



ENERGY DEMAND RESEARCH PROJECT

Review of progress for period September

2008 – March 2009

September 2009

Ref: 115/09

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2 Summary

- *This is the third report on the Energy Demand Research Project, a large scale, Great Britain-wide trial seeking to better understand how consumers react to improved information about their energy consumption. This project is designed to measure the long term response to interventions. These interim reports provide updates on progress on this two year trial, but are not designed to provide conclusions at this stage.*
- *Since the last report¹, there has been significant progress in installing smart meters and progressing the trials. This will mean that future reports will contain more statistically robust results given the increased data available. The four participating suppliers; E.ON, EDF, ScottishPower and SSE are investigating the reactions to the delivery of energy use information to customers through bills, clip on visual display units, and smart meter related interventions. There are now nearly 59,000 households taking part in trials and a further 18,000 households are included in control groups (114% of the target). Nearly 17,000 households have had smart meters installed as part of the trial, many with both gas and electricity smart meters.*
- *The oral response from customers about receiving additional information on their energy use has on the whole been positive. As yet statistically significant differences in energy usage between intervention and control groups have not been observed consistently across the trials; however, further work on the data is being progressed. Until full correction of the data has been resolved the results are being treated as preliminary.*

¹ Energy Demand Research Project; review of progress March 2009;
<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=116&refer=MARKETS/RETMKTS/METRNG/SMART>

3 The Energy Demand Research Project

3.1 *Background*

The Government allocated £9.75 million to part finance a large scale trial investigating consumer response to improved feedback on their energy use - the Energy Demand Research Project (EDRP). Ofgem agreed to manage this trial on behalf of Government (in terms of both drawing up recommendations for grant funding, and in overseeing the implementation and assessment of data arising out of the scheme).

Participating suppliers in the EDRP are required to submit reports at six-monthly intervals for the duration of the project. The EDRP is being undertaken by four different energy companies, namely EDF Energy Customers plc (EDF), E.ON UK plc (E.ON), SSE Energy Supply Limited (SSE) and ScottishPower Energy Retail Limited (SP). This report presents information from supplier reports submitted in March 2009 and is the second set of detailed reports in the EDRP.

Supplier reports are analysed by the Centre for Sustainable Energy (CSE), who support Ofgem in its evaluation and monitoring of the EDRP. CSE primarily ensures statistical reliability is maintained, interrogates the conclusions in the Suppliers' reports, and will cross analyse interventions across Supplier trials to add to the EDRP learnings.

This document provides an overview of the current state of play across the EDRP as a whole and evaluates progress since the last reporting period in September 2008 (published in April 2009²). This evaluation process included telephone interviews with all supplier project teams by CSE.

3.2 *What is being trialled*

The trial consists of 26 trial groups, some of which are further divided into subgroups based on, for example, consumption level or type of meter. This section describes the 6 main categories of trial interventions.

3.2.1 Billing and information

Trials in this category include the provision of:

- additional information on past consumption, including graphs with bills providing a comparison of consumption with the same period in the previous months/year.
- monthly billing
- more accurate bills by means of having smart meters

² See

http://www.ofgem.gov.uk/Markets/RetMkts/Metrng/Smart/Documents1/EDRP_June_2008_Public_progress_report_final.pdf

- energy efficiency information and advice

More than 13,000 households are now taking part in some form of billing trial, while nearly 26,000 are receiving energy efficiency information³.

3.2.2 Clip-on visual display units

Clip-on visual display units have been given to almost 8,500 households (although trial leavers have reduced this figure to 7,500 households). Visual display units measure electricity consumption and load as well as cost of energy use. 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 and do not necessarily show the same units as is being recorded by the customers' meter.

3.2.3 Smart meters

Smart meters have now been installed in about 17,500⁴ 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 read the meter manually. Several setups are being tested:

- Smart meters with a remote visual display of consumption and cost information of energy used for both electricity and gas.
- Smart meters with daily consumption information sent to the households' TV
- Smart meters with daily consumption information available on the internet
- Smart meters linked to heat control units which allows customers to control their boiler through a wall panel whilst having access to accurate electricity and gas consumption data
- 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).

