

UK Parliament calls for Evidence on Smart Metering Programme

As readers of my blog will know, I am [concerned about the GB Smart Metering programme](#), not because of any issues with smart meters per se – they can be an important part of a smarter grid. My concern has always been that the GB programme will fail to deliver most of the potential benefits of smart metering, instead saddling consumers with the cost of a lot of obsolete technology.

Now it looks as if that message may be getting across. Parliament's Science and Technology Committee has just started an evidence check and is requesting input from anyone with relevant views on the GB Smart Metering Programme. You have until midday on 28th January and can submit comments on their [website](#). It claims they will be "pre-moderated" and that "Your comment will not be treated as formal written evidence to the Committee." I hope that's just standard wording and not a devious attempt to dismiss evidence.

Some initial mistakes pushed the technology in the wrong direction. Instead of correcting them, DECC has applied more and more complex sticking plasters whilst denying the underlying issues, to the point where the programme is now:

- The most complex system in the world
- The most expensive system in the world
- Based on technology which is heading to be obsolete by the early 2020s.

To justify its value, DECC has ignored evidence on consumer behaviour, relying instead on wishful thinking from academics and consultants. As more is learnt from other deployments around the world it is clear that the benefits have been vastly overstated. One utility – British Gas, almost certainly has enough data to provide a clear picture on long term benefits, but this has not been released, probably because it would torpedo the current impact assessment.

I believe it is the time for a thorough review to ensure that Britain gets the smart metering system it needs. If the current programme continues it will almost certainly overrun on cost. Parts of it will be obsolete by the time the deployment is complete and a new replacement programme will need to start by the end of 2020 if the meters are to continue operating, with all of the associated costs. It has all of the hallmarks of a major IT disaster, but one where the public will be more conscious than ever before of the true cost of a Government screw-up, because it will be clearly visible on their inflated energy bills.

The UK Government departments and Non-Departmental Government Bodies have widely different approaches to basing policy on evidence. At its best we have [NICE](#) – the National Institute for Health and Care Excellence, which is world recognised for its competence in using evidence to direct clinical and prescribing policy. However, at the shallow end of the evidence pool we find the desperate doggy paddling of DECC, whose mandarins still pursue the approach of policy leading evidence, i.e. they make up their minds about what they want to do, then manufacture the "evidence" to support the policy.

I'd like to address the questions raised by the Science and Technology Committee and suggest how they might go about obtaining some real evidence on which to base a smart metering programme. However, I don't think they need to look far to come to the conclusion that a good programme would almost certainly look very different from the current GB deployment plans.

To start an assessment of the programme, it's worth looking at a [paper that Dieter Helm has written in praise of smart meters for Smart Energy GB](#) – the body charged with selling their benefits to

consumers. Dieter is a leading figure at [the disruptive end of energy policy](#), advocating a free market for generation, which will allow users to consume as much energy as they want, as long as generators fulfil their carbon obligations. But at least it is an energy policy, which is more than you can say for what we have been offered by successive Governments. He makes the point that smart meters will provide data to help secure reliable and continuous supply. To achieve that, his vision of smart meters would be that they are part of a ubiquitous roll-out of household broadband, sending real-time data to the grid.

