

**WESTERN POWER**  
**DISTRIBUTION**

*Serving the Midlands, South West and Wales*

# Investing in your future electricity networks

Supporting local growth  
and decarbonisation



[westernpower.co.uk](http://westernpower.co.uk)

Autumn 2020  
workshop support material

# Contents

1. Introduction	03
2. Who we are and what we do	04
3. A regulated business	05
4. Investment in the electricity network	06
5. Project examples	07
In the East Midlands	08
In the West Midlands	10
In the South West	12
In South Wales	14
6. Connecting to the electricity network	15
Allocation and Reservation of Capacity	16
7. Net Zero and Low Carbon Technologies	17
Electric Vehicles	18
8. Flexible Power	20
9. Distribution Future Energy Scenarios	21
10. Community Energy	22
11. Your local contacts	23

1.  
Introduction

2.  
Who we are  
and what  
we do

3.  
A regulated  
business

4.  
Investment in  
the electricity  
network

5.  
Project  
examples

6.  
Connecting to  
the electricity  
network

7.  
Net Zero and  
Low Carbon  
Technologies

8.  
Flexible  
Power

9.  
Distribution  
Future Energy  
Scenarios

10.  
Community  
Energy

11.  
Your local  
contacts



# Introduction

Western Power Distribution (WPD) is investing £7.1 billion in the electricity distribution network between 2015 and 2023.

This investment will go into reinforcing the existing network, improving network reliability, providing additional capacity and upgrading equipment.

We know that local growth plans are now heavily affected by the use of low carbon technologies and ambitions to strive towards the UK's Net Zero target. Change in local communities is therefore happening at varying paces.

We want to make sure that our stakeholders are aware of our planned investment and improvements, particularly in their local area.

We are therefore running a round of local engagement events to support communities and Local Authorities to plan their local growth in line with UK targets. The events, in September 2020, will also allow our stakeholders to forge ongoing relationships with us and their peers.

This document supports those events and will include some useful snapshots of investment examples as well as information about our approach to **Low Carbon Technology and the move towards Net Zero** as well as links to more information on the WPD website.



**We want to make sure that our stakeholders are aware of our planned investment**

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Who we are and what we do

Western Power Distribution is an electricity Distribution Network Operator (DNO).

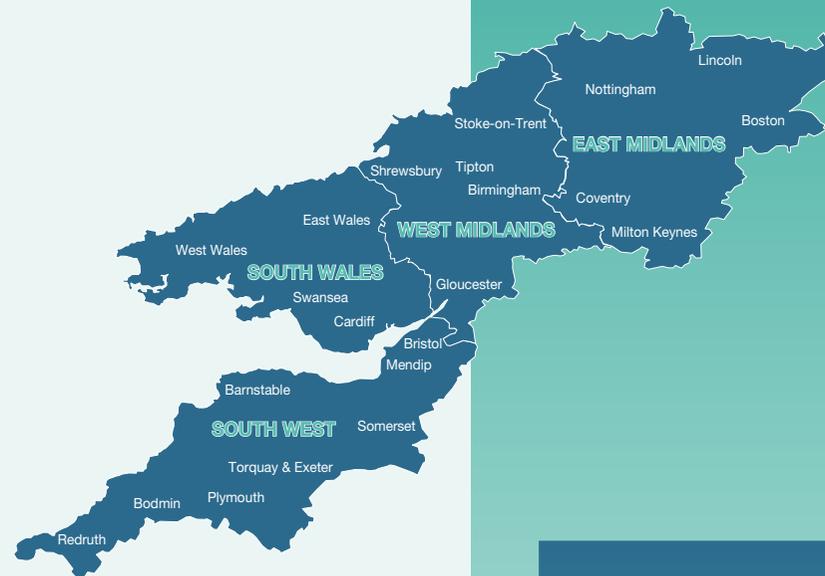


We are responsible for the network of engineering assets that allows the distribution of electricity to customers' premises.

Our distribution network consists of transformers, underground cables and overhead lines, switches and service connections. This network sits between what was traditionally known as the National Grid transmission network and customers.

We are the DNO for the Midlands, South West and South Wales. The network we operate covers a geographic area of some 55,500 km<sup>2</sup> serving over 7.9 million customers and is the largest in the UK - covering every kind of geography and demography.

We employ over 6,500 staff and our teams are based in local offices where they take responsibility for local issues, deliver local work programmes and respond quickly to local power cuts.



