



ENERGY DEMAND RESEARCH PROJECT

Review of progress

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Summary

- *The Energy Demand Research Project is a jointly funded project with Government and participating industry parties. It is a large scale trial that investigates how customers respond to better information on their energy use, and how lasting this response is. Information may be from bills, clip on visual display units, or smart meter related feedback. The project started in the second half of 2007, and is expected to finish in 2010. Ofgem is managing the trial on behalf of Government, and is reporting on progress throughout the trial period. As part of this reporting, we are providing progress review reports every six months, of which this is the first.*
- *There have been delays in installing smart metering systems, mainly due to technical difficulties. These are largely because it is new technology: combining gas and electricity smart meters and visual display units into one metering system has not been done elsewhere in the world. But solutions have been found and meters are being installed rapidly. Trial participants currently expect all gas and electricity smart meters to be installed by September this year. Ofgem continues to monitor this progress through regular updates from participants.*
- *There are therefore no quantitative results from smart meter trials in this report. Further, we note that given the trial participants' latest estimates of the timing for the installation of smart meters, it is unlikely that there will be significant amounts of data from smart meters available in time to feed into our next report, due in November 2008. There will, however, be very useful information about issues, risks, and customer reactions at that time.*
- *There is early information from billing and visual display unit trials. At this stage the consumer response to these interventions shows no statistical difference from the consumption patterns of the control groups. Initial sample surveys of visual display unit trials suggest up to half of the customers are not using the device, with half of these reporting this was due to the customer not replacing the batteries. There were also installation problems with the clip on devices. Customers that have used them, though, comment favourably. Quantitative evidence of the display's impact on customer energy use will continue to be investigated over the course of the trial. The long term impact will be particularly important.*
- *As a result of the delays in installing smart meters, the end date for the Energy Demand Research Project (EDRP) has been delayed one month to August 2010.*

1. The Energy Demand Research Project (EDRP)

1.1 Overview

The Government allocated £9.75 million to part finance a large scale trial investigating consumer response to improved feedback on their energy use - the EDRP¹. This was in response to the need for more robust, longer term evidence on customer response to energy saving initiatives in Great Britain. Ofgem agreed to manage this trial on behalf of The Department for Business, Enterprise and Regulatory Reform² (BERR), in terms of both drawing up recommendations for grant funding, and in overseeing the implementation and assessment of data arising out of the scheme. We appointed the Centre for Sustainable Energy (CSE) to support us in evaluating and monitoring the project.

The EDRP is being undertaken by four different energy companies (The Participants), namely EDF Energy Customers plc (EDF), E.ON UK plc (E.ON), SSE Energy Supply Limited (SSE) and Scottish Power Energy Retail Limited (SP); all of whom have provided (at least) match funding. These companies were chosen out of 22 bids which a Project Board evaluated against specific criteria (such as the statistical soundness of the trials and value for money). Working with these suppliers is a number of universities, consumer groups, meter manufacturers and technology providers. Within the EDRP, there are a range of interventions involving around 50,000 households across Great Britain. The EDRP includes specific focus on customer segments, such as the fuel poor.

The following section outlines the range of interventions being trialled. Further details of the trials being conducted by each of the 4 participants will remain confidential while the trial is on-going so as not to interfere with the statistical robustness of this project.

1.2 What is being trialled

Billing and information

Trials in this category include the provision of:

- additional information on past consumption, including graphs with bills.
- monthly billing
- more accurate bills by means of having smart meters
- energy efficiency information and advice

More than 10,000 households will take part in some form of billing trial, while over 14,000 will receive energy efficiency information³.

¹ Further information is provided in the invitation to tender to bid letter (ref 155/06) on Ofgem's website: <http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=7&refer=Markets/RetMkts/Metrng/Smart>

² Originally the Department of Trade and Industry

³ Note that some of these households will have more than one intervention, e.g. both historical bills and energy saving advice.

Clip-on visual display units

The effects of installing visual display units are being investigated in almost 8,500 households. Visual display units measure electricity consumption and load only. They enable the household to understand how much electricity they are consuming at any point of time through an electronic display in the house. Clip on units do not communicate remotely with suppliers.

