

## Energy Networks Association response to Ofgem “Key enablers for DSO programme of work and the Long Term Development Statement” Consultation

### Introduction

1. Energy Networks Association represents the companies that operate and maintain the gas and electricity grid network in the UK and Ireland. Serving over 30 million customers, they are responsible for the transmission and distribution network of “wires and pipes” that keep our lights on, our homes warm and our businesses running.
2. Our energy network companies are recognised worldwide for their strong track record of safely, reliability and securely providing the UK with the gas and electricity it needs in three key areas:
  - **Trusted performance** - The average gas customer will experience an unplanned interruption once every 140 years. For electricity customers, since 1990, there has been a 59% reduction in the number of customer interruptions, and an 84% reduction in length of customer interruptions<sup>1</sup>. The average GB premises experiences a power cut once every two years and the average length is now only 35 minutes<sup>1</sup>.
  - **Reduced costs and increased investment** - Network costs are now 17% lower than they were at the time of privatisation<sup>2</sup> and are projected to remain flat, and in some areas fall, into the next decade<sup>3</sup>. These costs are the same or cheaper than in other major economies. The UK’s energy networks companies have attracted some £100bn of investment since 1990<sup>4</sup>. They are forecasted to invest £45bn between 2013 and 2023.
  - **Delivering innovation** - Network companies have spent a total of £99mn across 928 projects through the Network Innovation Allowance, and supported over 1,400 innovation projects since 2004. Independent research carried out by Pöyry has shown that innovation projects from the previous Low Carbon Networks Fund by local electricity Distribution Network Operators (DNOs) could deliver up to £1.7bn of benefits by 2031<sup>5</sup>.

### Introduction to Our Response

3. ENA welcomes this consultation paper and the opportunity to provide views on behalf of our electricity networks members. We are aligning our response to the questions posed within the consultation document where we can, as well as providing input on points made elsewhere in the position paper.
4. ENA has been delivering the Open Networks project over the last three years, and this has been recognised by Ofgem and BEIS in the Smart Systems and Flexibility Plan. We are making progress towards the delivery of Distribution System Operation (DSO) and the key enablers to support this, and we welcome the recognition of this work through the references within the consultation paper. Several of the areas covered in this draft consultation are subject to ongoing work within the Open Networks project.

<sup>1</sup> Ofgem RIIO Electricity Distribution Network report 2016-2017; Ofgem OES Review 1998-2000

<sup>2</sup> Ofgem blog tougher price controls energy networks

<sup>3</sup> Ofgem Network Performance Under RIIO

<sup>4</sup> Ofgem RIIO fast facts

<sup>5</sup> ENA New opportunities for energy innovators

### DSO Definition

5. We agree with you that “DSO to be a set of functions and services that need to be executed to run a smart electricity distribution network. This definition does not imply a single party as an operator, but recognises roles for a range of parties in delivering DSO.” This is how we have defined Distribution System Operation in the Open Networks Project and we are continuing to work on our DSO Implementation Plan, which starts from our definition of DSO and associated functions and activities.

### Part 1 – The Long Term Development 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?

6. In the Open Networks Project, we have enhanced the current data available on Distributed Generation (DG) and Low Carbon Technologies (LCTs) through the System Wide Resource Register (SWRR). As at the end of January, each DNO will be publishing all resources equal to or greater than 1MW connected to the distribution networks in a consistent agreed format, regardless of where they are connected. In July, all DNOs will extend the registers to include reinforcement works.
7. We have identified further improvements to the SWRR that will be considered this year and this can be provided as input to any LTDS Working Group. This is part of the ongoing SWRR development. Improvements to consider may include:
  - Expanding register to include Distributed Energy Resources (DER) <1MW
  - Inclusion of ESO, TO & iDNO registers
  - Development of central platform to host all company registers
8. Through the work at ENA on the Flexibility Commitment, we are collecting data and making it visible throughout all aspects of the Flexibility Markets. This includes making constraints visible, forecasting requirements, reporting on procured services and reporting on dispatch actions across the DNOs. This transparency in reporting is one of the six key steps for delivering our Flexibility Commitment.
9. Through the work of ENA's LCT Working Group, we are working with industry to simplify the process of 3<sup>rd</sup> party notification of EV and Heat Pump installations on DNO networks. This includes collaborating with the Energy Data Taskforce (EDTF) on the Energy Asset Registration Strategy.
10. The ENA Data Working Group is looking to support the EDTF in the development of a Digital Systems Map (Recommendation 5), and if there is data within the LTDS that can be mapped to the Digital Systems Map, it will be considered for inclusion. It could be in the future that the Digital Systems Map could be a means to meet LTDS obligations for DNOs.
11. Taking into account the EDTF principle of “assumed open data”, we are working with stakeholders, BEIS and Ofgem to understand what data from the above can be made public, and what cannot. This includes understanding and utilising the “Data Triage”