## Our key responsibilities

We do not buy or sell electricity, or send any bills to electricity customers. Traditionally, what we do is simple and comprises of four key tasks:



we operate our network assets effectively to 'keep the lights on' for our customers;



we maintain our assets so that they are in a condition to remain reliable;



we fix our assets if they get damaged or are faulty;



we upgrade the existing networks or build new ones to provide additional electricity supplies or capacity to our customers.



The network we operate covers a geographic area of some 55,500 km<sup>2</sup> serving over 7.9 million customers and is the largest in the UK

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# A regulated business

Although we are facilitating competition in some of the services we provide (such as new connections) we are a natural monopoly within the geographic area we serve.

We are therefore regulated by the Office of Gas and Electricity Markets (Ofgem).

Ofgem issues licences to DNOs that set out the obligations and responsibilities of the companies and also determines the revenues they are allowed to earn each year. WPD has four licences covering each of the four geographic areas we cover.

Periodically, Ofgem scrutinises the Business Plans of DNOs through a process known as a Distribution Price Control Review.

This determines how much DNOs are allowed to charge in total per year for network investment, operating costs and allowed returns.

This charge, known as DUoS (distribution use of system), is payable by the electricity suppliers who, in turn, incorporate it into electricity charges to customers.

Based on 2019/20 reporting, our costs account for around 17% of our average domestic customer's electricity bill.



**Our costs account for around 17% of our average domestic customer's electricity bill**

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Investment in the electricity network

Our network covers densely populated residential areas and widely dispersed rural communities, from the Wash in Lincolnshire down through South Wales and to Land's End and the Isles of Scilly in Cornwall.

The diversity of our network can cause a variety of issues across the distribution area. This, combined with the age of the network (a large proportion of our assets were built in the 1960s) and recent environmental challenges, means we will need to invest more than ever to keep our network efficient and reliable in order to keep the lights on.

Our current Business Plan outlines our investment commitments until 2023 and was submitted to Ofgem in 2015. WPD was the only DNO out of six in the UK to have its Business Plan 'fast-tracked'. This allowed us to maximise and secure our investment funding early. We committed to investing £7.1 billion in our network between 2015 and 2023 and we continue to deliver against our RIIO-ED1 investment plans.

Looking ahead to RIIO-ED2, our price control period starting in 2023, we used our January 2019 stakeholder workshops to start the conversation about our Business Plan early. Further engagement workshops were held in Spring 2020 which allowed us to identify the high level topics stakeholders want us to address in RIIO-ED2 and a second round is due in the Autumn.

We also have an established Customer Engagement Group (CEG) committed to developing WPD's investment plans going forward. The CEG acts independently and operates at arm's length from WPD and provides rigorous challenge to us in the development of our Business Plan, including our proposed approach to investment and expenditure.

2019/20  
Across the  
whole of WPD:



Total network  
expenditure  
**£947m**



**99.993%**  
network  
availability



Cost to average  
domestic  
customer  
**27p**  
per day

1.  
Introduction

2.  
Who we are  
and what  
we do

3.  
A regulated  
business

4.  
Investment in  
the electricity  
network

5.  
Project  
examples

6.  
Connecting to  
the electricity  
network

7.  
Net Zero and  
Low Carbon  
Technologies

8.  
Flexible  
Power

9.  
Distribution  
Future Energy  
Scenarios

10.  
Community  
Energy

11.  
Your local  
contacts

# Project examples

We are constantly carrying out works to maintain and improve the network and the projects we commission to do this vary in both size and scope – but all are of equal importance to us.

When undertaking new projects, we do so for one of six main reasons:



#### Asset replacement

Directly changing our network assets, usually due to condition or age.



#### Worst served customers

Improving the network for those with the most outages (over 12 outages in three years).



#### Cable undergrounding

Replacing an overhead line with an underground cable for either safety or environmental reasons.



#### Resilience

Mitigating against the effects of adverse weather; building flood defences, tree trimming, etc.



#### Reinforcement

Upgrading our network to deal with increased demand.



#### Cable diversions

Moving the cable in the ground due to new building works.

The following pages provide some examples of recent or upcoming projects in each of our four licence areas, with details of the work involved and the associated benefits for our customers.