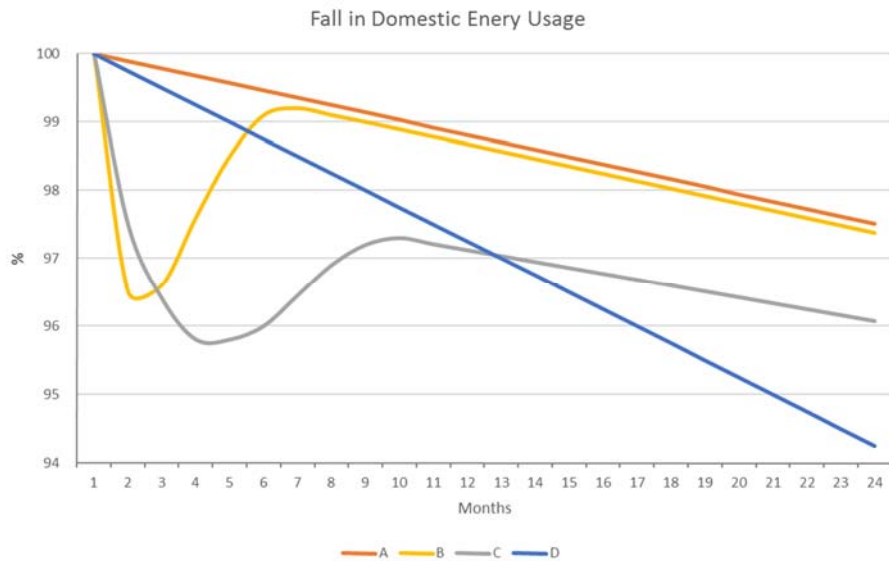
The irony is that Dieter has written this article for Smart Energy GB. I don't disagree with what he says, but the smart meters that we are being given, and which Smart Energy GB are promoting, are not the ones that Dieter is writing about. DECC has designed meters which are incapable of fulfilling any of these points. Dieter may well recognise this, as in his penultimate paragraph he points out that "the roll-out of smart meters should not be thought of as a one-off exercise. It is a continuous program". In other words, he is saying that we will very quickly need to write off the £15 billion or so that will have been spent on them (and been added to our energy bills), and then go and spend another £20 billion or more to replace them with something that works (which will also get added to our bills). When the expert commissioned to write the PR for the metering programme says that, you know something is going very badly wrong. Which brings me back to the parliamentary committee's call for evidence.

I'll address this in the order of the Science and Technology Committee's [paper](#), starting with the alleged benefits. As well as explaining each problem I'll also suggest the action which needs to be taken to obtain the necessary evidence.

The first perceived benefit in DECC's assessment is based on the fact that all consumers will be offered an In Home Display, enabling them to see how much energy they are using and how much it costs. Few would argue that making energy use more real is anything but a good thing, but you don't need a smart meter to do that. Energy monitors have been around for years which consumers can install themselves, or which meter readers could clip onto meter tails. They've been given away free in the past, or you can buy them for around £20 on Amazon. At scale they could be made for under £10. (I used to design them – this is a real manufacturing cost.) If the aim of the programme is to inform users of real time electricity usage, that would be the most cost effective way to do it.

The In Home Displays being supplied with smart meters look old fashioned. Their design and interface appear to date back to a time before smart phones and remind me of the lab instruments I used at college in the 1970s. We know from evidence of In Home Display usage that most end up in drawers within a few months. We also know that although there can be an immediate change in behaviour, it slips back within about six months. That's because for most consumers, energy is used when it's needed and saving a few pounds each week does not change behaviour for long. A [thorough study in the Netherlands](#), showed that the average saving was around 0.6%. However, electricity use is actually falling by around that amount each year according to DECC's own figures as appliances become more efficient, and it's not clear whether some or all of the 0.6% decrease may have been due to faster appliance replacement, which would negate the improvement. That survey used more data over a longer period than anything DECC has released.

It's important to understand the need for long term data if you want to predict consumer savings. When a user first gets an In Home Display they may ignore it, or start looking to see what uses energy. The following graph shows some of the possible outcomes:



