Low Carbon Network Fund Project Progress Report December 2011

LV Network Templates for a Low-carbon Future

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Western Power Distribution
LV Network Templates for a Low-carbon Future
Reporting period: June 2011 – November 2011

1. Executive summary

1.1. Project Background

The Network Templates LCNF Tier 2 project is designed to provide data on the low voltage (LV) distribution network. Currently, the final stage of monitoring is on the outgoing 11kV feeders in a primary substation, where current and voltage is measured. The real-time loading of the distribution substations, located along the 11kV feeders, is not recorded or visible remotely, and can only be obtained by visiting site to read a maximum demand indicator, which has variable and poor accuracy across the loading range. This project will provide remote monitoring of current and voltage at 975 distribution substations, through the addition of monitors and communication infrastructure. In addition, voltage monitors will be installed in houses at the end of low voltage feeders, to allow voltage profiles to be developed.

Collecting this data now is important is due to the forecast increases in loading and voltage stresses on the network arising from expansion in the numbers of low-carbon equipment to be connected into the low voltage network, including photo-voltaic generation, heat pumps and electric vehicles. Better understanding of the time of day loading and voltage "headroom" currently available on different types of LV network and customer is crucial to planning the network of the future. This project will develop statistically sound network templates for different types of LV network, comparing traditional networks with those including low-carbon technologies.

1.2. Project Progress Highlights

During the second reporting period (June 2011 – November 2011) the Network Templates project has continued through the construction and deployment phase, with all key milestones remaining on target. The following is a summary of the key activities completed during the first reporting period.

1.2.1. Customer communications

Communication with customers affected by this project has continued in line with the strategy agreed with Ofgem earlier this year. Customers affected by shutdowns have been given the necessary letter informing them of the date and time of the shutdown.

Letters have begun to be sent to customers to obtain consent to be part of the project, by having a voltage monitor in their home. The volume of this correspondence is increasing quickly, with hundreds of letters sent to date.

1.2.2. CT installation

Installations of current transformers (CTs) began at the end of April 2011. As of the end of November, CTs had been installed in 610 of the 725 ground-mounted substations, and all of the pole-mounted substations. The estimated completion date for all CT installations is the end of January 2012.

1.2.3. Communications infrastructure

Work with the communications provider (GE) has developed during this period. A proof of concept test was completed, proving the communications paths. Invaluable lessons were learned during this period, helping to modify designs where necessary. The first batch of communication enclosures is to be delivered the second week of December 2011, with further batches up to the middle of March 2012. WPD and GE have gone through the JRC in order to obtain licensed frequencies from Ofcom. The JRC will complete their detailed frequency allocation for the final area in early January 2012.

1.2.4. Voltage monitor installations

The installation of voltage monitors in customers' homes began in November 2011, and to date 150 monitors have been installed.

1.2.5. Project partner and stakeholder engagement

There has been continued communication with the key project partners and stakeholders associated with this project, including GE, the University of Bath, Npower and the Welsh Government. Contracts are expected to be signed with the University of Bath and Npower in the third week of December 2011.