process described in the EDTF report and the Energy Systems Catapult's Data Best Practice Guidance.

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

12. The use of the CIM has been identified below to deliver interoperability and we would support this.
13. In the System Wide Resource Register, from July 2020, DNO and TO network reinforcement requirements will be linked to new distributed generation that is accepted to connect onto distribution networks. This will provide further information for project developers to assess opportunities to connect to, and to provide services to, DNO networks.

**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?

14. There is development identified within the SWRR and DCUSA Modification Proposal DCP350 to share connections data and this can be further progressed. From January 2020, the SWRR will publish information on connected resources down to 1 MW in capacity. Some of these resources detailed in the SWRR will be connected at 11kV and below.
15. We could potentially share existing data that we have on 11kV and LV networks, if it were in a suitable digital format. Roll out of targeted network monitoring, particularly at the lower voltages, will need to be expedited if we are to achieve this visibility and meet our Net Zero targets.
16. We are innovating in a range of areas to achieve better LV visibility in addition to rolling out network monitoring. Use of smart meter data, digital connection notification techniques, artificial intelligence and machine learning from a range of different datasets are key techniques for achieving this.

**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?

17. Open Networks Workstream 1B Product 4 (Data Exchange in Planning Timescales) has identified an extended scope for the planning data to be shared between network operators so that transmission and distribution networks can be more accurately assessed and developed with increasing levels of DER. This proposal for increased data exchange will be considered through a forthcoming Grid Code modification. The scope of this data exchange will include data (or network models) for a number of different demand scenarios (e.g. winter peak demand, solar generation peak and conditions of high transmission system power transfers). It is feasible, subject to network company

confidence obligations, that this planning data (or models) could be made more widely available to industry stakeholders.

18. The use of the CIM has been identified below to deliver interoperability and we would support this.

**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 a 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?

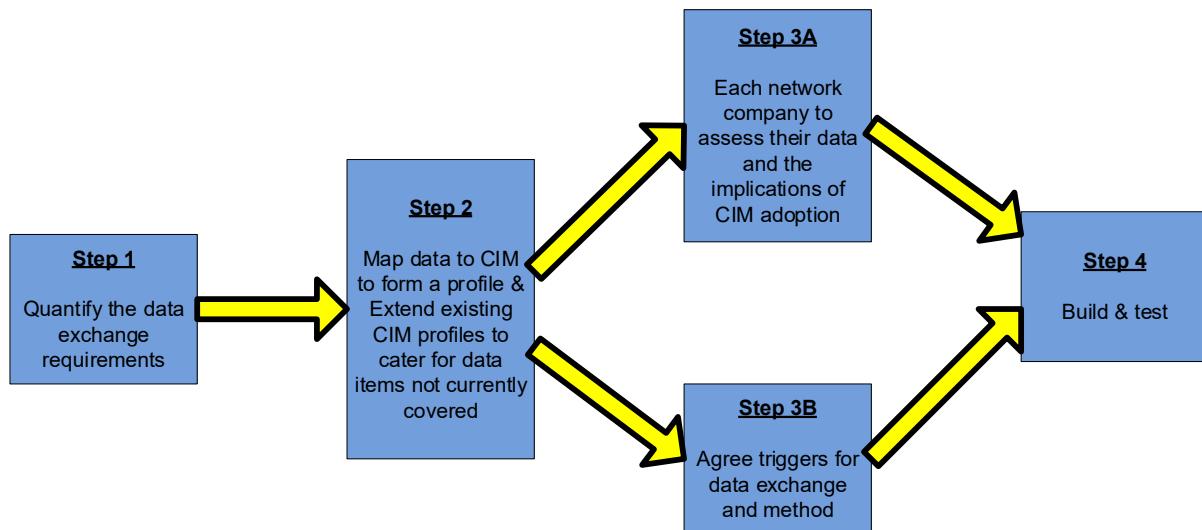
19. We agree and in the Open Networks Project, we have undertaken an analysis of the potential ways to collate and present planning data and our final report is published in the Open Networks section of the ENA website:

