

Flexibility@ofgem.gov.uk

Avonbank  
Feeder Road  
Bristol  
BS2 0TB

Telephone 0117 9332435  
Email [asleightholm@westernpower.co.uk](mailto:asleightholm@westernpower.co.uk)

Energy Systems Integration Team  
Ofgem  
9 Millbank,  
London  
SW1P 3GE

Our ref

Your ref

Date

12 January 2017

Dear Sir,

### **A Smart, Flexible Energy System**

Western Power Distribution is the Distribution Network Operator (DNO) that serves 7.8 million customers across the South West of England, South Wales and the Midlands.

We thank you for the opportunity to respond to the call for evidence on 'A Smart, Flexible Energy System' and to set out our views on the shape and structure of the Energy System in the future.

In addition to responding to the specific questions contained within the call for evidence we set out below our overarching views and additional comments which although do not directly translate into a specific answer to one of those questions does provide additional points for consideration.

WPD is best placed to deliver as a Distribution System Operator (DSO) with operational responsibility for the whole of its' distribution network in the near future because;

- WPD has a proven record of operating an efficient network delivering exceptional network reliability whilst delivering the highest levels of customer satisfaction in the industry;
- WPD's innovation strategy and the resulting innovation projects have been specifically focused on gaining the knowledge and experience in both the methods and technologies that can deliver flexibility as part of the transition from DNO to DSO. We have an excellent grasp of future challenges and have plans in place to transfer innovation project learning into business solutions and customer propositions;

- We believe that the majority of flexibility will be embedded within the distribution network and the distribution network capabilities need to be appropriate to deliver the required whole system outcomes going forward in an effective and efficient way. This must best protect customers from the risk of stranded investment (or unnecessary investment);
- Focusing our DSO advanced network management in this way, especially in congested locations;
- We are carrying out strategic studies assessing a range of scenarios to give visibility of likely strategic reinforcements and the opportunities to provide services to avoid or defer these investments. The scenarios cover the period to 2030 and will be updated for each of our licenced areas on a 2 yearly rolling program; and
- As a result of these studies we believe that further benefits can be achieved where the DSO takes on an enhanced regional responsibility, supporting regional transmission network using this embedded flexibility.

As highlighted in the call for evidence, a key issue is defining the roles of different parties in system and network operation. In this regard, the paper clearly lays out the drivers for system change and the emerging system requirements that demonstrate the need for DNOs to transition to DSOs.

Our views above support a division of responsibilities between DSO and System Operator (SO) as contained in the third of the example operational models presented in the call for evidence, with the example option of the DSO having overall responsibility for whole system planning and operation within a region.

To support this and continue our transition to DSO from DNO we have already established additional DSO enabling priorities to:

- Expand the existing roll out and application of Active Network Management (ANM) to the higher voltage networks, prioritising areas that are the most likely to benefit. From this we can optimise investment decisions, deliver greater network flexibility and maximise customer connection choice;
- Protect the integrity and safety of lower voltage networks. We will be looking to maximise the use of smart meter data, apply additional network sensing as required and implement simple control schemes. We aim to develop wider flexibility for the use of import/export capping as an alternative to conventional solutions - only reinforcing the networks when these solutions cannot deliver what is required; and
- Co-ordinate with the SO by helping to establish visibility platforms for suppliers, aggregators and customers to allow the development of flexibility services shared between DSO and SO. This will include the requirement to raise the awareness of Demand Side Response (DSR) and to help customers to value stack where appropriate.

Whichever model of future operational responsibility is implemented, coordination of activities between the DSO and SO will be essential. WPD has worked closely with National Grid Transmission Operator and SO teams over several years. We jointly developed the Inter-Control Centre Communications Protocol (ICCP) link between DNO and National Grid control rooms through a Low Carbon Network Fund (LCNF) project in 2011 (a good example of an innovation funded project becoming a 'business as usual' enabler).

This link has been used by other DNO innovation projects and forms the basis of planned inter-system data sharing/constraint management in South Wales and South West England. Customer connection offers, which depend on this collaboration, have already been accepted by customers.

We are also currently working with National Grid SO on a Regional Development Plan for the South West. The aim of this plan is to redefine network limits to release capacity by developing enhanced network data and models, improved Distributed Energy Resource (DER) control and the implementation of enhanced operability schemes. This will include developing a process to allow efficient decision making between transmission, distribution or service solutions that cater for the capacity limits expected when applying our long term scenarios in the growth of Distributed Generation (DG) and demand.

All our Innovation Projects involving Demand Side Response have been carried out with the involvement of National Grid. FALCON was the first LCNF project to report on the importance of revenue stacking for customers. Project SYNC was operated in parallel with the SO's Demand Turn Up (DTU) service during the summer of 2016. SYNC has again confirmed the value of coordinating SO and DSO actions. As presented at Power Responsive in the summer of 2017 the DTU service will again be used to reduce summer generation local constraints as well as assisting with system balancing.

Project ENTIRE is establishing a core WPD capability in DSR. The necessary forecasting, contracting, despatch, metering and settlement functions will be developed while alleviating winter demand congestion in the South-East Midlands. The project will establish a local marketing campaign to raise awareness of DSR with Industrial & Commercial customers. A value stacking service will be offered under our soon to be launched Flexible Power campaign.

Innovation projects such as LV Network Templates, the Lincolnshire Low Carbon Hub and FALCON have established that advanced control systems and network monitoring can be applied to existing networks. In doing so, networks can therefore gain capacity headroom for both generation and demand. In addition the data can be used to improve investment planning decisions and allow some flexibility in timing reinforcement works. The data can further be used to offer innovative customer solutions, such as those already contained within our suite of Alternative Connections and Demand Side Response agreements.

