WESTERN POWER DISTRIBUTION

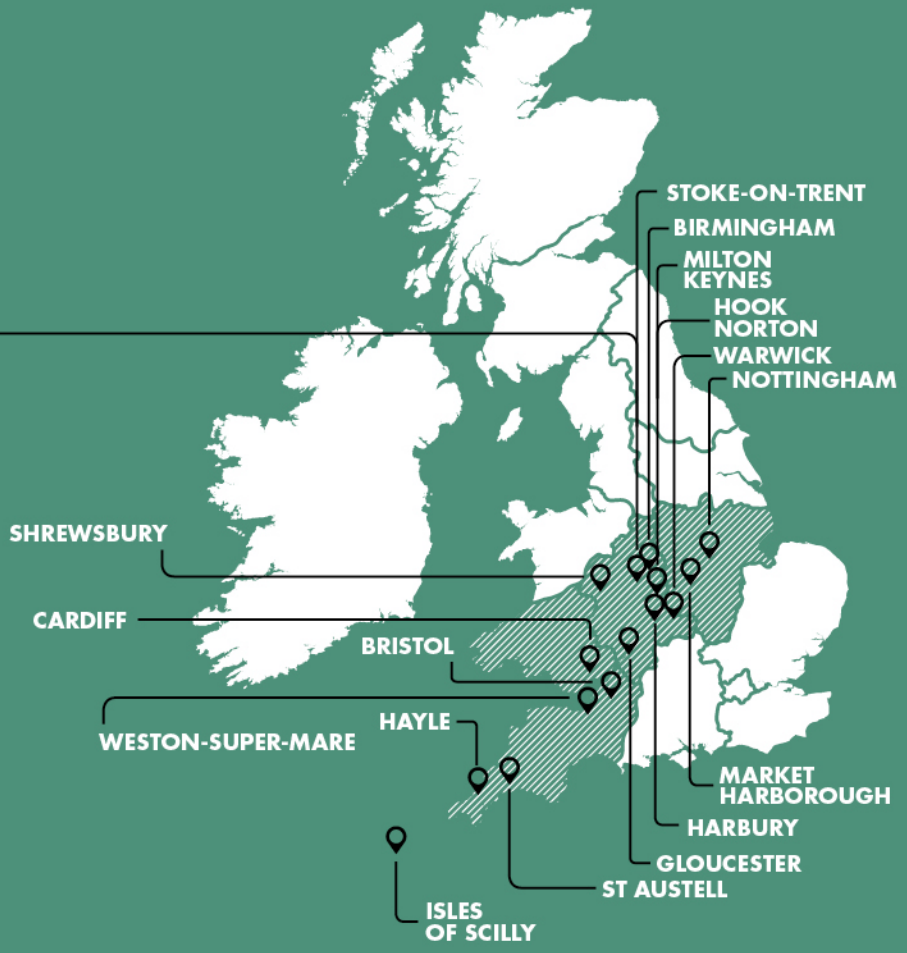
INNOVATION

NEXT GENERATION NETWORKS

DNOs and DSR

DSR Event 2017

7th September 2017

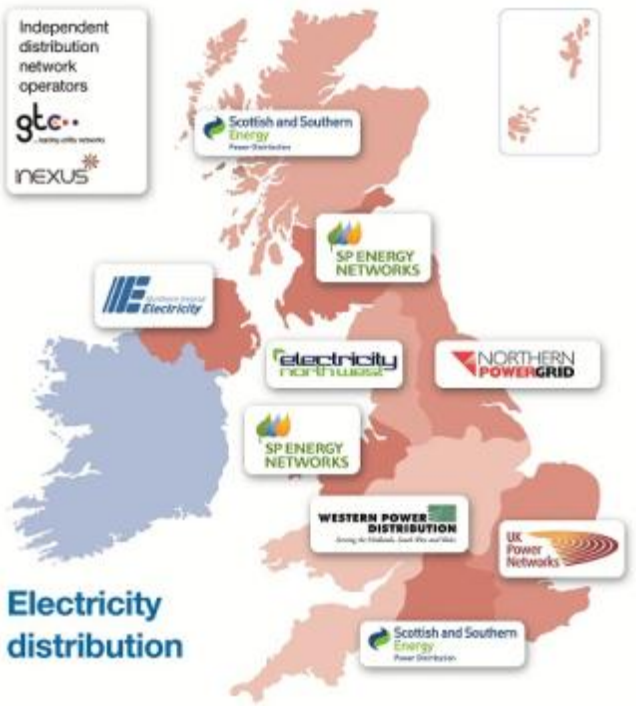


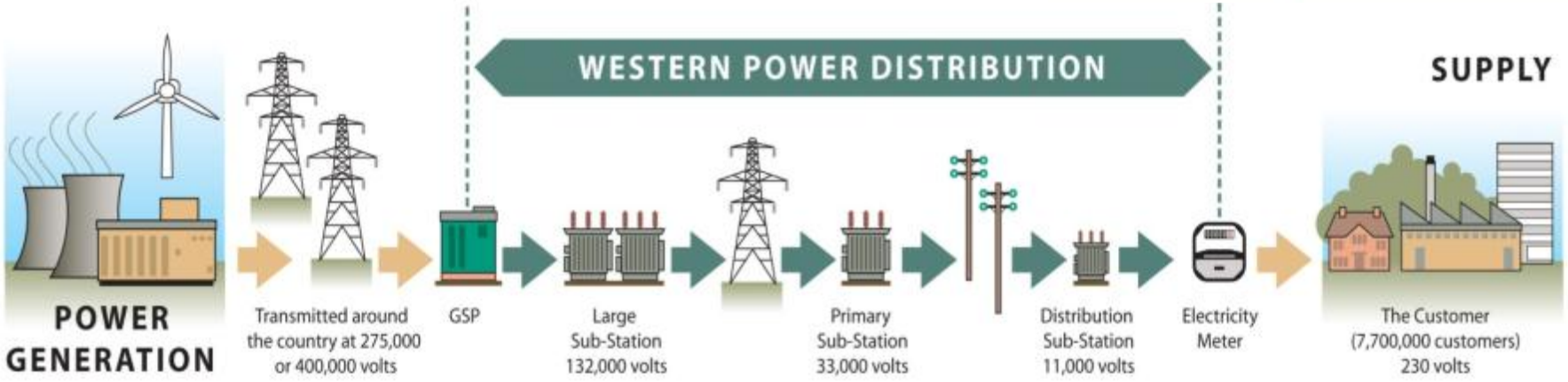
Matt Watson

Innovation & Low Carbon Networks Engineer