3.2.4 Community engagement

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

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

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.

3.2.5 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'. However, their energy consumption is recorded to enable comparisons with the households that are part of a trial. There are nearly 18,000 control households.

3.2.6 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 the types of interventions being trialled and how they have achieved statistical reliability have been approached in a number of ways. This has added to the richness of the EDRP.

4 The Report

The key findings across the major interventions are summarised under the headings below.

4.1 *Billing*

The level of householder awareness of billing interventions has improved since the last report. There are two types of billing interventions being trialled. 'Better billing' refers to increased frequency/accuracy of bills. 'Information on bills' refers to enhanced consumption information on bills such as graphs and/or comparisons between bills.

71% of customers surveyed in one billing trial said they noticed a difference in the way they were billed. When asked what difference they noticed 58% said they noticed a change in the frequency of bills. The large majority (73%) of individuals in these trials said they preferred the monthly frequency of bills.

Another supplier reported that customer feedback has been useful in resolving technical and delivery issues and in developing lines of enquiry for wider analysis and customer surveys. The main positive customer comment on 'billing information' from this trial group was that the graphs clearly showed customers their increases and decreases in usage which many customers found useful. In another trial, it was reported that regional benchmarking encouraged high usage customers to seek help and advice to reduce consumption.

4.2 *Display Units (Clip on)*

Ninety-eight percent of clip on monitors have been installed to date, with mixed responses. One trial group reported that of those who had had a clip on display monitor installed by the supplier, 81% had used it – 49% daily, 13% several times a week and 57% had talked about it with others.

In contrast, a separate trial group reported lower levels of engagement with the clip on display unit, with around 58% of customers who were sent the monitor saying they used it. This group was required to install the monitor themselves and some required additional guidance to update price settings on the monitor. Of those who acknowledged receiving it, around 40% said they did not use it at all. Of those that used it initially 40% had stopped using it after a year. There were also a number of customer service issues related to failing batteries and faulty monitors.

Individual customer comments from another trial group further highlight the mixed reactions of customers to the intervention. While this does not provide a

statistical basis on views (full household surveys are still to be done), the individual comments provide a flavour of the views from customers. Negative comments included but were not limited to:

- the monitor was faulty
- the monitor was not accurate
- don't see that it will help to save money, just shows the obvious

Positive comments included but were not limited to:

- it is useful in reducing energy wastage and changing behaviour
- it helped the household to save money

Another trial required two types of monitors to be installed. One was a mains powered monitor and the other a clip-on monitor. It was reported that more mains powered monitors remained in operation longer than the clip-on monitors and the mains monitor was perceived by customers to be easier to use. Expended and un-replaced batteries were seen as a key reason why clip on monitors were no longer fitted and working. A survey of this trial group indicated that customers with visual display monitors check their energy consumption more often but there were no consistent differences between groups on the efforts made/measures taken to save energy.

4.3 Energy efficiency advice

Suppliers are providing energy efficiency advice to a selection of trial households in conjunction with other interventions. Across the EDRP as a whole nearly 26,000 households (98% of the target) are now receiving advice and tips on household energy consumption.

A survey of 75 trial group members showed that 38% of those who received energy efficiency advice with their bills recalled receiving this information. Of these, 22% talked to others about the advice and 33% took specific action – 12% installed low energy light bulbs, 11% installed insulation and 8% turned lights off more often.

Customer feedback from another trial group indicated that the promotion of energy saving to save money rather than to help the environment is a better attention grabber.

4.4 Smart meters

Although each company cautions that it is too early in the study to report any results with confidence, this is however an important stage in the project as all participants are now receiving large quantities of data from the smart meters.

This has meant they have needed to iron out data collection issues and it also enables participants to better assess the quality of the data and the adequacy of the analytical methods used. The results have helped to highlight issues such as:

- the need for better validation of data collection and processing
- the need to establish robust mechanisms for applying time and weather corrections to datasets
- the need to resolve problems resulting from spurious readings from customer mistakes and unexplained outliers

As a result, trial participants are doing more to improve the data and analysis and expect to report clearer messages over the next reporting period.