Smart meters

Some trials are installing smart meters in more than 18,000⁴ homes. These are electricity and gas meters that collect meter values on a half hourly basis and transmit the data back to the supplier without the need for the consumer to manually read the meter. Several setups are being tested:

- Smart meters with a remote visual display; both electricity and gas.
- Smart meters with information sent to the households' TV
- Smart meters with information available on the internet
- Smart meters linked to heat control units
- Smart meters with an alarm which alerts the user to certain electricity consumption levels (load limiting alarm)
- Smart meters with a energy savings reward tariff which rewards the user for limiting their energy use
- Smart meters with a time of day tariff which rewards the user if they move their consumption to 'off peak' hours (for example by running the dishwasher overnight).

Community engagement

The effects of public schemes promoting community spirit and awareness are also being trialled. These trials include: a metered local substation to monitor the community's energy consumption; a financial reward of £20,000 for a 10% reduction in consumption at the community level; fitting smart meters in participating households in the selected communities; energy efficiency advice; various community events and energy saving incentive schemes organised at a local level.

Control groups

Control groups have been included to ensure the statistical robustness of the trials. The control groups consist of consumers that will not be provided with any information above their normal 'business as usual'.

⁴ Note the actual number of smart meters is greater because a proportion of households will receive both gas and electricity smart meters.

1.3 Trial Design

The EDRP as a whole, and for each supplier participant, consists of a large number of trials. The above trials are being tested individually, and in combinations with each other, across Great Britain. In addition to establishing the individual effects, some of the trials are designed to test the total impact when a range of interventions are used. The aim of this is to establish whether the total effect on energy demand is greater than the sum of the effects of the components. In all cases sample size has been selected to ensure statistical soundness. The supplier participants are responsible for their own trial structures, so have achieved statistical reliability and devised how to stimulate response in a number of ways. This has added to the richness of the EDRP.

2. The Report

Participants are required to submit project reports to Ofgem at six-monthly intervals for the duration of the EDRP. This document draws information from the first set of detailed outputs from participants since the EDRP contracts were signed in mid 2007. In addition to these reports, Ofgem has frequent contact with the supplier participants to monitor issues and progress.

2.1 Summary of progress across trials

Different interventions are at different stages of implementation. Most progress has been made on the more straightforward groups, such as controls, information on bills and customers receiving non-smart metered visual displays. Quarterly, and in some cases monthly, meter readings are being collected from these households. However, all EDRP participants have experienced delays in installing smart meters. These delays mean that at the time this set of project reports were written, there was no energy demand data available from the smart meter trials.

The information presented in this section is drawn from a combination of suppliers' reports, interview findings and follow-up data received from suppliers after the interviews. This project was specifically set up to consider the long term effects of improved impact. Given we are still at a relatively early stage in the EDRP, the amount of statistical information available is still relatively small. E.g. where quarterly bills are being used, there could only have been two data points for a household.

Information on bills

All suppliers have made good progress in getting consumption history data onto customer bills. Customer survey research conducted by one of the participants showed that 50% of respondents were able to recall in detail the information and advice presented to them in correspondence, and indicated a greater awareness

of their energy use. However supplier participants note the uncertainty of being able to retain this interest over the longer term.

Thus far virtually none of the trials in this category have recorded any statistically significant difference in customer response to the interventions, versus consumption patterns observed in the control group. There was one exception in an electricity fuel poor group, who recorded a small but statistically higher consumption. However, it was noted that this could be a function of the control sample and is being further investigated.

Energy efficiency advice

Progress with the delivery of energy efficiency advice is mixed. In some cases the advice is to be delivered using technology that is not yet up and running, as it is linked to the smart meter trials. In other trials, advice delivery is via bills, and is now well under way. There have as yet been no statistical differences recorded in consumption response versus that in the control group.

One supplier participant survey of a sample of customers in their trials indicated a generally high level of awareness of the need to save energy before the trials commenced. Initial analysis suggested this was more from financial motivations than environmental ones. Most respondents felt they already engaged in energy saving behaviour, particularly where costs or the 'hassle' of the activity are low. Media has played a key role in this, with the survey results noting the key influences for energy saving behaviour (before the trials started) were from TV (55%) or the press (40%), followed by friends or family (30%), with the energy supplier in fourth place (26%). National government was cited as an influence for 12%, while 9% noted local government influenced their energy saving behaviour.

