved through several different routes including:

- additions to existing codes whether via the CUSC and Grid Code (of which both ESO and the DSOs are parties to)
- a reworked STC
- through an entirely new DSO-ESO code or framework.

We are keen to hear views from industry on the merits and drawbacks of formalised DSO-ESO ways of working, and any preferences on routes to achieve this as we continue to develop our plans in this area. The Energy Codes Review will, in time, help us to plan our next steps in this area which will ensure we are aligned with BEIS' recommendations. We will review all our plans to check for alignment when the recommendations from the ECR are published.

Julian Leslie said "data Openness & transparency for all" in the presentation - this is welcomed. Please tell that to your ESO colleagues who argued against this with Grid Code mods 109 /133.

Grid Code modifications GC0109 and GC0133 were both proposed by SSE Generation and require the ESO to share various additional system information based on transparency. The ESO has worked with stakeholders to develop the modifications, particularly to establish the scope (for GC0109) and value of sharing this information. While the ESO entirely supports the principle of transparency and has put various initiatives to improve this in place, any additional requirements that need to be fulfilled by the ESO's control room ultimately add to the costs that will be borne by consumers.

Both modifications are nearing completion and will be submitted to Ofgem for decisions.

Will we see the high level of automation required to engage the large numbers of DER assets engaged through the DSO?

Through the likes of programmes such as the Regional Development Programmes, we are developing the processes, tools and systems to enable better coordination and management of multiple, decentralised energy resources, whilst also working towards the development of enhanced automation across various areas, where possible.

Closely aligned TNUoS and DUOS methodologies - this won't be the case if distributed generation is forced to pay both TNUos and DUOS because of access to SCR.

We can look to further align the principles behind TNUoS and DUoS methodologies to provide more consistency in charging approaches. This could then make the charges simpler for stakeholders to understand, if they pay one or more element of the charges.

What is the earliest we could have clarity over DSO/ESO revenue stacking and operation? I think we need clarity before 2025.

We recognise that clarity over revenue stacking and operation is a key requirement for many stakeholders and will take this feedback into account as we develop the works, we need to do to support the DSO transition.

What products or workstreams are underway to better reflect the locational value of DERs?

Each of the DNOs is developing its own range of flexibility services under the standardised ENA services. The ESO is looking for a range of services for different transmission system needs and welcome options from DER where applicable.

Rebuild the Gena and Demand matching process from 'bottom up' by submission and instruction.

We'd like to invite the participant who submitted this comment to get in touch so we can better understand this suggestion: box.WholeElectricitySystem@nationalgrideso.com. Thank you.

Questions from T*he road to net zero electricity markets launch webinar on* 26th March 2021.

Rebuild the distributed systems relies on grid for back-up during extreme conditions. What's on the grid providing the back-up? "Distributed" isn't the solution to all.

We agree that future operability needs will come from a range of solutions. Our pathfinder projects are looking at facilitating solutions from different providers for system needs such as voltage and stability.

How does the purchase of Western Power Distribution (WPD) fit with 'not wanting to be a DSO?'

Since 2019 the ESO has been operating as a legally separate organisation within the National Grid (NG) group. We have strict business separation requirements between ourselves and other entities within the group and work closely with Ofgem to ensure there are no conflicts of interest. Given the news of the proposed acquisition of WPD by the NG group we will continue to work closely with the regulator to ensure there are no conflicts of interest.

The DSO Markets session and DSO transition approach represent the views of the ESO only and do not necessarily reflect the views of other entities within the NG group.

Do ISOs in other markets also act as DSOs? There might be benefits of having a single entity acting at all voltages.

We are keen to learn from international peers as we support the DNOs to build their capability as DSOs. Whilst we recognise that there could be benefits of a single entity acting as the system operator over all voltage levels of the network there could also be missed opportunities.

We believe that the development of DSO capabilities will support the ESO in enhancing its own system operation offerings providing new case studies and fresh perspectives to build on across our operations, network and market development functions. We don't believe that having separate entities as TSO and DSO precludes excellent communication and coordination to successfully deliver a whole system approach to system operation.

For a session on DSO, why is the consumer given the last slot to speak? The first speaker tells us what the consumer wants from a DSO. How do they know?

Throughout our work on developing the DSO approach we have sought feedback from both DSOs and service providers and will continue to do this in the future. We are currently consulting on our DSO approach and would love to hear your views! The consultation is open until the 21st May 2021 – please send your thoughts to box.WholeElectricitySystem@nationalgrideso.com

Should the distribution (D) markets be separate from the already established transmission (T) markets? If so, contracts and products should be the same to enable the move to one system.

Work has already been undertaken to help align existing DSO flexibility services. More work is planned through Open Networks in 2021 which will look at opportunities for synergies wherever possible between T and D-based services.