Who Are We?

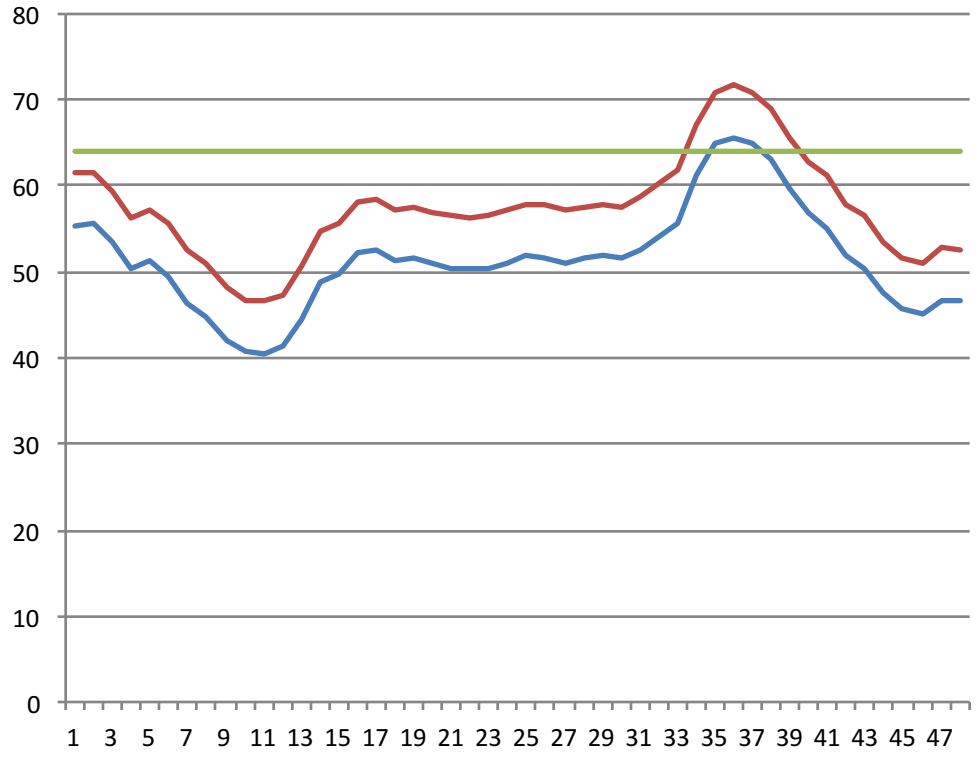
- 7.8 Million customers over a 55,300 sq kms service area
- Our network consists of 220,000 kms of overhead lines and underground cables, and 185,000 substations
- 4 out of 14 UK Distribution Licences
- LV to 132kV Network ownership





