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Dear Alex

Key enablers for DSO programme of work and the Long Term Development Statement

Thank you for the opportunity to provide input into the discussion around the update of the Long Term Development statement.

We are keen to be involved in the development of the new LTDS which we believe is an important step to helping to unlock the benefits of a more flexible energy system.

Below, we have provided detailed responses to the questions in the consultation but if you need any further information please do not hesitate to contact me.

Yours sincerely

Ross Bibby
Senior Analyst – Networks Regulation

SECTION 1 – The Long-Term Development Statement

Responses to section one of this consultation will be used to inform updates to the LTDS FoS. We will convene a working group in 2020 from across industry to define the specification of the reformed FoS based on the responses to this consultation. The New FoS will be in place by 2023.

Content format of form of statement

Question 1: *We consider that improvement is required in the visibility of DG and LCTs connected to the distribution network. In addition to DG and LCT connections, can you identify areas for improvement in the current data that is shared in the LTDS?*

SSEN recognises the importance of capturing DG and LCT connections and we are in agreement that the visibility of these technologies should be increased. There are some DG & LCT customers that are not fully visible as they are under a size threshold and are able to connect then notify. More visibility and information relating to customers connecting DG and LCT's would be welcomed by SSEN.

With respect to additional data improvements, SSEN propose that the LTDS also identifies flexible connections, these being connections using Active Network Management (ANM) schemes and/or special intertrip schemes, and also identifies connections that may have alternative contracts for Constrained Managed Zones (CMZ), Demand Side Response (DSR) etc. This could be captured within a table of connected and contracted schemes.

In addition, SSEN is developing their Distribution Future Energy Scenarios (D-FES) and this may be an additional element that could be included in the LTDS. As the LTDS already provides a demand forecast, extending this to reflect the impact of multiple scenarios may be possible.

Question 2: *Can you identify areas for improvement in the presentation of network information in the current FoS?*

We believe that the current format of the LTDS; predominantly data tables and single line diagrams, is fit for purpose for current data sets and potentially future data requirements. The flow of data and the information provided gives interested parties the necessary technical parameters to assist with building models and undertaking necessary studies on the 33kV network.

Question 3: *The EDTF and others have identified the need to collate and share 11kV and lower voltage network data. Is there value in creating a sharing mechanism for 11kV and LV network data ahead of the expected roll out of network monitoring and telemetry in RIIO-ED2 and the limited data availability in RIIO-ED1?*

Yes, there is value in establishing a sharing mechanism for data now as it will assist in optimising the roll-out of network monitoring and telemetry. The sharing mechanism should be consistent across all DNOs.

Although we agree that a sharing mechanism would be a positive development, providing 11kV and LV data to the same granularity as the existing 33kV network in an LTDS format will be extremely challenging due to the exponential increase in the volume of asset data compared to the 33kV network. Providing the information in a format that is focused and cohesive is likely to be difficult due to the volume of data.

It should be noted that the network coverage of monitoring devices on the 11kV and LV networks is not the same as at 33kV, so at present it would not be possible to provide the same level of detail for 11kV and LV networks as currently provided for 33kV networks. To improve information and build a robust sharing mechanism, monitoring devices and data recorders are required to be installed across the 11kV and LV networks.

Question 4: *Given the complexity of future distribution networks, static data alone may not satisfy user needs. Should the FoS be enhanced to mandate the development of a common network model to allow power system simulation that each licensee must make available for exchange to users and interested parties? If so, what do you consider to be an appropriate standard?*

We would like to engage further on this with stakeholders to understand what platform these models could be presented on, to best add value and meet requirements. It is our understanding that there is not a common modelling tool used across the industry with different DNOs opting for Power Track, PSSe & SinCal to name a few. For SSEN the preferred standard would be PSSe for 33kV models and SinCal for 11kV models. Dynamic modelling with real time data will present other complexities and issues that would need to be further resolved.

Question 5: *From a review of industry publications we consider that interoperable standards will underpin future DSO activities. Should the FoS mandate the adoption of an IEC 61970 CIM and IEC 61968 CIM for Distribution Management, such that data is collated and constructed in a manner similar to WPDs CIM innovation project model? Are these standards mature and what are the likely benefits and costs?*

We agree with the general principle of mandated inter-operable standards for distribution management activities and agree that a standardised approach with a common set of rules would be beneficial. We would like to be involved and engage with future discussions on this topic.

