



# Digitalisation Commitment

How Western Power Distribution is harnessing the power of digital technologies to create the network of the future today.

December 2019

## 1.0 Why digitalisation is needed

- 1.1 Our vision 3
- 1.2 What is digitalisation?  
(Digitalisation vs Digitisation vs Open Data) 4

## 2.0 Our approach

- 2.1 Developing the Digitalisation Strategy 5
- 2.2 Key aspects of our strategy 7
- 2.3 Our enablers 8

## 3.0 Next steps

- 3.1 Our commitment 10
- 3.2 Our stakeholder engagement 11

## 4.0 Actions taken to date 12

## 1.1 Our vision

**Digitalisation of the energy system is a critical step in enabling the UK's transition to net zero carbon emissions while keeping the lights on for customers.**

The UK has a clear commitment to net zero carbon emissions by 2050. This is leading to unprecedented changes in the way customers use, generate and distribute energy. Digitalisation of the energy system is at the heart of Western Power Distribution's (WPD) transition to build a smart and efficient energy system.

We operate the network for our customers, so it is essential we respond to their changing use of the network and adapt our operations to continue to deliver excellent customer service, reliability and value for money. At WPD we are seeing significant increases in distributed, renewable forms of generation connecting directly to our network, such as solar, wind, heat pumps and energy storage. As a result we are seeing our role as a Distribution Network Operator shift to become a Distribution System Operator (DSO) to manage real-time energy flows, and use technology, innovation and commercial arrangements to make optimal use of existing network capacity.

Digitalisation applies to the whole energy industry, not just the network operators like WPD. But our central position in the energy delivery chain – independent from energy service providers, suppliers and generating companies – means our role is critical. Therefore, we are working with the other energy network companies via our trade association the Energy Networks Association (ENA), the government's Energy Systems Catapult and our stakeholder community to identify the data which should be shared across the industry and how it should be pooled.

### Our drivers: meeting the changing needs of our customers



Ability to meet and exceed data and digital requirements



Ensure right data is available at the right time in the right format



To serve current and future needs of the energy system



Delivering on stakeholder and customer recommendations

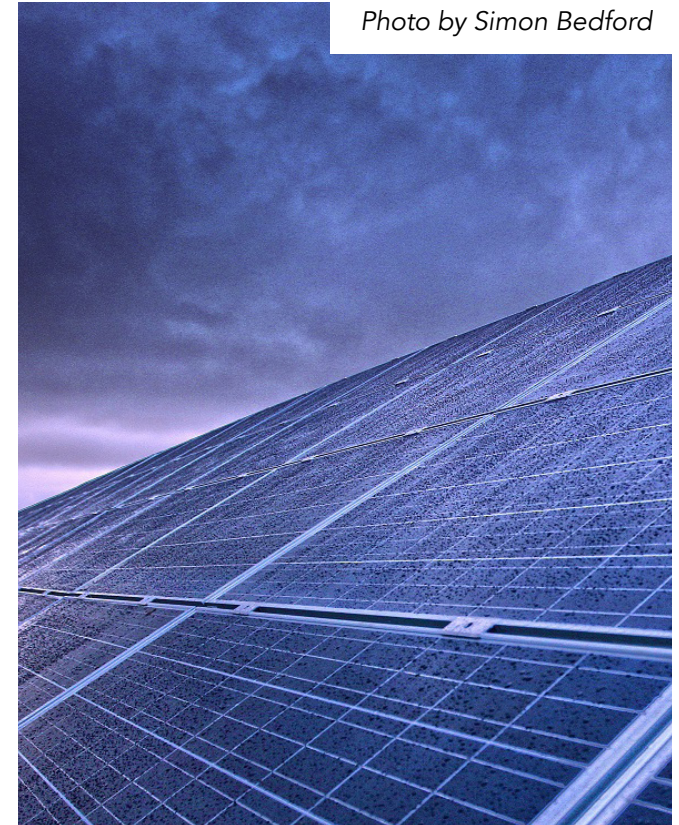


Photo by Simon Bedford



**DIGITALISATION OF THE ENERGY SYSTEM IS A CRITICAL STEP IN ENABLING THE UK'S TRANSITION TO NET ZERO CARBON EMISSIONS**

## 1.2 What is digitalisation? (Digitalisation vs Digitisation vs Open Data)

To understand digitalisation it is important to draw a distinction between it, digitisation and open data.