<http://www.energynetworks.org/assets/files/ONP-WS1B-P4%20Data%20Exchange%20Report-PUBLISHED.pdf>

20. We have concluded that using an industry standard or an approach based on extending current industry standards to define the prototype of a future new standard, promotes the required interoperability between different organisations and products, and ultimately improves the efficiency of markets and choice of software product vendors.

21. We also identified the Common Information Model (CIM XML) as the widely preferred industry standard for data exchange. Many network companies have already adopted the standard as the means to exchange data between corporate systems and, to a limited extent, exchange data between companies.

22. Having decided upon the use of the IEC CIM standard as the basis for Transmission to Distribution (T-D), Distribution to Distribution (D-D), iDNO to Distribution (ID-D) data exchange and also the basis for providing stakeholder visibility of data in a standard format, there are a number of fundamental steps that need to be undertaken. These steps are illustrated below:



23. It is proposed that a UK CIM working group is established with an appropriate body providing governance of the standards development within the UK. Several organisations have been identified as potential governance bodies as follows:
  - Institution of Engineering and Technology (IET)
  - British Standards Institution (BSI)
  - Energy Networks Association (ENA)
24. If Ofgem were to convene a Working Group to progress the CIM standard, then we would like to participate to provide continuity in the development work done to date in Open Networks and make use of a group of network experts already engaged in development work.
25. We have identified some potential costs in delivering the benefits of interoperability, but further work would be needed on a Cost Benefit Analysis. Understanding legacy systems and how these can be replaced or transitioned towards a CIM standard is critical.
26. More detail exists in the report, so please refer to this for more conclusions and recommended next steps. We need to ensure that any further work is aligned with Ofgem objectives and proposed activities.

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

27. It should remain in this format until there is a more user friendly format agreed and implemented across industry (e.g. from the ENA Data Working Group).

**Question 7:** Ensuring network information remains accessible is a priority. At present there is no formal requirement for the production of 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?

28. The Data Working Group at ENA is considering how network data (including heatmaps and headroom) might be better presented to stakeholders. The EDTF has recommended visualising data in a map-based format and we support this recommendation.

**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?

29. As part of the Open Networks work in 2018, a good practice guide was put in place for information provision by network companies ahead of connection applications including heatmaps. For heatmaps, this included good practice on the quantification of headroom for generation and demand, voltage levels, the ability to download information from heatmaps, and the connection status of the generation and demand that should be taken into account in heat maps. Since the publication of the good practice guide, DNO adherence to good practice has been monitored and has improved.
30. Benefits to customers would be consistency in presentation of data, but all data presented would have to be subject to the principles of data triage, as set out by the Energy Data Task Force, so any issues that might be identified by that process would be a barrier to publication (e.g. commercial confidentiality, security risk).

