A smart move?

New energy smart meters will start to be installed in our homes from 2012. But if you want to reduce your bill, you can start today

The humble electricity and gas meters could soon be things of the past, under plans for every UK home to have smart meters installed by 2020.

Smart meters would allow suppliers to record remotely how much electricity and gas householders use, doing away with the need for estimated bills and visits from the meter reading man. The roll-out of meters is due to start in 2012.

The government hopes that by giving consumers greater control over our energy use and costs, we'll adopt a more frugal approach which will reduce demand and cut greenhouse gases.

But it's energy suppliers not consumers, that will make the biggest savings from smart meters, according to the government's own figures. Suppliers will save more than £306m in reduced admin, staffing and other costs, while consumer are expected to save just £36.75m – £1.43 per home. And while suppliers will pay for the meters upfront, they'll be able to pass the costs on to us.

What smart meters could do

Smart meters have great potential. They could, for example, communicate with appliances such as washing machines to use power only when demand is low and energy cheap. At peak periods, a smart fridge (capable of retaining its temperature), could 'talk' to the meter and switch itself off, saving power and money.

For those producing their own energy with solar panels, wind-turbines and micro-generators, they could make selling energy back to the grid much easier.

Smart meter or energy monitor?

The assumption that smart meters will automatically help consumers save money and energy is dubious at best.

Crucially, they don't give consumers any more real-time information than existing meters. For that, you need a wireless energy monitor.

Wireless energy monitors are available to buy now, but they're not an integral part of the government's roll-out plan. They tell you how much energy your home uses in pounds and pence an hour. We've tested the accuracy and ease of use of seven monitors. They all do what it says on the tin but our three Best Buys give the most accurate energy use data.

Which? says

Smart meters have potential to save energy and money, but for this to happen there should be:

- a roll-out of portable wireless energy monitors to give real-time information consumers can use to cut energy use and costs. The government agrees monitors are 'likely to be necessary' for consumer engagement but it doesn't compel suppliers to provide them, putting the onus and cost on consumers;
- minimum standards set for meters and monitors so that they show rate of use, cost in pounds and cumulative use over a day, week, month and quarter;
- choice and value should be encouraged by competition. The government's preferred option allows for just one provider of smart meters.

For more on Which? work on energy, see www.which.co.uk/energy.

5.5 tonnes
of CO_2 is produced by the average household each year – twice as much as the average car

10%
of the total UK electricity bill is from items left on standby

£306m
The amount that smart meters are expected to save the energy industry. The public is expected to save just £36.75m, £1.43 per home

Energy monitors

Q What's the difference between a smart meter and energy monitor?

A Smart meters send and receive information about your energy use remotely, without anyone visiting your home. Under current plans, they won't have real-time display units.

An energy monitor works with your existing meter so you can see how much energy your home uses. It gives data on real-time energy costs in pounds and pence an hour.

Some models can translate use into values such as greenhouse gas emissions, and have memory functions so that you can compare data daily, monthly or yearly. Virtually all monitors are wireless, so you can use them anywhere at home. Smart meters are stationary and relatively inaccessible (eg under the stairs).

Q If I use a monitor will it automatically save me power?

A Installing an energy monitor will not by itself save energy. It's just an instant record of the household's energy use and costs, on a real-time basis. It's up to you to act by switching off appliances used needlessly.

Q How do energy monitors work?

A They have a display unit, transmitter and sensor. A sensor clips round the cable protruding from the meter box to monitor the magnetic field round the power cable, measuring the electrical current (amps). This is re-calculated as power used (watts), cost (£) and greenhouse gas emissions (CO_2).

Q Will monitors work with any type of electricity meter?

A The monitors we tested work on the assumption that you can clip the sensor to the phase supply cable which exits the electricity meter. For most homes this won't be a problem, but cables connected to some newer meters are encased. A power company engineer may need to remove the casing to clip on the sensor.

Q Can I connect it to my computer to analyse the data in more detail

A Some can be. See table, p22.

Q Can monitors give information on individual appliances?

A A monitor from Current Cost can, if you add sensors. But with any wireless energy monitor you can just turn appliances on and off while checking the display to see what power is being used.

Owl CM119 £34

Which? test score 80%

PROS This was the most accurate monitor. It's simple to use and has a large, clear easy-to-read LCD screen. The quick-start and troubleshooting guide is useful and the monitor can be used with up to four tariffs.

CONS The instruction text is small with little detail on accessing advanced functions. It can be tricky to fit batteries and to clamp the sensor onto newer power cables.

