WARM PLAN SMART METERS
MONITORING REPORT (PHASES 3 TO 5)

JUNE, 2008

Prepared for **Ofgem**

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EXECUTIVE SUMMARY

This report summarises the monitoring results from a two-year pilot test of Smart Meters in London (Warm Plan) funded by the Energy Saving Trust. HelpCo has been managing the project and Ofgem has paid for the monitoring and evaluation of the results coming from this pilot. The aim of the monitoring was to establish both qualitative and quantitative data on householders' reactions and use of the Smart Meters. Additionally, the impact of regular feedback to households based on the information gathered centrally from the Smart Meters was an important area for examination.

The evaluation was to be carried out on 100 households who received a Smart Meter and personalised regular feedback from Warm Plan on their energy consumption and advice on how to reduce it. There was to be a further hundred households who received only a Smart Meter but no feedback about their energy consumption other than bills. For both household sets, the monitoring process followed an identical pattern. Telephone calls were made 2-3 months after installation of the Smart Meter to 10 customers who had accepted the Warm Plan offer and 10 to those who had not taken up the offer. The results of this initial research were used to design the self-completion questionnaire that all households using the Smart Meters were sent one year after their installation.

95 completed questionnaires were analysed and a report and presentation were delivered to Ofgem, HelpCo, EDF Energy and other partners in July, 2007. This report identified problems with the siting of some of the display units and the need for *wireless* internal communication between physical meters and display units to overcome these and to speed installation. It also showed that the main initial advantages perceived by customers in Smart Meters were "no more estimated bills" and "no meter readers calling", although some appreciated the potential energy savings.

Although the meters in questions are dual fuel, by the standards of this rapidly evolving field, the specification for these meters is a little dated being based on the pre-payment meters used in Northern Ireland since 2000. Originally scheduled to run from 2004-6, this pilot was dogged by delays in acquiring the meters, problems with procedures to get them installed and three different partnerships with energy suppliers before EDF Energy was chosen. Many barriers to installing and operating Smart Meters in households had to be overcome and the lessons learned from this were fed back in June 2007 to the larger energy demand reduction trials that Ofgem is currently running.

The Warm Plan project did not achieve its target of recruiting 100 households which would be provided with Smart Meters and personalised feedback and 100 households which would only be supplied with the Smart Meters. There are many reasons for this and the situation was not helped by the poor communications from and between HelpCo and EDF Energy resulting in a further 29 of the trialists dropping out. By April 2008, only a total of 130 Warm Plan trialists were still using a Smart Meter when this survey was undertaken. In the end, responses were obtained from 65 households who had both Smart Meter and received HelpCo feedback reports and advice and 29 who only had a Smart Meter (72% response rate).

All continuing households in the trials were contacted in a 2 week period beginning 18th April 2008 (approximately 11-14 months after installation of the Smart Meters) to take part in a structured telephone questionnaire which had been refined based on earlier experience with a small sample. Additionally, telephone interviews were held with 15 of the dropouts to

ascertain the primary reasons why they had left the pilot. Finally, the last 12 months electricity and gas consumption were evaluated using monthly consumption figures supplied by HelpCo from the signals received from Smart Meters. These were compared to the historical consumption figure provided by EDF Energy for an earlier 2-year period.

Key Lessons Learned

Location of the Smart Meter Display

The display was hardwired to the physical meter and to minimise disruption and installation time, limits were placed on the extent of wiring to be undertaken. This resulted in far too many Smart Meter display units being installed in inaccessible and not very visible locations. **The location is important as those households with a Smart Meter in a visible location (e.g. hall or kitchen) are five times more likely to interrogate their Smart Meters on a greater than once a quarter basis as those with less visible or inaccessible locations.** Around 40% of households with such visible locations read their Smart Meters more often than quarterly.

We strongly recommend the wireless option for communication between the meter and the display unit to allow favourable siting of the display unit. The HelpCo meters use a GSM signal for communication back to HQ and there have been a few problems which have annoyed householders.

What do householders expect from Smart Meters?

The two most important factors for participating in the pilot were **an end to estimated bills and no need for the meter readers to call anymore**. However over half of the householders expected that the Smart Meter would help them to monitor energy consumption and cut their energy bills.

Do Smart Meters result in more frequent reading of the meters?

Prior to the installation of Smart Meters, only 3% of households read their meters more frequently than once a quarter. For those households which had Smart Meters and received HelpCo report, the corresponding figure is 27% and for the householders who only got a Smart Meter, 23%. Both figures are down compared to just after the installation of the Smart Meters at of around 40% and 30% for the supported and unsupported households. We believe this is strongly linked to the (by today's standards) **primitive display and the less than "user friendly" manual for the Smart Meter.**

We have also discerned from various questions asked during the survey that about a third of people with Smart Meters now never read the meters at all – approximately double the number of households that previously never read the meters at all. We ascribe this change to the fact that people have more confidence in the accuracy of the bill, the fact that those that received the reports from HelpCo may be relying more on the reports for such information and finally the "novelty factor" wearing off.

Ease of use and the Smart Meter Guide

Around two out of the three households with Smart Meters do actively interrogate their Smart Meter with the most common function being total consumption. **Those households which receive the HelpCo reports access a wider range of information from the Smart Meters than those households which do not.**

The figures for those households who found it either very or quite easy to use their Smart Meter display unit grew over the period till by the end, over half of those who had read the user guide found it very or quite easy to use. However around 27% of households still found it quite or very difficult to use. It should be noted that nearly a fifth of all households had not read the user guide.

The reasons why consumers had not used the Smart Meter displays more often were quite wide ranging and varied dramatically between those who had read the user guide and those who had not. For those who had not read the user guide, it tended to be along the lines of never explained to me/too busy/too time consuming/too hard to read with my poor eyesight. For those who had read the user guide, the main reasons for not using more often are don't see any point in using it more/too difficult to use/too time consuming/reading it won't change my behaviour to saving energy.

As we commented earlier, nearly one in five households did not read the guide. **For those that did read the guide, the percentage who found it either very easy or quite easy to understand grew to a combined 65% after one year but 18% still found it quite or very difficult.**

How Smart Meters have helped the households

Early on, nearly half the households felt that the Smart Meter had not helped them in any way but after a year's experience, this had dropped to 9%. The main ways which Smart Meters had helped were to get more accurate fuel bills (62%), to use more energy saving light bulbs (55%) and improved behavioural changes such as not leaving appliances on stand by, turning off unwanted lights (48%). In all cases, these benefits were higher for the households receiving HelpCo reports than those which only had a Smart Meter. **Indeed, nearly two out of three households who have received HelpCo's advice have actually followed it.**

Perceived and real impact on fuel bills

The number who felt their energy bills were lower or higher than the last few years was 33% for both categories with more householders who got the HelpCo reports feeling the bills were lower rather than higher. On the accuracy of the bills, 62% felt they were now more accurate and only 6% less accurate. The percentage of households whose last bills were estimated as dropped from 39% to 20% but still a disappointingly high figure (due to teething problems, estimated bills were still being sent initially). The hoped for reduction by householders in meter readers calling did not materialise and 43% of households still had meter readers calling which is way above the expectation from statutory inspections – again this is due to poor communications in the early stages and has now been largely overcome.

The actual energy savings were deduced from comparing the data from the Smart Meters over the past 12 months with the historical data supplied by EDF Energy for the period April 2004

- April 2006. Somewhat surprisingly, half the sample had used less than 8,000 kWh of gas per year – considerably less than the GB average of 19,000 kWh per year. Even allowing for the higher than normal percentage of flats and terraced housing, this still represents a much lower figure than we would expect to see. This may imply that there was either considerable underheating and/or the use of alternative heating prior to the installation of the Smart Meters. After the installation of the Smart Meters, overall the gas consumption rose by almost 50% yet the electricity consumption fell by 16%which would tend to confirm the underheating and/or the use of alternative heating prior to the installation of the Smart Meters.

However, further detailed analysis of the results showed that there appeared to be two conflicting trends:

- For those households whose energy had increased, they had previously had an average annual gas consumption of less than 7,000 kWh which rose to over 17,000 kWh after the installation of Smart Meters.
- For those who had actually saved gas, the average annual consumption had dropped from 18,000 kWh to 13,000 kWh.

Thus the picture is highly confused. Assuming that the data we were given are valid, then we believe that there is evidence of considerable underheating and/or use of alternative heating fuels to gas prior to the installation of the Smart Meters. **Thus it is not possible to draw conclusions from these results and the energy savings can only be tested in larger scale trials of Smart Meters currently underway.**

Householders' overall views on Smart Meters

Despite the considerable problems that householders have clearly experienced with this particular brand of Smart Meter and the far from ideal service they have had, **the attitudes of those in favour of Smart Meters has shifted over the year they have had the Smart Meter from 25% to 50% being very likely to recommend to a friend; those being very unlikely to recommend to a friend has dropped from 12% to 7%.** Of course, the main reasons for recommending to a friend that they are helpful in monitoring energy usage, no meter readers call, and accurate bills. The main reasons why people would not be very unlikely to recommend to a friend are no perceived advantages, the meter reader still calls and a few concerns that they think gas might be cut off.

After a year's experience, over 80% of households could think of something they liked about their Smart Meter: getting actual bills/not estimated, was the most frequently mentioned, with the ability to monitor consumption a close second. No meter readers calling also featured fairly highly but it should be noted that this, as previously mentioned, did not materialise to the extent that it should have. It should also be noted that there is a significant minority (15%) who felt they liked nothing about the Smart Meter.

Final Conclusions

Although the Warm Plan project has not met its initial expectations, it has pointed out the practical and communication problems that need to be resolved if householder expectations from Smart Meters are to be met. In particular: the key messages which should be incorporated in any future Smart Meter trials and in any subsequent roll out to the wider population are:

- Locating the Smart Meter in a readily accessible and visible location is very important if people are to access it on a regular basis.
- The display device and the user interface along with the Smart Meter manual need to be more user-friendly than those employed in the Warm Plan pilot
- For some customers it requires more training on how to use the Smart Meter and education about it as a tool and what it can deliver in conjunction with energy saving measures and behaviour change
- Householders expect an end to estimated bills following the installation of Smart Meters and also all less frequent calling of meter readers; if poor communications within the company mean this does not result, then householders are understandably annoyed
- Personalised advice and energy saving tips were acted upon
- The historical the electricity and gas consumption data available prior to the installation of the Smart Meter was of doubtful validity and did not permit any estimate of energy savings arising after installation of Smart Meter; we recommend that the houses are properly monitored for the year prior to and the year following the installation of the Smart Meter

Despite the problems, householders are positively disposed towards Smart Meters although some households needed time to fully understand this particular Smart Meter. There are clear indications that the personalised feedback has engendered a more positive attitude by householders to energy saving than those households which only received a Smart Meter and no feedback.

It should be stressed that none of the problems listed above are insurmountable and are typical of the teething problems that one would expect in piloting new concepts involving a variety of market actors. We hope that these general lessons from this pilot are of help to the larger trials that Ofgem is monitoring on behalf of the Government and we are extremely grateful to EDF Energy and Warm Plan for providing this information so freely.

INTRODUCTION

Purpose of the research

New Perspectives, in collaboration with Eoin Lees Energy, has been funded by Ofgem to conduct an independent monitoring research programme on the Warm Plan Smart Meter trial. This report covers the final stages of the Monitoring Programme – pilot testing of a Telephone Questionnaire (Phase 3), the main Telephone Survey of Trialists (Phase 4) and some interviews with drop-outs (Phase 5) (see details below).

The main purposes of these final phases of the research are:

1. To compare the experiences of those households receiving Smart Meters *and* full support from HelpCo (in the form of monthly postcards, quarterly reports, and warning postcards if necessary) with those households which received *only* Smart Meters and no further support.

2. To see what information about their Smart Meters they learned from different sources, and which encouraged them to join this trial.

3. To see how satisfied (or not) households are with the location of their new Smart Meter, and whether this affects ease or frequency of use.

4. To check how often Trialists now interrogate their Smart Meter for information on fuel consumption, compared to how often they read their old meters previously, and how often they read their Smart Meters a year ago.

5. To check whether the User Guide supplied to (most) households has been read and is readily understood.

6. To see whether information from the Smart Meter is encouraging Trialists to adopt energy saving behaviour.

7. To see whether the extra information and advice sent to those Trialists getting the full HelpCo support is encouraging them to adopt energy saving behaviour.

8. To check how useful Trialists (who receive full support) find the targets set by HelpCo, and in what terms they would prefer these to be set.

9. To explore what additional support from HelpCo some households might like.

10. To see whether the Smart Meters and additional advice are having an effect on fuel bills, accuracy of bills, or frequency of visits by meter readers.

11. To check on Trialists' overall reactions to the Smart Meters (and HelpCo support) by seeing whether they would recommend Smart Meters to a friend, and why, and by exploring their main likes and dislikes of the scheme.

12. To compare the historical fuel consumption records of Trialists (over one to two years prior to receiving a Smart Meter) with their fuel consumption over the time when they have had a Smart Meter, in order to check whether any fuel savings were achieved through getting a Smart Meter and advice.

13. To examine the reasons why a few households dropped out of this Smart Meter test.

Background to the Warm Plan project

HelpCo (part of GLEEN) has been managing a two-year pilot test of Smart Meters in London in some 150 households. Originally scheduled to run from 2004 to 2006, this pilot was dogged by delays in acquiring the meters, problems with procedures to get them installed, and three different partnerships with energy suppliers before EDF Energy was chosen. All the households now taking part are dual-fuel customers of EDF Energy, who had their (indoor) gas and electricity meters connected to a new Smart Meter (made by PRI). These installations were done between October 2006 and May 2007. The Smart Meter offers three key potential benefits to households:

1. The Smart Meter provides daily readings by wireless to PRI/HelpCo/EDF Energy, thereby (theoretically) avoiding the need for a meter reader to gain access to the home to read the meter in person (although there is still a statutory requirement to inspect meters every 2 years).

2. The Smart Meter may be interrogated via its keypad by the householder, in order to monitor instantaneous, daily, weekly or monthly energy use, thereby enabling the householder to experiment and learn the effects of energy conscious behaviour and improvements.

3. The daily wireless readings communicated by the Smart Meter to HelpCo enables HelpCo to provide monthly energy reports and a fuller quarterly report to a sub-sample of households selected to receive this fuller service, or (whenever a high or low usage alarm is triggered) to alert a household to exceptionally high or low consumption of either gas or electricity and then to discuss possible solutions.

Evaluation Phases and methodology

Phase 1 of this research was conducted by New Perspectives between 10th and 23rd April, 2007. This initial exploratory phase consisted of exploratory telephone interviews with ten households trying the new Smart Meter ("Trialists") and ten interviews with households which had rejected the offer of a Smart Meter ("Rejectors"). The results of this Phase 1 research were reported to Ofgem in May, 2007 and used to help design the self-completion questionnaire Phase 2 of the research.

Phase 2 of this Monitoring Research was conducted by New Perspectives in June, 2007 using a self-completion postal questionnaire, designed to quantify all the issues emerging from the Trialist interviews in the Phase 1 research, and to collect more robust data on actions taken and possible savings made. 95 completed questionnaires were analysed by New Perspectives and a report and presentation on Phase 2 were prepared and delivered to Ofgem, HelpCo, EDF Energy and other partners in July, 2007 – see "Warm Plan Smart Meters Monitoring Report (Phase 2), July, 2007". This report identified problems with the siting of some of the display units and the need for *wireless* internal communication between physical meters and display units to overcome these and to speed installation. It also showed that the main initial advantages perceived by customers in Smart Meters were "no more estimated bills" and "no meter readers calling", although some appreciated the potential energy savings.