**DIGITALISATION: USING**

**DIGITISATION: COLLECTING**

**OPEN DATA: SHARING**

For WPD the term **digitalisation** means using digital technologies to fundamentally change how we develop and operate the network to deliver an economic and efficient service for customers.

**Digitisation** is the process of collecting information about the electricity grid using sensors and control equipment. We are collecting some information for the first time and converting previous analogue information into digital formats. This allows it to be computer processed in support of digitalisation.

By **Open Data** we assume that all data should be presumed open unless proven otherwise for privacy, security or commercial confidentiality reasons.

## 2.1 Developing the Digitalisation Strategy

**As a regulated business, periodically we set out a Business Plan for a set period of time (called a 'Price Review Period') following extensive consultation with our stakeholders. This is then agreed with our regulator, Ofgem.**

The next regulatory period will run from 2023-2028 and will be called RIIO-ED2. Our planning is already well underway and the focus on building a smarter energy system will be a central priority across this five-year period. Our digitalisation strategy and work plan will continually evolve up to and beyond the delivery of our RIIO-ED2 business plan. The first draft of our RIIO-ED2 business plan will be published in December 2020 and digitalisation will be a major component of it.

**Our strategy adopts two principles.**

### **Digitalising the Energy System**

Innovation projects previously delivered by WPD have developed new equipment capable of providing enhanced visibility of the electricity network. These solutions, together with advanced ICT-based control systems, are being rolled out across our regions. The roll-out is aligned with our customers incrementally switching from fossil fuels to electricity to meet their heat and transport needs.

### **All data is presumed open**

Our [Energy Data Hub](#) is already home to many sets of network data and information. We continue to add both raw datasets and more user friendly enquiry tools to the site.

### **Already underway: Common Information Model**

We are currently completing a project to deliver standardisation for all electricity network data to make it easier to share information across the industry with a range of partners. The Common Information Model (CIM) leads to an integrated network model (INM). This model combines data from our SCADA, GIS and Asset Data systems to provide an enhanced dataset of the network from its connection to the National Grid down to HV/LV substations. INM for our South West licence area will be delivered at the end of Q1 2020 and for our other three licence areas by the end of 2020. These will be made available via our Energy Data Hub and will feed our network analysis tools in both planning and operating timescales. Projects are also underway to derive LV network data to facilitate improvements to the design and operation of the LV network.

## 2.1 Developing the Digitalisation Strategy

We fully support the coordination of customer asset registration across the electricity industry and are adapting our processes to make this happen. Our neutral position in energy service markets means WPD is well positioned to act as the hub for this information.

Our full digitalisation strategy will set out how new technologies are already, and will continue, enabling us to:

- Further improve business efficiency
- Turn data into information that benefits customers
- Provide open data to market participants
- Produce better insight into asset capability for customers planning to connect new loads, storage or generation
- Develop new connection and service propositions
- Drive enhanced network performance.

