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WESTERN POWER DISTRIBUTION

Serving the South West and Wales

WPD South Wales

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Introduction

Electricity is an essential part of 21st Century life and more than ever customers in South Wales expect a safe, reliable, and secure supply. Western Power Distribution (WPD) needs to plan ahead to ensure that it can continue to provide its service at an affordable cost and respond to the challenges ahead.

WPD's key goals for success are to improve the reliability of our network and to deliver excellent customer service.

The future presents many new challenges. We need to ensure that our network is maintained and upgraded to meet increased demands from customers and new generation, and to respond to protect it against the impact of climate change and increased security risks. At the same time we have a responsibility to minimise our impact on the environment especially in relation to greenhouse gases.

We are looking ahead to 2010-2015 and planning our investment programme to achieve our goals and to meet these new challenges. We will be asking the energy regulator, Ofgem, to agree our spending plans during 2009.

But first we want to hear your views. Please take the time to let us know.

Robert Symons

Chief Executive

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Why do we want your views?

The energy regulator, Ofgem has asked us to prepare a draft business plan for 2010-2015 which includes a range of possible investment programmes.

This consultation summarises our proposed investment plans for 2010-2015. The details can be found in the draft high level Business Plan on our website www.westernpower.co.uk.

To continue to provide a reliable, quality service at an affordable price, we need to prioritise areas where additional investment is needed.

We have identified three main areas that we believe will require additional investment.

- The level of investment required to support changes in demand and generation, especially an expansion of distributed energy.
- Improving the quality of supply.
- New investment to provide network security and initiatives that address climate change.

We want to hear stakeholders' views on their priorities for additional investment.

Next steps

We will also be holding a stakeholder event in the summer. If you are interested in attending please let us know.

We will take the views of stakeholders into account when preparing our final detailed investment proposals for discussion with the energy regulator in 2009.

More details will be available on our website. www.westernpower.co.uk

How to respond

The rest of this consultation paper summarises our investment proposals. To help you with your response, we have included questions at the end of each section. Alternatively you can let us have your views using the response form at the back of this booklet.

Please reply by email to wpdconsultation@westernpower.co.uk.

Or write to:

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This consultation closes on Friday 25 July 2008.

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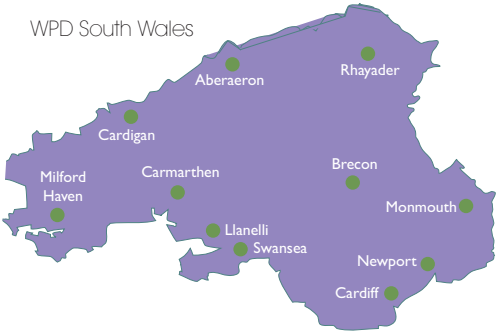
Our Network

Western Power Distribution is responsible for the local distribution of electricity along overhead wires and through underground cables. Our network is one of the most expansive of in the UK with 35,000 km of network and 40,000 transformers. We maintain the electricity network, repair it when faults occur, extend it to connect new customers and reinforce it to cope with changes in the pattern of demand.

We cover an area of 11,800km^2 and serve 1 million homes and businesses across South and West Wales including Cardiff and Swansea, the South Wales Valleys, Carmarthenshire, Pembrokeshire and parts of Ceredigion in West Wales and Powys in Mid Wales.

WPD is not an electricity supplier, so we do not send out electricity bills or read meters. WPD does not generate electricity or buy electricity from generating companies to sell to customers. Over 80% of a typical domestic customer's bill is made up of supply, generation and transmission. The distribution element is less than 20% of an average domestic electricity bill - £75 per year



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Maintaining Service Levels

WPD provides one of the highest levels of service in the UK compared to other electricity distribution companies. Most of our future expenditure is designed to maintain our current level of service, such as updating our network and replacing parts which are not as reliable as they should be. For more information about our network and current performance please see the latest Quality of Supply Report available on our website www.westernpower.co.uk.

New legislation such as the Electricity Safety, Quality and Continuity Regulations and Traffic Management Act will result in additional costs to the business. These regulations require WPD to carry out work to achieve the safety clearances specified for buildings and undertake an ongoing programme of tree cutting to improve network resilience especially during severe weather.

To maintain these service levels and comply with new legislation in itself presents a major challenge in resource management.

During 2005-2010 we are going to invest £145m in the network in South Wales. For 2010-2015 we forecast that we will need to spend an extra £60m to £120m over 5 years to maintain current service levels and comply with all the relevant legislation. This is about an extra £6 to £12 on an average domestic electricity bill each year.

