

The National Smart Meter Challenge: redefining our relationship with energy

An inside look at how smart meters helped fourteen households take control of their energy use

A report by British Gas and The Futures Company

What's the scoop on smart meters?

What are smart meters?



Much like your old gas and electricity meters, smart meters measure how much energy you use in your home. But, unlike your current meters, our smart meters send readings directly to energy suppliers. They also come with an easy-to-read smart energy monitor (right) that shows you exactly how much energy you're using, as you use it – and what that's costing you in pounds and pence. And they do it for both gas and electricity.



The smart energy monitor

As well as showing you how much energy you're using and what that costs, the smart energy monitor uses a traffic light system to show you whether you're using a little or a lot. And because it keeps a record, you can compare what you're using now with what you were using two hours, two days, two weeks or two months ago. So if you change your behaviour one way or the other – by switching appliances off, for example, or leaving them on standby – you can clearly see how it affects the amount of gas and electricity you use over the short, medium and long term.

Why are they good news for households?

By displaying your energy use on the smart energy monitor, smart meters give you a much clearer view of how much energy you're using, and the impact of any actions you take help you to control that use. Which means you can make informed decisions about when to cut back and make savings. But smart meters don't just communicate with you: they use wireless technology to send your meter readings to your energy supplier automatically. So no more estimated bills, or crawling into an overflowing cupboard to take a reading. Because you pay for what you use, not what someone estimates you use, your bills are accurate – and you're always in control.

“ I've been posting all the tips on Facebook and sharing the information I'm finding out about levels of energy used in different appliances... My friends are loving it. ”

- (Paul and) Michelle, Walsall



Three things you didn't know about energy

1. If everyone across the UK unplugged their mobile phone chargers when they weren't using them, we'd save enough energy to power 115,000 homes a year
2. Leaving a PC monitor switched on overnight uses the same amount of energy it would take to microwave six dinners
3. Using a low-energy light bulb will cost you £11.97 less a year* than using a standard light bulb

Sources: 1. Carbon Footprint. 2. Good to Know. 3. Carbon Footprint. *Based on four hours' use a day

The nation's first ever Smart Meter Challenge

What a difference 10 weeks makes That's how long the Smart Meter Challenge ran for in 2014.

The first of its kind in Britain, the challenge involved installing smart meters in 14 households, then setting a series of challenges to find out how the technology changed the way people felt about and managed their energy use.

We wanted to go beyond what we already knew about smart meters and get people talking about how they affected their daily lives, and helped them to become more energy-efficient. And we wanted the challenge to be independent. So we asked research agency The Futures Company to find a range of households and run the study for us.

The results show that smart meters give people an unprecedented level of control over their energy use, as well as make it easy to manage. Take Katie from Bradford: at the beginning of the process, she told us, "My bills change all the time and the cost is always more than I expect." But after having smart meters and a smart energy monitor installed in her home (and taking part in the weekly challenges), she knew exactly how much she was spending every day. And she was seeing things very differently as a result:

“ Electricity only costs me about £1.36 a day, and you can't get much else for that, can you? ”

Katie's experience reflects that of the majority of the people in our study. At the beginning, energy was an abstract thing over which they felt they had little control. But by the end, they'd become experts, equipped to take responsibility for how much energy they used. And, crucially, they were using that knowledge to do things differently.

Our study may only have covered a small number of homes, but it hints at the ways in which meeting the Government's target (installing smart meters as standard in British homes and small businesses by the end of 2020) will redefine people's relationship with energy. This report summarises the study's main findings, and includes lots of data, quotes and stories from our households. If you'd like to know more, contact the British Gas press office on 0800 1077015 or media@britishgas.co.uk.

The numbers in a nutshell

Felt in control of their gas and electricity usage¹:

Start of challenge

1/14

End of challenge

12/14

Were able to state quite or very accurately how much they spent on gas and electricity²:

Start of challenge

2/14

End of challenge

10/14

Found it hard to work out what they should be doing to save energy³:

Start of challenge

14/14

End of challenge

4/14

Switched on to saving energy

By taking part in the Smart Meter Challenge, our households discovered some handy tricks for controlling the amount of gas and electricity they used. Here's their top ten.