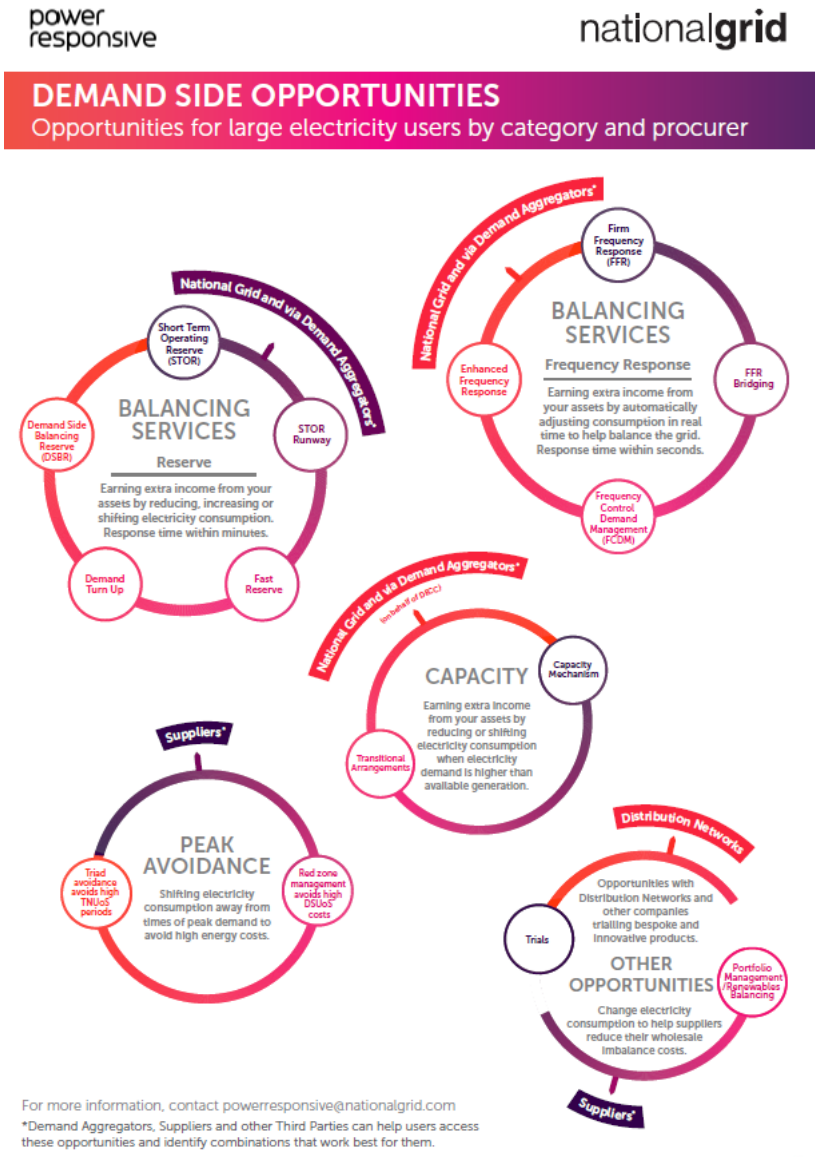
Why would a DNO want to use DSR?