Further examples are available online

[Investment map](#)

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Projects in the East Midlands



## Northants & Milton Keynes Welford to Sulby

**Duration:** 2 months

**Total spend:** £124k

**Start quarter:** Q4, 2020

**Customers affected:** 1,043

**Details:** 1.8km of new High Voltage cable to replace existing cable due to age and condition.

**Customer benefits:** Improved network reliability by reducing faults and interruptions for customers.



## Leicester & Kettering Loughborough

**Duration:** 3 years

**Total spend:** £1.5m

**Start quarter:** Q2, 2019

**Customers affected:** 98,000

**Details:** Upgrade of the 132kV to 33kV transformer.

**Customer benefits:** Increased capacity in the Loughborough, Shepshed and Quorn areas.



## Coventry & Warwickshire Bowling Centre, Tamworth

**Duration:** 2 weeks

**Total spend:** £50k

**Start quarter:** Q1, 2021

**Customers affected:** 17

**Details:** Replace substation to improve flood resilience.

**Customer benefits:** Reduced risk of power cuts during extreme weather events.



1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Projects in the East Midlands



## North Lincolnshire North Hykeham

**Duration:** 12 months

**Total spend:** £2.1m

**Start quarter:** Q2, 2021

**Customers affected:** 10,788

**Details:** Install a third 33/11kV transformer and replace 33kV and 11kV switchgear to provide additional capacity and network security in the area.

**Customer benefits:** Increased available capacity for new connections, upgrades and uptake in low carbon technology. Improved network security for customers in the area.



## South Lincolnshire Pickworth

**Duration:** 4 months

**Total spend:** £220k

**Start quarter:** Q3, 2020

**Customers affected:** 1,243

**Details:** 2.6km of 11kV underground cable overlay to connect two separate 11kV circuits and replace existing 750m section of 11kV overhead line to prevent persistent problems with trees.

**Customer benefits:** Increased capacity in the area and improved network performance reducing customer interruptions.



## Nottingham Lenton

**Duration:** 6 months

**Total spend:** £300k

**Start quarter:** Q4, 2020

**Customers affected:** 1,021

**Details:** 2.5km of new cable connecting two major city centre primary substations to improve 11kV network resilience for the Queens Medical Centre Hospital and University of Nottingham.

**Customer benefits:** Additional security of supply in the area.



## Chesterfield & Mansfield Pleasley Vale Mills, Mansfield

**Duration:** 2 months

**Total spend:** £129k

**Start quarter:** Q3, 2020

**Customers affected:** 399

**Details:** Rebuild 1.5km of 11kV overhead line and install 600m of 11kV underground cable due to age and condition of existing network.

**Customer benefits:** Improve network reliability by reducing faults and interruptions.



## Derby Rangemore, Burton on Trent

**Duration:** 7 weeks

**Total spend:** £239k

**Start quarter:** Q3, 2020

**Customers affected:** 552

**Details:** Replace 1.9km of High Voltage underground cable due to age and condition.

**Customer benefits:** Improved network reliability and security of supply in a predominantly commercial area.

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Projects in the West Midlands



Stoke-on-Trent

Shrewsbury Tipton

Birmingham

WEST MIDLANDS

Gloucester



## Telford Ketley-Donnington

**Duration:** 6 months

**Total spend:** £2.4m

**Start quarter:** Q3, 2020

**Customers affected:** 10,000

**Details:** New 33kV cable connection to existing primary substation, as well as the installation of a new 33kV/11kV transformer and associated 33kV switchgear.

**Customer benefits:** Increased security of supply, and an increase to the firm capacity rating at the primary substation to help with future load growth.



## Stoke Garmelow

**Duration:** 3 months

**Total spend:** £420k

**Start quarter:** Q4, 2020

**Customers affected:** 200

**Details:** Installation of 2.3km new High Voltage underground cable to interconnect two different spur circuits to improve network security.

**Customer benefits:** Improved network reliability by reducing faults and interruptions for all customers connected.



## Birmingham Perry Bar

**Duration:** 6-9 months

**Total spend:** £2.2m

**Start quarter:** Q4, 2020

**Customers affected:** 10,500

**Details:** Interconnectors installed between two primary substations.

**Customer benefits:** Increased security of supply and allowance for future load growth.



1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Projects in the West Midlands



## Tipton

Albrighton, Codsall and Pattingham

**Duration:** 3 months

**Total spend:** £500k

**Start quarter:** Q3, 2020

**Customers affected:** 5,000

**Details:** Replacement of a 33kV overhead line that is becoming unreliable. Part of the circuit to be undergrounded at the same time as work to reinforce the 11kV network is undertaken.

