ukpowernetworks.co.uk/innovation

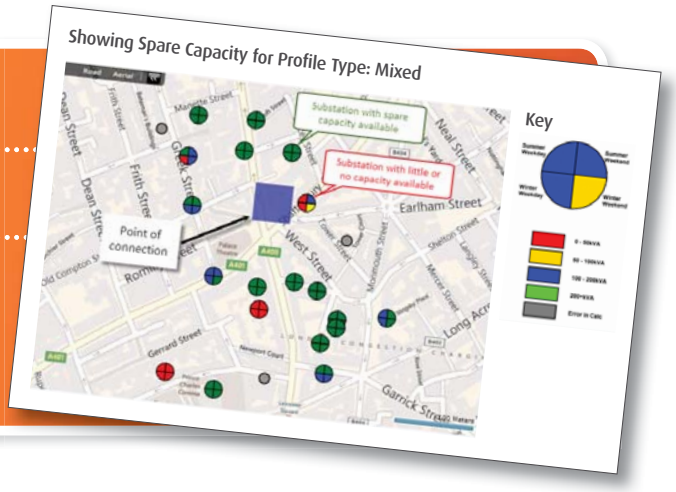
UK Power Networks
Delivering your electricity

Distribution Network Visibility

Funding mechanism: LCNF Tier 1

Project budget: £2.89 million

Status: Completed
Start date: September 2010
End date: September 2013



Project concept/overview/challenge

Electronic devices (also called Remote Terminal Units) are used to reconfigure our distribution network and collect data about its performance, so we can intervene when necessary to keep supplies safe and reliable. This project is exploring better ways to collect and use the data we gather such as demand, capacity and faults on our electricity network.

Improving our remote telemetry is key to a 'smarter' electricity network which responds to swiftly changing electricity demand and generation. Improvements to our IT architecture mean we can now collect and store more data to gain a better understanding of how our network is performing.

Stakeholder benefits

- Quickly identify substations where new load can be connected.
- Potentially defer reinforcement by use of demand profiles.
- Improve network and asset reliability by monitoring trends.
- Manage substation and network utilisation.
- Information on network to support operational practices.

What we are doing/deliverables

- Maximise the capabilities of remote telemetry (Remote Terminal Units) at our substations.
- Demonstrate the benefits of smart collection, use and visualisation of data.
- Develop software to improve our understanding of network performance.
- Evaluate alternative solutions for sites in the South East and East of England which currently have very limited monitoring.
- Decide what data should be collected and how often.

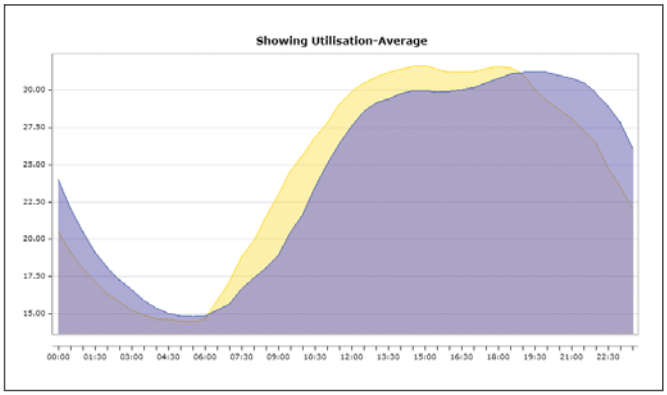
Findings

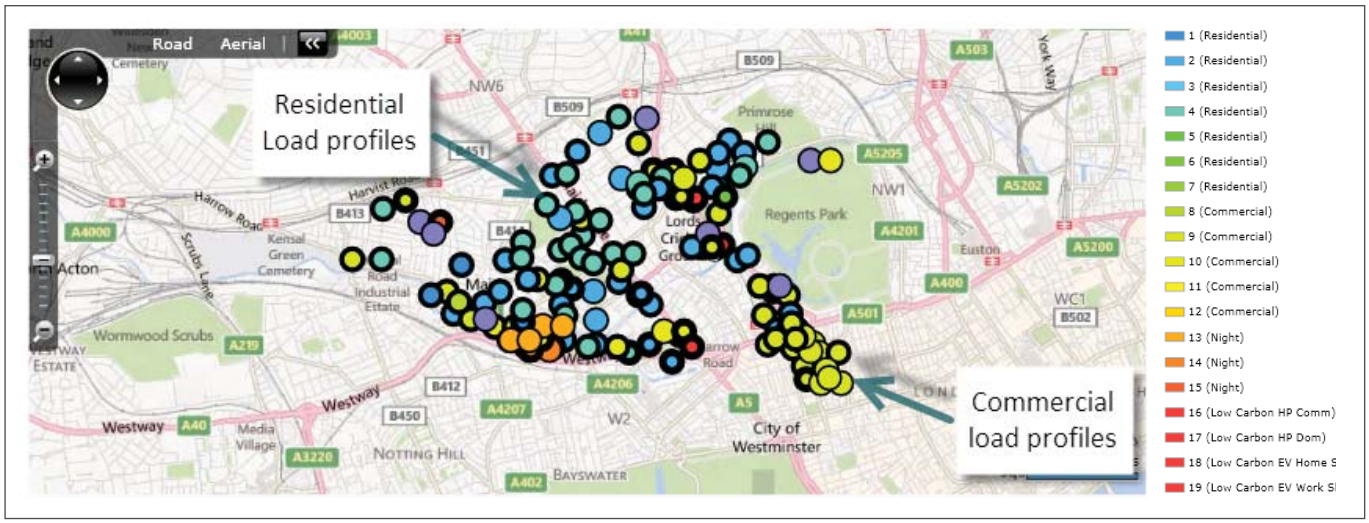
DNV Tool - A web based tool has been developed which is used to visualise the vast amounts of raw data that increased network monitoring inevitably leads to. The tool and its components are available to all GB DNOs.

IT White Paper produced - This details the IT architecture required to replicate a system similar to that implemented by the DNV project. This will assist IT architects in other GB DNOs wishing to replicate the results of the project. The IT white paper will be published alongside the close down report.

Case Studies - Multiple case studies have been written which detail how network data has led to various benefits for a DNO including avoiding unnecessary asset replacement, extending asset lifetimes and improved operational responses.

Innovative Monitoring Technologies - Non-invasive alternatives to traditional options for monitoring both HV and LV networks using optical sensors have been proven. This will allow monitoring to be increased with the least disruption to the operation of the network.





Next steps

- The visualisation tool developed as part of the project is being adopted by UK Power Networks and will be supported by 'business as usual' to ensure the benefits continue to be available to the business.
- The wider findings of the project are being used to inform UK Power Networks' future plans for network monitoring.
- Various elements of the project have been identified as areas that could be investigated further. These will be considered for future projects on an individual basis.
- UK Power Networks is in discussion with other GB DNOs considering the implementation of similar systems.

Partners

PPA energy

capula