

Re: Energy Billing and Metering: Changing customer behaviour

The Energy Saving Trust is pleased to respond to DTI's Energy Review Consultation *Energy Billing and Metering: Changing customer behaviour*. Our response focuses on the relevant areas of the Energy Saving Trust's expertise and we do not attempt to answer questions outside our area of expertise.

The Energy Saving Trust strongly supports the Government's proposal to mandate the provision of comparative consumption data graphically on energy bills. However, we believe that the accuracy and frequency of bills has a greater influence on customer behaviour. This cannot be achieved with the current levels of estimated bills.

We support the proposal of rolling out real-time displays as a precursor to the installation of smart meters. Any measures to make energy use more visible to the consumer is a step in the right direction. However, this must be within an agreed framework for smart metering and achieving standards of minimum functionality.

However, it is smart metering (automated meter management + interval metering + consumer interface) which provides far greater opportunities to improve domestic energy efficiency by catalysing long term sustainable behavioural change and increasing the rate of installation of measures by making energy consumption visible.

International experience demonstrates that smart metering delivers energy saving. The Energy Saving Trust believes the implementation of smart metering and improved consumer feedback can achieve energy savings in the order of 5% which would provide a significant contribution to the Government's domestic carbon reduction targets.

We therefore strongly support the installation of smart metering in new dwellings and during major refurbishments, as well as a programme for full-scale rollout completed within the next 10 years. Real-time energy displays should be installed as part of this programme.

Please contact me if I can be of further assistance, meanwhile I look forward to the outcomes of the consultation.

DTI – Metering and Billing: Changing Customer Behaviour Energy Saving Trust Response

Introduction

The Energy Saving Trust was established as part of the Government's action plan in response to the 1992 Earth Summit in Rio de Janeiro, which addressed worldwide concerns on sustainable development issues. We are the UK's leading organisation working through partnerships towards the sustainable and efficient use of energy by households, communities and the road transport sector and one of the key delivery agents of the Government's climate change objectives. Our response focuses on the key areas of the Energy Saving Trust's activities and related issues that are relevant to the consultation. We do not attempt to answer questions outside our area of expertise. Please note that this response should not be taken as representing the views of individual Energy Saving Trust members.

The Energy End Use Efficiency and Energy Services Directive requires transposition into UK legislation by May 2008. Article 13 requiring improved metering and billing, particularly the provision of actual consumption data at a frequency which gives consumers greater control over their energy use, will increase pressure on energy suppliers to enhance this aspect of their business. Frequent, accurate, more informative billing will require improved systems and technology which smart metering can efficaciously provide.

The consultation seeks to address billing and metering separately. In our view, this approach runs contrary to the fact that they are both integral components of the one issue – improving energy consumption information for consumers – and both offer significant energy saving potential. While our response is structured to answer the key questions posed, primarily in our area of expertise – household energy efficiency – we are of the view that this consultation does not fully identify key benefits of addressing billing and metering solutions together.

All references to smart metering within this response refer to the Energy Saving Trust's preferred approach of interval + automated meter management that incorporates a permanent, highly visible consumer interface.

Section 5: The future of billing

1. How can the Government's commitment to mandate the provision of historical consumption information in graphical form best be delivered?

The Energy Saving Trust fully supports the Government's commitment to mandate the provision of historical consumption information in graphical form on energy bills. This information could usefully be provided as both the amount of energy consumed, cost of energy consumed and the CO₂ emissions from energy consumed. It is important to make a clear link between energy consumption and the emissions responsible for climate change, in order to provide a sense of personal agency to change behaviour.

Under the proposal, however, those customers who have changed suppliers will not be provided with historical consumption information. Around 4 million customers changed supplier in 2006. With an increasingly mobile customer base, this could potentially leave a large number of customers without this information. The Energy Saving Trust suggests consideration should be given to developing some form of agreed protocol which would allow for a customer's historical billing data to move with them when they switch energy supplier.