**Customer benefits:** Improved supply reliability for customers in the area.



## Gloucester

Cheltenham

**Duration:** 1 month

**Total spend:** £120k

**Start quarter:** Q3, 2020

**Customers affected:** 800

**Details:** 0.9km of new High Voltage cable to reinforce the distribution network in the area.

**Customer benefits:** Improve network security of supply and secure future demand.



## Hereford & Ludlow

Star Aluminium/Stanmore Industrial Estate

**Duration:** 4 months

**Total spend:** £644k

**Start quarter:** Q4, 2020

**Customers affected:** 282

**Details:** Reinforcement of local network with a new 11kV feeder and a primary substation 11kV switchboard extension.

**Customer benefits:** Greater security of supply for key businesses in the Shropshire area.



## Worcester

Banbury

**Duration:** 4 months

**Total spend:** £650k

**Start quarter:** Q3, 2020

**Customers affected:** 2,500

**Details:** Reinforce the local 11kV network by replacing a small section of underground cable with new larger rated cable.

**Customer benefits:** Improved supply reliability for customers in the area.

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Projects in the South West



## Bodmin

St Columb and Fraddon

**Duration:** 6 weeks

**Total spend:** £100k

**Start quarter:** Q3, 2021

**Customers affected:** 216

**Details:** Installation of approximately 1km High Voltage cable interconnector between two primary substations to “ring in” a large spur at Castle-An-Dinas.

**Customer benefits:** Quicker restoration of customer supplies in the event of a High Voltage fault in addition to reducing the need to interrupt supplies for planned work.



## Bristol

Hambrook Lane, Stoke Gifford

**Duration:** 1 Month

**Total spend:** £71k

**Start quarter:** Q4, 2020

**Customers affected:** 140

**Details:** Removal of High Voltage overhead line replaced by 570m of cable due to development and wayleave termination.

**Customer benefits:** Improved network reliability and visual amenity.



## Plymouth

Saltash and Torpoint

**Duration:** 2 months

**Total spend:** £290k

**Start quarter:** Q1, 2020

**Customers affected:** 2,100

**Details:** Replacing and upgrading approximately 1,630m of underground mains cables.

**Customer benefits:** Reduction in faults and allowance for future electrical growth and facilitations of low carbon technology such as electric vehicle charging points.



1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Projects in the South West



## Devon Moretonhampstead

**Duration:** 2 weeks  
**Total spend:** £190k  
**Start quarter:** Q3, 2020  
**Customers affected:** 170  
**Details:** Replace 60 poles and reinforce 5,200m of 11kV overhead line.  
**Customer benefits:** Increased capacity and reliability.



## North Devon Welcome Cross

**Duration:** 2 weeks  
**Total spend:** £30k  
**Start quarter:** Q2, 2020  
**Customers affected:** 412  
**Details:** 500m of High Voltage overhead cable diverted due to multiple faults caused by unstable large trees in a forestry.  
**Customer benefits:** Improving network reliability and security of supplies for customers.



## Somerset West Somerset

**Duration:** 6 weeks  
**Total spend:** £1.5m  
**Start quarter:** Q3, 2020  
**Customers affected:** 800  
**Details:** Replacement of poles and reinforcement of overhead cable.  
**Customer benefits:** Improved network reliability through reduced faults/interruptions and upgraded network to cope with increased demand.



## Mendip Norton Hill Primary School

**Duration:** 2 months  
**Total spend:** £130k  
**Start quarter:** Q3, 2020  
**Customers affected:** 2,034  
**Details:** New transformer to supply school and residential area. Two substations linked for reliability and various circuits diverted to accommodate the development.  
**Customer benefits:** Improved network reliability and increased capacity in the area.



## West Cornwall Zennor

**Duration:** 3 months  
**Total spend:** £254k  
**Start quarter:** Q4, 2021  
**Customers affected:** 26  
**Details:** 3.6km of overhead line and 15 poles being replaced with 1.2km of 11kV underground cable in an area of outstanding natural beauty (AONB).  
**Customer benefits:** Improve appearance in an AONB and improve reliability through the removal of overhead lines.



1. Introduction
2. Who we are and what we do
3. A regulated business
4. Investment in the electricity network
5. Project examples
6. Connecting to the electricity network
7. Net Zero and Low Carbon Technologies
8. Flexible Power
9. Distribution Future Energy Scenarios
10. Community Energy
11. Your local contacts



# Projects in South Wales



## West Wales

Saundersfoot, The Strand

**Duration:** 12 months  
**Total spend:** £245k  
**Start quarter:** Q1, 2020  
**Customers affected:** 400  
**Details:** Replacement of The Strand transformer and switchgear and 1.1km of Low Voltage cable due to aging condition and general load growth.  
**Customer benefits:** Improving network reliability and security of supplies for customers.



## East Wales

Caerwent

**Duration:** 1 month  
**Total spend:** £108k  
**Start quarter:** Q3, 2020  
**Customers affected:** 48  
**Details:** Dismantle lattice towers and replace overhead lines with underground cable.  
**Customer benefits:** Improved aesthetics in an Area of Outstanding Natural Beauty (AONB).