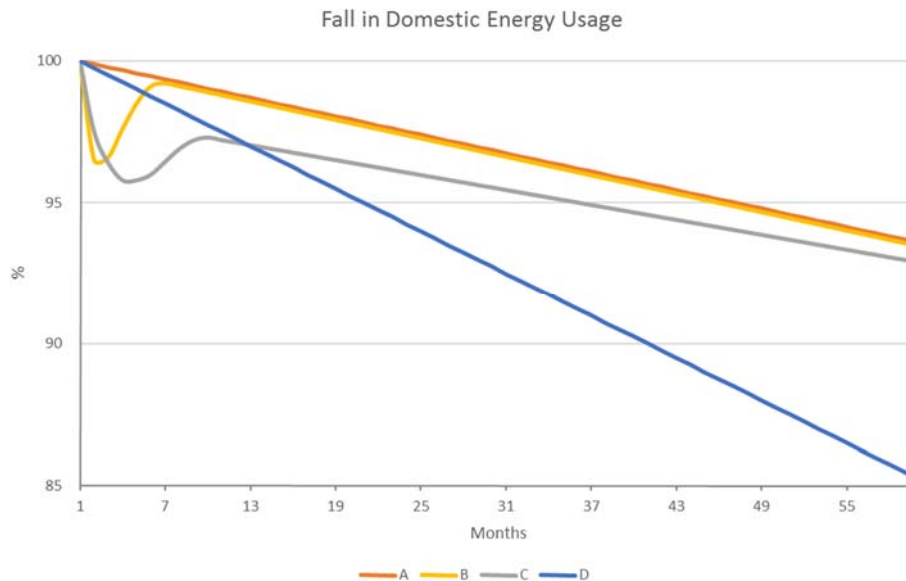
Line A (red) shows the average decrease in domestic electricity consumption, based on [DECC's figures](#). This is going down because of legislation which forces manufacturers to make appliances more efficient. Over time, as we get new phone chargers, TV, fridges and light bulbs, the average amount of electricity we use gets less.

Line B (yellow) is the typical reaction to an In Home Display. Users start to turn off lights and yell at the kids to reduce consumption. After a few months, most of them begin to revert back to their normal behaviour, with energy consumption rising back to meet the falling average.

Some users make a more positive change, as shown by line C (grey). They find something which is energy hungry and go out and replace it. It may be getting rid of halogen light bulbs or buying a more efficient fridge. Although their behaviour also reverts, they will see the ongoing advantage of having made the physical change.

Finally, line D (blue) is what DECC thinks will happen – i.e. users will continue to reduce their consumption by an additional 3% every year.

If we look a bit further out, we see how wrong that assumption is.



Showing the same trend over five years, both the IHD users will revert back to the average. That should be obvious, as the average declines commensurate with the population gradually replacing inefficient devices with more efficient ones. All that the IHD has done is speed up the replacement decision for a small fraction of users. Appliances will continue to improve, getting better than the ones that they have just replaced, so their annual savings slowly decrease as they once more reflect the norm.

Now look at what happens to DECC's projection (line D). It keeps on falling. That will only happen if consumers keep on replacing devices, but that makes no sense. Once you have a modern appliance, replacing it with a more recent one generally only saves you a few tens of pounds each year – far less than the replacement cost. The US Government's Energy Star program has a good web [calculator for fridges](#) – usually considered the worst offenders, which points this out. So DECC's savings are illusory.

They're also pretty insignificant in the overall scheme of domestic money wasting. It is worth comparing energy wastage with food wastage. As the recent BBC series "[Hugh's War on Waste](#)" showed, the average home throws away £470 of perfectly edible food each year, a figure which is growing. In contrast DECC estimates that a smart meter will save the average home £23 a year, although the evidence from the Netherlands suggests that may be an overestimate. Trying to believe that an old-fashioned display in the home will have much impact is difficult to accept. If consumers are happy to waste over twenty times this amount of food, why will they put effort into changing their energy use? It suggests that any behavioural change for energy is purely a DECC wish, not a consumer reality.

Action: Science & Technology Committee – Ask behavioural psychologists whether consumers will bother, based on these figures? Use this response to adjust the perceived financial benefit in the smart metering impact assessment.

That is for electricity meters. For gas metering, there is very little evidence that suggests they save money for consumers. The Dutch study suggested a 0.9% saving, but with multiple provisos about confounding factors. Understanding gas usage is difficult. Whilst you can equate electrical power being used with a short term activity, such as boiling a kettle, it's much more difficult to do that with gas. Gas is mostly used for cooking, heating and hot water. Turning your oven down will reduce the

power required for the oven to reach temperature, but will increase your cooking time. I've asked various members of DECC and Smart Energy GB which is the more efficient option and none know, so it's difficult to claim there's any evidence that showing gas consumption has any effect. For heating, a display gives you little idea of the saving if you turn your thermostat down. What could save money is a smart thermostat, like British Gas' excellent Hive. So if the aim is to save users money on their gas bills, all of the evidence suggests they should be given smart thermostats, not smart gas meters.