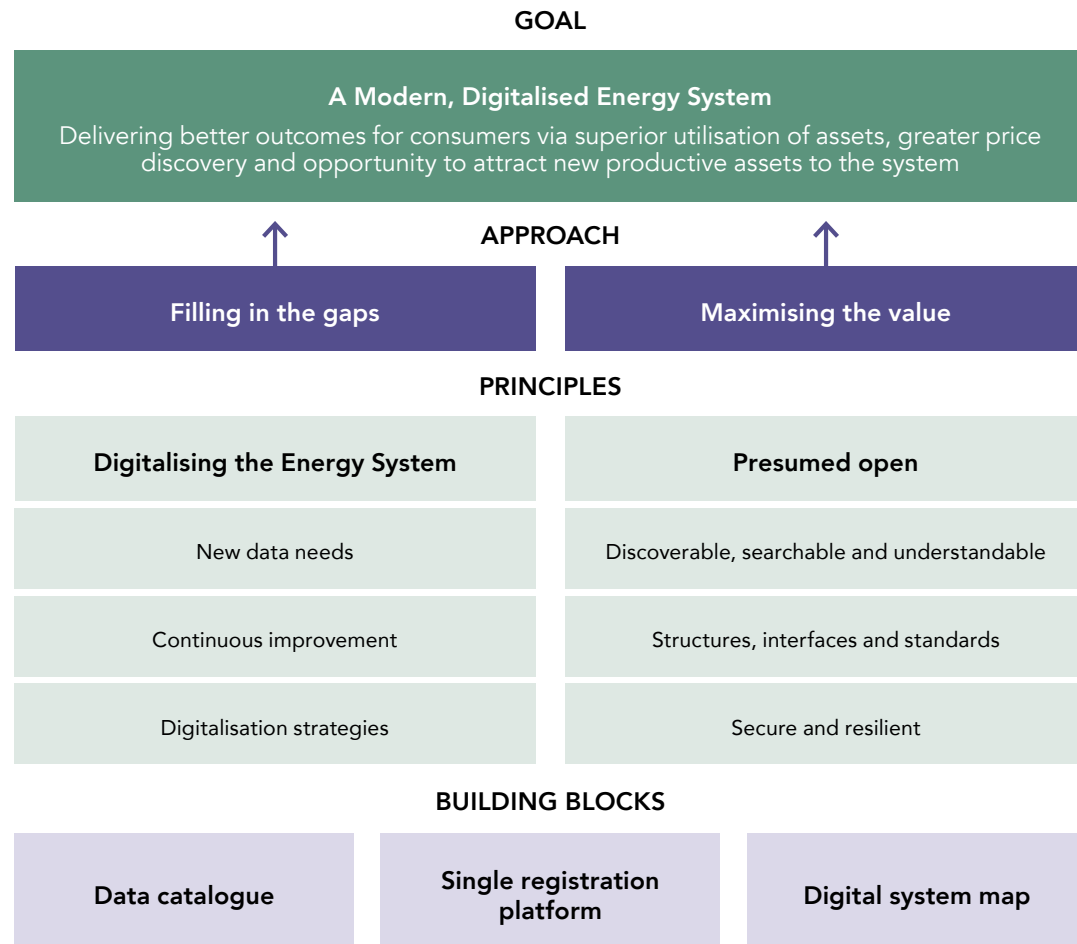


Image taken from: <https://es.catapult.org.uk/energy-data-taskforce-report>

## 2.2 Key aspects of our strategy

To deliver our long-term strategy of using digital technologies and delivering open data we will need to transform all aspects of our business including capability, people and culture. The use and expansion of field apps to collect data and provide information to field staff is helping to deliver the importance of data to our field staff.



 <b>Culture + Organisation</b> Culture that encourages innovation, aligns with business goals, and accelerates delivery	 <b>Security + Compliance</b> Appropriate segmentation of systems to balance open and closed systems enabling interoperability of critical national infrastructure	 <b>Innovation + Exploration</b> To discover new customer needs and emerging delivery mechanisms	 <b>Network Management + System Operations</b> Digitalising the processes & operations of our network business	 <b>Data Management + Governance</b> Further develop data management practices to enable our business
 <b>Architecture + Technology</b> Integrating IT + OT field systems to deliver work management data to make right decisions & enable system	 <b>Approach</b> Establish common working practices for our digital and data roadmap and projects			

**BUILDING A SMARTER ENERGY SYSTEM WILL BE A CENTRAL PRIORITY**

## 2.3 Our enablers

We have already started the process of digitalisation through the delivery of several projects within our DSO Strategy and work plan. Many of these projects are acting as enablers of DSO solutions through the creation of accessible datasets which will be used both within WPD and shared by others.

Core activities currently underway include improving the granularity and accuracy of network data to better understand its design capability and current use. We are thinking about the capability we need in multiple time horizons including historical information and analytics; future investment planning, and real-time operation.

