

'Smart metering for all homes by 2020'

Introduction

Following a consultation exercise undertaken by DECC (Department of Energy and Climate Change) over the summer¹, it was announced on 02 December 2009 that 'smart meters' will be installed in all homes in Great Britain by 2020. This document explains what smart meters are and the advantages their implementation will bring.

What is smart metering?

Until now electricity and gas meters have measured only total energy consumption: they have not been used to provide information about when the energy was consumed. Smart meters are the next generation of meters and *they* provide real-time measurement of energy use. The information recorded by the meter can be displayed on a screen visible to occupants in the home (see image); it can also be downloaded by the energy supply company.

Great Britain is not the first country to adopt smart metering technology – the United States, Canada, Italy, Australia, New Zealand and the Netherlands are among a small number of countries already making some use of this technology.



A smart meter display screen

¹ http://www.decc.gov.uk/en/content/cms/consultations/smart_metering/smart_metering.aspx

What are the benefits of smart metering?

There are two principal benefits:

1. Consumer awareness of domestic energy consumption is improved and this is expected to encourage a significant reduction to be made through behavioural changes.
2. Energy supply companies are better able to match the supply of energy with demand for it. This improves the efficiency of supply and reduces the amount of excess generation capacity (i.e. power stations) ticking over.

It is expected that there will be a range of other related benefits, such as reduced costs of meter reading. But most importantly, in the fullness of time, smart meters will play a fundamental role in the development of a 'smart energy grid' (see below).

Smart meter functionality

The above benefits will be delivered by smart metering which has the following functionality:

- 100% accurate real-time meter reading, delivering data to both consumer (e.g. to the in-house display screen) and energy supplier. There will be no need for a meter reader to gain access for meter readings and no more estimated bills.
- Two-way communications allow data to be uploaded and downloaded between the energy supply company and the home, which will deliver benefits such as making it easier for consumers to change energy supplier.
- The use of 'time of use' tariffs is supported - suppliers will be able to change their prices for electricity and gas at certain times of the day to match with the demand. When demand is high, for instance between 5pm and 7pm (when people arrive home from work, switch on the TV, boil the kettle and turn on the lights), energy prices could be higher than at times of low demand such as in the middle of the night. Consumers would be encouraged to alter their power use to match the lower tariff periods e.g. by setting the washing machine to run overnight.
- Remote disconnection of supply is facilitated, which allows new options for dealing with pre-payment and non-payment.
- Load management capability to deliver 'demand side management', e.g. remotely turning off appliances such as fridges for short periods at times of peak electricity demand (automatically switching back on if the temperature inside the fridge rises too much).
- Measurement of electricity exported from microgeneration equipment installed at the home. This will facilitate payment for the energy exported and provide useful data for the electricity supply company, allowing better use to be made of renewable energy (which is inherently more intermittent).

'Smarter grid'

The implementation of smart metering is one key stage in the development of an electricity transmission and distribution grid that better manages the generation and supply of energy through the use of two-way communications, advanced sensors, and distributed computers.

Such a system would be able to anticipate, and instantly respond to, problems in order to avoid or mitigate power supply failure and power quality issues and support greater use of distributed generation (from combined heat and power and renewable energy, etc.). A smarter grid could also support the increasing use of electric cars, both by controlling their charging to suit the availability of an adequate supply, but also utilising their battery storage to smooth fluctuations in demand. *Smarter Grids: The Opportunity*², published by DECC provides further information.

The effect on new homes

Detailed work to set the common technical specifications will need to be concluded before smart meters can be mass produced and installed. It is unlikely, therefore, that smart meters will be available for installation in any homes before 2012.

It is not clear what effect the implementation of smart metering may have on future new homes, but it would appear that there may be no need for homes to continue to be fitted with external meter cabinets, as access for meter reading will not be required. However, these may remain desirable, if only for periodic replacement of the meters. The size of cabinets could change to suit the new generation of meters.

² http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/network/smart_grid/smart_grid.aspx