Ideally, estimated bills should be a last resort. They are often inaccurate and based on outdated information. They also do not allow customers to identify the impact of any behavioural changes they have made, and do not account for the impacts of installing energy efficiency measures until the next meter reading which could be 6 to 12 months later. In instances of estimated bills, this should be noted clearly on each bill and differentiated from actual meter data in any graphical representation of historical consumption.

We believe Government should provide clear guidance to energy suppliers on the type of information which must be included on energy bills and general direction on its format, particularly what should be displayed graphically. However, suppliers should have the opportunity to differentiate themselves to customers by providing a better service but within the parameters of the guidance, ensuring there is a general consistency for those changing suppliers and allowing householders to compare consumption patterns with family, friends and neighbours.

The consultation requests views on the value of correcting information to take account of different weather conditions. It is important that consumers receive the detail of their actual consumption. Correcting for weather conditions provides an inaccurate picture of consumption and might mask the need for energy saving measures, such as insulation. It is also likely to confuse many consumers who already have difficulty in understanding their bills particularly in relation to the various gas conversion factors.

The Energy Saving Trust strongly supports these requirements applying to small energy suppliers. We see no reason why this should not apply to heat and ideally should apply to other fuels as well. The focus should be on the customer and the information required by them to stimulate energy saving action.

2. What energy efficiency information would be most useful to domestic customers?

Energy suppliers already provide a basic level of information on energy efficiency. This is usually a message on the bill itself or a leaflet mailed with the bill. They are also required, as a condition of the Supply Licence, to make information available to customers.

However, it is important to make a distinction between the provision of energy efficiency information and energy efficiency advice. While providing information is helpful, it is meaningful advice, such as face-to-face, which is far more effective in helping people to change their behaviour or install energy efficiency measures. The difficulty with information included with bills is that the penetration level is unknown. Often customers simply discard the material without reading it. This option is also clearly going to be decreasingly useful with a greater number of people opting for direct debit and online billing information. On-line advice can be provided but this requires consumers having to look for it in the first place or is likely to be dismissed as spam if sent by email.

People are more like to take action when information and advice is delivered by a trusted source. At present, levels of trust of Government and energy suppliers¹ is not as high as friends and family, or other organisations which are seen as independent and impartial. More frequent, accurate billing may help improve this to some degree over time. However, consumers have "little faith in their energy supplier and no sense of why they

¹ Oxera (2006) **Policies for Energy Efficiency in the Household Sector: A report for Defra**
<http://www.defra.gov.uk/environment/energy/eeir/pdf/oxera-report.pdf> p42;

might promote energy saving². This is clearly a result of a market structure which incentivises suppliers to sell more energy, not less. A national energy efficiency advice infrastructure currently exists, funded by Government, which could be further utilised for the provision of advice.

3. *How can the Government cost effectively improve the frequency with which customers are provided with accurate bills?*

The provision of accurate, more frequent bills to customers is a proven key tool to stimulate installation of energy efficiency measures. Current billing arrangements are inadequate given the high level of estimates. This is borne out in the large number of contacts energy suppliers have from customers querying their estimated bills. More frequent meter readings would create much greater customer confidence as well as providing customers with an opportunity to exert a greater level of control over their energy use. Whilst energy suppliers have a natural interest in reducing their costs to serve arising from poor billing, they have failed to sufficiently tackle this problem despite considerable effort. Clearly some Government intervention is now required.

The consultation proposes placing a requirement on suppliers to read meters at least once per year. While this is an improvement on the current licence requirement of once every two years, in reality suppliers generally try to read customers' meters once per year for balancing and settlement with some exceptions. Therefore placing an annual reading requirement on suppliers is unlikely to yield any significant changes in current practice nor lead to better billing.