Have a single service procurement tool - Project TERRE and Project MARI shows it works - having seven different tools are the worst outcome for customers.

We will be developing a single market platform (SMP) for ESO services over the next few years. The project team are keen to ensure that this platform builds in interoperability with other procurement systems. Standardisation is key here, as referenced in some of the other presentations. There will be work initiated in this area through Open Networks.

We've said we want SMP to have interoperability with other systems, recognising that this is a rapidly evolving area.

Do ESO and the DSOs agree on what should be the future coordinated market organization (e.g. who will procure resources, who will send dispatch instructions)?

Our expectations are that ESO will procure system services to meet Transmission system needs and that DSOs will procure system services to meet Distribution system needs. We expect that there will be a direct contractual relationship between the relevant procuring party and successful service provider/s.

The ESO and DSO operational teams will then coordinate based on forecasts and system conditions in real time to instruct contracted service providers. Naturally, there are many system needs that are not confined to one voltage level or another and outcomes in one market will affect others. The exact nature of service market organisation between the ESO and DSOs is still in development.

The finalised ways of working between the TSO and DSO will need to be coordinated and aligned to deliver a whole system approach that provides maximum value for end consumers. We will be actively involved in discussions with DSOs and industry via the ENA's Open Network's project to help develop ways of working between ESO and DSO procurement and dispatch of system services. The continued progression of the Regional Development Programmes (RDPs) will also support learning in this area.

Are you concerned that prices in locational DSO markets will become detached from the GB-wide wholesale market prices?

Existing locational DSO markets are procuring system/grid services active power products to support the management of distribution constraints. These products have different timings and specifications to the energy only GB-wide wholesale market and so we would expect that different price drivers exist in these different markets.

Some DSO services are currently scheduled for delivery ahead of time on the Thursday prior to the week of delivery. This knowledge will allow asset owners to weigh up their options when deciding how best to commercially optimise their asset closer to real time. Prices in these markets will be important to signal areas of scarcity to industry and so we would expect divergence in prices between the different markets to incentivise greater participation in markets of greater need.

How do you differentiate between ESO solving ESO's problems and DSOs solving their problems? Listening to presentations I am concerned the lines are blurred.

This is a key outcome of a product within the ENA – Open Networks work plan throughout 2021. We recognise the need for much closer working between the DSOs and ESO in both planning and operational timescales to undertake whole system management at lowest cost to consumers. The derivation of primacy rules under different scenarios will be key to understanding more around how this works. In addition, there are also several innovation projects, such as WPD's EFFS and SSEN's Transition, providing additional input and learning in this area.

What evidence is there internationally that a separate "independent" System Operator is best practice? Most markets referenced are much higher fossil fuelled than the UK.

Ofgem have produced a review of system operation which can be found here which includes a recommendation on the appropriate governance model for the ESO.

The preferred governance models for the GB system operators (both ESO and DSO) are for Ofgem and BEIS to determine.

Do you envisage a settlement process for each market or one combined settlement as now?

The ESO currently settles and pays service providers who provide services to the ESO through our formal ancillary service markets such as but not limited to FFR tenders, DC auctions ORPS utilisation and black start contracts. Bids and offers made via the Balancing Mechanism to support real-time system operation are settled and paid for via ELEXON.

DSOs are currently settling for their flexibility services themselves. As these markets mature there will need to be increased data flows between their organisations and ELEXON to provide flex providers in DSO markets with the same opportunities as those participating in ESO markets such as ABSVD of utilised volumes. In the future there may be a synergised approach to settlement across the different DSO organisations.

How can embedded BMUs provide short notice DSO flexibility services within the constraints of the Balancing Market (BM)?

Providers can currently alter their BM parameters up to gate closure and this is a means of indicating to the ESO that they are not able to provide services via the Balancing Mechanism, if looking to do so via a DSO flexibility service.

Your own technical work proved distributed assets can't re-start adjacent or higher-voltage grid sections and load, so why are you spending millions on it?

Distributed ReStart has designed engineering solutions to overcome technical challenges, including ability to restart higher voltage networks. We will be conducting live trials on 3 case studies on the SPEN network this summer, including using renewable generation as black start & supporting services to extend restoration up to transmission voltage. Results will be published on the DR webpage in the coming months.

As a generator supplying services to the system, e.g. Frequency Response, how can I only supply it to either the DSO or the ESO? How can this service be sold "in 2 markets"?

We will be developing a single market platform (SMP) for ESO services over the next few years. The project team are keen to ensure that this platform builds in interoperability with other procurement systems.

Standardisation is key here, as referenced in some of the other presentations. There will be work initiated in this area through Open Networks. We've said we want SMP to have interoperability with other systems, recognising that this is a rapidly evolving area.