## Swansea

Bynea, Llanelli

**Duration:** 2 months  
**Total spend:** £70k  
**Start quarter:** Q1, 2020  
**Customers affected:** 3  
**Details:** Diversion of 750 meters of 11kV overhead line.  
**Customer benefits:** Improved reliability and visual impact at a holiday park.



## Cardiff

West Gwent

**Duration:** 3 months  
**Total spend:** £86k  
**Start quarter:** Q3, 2020  
**Customers affected:** 12,865  
**Details:** Five spans of 33kV overhead line dismantled and cables installed underground.  
**Customer benefits:** Network reliability improved due to reduce faults and interruptions to customers.

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Connecting to the electricity network



One of our key roles is to provide new connections and modify existing connections to our network.

We aim to make connecting to our network as straightforward as possible. Whether customers choose us to complete the entire connection works or choose a competitive connection provider to undertake some of the work, our locally based design teams can discuss the right solution to meet individual connection requirements.

## Types of connection:

-  **New demand connections** - we provide connections to our existing network across a wide spectrum of premises types; from street furniture and single infill properties through to large housing developments and retail/industrial units no job is too big or too small.
-  **New generation connections** - we also provide connections to our existing network for all types of generation, including solar powered, wind, hydro, CHP and energy storage. Our aim is to ensure this generation can export energy safely on to our network.
-  **Modified connections** - we can upgrade an existing connection to cater for a customer's ongoing needs, whether they need an increase in supply capacity perhaps to cater for bigger machines or want to make a change to the operating characteristics by installing generation at a demand site.

## We try to make the application for connection process as simple as possible.

Our website Connections page will provide all you need to know in order to make an online application and includes helpful information on areas such as competition in connections and connecting Low Carbon Technologies, for example electric vehicle charge points. For further information about the process see link, right.

-  Before you make a full connection application you can apply for a **Budget Estimate** – early, free of charge indication of the likely cost of connection when the full details of the scheme are not known or the connection isn't needed in the near future.
-  A **Connection Offer** will be carried out once a full application has been received. This will involve a number of studies to assess the connections impact on the network. The Connection Offer will contain details of the connection charge. This charge will include the cost of new assets, any associated reinforcement of the existing network and recovery costs from previous works. The terms and conditions for connection will also be included.
-  A **Connection Agreement** is made between us and the connecting party and details terms and conditions that must be adhered to whilst the premises remains connected to the network. The Connection Agreement will specify the characteristics of connection including the Maximum Import and/or Export Capacity and any specific operating conditions, for example export limitation or disturbing load requirements.



Further useful information on our website:

## Connections applications

### Jargon Buster

explains the terms and background information needed to understand a little more about how Distribution Networks operate

### Network Capacity Map

provides an indication of the network's capability to connect large-scale developments to major substations and is updated every six months

### Data Portal 2

provides third parties with access to asset information data and mapping for planning purposes

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Allocation and Reservation of Capacity

We recognise that large housing and commercial developments may build out over a number of years and that customers require some level of surety that the capacity they require will be available at the time of need.

We need to balance this with ensuring that subsequent customers who are ready to proceed with their scheme are not unfairly disadvantaged.

Following stakeholder consultation, we are making changes to the way in which capacity can be reserved for large developments and subsequently allocated to the specific phases of works. Connection Offers may include immediate connection works, infrastructure and/or reservation of capacity in any combination. Subsequent phases of the development will draw down from the reserved capacity in accordance with an agreed programme of works.

## Confirmation of Appointment

If the applicant is not the landowner or occupier, we will require a Confirmation of Appointment from them which should clearly identify the extent of the development area, the number of connections and the capacity required. To ensure we do not unduly hinder the process we will not require the Confirmation of Appointment until post acceptance of the Connection Offer. We will provide a template letter for this within our Connection Offer that can be forwarded to the landowner(s) or developer.

We believe the requirement for the Confirmation of Appointment form is integral to the process and ensures that applicants are only reserving capacity for that which they are authorised to do so.



Further useful information on our website:

**Allocation and reservation of capacity** provides more information relating to the revised process

1. Introduction
2. Who we are and what we do
3. A regulated business
4. Investment in the electricity network
5. Project examples
6. Connecting to the electricity network
7. Net Zero and Low Carbon Technologies
8. Flexible Power
9. Distribution Future Energy Scenarios
10. Community Energy
11. Your local contacts



# Net Zero and Low Carbon Technologies

As a Distribution Network Operator we are committed to accelerating Net Zero in communities across our region.