Question

Do you agree that WPD's investment programme should aim to maintain its current levels of service until 2015 and beyond?

2

Future Requirements of Network Users

Customer demand - outlook for 2010-2015

We need to predict the future requirements of our network users across South Wales for 2010-2015 as this determines the level of expenditure needed to connect new electricity load and reinforce the network to ensure that the network can adequately meet the increased load.

Our business plan contains the following assumptions:

- We forecast the level of new connections at lower voltages to continue at the existing levels of around 10,000 properties per year. Our forecast for larger commercial and retail projects, together with large housing developments is based on discussions with local authorities, developers and the Welsh Assembly Government.

- Changes to demand profiles such as summer peaking demands will not significantly impact our reinforcement plans, although we are seeing the gap between summer and winter demand reducing within city centre areas.

- Energy efficiency initiatives and demand side management (DSM) will not have a significant effect within the period, although we recognise there is a likelihood of reduced growth in later years.

We would like to hear stakeholders' views on the likely impact of summer peaking load, government policies on smart meters to reduce demand and other climate change policies such as zero carbon homes. Will this impact ahead of 2016?

Questions

Is our assessment of economic activity and the demands on our network reasonable? Do you believe we will see any significant changes over the next 5 years?

Distributed energy

The amount of generation connecting to local networks "distributed energy" is expected to become an important part of the UK energy market as we move towards a low carbon economy.

Our business plan contains the following assumptions.

- Domestic and small business uptake of micro-generation will continue to develop relatively slowly.
- We are aware of significant renewable connection activity in the TAN8 planning areas. We expect a number of these medium-sized and large distributed energy projects to come on stream by 2015.
- We anticipate some development of localised active management control systems to facilitate distributed energy. However we do not anticipate a need for significant design changes to our network to facilitate two-way flows of energy from local generators.
- Recent years have seen limited levels of distributed energy connections, with capacity increasing by approximately 42MW since 2005. However, we have a number of larger projects driven by TAN8 which are in the planning stages and our forecast therefore assumes significantly more activity during the period 2010 to 2015.

Are you considering installing generation in your home or business? We would like to hear from stakeholders who are planning new generation facilities including heat networks.

Question

Do you believe that distributed energy will develop at a faster or slower rate than our projections?

3
Reducing Power Cuts

Restoring supplies

We have improved the average length of time that a customer is without electricity in a year from 90.5 minutes in 2002 to 42.0. Currently 85% of customers are back on supply within an hour of a power cut. We have achieved this through continually improving the management of our resources, improved working practices and investing in new technology.

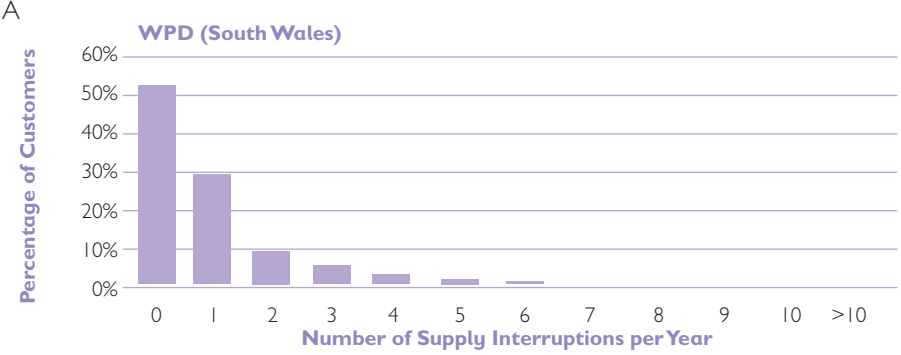
Network reliability

A measure of supply reliability is the average number of times that a customer experiences a power cut in a year. The graph below shows that many customers experience a very low number of power cuts. However around 20% of customers have a power cut more than once a year.

Reducing power cuts is one of our key goals. Despite reducing the average number of power cuts experienced by customers each year, our customers tell us that they want further improvements.

One of the ways that we can improve our service is through investment in state-of-the-art automatic systems on our high voltage network. This equipment enables us to isolate a fault on our network to just that part of the circuit affected, thus reducing the number of customers who experience a power cut.

Graph A



The improvements that we have made so far in reducing power cuts are largely as a result of installing this automatic equipment. We have already automated 800 circuits across our region and this has produced significant benefits. We believe that some further improvements can be achieved with automatic equipment.

