Shaping Subtransmission to 2030 – West Midlands 2018

Webinar Question & Answer session

Given the 1.92GW of energy storage in your studies, what does this translate to in terms of MWh?

In terms of the energy storage projects that have connected to our network, these are predominantly small test systems and proof of concepts; as a result the energy storage capacity of such sites is relatively small. Our recently published 'Energy Storage Growth Scenarios and Operating Modes Consultation' paper states:

> *The storage power output (MW) to storage capacity (MWh) is a key characteristic of a storage system and can vary depending on the business model that is driving the specification of the storage asset.*

For enquiries to connect to our network, energy storage capacity is not a specification which is required. Our Energy Storage consultation is available at:
https://www.westernpower.co.uk/About-us/Our-Business/Our-network/Strategic-network-investment/Energy-Storage.aspx

What policy does WPD have about owning an operating their own battery storage? What will Ofgem mandate in terms of this potential conflict of interest?

WPDs view on owning and operating storage is outlined in our DSO strategy. We do not believe that a Distribution System Operator (DSO) should need to invest in energy storage. Instead, a strong market based on time shifting energy should be able to deliver energy storage more economically than a DSO would be able to. However there may be circumstances where the market cannot provide a solution to a network constraint but energy storage is still seen as the best solution. Under this scenario, we would like to see a mechanism if the market is unable to deliver energy storage, we would not want to be prevented from utilising energy storage where necessary. Our DSO strategy is available at:
https://www.westernpower.co.uk/About-us/Our-Business/Our-network/Strategic-network-investment/DSO-Strategy.aspx

Is the scenario report published?

Our West Midlands 'Technology growth scenarios to 2030' report published in conjunction with Regen details all of the scenarios used in the Shaping Subtransmission project. It is available at our website:
https://www.westernpower.co.uk/netstratwmid

How do you translate the National Grid FES outlook (provided at a national level) to a smaller geographic area? What confidence do you have in this approach?

Whereas the National Grid Future Energy Scenarios use a top-down approach to outline the future of energy on a national level, the WPD and Regen 'Technology growth scenarios to 2030' reports use a bottom-up approach to analyse the growth of generation and demand. We have a high level of confidence in this approach; we find that for a distribution network a bottom-up approach captures more of the local variation in the demand and generation mix. As an example, the round 1 of Shaping Subtransmission reports demonstrated that our scenarios show different uptakes of low carbon technologies depending on the geographic location and local environment. We are looking to work more closely with National Grid in the development of Future Energy Scenarios, the Regional Development Plan project in our South West licence area looks for closer alignment between the regional and national Future Energy Scenarios.

Do the scenarios factor in EV demand / V2G impact on network?

Vehicle to Grid growth (also energy storage) is a difficult concept to understand without knowledge of the mechanisms and revenues which are available for such technologies. Depending on the mechanisms which are available to customers, the operational impact on the distribution network can be varied. The approach taken in the Shaping Subtransmission studies is to assume that a decent operational market is in place which incentivises users to operate in a manner which meets the requirements of the regional network. The scenarios consider the demand growth of low carbon technologies, including electric vehicles and Heat Pumps. The electric vehicle scenarios consider time of use tariffs which noticeably altered the effects of an evening peak in the later years of our studies. The electric vehicle profiles will be redeveloped for the South West Shaping Subtransmission studies to utilise data available from WPDs Electric Nation innovation project. As vehicle to grid storage is very much an emerging technology, there is insufficient data available to assess the impacts on the subtransmission network. This is an aspect of the Shaping Subtransmission studies which we would like to develop in future studies.

How do the scenarios translate to the Long Term Development Statement (LTDS) or is this on-going?

The Long Term Development Statement is published annually and considers the current position of the network with growth forecasts for the coming years. The Shaping Subtransmission studies consider the impacts of demand and generation growth on the subtransmission network out to 2030 over a range of different scenarios. Both of these publications use the same underlying data so are quite closely aligned, however the Strategic Studies use different assumptions on how we plan and secure the network. As mentioned in the presentation, during 2018 WPD will be signposting areas of the network where flexibility will be required in the next few years. As this signposting work develops, we expect the LTDS and Network Strategy publications to align more closely.

Will you be advising Local Enterprise Partnerships within the area covered by this report regarding the implications to economic development

As part of the Shaping Subtransmission studies, Regen worked with Local Authorities and Local Enterprise Partnerships to establish scenarios for demand, generation and low carbon technology growth. The Shaping Subtransmission reports identify areas of our network where we may expect to see network constraints in the future based on these scenarios. We welcome collaboration and engagement with LEPs around our forecasting process; in addition we have made our scenario data available to a number of LEPs. It should be noted that this data is derived from local authority data, therefore should be kept independent to future local development plans to ensure that there is no incorrect feedback loop for our strategic studies informing future Local Development Plans.

Will you use the Monte Carlo approaches to quantify supply reliability using the automated network analysis capability?

Our modelling process currently assesses the subtransmission network using historical data for a series of representative days. This choice was made primarily due to the fact that for a large amount of time, the network operates within technical limits. However we are particularly interested in the times where our network is close to exceeding the technical limits – hence why our representative days take into account the periods where our network is highly stressed. As we move towards modelling energy as well as power, our analysis approaches will have to expand to incorporate more representative days reflecting typical network behaviour. Monte Carlo analysis is an approach which we are considering as we develop our modelling techniques.

What service supply reliability targets are being set in terms of a range of reliability metrics and at various voltage levels and location? Does resilience equate to a numerical measure of reliability of supply?

Reliability and availability are driven by incentive targets set by Ofgem. This is measured in terms of customer interruptions per 1,000 customers per year (CI) and customer minutes lost per customer per year (CML). Below is a summary of the incentive mechanisms for reliability currently in place:

Reliability and availability: providing long-term reliability, minimising the number and duration of interruptions and ensuring adaptation to climate change.	
Incentive measure	**Incentive type**
Interruption incentive scheme (IIS): DNOs can receive a financial reward or incur a financial penalty depending on their performance against a target for both the number and length of their network supply interruptions.	Financial: 250 RORE basis points per annum. Supported by monitoring of Secondary Deliverables. Reputational.
Guaranteed Standards of Performance (GSoP): direct payment to customers of fixed amounts if DNO fails to deliver specified minimum levels of performance.	Financial: payment to customers for failure to meet standards. Reputational.
Worst-served customers (WSC): DNOs have access to funding to improve the reliability for a subset of customers whose supply has been repeatedly interrupted.	Financial: £76.5 million over ED1 (use-it-or-lose-it). Reputational.
Network resilience: proactive network investment for reducing the impact of disruptive events, such as floods or severe storms.	Reputational.

WPD performs highly across all four licence areas for reliability and availability, with an average of 49.30 CIs and 29.84 CMLs per year for regulatory year ending March 2017. The Ofgem ED1 annual report is available at:
https://www.ofgem.gov.uk/publications-and-updates/riio-electricity-distribution-annual-report-2016-17