In 2019 the UK committed to achieving Net Zero by 2050. This will be achieved through the decarbonisation of heating and transport.

Gross Zero would mean reducing all emissions to zero, however Net Zero allows for some emissions as long as they can be offset.

In order to achieve Net Zero, UK Local Authorities are striving towards a low carbon economy using technologies with significantly reduced carbon impact, for example:

**Heat Pumps (HP)** a form of space heating becoming popular in the decarbonisation of heat. They can be Air Source Heat Pumps (ASHP) or Ground Source Heat Pumps (GSHP) and can be scaled for installations in domestic and commercial property.

**Electric Vehicles (EV)** are becoming the primary technology used in the decarbonisation of transport. Battery Electric Vehicles operate with no form of internal combustion engine and are therefore not reliant on fossil fuels. EVs can include cars, vans, refuse vehicles and buses.

**Photovoltaics (PV)** generally refers to solar panels. These convert solar energy into electricity and can be seen in solar farms in rural locations and on both domestic and commercial properties – usually on a rooftop.

Electric vehicles and charging will be covered in more detail at our Autumn workshops and in this supporting booklet given they are high on our stakeholders' agenda at present. Further information about other technologies can be found using the 'smarter networks' link to the right.



Further useful information on our website:

**Net Zero Communities Strategy**

**Jargon Buster**

**Smarter Networks**

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Electric Vehicles

Wherever and whenever people want to charge, they need to know we will provide an adequate and safe electricity connection to meet their needs.

Our job is to make sure the network is ready for all kinds of EV charging.

People's charging needs will vary, depending on the type of vehicle they own and whether they have access to their own charging point or plan to use a public charging facility.

We know only 60% of car users have access to an off-street parking location likely to be suitable for charging.

We have years of experience designing electricity networks and are used to adapting to the changing needs of customers.

In some cases, this will mean upgrading the network; in others, it will involve innovative solutions to create faster and more efficient connections. Our latest EV strategy explains how we are preparing our network for those changes such as driveway, on-street and motorway charging.



We predict up to  
**217,000**  
chargers will be connected to our network by 2023



We've allocated  
**£58million**  
for investment in our EV charging infrastructure

1. Introduction
2. Who we are and what we do
3. A regulated business
4. Investment in the electricity network
5. Project examples
6. Connecting to the electricity network
7. Net Zero and Low Carbon Technologies
8. Flexible Power
9. Distribution Future Energy Scenarios
10. Community Energy
11. Your local contacts



# Electric Vehicles



## What will EV charging look like?

There are four main types of EV charging – super, rapid, fast and slow.

These represent the power outputs – and therefore the charging speeds – available to charge an EV. (Power is measured in kilowatts or kW).

Smaller size chargers are set to become a common sight on driveways and for on-street parking, to enable overnight charging.

Charge Point type and power output	Likely installation location	Specific connection requirements	Network considerations	Likely charge time for a 35kWh charge	Typical approx. connection lead-times	Network and Third Party considerations	Approx. connection cost
Slow up to 3kW	Domestic	None – connects via household plug/socket	None	12 hours	Immediate	None	None
Slow 3.7kW	Domestic or street side	Dedicated household circuit or on street equivalent	In some cases limited local reinforcement is required	9 hours	Immediate in most cases	Usually none	Usually none
Fast 7kW	Domestic or street side	Dedicated household circuit or on street equivalent	Likely upgrade to service cable and local mains	5 hours	4 to 8 weeks	Likely upgrade to service cable and local mains	£1,000 to £3,000
Fast 22kW	Street side or public charging location	Three phase dedicated supply point	Requirement for three phase connection and likely local mains upgrade	1.5 hours	8 to 12 weeks	Streetworks and permissions	£3,500 to £12,000
Rapid 43kW	Public charging location	Three phase dedicated supply point	Requirement for three phase connection and likely local mains and transformer upgrade	45 minutes	8 to 12 weeks	Streetworks and permissions	£3,500 to £12,000
Super 130kW or multiple rapid chargers	Public charging location	Supply point from dedicated transformer	In most cases a new transformer will be established	15 minutes	16 weeks	Streetworks, permissions and cost of land for transformer	£70,000 to £120,000



Further useful information on our website:

**EV Strategy Summary**

**EV Guide for Drivers**

**EV Strategy**

**Getting Electric Vehicles Moving**

**EV Charging and Engagement for Local Authorities**

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Flexible Power

The UK's electricity system is undergoing a rapid period of change as distribution network customers invest in generation and alter their consumption behaviours to realise a lower carbon future.