Since then those households trying out Smart Meters have had a further nine to ten months (including an entire second winter) in which to learn more about how to use them and to modify their behaviour to save energy.

The final stages of the Monitoring Programme covered in this report are: Pilot Testing of a Telephone Questionnaire (Phase 3), the main Telephone Survey of Trialists (Phase 4) and some Interviews with Drop-Outs (Phase 5).

For the final Phases of this Monitoring Research the Phase 2 self-completion questionnaire was updated by New Perspectives and turned into a telephone questionnaire for pilot testing in Phase 3. In Phase 3 ten Warm Plan Trialists were interviewed by New Perspectives during April, 2008 - six who received advice as well as a Smart Meter, and four who only received a Smart Meter. The questionnaire was found to work well over the telephone and so was passed on to Avalon Research for use in the main survey of all 147 Warm Plan Trialists who we were informed by HelpCo still had a Smart Meter.

Between 18th April and 2nd May, 2008 Avalon Research interviewed by telephone a further 84 Warm Plan Trialists from the lists supplied by HelpCo, which together with the ten pilot interviews provided a total of 94 respondents (for Phase 4) on whom this report is based: 65 of these Trialists also received HelpCo reports and advice (as well as having a Smart Meter) and 29 had only a Smart Meter (and no other reports or advice). During the fieldwork we discovered from EDF Energy, and from responses to Avalon's calls, that at least another 17 households had dropped out of this trial over the past few months, leaving only 130 supposedly active Warm Plan households of whom we managed to interview 94 (a 72% response rate against a target of 80%).

Avalon Research coded all open-ended questions and answers in the questionnaire (using code lists based on and developed from the 2007 findings) and prepared the detailed (SNAP) analysis tables shown later in this report. Avalon Research also appended to the interview records all demographic and fuel consumption data collected by HelpCo and New Perspectives from EDF Energy and from the Smart Meters themselves.

In order to calculate both the Historical and Recent 12 monthly fuel consumption figures of the test households, New Perspectives proceeded as follows. EDF Energy kindly supplied historical fuel consumption figures to New Perspectives for most of the households taking part in this trial. Most historical records consisted of two years' meter readings (for both gas and electricity) ending with final readings at the service visit during which the old meters were replaced by Smart Meters; all records included at least one winter. For each household the oldest reliable meter reading (usually by a meter reader) was compared with the final reading at the time of fitting the Smart Meter, and the total fuel consumption over the interim calculated. This total was then divided by the number of months between the readings, and multiplied by 12 to give an average 12 months historical fuel consumption (prior to the fitting of a Smart Meter).

In order to calculate the recent average 12 monthly fuel consumption a similar process was followed, but using monthly consumption figures supplied by HelpCo from the signals received from Smart Meters. Most of these consumption figures consisted of 12 months consecutive readings to end March, 2007. Where fewer than 12 months consecutive readings were available, all available monthly readings were totalled, divided by the number of months covered, and multiplied by 12 to provide a 12-monthly estimate. These recent and historical

consumption figures were appended to the interview records by Avalon Research, and any changes are analysed and discussed in this report.

Finally New Perspectives carried out semi-structured telephone interviews with 15 of the 40 households which have dropped out of this trial since it began, and Avalon completed short interviews with 29 drop-outs. The aim of this was to examine the reasons for drop-outs occurring and to suggest ways in which these might be avoided in larger-scale trials.

Arrangement of the report

This Introduction is followed by the Findings section which explains and illustrates the main findings with Summary Tables. Throughout the Findings readers are also referred to the relevant SNAP tables in the Tables section which follows.

In the Appendix can be found a copy of the Telephone Questionnaire used for Phase 4 of this study.

FINDINGS

Months in which Smart Meters were installed

Almost half (44%) of all Trialists can now no longer recall in which month their Smart Meter was installed (compared to 23% in June, 2007), but otherwise most of those also getting short reports from HelpCo seem to have had their meters installed between November, 2006 and January, 2007, while those who received Smart Meters only seem to have had these meters installed since January, 2007. This is consistent with HelpCo's pattern of sign-ups, which was to offer full support to the first 100 Trialists, and then to install meters only in the second tranche of Trialists. Unfortunately only about 50 meter-only installations were originally achieved, compared to the 100 originally planned.

In 2007 we found that the length of time that Trialists had to try their Smart Meters seemed to make no difference to how likely they were to recommend Smart Meters to a friend, so we concluded that all Trialists had had adequate experience with Smart Meters on which to report.

(See SNAP Table 1)

Satisfaction with Smart Meter locations

Advocates of the use of Smart Meters have often proposed in the past that Smart Meters (or at least their displays) should be placed in prominent positions where householders can readily see the information displayed. In this way (it has been argued) householders will quickly recognise how much energy they are using, and take steps to moderate their consumption.

Results from this latest (Phase 4) survey confirm the findings of last year's postal survey. Prominent locations for Smart Meter displays are not always achieved, as some households prefer their meters to be out of sight. In Summary Table 1 (below) we compare the pre-existing locations of gas and electricity meters with the locations in which Smart Meter displays were finally fitted. As can be seen, Smart Meter displays ended up in more accessible locations such as the hallway/corridor or kitchen in 58% of Trialists' homes, whereas 55% of pre-existing electricity meters and 45% of pre-existing gas meters had been in these locations.

Smart Meter displays also ended up "visible" (rather than "in a cupboard") in 49% of installations, compared to only 38% of electricity meters and 29% of gas meters which were "visible". So overall only some slight improvement has been achieved in the accessibility and visibility of Smart Meter displays compared to their forerunners.

SUMMARY TABLE 1 METER LOCATIONS (2008)	**Smart Meter Displays**	**Electricity Meters**	**Gas Meters**
Base: All Trialists	94=100%	94=100%	94=100%
No. whose meters are in:			
Hallway/corridor	48%	45%	29%
Under stairs	19%	16%	24%
Cellar	12%	18%	18%
Kitchen	10%	10%	16%
Other room/place	12%	12%	13%
No. whose meters are:			
Visible	49%	38%	29%
In a cupboard	47%	59%	68%
Other	4%	3%	3%

To some extent the siting of the Smart Meter display unit was constrained by EDF Energy's desire not to have to drill through masonry walls to allow the display to be connected to the main meters by wiring. Latterly a limited amount of drilling through stud walls or timber was allowed. Nevertheless some households which had had their meters in the cellar or under the stairs also ended up with Smart Meter displays in these locations too.

By 2008 most Trialists were "very happy" (53%) or "quite happy" (35%) with where their Smart Meters were installed, and only 9% felt they would have preferred them to have been installed somewhere else – usually in the kitchen (4%) or hall/corridor (5%), and a few would have preferred them in a cupboard instead (3%). Those who only received a Smart Meter were still slightly less happy with their display unit location, suggesting that the extra help and advice from HelpCo may encourage them to accept a more intrusive display unit. But overall more people were now happier with their Smart Meter's display unit's location than they had been in 2007, suggesting that a meter location is just something most people come to terms with over time.

SUMMARY TABLE 2 SATISFACTION WITH SM LOCATION	**All 2007**	**All 2008**	Hall/ corridor	Under stairs	Cellar	Kitchen	Others	Visible	Cupboard	Reports	Only SM
Base: All Trialists	95	94	45	18	11	9	11	46	44	65	29
No. who feel:	%	%	%	%	%	%	%	%	%	%	%
Very happy	38	53	58	44	27	67	64	54	52	54	52
Quite happy	31	35	36	39	45	22	27	41	32	37	31
Neither happy nor unhappy	26	4	4	6	-	-	9	2	5	2	10
Rather unhappy	4	7	2	11	27	11	-	2	11	8	7
Very unhappy	-	-	-	-	-	-	-	-	-	-	-
No. who'd like SM:											
Nowhere else	83	85	87	83	75	78	100	89	84	85	86
In kitchen	5	4	2	11	8	-	-	-	5	3	7
In hall/corridor	3	5	-	11	8	22	-	-	11	5	7
Elsewhere	1	3	4	-	-	-	-	6	-	5	-
In a cupboard	5	3	7	-	-	-	-	4	2	5	-
Not in a cupboard	3	-	-	-	-	-	-	-	-	-	-

Most of the 83 Trialists who were very happy or quite happy with the location of their Smart Meter display were happy because it was easy to access and read (27%), it was where their old meters were (23%), it was tucked out of the way (22%), it was easy to access but also out of sight or unobtrusive (7%), or because it was the only practical location (10%). But some of those eleven respondents who were not altogether happy with the location felt this way because the display unit was in a cramped or dark space (18%) and difficult to read without a torch (9%), or in an inaccessible or distant location like a cellar (18%).

Lesson: It is unfortunate that more Smart Meter displays were not fitted in visible locations when the opportunity arose. Ensuring a visible and accessible location is important in future trials if the maximum benefit is to be gained from Smart Meters. Overall there is a case for arguing that surveyors and installers of Smart Meters should try harder to convince householders of the benefits of having a more accessible and visible Smart Meter, as this (as we see later) might encourage people to make more use of it. In future wireless connections to Smart Meter display units should make this more feasible. (See SNAP Tables 2-4)

The Advantages of Smart Meters

In the 2008 telephone survey Trialists were asked which advantages of Smart Meters encouraged them to agree to try it, and which was the single most important factor in encouraging trial. Results are summarised below in Summary Table 3 for the results from both 2007 and 2008:

SUMMARY TABLE 3 FACTORS ENCOURAGING TRIAL	**2007 SURVEY (Postal)**		**2008 SURVEY (Telephone)**	
	Factors encouraging trial	**Most important factor**	**Factors encouraging trial**	**Most important factor**
Base: All Trialists	95 100%	95 100%	94 100%	94 100%
Factors encouraging trial:	%	%	%	%
Read remotely/no need for meter readers to call	51	29	78	31
Accurate readings/no more estimated bills	56	37	74	22
Could use meter to monitor energy consumption	44	20	54	21
It could help us cut our energy bills	46	29	62	17
It was something new/trial of new meter	34	2	45	2
It was free of charge	44	11	59	1
It came with free, energy saving measures	38	15	39	1
We would get free energy saving reports/advice	24	8	35	2
Others	1	2	7	1
Don't remember	2	1	1	1
None	-	-	-	-
No reply	17	15	-	-

In our 2007 report we concluded that "getting accurate readings and no more estimated bills (37%) was the most important motive, followed by no more meter readers calling and the help to cut energy bills (both mentioned by 29%). In short, two thirds wanted a Smart Meter because of potential improvements in billing. The chance to monitor consumption (20%) was also important. But disappointingly few Trialists were attracted by the free energy saving advice and reports – only 10% of those who receive this support mentioned this factor; the free energy saving measures were more important for some (15%)."

Now in 2008 – when the more rigorous telephone interview ensures that no more than one "most important factor" is named by any respondent – we still find that doing away with meter readers calling (31%) and getting accurate bills instead of estimates (22%) are recalled as the more important factors by most trialists. Fewer trialists cite using the meter to monitor energy consumption (21%) or that it could help cut energy bills (17%).

The provision of "free energy saving reports and advice" was mentioned by almost half of all supported Trialists (46%) as a factor which encouraged them to try the scheme, but it was the "most important factor" for only 2% of those who actually received such support.

On balance we conclude the main appeal of smart meters for customers will continue to be that they eliminate meter readers' calls and promote accurate billing, rather than being seen as an aid to monitoring and reducing energy consumption. To encourage wider use of Smart Meters for monitoring consumption will probably need a more intensive education campaign about domestic energy management than this small-scale trial was able to provide.

(See also SNAP Tables 5 and 6)

Free energy saving measures received and used

Over one fifth of Trialists in both surveys (2007 and 2008) could not recall receiving *any* free energy saving measures, and one or two said (in 2007) that they had chased HelpCo for these promised measures. But not all these free measures had been used by recipients even when they received them. In 2007 we found that only about half the free electric kettles had been used, although this has now grown to about three quarters. In 2007 about one in six recipients had not yet tried any free energy saving bulbs, but by 2008 almost all recipients had tried them. About a fifth of those receiving free radiator panels had still not used them by 2008.

SUMMARY TABLE 4 FREE MEASURES GIVEN AND WHETHER USED OR NOT	**2007 SURVEY (Postal)**		**2008 SURVEY (Telephone)**	
	Measures received	**Measures used**	**Measures received**	**Measures used**
Base: All Trialists	95 100%	95 100%	94 100%	94 100%
No. who said:	%	%	%	%
None	21	5	22	3
Electric kettle	45	22	47	36
Energy saving bulbs	64	54	69	68
Reflective radiator panels	52	41	54	46
Other items	3	5	3	1
Don't remember	1	-	2	-

In 2008 trialists who had not made use of some of these free measures were asked for the first time why this was. Some of the main reasons mentioned for not using each item seemed to be:

Electric kettles: *keeping it till needed/gave it away/not as good as present one/too small.*

Reflective radiator panels: *difficult to fit/need instructions/kept falling down/fitted better ones/ removed for safety.*

Energy saving bulbs: *keeping them till needed/till bulbs fail.*

(See SNAP Tables 7 and 8)

Previous use of meters and whether this changed with the Smart Meter

In order to check whether Smart Meter Trialists made more use of the Smart Meter than they had of their previous meters, we asked them how often they had read their old meters before the Smart Meter was installed, and how often they now read their Smart Meter for information on gas or electricity. The results are summarised in Summary Table 5A (2007) and 5B (2008) below. There were no significant differences between the *Report* and *Meter-only* samples before they got their Smart Meters (so these data are not split here) but there are afterwards:

SUMMARY TABLE 5A (2007) FREQUENCY OF READING FORMER METERS AND NEW SMART METER	**Old Gas meter**	**Old Electricity meter**	***Reports:* SM for Gas**	***Reports:* SM for Electricity**	***Meter-only:* SM for Gas**	***Meter-only:* SM for Electric.**
Base: All Trialists	95 100%	95 100%	68 100%	68 100%	27 100%	27 100%
No. who formerly read/now read each meter for each fuel……..:	%	%	%	%	%	%
Never	7	6	26	25	48	48
Only when estimated bills come	60	57	13	15	11	11
Every quarter/every 3 months	22	23	4	4	4	4
More than once a quarter	1	1	12	12	-	4
About once a month	-	1	15	12	19	19
About once a week	2	2	7	6	4	-
More often than once a week	-	-	7	7	7	4
Don't know	2	1	6	7	4	4
Other answers	3	3	3	4	4	4

SUMMARY TABLE 5B (2008) FREQUENCY OF READING FORMER METERS AND NEW SMART METER	**Old Gas meter**	**Old Electricity meter**	***Reports:* SM for Gas**	***Reports:* SM for Electricity**	***Meter-only:* SM for Gas**	***Meter-only:* SM for Electric.**
Base: All Trialists	94 100%	94 100%	65 100%	65 100%	29 100%	29 100%
No. who formerly read/now read each meter for each fuel……..:	%	%	%	%	%	%
Never	18	17	31	29	38	34
Once/twice a year	5	5	2	2	11	11
When bills/estimates/inaccurate bills/requests to read it come	38	38	5	5	7	10
Every quarter/every 3 months	29	30	15	15	7	7
More than once a quarter	1	1	3	5	-	-
About once/twice a month	-	-	14	14	14	14
About once a week	1	1	6	6	3	3
More often than once a week	-	-	3	3	7	7
Less now than when we first got it	-	-	9	9	14	14
Other answers/occasionally/DK	7	8	12	12	-	-

In 2007 we concluded from the data in Table 5A (above) that "before getting a Smart Meter most people only used to read their gas or electricity meters if they received an estimated bill, or to check the bill was right every quarter. Fewer than one in twenty households (4%) read their meters more often than this, but only 6% *never* looked at their meters. Once the Smart Meters were installed patterns of households reading their own meters changed in two ways:

1. More people now *never* look at their Smart Meters (feeling perhaps that they do not need to as the data are sent automatically to EDF). Almost half (48%) of those just getting a Smart Meter now never look at it, but of those also getting HelpCo support only about 25% *never* look at it.
2. But some people now look at their Smart Meter slightly *more often* than they did before – i.e. more than once a quarter, or even once a week or more often. Around 41% of those also getting HelpCo support now look at their Smart Meter more than once a quarter, as do about 33% of those who just received a Smart Meter."