- Avoid or defer reinforcement
- For both winter peak and summer minimum
- Will always compare against traditional reinforcement which has variable costs



Key characteristics

- Locational
- Higher voltages
- Limited capacity (pay as you go)
- Always compared with reinforcement
- Potentially time bound
- For n-1 conditions but called pre fault
- Needs to integrate with ANM
- Needs to be integrated with other DSR schemes



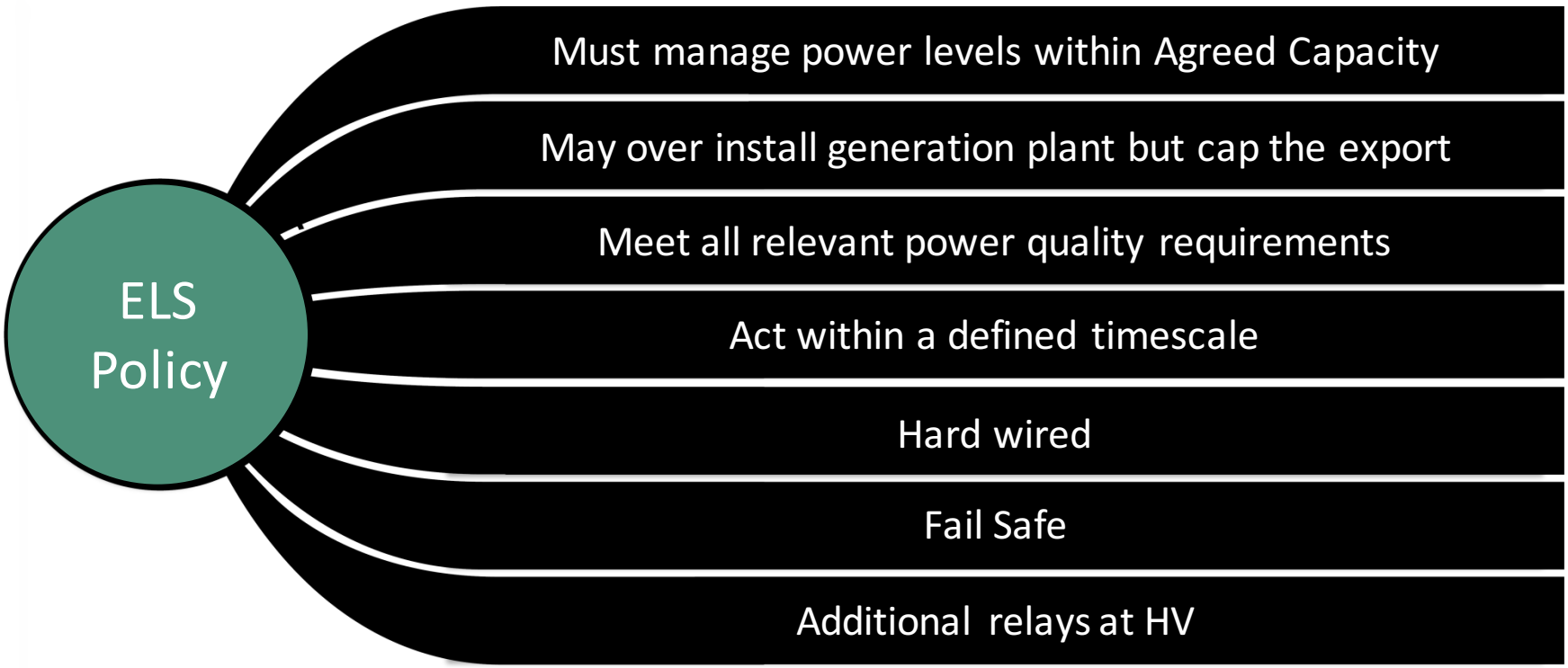
Project Entire

Flexible Power
By Western Power Distribution

- Builds on the learning of previous projects which allowed shared SO/DSO access to flexibility.
- Facilitates a competitive market for flexibility to lower costs whilst ensuring full coordination of SO and DSO requirements.
- Establishes principles for coordination of prosumer DSR with Electricity Network flexibility.