Action: Science & Technology Committee – Compare the costs of alternative methods for promoting consumer energy savings. If there is a more efficient option, it should be pursued separately, rather than loading the smart meter specification with an overly expensive engagement technology.

DECC reports constantly cite the [Early Learning Programme](#) which found annual energy savings of around 2.2% for electricity and 1.5% for gas in the first year, from which they somehow concluded that it was realistic to expect savings of 3% or more every year. These figures are based on just over 6,000 pairs of smart meters and 5,000 gas meters, fitted in 2011. I have seen no follow up on these figures. From data I have seen on much larger deployments, the initial gains are rapidly lost as users revert back to their previous behaviour. There should be a further four years of data available which could give us evidence. The fact it is not presented suggests it may not be the evidence DECC wants revealed.

Action: DECC – provide five years of follow up data for the ELP users.

The Science and Technology Committee repeat the claim that the rollout “will increase consumers' confidence in and engagement with the energy market”. Various reports over the past few years have shown that the level of consumer trust in energy suppliers is at an all-time low ([including a report by the Smart Meter Central Delivery Body](#)). You could argue that improving the level of confidence and engagement shouldn't be difficult, as it can't get much worse. However, you need a mindset within a company to change that and that's not been obvious in the UK energy suppliers. There's a good paper on “[The Role of Trust in Consumer Relationships](#)” written by the ESCP Europe Business School. It was based on a study of the banking, insurance and mobile phone industries in the UK and US and concludes with a set of ten recommendations. An important one is “admit mistakes, apologise and fix them.” There is little evidence of that within the industry or within DECC. It reminds me of a comment I heard from a senior member of one of California's utilities, who told an audience of industry executives that “the best thing about smart metering is that it gives us more evidence to blame the customer”. Whilst that attitude prevails it is difficult to see how the rollout will increase consumer confidence. So any financial benefit from that should be excluded from the cost benefits analysis.

Action: Science & Technology Committee – Ascertain whether UK energy suppliers and DECC have the mindset to admit mistakes, apologise and fix them. If not, remove any accruing benefit from the smart metering impact assessment.

Another benefit cited by DECC is the ability to move to 24 hour switching, along with the growth in third parties who will provide the ability for customers to switch more frequently. As [market reports on switching from analysts like Vaasa](#) show, switching starts to fall in deregulated markets as the market matures. In the UK it peaked at around 30%, (helped by the doorstep miss-selling scandal), since when it has fallen. Much of the remainder is through dedicated switching sites, which receive a commission from the energy supplier each time a customer switches. That commission based

model is just about sustainable for annual switching, as long as utilities perceive value in customer acquisition, but is definitely not sustainable if customers switch more frequently. “An enabler for 24 hour switching” generally has a subtext of belief in service models which can switch a customer on a weekly or monthly basis, but there is no evidence that such a business model is sustainable. In the US, where admittedly this business is constrained by the limited degree of deregulation, a number of startups have attempted to offer this type of service based on Green Button data from smart meters. To the best of my knowledge, none have been successful. Hence it is questionable whether this is more than just a piece of marketing fiction.

Action: Science & Technology Committee – Request that DECC single out the real contribution from 24 hour switching and provide justification for those savings. Unless these are robust, remove this figure from the smart metering impact assessment.

Moving on to the technology, more evidence is required for the choice of both the in-home and long range wireless standards. In the home, meters communicate with each other, the comms hub and the IHD using a variant of the ZigBee standard. Rather than using the same version deployed elsewhere in the world, DECC and the smart metering manufacturers have branched the specification to produce a far more complex variant unique to the UK. Over the four years this has taken, support for ZigBee has declined and it has rapidly being superseded by a new, incompatible mesh standard called Thread. The result is that industry expertise and support for ZigBee is already atrophying. This means that the version on which GB meters are based is essentially obsolete. When security or performance flaws are discovered, as they always are with wireless specifications, there will be a lack of expertise to correct them. In the worst case scenario the entire smart metering network may need to be shut down if faults are found.

Action: Science & Technology Committee – Ascertain the likely level of expertise to support the chosen SMETS2 ZigBee standard over the next 20 years. Assess the risk and cost of having to conduct a total network shutdown.

