

New Projects

WPD Launches DSO Strategy

WPD recognises that the change from a Distribution Network Operator (DNO) to a Distribution System Operator (DSO) is essential to driving performance and efficiency from our network and to ensure it can meet the future energy demands of all our customers. The enhanced capabilities we are developing will also give our customers the freedom to access other opportunities within the developing energy system.

Our DSO Strategy is available to view here:

<https://www.westernpower.co.uk/docs/About-us/Our-business/Our-network/Strategic-network-investment/DSO-Strategy/DSO-Transition-Strategy.aspx>



We're encouraging our stakeholders to feedback on our proposed actions to become a full DSO and consult upon the strategic decisions we think will provide the most benefit to our customers as we move to a smarter system. We're holding a DSO Strategy Consultation Event on Thursday 14th September 2017 at IET Birmingham: Austin Court. If you'd like to join us please register your attendance by emailing your details to wpdnetworkstrategy@westernpower.co.uk. If you're unable to join us you can still provide your feedback via the DSO Consultation Response Form which can be downloaded here: <https://www.westernpower.co.uk/docs/About-us/Our-business/Our-network/Strategic-network-investment/DSO-Strategy/DSO-Summary-and-Consultation-Questions.aspx>

Customers

Project FREEDOM runs from October 2016 to Decemeber 2018, and will use 75 domestic households in the County Borough of Bridgend, South Wales, to trial a hybrid heating solution combining gas boiler and air-source heat pump technology, which can be used as flexible loads in domestic properties. Bridgend has been chosen as a target recruitment area because its population has a good demographic spread which is representative of the majority of the GB population as a whole.

We have agreed terms with mainly two registered social landlords in the area to aid with recruitment. I.e. Wales and West Housing Association and Hafod Housing. We formalised contracts with them in May. During the month of June we contacted 40 Wales and West Housing tenants, sent them literature and conducted an initial assessment. We have also been in touch with large local businesses and organisations in Bridgend to support the distribution of literature. These include Bridgend Council, Ford Manufacturing, CGI, Sustainable Wales and Bridgend College – all 5 organisations are currently reviewing the project details and the literature before promoting the project internally within their organisations. We have also received 5 private homeowner enquiries. We will continue to contact tenants throughout July. Installation activity started in the week commencing 26th of June in some of the surveyed Wales and West Housing properties.

We will continue to work with the local Member of Parliament for Bridgend Constituency to help with publicising the project through press releases in the local press and social media – the press release will be reviewed by WPD, WWU and PassivSystems before release.



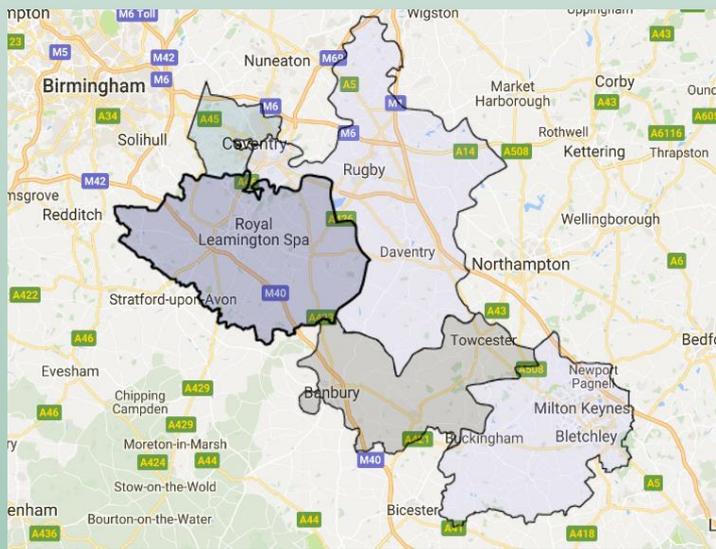
Above: The FREEDOM brand.

To aid with customer recruitment, Homeowner/Tenant literature on the FREEDOM Project was drafted and approved by WPD and WWU in May.

This includes a Tenant Info Guide and separate FAQs; Homeowner Info guide and separate FAQs. These are distributed to all housing tenants. The Project FREEDOM identity, including the brand identity, style and naming options was completed in May by design agency, Synergy.

WPD has launched its **“Flexible Power”** brand to help promote the **Entire project**. The project is aimed at investigating the commercial mechanisms required to make DNO led Demand Side Response (DSR) commercially viable. Building on the work from FALCON and SYNC, the project aims to promote revenue stacking for customers in order to maximise participant revenues whilst reducing the cost for the DNO.