Question 6: *Should the FoS also be retained in its current Microsoft Excel form? Is there value in this format?*

SSEN believes that the current format is an effective way to present a large data set. It enables customers to understand, read and use the large data set. In addition, some modelling tools, such as PSSe, accept excel formats as an input so this current format can be very useful when building power flow models.

Heatmaps, direct needs identification and hosting capacity

Question 7: *Ensuring network information remains accessible is a priority. At present there is no formal requirement to produce heatmaps. In order to ensure future customer can access the required data, should the scope of the LTDS and FoS be extended to mandate the production of heatmaps?*

As one of the first DNOs to provide a heat map product we agree that there should be a requirement for all licenced network operators to produce them. They are an excellent method of exploring data and facilitating investment in the right areas.

However, we need to be mindful that the production of heat maps came from the stakeholder feedback under the Incentive on Connections Engagement originally and so information presented relates to a specific purpose and audience as identified from that engagement, relative to the LTDS. For example, SSEN's heat maps show connection applications in process as well as issued but not yet accepted, quotation offers in addition to contracted and connected projects. These would not be a meaningful feature for the LTDS.

We feel that the requirement of the heat maps should be clearly defined and based on a minimum scope rather than absolute content to allow for the fact that different DNO areas have differing factors affecting connection, for example, updates on future Transmission projects are of particular interest to customers in the SHEPD area but this may be less relevant elsewhere. It is important that the heat maps continue to reflect stakeholder requirements.

Question 8: *Would there be benefit to adopting common guidance or formats on information presentation within heatmaps, including the presentation of technical information and cost information? What are the barriers to its adoption?*

As stated in the question above we feel there is a benefit to adopting some guidance on the information presented in the heatmaps.

The level of technical information to be included would need further discussion. For example, it may not be appropriate to include cost information, as the costs would need to be assessed on a connection by connection basis depending on exact location and amount of work required.

Question 9: *The core focus of the LTDS is to assist users to enter into arrangements with the licensee and evaluate the opportunities for doing so. Should the scope of the heatmaps include other network needs, such as flexibility requirements? What is the best mechanism to notify network users of opportunities to enter arrangements with the licensees?*

Currently the LTDS is compiled to allow demand customers to assess areas of the network where they could connect. While it may be that this gives generation customers an indication of the areas of the network that would be suitable for connection, that is not its principal purpose. Our heat maps give indications of areas that are available for both demand and generation connections. However, flexibility requirements are currently advertised on the Piclo platform. This provides a single location for flexibility providers to assess the opportunities available.

It is important to remember the purpose of the LTDS and to ensure that arrangements meet stakeholder requirements, do not contain lots of duplicate information, and do not become so full of functionality that they are difficult to use and therefore not fit for purpose.

Question 10: *On what frequency should these maps be updated? Should they be updated as there are changes to the underlying data or periodically?*

These maps should be updated as frequently as needed – having due respect for the cost and effort of updating on one hand versus the likely benefit on the other.

Forecasting of network needs

Question 11: *Is there a need for a common methodology or principles for estimating load growth? What potential role could the D-FES play in informing the load growth forecasts on the LTDS?*

A common methodology is vital to ensure that users looking to connect have the same experience from all network operators. However, this must be flexible enough to allow regional variations, such as different D-FES uptakes, being incorporated

Question 12: *Are there any lessons that can be learned from other industry documents such as the ETYS and the NG FES?*

We believe that there are lessons to be learned from EYTS and NG FES; however, we feel that DNOs should collectively determine what best practice could be taken from these reports to improve the existing LTDS. We would not suggest that the LTDS is changed to align with Transmission as the needs of users and data presented is different.

Question 13: *Do you agree that the LTDS should be enhanced to present the key assumptions for network requirements forecasting and the uptake in LCTs, or is this a role better served by the D-FES or other documents?*

We feel that the LTDS should be enhanced, however, as mentioned earlier it must have clear aims. The D-FES work provides multiple, possible future pathways; it is not a forecast. The D-FES analysis must be incorporated into the LTDS to produce a likely demand forecast. Combining the data sets will reduce the number of documents customers need to refer to to understand the bigger picture.

Question 14: *Forecasting tools have been a focus of a number of innovation projects. Are there any mature tools or techniques that could be adopted to enhance the transparency or robustness of the load growth forecasts?*

Projects such as WPD's EFFS claim they will provide more robust forecasting techniques once complete. It is important to remember that DNOs are already skilled at producing load growth forecasts. This update should be seen as an evolution of the LTDS. Any future demand forecasting will still rely on historical data as a base, but further consideration will also be given to future weather effects, LCT uptake and economic growth etc.