1. Choose the right size of burner or ring for the pan, and always put lids on to keep the heat in
2. Use a steamer to cook vegetables, so you can layer vegetables on top of each other and still use one ring
3. Cook two meals at once rather than using the oven when it's half-full
4. Wash clothes at 30°C instead of 40°C
5. Only boil the amount of water you need in the kettle
6. Turn down the thermostat on your hot water by 1-2°C*
7. Dry clothes on a line or clothes horse rather than using a tumble dryer or radiator
8. Wait until you have a full dishwasher before you put it on
9. Don't leave mobile phones charging overnight
10. Turn all appliances off standby

*To avoid legionella, always keep your hot water thermostat set to 60°C or above. For more information, visit hse.gov.uk/healthservices/legionella.htm

The Smart Meter Challenge

Why we did it

We wanted to give people the chance to see how smart meters can help them track and control how much energy they use, and to share their experiences with the nation.



So we asked an independent research agency, The Futures Company, to carry out a study into the impact of smart meters on 14 households. We installed the smart meters at the start of the challenge, and The Futures Company captured what people were thinking and doing about their energy use, before, during and after.

Who took part

The Futures Company recruited households of different types and sizes from across Britain: London, Glasgow, Cardiff, Leeds, Walsall, Manchester and Weymouth.

10 weeks, 5 challenges, 3 shifts: the results of the Smart Meter Challenge

The results of the study revealed three clear shifts in the attitudes and behaviour of our households. We've summarised them here.

What we asked the households to do

For the first five weeks, they tackled a different challenge each week, and recorded what they learnt about energy use, and how smart meters changed their behaviour as well as their attitudes towards energy. The challenges included:

- an energy-guzzling game: working out what uses the most energy in the home
- a kitchen challenge: measuring the impact of a range of energy-saving tips on everyday life
- a digital detox: switching off all digital devices for two hours on a weekday and two at the weekend.

For the final five weeks, we left the households to it, to see how many of the new habits they managed to keep up.



1. From 'something technical that I can't see' to 'something simple and visible'

Before

“ I don't really know what kWh actually means on my bill, so I can't tell whether it's accurate or not ”

- Stella, London

Before having smart meters and a smart energy monitor installed in their homes, the people taking part in the challenge said they didn't really understand energy. Because they found it technical and confusing, it was difficult to gauge how much of it they were using. And even the units of measure – kilowatts, or kWh – felt intangible and hard to relate to their daily gas and electricity use.

It didn't help that they couldn't 'see' their energy. (Most couldn't even see their gas and electricity meters, which were hidden away in cupboards or outside.) As Marie in Manchester put it, "It's not like my food, where I can see how much me and the kids are getting through."

Because of this, our households tended not to give much thought to their energy use until the time came to pay a bill. Only seeing their totals for the month or quarter – which are often estimated – made it hard to connect these figures to their daily use.

These factors conspired to make energy a topic that didn't interest or engage our households. Put simply, energy was leaving them cold.

Number of households who agreed they would like to be more aware of their energy usage, but don't have the time to worry about it⁴:

Start of challenge
7/14

End of challenge
0/14

“ Having the smart energy monitor has really opened my eyes to how much energy certain things use when you think they are off, but they aren't really ”

- Kate, London

After

“ I was quite angry about my bills before I got smart meters – I had no idea why I was paying so much. Now I can see every day where it's going, it's clearer and fairer ”

- Stella, London

With a smart energy monitor, it doesn't matter if you don't know your kilowatts from your cubic feet. The monitor allows you to see your energy consumption in units we all understand: pounds and pence per hour. (Though you can opt to see them in kilowatts or CO2 if you'd rather.)

This has made things dramatically easier for our households. Not only do they now see energy as simple and easy to understand for 'people like me' – they've become experts. Like Tracey in Leeds: "I check my smart energy monitor every evening to see how much energy I've used and compare it to the cost of other days." Or Dariusz in London: "I've been telling all my friends and neighbours how much it costs to use the most expensive appliances."

Being able to see what they use every day has also turned the cost of energy from something unpredictable (and sometimes confusing) to something visible that equips people to make informed decisions. Like Lynne from Manchester, who said: "I used to leave the iron on and go and make a cup of tea, but now I know how much energy it's using, I don't."

The traffic light-style system on the smart energy monitor helped to keep energy front of mind, too, with some people even using it to check everything was switched off before they went to bed, so they didn't waste energy on appliances or gadgets they weren't using.

But being visible and easy to understand hasn't just turned energy into something people can comprehend. Many households reported feeling more in control of how they run their homes in general, not just how they use energy. And this gave them the 'feel good factor'.

