



Serving the Midlands, South West and Wales

Session 5: **Smart future and new possibilities**

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HIGH PERFORMING DNO

- DNOs have a long track record of using innovation to be more efficient
- We will build on this as we take on additional roles within the energy system



DSO STRATEGY

We have published our DSO Strategy

- It outlined our four key focus areas for DSO implementation and our plan to achieve them
- We highlighted key enablers in monitoring, control & automation, communications and data systems to enable us to be a high performing DSO











- We consulted on this approach and updated our plan based on feedback
- **We are the only DNO to have provided a costed DSO implementation plan**



www.westernpower.co.uk/our-network/strategic-network-investment/dso-strategy

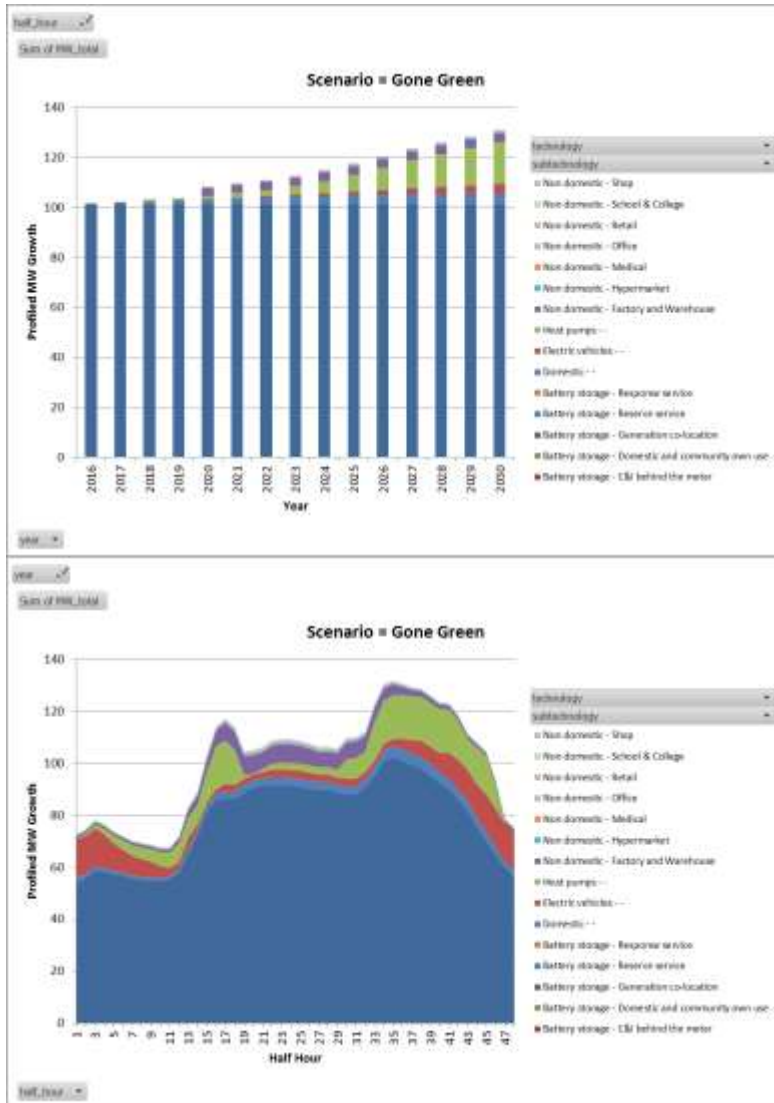
DSO FORWARD PLAN HIGHLIGHTS

				Looking Forwards				
Neutral Supply Market Facilitation 	Published data on 32 zones	Signposting		Data on Signposting publicly available for download	Commitment to publish more data on system needs	Working with stakeholders to further develop market information	Development of a Flexibility Register for those offering services	
Enabling Decarbonisation 	Suite of four different Alternative Connection types developed	Alternative Connections rolled out as business as usual		Connection of 9.5GW of distribution connected generation	Strategic Investment Options developed for future generation scenarios	Active Network Management available in all areas by 2021	Roll out of flexibility will enable additional connection options	
Enhancing Security of Supply 	Consistent improvement in reduction of network unavailability	Widescale deployment of automation		Industry learning gained on resilience through Regional Development	Ongoing ED1 commitment to reduce customer minutes lost and number of customer interruptions	Development of RESTORE flexibility product	Our Control Room will be able to dispatch distributed energy resources to help support the network	
Flexibility Services 	Flexible Power brand procuring flexibility services under business	Flexible Power products published	Flexibility		ENTIRE project proving benefits of flexibility	Flexible seeking further summer and winter flexibility services in 2019	Openly testing the market to compare flexibility against conventional reinforcement	