IDNOs and the LTDS

Question 15: *Do you agree that IDNOs should be issued with a direction to produce a LTDS?*

Yes. IDNOs are now significant players in the connections marketplace. The nature of the projects that they are involved in, and the fact that a lot of the newest and most flexible networks are being constructed by them means that they exert significant influence. We see no reason why IDNOs should be excluded from the requirement to produce a LTDS

Question 16: *What summary information should IDNOs publish? This is currently found in section one of the LTDS FoS, such as information relating to the design and operation of all voltage levels of the distribution network. Please explain your reasoning.*

IDNOS should be required to produce information of the same granularity that DNOs do. IDNOs have the same duty to connect as DNOs, therefore should provide the same level of information to help inform those interested in connecting.

Question 17: *What information on network data should IDNOs publish? This is currently found in section two of the LTDS FoS. Please explain your reasoning.*

Please see the response to Q16.

Delivery governance of the form of statement

Question 18: *Do you agree with our proposal on how the LTDS delivery body should be convened and governed?*

Yes, we agree that a working group of industry experts should be created. It is important that each DNO has a nominated person at the working group to ensure their stakeholder requirements can be reflected and met in the most economic and efficient way possible, providing value for money.

Question 19: *Would you like to nominate an individual to take part in the LTDS working group? Please set out reasons for their inclusion and any qualifying experience the nominated person has to function as a strong contributor to the group.*

Adam Bain (SHEPD) and Will Monnaie (SEPD). Both are currently System Planning Leads for their respective DNO area.

SECTION 2 – Key Enablers for DSO

Responses to section two of this consultation will feed into our policy development on DSO. Information will inform where, when and how we take regulatory steps to facilitate DSO through improvements to technology, data and engineering practices. We expect to harness this information to help define our forward work programme on key enablers for DSO and associated regulatory actions and will continue to coordinate this with wider data strategies as outlines here and in the supplementary consultation document.

Network monitoring & visibility enablers

Question 20: *What network monitoring parameters would you like to have access to? At what frequency?*

We feel that load data should be available in as granular detail and as close to real time as possible. However, it must be noted that the gathering of additional data is reliant on the installation of monitoring devices on the network. The number of these will increase exponentially at each level of voltage decrease. The installation will take time and have a cost impact. The value of the data gathered must be balanced against the cost. The data could theoretically be gathered by smart meters but the final level of penetration at the end of the installation period is uncertain and therefore it cannot be guaranteed that the appropriate level of information will be able to be gathered from these devices in order to provide the network data desired. There are also concerns that any difficulties associated with rollout or communication links on a geographical basis could have a disproportionate impact on some groups of customers.

Question 21: *What would enhanced 33kV network monitoring enable that cannot be undertaken today?*

Enhanced monitoring will help better inform network development plans covering the whole system. It will allow greater understanding of where flexible solutions can be employed. Potentially it will allow less constraint on DG customers and also real time analysis on how the network will react to abnormal running.

Question 22: *What would enhanced 11kV network monitoring enable that cannot be undertaken today?*

See response to Q.21

Question 23: *What would enhanced LV network monitoring enable that cannot be undertaken today?*

Enhanced LV monitoring will support to Government targets to enable EV uptake by allowing DNOs, and consumers, to determine the most appropriate investment on a given network.

Visibility of small-scale generation and EV charge point connection are reliant on the notification process to give accurate records. We have helped the ENA establish data sharing agreements with government departments such as OLEV (Office for Low Emission Vehicles) and DfT (Department for Transport) to augment our records with any non-reported installations, which led to a 60% increase in our records – further improving our ability to address issues expected to arise from increased EV and HP connections.

We would also welcome discussions around the use of SMART metering data that could help better inform data gaps on LV networks.

Question 24: *What constraints in data systems architecture do you perceive are limiting network monitoring and visibility?*

We believe the following can limit network monitoring and visibility:

- Availability / reliability of communication networks to provide data (real-time or periodically)
- The cost of establishing, running & maintaining communication networks
- Cyber security
- Restrictions due to legislation i.e. GDPR, Utilities Act etc.