- Allows prosumers to revenue stack across multiple streams.

Enabling Customer Prosumption

- WPD have created a policy to allow customer to connect generation behind the meter even in areas with constraints



Alternative Connections

TIMED

- **Generation curtailed within specific times**
- Sub 1MVA
- Modelled seasonal capacity variations
- Localised control only
- No comms
- Non-optimised

SOFT-INTERTRIP

- **Releases pre-fault capacity with trip facility**
- 11kV and 33kV
- Real-time monitored values
- Small clusters of generation or simple pinch points
- Existing monitoring with localised control

ACTIVE NETWORK MANAGEMENT

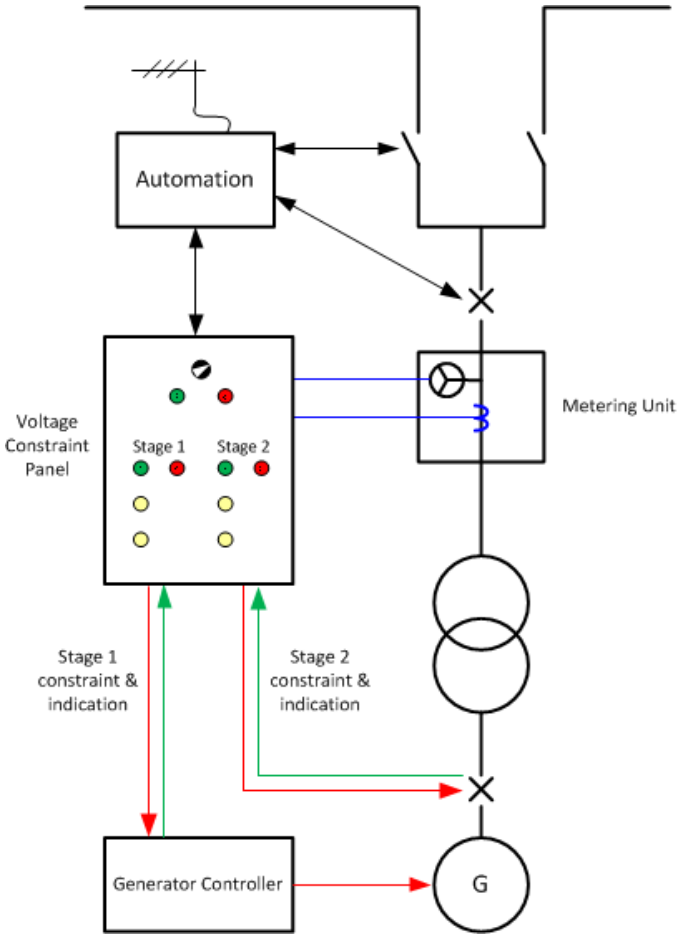
1010
1011
0100

- **Fully optimises capacity based on all constraints**
- Management of generation using LIFO principles
- Real-time granular control of output
- Requires new Active Network Management control and monitoring systems