**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?

31. In Open Networks, we have identified the need to increase visibility of system needs and this is reflected in the new product we have defined for 2020: WS1B Product 5 Signposting of Potential Network Capacity Requirements. The objective is to improve how DNO network capacity shortfalls and forecast network requirements are described and publicised to the wider market.
32. Different approaches to the identification of capacity requirements are currently used by network companies and different methods are used to signpost network capacity shortfalls outside companies. A standard approach to how shortfalls are identified (e.g. methods for application of scenarios to network simulations) and signposted could help industry participants to identify and bring forward more effective options to address shortfalls. This can build on the distribution system FES (D FES) scenarios which Open Networks is considering for standardisation.
33. The work will review how DNOs currently publicise system requirements and identify good practice, whether there is value in standardising the approach to signposting requirements, or whether there is value in different approaches. A common approach of signposting where network reinforcement/Active Network Management (ANM)/Flexibility might be required should be proposed. This should include the level to which shortfalls are identified on DNO networks (e.g. at GSPs, on 132kV circuits, at 33kV etc).
34. Again the ENA Data Working Group is considering how network data might be better presented to stakeholders, which could include things like flexibility requirements. The EDTF has recommended visualising data in a map-based format, and we support this recommendation.

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

35. Under the Open Networks good practice guide for information provision by network companies ahead of connection applications (see Q8 above), it is recommended that heatmap information is refreshed at least monthly. 4 of the 6 DNOs currently publish on a monthly basis. The other 2 DNO's update their heatmaps on a quarterly basis.
36. As we move towards a more digital, map-based system, we aim to further automate these types of processes, which will naturally lead to an increase in the frequency with which they are updated.

**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?

37. As part of the Open Networks 2020 scope, Workstream 1B Product 2 (Whole System FES – Coordination of National and Regional FES), will further review and standardise the scenarios that are produced through D-FES. This will include the case for DNO's basing D-FES on nationally agreed scenarios. The 2020 work will also consider how network companies take assumptions around key "Building Blocks" (e.g. Electric Vehicle ,EV, numbers) and convert these to demand and network capacity requirements. These changes will ensure that good and consistent practice is being used across DNOs for estimating load growth and for identifying capacity shortfalls.

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

38. We have National Grid ESO fully engaged on all development work within Open Networks and therefore reflect learning from these processes in our development work. For example, for the Workstream 1B, Product 2 work noted under Question 11, the ESO is an active part of the product team.

**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?

39. We agree that assumptions included in the LTDS should be closely aligned to the D-FES. The D-FES will provide an envelope of credible future assumptions and any single set of LTDS assumptions should sit within this envelope.

**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?

40. Innovation Projects such as Electricity North West's ATLAS project (2015-2017) have developed load growth methodologies and then enhanced them in business as usual. This project revealed the importance of engagement with customers and local stakeholders, as well as sophisticated techniques such as bottom up and consumer choice modelling in the derivation of load growth forecasts. WPD's EFFS project will provide more robust forecasting methodologies once completed, albeit on a more short-term basis. We monitor and track the outputs from these Innovation Projects and feed them back into the product teams of the Open Networks Project. This is very much in line with our principle of taking a "learn-by-doing" approach.

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

41. This is for the individual IDNO network companies to respond to.

**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.

42. This is for the individual IDNO network companies to respond to.

**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.

43. This is for the individual IDNO network companies to respond to.

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

44. In your introduction, you “are inviting interested parties to put themselves forward to join the LTDS update working group that Ofgem will convene and chair. More information on this working group is presented in the LTDS section. Please make it clear on your response to this consultation if you wish to contribute to the working group to develop LTDS FoS.” ENA and its Members will contribute to the Working Group through their direct experiences of the LTDS. If there are common developments or standardisation initiatives that would better sit with collective network development, then ENA would be happy to consider how we might help use the Open Networks Project and/or the ENA Data Working Group as a vehicle for collective standardisation and delivery across networks.

**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.

45. ENA will put forward a representative on behalf of all Electricity Members. ENA will need to determine the best person to put forward based on the collective group of people that Member Networks nominate individually. Once Members have finalised their nominations, we will be in contact to put forward the ENA representative. We believe that there is a strong link between our new Workstream 1B Product 5 (Whole System FES – Signposting of Potential Network Capacity Requirements) and the LTDS Working Group as one group is considering future system needs and the other future development.