Whilst some customers would like to receive accurate monthly bills as with mobile phone and ISP contracts, we believe that an appropriate balance is for customers to receive accurate quarterly bills containing comparative information upon which they can improve their energy management and help them base their energy efficiency decisions. As an absolute minimum, current practice can only be improved if suppliers are required to read meters at least twice per year.

While encouraging customers to read their own meters is helpful in cutting meter reading costs and may result in slightly higher consumer engagement with their energy consumption, it is unlikely that it will be widely adopted by consumers due to the inconvenience and inability to actually read the meter.

4. *What forms of comparative benchmarking might provide useful information to domestic customers?*

A report for Ofgem in 2003, by the Centre for Sustainable Energy concluded that customers did not like the idea of being compared with others. Without trialling such an approach, it is difficult to know whether benchmarking on bills would stimulate energy saving action. As with the design of forthcoming Energy Performance Certificates for homes, we believe that market testing is strongly advisable in order to determine the effectiveness of comparative benchmarking information.

² CSE (2004) **Consumer Preferences for Improving Energy Consumption Feedback** Report for Ofgem pp22-23

5. *Would further information about sources of energy efficiency advice be useful*

Further information about sources of energy efficiency advice would be a useful addition to customers' bills. As stated above, it is important that the advice is provided by an independent and impartial organisation which customers trust, such as a local energy efficiency advice centre. When coupled with more frequent, accurate bills it would present a major opportunity to engage with householders on various energy saving activities.

Research into the impacts of advice on energy saving behaviour change and installation of energy saving measures, undertaken for the Energy Efficiency Partnership for Homes (EEPfH), shows that on average, following advice householders reduced their energy consumption by 1,971 kWh³ or 7.9%⁴. This evaluation was undertaken around three years after the original advice was given. It does show that behaviour change is achievable, and that raising awareness and advice successfully reduces energy consumption. Increasing visibility of consumption through improved billing, and even more so through a real-time energy display, can only serve to increase consciousness and access to advice, and consequential energy saving action.

Section 6: Metering arrangements in Great Britain

1. *What are consultees' views on the provision of individual meters to individual premises within district heating systems?*

The Energy Saving Trust strongly supports the installation of individual meters and heating controls to individual premises within district heating schemes. The vast majority of households within district heating schemes currently have no idea how much energy they are consuming on space and/or water heating. With space and water heating making up 80% of household energy use, there is significant potential for energy saving, as demonstrated by the Danish trial referred to in the consultation paper.

Whilst installing meters, it is vital to fit heating controls at the same time so that consumers have the capacity to control and modify their energy consuming behaviour. In many older district heating schemes, controls were not installed and it is unfortunately not uncommon to find householders controlling the temperature by leaving windows open and thus wasting a significant amount of energy.

The situation with district heating schemes is similar to the arrangements for water supply – use is not generally metered and customers are not billed for the specific amount they consume. The Government recently (30.01.07) proposed making water meters compulsory for water stressed areas to ensure sustainability of water supplies in the future. Metering to reduce energy consumption through district heating schemes is a consistent policy decision.

³ New Perspectives et al (2005) **Energy conscious behaviour saves money** (Energy Efficiency Partnership for Homes, London)

⁴ Based on average household consumption of 24,790kWh used in Ofgem Cost Benefit Analysis Model (2006)

Section 8: The future of metering – real-time displays

1. *What would be the best method of rapidly rolling out real-time displays?*

The Energy Saving Trust supports the rollout of real-time displays within an overall framework and timetable for installation of smart meters. To some extent, the market should be allowed to develop and deliver within sustainable capacity. However, this needs to occur within a framework of agreed minimum standards and functionality for real-time displays, and mandated, for example, through the Supply Licence.

It is important that minimum standards are agreed before rolling them out. Accuracy of the devices is vital, along with having the following capacity:

- Graphical display of energy consumption in kWh, £/p and CO₂
- Historical consumption – day/week/month in kWh, £/p and CO₂
- Compatible with subsequent smart meter installation
- Dual-fuel and/or multi-utility where appropriate

Once minimum standards are specified, the market will take the opportunity to produce more innovative devices with increased functionality. This has been demonstrated by the improvements seen in display devices and even more rapidly in other consumer technologies such as ipods and mobile phones over recent times.