The cost of applying advanced intelligence to a network is largely independent of the voltage it operates. WPD is prioritising EHV networks, combining the application of advanced network management with targeted asset upgrades or reconfiguration. This releases the most capacity for each pound invested. The EHV network is the most congested from the rapid expansion of solar and wind distributed generation. Alleviating 33kV constraints by adding flexibility is also enabling us to manage 132kV and transmission constraints.

The nature of constraints on transmission, 132kV and EHV networks in the future is highly dependent on policies relating to the electrification of transport and heating. Focusing our DSO advanced network management in this way, especially in congested locations, best protects customers from the risk of stranded investment.

We have a published programme of deployment for Alternative Connections. Each zone requires additional equipment and telecommunications to be fitted at BSP and GSP substations. Five zones are already active in areas that suffer from severe congestion including areas in the South West, South Wales and East Midlands. By 2021 all GSP and BSP areas requiring ANM will be operational.

Prior to an area being enabled we have created and already offer as business-as-usual connection variants which mean that generation output to the grid must be reduced at certain times. These are available across WPD and are termed 'Timed' and 'Export Limited' connections. This concept will be extended to demand and storage connections over the next few years.

Many of our LCNF and National Innovation Allowance (NIA) projects have delivered valuable knowledge on future mass adoption of Low Carbon Technologies (LCTs). Projects like ECHO, Community Energy Action and Sunshine Tariff have confirmed that there is very limited interest in demand flexibility for existing appliances. SoLa BRISTOL provided insight into home energy storage and indicated the potential of the technology to flatten load profiles and reduce bills - but only once the cost of storage falls significantly.

Customers may be more responsive to price signals with new LCTs such as electric cars and heating systems. However there is little evidence to support this at the current time. We are therefore pursuing a dual path of testing intelligent DSR and developing network interface units to protect the system from inadvertent overload. Electric vehicles are a key focus area for us. Therefore, we have been working closely with the motor industry and acting in an advisory capacity for Cenex.

Our CarConnect Electric Nation project will test dynamic and static time of use tariffs to assess consumer behaviours. The work builds on SSEPD's My Electric Avenue trial, but with a larger sample set, more modern vehicles (with faster charging/higher capacity batteries) and more intelligent control.

The Connect and Manage project is developing a simple network interface for LCTs that will prevent the distribution network from overload at times of peak load. The equipment is designed to be low cost and be autonomous (or have simple communications). Testing will be carried out in Nottingham and Milton Keynes with micro-generation, home storage and electric cars.

Hydrogen and natural gas are areas that are likely to play an important role in satisfying peak energy demand periods. We therefore continue to work closely with the Gas Distribution Network businesses. Project FREEDOM, funded under the NIA mechanisms of WPD and Wales & West Utilities, is testing a dual fuel hybrid heating solution in 70 homes in Bridgend. The project is running in parallel with the Energy System Catapult's 'Smart Systems and Heat' work.

During 2016, we have carried out over 50 stakeholder events, attended by over 3,000 stakeholders, where the requirement for and the transition to DSO have been discussed at regional, national and international events to ensure that stakeholders are aware of the opportunities that are emerging to interact with the network. Our main stakeholder events, in six locations across our region in January 2016, included a specific section outlining a vision of what we will do as a DSO together with a separate breakout session examining the transition from DNO to DSO.

With respect to the question of whether a DSO should be allowed to own and operate DER we strongly believe that some level of allowed ownership is a necessity. Whilst market competition may deliver the larger volume of EHV/132kV requirements (based on the visibility platforms referred to above) there will be other situations where offers are limited or non-existent due to:

- The volume or scale of the required service not being sufficiently large to attract service providers;
- The ability to provide other services (revenue stack) is limited or non-existent;
- The location of the service does not attract service providers (i.e. islands or other remote locations); or
- A lack of specific interest in an unusual or new technique (i.e. no market is established)

As highlighted in the call for evidence, a key forum to address cross system issues is the Energy Networks Association Transmission and Distribution Interface Steering Group in which we take a leading role. As the number of issues that need addressing is increasing and there is a need to increase the pace of progress, the approach to delivery has been reviewed. ENA Board members have agreed to an updated programme structure that is being implemented through January 2017.

The revised approach will include:

- The appointment of a Programme Director to drive delivery of the work;
- The establishment of more clearly defined work packages and deliverables;
- The increased commitment of individual network and system operator resources to the work; and
- An increase in reporting to the ENA's senior management groups and the ENA Board.

It is important that BEIS and Ofgem keep progress under review to ensure that both legislation and regulation are appropriate to enable flexibility to be used to provide an overall cost efficient energy system for customers.

In summary, we believe that our proven record of operating an efficient network, delivering exceptional network reliability, the highest levels of customer satisfaction in the industry together with innovation projects focused on gaining knowledge and experience in delivering flexibility leave us best placed to transition to a DSO in the near future with responsibility for whole system planning and operation within a region.

Our detailed responses to the questions raised in the call for evidence are attached. If you require any further information or detail around any of the contents of this letter please feel free to contact me at [asleightholm@westernpower.co.uk](mailto:asleightholm@westernpower.co.uk).

Yours sincerely

A handwritten signature in black ink, appearing to be 'AS' or 'ASL', written in a cursive style.

ALISON SLEIGHTHOLM  
Regulatory & Government Affairs Manager

Cc Electricity Systems Team, BEIS