"These results suggest that the introduction of Smart Meters into some homes can lead to a reduction in customers' own meter reading, with more people just leaving the Smart Meter to do its own thing and send the data to EDF Energy, and this was after all the main attraction of the Smart Meter for many Trialists. But in other homes (perhaps 33% to 41%) it can encourage more frequent use of the meter, but extra support (e.g. from HelpCo) does seem to play an important role in encouraging more frequent meter reading, and we conclude that more such encouragement is needed for maximum benefit to be gained from Smart Meters."

The latest data from the 2008 survey (see Summary Table 5B above) suggest that slightly more trialists (17%/18%) now think that they *never* used to look at their old meters, but most feel they did look at them at quarterly when bills or estimated bills arrived (as we found in 2007, although the pattern of responses differs slightly, probably due to the use of a telephone interview rather than a self-completion questionnaire).

What the latest data suggest about patterns of use of the new Smart Meters broadly confirms what we concluded in 2007, but with some subtle underlying trends. Although more people still *never* look at their Smart Meters (compared to their former meters) we find that slightly *more* of those who have been getting HelpCo Reports are now *never* looking at their Smart Meter (perhaps relying more on the reports for information) whereas slightly *fewer* unsupported households now *never* look at their Smart Meter compared to the situation in 2007. This is corroborated by the numbers in both samples who say they now look at their Smart Meter less often than when they first had it.

But there are now rather fewer households in either group who look at their Smart Meters more often than once a quarter – around 27% of the supported sample (who get HelpCo Reports) and about 23% of the unsupported sample (who only got a Smart Meter and no reports). This decline in the numbers who look at their Smart Meters more frequently is worrying, and suggests that this model of meter is not user-friendly enough to encourage increased use an energy monitoring tool. (Some of the quotes from the Phase 5 Survey of Drop-outs also support this view – see page 41).

(See also SNAP Tables 9 and 10)

Frequency of reading Smart Meters depending on their location

As in 2007, we have again analysed these data by the location of the Smart Meter (see SNAP Tables 10A and 10B and Summary Table 5C, below). These again show that Trialists are five times more likely to read their Smart Meter more often than once a quarter when it is sited in the kitchen or hall than they are if it is in the cellar or under the stairs; around 40% of the more visible meters are read more often than quarterly.

SUMMARY TABLE 5C (2008) FREQUENCY OF READING SMART METERS – BY LOCATION	**Total**	***SM in Kitchen or Hall***	***SM in Cellar or under Stairs***
Base: All Trialists	94 100%	54 100%	40 100%
No. who now read their Smart Meter:	%	%	%
For GAS:			
Never	33	26	43
On Estimates/Quarterly	15	13	18
More often than Quarterly	26	39	8
Other answers	27	22	33
For ELECTRICITY:			
Never	31	26	38
On Estimates/Quarterly	15	13	18
More often than Quarterly	27	41	8
Other answers	26	21	38

(See also SNAP Tables 9, 10,10A and 10B)

Information read from Smart Meters

Based on the data from 2007 (shown in Summary Table 6A, below) we concluded in our 2007 report that many Trialists did *not* interrogate their Smart Meters at all initially: some 37% of the larger sample getting HelpCo reports claimed to have read *none* of the possible types of data on their Smart Meter, and among those getting the Smart Meter only this rose to 59%. These figures also suggested that the 2007 data for "never" reading the Smart Meter in Table 5A (above) might have been an understatement.

There also appeared (in 2007) to be limited understanding of what data can be read on a Smart Meter. To test this we deliberately left in this question two types of reading which are *not* in fact available for gas – *current energy consumption* and *current cost of energy consumption*. That these figures are not available is made clear in a note on page 5 of the *User Guide.* Nevertheless many in each sample claimed to have read these data on their Smart Meter (although some might have misunderstood these terms even though they are in the *Guide*).

In 2007 we felt that the best we could conclude was that only about 63% of the HelpCo supported sample probably read *any data* on their Smart Meter, and that only 41% of the meter-only sample probably read any data at all. Exactly what data they read was doubtful, but it looked as if most people claiming to read data looked at only one or two types of data for each fuel, more commonly their *total energy consumption* and their *previous month's consumption.* We suspected that this was because many people had not really got to grips with how to read their Smart Meter, even if they were interested in doing so, and we pointed out factual errors in the Guide and showed how it could be made more user-friendly.

Notwithstanding these uncertainties, Summary Table 6A shows that those who also received HelpCo reports had already become (by spring 2007) significantly more involved in using their Smart Meters in some of the ways intended. This suggested that more encouragement was required to get people to use Smart Meters pro-actively.

SUMMARY TABLE 6A (2007) INFORMATION READ FROM SMART METERS	***Reports:* SM for Gas**	***Reports:* SM for Electricity**	***Meter-only:* SM for Gas**	***Meter-only:* SM for Electric.**
Base: All Trialists	68=100%	68=100%	27=100%	27=100%
No. who read this information on their Smart Meter:	%	%	%	%
Current energy consumption	*(41)**	40	*(19)**	22
Current cost of energy consumption	*(22)**	25	*(19)**	19
Previous day's consumption	13	13	4	-
Previous week's consumption	16	16	4	4
Previous month's consumption	22	22	7	7
Total energy consumption	26	28	11	11
Price per unit (Rate Data)	13	13	7	7
Others	-	1	-	-
NONE OF THESE	37	38	63	59

Note: *( )** It is ***not*** possible to view current gas consumption or cost (See also SNAP Table11)

SUMMARY TABLE 6B (2008) INFORMATION READ FROM SMART METERS	***Reports:* SM for Gas**	***Reports:* SM for Electricity**	***Meter-only:* SM for Gas**	***Meter-only:* SM for Electric.**
Base: All Trialists	68=100%	68=100%	27=100%	27=100%
No. who read this information on their Smart Meter:	%	%	%	%
Current energy consumption	*(29)**	34	*(10)**	17
Current cost of energy consumption	*(23)**	23	*(10)**	17
Previous day's consumption	20	20	14	17
Previous week's consumption	22	22	10	14
Previous month's consumption	25	25	10	21
Total energy consumption	38	38	48	59
Price per unit (Rate Data)	9	12	14	10
Others	3	3	14	14
NONE OF THESE	34	32	31	24

Note: *( )** It is ***not*** possible to view current gas consumption or cost (See also SNAP Table11)

Now (in May, 2008) this situation has improved slightly, and it seems (from the data in Summary Table 6B, above) that rather fewer trialists now look at *none* of the types of data available, and that significantly more are now looking at total energy consumption for both gas and electricity. This is particularly so for those trialists who do not receive any support: the numbers looking at total consumption for both gas and especially electricity have increased four or fivefold in a year. All this suggests that it does take time (e.g. over 12 to 18 months) for many people to get used to a Smart Meter and to begin to make real use of it. On the other hand, the very fact that they received a postal questionnaire in 2007 asking about these habits may have encouraged some to explore further possible uses for their Smart Meter. Whatever the reason, over two thirds of Smart Meter users now access some information on their display (most often their "total consumption") and those who also receive HelpCo reports access a wider range of information.

(See also SNAP Table 11)

How easy to use is the Smart Meter display

In 2007 we found that just over one third of each sample found the Smart Meter display either *quite easy* or *very easy* to use. Almost as many Trialists found it *quite difficult* or *very difficult* to use – especially those who received only the Smart Meter or who had not read the *User Guide* (26% of both groups found it *very difficult*). There were also quite a few people who had not yet tried to use the Smart Meter display by June, 2007.

The reasons why people (at least initially) found the display "difficult" are shown in Summary Table 7A (below). The more common reasons were that some Trialists had not been shown how to use the display unit, they found the process too complicated ("like Code"), and the display was not intuitive – it needed to be menu driven; a few claimed they had not been given any *User Guide*, and a few found their displays too hard to read in dark locations without a torch.

SUMMARY TABLE 7A (2007) HOW EASY TO USE IS THE SMART METER DISPLAY	***Get HelpCo Reports***	***Got Smart Meter only***	**Have read *User Guide***	**Have not read *User Guide****
Base: All Trialists	68 100%	27 100%	64 100%	27 100%
No. who say they found Smart Meter display unit….. to use:	%	%	%	%
Very easy	6	15	11	4
Quite easy	29	22	31	22
Neither easy nor difficult	16	4	16	7
Quite difficult	21	7	19	15
Very difficult	9	26	8	26
Don't know/not tried to use it yet	18	26	14	26
Base: All who found Display "Difficult":	20	9	17	11
No. who gave their reasons as:	No.	No.	No.	No.
Don't understand display/never explained to me	6	5	3	7
Complicated/always need Guide/like Code	4	-	4	-
Display too basic/not intuitive/needs menu	5	-	3	2
Don't understand some calcs/rate incorrect	2	1	3	-
Guide hard to understand/confusing/inad. info.	-	3	3	-
Not left any instructions/have no Guide	2	1	-	2
Difficult to see in dark cupboard/needs torch	2	2	2	2
Read out unstable/figures change/not working	-	1	-	1
Gas in kWh not Units	2	-	1	-
Makes noises/could not stop/EDF can't help	1	-	1	-
Don't have time to look at info it can produce	1	-	-	1
Not given instructions and angry about trial	-	1	-	1

Note: * 4 Trialists certain they had never received a Guide were omitted from this analysis.

By May, 2008 it seems that rather more trialists had come to terms with using the Smart Meter display unit, and now felt that it was either "very easy" or "quite easy" to use. But there still remain substantial minorities in both the supported and unsupported samples who either find it "quite difficult" or "very difficult" to use, or who have still not tried to use it at all. There are also some signs that the unsupported group is now more willing to have a go and learn how to use it, while a few of the supported group have become even more reluctant to try it or find it even harder to use than they did initially. And over half of those who have not read the *User Guide* have still not tried to use it (see Summary Table 7B, above).

The main reasons why some people find the Smart Meter difficult to use continue (in 2008) to be broadly those already identified in the 2007 survey: they had not been shown how to use it;

it was too complicated, hard to understand, and you needed the Guide to use it; or it was in a dark cupboard and hard to read even with a torch.

SUMMARY TABLE 7B (2008) **HOW EASY TO USE IS THE SMART METER DISPLAY**	***Get HelpCo Reports***	***Got Smart Meter only***	**Have read *User Guide***	**Have not read *User Guide****
Base: All Trialists	65 100%	29 100%	72 100%	15 100%
No. who say they found Smart Meter display unit….. to use:	%	%	%	%
Very easy	23	14	22	20
Quite easy	22	34	32	7
Neither easy nor difficult	11	7	10	7
Quite difficult	9	21	14	7
Very difficult	17	7	15	7
Don't know/not tried to use it yet	18	17	7	53
Base: All who found Display "Difficult":	17	8	21	2
No. who gave their reasons as:	No.	No.	No.	No.
Don't understand display/never explained to me	3	3	4	1
Complicated/always need Guide/like Code	5	-	5	-
Don't understand some calcs/rate incorrect	-	2	2	-
Difficult to see in dark cupboard/needs torch	2	3	5	-
Read out unstable/figures change/not working	-	1	1	-
Don't have time to look at info it can produce	2	-	1	1
Don't understand what to do/difficult to use	4	1	5	-
Giving incorrect information	2	-	2	-
Other answers	5	2	4	-

Note: * 5 Trialists certain they had never received a Guide were omitted from this analysis.

In summary, over half (54%) of those who have read the *User Guide* now find their Smart Meter "quite easy" or "very easy" to use (up from 42% a year ago). But the proportion finding it "quite difficult" or "very difficult" has remained almost 30%.

(See also SNAP Tables 12 and 13)

Why Smart Meter displays are not used more often

The two main reasons which emerged in the 2007 survey as to why people didn't use their Smart Meter display more often were that they *don't see any point in using it more than they do*, or that they *don't know how to because it was never explained to them*. This suggests that there is i) an urgent need to communicate the benefits to be gained from knowing more about one's own fuel consumption patterns, and ii) a real need either to demonstrate and explain in person the workings of this quite complex meter to new users, or to make the display much more intuitive and self-explanatory (i.e. menu-driven). (See Summary Table 8A below.)

SUMMARY 8A (2007) **WHY THE SMART METER DISPLAYS ARE NOT USED MORE OFTEN**	***Get HelpCo Reports***	***Got Smart Meter only***	**Have read *User Guide***	**Have not read *User Guide***
Base: All Trialists	68 100%	27 100%	64 100%	27 100%
No. who say they don't use Smart Meter display unit more often because:	%	%	%	%
Don't know how to/never explained to me	26	33	19	48
Too complicated/difficult to use	9	19	8	22
Don't see any point in using it more than I do	31	22	39	7
Find User Guide hard to follow	7	7	8	7
SM hard to access/in cupboard/cellar/und. stairs	7	4	6	7
Other reasons	25	4	14	26
No particular reason	13	19	17	11

In the latest 2008 survey we found a wider range of reasons for not using the Smart Meter display more often. There are some similarities – *don't see any point in using it more than I do* and *too complicated/difficult to use* as *it was never explained to me* – but there are other growing reasons (perhaps connected) that using it is *too time consuming* and they are *too busy*, and that access is difficult because of where it is sited in a cupboard, cellar or below stairs. There are also signs of *disinterest* and *scepticism: I'm not interested, reading it won't change my behaviour, I track my consumption by the bills,* and *I don't think it will help save money.* All these responses suggest that trialists have not been adequately educated about what the Smart Meter could do for them and how they need to use it as a tool to help them.