The Energy Saving Trust would support suppliers being responsible for installing displays. This increases the likelihood of them being installed correctly, provides an opportunity to explain to consumers how they work, and will ensure greater consumer use and engagement with the devices. The provision of displays, without installation, would require consumers to both calibrate and install them, and as such, there is clearly a major and unacceptable risk that this would not happen.

We suggest a requirement be placed on suppliers to provide display devices to consumers. Within agreed targets for rollout timeframe, suppliers should be able to determine the most cost-effective means of achieving this. The requirement should also allow some flexibility for future innovation in this area. Currently, consumer displays are the most effective means of communicating the information as, unlike internet based systems, they do not require a specific action from the individual. However, future innovation should not be discouraged. Innovation of devices suitable for people with a disability should also be encouraged, and included as part of the requirement on suppliers to meet minimum standards.

Real-time displays are likely to be of benefit to low-income consumers, giving them greater control over their energy use and allowing them to reduce non-essential consumption. With appropriate support, information and advice displays should not pose a greater risk of self-disconnection than the new generation of pre-payment meters.

Section 9: The future of metering – smart meters

1. *Trials of smart meters and other devices in the domestic market will begin shortly. Do consultees have views about the costs and benefits of smart meters in the domestic sector?*

The Energy Saving Trust is strongly of the view that Interval Metering with Automated Meter Management (AMM) – metering with two way communication and a fitted in-home consumer interface with real-time energy use data - provides the greatest benefits not only to the consumer but for likely future needs, such as the facilitation of distributed energy through microgeneration. This position is supported by international experience.⁵ It also provides the supplier with greater opportunities for innovative tariffs and the ability to shift and/or flatten peak demand, increasing security of supply. Innovation that has so far sadly been lacking in the competitive marketplace although smart metering would allow this to change for the benefit of consumers.

Interval + AMM provides key benefits and opportunities to both consumer and supplier, including:

- Frequent data on energy consumption
- Time of use data
- Historical use data
- Differential tariffs based on time of use
- Greater control over peak demand
- Ability for supplier to communicate with consumer – eg energy saving messages
- Accurate and timely billing
- Remote disconnection for non-payment
- Net metering for microgeneration
- Improved security of supply
- Ability to switch between credit and pre-payment functions
- Increased ease of customer switching

The Energy Saving Trust strongly believes that the 1% energy saving cited by Ofgem in their cost-benefit analysis⁶ was unreasonably conservative, particularly in light of the substantial scope of savings shown in international research on domestic smart metering and improved consumer feedback – 0% to 20%, with the majority falling within a range of 5% to 10%.⁷ However, it is important to emphasise that despite this overly conservative estimate of the benefits of smart metering, there was a positive net present value for rollout of Interval+AMM metering technology.

In addition, the 1% estimate still represents 8.6% of the Government's domestic CO₂ reduction target. Given this rate assumes no additional information, advice and support for energy saving, the Energy Saving Trust believes this level can be substantially increased to create long term behavioural change, as well as leveraging greater savings by making measures taken through the Energy Efficiency Commitment (EEC) more cost effective and easier to deliver for suppliers. With a greater public focus on climate change, higher energy prices, increased efforts on engagement through Government Programmes (eg Climate Change Communications Programme), Energy Saving Trust programmes (eg Sustainable Energy Network, Energy Efficiency Advice Centres, Energy Saving Recommended, etc), EEC, and others, energy savings are far likelier to be higher than those assumed in Ofgem's cost benefit analysis.