We are looking at 2 options for further investment on automatic equipment to reduce power cuts.

	Option 1	Option 2
Current average number of power cuts per customer per year	0.78	0.78
Target Improvement by 2015	10%	15%
Cost over 5 years	£9.1m	£25.0m
Amount extra on an average domestic electricity bill each year.	90p	£2.50p

Questions

Do you agree that WPD should focus on reducing the overall level of power cuts? Which of the options do you support?

Improving service to remote customers

Due to the high proportion of rural network in WPD's region, some customers experience a higher than average number of power cuts. This is shown on Graph A on the previous page.

In addition to reducing the average number of power cuts, we also want to improve our service to this group of customers. The worst-served customers are usually located in clusters on the most remote parts of the network. As a result the solution to improve supply reliability to a particular customer or group of customers is invariably complex and costly. The cost of improvement works to a group of customers ranges from £150 to £35,000 per customer.

We are looking at the following options:

	Number of customers expected to benefit	Total cost over 5 years	Amount extra on an average domestic electricity bill each year
Option 1	1300	£1m	10p
Option 2	2900	£2m	20p
Option 3	3600	£4m	40p
Option 4	4000	£6m	60p

Questions

Do you agree that we should improve our service to our worst-served customers? Which option do you support?

City centre substations

The networks that deliver electricity to the large substations in city centres are designed so that supplies to customers would not be interrupted when one item of equipment is out of service, either for maintenance or repair. However, should a second item of equipment fail when the first item is out of service then supplies to customers could be interrupted. This is known as "second circuit outage risk".

We have a few large substations serving commercial city centre areas in Cardiff and Swansea that are subject to second circuit outage risk. Although the risk is very small it could lead to severe and prolonged disruption for the predominantly commercial businesses in these areas.

To protect against this unlikely set of circumstances would cost £2.5m. This is about an extra 25p on an average domestic electricity bill each year.

Question

Should we eliminate the risk of failure of a major substation serving City Centres?

Voltage problems

We know that sometimes customers experience voltage dips. However the total number of complaints received from customers is very low. Therefore we are not planning a specific investment programme to deal with the issue. Instead we will take account of any problems in our plans to maintain current service levels and also when we connect new load onto the network.

Question

Do you agree that we do not need a specific programme to deal with irregular voltage?

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New Challenges – Network Security and Climate Change

Two significant challenges facing WPD are network security and climate change. We need to plan ahead and invest in measures to address these challenges.

Protecting substations with security equipment

We have been working with Government and Police to understand what further steps we need to take to protect our equipment from copper theft, vandalism and other security threats and to ensure the safety of the general public. We want to spend £6.5m installing security equipment at nearly 300 major substation sites across the region, and to apply security measures at these sites using the latest standards employed nationally for enhanced substation security. This is about an extra 65p on an average domestic electricity bill each year.

Questions

Do you agree that we should invest in substation security? How important is this to you?

Climate change

Climate change affecting South Wales is expected to lead to more frequent and intense storms, and flooding due to higher rainfall and rising sea levels.

Protecting the network against severe weather

During periods of severe weather, in particular high winds, our overhead lines are damaged by falling trees and other wind-borne debris. This damage causes supplies to our customers to be interrupted.

In order to improve performance during severe weather, new regulations have been introduced that require WPD to ensure that our critical high voltage overhead lines are less at risk from falling trees during severe weather.

However, during storms the majority of instances of damage are on the lower voltage (LV) overhead network. The overall time taken to restore all supplies is determined by the number of LV overhead network incidents. The overall time to restore supplies

can be reduced if the number of LV overhead network incidents is reduced.

In order to reduce the number of LV overhead network incidents during storms, we are proposing a 10 year programme to reconductor our most exposed LV lines. We propose to use a modern conductor that is more resilient to damage by tree and other wind-borne debris. There is 3205km of LV network in South Wales, 38% has been reconductored using this resilient modern conductor.

We are looking at the following 3 options during 2010-2015 for reconductoring our most exposed low voltage lines:

Question

How much should WPD spend so that supplies can be restored more quickly during severe weather?