Between August 2008 and November 2008, mean (corrected) electricity consumption was observed to decline for customers in one trial group that had received two consumption comparison letters, a smart meter and a personalised 'time of use' letter (letter sent to customers highlighting how much they spend on energy use at certain times of the day). This was also the case for customers in another trial group that had received a smart meter with integrated real-time display and a personalised 'time of use' letter. Note that these interventions were introduced progressively over time, rather than in combination, and the decline was only observed once the interventions were in use in combination.

Some of the other trial teams with smart meter data covering the period 1st August 2008 to 31st January 2009 reported some early indications that some customers' consumption decreased relative to the same period in the previous year. However we are not reporting specific details on these results as they cannot be taken as conclusive at this early stage due to limited data being available, a lack of time and weather correction⁵, and so far unverified comparability of trial groups with control groups.

Instead, we have focussed this report on customer feedback on the smart meter interventions, gained from customer surveys and other customer interactions, including recruitment.

In general, there has been good feedback about the smart meter trials, including positive comments about billing accuracy, reduced need for meter reads and improved ability to track household energy consumption. For one trial group, the smart meter linked display unit was one of the most popular interventions at the point of recruitment and had a markedly higher recruitment rate compared to other interventions.

As ever, though, there is a mix of reactions from customers. These responses ranged from (a) since having the smart meter installed they are really trying to reduce energy usage to (b) the smart meter trial is a waste of customers' money.

⁵ Time and weather correction factors allow for the analysis of data across time and control for the variation in weather.

Two trial teams are utilising the web as a customer interface with smart meters to view consumption and compare individual usage against average usage patterns. One team has completed its roll out of this intervention; the other was nearing completion at the time their report was written. However, for both trial teams the web intervention was reported as one of its most popular. One team reported markedly higher recruitment rates compared to other interventions. The other trial group reported customers' positive expressions of interest and enthusiasm about being able to view their energy data online. 10% of customers in the web trial called the supplier with web specific enquiries. 20% of these customers had problems accessing their online accounts, the main reasons being due to the complex password rules or customers changing their email address.

98% of smart meters with alarms (used to alert the user of consumption level) have now been installed. This intervention consists of a wall panel display unit linked to a smart meter which sounds an alarm if the household exceeds a pre-set consumption limit for a 24 hour period. Feed back from customers to date is that they do not want any type of alarm that notifies them of high consumption; instead they would rather interact with the smart meter when they want. As a result it was easier for this supplier to recruit customers for the in home display unit trial (which is linked to the smart meter) than for the smart meter with alarm trials. Of interest, though, customers in the in home display unit trial were reportedly confused by the information on gas consumption provided by the display unit, which is described in cubic meters, compared to the information on bills which is described in kWh.

The heating controller trial group receives a real time digital display showing smart meter information with a link to a heating controller. This allows customers to control their boiler through a wall panel whilst having access to accurate gas and electricity consumption data. Over half of the installations were completed at the time of the suppliers report. Delays occurred as 50% of boilers were found to be unsuitable for this trial. The remainder of installations were reported to be completed by June 2009. This product was one of the most challenging with complexities around how it would be implemented in the home, implications for existing service contracts and constraints of the existing infrastructure.

4.5 Community engagement

The community trials involve multiple interventions co-ordinated by community members and therefore have a more intensive campaign, combining a range of energy saving initiatives with ongoing support. To date, two of the three community trials have shown a drop in year-on-year electricity consumption. However, these changes have not been subject to any tests of statistical confidence as yet. In particular, these results have not been compared to changes in energy consumption amongst GB customers as a whole e.g. other areas in GB may also have seen a decline in energy use from the previous year because of greater energy saving awareness or the effects of the recession. It is anticipated that clearer results should emerge by the next reporting period.

5 Way forward

EDRP is a two year trial which is designed to test for sustained effects on energy demand. The final trial report, based on data until October 2010, will be submitted by Ofgem to Government in early 2011.

The next set of EDRP supplier reports is due at the end of September 2009. These will then be cross-analysed by the EDRP evaluation team and a report will be submitted by Ofgem to Government in December 2009. We would then expect the next update report to be published in February 2010.

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