2. From 'something I can't influence' to 'something I can control'

Before

“ Lighting is really important to me to create a nice atmosphere in my home, so I don't want to reduce how many lamps I use

- Tracey, Leeds

At the start of the challenge, our households said they had a couple of easy tricks for saving energy, like switching off the lights when leaving a room. But they saw these tactics as low-impact and impractical. And they already felt they were doing everything they could to keep their bills down. As Katie in Bradford said: "I've used energy-saving light bulbs before, but other than that there's not much I can do. I still need to give my children a bath and I don't want them to be cold in the house."

Some people also felt that to really make a difference to their use, they'd need to make massive changes – either by spending lots of money on changing their homes, or by denying themselves of things they enjoy and that help make the house a home. Instead, they tried to control their energy costs in other ways, like opting to pay a fixed amount each month to make their bills predictable.

After

“ By just adjusting the temperature of the water by a few degrees, we're saving energy. And [because it's] a one-off thing, [we] can forget about it

- Andy, Walsall

The smart energy monitor is the hero of this story, too. By constantly displaying how their energy consumption fluctuates depending on what they're using, it's shown our households that, in fact, they don't need to make really big changes to see a difference – the little ones really add up. As Lynne in Manchester said: "Knowing now there are small things I can do makes me confident, as I thought [my son] Kyle and I were going to have to change loads."

Our households also discovered that:

- they don't have to deprive themselves to save energy, but can make permanent changes to cut back on their use (like Manju from London switching off the radiators in the rooms she and her husband don't use)
- they can develop energy-saving habits: "I don't leave the water running for ages before I get in the shower now" (Helen, Glasgow). Some of these habits have become so instinctive, our households don't even view them as energy-saving any more, like only running the washing machine when it's full, or drying clothes outside in summer instead of in the dryer.

What's more, being able to see the impact of using particular appliances means our households could make informed choices about, for example, when to use hair straighteners (2-4p an hour) and when to use a hairdryer (23-28p an hour).*

These changes haven't been passing fads, either. Our households continued to make energy-saving decisions once we'd left them to it (in the second five weeks of the challenge). The behaviour changes that 'stuck' the most tended to be ones where people could clearly see the impact of the change on the smart energy monitor, like our hairdryer example; ones that were simple and didn't involve too much sacrifice, like Andy's thermostat; and ones that had a secondary benefit, like Deborah (from Cardiff)'s husband continuing to read in the evenings after the digital detox ended, instead of looking at screens, because he enjoyed it so much.

* Our households calculated these costs, so they shouldn't be quoted as universal costs per minute. Actual costs may vary according to appliance specifications.

“ I didn't like to wash my clothes at anything less than 50°C, as I thought it didn't clean the clothes well enough. I was surprised to see that actually washing them at 30°C did them just as well, as long as the clothes weren't heavily stained.

- Katie, Bradford

Number of households who used their washing machine three times a week or more:

Start of challenge

9/14

End of challenge

5/14

Number of households who used their tumble dryer more than once a week:

Start of challenge

7/14

End of challenge

4/14

3. From 'something that's a time-consuming chore' to 'something that's in line with modern life'

Before

“ It's very difficult to keep track of what you're using, or even notice it, without a smart energy monitor. If you don't see the effect it's having it's easy to forget to try to save energy ”
- Dariusz, London

Before the challenge, measuring and paying for energy was at best a time-consuming chore, and at worst a source of anxiety, for many of our households.

Much of this was down to the fact that energy use felt like an unknown quantity, so people had no idea what would greet them when they opened the bill. But it was also because the ability to monitor energy hadn't kept pace with other things in people's lives: being able to manage their finances without ever stepping foot in a branch, for example, or using apps to monitor everything from how many calories they eat or the number of steps they take in a day.

By comparison, having to go and read the meters outside, or wait for someone to come and read them, felt outdated and burdensome.

After

“ One of my favourite things is not having to take meter readings any more – they get sent to my energy provider automatically ”
- Dariusz, London

With the introduction of smart meters, energy has caught up with the rest of modern life. And our households have really felt the benefit. Tracking their gas and electricity use has gone from being a stressful chore to something that's up-to-the-minute and hassle-free. As Marie in Manchester explains: "Before, on the 15th of every month, I'd read the meters outside, with a torch. Now, it's all digital and the readings will be completely accurate. I don't need to worry when I'm on holiday either, as it's all done for me."

