

Customer Led Network Revolution

Dedicated website – Yes

Organisation webpage – No

Centralised portal – ENA Smarter Networks

Objectives/Success Criteria – Yes

Closedown/final report – Yes

Open-source data – Yes

Peer-reviewed academic output (Primary Subject / Referenced) - 16 / 0

Brochures/Case Studies – Yes

On-line major conference/event presentations - 20

Dissemination Event / Output available – 1 / 1

Follow-on project – Yes (DSSS)

Consumer Engagement

Consumer Participation – Yes

Consumer Feedback –

Output Summary

Progress reports – Yes

Detailed and objective final report – Yes

Project method detailed – Yes

Performance to objectives detailed – Yes

Lessons learned identified – Yes

Policy/Regulation implications reviewed –

Project has produced a significant output in multiple formats and levels of detail. Main closedown report is detailed and balanced with performance to objectives and lessons learned clearly defined.

Outcomes vs. Objectives/Targets

Performance to objectives – all achieved.

Key Findings

- Regular domestic customers contribute less to system peak demand than previous assumptions, recommending a new design assumption of 0.9kW per customer (42% less than previous).
- A significant level of naturally occurring diversity in energy practices was observed from home to home and even from day to day within homes. The majority of domestic customers appear inherently flexible.
- The impact of solar PV is lessened due to diversity of panel alignment and thereby producing their peak output at different times of the day – our new default planning assumption is to apply a 10% discount to the previous assumption of full output, as used by the industry.

- For customers with electric vehicles and heat pumps, rather than a conservative assumption of the full 3kW rating of the equipment, as used by the industry, an uplift of only around 1kW per customer is proposed to allow for diversification.
- Micro-CHP units tended to offset the household evening peak demand by a few hundred watts in winter. This technology could therefore be beneficial for both network planning and electricity generation costs.
- We have found little evidence of customers' new LCT installations creating power quality problems. In practice, it seems as though the equipment which customers are choosing is both relatively benign individually, multiple installations don't seem to interfere with each other and the natural customer diversity means that individual issues are not compounded.
- A project with such a large number of test cells, and demographic and technical sub-groups within those test cells, adds significant complexity. A balance needs to be found between testing a sufficiently varied range of options and real-world constraints.
- Working with a recognised and respected university gives the trials credibility and encourages customer participation.
- Reasonable numbers of residential customers were interested in time-of-use (TOU) tariffs and also in exploring tariffs involving restricted use and direct control. It needs to be clarified how far this interest extends further to other customers who might have to change usage patterns significantly to benefit.
- SMEs contacted expressed initial keen interest in the prospect of lower bills. However, in the end the firms contacted were not amenable to remaining with the trial for restricted-use or for direct control tariffs.
- When targeting a tight geographic area the initial customer drop-out rates can be high. The DSR reliability levels experienced during the trials means that DNOs need to over-procure capacity to achieve the required level of network security. The contract arrangements need to be simple to understand, simple to operate and they must offer a fair price to the provider and the DNO in order to be viable. It is easier to procure DSR from standby generation than find a truly flexible load.