(See also SNAP Table 14)

SUMMARY 8B (2008) **WHY THE SMART METER DISPLAYS ARE NOT USED MORE OFTEN**	***Get HelpCo Reports***	***Got Smart Meter only***	**Have read *User Guide***	**Have not read *User Guide***
Base: All Trialists looking at SM less often than once a week:	63 100%	27 100%	68 100%	15 100%
No. who say they don't use Smart Meter display unit more often because:	%	%	%	%
Don't know how to/never explained to me	6	7	3	13
Too complicated/difficult to use	14	11	13	7
Don't see any point in using it more than I do	13	15	18	-
Find User Guide hard to follow	3	-	3	-
SM hard to access/in cupboard/cellar/und. stairs	6	15	10	7
Too busy/time consuming	19	7	13	33
Not interested	8	7	9	7
Can't see it/poor eyesight	2	4	-	13
Because EDF read it for me	2	4	1	-
Reading it won't change behaviour/conserving	8	11	12	-
Bills OK/track consumption by bills	5	11	6	7
Don't think it will help save money	-	4	1	-
Other reasons/DK	11	19	16	7
No particular reason	16	4	13	13

The *Smart Meter User Guide* – reading and understanding

In the 2007 survey we found that only two thirds of our Trialists had received and read the *Smart Meter User Guide*. Over a quarter had received it but not read it, and 7% said they had never received a *User Guide*. Of all those who had read the *Guide* over half found it *very easy* (11%) or *quite easy* (41%) to understand, but amongst those receiving a Smart Meter only over half found the Guide *quite difficult* (24%) or even *very difficult* (29%) to follow. This reinforces our finding from the earlier qualitative phase of this research that the User Guide should be improved to heighten understanding.

By the time of the 2008 survey this situation seems to have improved: more Trialists have now read the *User Guide*, and more (21%) are finding it "very easy" to understand. But there is still a substantial minority who continue to find it "quite difficult" (10%) or even "very difficult" (8%) to understand. (Remember these figures refer to the *Guide* and not to the display which is covered in Tables 7A and7B, above.)

SUMMARY TABLE 9 READING, AND UNDERSTANDING THE *SMART METER USER GUIDE*	***2007***			***2008***		
	Total	***Get HelpCo Reports***	***Got SM only***	**Total**	***Get HelpCo Reports***	***Got SM only***
Base: All Trialists	95 100%	68 100%	27 100%	94 100%	65 %	29 100%
Reading the *Smart Meter User Guide* No. who:	%	%	%	%	%	%
Have read the *Guide*	67	69	63	77	75	79
Have not read the *Guide*	26	22	33	16	17	14
Received no *Guide*	7	9	4	5	5	7
Base: All Reading the *SM User Guide*	64 100%	47 100%	17 100%	72 100%	49 100%	23 100%
Ease of understanding *SM User Guide:* No who found it…..to understand:	%	%	%	%	%	%
Very easy	11	9	18	21	16	30
Quite easy	41	47	24	44	51	30
Neither easy nor difficult	27	28	24	15	18	9
Quite difficult	14	9	29	10	8	13
Very difficult	6	9	-	8	4	17
Base: All NOT reading *SM User Guide*	27 100%	18 100%	9 No.	15 100%	11 No.	4 No
No. who said reason *SM Guide* not read was:	%	%	No.	%	No.	No.
Not had time/too busy/not got around to it	37	44	2	47	7	-
Guide not provided/not sure I had a Guide	15	17	1	7	-	1
Meter not working/not stable	7	6	1	-	1	-
Cannot find User Guide	4	6	-	7	-	-
Haven't needed to use meter	4	6	-	-	-	-
Only need it to refer to	4	-	1	-	-	-
Not easy to understand	4	-	1	7	1	-
Installer explained meter operation	-	-	-	13	1	1
Other reasons	-	-	-	13	1	1
Don't know	4	-	1	7	-	1

Those Trialists who have still not read their *User Guide* say that this is mainly because they are "too busy", or are not sure if they still have a Guide or even if they ever had one in the first place.

(See also SNAP Tables 15 to 17)

Further use of the *Smart Meter User Guide*

In 2007 three quarters of all Trialists in both samples still had their *User Guide*, mostly keeping it by their Smart Meter display (29%) or in the kitchen (20%) or living room (11%). A few kept it in a folder or filing cabinet with other appliance instructions. About half of all Trialists (51%) felt they would look at their *User Guide* again in future; some of those who felt they wouldn't do so find the *Guide* unhelpful or hard to understand, or wanted their Smart Meter removed, or felt the Guide was the wrong guide or had incorrect information in it.

SUMMARY TABLE 10 FURTHER USE OF THE *SMART METER USER GUIDE*	***2007***			***2008***		
	Total	***Get HelpCo Reports***	***Got SM only***	**Total**	***Get HelpCo Reports***	***Got SM only***
Base: All Trialists	95 100%	68 100%	27 100%	94 100%	65 100%	29 100%
No. who……their *Smart Meter User Guide:*	%	%	%	%	%	%
Still have it	75	75	74	80	82	76
No longer have it	5	4	7	3	2	7
Don't know	9	9	11	10	9	10
Never had a User Guide	7	9	4	5	5	7
No. who keep their *SM User Guide* in:	%	%	%	%	%	%
By Smart Meter	29	26	37	28	29	24
In kitchen	20	24	11	10	9	10
Elsewhere	13	16	4	3	2	7
In living room	11	7	19	9	8	10
Filed with other manuals/guides/papers/bills	-	-	-	13	15	7
Don't know where it is	-	-	-	18	18	17
No. who …..look at *User Guide* in future:	%	%	%	%	%	%
Yes – will look at it again	51	49	56	51	57	38
No – won't look at it again	9	12	4	11	6	21
Might do if I have time	7	6	11	15	15	14
Don't know	6	9	-	3	3	3
Other answers	1	1	-	-	-	-
Base: All who won't look at *Guide* again	9	8	1	10	4	6
No. who won't look at *Guide* because:	No.	No.	No.	No.	No.	No.
Don't understand it/no help/not useful	3	3	-	2	1	1
I/landlord wants meter removed	2	2	-	-	-	-
Seems to be wrong Guide	1	-	1	-	-	-
It was wrong about gas Units	1	1	-	-	-	-
No time	1	1	-	1	1	2
No need	-	-	-	4	2	-
Hard to follow/badly written/plastic card easier	-	-	-	2	-	2
Others	-	-	-	1	-	1
Base: All who may look at SM Guide again:	n/a	n/a	n/a	85 100%	59 100%	26 100%
No. who have received a simpler Laminated Instruction Card for their Smart Meter: Still have this Laminated Card	N/a	N/a	N/a	% 14 12	% 14 12	% 15 12

By 2008 more of the remaining and active Warm Plan Trialists (80%) felt they still had their *User Guide*, although 18% of these did not know where it was. But substantial numbers still keep their *Guide* by the Smart Meter (28%) or filed with other manuals/papers/ bills (13%). Few recall receiving (14%) or keeping (12%) the simpler laminated instruction card later distributed by EDF Energy to try to remedy problems with the *Guide*.

(See also SNAP Tables 18, 19 and 19A)

How the Smart Meter has helped Trialists

Both samples were asked whether anything that they had learned from their Smart Meter had helped them to save energy. The results for both surveys are shown below in Summary Table 11. In both years' surveys there was a slight tendency for those who also received HelpCo reports to take more action *from information learned from their Smart Meter.*

The 2007 results initially suggested that around half of all Trialists did not learn anything from their Smart Meters which encouraged them to save energy in any ways – they either ticked "not helped in any ways like this" (37%) or did not answer the question (11%).

But in 2007 around half of all Trialists felt that they had learned something from their Smart Meter which had encouraged them to do things like not leaving appliances on stand-by, turning off un-needed lights (both 27%), using more energy saving bulbs (24%), changing their behaviour to save energy (22%), or controlling their heating (19%) or hot water (11%) better. But only 3% had installed any extra energy saving measures (i.e. apart from the freebies from HelpCo). For some Trialists the main ways in which their Smart Meters were thought to have helped was by getting *more accurate* (27%) or *lower* (21%) fuel bills.

SUMMARY TABLE 11 WAYS IN WHICH THE SMART METER HELPED TRIALISTS	***2007***			***2008***		
	Total	***Get HelpCo Reports***	***Got SM only***	**Total**	***Get HelpCo Reports***	***Got SM only***
Base: All Trialists	95 100%	68 100%	27 100%	94 100%	65 100%	29 100%
No. who felt their Smart Meter helped:	%	%	%	%	%	%
In no way/no reply	47	46	52	9	9	7
Not to leave appliances on stand-by	27	32	15	48	54	34
To turn off lights not needed	27	29	22	49	60	24
To get more accurate fuel bills	27	28	26	62	65	55
To use more energy saving light bulbs	24	25	22	55	62	41
To change behaviour to save energy	22	26	11	45	51	31
To get lower fuel bills	21	21	22	44	52	24
To control their heating better	19	24	7	39	43	31
To control their hot water better	11	13	4	28	31	21
To install other energy saving measures	3	3	4	11	12	7
In other ways	2	3	-	15	11	24

In our 2008 survey we found that trialists were now ascribing more energy saving actions to the influence of the Smart Meter, and that very few felt it had helped "in no way" (9%). This may be partly due to the way each question was asked in turn on the telephone survey, but far more trialists now felt that their Smart Meter had helped them take each of the listed energy saving actions, and more felt that it had helped them get more accurate fuel bills (62%) and lower ones (44%).

When in 2007 we also analysed these results by Age to see if people of different ages were more likely to benefit, the results suggested that younger people (25-44) were slightly less likely to derive benefits from Smart Meters, although the sample sizes in each age group were really too small for this to be conclusive. This may only be true in the first year or so, as a similar analysis done in 2008 (see SNAP Table 20) suggests that after two years people aged 25-54 are more likely to change their behaviour with the help of a Smart Meter than are people aged 55 or over.

(See also SNAP Table 20)

Advice and support from HelpCo – how useful and effective this was

This section covers only those Trialists who also received the full package of support and advice from HelpCo (and not the Trialists who only received Smart Meters and no further support). Summary Table 12 (below) shows what advice these Trialists recalled, whether or not they followed it, and how useful they found it.

In the 2007 survey we found that most Trialists (85%) who received HelpCo support could recall receiving some printed information from HelpCo – 62% recalled the quarterly reports, 46% the monthly postcards, and 12% recalled getting a warning postcard. Since *all* these Trialists should have been sent at least the monthly postcards and at least one Quarterly report, these results suggested that quite a few HelpCo communications were mislaid or possibly thrown away as junk mail. We had in the past suggested that a labelled clip file was supplied to Trialists to help them save and study the information sent from HelpCo, as we felt that this would have helped retention and recall of the information sent, but we understand that this has not been done. Around a quarter of these Trialists (25%) also recalled some follow-up HelpCo advice over the telephone (18%) or through a Home Visit (7%).

By 2008 Trialists' recall of HelpCo information seems to have improved: 83% now recall their monthly postcards and 69% their quarterly reports, but since every Trialist should have received these there are clearly some communications from HelpCo which are still not registering. Slightly fewer Trialists (than in 2007) now recall any advice from HelpCo over the phone or through a home visit.

In 2007 about two thirds of Trialists who received support and advice from HelpCo seemed to have followed this in some way – mostly by being careful to turn off lights (50%) and appliances (46%), fitting more low energy bulbs (37%), or by re-programming their heating (22%) or hot water (19%). Two thirds of the recipients of HelpCo's advice found it *quite useful* (49%) or *very useful* (18%), but those few who did not follow any advice said that this was because they already knew or did all that HelpCo advised, or that they had received no advice.

By 2008 it seems that slightly *fewer* of those receiving HelpCo advice feel they are actually following it in any way – only 55% now say they follow any of it compared to 68% in 2007. Fewer trialists now feel they follow HelpCo advice by turning of unneeded lights (42%) or appliances (35%) although a few more may have fitted more low energy bulbs. This suggests either that the influence of such advice may wane over time, or that once such energy saving behaviour has been adopted in the home for a year or more it is no longer ascribed to the original source of advice. Nevertheless two thirds of households followed HelpCo advice at some stage.

Whatever the case, in 2008 marginally more trialists now feel that HelpCo's advice has been "very useful" (20%) or "quite useful" (51%), although there has also been an increase in the number feeling it is "not very useful" (17%).

Those trialists who have not followed any HelpCo advice feel this is mainly because they haven't received any or because they already did or knew about all the things advised.

SUMMARY TABLE 12 **INFORMATION AND ADVICE FROM HELPCO – HOW USEFUL IT IS**	***2007 Get HelpCo Reports***	***2008 Get HelpCo Reports***
Base: All Trialists who get HelpCo support	68=100%	65=100%
No. who recalled receiving…..from HelpCo:	%	%
Postcards (monthly)	46	83
Warning postcards	12	17
Paper (quarterly) Reports	62	69
None of these	12	6
No reply	3	-
No. who recalled other advice:	%	%
Over the Telephone	18	14
In a Home Visit	7	3
Neither	65	77
Don't remember	10	2
No. who followed any HelpCo advice by:	%	%
Setting programmer to turn off heating when not needed	22	23
Setting programmer to turn off hot water when not needed	19	18
Turning off appliances at night (not leaving on stand-by)	46	35
Fitting low energy bulbs in more lights	37	40
Turning off lights not needed	50	42
Any other advice	16	15
NONE of HelpCo's advice followed	24	37
Don't remember	4	2
No reply	4	6
No. who found HelpCo information/advice:	%	%
Very useful	18	20
Quiet useful	49	51
Not very useful	10	17
Not at all useful	4	2
Don't know/not read it	12	5
No reply	7	6
Base: Trialists who followed NO HelpCo advice/info:	16	24
No. who followed NO HelpCo advice/information because:	No.	No.
No advice received from HelpCo	5	11
Already knew all this/already did all this	9	8
Not alerted to any NEW measures by HelpCo	2	-
Other answers	-	5

In 2007 we did also ask these Trialists why they found HelpCo advice useful or not, but almost half of them failed to answer this question then. The replies from those who did answer suggested that some people did find the comparisons useful (7%), that the information kept energy saving in their minds (7%), and that they found it useful to know what they were using (4%). Those who found the information less useful sometimes mentioned that they were previously aware of all these energy saving methods (10%).

This question was repeated in the 2008 telephone survey with more success (see SNAP Table 24). The 46 trialists who found HelpCo's advice "very useful" or "quite useful" mainly mentioned that this was because:

It keeps energy saving in our minds	28%
Useful to know how much energy used	17%
Good to know we are doing well/on track	11%
Cumulative cost/usage/year on year comparison	11%
Useful to know how much it is costing you	9%
Comparison with neighbours/similar houses useful	7%

Encourages me to do more	4%

The main reasons why 12 trialists found HelpCo's advice "not very useful" or "not at all useful" were:

Good to know we are doing well/on track	3
Don't understand any of it/difficult to understand/presentation unclear	4
Distrust reports/get different figures on bills	1
Comparisons meaningless/too many factors	1
Aware of all energy saving methods before	1
Had no advice/received nothing	1

(See also SNAP Tables 21 to 25)

Usefulness of and preferences for "Targets"

Up to June 2007 Trialists receiving HelpCo support were set Targets for energy consumption in their homes based on the average consumption for similar homes to theirs. In the first qualitative phase of research (early 2007) we found that this was not universally popular. Later on (when a full year's consumption data became available for all Trialists' homes) HelpCo planned to set targets based on the previous year's energy consumption. This should have been much more popular, as the 2007 results below suggest: 59% of Trialists would prefer comparisons with their own previous consumption, although the other two options also received some support.

Meanwhile there was (in 2007) some ambivalence about the targets which had been set: almost a quarter of these Trialists (24%) either did not notice any targets or felt none had been set, and another 25% felt them *not very useful* or even *not at all useful*. But almost half (46%) felt they were *quite useful* or *very useful*. In terms of the units in which future targets should be set, more Trialists (60%) preferred them set in "£ spent on energy", although some supported kWh (28%) or Kgs CO2 (25%).