Electric Vehicle Readiness 	Electric Vehicles			Our innovative EV trial, Electric Nation successfully installed 673 domestic smart chargers	We have exhibited at the low carbon vehicle and energy infrastructure	Results from Electric Nation on smart charging behaviour	Building on learning from Electric Nation on using EV flexibility to defer reinforcement	Continued selective upgrading of assets in LCT hotspots
Enabling Economic Growth 	Strategic Investment Options reports published for all four license areas	Stakeholder engagement completed in all regions	Distribution Future Energy Scenarios		Refresh DFES and Strategic Investment Options reports on a two year cycle	Engagement with Government on Local Energy Strategies	Continue to share forecast data with local and regional Government and other stakeholders	
Whole System Planning 	Installation of FREEDOM test sites	Completion of WPD & NG Regional Development Programme for South West		Development of industry under ENA's Open Networks	Collaborative Strategic Investment Options reports with other DNOs	Joint SO and DSO articles published under WPD DSOF	Implementation of RDP recommendations, including enabling Deep Connect & Manage for customers	
Communities and Localism 	Wide range of innovation projects centred around local communities	Community energy events held in major locations within WPD area		DNO to DSO community consultation published	Continued engagement with local communities enabling them to participate in future energy markets	Outputs and actions from the DNO to DSO community consultation	Additional commercial opportunities for customers connected at LV	

SCENARIO BASED FORECASTING

Since 2016, WPD has been using scenario based forecasting to build a regional picture of demand, generation and storage uptake

We have built a bottom-up understanding of demand, generation and storage growth out to 2032 across 260 individual zones within our region and share this information.



WHAT DOES FLEXIBILITY LOOK LIKE?



Generation turn up or turn down



Demand turn up or turn down



Shifting consumption forwards and backwards

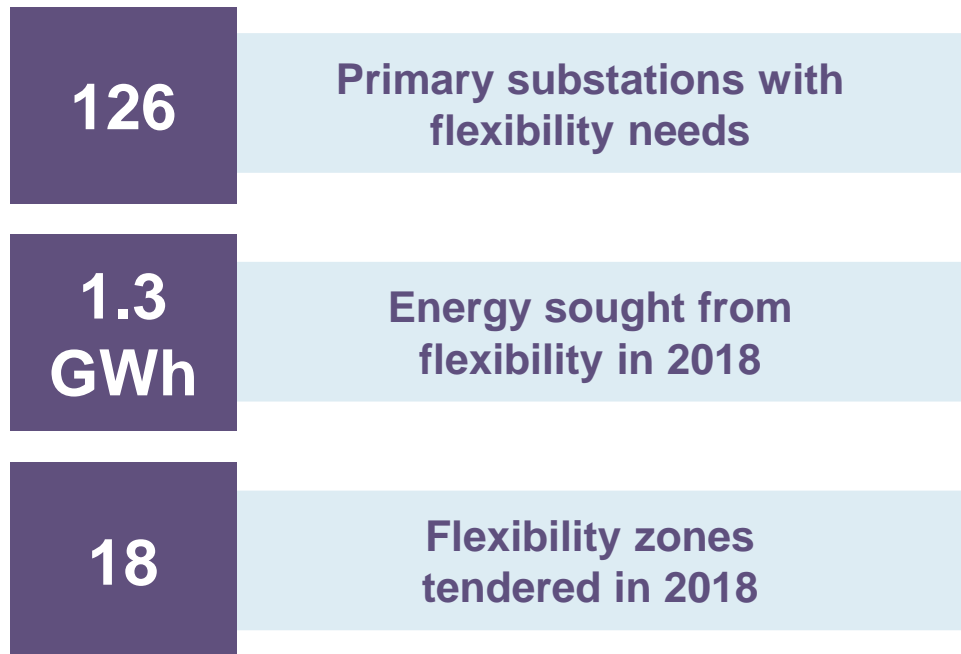


Storing energy for later consumption

FLEXIBILITY FIRST

WPD has always used the flexibility inherent in its networks to provide an economic and secure supply ahead of undertaking conventional reinforcement

- We are now expanding this to include market-provided flexibility and will seek this in the areas triggering load related reinforcement within ED1



Throughout the rest of ED1 we will assess 90% of our load related reinforcement investment for a more economic delivery by flexibility services.