Clip-on visual display units

This category of intervention does not depend on smart metering. Progress with installation is positive, with all suppliers meeting or exceeding their target. Around 8,500 have been distributed to date. One participant has reported that it has been easier to recruit customers for the visual display unit (VDU) trials than for their trials that offer the customer an enhanced bill.

However, participating suppliers have noted a number of problems, so installed numbers cannot be assumed to present a true picture of the number of households now actively using a visual display unit (VDU). Over 5,000 VDUs were posted to customers for self-installation. At this stage it is not known how many of these have installed the device successfully, but an initial survey of 100 households is not encouraging: around 20% did not reach the households (were not collected from sorting office), and of those that did receive them, nearly half report that they had not installed or did not use the device.

In other VDU trials, trained technicians were used to install the VDUs in households that had signed up to receive one. One supplier participant in particular found that nearly half of households approached could not accommodate the device for technical reasons (such as poor access to the live

wire). Furthermore, a survey of 515 households showed that nearly half were not using the device after it had been fitted; and half of these reported that this was due to the batteries running out. The fact that most customers did not replace the batteries could suggest limited interest in the device and the service it was providing, or that the interest was short lived, but this needs to be investigated quantitatively. It will be important to capture in the months ahead whether or not even a short term exposure to the information the VDU provided stimulated the household to reduce energy.

Early analyses of results from these trials do not paint a conclusive picture. One participant calculated the only statistically significant difference in consumption compared to the control group was where their electricity fuel poor trial indicated a higher consumption than their control group, but the participating supplier will be doing additional statistical analysis (for example comparing against historical data) to further investigate this result. Another participant's results indicated that customers' awareness of their energy use had increased and, of the customers who had installed their VDU, 87% reported a change in habit. Switching off standby consumption and unnecessary lights were the measures most frequently cited by customers. This participating supplier will be investigating if there is quantitative evidence of any energy savings, and, if so, whether these are sustained.

Smart meters

Progress with the installation of smart meters has been slowed by a number of delays, largely technical. The delays have been particularly around dual fuel installations (gas and electricity smart meters in one house). All suppliers in the EDRP are also proposing some form of visual display unit combined with the smart meters. It is unique in the world to have one smart metering system involving the three combined elements of an electricity meter, a gas meter and a remote visual display unit. This system has therefore been newly built for the trials and the apparent inexperience with, and immaturity of, this combination of technology, has proved to be a significant issue in this element of the EDRP. One participant is trialling a number of different metering system configurations and sourcing technology from several different suppliers. They highlight the difficulties encountered with the incompatibility of components supplied by different manufacturers.

Nonetheless, problems have been mostly overcome and smart meters are currently being installed for the trials. But we expect that, because of the above delays, the next round of supplier reports will have very little qualitative evidence from smart meter trials. They should, though, have very informative feedback about customer perceptions, amongst other qualitative feedback.

Community trials

Progress in the community trials is positive in many respects. The substation metering is in place and a number of community energy-saving events have been held. Installations have been limited to date due to the delays with smart metering and associated communications technology. However, the total number

of households influenced by the community trials is likely to be significantly higher than the recruited 1,500 households and work will be done to ascertain the full impact.

2.2 Next report expectations and timelines

Participating suppliers currently project that the installation of the remaining smart meters in 15,000 or so households will be completed between June and September 2008 (range across participants). This progress is being closely monitored by Ofgem, including through regular install reports.

The next set of EDRP supplier reports is due in late September 2008⁵. The install timings above suggest a high likelihood that there will be little smart meter data available in the next set of reports. There will, however, be useful information around practical issues and customer reactions to smart meter installation, as well as more information from other interventions.

Delays to the delivery of smart meters, combined with the dependency of so many of the trials on these meters, means that there have been slippages compared with the original project plans. The projected end date for the last of the EDRP trials, when two full year's worth of trial data will be available, is now August 2010.

Additional questions on the EDRP can be directed to either Louise van Rensburg (email: Louise.vanRensburg@ofgem.gov.uk) or Mattias Bjornfors (email: Mattias.Bjornfors@ofgem.gov.uk) at Ofgem.

⁵ These will then be cross-analysed by the CSE evaluation team and a report submitted by Ofgem to government in November.