Flexibility trading enablers

Question 25: *What operational data is most important to prioritise opening up first and why?*

The most important operational data is accurate power flow information from demand consumers and generators combined with available network capacity. Without these data sets, managing a network in a flexible world and trying to maximise available asset capacity could result in increased risk to network integrity. This data enables networks to be managed within their rated capacities whilst enabling DSOs to improve network utilisation. In addition, this information would assist with operating the network more flexibly under abnormal conditions; such as maintenance periods, faults etc.

Question 26: *How does a lack of access to this data impact the delivery of flexibility to the system?*

Without this data, the full potential of flexibility cannot be achieved as DNOs will be unable to make alternative investment decisions for network services (CMZ, DSR, etc) and/or encourage third party investments in areas through price signals. In addition, a lack of data can make network operability inefficient and increase network constraints.

Flexibility dispatch and control enablers

Question 27: *Are there any real or perceived conflicts of interest with DNOs owning and operating ANM platforms at scale? What additional protections could be required for ANM customers?*

The purpose of an ANM system is to allow greater numbers of connections, more quickly and at lower cost. This is because it does not trigger reinforcement. The only possible conflict of interest would be if DNOs were favouring connection of assets of affiliated or related undertakings. Given there are already stringent rules, both in their licences and under competition law not to distort, prevent or restrict competition or provide an advantage to an affiliate this is not perceived to be a credible risk. The recently introduced licence condition also prevents DNOs from owning or operating generation assets except in certain restricted circumstances and usually in relation to maintaining security of supply. Any breach of these regulatory and legal requirements would result in substantial sanctions being applied.

Question 28: *In order to preserve optionality over ANM scheme operations, what technical and commercial protections, such as technical ring-fencing, may be required?*

We feel that the commercial protections and technical requirements will be driven and agreed through connection agreements. The proposals on the options for signal receipt, operation and control will be agreed as part of these terms. We feel that DNOs should be able to monitor and control a connections export/import if the customer has signed up to a contract to connect flexibly.

Monitoring and operational equipment being installed for flexible services could be contested; however, as a reasonable and responsible network owner we must ensure the quality of the products being installed and where possible standardise them for cost and installation efficiencies.

Although a DNO will have a contract with a customer for a flexible service there may be conflicts of interest should that generator also be contracted under the National Grid balancing mechanism. There may be two different needs driven by Distribution and Transmission and separate contracts for services could leave one or both networks at risk.

Question 29: *Please provide real world examples where lacking timely access to usable network data, or regulatory barriers, have limited your ability to provide a DSO function or support service. Please submit any relevant evidence and documentation of examples cited.*

1. With the roll out of SMART meters picking up pace there is an opportunity for DNOs to receive this data to better inform their LV networks. As more LCTs connect, at LV network level, this data could be of increasing value. Better data through SMART meters could open up flexibility on LV networks for new connections or be used to offset traditional reinforcement schemes.
2. There are instances where overloads have occurred that could not be foreseen and resulted in the network tripping. Only upon investigation of the trip could the issue be

fully identified. Having the correct network monitoring and data could have helped identify and avoid such trips.

3. From an operational perspective, when running Blackstart scenarios it can be difficult to determine the demand on the network that would need to be restored; especially when there is a large mix of demand and generation on the wider network. Lack of sufficient generation to pick up demand could cause further cascading trips.

Question 30: *Are there any other issues related to enabling DSO that have not been considered that you think are important? Please provide details of your considerations.*

Detailed knowledge of the LV network will be required as this will need to be much more closely monitored and controlled with the electrification of heat and transport. Systems will need to be updated and engineers trained in LV control. The real time data from the LV network will be vital in ensuring the successful functioning of the DSO model. There is a lot of potential for participation in flexibility services at LV level with Vehicle to Grid activities becoming more common, the use of household batteries allowing controlled export of PV generation and so on. A lot of the new technologies that will affect power flows will be connected at LV. Electric vehicles and Heat Pumps being the two obvious examples. The monitoring of the LV network will also be important for understanding when participants exceed their contracted output.

The services that can be provided and the parameters within which they can operate will need to be clearly defined. Enhanced monitoring will be required for the imposition of sanctions on those who exceed the bounds of their contracts, for example by exporting a greater capacity than agreed.

The development of the industry codes will need to proceed at an appropriate pace in order to ensure that the DSO model can develop in a timely manner to unlock as great a level of benefit as possible. The codes must complement each other to ensure that a whole system view can be taken when making investment decisions.