	Option 1	Option 2	Option 3
Km of overhead line	70km	140km	210km
Cost over 5 years	£2.5m	£5.0m	£7.8m
Amount extra on an average domestic electricity bill each year	25p	50p	80p

Protecting substations against flooding

The flood that affected parts of England in July 2007 has led to a national review of the security of large substations. We have reviewed our plans and procedures to deal with problems caused by flooding. Whilst it is likely that loss of electricity supply would be secondary to the problems caused by flooding, it is important that we have contingency plans in place for those areas most at risk. We are working with the Environment Agency to assess the degree of risk to our substations. A flooded substation could interrupt electricity supplies for up to several weeks to large areas of population, including to customers whose homes and businesses are not flooded themselves but are supplied by a flooded substation. Drinking water and sewage processing could also be affected if substations supplying these facilities were flooded.

We currently estimate that permanent protection of 50 of these sites on a 10 year programme will cost an estimated £16.6m; £8.5m in the first five years. This is around 85p on an average customer's bill each year.

Alternatively, it would be less costly to just protect the larger 132kV substations or just those that provide electricity to water and sewerage works.

Questions

Do you agree that we should protect our network against severe weather and flooding? How important is this to you? Should we protect all major substations, or only the very largest and those which supply water and sewage works?

Reducing the risk of emissions from our equipment

It is important for WPD to play its part in reducing the emissions that contribute to climate change and other environmental damage.

Much of our equipment was installed at a time when there were few concerns about its possible impact on the environment. We have identified some areas where early replacement of equipment would significantly reduce the risk of environmental emissions.

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Fluid-filled cables

The design of very high voltage underground cables has evolved over many years and our new cables all use a solid plastic-like insulation. Old designs of 33,000 volt and higher voltage cables used insulating oil in ducts inside the cable. Whilst these cables are normally very reliable, in the event of a fault, or more commonly damage by third parties digging the street, this oil leaks out, potentially causing environmental damage to land and water courses.

In common with other UK Distribution Companies, we work to an operating code agreed with the Environment Agency, and assess the condition and the environmental risk of our cables. We have a identified a number of circuits where an oil leak would be at significant risk of damage to water courses.

We want to spend £2.5m over 5 years in order to reduce or eliminate the environmental risk. This is about an extra 25p on an average domestic electricity bill each year.

Question

Do you agree that WPD should act to reduce the risk of oil leaks from fluid-filled cables?

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Reducing the carbon footprint of our equipment

Some electricity is used up whilst travelling along our network from the power station to the end consumer, in overcoming electrical resistance in the wires or cables and in our transformer equipment. This "lost" electricity makes up 98% of WPD's carbon footprint. Total UK electricity losses are a significant proportion of the UK's carbon footprint. We want to change our policy on the specification of new transformers and cables to reduce electrical resistance by moving to "low loss" transformer equipment and non-tapered cables.

This higher specification will cost an additional £11.5m over 5 years for low loss transformer equipment and £4.5m over 5 years for non-tapered cables. This is about an extra £1.65 on an average domestic electricity bill each year.

Question

Do you agree that WPD should invest in new technology to reduce losses, to help reduce WPD's and ultimately the UK's carbon footprint?

Internal initiatives to reduce our carbon footprint

Like most responsible companies we have put in place initiatives to reduce our carbon footprint, such as improving the energy efficiency of our buildings, and recycling. We will continue to look for cost-effective ways of reducing our environmental impact as part of our everyday operations.

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Undergrounding in National Parks

At the last regulatory review, the energy regulator allowed WPD to replace 1.5% of the overhead lines in National Park areas with underground cables during 2005-2010. For South Wales this was 49km of overhead lines out of a total of 3,300km of overhead line situated in National Park areas. The cost of undergrounding in National Parks was estimated at around £100,000 per kilometre of line, a total allowance of £4.9m. This was equivalent to around 50p per customer on the average customer's bill each year.

WPD chose not to undertake this work due to the very high cost and the considerable resource implications on these projects. We appreciate the merits of improving visual amenity in National Parks, but our priority for 2005-2010 has been to improve the reliability of supplies to customers.

The energy regulator is indicating that it may again allow WPD to spend money on undergrounding schemes in National Parks. For 2010-2015 our objectives are to further improve the reliability of supplies and to address climate change issues. As this project does not contribute to either of these objectives, we do not consider that it provides value for money.

Question

Do you agree that replacing the overhead network with underground cables in National Parks is not an investment priority for customers as there are no supply reliability or carbon reduction benefits and the costs are very high?

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Any Other Issues - Have Your Say

We hope you will take this opportunity to tell us which of our proposed investment programmes are important to you.

Question

Have we missed any area of capital investment that you consider to be important? If you think that we have please tell us.

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