In order help manage network constraint in the East Midlands, 5 Constraint Managed Zones (CMZ) have been set up covering the target area below. These cover a mixture of constraints. Some aim to reduce peak loading over the winter period, others look to manage the network during the summer outage season.



These zones are looking for customers who can reduce demands or increase generation on receipt of a signal. WPD is looking for half hourly metered customers who can respond within 15 minutes of receiving the signal and can hold the response for at least 2 hours. Customers can participate directly or through aggregators and the service is technology agnostic.

Through its “Flexible Power” brand, WPD will be offering a simple CMZ service, or a stacked service balancing the CMZ service with a flexible Short Term Operating Reserve (STOR) contract as well as some TRIAD avoidance. Both services will be highly automated, using on-site control equipment and a client app to reduce administrative burden for participants and WPD.

The project runs until June 2020 with recruitment running throughout the trial. Control systems should be live by Nov. More information on participation can be found at www.flexiblepower.co.uk. Alternatively email wpdflexiblepower@westernpower.co.uk.

The **Open LV**, NIC Project has moved from the mobilisation phase into design and build.

Factory Acceptance Testing is due to commence on 16th August and contracts are in place for all partners. Customer engagement activities’ have started through the Centre for Sustainable Energy (CSE), a request for interest has been sent to community groups across WPD areas and has generated a very encouraging response.

The projects branding has been developed and approved and an example of this is shown below.

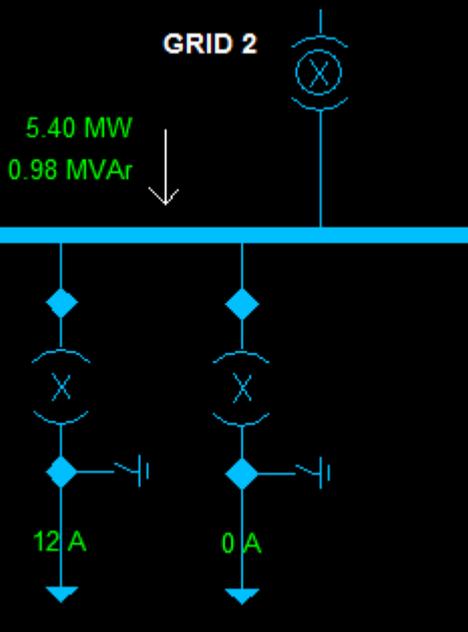
The next few months will see the continued technical development of the hardware and software solutions, with the first required Ofgem report on Specification, Design and Factory Testing of the overall Open LV solution due on 27th October.

The second report on Identification of Target Networks (Method 1), Community Engagement Plan, Assessment of the Market Potential (Methods 2 & 3) and Detailed Trial Design for all Methods is due on 31st December.

The project will trial a new open and flexible solution that will be installed in Low Voltage (LV) substations, providing a much-needed enhanced data platform for local electricity grids. This platform will enable the development of Apps to provide benefits to customers, community energy groups, DNOs and the wider industry. The project started in January 2017 and will run until April 2020. The Open LV Solution will provide consumers with network demand information for their local network and offer them the ability to develop and deploy new Apps to meet their local energy needs.



Assets



Above: Typical Diagram Extract Showing Analogue Values

Transitioning from a network based on passive operation enabled inherently through its design, into one in which demand and generation is balanced locally requires wide spread network visibility both for planning and control purposes.

Within the WPD Future Networks Team we have a number of projects looking at what data and at what quality we will require for future uses and subsequently how best we can provide this. As part of the innovation strategy we have a number of projects on this data theme including 'Time Series Data Quality' and the 'Common Information Model'. As well as documented learnings around data processing in general these projects have also facilitated business change to update and install new monitoring hardware to improve data quality.

The **Analogue Rectification Project** has taken outputs from the various innovation projects together with comments from the Primary System Design and control teams to produce a list of locations on the network requiring increased data visibility. This prioritised list is then used by our colleagues in the projects, design, telecoms and network management team to populate a work program to design and install solutions to meet these requirements.

The level of work involvement involved in each site can vary significantly from commissioning in situ transducers to install new multi-function transducers with complex voltage selection schemes with the business looking to improve data visibility at over 1500 network locations across the business.

WPD has recently registered a project under NIA looking at **Sulphur Hexafluoride (SF₆) Alternatives**.