By the time of the 2008 survey there were still 15% of trialists being sent HelpCo reports who had not noticed any "targets" at all, but more of these supported trialists were now finding the targets given at least "quite useful" (40%). Support for comparisons with previous year's energy consumption had grown by 2008 till over two thirds of this sample (68%) would like targets set in these terms. Support for comparisons with similar homes had dropped slightly (to 25%), while support for targets based on calculations had increased (to 43%). "£ spent on energy" remained the favourite way of setting targets (for 62%), while both kWh (34%) and kgs CO2 (37%) are now more widely supported than they were last year.

SUMMARY TABLE 13 **USEFULNESS AND PREFERENCES FOR TARGETS**	***2007*** ***Get HelpCo Reports***	***2008*** ***Get HelpCo Reports***
Base: All Trialists who get HelpCo support	68=100%	65=100%
No. who found the Targets set by HelpCo:	%	%
Very useful	18	17
Quite useful	28	40
Not very useful	21	15
Not at all useful	4	6
Did not notice them	12	15
No targets were given	12	-
No. who would like Targets to be set through:	%	%
Comparisons with our previous year's energy consumption	59	68
Comparisons with similar homes nearby	29	25
By calculated target based on home's age/insulation etc.	34	43
Don't know/no preference	22	11
No. who would prefer Targets to be set in terms of:	%	%
£ spent on energy	60	62
kWh (kilowatt hours) of energy used	28	34
Kgs (Kilograms) of CO2 emissions	25	37
Some other units	3	3
Don't know/no preference	15	11

(See also SNAP Table 26)

Preferences for other help from HelpCo

By running this Smart Metering Trial, it had already become apparent to HelpCo by 2007 that some of the problems which they were spotting (through careful analysis of Trialists' daily and weekly fuel consumption data) really needed quite assertive intervention in order to help householders overcome some of the problems they have with homes which are hard to heat or with heating systems which are difficult to control.

The 2007 results from this survey suggested that for most Trialists a higher level of intervention from HelpCo would be welcomed: 50% would like information on grants and subsidy schemes; 40% would like HelpCo to arrange improvements; and 28% would like a Home Visit from an Energy Adviser. The least popular measure was simply more information and advice over the phone (18%). But further intervention does need to be done sensitively, as about one in five (19%) of these Trialists feel they do not want these forms of extra help.

In 2008 the telephone survey showed a similar pattern of responses: over half the sample (54%) would now like information on grants and subsidy schemes; improvements arranged by HelpCo would be popular (40%); and home visits to give advice would be welcomed by one in three of these households (32%).

SUMMARY TABLE 14 **PREFERENCES FOR OTHER FORMS OF SUPPORT FROM HELPCO**	***2007*** ***Get HelpCo Reports***	***2008*** ***Get HelpCo Reports***
Base: All Trialists who get HelpCo support	68=100%	65=100%
No. who would like…..from HelpCo:	%	%
More advice and information over the phone	18	11
Energy Adviser to visit home and give advice	28	32
Information on any grants or subsidy schemes	50	54
Energy efficiency improvements arranged by HelpCo	40	40
Any other ideas	12	9
None of these	19	14

(See also SNAP Table 27)

Perceived effects on fuel bills and meter readings since Smart Meters were installed

The installation of Smart Meters was supposed to help people cut their fuel bills, eliminate further calls from meter readers and improve billing accuracy, since readings were transmitted daily to PRI/EDF Energy. In practice by 2007 there was by then little evidence that any of these things were happening in either sample on the sort of scale that had been hoped.

SUMMARY TABLE 15 SMART METERS' EFFECTS ON FUEL BILLS AND METER READINGS	***2007***			***2008***		
	Total	***Get HelpCo Reports***	***Got SM only***	**Total**	***Get HelpCo Reports***	***Got SM only***
Base: All Trialists	95 100%	68 100%	27 100%	94 100%	65 100%	29 100%
No. who feel their Fuel Bills are:	%	%	%	%	%	%
Lower than last year/2 years ago	20	25	7	33	38	21
About the same	33	32	33	20	22	17
Higher than last year/2 years ago	19	16	26	33	31	38
Don't know	22	19	30	13	9	21
Other answers	6	7	4	-	-	-
No. who noticed….about Meter Readers:	%	%	%	%	%	%
Meter Reader has stopped calling	21	21	22	54	48	69
Meter Reader still calls	59	63	48	43	51	24
Don't know/too early to tell	18	13	30	2	2	3
No. who feel their Fuel Bills are now:	%	%	%	%	%	%
More accurate	27	32	15	62	58	69
Less accurate	16	16	15	6	6	7
About the same as before	19	19	19	19	23	10
Don't know/too early to tell	32	28	41	12	12	10
Other answers	3	3	4	-	-	-
No. whose last Energy Bill was:	%	%	%	%	%	%
Actual	34	37	26	64	58	76
Estimated	39	37	44	20	23	14
Don't know	19	18	22	15	18	7
Other	6	6	7	-	-	-
No. who pay for Gas:	%	%	%	%	%	%
On receipt of Quarterly Bill	32	29	37	26	20	38
By Monthly Direct Debit	59	59	59	66	71	55
In other ways	5	6	4	5	6	3
No. who pay for Electricity:	%	%	%	%	%	%
On receipt of Quarterly Bill	29	28	33	26	22	34
By Monthly Direct Debit	60	60	59	67	71	59
In other ways	5	6	4	5	6	3

Although 20% of Smart Meter Trialists did feel (in 2007) that their fuel bills were now lower than at this time a year before, this is counterbalanced by 19% who felt their bills were now higher. Most felt their bills were about the same (33%) or didn't know yet (22%). Very few of those receiving only Smart Meters now felt their fuel bills were lower (7%). We concluded then that to some extent this phenomenon might have been due to the high number of estimated bills still being received (39% of the latest bills were "estimated") or to the high number of Trialists paying by Monthly Direct debit (around 60%).

In 2007 most Trialists (59%) reported that a meter reader still called to read their meter, and their views on this (see SNAP Table 30) ranged from *annoyance* (27%), through feeling *it's pointless* (25%), to being *not bothered* (11%). Some Trialists had tried to explain the Smart Meter to meter readers, who seemed to know nothing about them, and they ended up feeling that *one hand (at EDF Energy) does not know what the other hand is doing* (5%).

On the question of billing accuracy by 2007 there might on balance have been a slight improvement since Smart Meters were installed; 27% felt there has been, but 16% felt bills were now less accurate. More (32%) felt it was too early to tell or that the accuracy was about the same as before (19%).

By 2008 this situation had improved very significantly, with 62% now believing their bills are "more accurate" than before, and many more are indeed now getting actual (64%) rather than estimated bills (20%). More trialists now feel they know whether their fuel bills have gone up or down since they have had a Smart Meter: one third feel their bills are now lower (33%) and one third think they are higher (33%). One fifth (20%) think their fuel bills about the same and 13% don't know. But among those also getting HelpCo reports, more feel their fuel bills are now lower (38%) while among those who only received a Smart Meter more felt their fuel bills had gone up (38%).

By 2008 households were still getting more calls from meter readers (43%) compared to statutory requirements, though this was more common among those who also get HelpCo reports (51%) than among those with only a Smart Meter (24%). Equal numbers of trialists now seen *annoyed* (28%) or *unconcerned* (28%) that meter readers still call, but a few more people do feel it is *unnecessary/not clever* (10%), *pointless* (13%), or even feel *frustrated* (10%) because the meter readers don't understand Smart Meters (see SNAP Table 30).

The trend to direct debit payments for fuel has continued since 2007, and two thirds of our trialist households now pay for both gas and electricity in this way (which may make it harder for them to track actual consumption through their bills).

As we see later when Historical and Recent fuel consumption records are compared, the trend to direct debit does seem to have made it harder for people to be sure of real changes in their fuel consumption patterns.

(See also SNAP Tables 28, 30 and 31)

Why fuel bills were thought to be lower or higher than before

In 2007 those few Trialists (19) who had noticed lower fuel bills felt that this was mainly because they were *more aware and careful through HelpCo advice* (32%), or because they had *applied energy saving measures/fitted low energy lamps* (16%), or because their Smart Meter had made them more aware (5%). A few felt their lower bills were due to a milder winter (11%), being away a lot (5%) or because they had lost their partner and were now the sole occupier (5%). Those with higher bills tended to ascribe this to higher fuel prices (17%), or to estimated bills (11%), or to the fact that their Smart Meter did not work or that they didn't trust EDF Energy (both 6%). A few had just noted that their bills were higher (33%) or lower (11%) and didn't really know why, and over a quarter of those who should have answered this question did not.

SUMMARY TABLE 16 **WHY FUEL BILLS THOUGHT TO BE LOWER OR HIGHER NOW**	***2007***		***2008***	
	Lower bills now	***Higher bills now***	***Lower bills now***	***Higher bills now***
Base: All Trialists	19 100%	18 100%	31 100%	31 100%
No. who feel their Fuel Bills are lower/higher because:	%	%	%	%
Applied energy savings/fitted low energy lamps	16	-	39	-
More aware/careful though HelpCo advice	32	-	45	-
SM encouraged me to be more aware	5	-	10	-
Warmer weather, so less heating needed	11	-	-	-
Because I am away often	5	-	-	-
Increased usage/at home more	-	-	-	16
Because I am now sole occupier	5	-	3	-
Bills just are higher/lower/by the amounts I pay	11	33	10	3
Higher fuel prices/inflation/political pressure	-	17	-	74
Because of estimated bills	-	11	-	6
Because Smart Meter does not work	-	6	-	-
Don't trust Smart Meter or EDF Energy	-	6	-	-
Other answers	-	-	6	-
No reply/Don't know	26	28	3	6

By 2008 more of those who thought they now had lower bills ascribed this to following HelpCo advice (45%) or to the energy saving actions/low energy lamps they had fitted (39%) One in ten felt their Smart Meter had encouraged them to be more aware.

Those who felt the now had higher bills than a couple of years ago ascribed this mainly to higher fuel prices/inflation/political pressure (74%) or to increased usage (of fuel) because they were now at home more (16%). Of course fuel prices have risen over the past few months, and this is reflected in the numbers now citing this reason for the apparent increases in their fuel bills.

(See also SNAP Table 29)

Overall views on Smart Meters

In both the 2007 and 2008 surveys we explored Trialists' overall views on their Smart Meters by asking them how likely they would be to recommend them to a friend and why/why not, what they liked and disliked most about them, and for any other comments they had on the Smart Meter, the advice provided by HelpCo, or any other aspects of this trial.

In 2007 we found that Trialists were split on whether or not they would recommend Smart Meters to a friend. After less than a year's trial over half would be *very likely* (25%) or *quite likely* (32%) to do so, and they were slightly more likely to recommend Smart Meters if they had also had HelpCo support. They were significantly more likely to do so if they had already noted that their fuel bills were lower. This is clear from Summary Table 17A, below, where Average Scores have been calculated out of 100 for each sub-group.

SUMMARY TABLE 17A - 2007 LIKELIHOOD OF RECOMMENDING SM TO A FRIEND	**ALL**	***Get HelpCo Reports***	***Got Smart Meter only***	**Fuel bills Lower**	**Fuel bills about same**	**Fuel bills higher**	**Don't know if bills changed**
Base: All Trialists:	95 100%	68 100%	27 100%	19 100%	31 100%	18 100%	21 100%
No. who felt they were…. to recommend SM to a friend:	%	%	%	%	%	%	%
Very likely (100)	25	24	30	47	26	6	29
Quite likely (67)	32	34	22	37	39	17	24
Not very likely (33)	16	18	11	11	19	22	14
Very unlikely (0)	12	9	19	-	3	44	10
Don't know	14	12	19	5	10	11	24
AV. SCORE (max 100)	***61***	***62***	***59***	***80***	***67***	***27***	***65***

In 2008 we find that attitudes have shifted in favour of Smart Meters (from 25% very likely to recommend them to a friend to 50% - see Summary Table 17B, below) at least among those remaining in the trial, although we must remember that quite a number of households had dropped out by this time and so are not covered in this part of the research in 2008.

SUMMARY TABLE 17B - 2008 LIKELIHOOD OF RECOMMENDING SM TO A FRIEND	**ALL**	***Get HelpCo Reports***	***Got Smart Meter only***	**Fuel bills Lower**	**Fuel bills about same**	**Fuel bills higher**	**Don't know if bills changed**
Base: All Trialists:	94 100%	65 100%	29 100%	31 100%	19 100%	31 100%	12 100%
No. who felt they were…. to recommend SM to a friend:	%	%	%	%	%	%	%
Very likely (100)	50	55	38	61	42	42	58
Quite likely (67)	19	17	24	23	26	13	17
Not very likely (33)	17	17	17	6	26	19	25
Very unlikely (0)	7	6	10	-	-	23	-
Don't know/no reply	6	5	10	10	5	3	-
AV. SCORE (max 100)	***73***	***76***	***67***	***87***	***72***	***59***	***78***

By 2008 half of the remaining trialists (50%) are "very likely" to recommend Smart Meters to a friend, and another fifth (19%) are "quite likely" to do so; so the average "likelihood of recommending" score has risen from 61 in 2007 to 73 in 2008. Once again those particularly likely to recommend Smart Meters to friends were those who had already noted lower fuel bills (scoring 87), and those who receive HelpCo reports (score of 76).

But once again (as in 2007) those who have found their fuel bills to be higher since they had a Smart Meter are more unlikely to recommend Smart Meters to a friend (score of 59).

(See also SNAP Table 32)

Why some people would or would not recommend Smart Meters to a friend

The reasons why Trialists feel they would or would not recommend Smart Meters to a friend are shown in full in Summary Tables 18A and 18B (below).

In 2007 the main reasons why some Trialists felt they would be *very likely* or *quite likely* to recommend Smart Meters to a friend were that they themselves found their Smart Meter helpful and useful for monitoring energy usage, that it did help them cut their energy use and save money (and carbon emissions), that they got more accurate bills (not estimates) and that no meter readers needed to call.

But in 2007 where Trialists thought they would be *not very likely* or *very unlikely* to recommend Smart Meters to a friend, they had encountered a range of irritating problems: e.g. estimated bills, higher bills, meter readers calling still, problems with EDF Energy, noisy meters and other teething problems.

SUMMARY TABLE 18A - 2007 WHY TRIALISTS ARE LIKELY OR UNLIKELY TO RECOMMEND SMART METERS TO A FRIEND	**ALL**	***Very likely***	***Quite likely***	***Not very likely***	***Very unlikely***	***Don't know***
Base: All Trialists:	95 100%	24 100%	29 100%	15	11	13
No. who felt this way because:	%	%	%	No.	No.	No.
SM helpful/excellent/useful/monitor usage	22	33	45	-	1	-
No meter readers/no meter reading required	6	13	10	-	-	-
Accurate bills/no estimates/pay for what used	7	17	7	1	-	-
Helps cut energy use/saves money/carbon	11	38	3	-	-	-
Friends waste energy/if friends wasted energy	2	4	3	-	-	-
Some teething problems/needs improving	5	-	7	2	-	-
Not sure SM readings match bills	3	-	7	1	-	-
Still getting estimated bills	8	-	3	5	1	1
Meter not explained to me/too complicated	5	-	3	2	-	2
No benefit so far/limited benefit/no advantages	8	-	3	5	1	1
Meter reader still calls	3	-	3	1	1	-
Makes noises	2	-	-	-	1	1
Dissatisfied with EDF/problems unsolved	6	-	-	2	4	-
Getting higher bills	5	-	-	-	4	1
Not bothered	1	-	-	1	-	-
Haven't used it properly yet to know if useful	1	-	-	-	-	1
Other answers	2	4	-	-	-	1
No reply	21	21	17	-	1	6

In the latest 2008 survey we found a similar pattern of responses. The main reasons for being likely to recommend Smart Meters to a friend were that Smart Meters were useful for monitoring usage, no meter readers called, bills were now accurate with fewer arguments and hassles, and that these meters did help cut energy use and so save money and carbon emissions.