DECC admits that the current ZigBee standard will not work in around 30% of homes due to range issues. Ironically, the mesh capabilities of ZigBee, which could alleviate this are not being used, because of security concerns. Instead DECC and smart meter suppliers are attempting to develop a new version of the standard which operates in the 868MHz spectrum, which would increase the range for an additional 20 – 25% of homes. This is a complex task. The ZigBee Alliance initially attempted to do this, starting in 2001, but despite ten years of development by radio experts, the resulting specification was commercially unsuccessful. It is questionable whether a DECC led group with significantly less wireless knowledge can accomplish what the ZigBee Alliance could not, especially in the timescale they claim. But then, DECC’s idea of time is very different to most people’s. Moreover, the spectrum they have chosen could become increasingly congested with the appearance of LPWAN solutions such as Sigfox and LoRa. None of this appears to have been taken into account, so there is a grave concern that this work will ever succeed, leaving 30% of homes without In Home Displays.

Action: Science & Technology Committee – Obtain expert evidence on the likelihood of DECC’s 868MHz project succeeding. Determine how this is likely to be impacted by the growing use of the 868MHz spectrum by other local and LPWAN standards. If the prospect of success is low, reduce the value of customer savings to reflect the by 30% of homes unable to access them.

More scrutiny also needs to be given to the choice of wide area wireless connection used to return data from the smart meters. This is implemented within the comms hub and is currently specified as GPRS / SMS for two of the three CSP contracts. However, the UK's GPRS networks are [scheduled to be turned off](#) by 2026 at the latest. Contracts for both of the regions using GPRS were won by Telefonica, who are being acquired by Hutchinson. Given that Hutchinson has no 2G network (which is what is used for GPRS) they will have little stomach for maintaining spectrum which could be profitably refarmed for use as 4G or 5G. If smart meters are to remain operational after 2026, then all of the comms hubs in these areas will need to be replaced by the start of 2026. This implies an additional cost of around £2 billion (split between new hardware and installation costs) between 2020 and the end of 2025. This should be added to the program cost as it cannot be avoided if the meters are not to become stranded assets.

Action: Science & Technology Committee – Require DECC to ascertain the number of comms hubs which will need replacing before 2026 and add this cost to the smart metering impact assessment, as it falls within the meter lifetime.

It is important to prepare for the 2G turnoff. It is far from clear which wide area technology will be [the best choice](#) after 2020. 3G may be turned off even earlier. LTE (4G) will remain power hungry and expensive. 5G is unlikely to provide national coverage before 2026. New IoT based options, including LTE-M and NB-IOT may be the solution, but infrastructure for them may be too far out. Alternatively LPWAN may provide a solution. However, some of these solutions may interfere with the 868MHz ZigBee radios, requiring a redesign of the home network. If that is the case, or if ZigBee chips and support have started to disappear this could also require upgrades of smart meters. To be ready for the 2G turnoff, a new specification will need to be completed by 2020, followed by comms hub reinstallations in the affected areas by 2026, i.e. well before the anticipated life of the smart meters. So this program, which may also require meter replacements, must be costed into the smart metering deployment cost now.

Action: Science & Technology Committee – Require DECC to develop a broader strategy for the 2G turnoff and add that cost into the current smart metering programme impact assessment.

A lot is made of the fact that future energy networks will have better information upon which to manage their activities and investments. As the current smart meters only report data 24 hours in arrears, that is not a vast improvement on what the grid operators already know. Networks need more granular data in real time, which is a major shortfall of the current smart meters, as identified [in Dieter Helm's article](#). However, that problem will require changes to the meter firmware (and probably hardware) in addition to a new comms hub. There should be a far more thorough investigation made into the value of data granularity and latency for grid optimisation, which should assess whether there is real value for the grid operators in day old domestic electricity usage data along with the cost benefit of upgrading meters for more real time information if there is. (Real time gas data probably has no value, as gas is stored, not generated against demand.)

Action: Science & Technology Committee – Commission a review of the value of smart meter data granularity and latency for grid optimisation. Based on this, revise the impact assessment figures for benefits and/or the cost of updating the smart meter specification.