Our current projects are set out in the table below:

Data and digitisation projects			Access and engagement hub
<a href="#"><u>Time Series Data Store</u></a>	<a href="#"><u>Low Carbon technology auto-detection</u></a>	<a href="#"><u>Integrated Network Model</u></a>	<a href="#"><u>Data Energy Hub</u></a>
<a href="#"><u>Presumed Open Data Project</u></a>	<a href="#"><u>Visibility Plug and Sockets</u></a>	<a href="#"><u>Flexibility First</u></a>	<a href="#"><u>Carbon Portal and Tracer</u></a>
	<a href="#"><u>Virtual Metering Data</u></a>	<a href="#"><u>Historical and Future Network Viewer Projects</u></a>	<a href="#"><u>Open LV Platform</u></a>

We will continue to add to and enhance the data sets available and welcome feedback on further data that would be useful to customers, government and local authorities as well as other energy market participants.



## Already underway: network management systems

We are enhancing our SCADA system using data to run Automated Power Restoration System (APRS), to fully integrate Active Network Management (ANM) and Demand Side Response (DSR) and to roll out System Voltage Optimisation (SVO).

### Distributed energy resources management system (DERMS)

APRS - provides automated post fault supply restoration improving customer service

ANM - allows the connection of demand and generation with curtailment in the event of a period of high system usage

DSR - use of demand side flexibility to complement conventional reinforcement

SVO - exploiting sensors and distributed computing to optimise voltage control



WE ARE THINKING ABOUT THE CAPABILITY WE NEED IN MULTIPLE TIME HORIZONS



## 3.1 Our commitment

**WPD's purpose is to deliver an essential public service for our customers. High quality, frequent and challenging engagement with stakeholders is therefore crucial to our approach. As part of our commitment to digitalisation we have to take account of many technical considerations. As engineers, we must use technology and innovation to convert the network to enable real-time, dynamic control and data access.**

We must allow better use of existing capacity and ensure efficient investment at all times. However, above all, we must understand the impact for customers and local communities.

We will therefore be seeking stakeholder input at every stage of the creation, refinement and delivery of our approach to digitalisation and would love to hear from you.

Digitalisation is at the heart of our plans for smarter operation of the distribution system. We believe it is essential to enable customers to adopt lower carbon technologies while enabling us to deliver reliable supplies and keep bills as low as possible.

We will lead by example and develop processes that can support the whole energy industry in achieving our goal of a net-zero energy system.

### Already underway: open data

We have just initiated an NIA project with the Energy Systems Catapult and the Centre for Sustainable Energy: Presumed Open Data (POD) which will include:

- **Review and validation of our existing data inventory**
- **Identify datasets not yet captured within the current inventory**
- **Produce structured metadata for datasets**
- **Data use case generation (internal and external value)**
- **Engage with stakeholders and run workshops**
- **Identify data or quality gaps that limit value/ restrict use cases**
- **Develop WPD open data triage process**
- **Apply mitigation techniques to maximise openness.**