But where (in 2008) trialists were not likely to recommend Smart Meters, this again proved to be because of a wide range of irritating problems: e.g. Smart Meters seemed of little benefit, meter readers still called, bills were higher, there were problems with EDF Energy or they thought their gas might have been cut off.

SUMMARY TABLE 18B - 2008 WHY TRIALISTS ARE LIKELY OR UNLIKELY TO RECOMMEND SMART METERS TO A FRIEND	**ALL**	***Very likely***	***Quite likely***	***Not very likely***	***Very unlikely***	***Don't know***
Base: All Trialists:	94 100%	47 100%	18 100%	16 100%	7	4
No. who felt this way because:	%	%	%	%	No.	No.
SM helpful/excellent/useful/monitor usage	24	38	28	-	-	-
No meter readers calling/security aspects	17	23	22	6	-	-
Accurate bills/no estimates/pay for what used	12	21	6	-	-	-
Simple/less hassle/no arguments	6	11	6	-	-	-
Helps cut energy use/saves money/carbon	12	19	6	-	-	1
Happy with the experience/good idea	7	13	6	-	-	-
See what spend/helps budget/puts you in control	3	6	-	-	-	-
It is free	3	4	6	-	-	-
Friends waste energy/if friends wasted energy	3	4	6	6	-	-
Poor design/teething problems/needs improving	3	-	6	6	1	-
Not sure SM readings match bills	1	-	-	-	1	-
No benefit so far/limited benefit/no advantages	6	-	-	19	3	-
Meter reader still calls	2	-	-	13	-	-
Dissatisfied with EDF/problems unsolved	1	-	-	6	-	-
Getting higher bills	1	-	-	6	-	-
Not bothered	1	-	-	13	-	1
Haven't used it properly yet to know if useful	5	2	6	6	-	2
Doesn't provide more info. about energy use	1	-	-	-	1	-
Think gas might be cut off	2	-	-	13	-	-
Other answers	16	9	28	25	2	-
No reply	2	-	-	-	-	-

(See also SNAP Table 33)

What Trialists like most about their Smart Meters

In 2007 the factor most commonly mentioned as "most liked" was that one *can monitor consumption immediately and accurately* (mentioned by 22% of Trialists), but this feature was mentioned significantly more often by those also getting HelpCo support (28%) than by those who received the Smart Meter alone (7%). Other salient "likes" among those getting HelpCo support were *accurate bills/no estimated bills* (10%) and *no meter reader calling* or *meter readers should not call* (9%). But even amongst this sample one in four Trialists did not reply to this question (24%) or wrote that they did not like it much (12%); this suggested that under two thirds actually liked their Smart Meter and the associated support.

Among those who received only a Smart Meter even fewer "likes" were mentioned in 2007: 33% did not reply and 11% wrote they liked nothing. The two salient likes were the *whizzy/small/ practical/smart design of the meter* (11%) and that it *could or will save energy* (11%).

SUMMARY TABLE 19 **WHAT TRIALISTS LIKE MOST ABOUT THEIR SMART METERS**	***2007***			***2008***		
	TOTAL	***Get HelpCo Reports***	***Got SM only***	**TOTAL**	***Get HelpCo Reports***	***Got SM only***
Base: All Trialists	95 100%	68 100%	27 100%	94 100%	65 100%	29 100%
No. who like most….:	%	%	%	%	%	%
NO REPLY	26	24	33	4	3	7
Nothing/not much/don't like it	12	12	11	15	15	14
No meter reader calling/or should not call	8	9	7	13	14	10
Actual/accurate bills/no estimated bills	8	10	4	22	23	21
Design/small/practical/whizzy/smart/looks OK	8	7	11	13	9	21
Auto/remote readings/no need to read meter	3	4	-	7	6	10
Can monitor consumption immed/accurately	22	28	7	18	23	7
Could or will save energy	5	3	11	2	3	-
Easy to read/OK to read	1	-	4	2	3	-
Like Reports rather than meter readings	3	4	-	1	2	-
Not bothered/don't know	2	1	4	3	-	3
Out of sight	1	1	-	2	2	3
Simple	-	-	-	5	6	3
Encourages me to be more efficient/aware	-	-	-	2	3	-
Useful information/tips	-	-	-	4	5	3
Saves me money	-	-	-	2	2	3
Modern technology	-	-	-	2	3	-
Other answers	3	1	7	6	2	17

By the time of the 2008 survey rather more trialists could at least think of *something* they liked about their Smart Meter: getting actual bills (not estimates) was mentioned most often (by 22%), with the ability to monitor consumption a close second (18%); no meter readers calling and the Smart Meter's design came equal third (both mentioned by 13%). But there was a still a significant minority (now 15%) who felt they liked nothing about the Smart Meter.

(See also SNAP Table 34)

What Trialists dislike most about their Smart Meters

In the 2007 survey 44% of Trialists either did not respond to this question or wrote that they did not really dislike anything, but this left over half of all Trialists who did dislike something about their Smart Meter. No one aspect of the Smart Meters was disliked by more than one in ten of all those who tried it, but there were a number of niggles which were each disliked by a few people. Those aspects of the meter more commonly disliked were *still getting estimated bills* (9%), *noises/bleeping/buzzing* (7%), the *difficulty of using it/complex/unclear/confusing coding* (7%), *faulty/stuck meter/information which is gobbledygook* (5%), *high bills/overcharging by EDF* (5%), *poor communications/service at EDF* (4%), and the meter's *location/under stairs/in garage* (4%) – for those who got only the Smart Meter the problem of poor location was the main one (mentioned by 15%).

This suggested in 2007 that there were still a number of problems with the meters themselves, learning how to use them, and with EDF's meter reading and billing services which (should) support them. We recommended then that these should be addressed if at all possible. There were also other minor issues which may be worth addressing, such as re-assurances about the safety of the wireless transmitter, and checks on the rates set and units used for gas.

SUMMARY TABLE 20 WHAT TRIALISTS DISLIKE MOST ABOUT THEIR SMART METERS	***2007***			***2008***		
	TOTAL	***Get HelpCo Reports***	***Got SM only***	**TOTAL**	***Get HelpCo Reports***	***Got SM only***
Base: All Trialists	95 100%	68 100%	27 100%	94 100%	65 100%	29 100%
No. who dislike most….:	%	%	%	%	%	%
NO REPLY	22	26	37	3	2	7
Nothing in particular/not a lot/not bothered	22	22	22	57	60	52
Noisy/bleeping/buzzing	7	6	11	4	6	-
Its location/under stairs/in garage	4	-	15	4	3	7
On wall – not hidden	1	1	-	-	-	-
Faulty/stuck/info is gobbledygook	5	6	4	1	2	-
Meter reader still calls	2	3	-	2	2	3
Estimated bills still/hard to interpret bills	9	10	7	-	-	-
High bills/overcharging by EDF	5	6	4	5	5	7
Safety of transmitter/radio waves	2	3	-	1	2	-
Poor communications/service at EDF	4	6	-	-	-	-
Diff. to use/unclear/coding complex/confus	7	7	7	9	9	7
DK how to use it/no Guide received	2	1	4	3	3	3
Not as helpful as expected/no advantages	2	1	4	3	2	7
Gas reading in non-standard units	1	1	-	-	-	-
Not attractive	1	1	-	3	3	3
Gas could be/was remotely cut off	2	2	-	-	-	-
Incorrect rate set	1	1	-	-	-	-
Pressure to look at info is time consuming	1	1	-	-	-	-
Other answers	-	-	-	11	11	10

By 2008 over half the sample of trialists (57%) felt there was *nothing* they disliked about their Smart Meters, but a few still mentioned niggling problems which they disliked and which had already been evident in 2007: e.g. difficulties in using it (9%), high bills/overcharging by EDF Energy (5%), noises/bleeping (4%), the hidden location (4%), no *Guide* (3%), that it was less helpful than expected (2%), its unattractive look (2%), and the meter reader still calling (2%).

(See also SNAP Table 35)

Trialists' other comments on Smart Meters, HelpCo, and this trial

The final question on the 2007 self-completion questionnaire asked *"Do you have any other comments about your Smart Meter, the advice provided by HelpCo, or any other aspects of this trial?"* and the same question was asked in the 2008 telephone survey.

In 2007 over half of all Trialists (57%) either did not reply or wrote that they had no comment, but 43% did have some extra comments to add.

The two more common comments (in 2007) were that *EDF knowledge/communications/ service is poor* (11%) and that *we still get estimated/inaccurate bills, so the Smart Meter is pointless* (9%). These comments seemed to arise either from problems Trialists have had with meter readers who don't seem to know what a Smart Meter is and don't seem to know that they are already being read remotely, or from their attempts to contact EDF Energy to supply their own meter readings from their Smart Meter in order to correct inaccurate estimated bills.

Many of the other comments in 2007 showed that some people were far from happy with other aspects of the Smart Meter and this trial: a few again mentioned that they should have been shown how to use their Smart Meter; some had not received the free energy saving measures which had been promised at the outset; others felt something was wrong with their meter, they wanted it silenced, or even removed altogether; and others complained that meter readers still called. A few repeated that they had learned nothing new from the advice provided by HelpCo, but some others wrote that the HelpCo advice was a good idea or that HelpCo itself was *customer-friendly*.

In 2008 some 39% of trialists had no other comments to make, but a few touched on most of the same or similar problems to those identified in 2007, but the most common comment now was positive: "Smart Meters are a good idea – keep it going" (16%). The problems now mentioned by at least two trialists each are:

EDF knowledge/communications/service is poor	4%
Still getting estimated/inaccurate bills so SM pointless	4%
We were not given promised energy saving measures	4%
Like to know but never shown how to use SM	3%
Bills and meter estimates differ	3%
Meter needs to be simpler/needs simpler *Guide*	3%
I/the landlord wants SM removed/sent back	2%
I'm angry meter readers still call/EDF can't fix this	2%
We were advised badly on location/can't read display	2%
Poor/little contact from HelpCo	2%
Can I keep meter if I change address/supplier?	2%
I would like bills more frequently/monthly	2%

SUMMARY TABLE 21 **TRIALISTS' OTHER COMMENTS ABOUT SMs, HELPCO, TRIAL ETC.**	***2007***			***2008***		
	TOTAL	***Get HelpCo Reports***	***Got SM only***	**TOTAL**	***Get HelpCo Reports***	***Got SM only***
Base: All Trialists	95 100%	68 100%	27 100%	94 100%	65 100%	29 100%
No. who also commented that:	%	%	%	%	%	%
NO REPLY	45	47	41	2	2	3
None/no other comments	12	9	19	37	38	34
EDF knowledge/communication/service poor	11	9	15	4	3	7
Still estimated/inaccurate bills/so SM pointless	9	9	11	4	5	3
Reports/HelpCo advice good idea/fine	3	4	-	1	2	-
Not given promised energy saving measures	2	3	-	4	6	-
Like to know but not shown how to use SM	2	-	7	3	3	3
SM is good idea – improve and keep going	3	3	4	16	15	17
Something wrong with our Smart Meter	1	1	-	1	2	-
Am elderly/widowed/don't understand it	2	3	-	-	-	-
HelpCo are helpful/customer-friendly	1	1	-	1	2	-
Angry meter readers still call/EDF can't fix	3	3	4	2	2	3
I/landlord want SM removed/I sent it back	2	3	-	2	3	-
Don't have time to keep checking readings	1	1	-	-	-	-
How strong/persistent is wireless signal?	1	1	-	-	-	-
I am very economical anyway	1	-	4	-	-	-
Nothing has changed for the better/it's worse	1	1	-	-	-	-
SM should be silent/I want speaker removed	1	1	-	-	-	-
Advice was misleading/learned nothing new	2	2	-	-	-	-
SM won't display current balance owed	1	1	-	-	-	-
Expected graphics-figures slow to update	1	1	-	-	-	-
No one advised on recycling/want more advice	1	1	-	1	2	-
Guide too brief/gives no rationale for SM	1	1	-	-	-	-
EDF cut off gas thinking we had a PPM	1	1	-	1	2	-
Guide is confusing – different units for gas	1	1	-	1	2	-
Bills and meter estimates differ	-	-	-	3	3	3
Poor/little contact from HelpCo	-	-	-	2	-	7
Can I keep meter if I change address/supplier?	-	-	-	2	2	3
Inconsistent readings	-	-	-	1	-	3
Could check more easily before	-	-	-	1	-	3
Wouldn't recommend SM	-	-	-	1	-	3
Don't have to read meter as before	-	-	-	1	-	3
Would like more reports/tell me how doing	-	-	-	1	2	-
Confused meter readers	-	-	-	1	2	-
Higher bills (now)	-	-	-	1	2	-
Advised badly on location/can't read display	-	-	-	2	2	3
Received no Reports	-	-	-	1	-	3
Free kettle broken	-	-	-	1	-	3
Meter needs to be simpler/simpler Guide	-	-	-	3	3	3
Good/efficient installation/service	-	-	-	1	2	-
Would like historical information available	-	-	-	1	2	-
Poor installation engineers	-	-	-	1	2	-
Calculations should take account of h/h comp.	-	-	-	1	2	-
Poor co-ordination between HelpCo and EDF	-	-	-	1	2	-
Would like bills monthly/more frequently	-	-	-	2	3	-
Thinking of changing supplier	-	-	-	1	2	-
Trial very badly handled	-	-	-	1	-	3
Electricity fine/gas poor	-	-	-	1	-	3
Other answers	3	1	7	9	6	14

(See also SNAP Table 35)

Analysis of the samples

During the process of signing up and surveying suitable households to take part in these trials, HelpCo collected information about all the households selected to take part in this trial. This was done partly to help them understand the patterns of energy use which they observed from daily meter readings, and partly to ensure comparability between the two sub-samples in this research – i.e. those who received a Smart Meter and support from HelpCo, and those who received only a Smart Meter. The data collected on the two samples which took part in this 2008 survey are compared in SNAP Table 37. The comparison shows that the two samples are broadly comparable, even though there are naturally some small differences when such small numbers are involved. We do not believe that any of the differences in results observed are primarily due to any minor differences in the samples.

Most of the homes in which these Smart Meters have been fitted are flats or terraced houses, with a few detached or semi-detached homes only in the supported sample. There are slightly more owner occupiers in the supported sample (52%) than in the unsupported sample (45%).

Most homes in both samples were built from pre-1900 to 1976, with very few homes built in 1977 or later. Almost all have either one (28%) or two storeys (68%). Homes with two or three bedrooms are the commoner types in both samples, although there are more larger homes in the supported sample (4 or more bedrooms).