90%

LRR investment assessed against Flexibility

For the remaining 10%, which is predominately at LV, we will continue to develop, test and evaluate other markets.

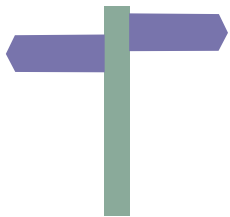
2019 – A YEAR FOR FLEXIBILITY

In 2019 we are seeking flexibility across 79 primary substations, requiring up to 60MW and 1900MWh

- This may defer up to £40m of load related reinforcement



Signposting



Early February 2019

Pre Qualification Questions



February 2019

Procure



March to May 2019

Integrate/Test



May 2019

Operate



June 2019 to May 2021

FLEXIBILITY – LEARNING BY DOING

After agreeing the principles of approach with Ofgem, we will begin using flexibility to provide quicker and more efficient options for new connections. This approach will be piloted in Lincoln to develop new commercial arrangements.

Flexibility can provide alternatives to reinforcement and benefits to the whole electricity system

Generators seeking connections

Demand seeking connections

Storage seeking connections

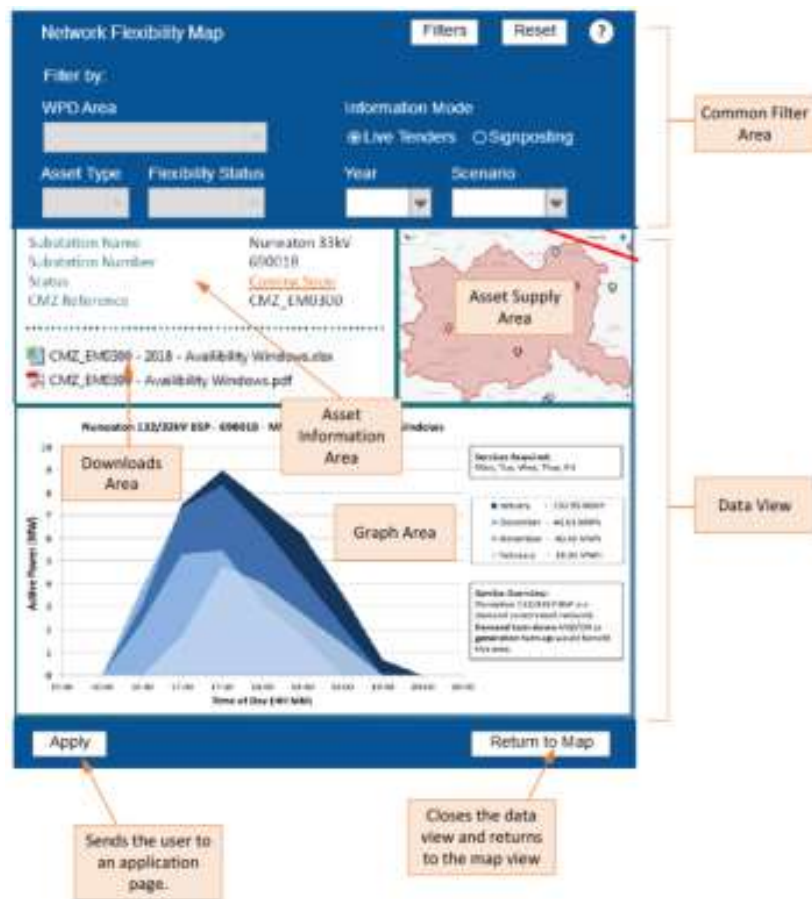
Flexibility providers seeking a revenue

Flexibility can be shared across the transmission boundary to access National Markets

SIGNPOSTING

To inform flexibility markets of our requirements both now and into the future, we have committed to publishing “signposting” information which describes the constraints triggering any significant load related reinforcement

- This year, we have published signposting on £60m of load related reinforcement.