⁵ Sustainability First (2006) **Smart Meters Commercial, Policy and Regulatory Drivers** (Appendix)

⁶ Ofgem (2006) **Innovative Domestic Metering** consultation

⁷ Boardman, Brenda & Darby, Sarah *et al* (2005) **40% house** (Environmental Change Institute, University of Oxford) p36

One of the key areas where the increased visibility of energy consumption, provided by smart metering, is likely to have an impact is on appliances left on standby. In 2004, the UK Market Transformation Programme conservatively estimated UK standby electricity consumption at an average of 325 kWh for each household, representing 7% of UK domestic electricity consumption⁸. This figure, conservative at the time, is likely to increase due to the rapidly expanding household consumer electronics market.

Smart metering also has the capacity to overcome one of the barriers to uptake identified in the report into the *Potential for Microgeneration*, namely, the low value of exported electricity.⁹ This suggests that the market for microgeneration technologies can develop more rapidly with energy export equivalence, facilitated by smart metering. Smart metering allows for accurate measurement and tariffs/payment for energy distributed from domestic microgeneration which, based on modelling, can significantly increase the uptake of these technologies and their contribution to reaching domestic CO₂ reduction targets.

Informed consumers are a pre-requisite for the efficient operation of a competitive market. However, domestic energy consumers are largely disengaged from their level of consumption, mainly as a result of direct debit payments, estimated billing¹⁰ and no means of comparing usage and/or costs.

Visibility of consumption data is key. Consumers need information to learn so that they can change behaviour and visibly see that it makes a difference. The Design Council project, *RED Future Currents*, highlights the importance of making energy tangible, that is, visible.¹¹ Smart metering needs smart consumer displays to provide accurate and timely consumption data which will give the consumer far greater control over their energy use. It is this visibility which will give consumers the information and power to change their own behaviour, as well as creating the necessary awareness to take further action, such as the installation of insulation, which will achieve energy saving for a 20 year period.

The Energy Efficiency Innovation Review suggests there is a lack of focus on behaviour and how to incentivise behavioural change. Existing programmes mainly rely on physical measures, but increasingly these need to extend to behavioural measures too, to reduce heating hours, internal temperature, lighting levels and appliance usage.¹²

Energy consumption feedback to consumers has emerged as a potentially very cost-effective measure. Studies conducted in the USA and Europe indicate that the provision of either detailed information in bills or of readily accessible real-time displays within the home can generate 5%-10% sustained reductions in energy consumption. The international experience referenced in the Energy Efficiency Innovation Review suggests energy use was reduced by 13% when meters indicating the consumption of each appliance were provided to households.

Market research undertaken by the Energy Saving Trust, most recently in September 2005 (prior to several major energy price increases by all suppliers) found that:

⁸ Market Transformation Programme (2004) **BNXS36: Estimated UK Standby Electricity Consumption in 2004** (Defra, London)

⁹ Energy Saving Trust, Econnect & elementenergy (2005) **Potential for Microgeneration: Study and Analysis**

¹⁰ Centre for Sustainable Energy (2003) **Towards Effective Energy Information: Improving consumer feedback on energy consumption – A report to Ofgem** p26

¹¹ Lockwood, Matthew & Murray, Robin (2005) **RED Future Currents: Designing for a changing climate** (Design Council, London)

¹² Energy Saving Trust (2005) **Energy Efficiency Innovation Review: Household Sector Final Report** (EST, London)

- 56% of people stated that they would like to know if their home could have less of an impact on the environment
- 51% stated that they would like to have more detailed information about how much energy they use
- 54% would like to know what sort of impact their home has on the environment.

Combined with recent weather-related events and greater acceptance of climate change as a major issue caused by human activity, we would expect these levels to be substantially higher in 2007.

It is also worth noting that the implementation of smart metering would facilitate the introduction of more radical solutions that will be required after EEC3 (beyond 2008-11) to reduce energy consumption and carbon emissions from the household sector, for example, a suppliers' obligation or personal carbon allowances.

The benefits of smart metering would also apply to those SMEs that do not currently have half-hourly metering.