## 3.2 Our stakeholder engagement

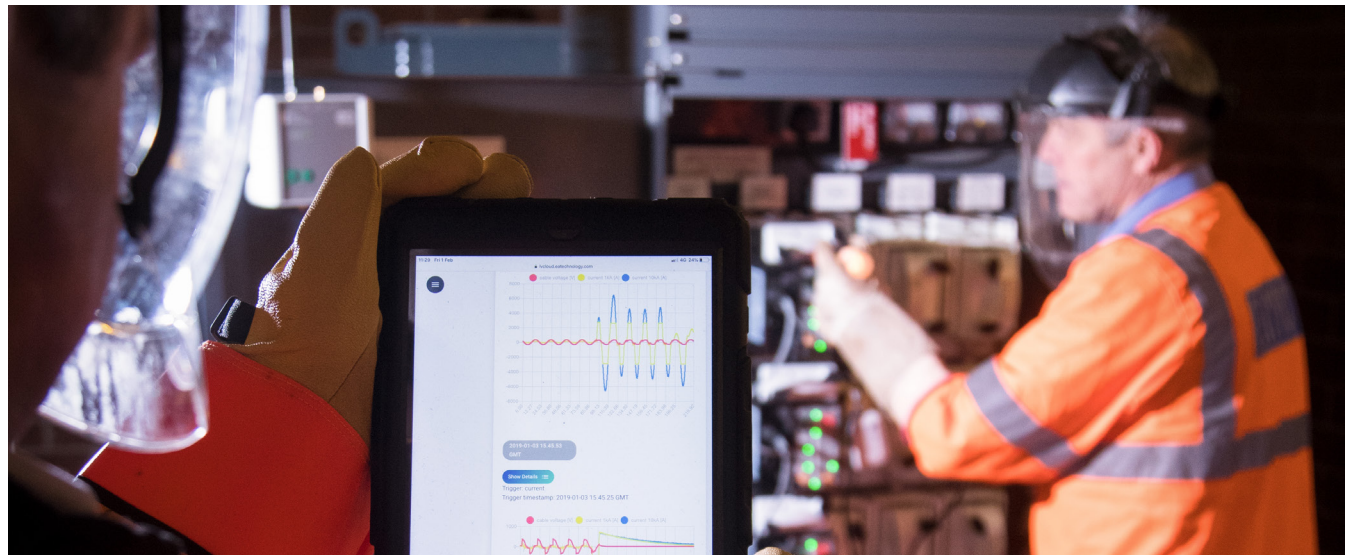
**We will regularly update our digitalisation strategy to reflect the continuously changing internal and external needs for new and improved data and information. We plan to deliver our first public strategy before the collaborative industry event arranged by the Energy Networks Association (ENA) for mid-March 2020.**

The specific agenda and format is under development in consultation with stakeholders and details will be issued soon, including how stakeholders can participate. The ENA event will be inclusive and highly participative. The purpose will be to showcase digitalisation strategies and initiatives undertaken and

in progress, with a view to garnering energy system data and digital user early engagement and feedback. It is intended that this will be the first in a series of events to ensure continued engagement.

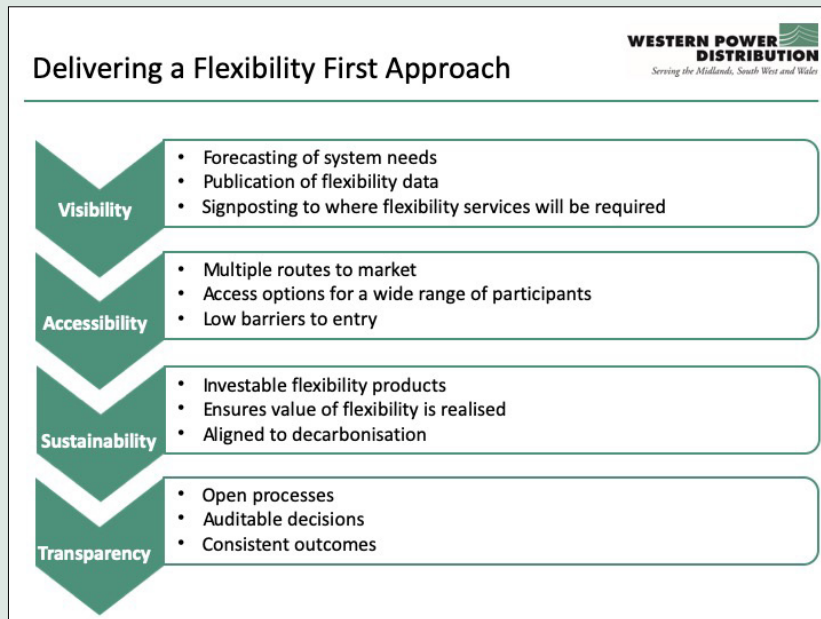
We will also be talking to stakeholders about digitalisation as we prepare our RIIO-ED2 business plan. Through workshops and dissemination events we encourage as many people as possible to help form a strategy and work plan which delivers best value to our customers.

**“ ABOVE ALL, WE MUST UNDERSTAND THE IMPACT FOR CUSTOMERS AND LOCAL COMMUNITIES ”**



## Already underway: future energy scenarios

By using a wide range of external data from developers, government and local authorities we produce [future energy scenarios](#) that are used to provide market data to facilitate customer and commercially owned sources of flexibility that we contract with via our [Flexible Power products](#) where they are more economic than asset solutions.