Times are changing for the country's electricity distribution networks. The transition to a low carbon economy is the biggest change we have faced in our history. The networks were designed for a one-way power flow: from centralised power stations, through the transmission network and then into the local distribution networks to the point where it arrives at customers' meters.

But the increasing electrification of heat, the introduction of electric vehicles and the change in the way we generate electricity from fossil fuels to renewables are both increasing demand and changing the power flows on our network. We're no longer dealing with one-way power flows: that means we have to find new ways of balancing the load on the networks to ensure customers have the power they need when they want it. Flexibility is one of the solutions to the changing use of the power networks.

Fundamentally, flexibility is about reducing loads on the network by using customers' ability to change their usage patterns by either switching on generators or reducing consumption. Managing peak load through flexibility helps reduce costs to all customers because it means we don't have to invest in a permanent upgrade to meet a temporary spike in demand.

To enable a greater volume of demand, generation and storage to be connected, our networks are becoming smarter and more active.

Creating a more efficient and flexible system will benefit all customers and empower them to be at the centre of the energy revolution.

The enhanced capabilities we are developing will also give our customers the freedom to access other opportunities within the developing energy system.

There are a number of conditions present on the network that can lead to a need for innovation and 'Flexibility Services' which mean we can monitor and manage the network in a way that allows us to meet increasing electricity demand.

We build partnerships that generate income for local businesses and enable us to accommodate increasing demand for electricity without having to increase the size of the network.

WPD has created 'Flexible Power' (see link, right) to deliver the procurement of demand response services.



Further useful information on our website:

**Flexible power web pages**



**Flexible Power**

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Distribution Future Energy Scenarios



The uncertainty in the future path of demand and generation growth, coupled with the significant changes in energy system operation outlines the need for coordination if growth is to be achieved economically.

Western Power Distribution runs Distribution Future Energy Scenarios (DFES) on an annual cycle for all licence areas. The DFES studies represent a range of credible future scenarios of what could connect to the distribution network.

The scenarios follow the same framework as used in National Grid's Future Energy Scenarios and account for differing uptakes of Electric Vehicles, Heat Pumps, new domestic and Industrial and Commercial (I&C) developments and distributed generation connections.

At WPD these scenario projections are developed using detailed local

knowledge and spatially allocated onto our network, which provides a bottom-up understanding of demand and generation growth in our region. Within WPD, DFES is used for strategic investment planning purposes, to highlight areas of the network where reinforcement may be required. These projections are called Shaping Subtransmission Reports (see link, right). The DFES projections also inform price control planning and are used as an input to regulatory submissions that WPD are required to publish.

The DFES data is published on an interactive map on our website along with reports on our methodology (see link, right).



Further useful information on our website:

**More details on DFES**

**DFES data on our interactive map**

**Shaping Subtransmission reports**

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Community Energy



Community energy covers aspects of collective action to reduce, purchase, manage and generate energy.

Community energy groups can also play a role in projects and trials led by others, such as local authorities, energy companies and network operators.

Their excellent links to local people and businesses mean they are trusted intermediaries. Community energy projects have an emphasis on local engagement, local leadership, democratic control and local community benefits.

As a Distribution Network Operator we are committed to accelerating Net Zero in the communities across our four licence areas.

We know that community energy organisations play a vital role in driving the Net Zero transition because they work from the ground up, bringing their friends, neighbours and wider communities with them.

We have now released the WPD Net Zero Communities Strategy, this aims to set out the work we have done in collaboration with community energy groups over the past seven years and present our action plan.



**97**  
community energy groups



**12,000+**  
members combined



**43%**  
of community energy groups are in our four licence areas



Further useful information on our website:

**Net Zero Communities Strategy**

**Community Energy Hub**

**Community Energy England**

**Community Energy Wales**

1. Introduction

2. Who we are and what we do

3. A regulated business

4. Investment in the electricity network

5. Project examples

6. Connecting to the electricity network

7. Net Zero and Low Carbon Technologies

8. Flexible Power

9. Distribution Future Energy Scenarios

10. Community Energy

11. Your local contacts



# Your local contacts

## Birmingham

Kester Jones

T: 0121 325 9477

E: [kjones1@westernpower.co.uk](mailto:kjones1@westernpower.co.uk)

## Bodmin

Mike Rogers

T: 01208 892239

E: [mrogers@westernpower.co.uk](mailto:mrogers@westernpower.co.uk)

## Bristol

Steve Blackwell

T: 0117 933 2145

E: [sblackwell@westernpower.co.uk](mailto:sblackwell@westernpower.co.uk)