From technology the next point of concern is tariffs. There is very limited evidence about the use of flexible tariffs for demand-side response in countries like the UK. What evidence exists is for utilities

with vastly different load profiles, typically Australia and Southern US states where summer demand is dominated by air conditioning and pool pump use. In comparison with these, [UK demand is almost a flat line](#), largely thanks to the effect of the Gulf Stream, which DECC really should factor into their calculations. The main problem is that the UK is suffering from a lack of long term energy policy, with insufficient new generating plant being built, as a result of successive Governments failing to make decisions. That means the gap between generating capacity and demand is becoming ever smaller, with a growing risk of power cuts if we get severe winter weather. Tariffing and smart meters are not a real solution – at best they are a very poor sticking plaster for a lack of policy. Nor is there evidence for their use in conjunction with half-hourly settlement. Whilst the UK Government rightly sees that it should move from the current forward pricing approach to half hourly settlement, that needs a fundamental policy change which probably involves commissioning significantly more generating capacity. That is unlikely to happen within the lifetime of the current smart meters, so any element of saving attributed to smart meters should be removed from any suggested benefits.

Incidentally, the provision of tariffing data for consumers would be far better conveyed via broadband to smartphones or wireless consumer devices than to the In Home Display. The UK is the only country attempting to use a dedicated display for this purpose. The programme only expects the IHD to be used for around a year, but there is no indication of how tariffing information would be supplied after that point. Again it suggests a strategy which has not been thought through.

Action: Science & Technology Committee – Perform a realistic review to determine when energy policy or regulation might realise any benefits from smart metering. Consider whether the programme should be halted or delayed because of this.

A further benefit that is cited is the market for third party SME developers to offer innovative services to customers. Switching has already been covered and discounted. Other innovative services would almost certainly require real-time energy consumption data which is not available directly from the smart meter. Instead the consumer or service provider would need to cover the cost of a Consumer Access Device (CAD) to bridge between their metering network and their own broadband connection. Existing energy monitoring devices, like the Loop from Navetas are likely to be cheaper and easier to install, making it unclear why consumers would want to purchase a CAD. In other countries where consumers have been allowed to connect devices to their metering network take-up has been very limited, with most manufacturers of such devices withdrawing from the market or going bust. Incidentally, it has taken 4-5 years before these energy suppliers have successfully implemented the capability for customers to connect devices to their smart meters, as that process poses significant security issues, even without the added complication of the DCC. Even when that has been done, there is no evidence of innovative services appearing.

Action: Science & Technology Committee – Assess whether the appearance of the proposed services is real or merely wishful thinking. If the latter remove any benefits from the smart meter impact assessment.

The committee's document does not mention security. This omission is worrying. Earlier this month industry experts concluded that the major recent outage in Ukraine was probably the [first example of a malicious malware attack on a power grid](#). I have noted before that [it would be easy for a malicious programmer](#) to obtain a job at one of the smart meter companies. They could then insert a piece of code into the meter firmware which would result in millions of meters turning off simultaneously and causing massive damage to the grid. Other industries making safety critical products have design practices to try and prevent this, along with test regimes to attempt to

discover any such attempt. In comparison, the level of firmware engineering in many metering companies is best described as hobbyist. To be fair, these are not skills a company obtains overnight and most meter manufacturers have neither the background in security critical firmware design, nor the margins to pay the salaries of the small number of experienced firmware engineers who do. But this is a real risk.

Action: Science & Technology Committee – Ask yourself how you managed to write your paper without once mentioning security. Then commission an independent audit of meter manufacturers and energy suppliers to determine whether they have the skills, processes and test regimes to produce and deploy safety critical software. Note that this is not the same as the security audit that GCHQ did on the specification. If necessary, ask them for advice.

The Smart Metering call for evidence document makes a number of other statements which need to be questioned, as they imply the acceptance of “facts” propagated by DECC which may have limited validity. Evidence should be sought regarding their veracity as they may incorrectly colour the real evidence behind the programme.