Finally, as another gadget to play with in the home, the smart energy monitor has proved to be a fun way to get the family thinking about their energy use. "The other day I left the telly on while I went to make the tea," said Lynne. "Kyle shouted down the stairs, "You should turn that off if you're not in the room!"

Getting even smarter with your energy

If you've got smart meters with British Gas, you can access Smart Energy Reports online (or we can post them to you). You'll need to opt in for daily or half-hourly readings and give us some basic information about your home.

Smart Energy Reports:

- track your gas and electricity use by the day, week, month or year
- show your likely spend on things like cooking, heating, lighting and appliances
- show you how your energy use compares to that of similar households
- let you view the history of your energy use, so you can keep track of the impact of the energy-saving measures you're taking

On top of this, you'll get general tips on saving energy, as well as personalised ones based on your own use.

All of which will equip you to take even more control over how you use energy in your home.

Number of households who found it very easy to take readings from their gas and electricity meters⁵:

Start of challenge

5/14

End of challenge

13/14

Smart meters, smart savings

After the challenge ended, we looked at how much gas and electricity our households had used over the ten weeks of the challenge with smart meters. And we compared it with how much like-for-like households* without smart meters had used over the same period. Here's what we found.

On average, our households used **7%** less electricity than their like-for-like households without smart meters over the same period.

On average, our households used **6%** less gas than their like-for-like households without smart meters over the same period.

If an average household** kept up this energy-efficient behaviour for a year, they would save more than **£28** on their electricity bill.

If an average household** kept up this energy-efficient behaviour for a year, they would save more than **£38** on their gas bill.

*From the same region, with the same-sized house and who had the exact same consumption levels as the Smart Meter Challenge households in the ten weeks before the challenge started.

** The potential dual fuel annual saving of £66 including VAT is based on Ofgem average annual consumption of 13,500 kWh of gas and 3,200 kWh of electricity per customer on the British Gas standard variable tariff paying by monthly direct debit averaged across UK regions. Excludes discounts and standing charges.

Footnotes

1. Answered top 3 box on a scale of 10 for "How in control do you feel over your gas and electricity use?"
2. Answered top 2 boxes on a scale of 10 for "How accurately could you say what your spend on your gas and electricity – per quarter/month (depending how you pay)?"
3. Answered 'A great deal' or 'Somewhat' to "How much, if at all, do the following factors hold you back from leading a more energy conscious life? – I find it hard to work out what I should be doing"
4. I would like to be more aware of my energy usage but I don't have the time to worry about it a lot of the time" in answer to the question: "Which one of the following statements best describes your energy consciousness?"
5. Answered top box on scale out of 10 to "On a scale of 1-10, how easy do you find the experience of taking your meter

Where to go for more information

For media queries

 call the British Gas press office on 0800 1077015

 email media@britishgas.co.uk

If you'd like to read more about the Smart Meter Challenge, go to the Guardian's dedicated microsite at theguardian.com/british-gas-smart-meter-challenge

If you're interested in upgrading to smart meters, or just want to know more, visit britishgas.co.uk/smarter-living/control-energy/smart-meters.html

Other ways we can help you to save energy

Keeping heat captive: insulate your loft and cavity walls for free

By stopping heat from escaping your home, loft and cavity wall insulation will save you money on your energy bill – up to £150 a year for loft insulation and up to £145 for cavity wall insulation – as well as reduce your impact on the environment. But the best news is, it could cost you absolutely nothing. You don't even need to be a British Gas customer, or buy other products or services.

Now, 90% of homes that need insulation could get it for free from British Gas. Find out more by calling 0800 787 0275 or visit ecobritishgas.co.uk.

Saving money from afar: Hive Active Heating™

Hive Active Heating™ lets you control your home's heating and hot water remotely, via an easy-to-use smartphone app, laptop or tablet. That means you could save up to £150 a year on your energy bill by only heating your home when you need to.

Imagine you've just set off on holiday and forgotten to switch the heating off. With Hive Active Heating™, you'll be able to see on your phone that it's still on, and you can deal with it from the airport or your hotel instead. Or you've made last-minute plans to go out after work: you can set your heating and hot water to come on later than scheduled – without even leaving your desk.

To find out more, visit britishgas.co.uk/products-and-services/hive-active-heating.html

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British Gas Business provides energy to one million UK businesses. British Gas provides value for money, dedicated customer service, innovative energy solutions and the highest quality Home Services expertise in the country.

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