## Part 2 – Key Enablers for DSO

### Questions 20-23:

46. We have no further proposals from ENA on **Q20-Q23**, and therefore this is for the individual network companies to respond to.

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

47. We will look to support any developments to enable interoperability and standardisation.

48. Ensuring that networks have secure and easy access to smart meter data is critical to improving LV monitoring and visibility.

49. Access to Electric Vehicle (EV) registration data has been significantly reduced by DVLA since the introduction of GDPR regulations. This has hampered network visibility of EVs and, if this continues, could lead to inefficient decisions being made by networks. We fully support the Energy Asset Registration Strategy of the EDTF, and would urge Ofgem to help expedite the delivery of this recommendation.

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

50. We would like greater access to smart meter data so that network companies can better identify what DER is present and how it is operating. This will enable improved decisions around opportunities for flexibility service opportunities, better network planning and forecasting and more efficient operation of the networks.
51. Ensuring visibility of assets via an improved asset registration strategy is also very important. See point 48 above.

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

52. Without access to this data, networks do not understand where DER is located and hence where there are potential sources of flexibility. This could lead to inefficient network forecasting, planning and design, as well as sub-optimal operation of the networks.
53. We believe that the steps being taken within the Open Networks Project are delivering on increased availability of data and continuing to open markets for flexibility, as we have responded to BEIS & Ofgem's Open Letter to ENA on the Open Networks Project. We would welcome any further guidance from Ofgem on where we might focus our efforts to enhance these markets.

**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?

54. We have captured Conflicts of Interest and Unintended Consequences in our published risk register, which has gone through significant stakeholder engagement with industry and Ofgem: <http://www.energynetworks.org/electricity/futures/open-networks-project/workstream-products/ws3-dso-transition/products.html>
55. Mitigating action has been appropriately allocated and we would welcome identification of any further risks to manage.
56. ANM schemes have been developed to enable greater options and opportunities for customers to connect to networks with limited capacity, and hence greater opportunities for DER to connect. We have produced best practice guidance for flexible connections and ANM schemes under the Open Networks Project. We will continue to support this through Open Networks as well as the ongoing standardisation of the procurement of flexibility services and the transparent assessment of Flexibility v. ANM v. Reinforcement as part of decision-making within DNOs (see 2020 scope for our Flexibility Workstream WS1A).

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

57. This is for the individual network companies to respond to.

**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.

58. This is for the individual network companies to respond to.

**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.

59. Enabling DSO underpins ENA's Open Networks Project and therefore we would welcome any input to improve our programme of work.

60. We have set out our proposed workplan for 2020 in our 2020 Open Networks Project Initiation Document, which is open now for public consultation and any feedback on this would be gratefully received for our consideration:

<http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-stakeholder-engagement/public-consultations.html>

### In Conclusion

61. In Open Networks DSO development, we have concentrated on the functions and activities that are required to deliver DSO and then looked at where the roles and responsibilities might lie, which is consistent with Ofgem's proposed approach. There are functions that are intrinsic to DNOs, the ESO and Transmission Owners to deliver against their regulatory requirements and this is key to maintaining safe, secure, efficient, and reliable networks.
62. In Ofgem's consideration of how to take forward data initiatives, we would like to again highlight that we have just initiated an ENA-wide Data Working Group, covering both gas and electricity.
63. ENA's Open Networks Project continues to focus on standardisation across DNOs, providing visibility of data and delivering on the opening of flexibility markets. Our focus will continue to be to ensure that this development work is implemented into tangible change at network operators.
64. Finally, ENA and its members look forward to continuing to work with Ofgem and BEIS to lead the way towards the transition to the smarter and more flexible energy system that the country needs.

If you have any questions on the points raised in this response, please contact John Spurgeon, Head of Regulatory Policy: [john.spurgeon@energynetworks.org](mailto:john.spurgeon@energynetworks.org)

### Energy Networks Association

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