ESO mentioned working with UK Power Networks on them providing intertrip to ESO. Can ESO please explain how this is done in compliance with CUSC?

We have recently delivered the N-3 intertrip capability with UKPN to fulfil specific conditions defined in Bilateral Connection Agreements with UKPN. This intertrip is required to ensure regional demand security compliance in line with the SQSS across wide areas of the network and is only armed when certain transmission system outage conditions are met.

NGET -> NGESO -> ISO. Should we take the same route in distribution, separating distribution owner from system operator?

Distribution Network Operators are very different organisations to an integrated Transmission System Operator. As a result, there is limited precedence in considering the legal separation of the ESO. This is ultimately a matter for policy makers such as BEIS and Ofgem.

The Regional Development Programmes (RDPs) seem to involve a lot of command and control of distribution nergy resources (DERs) by ESO and DNO but this could put off participation. How does this work for aggregated response?

We're keen to get stakeholders more actively involved in Regional Development Programme market development and will be initiating engagement shortly. We want RDPs opportunities to be accessible to all potential providers, included aggregated units, recognising that they are for a specific regional need.

We have done 4DHeat type approach over 30 years ago with Total Heating Total Control product for consumers. This is not a new idea.

We recognise that there have been previous schemes considering time staggering of domestic heating demand.

Will 4D Heat and the Total Heating Total Control project be superseded by heat pumps which reduce elec demand by 4/5 and also displace it in time, largely to daytime?

The 4D Heat and Total products used off gas-grid sites in the north of Scotland to "soak up" excess renewable generation and support management of network constraints. The project outcomes were positive, showing that the electrically heated sites could absorb some excess generation however the amount required to avoid network constraints was significantly greater than the potential to increase demand via this method.

Heat pumps are typically more efficient than older electric storage heaters (which were typical of the sites studied in the north of Scotland) and therefore would likely be less effective in soaking up excess generation. Heat pumps are also typically sources of electricity demand during the hours when home heating is required which can be during the day whereas the older electric storage heaters would typically be sources of electricity demand overnight.

This displacement as mentioned in the question may also affect the effectiveness of heat solutions to manage network constraints. Nonetheless, we expect that the transition to zero-carbon sources of heat will provide new assets for both DSO and ESO markets. We will work closely with companies operating in this space to maximise the system support we can access from the heating transition and deliver value to the end consumer.

As the DSO flex-market is evolving now it would be beneficial to agree the Primacy rules and revenue stacking principles now rather than by 2025. Is it possible?

We are aware that primacy and service stacking principles are a key topic in the development of DSO markets. We are working closely within the Open Networks forum to explore this topic in more detail.

In parallel we will be looking to work with DNOs to develop a test-bed to implement these rules in areas of particular need, such as through the Regional Development Programmes.

If services are going to be more location specific, why would this need assets to be aggregated on a wider location basis? Doesn't this suggest the opposite?

Some system services such as voltage control and thermal constraint management are very location specific and therefore aggregation over a wide area would not be appropriate to deliver value from the service. For other services, most notably frequency response, reserve and inertia aggregation over larger areas should be more feasible as these products act nationwide.

(Comment) Let's agree on, and stick to metering/performance monitoring standards across all markets!

We agree that common standards for system services across ESO and DSO markets should be the goal where possible and look forward to working with industry to identify and implement these common specifications.

How can ESO/DSOs co-ordinate to make it much clearer for end users what opportunities there are, how they can be stacked, and what the requirements are?

Please see our response above (to this question: As the DSO flex-market is evolving now, it would be beneficial to agree the Primary rules and revenue staking principles now rather than by 2025. Is it possible?)

The focus has been on forecasting and flex thus far. How is energy efficiency to fit in to the ESO/DSO strategies?

Energy efficiency is an important piece of the puzzle to achieve net-zero emissions for GB's economy. The development of increased efficiency in appliances and other demand sources is driven by government regulations and industry standards alongside innovation from product manufacturers. Our role as the TSO is focussed on forecasting system requirements and developing suites of system services which enable efficient, fair and transparent whole system management. We will continue to work very closely with the DSOs to deliver whole system outcomes.

However, we don't expect to be leading any initiatives in energy efficiency for demand users in the future. We, and our DSO counterparts, will provide our full support to BEIS if they require it for any energy efficiency projects in the future.

How do you manage data transparency issues with some DSOs having flexibility service providers in the same company (even with unbundling properly applied)?

DSO ownership and parent company status is a matter for Ofgem. Within the ESO we are working hard to continuously improve our data transparency and follow principles of complete data openness wherever possible. Data transparency is also likely to be an important goal for the DSOs and is high on our regulator,

Ofgem's, list of priorities. The more information we can share with industry in a wholly transparent and public way the more we can grow industry confidence in our fair and accessible markets.