## Cardiff

Maurice Eshelby

T: 01443 219155

E: [meshelby@westernpower.co.uk](mailto:meshelby@westernpower.co.uk)

## Chesterfield & Mansfield

Patrick Bates

T: 01773 543543

E: [pbates@westernpower.co.uk](mailto:pbates@westernpower.co.uk)

## Coventry & Warwickshire

Trevor Richards

T: 01455 232246

E: [trichards@westernpower.co.uk](mailto:trichards@westernpower.co.uk)

## Derby

Simon Havill

T: 01332 276611

E: [shavill@westernpower.co.uk](mailto:shavill@westernpower.co.uk)

## Devon

Matt O'Dowd

T: 01392 352550

E: [modowd@westernpower.co.uk](mailto:modowd@westernpower.co.uk)

## East Wales

Huw Thomas

T: 01633 628200

E: [rhthomas@westernpower.co.uk](mailto:rhthomas@westernpower.co.uk)

## Gloucester

Neil James

T: 01452 651248

E: [najames@westernpower.co.uk](mailto:najames@westernpower.co.uk)

## Hereford & Ludlow

Nigel Sweet

T: 01432 349111

E: [nsweet@westernpower.co.uk](mailto:nsweet@westernpower.co.uk)

## Leicester & Kettering

Colin Randle

T: 01536 311187

E: [crandle@westernpower.co.uk](mailto:crandle@westernpower.co.uk)

## Mendip

Neil Patten

T: 01761 405130

E: [npatten@westernpower.co.uk](mailto:npatten@westernpower.co.uk)

## North Devon

Andy Manning

T: 01271 347720

E: [amanning@westernpower.co.uk](mailto:amanning@westernpower.co.uk)

## North Lincolnshire

Mark Hutchinson

T: 01522 517692

E: [mhutchinson@westernpower.co.uk](mailto:mhutchinson@westernpower.co.uk)

## Northants & Milton Keynes

Justin Hargate

T: 01604 875511

E: [jhargate@westernpower.co.uk](mailto:jhargate@westernpower.co.uk)

## Nottingham

Dave Hewitt

T: 0115 850 4200

E: [dhewitt@westernpower.co.uk](mailto:dhewitt@westernpower.co.uk)

## Plymouth

Paul Elsen

T: 01752 502006

E: [pelsen@westernpower.co.uk](mailto:pelsen@westernpower.co.uk)

## Redruth

Jon Nesbitt

T: 01209 616742

E: [jnesbitt@westernpower.co.uk](mailto:jnesbitt@westernpower.co.uk)

## Somerset

Chris Garnsworthy

T: 01823 348571

E: [cgarnsworthy@westernpower.co.uk](mailto:cgarnsworthy@westernpower.co.uk)

## South Lincolnshire

Ian Brooks

T: 01476 863086

E: [ibrooks@westernpower.co.uk](mailto:ibrooks@westernpower.co.uk)

## Stoke

Matt Griffiths

T: 01782 403700

E: [mgriffiths1@westernpower.co.uk](mailto:mgriffiths1@westernpower.co.uk)

## Swansea

Paul Llewellyn

T: 01792 784310

E: [pllewellyn@westernpower.co.uk](mailto:pllewellyn@westernpower.co.uk)

## Telford

Andy Barton

T: 01952 601160

E: [abarton@westernpower.co.uk](mailto:abarton@westernpower.co.uk)

## Tipton

John Kendrick

T: 0121 224 1991

E: [jkendrick@westernpower.co.uk](mailto:jkendrick@westernpower.co.uk)

## West Wales

Heddwyn Jones

T: 01559 382701/ 01437 772977

E: [hjones1@westernpower.co.uk](mailto:hjones1@westernpower.co.uk)

## Worcester

Mike Wigmore

T: 01905 383109

E: [mwigmore@westernpower.co.uk](mailto:mwigmore@westernpower.co.uk)



## Expert contact details

[Connections Policy](#)

[Community Energy](#)

[Low Carbon Technologies](#)

[Future Energy Scenarios and Flexibility](#)

[Feedback on this document](#)



1.  
Introduction

2.  
Who we are and what we do

3.  
A regulated business

4.  
Investment in the electricity network

5.  
Project examples

6.  
Connecting to the electricity network

7.  
Net Zero and Low Carbon Technologies

8.  
Flexible Power

9.  
Distribution Future Energy Scenarios

10.  
Community Energy

11.  
Your local contacts

# WESTERN POWER DISTRIBUTION

*Serving the Midlands, South West and Wales*



Home



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

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