Around a quarter of homes (23%) are single person households, with slightly more of these in the sample not supported by HelpCo advice (31%).

Almost all homes in both samples have gas central heating, some new (65%) and some old (21%). But few have as yet any gas *condensing* boilers (5%).

Around a third of Trialists (30%) were in households with only one adult, but most households in both samples included two or more adults. Around two thirds to three quarters of both samples were comprised of households without young children.

Patterns of heating in both samples was similar, with the commonest pattern being to have the heating on 7 hours a day on weekdays, and for 16 hours at weekends. Most households in both samples heated their whole house, but this was less common in the unsupported sample.

Although we asked surveyors to collect employment details these were often too sparse to ascribe social grades reliably to our respondents. We do know that around half of each sample was employed or self-employed. Around a quarter of each sample was retired. Too little data were collected on Terminal Education Age.

In terms of ethnic diversity just over two thirds of our HelpCo-supported Trialists were white British or Irish, but only 48% of unsupported Trialists were; more of them were of African (10%) or Afro-Caribbean (7%) origin.

In terms of Age the two samples were broadly similar, mostly 35 to 64 years old, with around one in five aged 65 or over. The supported sample was 40% male and 60% female, and the unsupported sample was similar (with some "unstateds"). There is a small but similar number of disabled people within the households in each sample – 17% in the supported sample and 14% in the unsupported sample (see also SNAP Table 37).

Historical and Recent Fuel Consumption compared

As explained above in the section on Research Methods, historical fuel consumption data were kindly provided by EDF Energy for almost all households still taking part in Warm Plan. Most of these comprised at least two years of gas and electricity meter readings, ending with the final meter readings taken during the service visit when the Smart Meter was installed. Wherever possible only firm readings taken by a meter reader were used to measure actual consumption over the two years prior to the Smart Meter being fitted. Consumption figures were then averaged to provide historical 12-monthly consumption figures.

A similar process was followed to estimate average 12-monthly consumption figures since the fitting of Smart Meters, but here the monthly consumption figures were taken from HelpCo's file of Smart Meter readings (relayed by wireless from the Smart Meters themselves). 12 months data (April, 2007 to March, 2008) were available for most households, but where they were not all the available monthly readings were aggregated to provide 12-monthly estimates.

These historical and recent fuel consumption figures for each household were then appended to the interview records from the 2008 survey so that changes in fuel consumption could be analysed by any other data in the survey. The results of this analysis are shown in SNAP Tables 38 and 39, and summarised in Summary Tables 22 and 23 below.

Degree Day data have also been collected for the Thames Valley (London) area over the four years for which Historical and Recent fuel consumption data have been collated, just in case any major changes in weather patterns might account for changes in fuel consumption. The actual degree days for this region in the four years covered were as follows:

Years covered	**Total Degree Days that year**
April 2004 to March 2005	1703
April 2005 to March 2006	1869
April 2006 to March 2007	1463
April 2007 to March 2008	1653

Broadly the years 2004/5 and 2005/6 (1786 Degree Days each year on average) represent the years for which Historical data are available, and the year 2007/8 is the year for which Recent data are available (1653 Degree Days). Based on Degree Day data alone one might expect consumption of heating fuel (mainly gas) to be about 7% lower in 2007/8 than it was in 2004/5 and 2005/6, assuming all other factors are equal.

The key finding is that although some households (31%) did make significant savings after getting their Smart Meters, ***overall average fuel consumption actually increased quite markedly*** – up from an average of 14,503 kWh per household per year to 19,391 kWh p.a. – a ***34% increase in total fuel consumption.*** This increase is accounted for mainly by increases in gas consumption, which rose on average from an average of 10,215 kWh p.a. to 15,890 kWh p.a. – a 56% increase following the introduction of Smart Meters. By contrast the average overall electricity consumption fell 16% – from 4,158 kWh p.a. to 3,501 kWh p.a. – and 73% of households did have lower electricity consumption after the fitting of Smart Meters. However this was more than offset by increases in gas consumption (see Summary Table 22, below).

SUMMARY TABLE 22 **FUEL CONSUMPTION COMPARISONS** **(ANNUAL kWh)**	**TOTAL** 94	**Get HelpCo Reports** 65	**Got SM Only** 29
Average Historical Consumption (before SM):	kWh	KWh	KWh
Gas	10,215	10,100	10,494
Electricity	4,158	4,393	3,619
TOTAL	14,503	14,645	14,163
Average Recent Consumption (since SM):			
Gas	15,890	16,892	13,564
Electricity	3,501	3,693	3,055
TOTAL	19,391	20,584	16,619
% changes in Average Consumption (since SM):			
Gas	+56%	+67%	+29%
Electricity	-16%	-16%	-16%
TOTAL	+34%	+41%	+17%
% of Sample who now have:	%	%	%
Lower Gas consumption	29	23	43
Same Gas Consumption	1	2	-
Higher Gas Consumption	66	72	50
Lower Electricity consumption	73	71	79
Higher Electricity consumption	26	28	21
Lower TOTAL consumption	31	23	50
Higher TOTAL consumption	63	72	43
Lower Elec. AND Lower Gas consumption	22	15	36
Lower Elec. AND Higher Gas consumption	47	51	39
Higher Elec. AND Lower Gas consumption	8	8	7
Higher Elec. AND Higher Gas consumption	17	20	11

These results are surprising and unexpected, but particularly so in the case of those who received additional advice from HelpCo as well as their Smart Meter. Among these households gas consumption rose 67% on average, although electricity consumption did fall by 16%. Total Fuel Consumption actually rose less (only by 17%) among those households which only received a Smart Meter and no advice. This suggests that some mechanism which tends to *increase consumption* may be more at work among those who also got HelpCo reports.

However, what is really surprising are the low annual consumption figures prior to the installation of the smart meters – half the sample have annual consumption figures of less than 8,000 kWh. We know from EEC/CERT that a 3 bed room flat (pre1976) without cavity wall insulation will require on average around 14,000kWh of gas per year; clearly terraced properties and all solid wall properties will consume even more gas to maintain average UK household temperatures. This may imply that there was either considerable under heating or the use of alternative heating (e.g. LPG or electricity) prior to the installation of the Smart Meters. The average electricity consumption per household per year is 3,700 kWh and the variation with property size is less marked than for gas heating. We decided to look for any causal correlations with a variety of factors including above and below 14,000 kWh per year consumption.

Much of the analysis shown in SNAP Tables 38 and 39 tried to isolate any causal mechanism at work here, but without any real success. There are no particular groups characterised by the ways in which they have used their meters or followed advice which seem to explain these

large (and somewhat disappointing) differences. For example we hypothesised that those who made savings would be more likely to have readily visible meters, or to read their meters more often, or to have found HelpCo's advice particularly useful, or to have followed more of HelpCo's advice. All these hypotheses were tested in the analysis (see SNAP Table 39) and no significant causal explanations were initially found to account for some households making savings while other households consumed significantly more fuel after a Smart Meter was installed.

As discussed above, in calculating the historical fuel consumption figures for Warm Plan trialists we had noted that quite a few households already seemed to have very low historical consumption figures, particularly for gas, but in some cases for electricity too. As one would expect, the ranges of consumption for homes of similar built forms and occupancy varied widely – e.g. due to personal preferences, incomes and lifestyles.

We hypothesised from the above that there were households which were previously very cautious about using much energy, fearing perhaps that they might get larger actual and estimated bills if they did not take extreme care. We therefore analysed our results to see whether those who had previously had rather high or rather low consumption were now making the savings. Results are shown below in Summary Table 23.

These results show that homes which had previously had *above average* consumption tended to be the ones now making savings, while homes which had previously had *below average* consumption tended to be the ones now using more. For example, 95% of the homes now using *more gas* than they did before they had a Smart Meter installed had historically used less than 14,000 kWh of gas a year, and on average used less than 7,000 kWh gas each year. This is well below the GB average of 19,000 kWh/year for gas heated properties. In contrast, almost two thirds (63%) of all homes now using *less gas* had previously used over 14,000 kWh of gas each year, and over 18,000 kWh p.a. on average (see Summary Table 23).

SUMMARY TABLE 23 **WHO MADE SAVINGS – BY HISTORICAL CONSUMPTION**	**TOTAL**	**Lower consumption now**	**Higher consumption now**
GAS (kWh p.a.):	kWh	kWh	kWh
Average Historic Consumption	10,215	18,123	6,883
Average Recent Consumption	15,980	12,980	17,570
ELECTRICITY (kWh p.a.):			
Average Historic Consumption	4,158	4,424	3,403
Average Recent Consumption	3,533	3,324	4,125
TOTAL GAS & ELECTRICITY (kWh p.a.):			
Average Historic Consumption	14,503	21,809	10,912
Average Recent Consumption	19,653	16,065	21,416
HISTORIC CONSUMPTION RANGES % of sample in each range			
GAS:	%	%	%
0-13,999 kWh p.a.	78	37	95
14,000+ kWh p.a.	22	63	5
ELECTRICITY:	%	%	%
0-3,999 kWh p.a.	53	50	63
4,000+ kWh p.a.	47	50	38
TOTAL GAS & ELECTRICITY:	%	%	%
0-15,999 kWh	67	31	85
16,000+ kWh p.a.	33	69	15

At one level the above results suggest that Smart Meters (and HelpCo advice) may be better at helping the fuel rich make savings, while they may also encourage below average consumers to use more – perhaps safe in the knowledge that at least the Smart Metering technology will not result in them being billed for fuel they have not used. Assuming that the energy consumption data supplied are correct, then another possible explanation is the considerable underheating and/or use of alternative heating fuels to gas prior to the installation of the Smart Meters. Consequently, we believe that it is not possible to draw conclusions from these results. Thus energy savings can only really be tested in larger scale trials of Smart Meters, and through monitoring which explores users' motives and habits in more detail, and with some prior knowledge of the changes in fuel consumption occurring in each household.

Another possibility is that the "targets" set by HelpCo in the advice they have provided to 68 households (in our sample of 94) have been set too high (based on 2006/7 consumption) and by telling households they are "doing all right" they have actually encouraged higher fuel consumption than would otherwise have occurred.

The only other hypothesis which may account for some of the increases in fuel consumption, is that some households which acquired Smart Meters may have believed that the Smart Meters themselves would somehow reduce their fuel consumption, without they themselves having to do anything; i.e. they might not have fully realised that the Smart Meter was simply a measuring tool to help them monitor and control their energy use through changes in their own behaviour. To test this hypothesis we analysed frequency of reading the Smart Meter by people's main motive for accepting a Smart Meter in the first place (see SNAP Table 10C). This analysis shows that those who accepted a Smart Meter "because it could help cut energy bills" were indeed more likely than other trialists to *never* read their Smart Meter – 44% of them never did so compared to 34% of all trialists. Conversely, more of those who accepted a Smart Meter *because they could use it to measure energy consumption* tended to read their Smart Meters more often, and far fewer never read it (only 19%). But the sample sizes are just too small for these differences to be statistically significant, and this hypothesis too needs testing in larger-scale trials.

Reasons why some Trialists have dropped out of Warm Plan (Phase 5 interviews)

In the final phase of this research (Phase 5, in May/June, 2008) New Perspectives interviewed by telephone 15 households which had earlier dropped out of this Warm Plan trial. This was done in order to explore the reasons for dropping out, and to learn lessons which could be applied in future Smart Meter trials. These households were drawn from drop-outs identified by HelpCo, EDF Energy, and through Avalon Research's calls. Additional reasons for dropping out were also available from Avalon's calls to 29 households in the database which proved to be drop-outs.

Summary Table 24 (below) gives the main reasons why 40 households listed on the Warm Plan database as Trialists had either never had a Smart Meter or dropped out of this trial:

SUMMARY TABLE 24 **REASONS FOR DROPPING OUT OF TRIAL**	**Base: All Known Drop-Outs** **40**
Total Smart Meters never fitted, because:	**7**
Unknown (households could not be contacted)	2
Installer never turned up to fit Smart Meter	2
Installer could not fit because gas meter was outside	1
Surveyor said technical problem on roof precluded SMs in block	1
Installer could not fit for other reasons (unknown)	1
Total Smart Meters fitted and later removed, because:	**31**
Original occupants moved/new tenants in residence/SM removed/unknown	9
Problems with radio signals from SM/EDF could not read SM remotely	10
Customers changed supplier/so EDF removed SM	5
Received estimated/incorrect bills	7
SM not user-friendly/hard to use/did not get on with it	4
Meter readers still kept calling	2
Smart Meter cut off the gas/electricity	2
SM was noisy/made bleeping sounds	2
Storage heaters installed and so SM removed	1
Other reasons unknown – no interview possible	9
Total Occupants unaware of SM Trial – confused/husband died**:**	**2**

We found seven "Trialists" listed on HelpCo's database who had never actually had a Smart Meter fitted. Sometimes the households involved did not know why this was, saying that they had expected to take part but "the installer never turned up". Others mentioned technical constraints spotted by the surveyor or the installer, such as "we have a gas meter outside, so they couldn't install it", or "the surveyor said there was a problem on the roof and no-one in the block could have a smart meter". The presence of these named households on HelpCo's database of Trialists suggests that communications between EDF Energy (the installers and operators of the meters) and HelpCo (who manage the project) have been less than perfect.

But most of the known drop-outs from this Smart Meter Trial seem to have had a Smart Meter installed, and then later had it removed for various reasons. In around one third of these cases this seemed to be because the original householders who signed up for the trial had since moved home, and in most cases EDF Energy had then removed the Smart Meter and replaced it with ordinary meters, although we did find one case where new tenants apparently still had a Smart Meter in place but knew nothing about it and so were not interviewed in full.

In just over a third of cases where the Smart Meters had been removed, this seemed primarily because of communications problems. Householders had usually been told by EDF Energy that poor signal strength meant they could not read the meter remotely and would therefore remove it. Sometimes this occurred after just a month or two of the trial, but some households suffered months of frustration while a succession of EDF Energy engineers tried to rectify communications problems. During this time the meter might be "bleeping" to warn of a lost signal, meter readers, estimates and "too high" bills would be arriving, and some householders were really annoyed by a poor experience with something they had initially had high hopes for:

> *"The meter readers told us it did not work. It never relayed information at all. We were dropped by EDF as they said it never worked. It was hideously inconvenient, lots of callers to tweak it, and it was a complete waste of time. We weren't upset when it was taken out as it was wireless technology. I'd never recommend one. We were enthusiastic at first, but when we got it!!...I can't speak badly enough about it. It was a complete waste of time!"*

In some cases households had found the frustration of trying to use their Smart Meter and deal with EDF Energy's meter readers or estimated bills all too much, and this had contributed to their decision to change supplier and so have the Smart Meter removed.