Using a similar functionality to our network capacity map, our network flexibility map is publically available on our website:

www.westernpower.co.uk/signposting

This displays information on:

- Geographic supply area
- MW peak and length for availability
- Estimated MWh utilisation
- Months/days/hours applicable
- Raw data downloads
- Four Industry-aligned future energy scenarios
- 5 year window

ELECTRIC VEHICLE (EV) READINESS

The UK has made a major commitment to decarbonise transport in the UK and electric vehicles are predicted to play a large part in reducing emissions

	SOUTH WEST	SOUTH WALES	WEST MIDLANDS	EAST MIDLANDS
Now	7,000	2,500	12,000	7,000
2030	815,000	255,000	995,000	785,000

- To help enable the adoption of electric vehicles, WPD is committed to the following:

Identify and proactively mitigate EV related network constraints

Ensure our network remains high performance and safe during the uptake of EVs

Develop an innovation programme that accelerates the adoption of EVs

- Recent WPD engagement revealed that only 11% of local authorities in our region are at the implementation stage of rolling out EV charging infrastructure
- **Understanding likely consumer behaviour is therefore very important – hence our questions to you today**

ELECTRIFICATION OF HEAT

Another factor for WPD to consider is the decarbonisation of heat. Bringing an expected shift from gas or solid fuel heating systems towards electricity based heating systems

- In likelihood this will focus on heat pumps - a heating device which harvests some heat energy from the environment
 - It would maintain a background level of heat in a house using this energy but would top it up with electricity from our network
 - When the weather is very cold this will add demand to our network

▪ Currently we are forecasting:

	SOUTH WEST	SOUTH WALES	WEST MIDLANDS	EAST MIDLANDS
Now	8,500	2,500	4,100	6,000
2030	120,000	78,000	62,000	78,000

- We expect new homes will transition to heat pumps first
- Existing properties will consider a change when existing boiler/heating systems needs replacing
- **Understanding likely consumer behaviour is therefore very important – hence our questions to you today**

TABLE DISCUSSION

1. How would you like WPD to report progress against the transition to DSO?

As a domestic customer:

- 2a. How likely are you to participate in flexible services?
- 3a. Would you be happy for a DNO to control the timing of your electric vehicle charging in an evening so long as you got a full charge for the?
- 4. Do you expect to replace your boiler, or supplement it, with an electric renewable heating system in the near future?

From a work/business perspective:

- 2a. How likely are you to participate in flexible services?
 - *What incentives would help increase your participation?*
- 3b. How likely is your company to move to electric vehicles in the next five years?



ELECTRONIC VOTE 9:

On a scale of 1 to 10, as a domestic customer, how likely are you to be flexible in terms of your energy use / generation in return for a financial saving?



Not likely
at all



Extremely
likely



ELECTRONIC VOTE 10:

On a scale of 1 to 10, how likely is your organisation to be flexible in terms of your energy use / generation in return for a financial saving?



Not likely
at all



Extremely
likely



ELECTRONIC VOTE 11:

**As a domestic customer, what proportion of WPD's annual £98 a year charges would you expect to save to make it worth your while to provide this flexibility?
(select one option)**

1. £0-£5
2. £5-10
3. £10-£20
4. £20-30
5. £30-£40
6. £40+
7. No amount is enough



ELECTRONIC VOTE 12:

As a domestic customer, how likely are you to replace your boiler with an electric renewable energy heating system (such as a heat pump)? (*select one option*)

1. Already own one
2. Likely in the next 5 years
3. Likely in the next 5-10 years
4. Likely in over 10 years time
5. Never/highly unlikely



ELECTRONIC VOTE 13:

As a domestic customer, how likely are you to purchase an electric vehicle?

(select one option)

1. Already own one
2. Likely in the next 5 years
3. Likely in the next 5-10 years
4. Likely in over 10 years time
5. Never/highly unlikely



ELECTRONIC VOTE 14:

How likely is your organisation to switch to electric vehicles? (*select one option*)

1. Already underway
2. Likely in the next 5 years
3. Likely in the next 5-10 years
4. Likely in over 10 years time
5. Never/highly unlikely



ELECTRONIC VOTE 15:

Which of these network-related factors would make it more likely for you to have an electric vehicle?

(select multiple options)

1. Easy access to charge points when away from home (located across the network)
2. The speed of charging when away from home
3. Cost of charging when away from home
4. Easy process to install a charge point at home
5. The speed of charging at home
6. Knowing there's enough capacity in the network for charging in the future (e.g. install bigger cables in areas where we anticipate high take-up)