Accuracy (over 24hrs) at 1Kw +3.18% **3Kw** -0.56% **6Kw** -2.72% **Batteries supplied** Yes **We found it cheapest at** John Lewis and Tesco **Also available at** Argos

Eco-eye Elite £40

Which? test score 78%

PROS There's a large and easy-to-read LCD display and it's controlled by a simple three button front panel. There's a memory function that allows you to check energy use over time. The quick set up and troubleshooting guides are useful.

CONS This unit only supports a single tariff supply and could be tricky to fit on to newer power cables.

Accuracy (over 24hrs) at 1Kw -3.54% **3Kw** -4.81% **6Kw** -5.67% **Batteries supplied** Yes **We found it cheapest at** Amazon.com **Also available at** Electricity-monitor.com, energy-monitors-direct.co.uk

Owl CM130 Micro £25

Which? test score 71%

PROS This simple, accurate and easy-to read monitor is a bargain at this price.

CONS It may be too basic for some – there's no memory function to compare use over time, for example. The controls are on the back, making it fiddly, and it may be difficult to clamp the sensor to newer power cables.

Accuracy (over 24hrs) at 1Kw +0.42% **3Kw** -3.89% **6Kw** -5.97% **Batteries supplied** Yes **We found it cheapest at** Energy-monitors-direct.co.uk **Also available at** Tesco, Asda, John Lewis, Amazon.com, Electricity-monitor.com

COUNTING ON SAVING

Nick Perry, *IT manager, London*

Gadget fan Nick reckons that his energy monitor has helped cut his electricity bill by up to £200 a year.

One in ten Which? members has a monitor, according to our survey and most say it's saved them money.

Nick bought an Electrisave Centameter for £70 a couple of years ago. He wanted to see how much power he'd be using in his new flat and to save money. He said the monitor made it easy to tell what appliances use lots of power over a short period. He switched to an Economy Seven tariff (it costs less to use energy at night than in the day) and tries to uses high-energy use appliances, such as his dishwasher, at night.

The monitor isn't accurate enough to check how much power less energy-intensive things, eg light bulbs, use over longer periods.

USING THE TABLE
The more stars the better

Specification
Price For Best Buys we give the cheapest widely available high-street price. If we couldn't find them at major high-street retailers we give the common online price. Prices for other models are a guide to what you expect to pay. **Tariffs** More complex devices generally support a two-tariff electrical supply as a minimum (eg Economy 7) with programmable times and costs for each individual tariff. **Memory function** Can compare historical data over given periods. **Projected use** Uses data to estimate future use. **PC use** Can connect to a computer.

Test performance
Accuracy We measured the accuracy of monitors over three power loads: 1kW (1000 Watts), 3kW and 6kW in a 24 hour period. ★★★★★ accuracy within 5% ★★★★ within 7.5% ★★★ within 10% ★★ within 12.5% ★ within 15%.

Ease of use Based on instructions provided, ease of connection and installation and use of monitor once installed.

Score
Ignores price and based on:

Accuracy	50%
Ease of use	45%
Features	5%

SMART METERS	SPECIFICATION					WHICH? TEST PERFORMANCE				SCORE (%)
	PRICE (£)	TARIFFS	MEMORY FUNCTION	PROJECTED USE	PC USE	ACCURACY @ 1KW/H	ACCURACY @ 3KW/H	ACCURACY @ 6KW/H	EASE OF USE	
OWL CM119 wireless electricity monitor	**34**	4	✓			★★★★★	★★★★★	★★★★★	★★★★	**80**
ECO-EYE Elite wireless electricity monitor	**46**	1	✓	✓	✓	★★★★★	★★★★★	★★★★	★★★★	**78**
OWL CM130 micro wireless energy monitor	**25**	1				★★★★★	★★★★★	★★★★	★★★★	**71**
EFERGY E2 USB wireless energy monitor	**50**	2	✓		✓[a]	★★★★★	★★★★	★★	★★★★	**65**
CURRENT COST CC128 envi wireless energy monitor	**40**	2	✓	✓	✓	★★★	★★	★★★	★★★★	**58**
EFERGY Elite wireless energy monitor	**40**	2	✓			★★★	★★	★★★	★★★★	**56**
ECO-EYE Mini wireless electricity monitor	**40**	1	✓	✓	✓	★★	★★	★★	★★★★	**48**

a Comes supplied with USB lead, CD-Rom and software.
Other models require purchase of optional extras.