> *"The summer bills were much higher – the same as the winter ones...I didn't really get on with it (the SM). I prefer meter readers calling as now and I get the right bill. I found it hard to read, so we changed suppliers to British Gas and EDF took it out."*

A couple of drop-out households had actually had their gas or electricity cut off by their Smart Meter at a quite early stage of this trial, and this had been enough to get them to drop the trial:

> *"We were cut off gas the whole weekend. EDF came on the Monday and I asked them to take it out. It should never have been installed as we got a poor signal. It was useless."*

Several of those who had had their Smart Meter removed had been attracted by the possibility of monitoring and reducing their energy consumption to save money or to help the environment, but they had not found the Smart Meter user-friendly or easy to use, even with the help of the *User Guide*, and some had clearly expected more guidance from the installer:

> *"I was swayed by the energy efficiency, greener, and you could monitor usage. I'd heard of gadgets that do that, but this wasn't the same. It was impenetrable, un-user-friendly. It did not help monitor. It took along time to install, and beeped all night the first night. It never gave us any useful information really. My husband found it very difficult and he has a degree!"*

> *"We never used to read the old meter – just get the bill. We read the Smart Meter all the time – every few days while we had it. But the beeping was annoying – because it lost signal they said. It wasn't that easy, more complicated than I thought it would be. It was not obvious. We read The Guide but it was not very helpful or straightforward."*

> *"The display was confusing, incomprehensible! It kept rotating and I could not read it. The Guide was no use. EDF and the sub-contractors gave no explanations."*

The pattern of siting these Smart Meters in the home was much the same among drop-outs as among those who remained in the trial – some in hallways, under the stairs, or in the kitchen, and some in cupboards and some not. But one trialist found his Smart Meter was fitted so high in a hallway (apparently to get a better signal) that he needed a ladder to read it, which made it "useless" he felt. Another found it easy to read (under her stairs) but felt that it did need to be sited in the kitchen for best results:

> *"It was easy to read – no inconvenience – but after a time I did not bother....I only read it the first week… You need the display directly in front of you in the kitchen."*

Those who had agreed to take part in this trial because they were attracted by the prospect of no more calls from meter readers found it particularly annoying that meter readers still called. Although some households put this down to signal problems, others were annoyed at the apparently poor communications between EDF Energy and their meter readers:

> *"The meter readers still called. There was no communication between EDF and the meter readers. The meter reader had no idea I was on a Smart Meter. I used to say 'No, you can't read it!'"*

We were unable to contact around one third of the known drop-outs in this study, mainly because they had no phone line, never answered, or refused to be interviewed, although we knew from the HelpCo/EDF Energy records that they had dropped out of this trial. Their reasons for dropping out are likely to be similar to those described above.

In reading the rest of this report it should be borne in mind that those Trialists who have had the poorest experiences with Smart Meters have already "voted with their feet" by dropping out of this trial. But their experiences should stand as lessons for all who plan similar trials about what can go wrong, the importance of good communications, user-friendly smart meters, appropriate siting of smart meters, and the re-training of meter readers to support this type of trial.

CONCLUSIONS AND RECOMMENDATIONS

1. This research was carried out by New Perspectives and Avalon Research between April and May, 2008. It is the third, fourth and fifth phases of a monitoring programme which had begun early in 2007, and which had already surveyed Warm Plan users through a postal survey in June, 2007. In this latest survey 94 active Warm Plan households were interviewed over the telephone, using a questionnaire very similar to the 2007 postal questionnaire, so that results from 2007 and 2008 have been compared in this report. In this latest survey 65 of the households were also receiving monthly and quarterly progress reports and advice from HelpCo (who received their Smart Meter readings), while 29 households in the survey had received a Smart Meter only (and no follow-up advice). Phase 5 of the research consisted of a further 15 semi-structured telephone interviews with households which had earlier dropped out of this Smart Meter trial, and analysis of 29 contact interviews conducted with drop-outs by Avalon Research.

2. As in 2007 we found that many existing gas and electricity meters in Trialists homes are sited in concealed locations – e.g. in cupboards, under stairs, or in cellars. Because of wiring and wall-drilling constraints, and households' own preferences, many Smart Meters ended up in similar but less than ideal locations, thus not fulfilling the primary aim to site them where householders could see them daily and readily access the wide range of information available. Nevertheless there was a slight improvement in the visibility and accessibility of the Smart Meter display units compared to where the main meters were previously sited. Although in practice 85% of Trialists are now happy with the final location of their Smart Meter display, we conclude that in future trials of Smart Meters it would be beneficial if surveyors and installers tried to persuade households to accept more prominent locations for Smart Meter displays. This is likely to encourage much more frequent use of these meters. Using wireless communication in the house between the meters and the Smart Meter display unit would also encourage better siting as well as speeding up some of the more complicated installations.

3. There are many potential advantages of Smart Meters, but the ones that seem to appeal more to households at present are that they may result in remotely-read accurate meter readings being used for billing, so no more estimated bills and no more meter readers calling. The possibilities of monitoring one's own consumption and cutting one's energy bills are still of slightly less interest to most households. Considerable education is therefore required in order to promote these advantages to households, if these benefits of Smart Metering are eventually to be enjoyed by all.

4. Although some free energy saving measures (e.g. electric kettles, low energy bulbs and reflective radiator panels) were given to most Warm Plan households, one in five never received any of these freebies, and not all households used the items they were given. Some found their free kettles too small or their radiator panels difficult to fit, and even a few energy saving bulbs were not used.

5. Because Smart Meters appeal for different reasons to different households, once Smart Meters are introduced people's own meter reading habits change in two ways: some people read their meters less often or never (relying on the remote reading technology to bring them accurate, not estimated bills); while some people do read their Smart Meter more often, hoping to get useful information from it to help monitor and control their own energy use. The latter pattern (making more use of Smart Meters) happens almost twice as often in households where the Smart Meter display is readily accessible (see point 2 above). This underlines the need to ensure that in future Smart Meter displays are installed where users have the best opportunity to make use of them. But by 2008 (after 18-24 months of having this Smart Meter) we found that some supported households (those getting HelpCo reports and advice) now tended to read their Smart Meters less often than they did initially (perhaps relying now more on those HelpCo reports), whereas some people who only received a Smart Meter were by now reading their Smart Meter more often than they had done at first. But many people are now reading their Smart Meters less than they did at first, and this suggests that this design of Smart Meter is not user-friendly enough to encourage households to make the best possible use of it.

6. The PRI Smart Meter display used in this trial is basically a modified pre-payment meter with an un-illuminated display of only 9 characters, and a quite complex operating procedure. Close attention to the instructions in the *User Guide* is therefore required if households are to make full use of all the information accessible. In practice we still find (in 2008) that fewer than two thirds of Trialists read any useful data from their meter, and those who do tend to look mainly at *total energy consumption* and *last month's energy consumption*. Trialists who received full support from HelpCo initially appeared (in 2007) to have been encouraged to make more use of their meter than those who received a Smart Meter only and no further support. But this situation has now (by 2008) changed, and more of those who only received a Smart Meter (and no other support) now seem to be reading at least their total energy consumption on their Smart Meters.

7. But almost one in three people did initially (i.e. in the 2007 survey) find this PRI Smart Meter quite difficult to use and others had not even tried to use it. Sometimes this was because they had not been shown how to use it (which some had expected to be) or that they claimed never to have received a *User Guide* or found it hard to understand, or that they saw no point in using the Smart Meter more often – i.e. they had not been told or failed to appreciate the benefits of monitoring energy consumption. We recommended (in 2007) that the *User Guide* be rewritten to improve comprehension, and that future Smart Meters have a simpler, more intuitive and preferably menu-driven operating system. By 2008 we found that more Trialists had learned how to use their Smart Meters, and now felt they were slightly easier to use, but that there was still a substantial minority of Trialists who found them tricky to use, especially if they had not read the *User Guide.*

8. Despite these problems with understanding how to make good use of these Smart Meters, by June, 2007 over half of all Trialists claimed to have been helped by their Smart Meter to take some energy saving measures – mainly behavioural measures like

turning off lights and appliances and controlling heating and hot water more carefully; but a quarter have also installed more energy saving light bulbs. In 2007 Trialists who received additional support from HelpCo were slightly more likely to adopt energy saving behaviour than those who only received a Smart Meter. By 2008 we found that even more Trialists were now saying they had adopted energy saving actions prompted by their Smart Meters, and that very few (fewer than one in ten) felt they had not been encouraged in some way.

9. In our 2007 sample of Trialists we had a sub-sample of 68 who also received full support from HelpCo in the form of monthly (postcard) reports, fuller quarterly reports, and warning postcards whenever their consumption pattern rang some pre-set alarms at HelpCo. But around 15% of these Trialists recalled receiving no further information from HelpCo, which (we concluded then) suggested it might have been of little interest and thrown away as junk mail. We recommended then (2007) that be supplied with a labelled clip file in which to file HelpCo advice for future reference (although we now understand that this has not been done). Despite this, some two thirds of those receiving HelpCo support (as well as a Smart Meter) had followed some of HelpCo's advice – usually by turning off lights and appliances, fitting low energy bulbs, and by re-programming their heating or hot water, and most had found this advice "quite useful" (49%) or "very useful" (18%). By 2008 we found that although most people still recalled HelpCo's advice (94%), rather fewer (55% now compared to 68% in 2007) are actually following it in any way, which suggests either that the influence of advice may wane over time, or that it is no longer attributed to the original source.

10. To date HelpCo has set "Targets" for supported Trialists to help them curb their energy consumption: these had (in 2007) been based on the average consumption of similar homes nearby, but this was found (in the first phase of qualitative research) to be unpopular. Most Trialists receiving HelpCo support said in 2007 that they would prefer their consumption targets to be set based on their own previous year's consumption, and this is happened later in this trial. Most (in both 2007 and 2008 surveys) would also prefer their targets to be set in terms of pounds (£) spent on energy, although both kWh and Kgs carbon also have some support.

11. HelpCo had already recognised (in 2007 from monitoring Trialists' consumption patterns) that there was great potential for further intervention by them to encourage those with the highest levels of energy consumption to adopt more energy-conscious behaviour or to have technical problems sorted. Most Trialists getting support from HelpCo would still welcome a more interventionist approach. They would like to know about grants and subsidies, have HelpCo arrange installations, and get Home Visits or more advice to help them. We recommended in 2007 that higher levels of intervention be tried with some of the "supported sample" during this trial, as long as good records were kept of the actions taken with each household. But this does not seem to have happened on a large scale, as fewer households now recall telephone advice (14%) or home visits (3%) compared to 2007.

12. It had been hoped that Smart Meters would rapidly help Trialists to reduce their fuel bills. By June, 2007 this had not yet happened for most Trialists: some believed they now had lower fuel bills (20%) while some believed they by now had higher fuel bills (19%). To some extent this was because many were still getting estimated bills (39%), apparently because EDF Energy were not making full use of the remotely read meter readings, but still sending meter readers (to 59% of homes) who were unfamiliar themselves with Smart Meters. As a result only 27% of Trialists felt (in 2007) that their bills were now more accurate than before. There was also a considerable level of annoyance and frustration that meter readers were still calling and that estimated bills were still being sent out by EDF Energy. There appeared to be a number of technical and internal communications problems at EDF Energy that should ideally be solved during the course of this trial. By 2008 we found more Trialists who *felt* their fuel bills were now lower (33%), but just as many who now felt their bills were higher (33%). But these perceptions were not always borne out by by their historical and recent fuel consumption records.

13. But Smart Meters (and HelpCo support) had (by June 2007) helped some people reduce their fuel bills, and where this had apparently happened Trialists seemed more likely to recommend Smart Meters to a friend, because they can help save money and carbon emissions, and they can result in more accurate bills and no meter readers. But people who had experienced higher fuel bills (often estimated) and those who had encountered teething problems with their meters or frustration in dealing with EDF Energy were less likely to recommend Smart Meters to friends. We concluded (in 2007) that there were a number of technical and procedural problems which EDF Energy did need to address. By 2008 more Smart Meter Trialists (or at least those left in the trial) were very likely (50%) or quite likely (19%) to recommend Smart Meters to a friend, particularly if they felt their fuel bills had been lower. Their main reasons for recommending Smart Meters were that they are helpful for monitoring usage, that they result in accurate bills, and that no meter readers call. Since fewer bills are now estimated and slightly fewer meter readers call, EDF Energy seems to be overcoming some of its initial problems.

14. Some Trialists (around one in four) seemed by June 2007 to have learned how to use their Smart Meters, and they particularly liked the fact that they could monitor their consumption immediately and accurately. This happened far more often initially among Trialists who got the full HelpCo support than among those who got only a Smart Meter. We concluded (in 2007) that with the present PRI Smart Meter, the extra support provided by HelpCo was making a real difference in encouraging people to make full use of this meter's potential. But we also concluded that much better results could be achieved with a more user-friendly Smart Meter, simpler instructions, and occasional newsletters which might encourage Smart Meter households to experiment more with their meters to show the savings from energy-conscious behaviour. By 2008 however we found that many of those getting extra HelpCo support were now not reading their Smart Meters as often (perhaps relying more on the HelpCo reports) and not doing as much on HelpCo advice. On the other hand some of those who had only received a Smart Meter (and no other support) were now making more use of their Smart Meter and seemed more likely (than in 2007) to recommend Smart Meters to friends.

15. In this final 2008 report we have also been able to compare actual Historic (2004-6) and Recent (2007-8) fuel consumption figures for almost all the households taking part in this trial. Although these show that 22% of households have achieved both lower gas and electricity consumption following the introduction of Smart Meters, and that 73% have achieved lower electricity consumption, most households (63%) have actually increased their total fuel consumption, and overall fuel consumption among these 94 households has increased by 34% following the introduction of Smart Meters. We found that most of the savings were made by households which had consumed above average amounts of fuel before, while increased consumption had occurred mainly in households which had previously had below average consumption. However, what is really surprising are the low annual consumption figures prior to the installation of the Smart Meters – half the sample have annual gas consumption figures of less than 8,000 kWh. For example, 95% of the homes now using *more gas* than they did before they had a Smart Meter installed had historically used less than 14,000 kWh of gas a year with an average consumption of less than 7,000 kWh per year. This is well below the GB average of 19,000 kWh/year for gas heated properties. In contrast, almost two thirds (63%) of all homes now using *less gas* had previously used over 14,000 kWh of gas each year. We cannot find any definitive reasons for these changes, but we have hypothesised that (with Smart Meters) some households may feel relief that they will only be charged for fuel they use, and so are less careful, particularly with their heating, while some households may have had unrealistic expectations that Smart Meters alone could save on their fuel bills, without changes in behaviour by the occupants. Others may have been misled by the way HelpCo set "targets" in terms of last year's consumption. Assuming the energy consumption data supplied are accurate, then in view of the considerable underheating and/or use of alternative heating fuels to gas prior to the installation of the smart meters, we believe that it is not possible to draw conclusions from these results. Thus energy savings can only really be tested in larger scale trials of Smart Meters, and through monitoring which explores users' motives and habits in more detail, and with some prior knowledge of the changes in fuel consumption occurring in each household.

16. Our telephone interviews with most of the 40 known drop-outs from this Warm Plan trial over the last 18 months have highlighted the sorts of problems which have led to households giving up their Smart Meters, even if they had high hopes of them at first. Some listed Trialists never actually had Smart Meters fitted, which suggests EDF Energy's communications with HelpCo were poor. But most drop-outs had left the trial for three main reasons: poor signals between the Smart Meters and EDF Energy had made them useless; some Trialists had change suppliers as a result of communication problems and other problems with their Smart Meters; and some Trialists had moved house and either the Smart Meters had been removed or the new tenants did not know what they were. The overall feeling from most of the drop-out interviews is that people's initial expectations of their Smart Meters had not been met by a first-generation Smart Meter which has often been poorly sited in the home, is difficult to read, and performs poorly in areas where signal strength (for its mobile phone communications) is inadequate.

TABLES

APPENDIX

Phase 4 Telephone Questionnaire