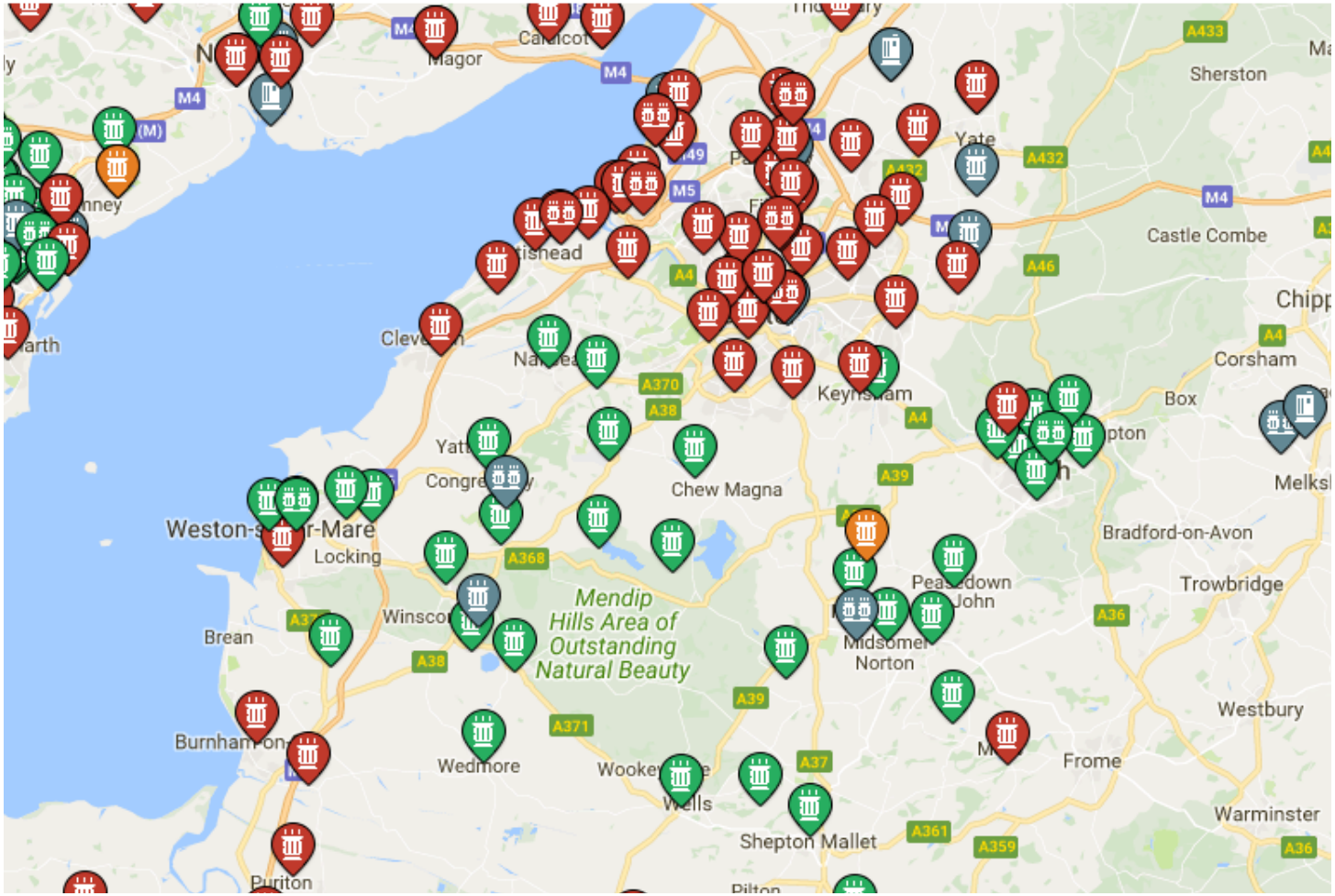
Costs, Complexity & Network Optimisation

Alternative connections for demand

- ANM system has been modified for controllable demand connections.
- This was extended to be able to control import and export on a single site, ideal for full control of batteries.
- We are due to trial some controlled demand connections using similar infrastructure in the coming months
- This will be in the form of a soft intertrip scheme
- May be rolled out to full ANM schemes



Improved signposting: capacity maps



THANKS FOR LISTENING

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Matt Watson

Western Power Distribution

Innovation and Low Carbon Networks Engineer

wpdinnovation@westernpower.co.uk

www.westernpowerinnovation.co.uk