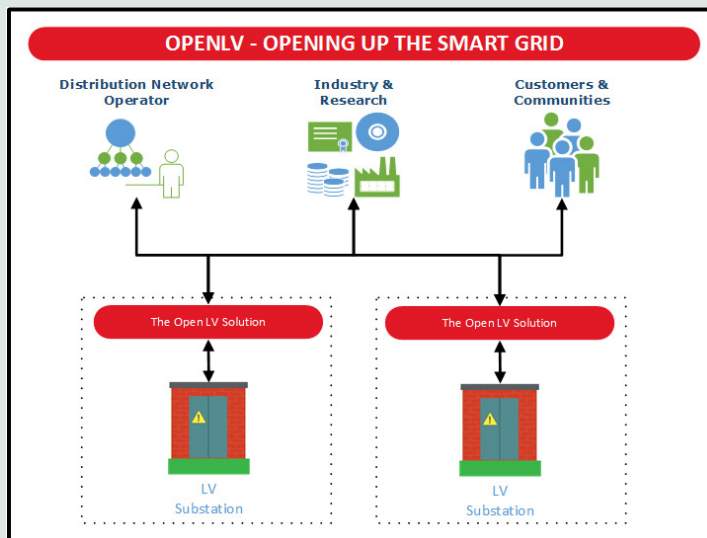
## Already underway: data detection

We worked with ElectraLink to investigate whether it is possible to automatically detect homes with solar panels or electric cars. ElectraLink is the central body responsible for sending energy data around the whole industry. This includes metering data and information from energy suppliers. They used artificial intelligence techniques to comb all the data flying through their systems. The aim was to see if it is possible to make the process for customers easier, effectively making new technologies “plug and play”.



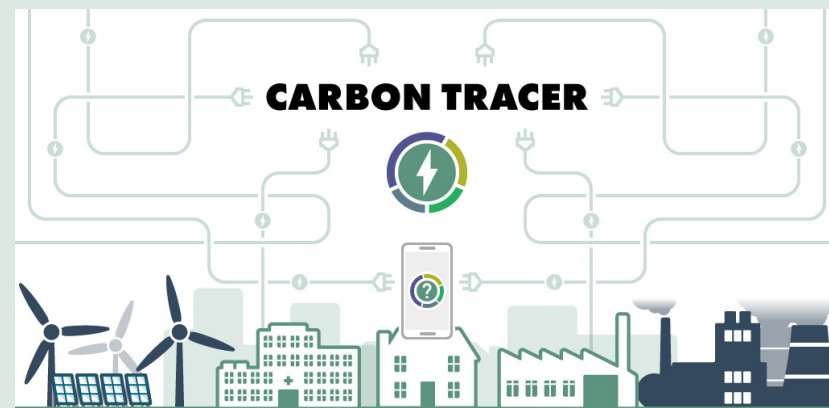
## Already underway: Open LV

The Open LV platform allows communities and energy service providers to securely access consumption data from their local distribution substation without having to come through the core WPD systems. The platform also allows them to develop apps using the data, which is hosted on the substation-based server. In effect WPD is acting as the App Store for third party solutions. We are planning to extend this concept to higher voltage substations so potential users can access information across a larger geographic area.



## Already underway: The Carbon Portal

The Carbon Portal provides accurate real-time historic and future CO<sub>2</sub> content for the actual electricity being delivered to our customers' homes. Increasingly we find that communities and end customers are interested in the source of their electricity, particularly when there are distributed renewable energy producers in their locality such as wind parks and solar farms. It takes data from the national grid CO<sub>2</sub> data stream and breaks it down into over 250 smaller areas across WPD. The data can be shared externally in real time and is being used by some energy service providers, for example to ensure that electric cars are charged only when green electricity is available.



---

Western Power Distribution (East Midlands) plc, No2366923  
Western Power Distribution (West Midlands) plc, No3600574  
Western Power Distribution (South West) plc, No2366894  
Western Power Distribution (South Wales) plc No2366985

Registered in England and Wales  
Registered Office: Avonbank, Feeder Road, Bristol BS2 0TB

December 2019

---

 [www.westernpower.co.uk](http://www.westernpower.co.uk)  @wpduk