SF₆ is an extremely potent greenhouse gas and as such it is increasingly becoming restricted and regulated. This potentially presents a significant problem to WPD and other network operators as SF₆ is an excellent insulating medium which is used extensively in High Voltage (HV) and Extra High Voltage (EHV) switchgear. The increased expense in complying with future regulations may lead to higher consumer charges for electricity use; therefore we are investigating alternative solutions to SF₆ as an insulating medium.

The aim of this project is to evaluate alternative insulating mediums in place of SF₆. The initial phase of the project will involve a thorough research review to capture previous learning from other projects and research into SF₆ alternatives. This review will capture all material properties of SF₆ to form a basis for comparison of alternative gases and ultimately the selection of a range of the most suitable insulating mediums to undergo tests in the next stage of the project. Following the review, the next stage will involve identifying and assessing the alternatives that could be used to replace SF₆. A selection of insulating mediums will be chosen for testing, both insulation and interrupting tests in existing SF₆ switchgear, such as Ring Main Units (RMUs). Following these tests the performance of each proposed alternative will be captured and presented in a report for discussion.



Above: A typical Ring Main Unit (RMU).

If successful it is anticipated that the development of a suitable SF₆ alternative will lead to a more environmentally friendly HV switchgear range. The chosen solution must be suitable as both an interrupting and insulating medium in the switchgear. The timescales of the project are that the research review will be complete by early 2018 and the appropriate SF₆ alternatives selected and tested by summer 2019 with a comprehensive report produced for industry review.

Project SYNC (Solar Yield Network Constraints) has now drawn to a close. Following investigations into **4 techniques**, the opportunities for increases in demand to benefit the network are better understood.

Technique 1; Automated Response, investigated the effects of rapid changes in solar generation output due to cloud cover with a view to developing a demand based solution if required. However the investigations into the topic showed that whilst large swings in current were observed, very little affect could be seen on system voltages. Full information can be found here: <https://www.westernpowerinnovation.co.uk/Document-library/2016/T1-Impact-of-cloud-cover-on-PV-results-1-0.aspx>

Technique 2; Load Matching, investigated the opportunities for customer led demand and generation matching through an ANM system. Building on the work carried out by SPEN in the ARC project, T2 investigated the commercial mechanisms and challenges associated with load matching services. The limited level of current curtailment in ANM systems prevented the trialling of the method, however findings from the investigations can be found here: <https://www.westernpowerinnovation.co.uk/Document-library/2017/SYNC/SYNC-T2-report-final.aspx>

Technique 3; DSR turn-up, trialled the coordination of a DNO turn-up service alongside a GB system operator service. By coordinating with National Grid, the DTU service was launched; this merged the 2 parties' requirements into a single streamlined service for participants. Participants contracted and interacted with National Grid, however through a bilateral agreement WPD could also dispatch the units. This DTU service contracted with 309MW and showed that coordination could be achieved between the 2 providers. General requirements were generally aligned with very little overlap. Participation in the target area was relatively low, as such WPD is retaining a watching brief to see how flexible DTU volume increases in the future. For more information a full report can be found here: <https://www.westernpowerinnovation.co.uk/Document-library/2016/Demand-Turn-Up-joint-report.aspx>

Technique 4; Distribution Adjustment Payment, looked into the options for incentivising useful behaviours through underlying charging methodologies rather than direct payments. Due to alternative forums for this debate being created during the project, Technique 4 was limited in scope to avoid duplication in effort and to focus attention on the wider industry processes such as Ofgem's targeted charging review or the charging work stream of the ENA's Open Networks project. The Technique 4 report can be found here: <https://www.westernpowerinnovation.co.uk/Document-library/2017/SYNC/T4-discussion-paper-final.aspx>

ANM Zone Update

One of the DSO Transition Programme identified key core competencies within the 'Assets' core business area is for the business to roll out 'Active Network Management' across the entire network by 2021. This aim is reinforced with the recent expansion of the published Active Network Management roll-out plan.

The plan now includes multiple zones establishment every six months and all new zones will include full the GSP area. The table below shows the locations added to the existing roll out plan available on the website; <https://www.westernpower.co.uk/Connections/Generation/Alternative-Connections/ANM-Further-Info.aspx>

GSP Group	Active BSP Group	Quoting From
Bridgwater	All	Active
Taunton	All	November 2017
Cardiff East	All	November 2017
Aberthaw	All	April 2018
Staythorpe	All	November 2018
Axminster	All	April 2019
Shrewsbury	All	April 2019
Rugeley	All	November 2019
East Claydon	All	November 2019
West Burton	All	November 2019
Remaining GSPs		January 2021

Find out more

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Registration is now OPEN to our DSO Strategy Consultation Event on 14th September.
[Click here](#) for more information.