The first of these is that the Government has engaged widely with industry and other stakeholders. My experience is that the Government, and DECC in particular, has worked hard to limit engagement to energy companies and existing suppliers. With few exceptions other companies have been excluded, particularly those with expertise of wireless communications, security and data analytics. Participation in DECC working groups has been limited to utilities, energy industry associations and representatives of trade bodies (notably BEAMA) who push the view of current suppliers who want to maintain the status quo. That has led to very limited due diligence of the technology chosen, with more emphasis put on PR and PowerPoint presentations than technical merit. The irony is that there are successful UK companies who are deploying smart metering to other countries at a fraction of the cost of the SMETS2 meters, but who have been excluded because they are not existing suppliers to UK energy suppliers.

The second questionable statement is that “the case for an energy supplier-led approach in the UK is strong”. If it is, there should be evidence for this. The UK is, to the best of my knowledge, the only country in the world which has taken this approach, rather than making that the network companies responsible. As such the UK case is bizarre and has resulted in significant additional costs, not least in the requirement for the DCC. The relative costs of supplier versus network-led approaches are not shown in the impact assessment, so it is not possible to tell whether the case is strong or not. Without that evidence this is just a bland statement after the event to support a dubious decision.

The third question is around the statement that “energy suppliers have strong commercial and financial incentives to engage customers” as a reason for a supplier led approach. They had the same strong commercial and financial incentives to engage customers when they were all miss-selling on the doorstep. They have one of the worst reputations for customer engagement of any industry in the UK. This is a valid argument against a supplier led approach. Equally, it suggests that the only way to change that poor engagement is through major disruption by bringing in new entrants from other industries, such as Google or similar. However, those more tech savvy entrants would certainly not want to take over the current smart metering deployment, which they would consider as quaint and archaic.

The fourth question is the repeated statement that the assumptions have been widely consulted. They have certainly been published on DECC’s website, but that is an arcane location, akin to the

“locked filing cabinet stuck in a disused lavatory with a sign on the door saying Beware of the Leopard” of Hitchhiker’s Guide to the Galaxy fame. Those involved in the deployment have been aware of it and have responded with comments to further their vested interests. Almost nobody else has been aware of it, not least because they have been excluded from the process, as described above.

But perhaps the greatest piece of evidence is that energy suppliers did not deploy smart meters themselves. They waited until the Government used them as a policy instrument, allowing the cost to be loaded onto consumers. That has been the same the world over. With few exceptions, where there is a valid business case, typically stamping out fraud or the cost of reading in sparsely populated areas, smart metering has not been financially effective without Government subsidy or regulation allowing the cost to be loaded back onto bills. Germany made the point when they backed away from their smart metering programme because it was financially non-viable. DECC received similar input from external consultants, but then adjusted the figures. They are still fighting Freedom of Information decisions to keep the calculations behind those adjustments from being made public, denying the evidence behind the programme.

Throughout its life, the GB smart metering programme has been an evidence free zone. It need not be. One company – British Gas, has deployed over 1.5 million smart meters over the past few years. If they released the energy consumption from these meters, along with equivalent data from 1.5 million households with dumb meters, it would provide the biggest evidence base in smart metering. That data should be anonymised and given to two or more independent companies or institutions to determine the actual savings and the length of time that consumers continued to engage with the In Home Displays, as explained above. If we could see that, we could then revisit the costs of deployment (which miraculously for a Government IT project have hardly changed over six years), offset the real savings that have been demonstrated and calculate whether it is worth continuing with the current smart metering programme.

Action: Science & Technology Committee – Obtain anonymised data from 3 million British Gas customers to independently determine actual consumer energy savings and length of engagement with In Home Displays.

Even that will not give us the full story. As explained above, there are additional costs due to the 2G turn-off, which will occur well within the lifetime of the current meters, in some cases within five years of their deployment. There are also questionable assumptions about service savings, the lifetime and support capability for the ZigBee element and whether the data provided from these meters fulfils the need of a future distributed generation network. And we must be absolutely certain that everything is secure.

The history of large scale Government led IT projects like this is not good. The record of DECC in delivering projects is one of the worst. The UK needs a good smart metering deployment. If the current one is not fit for purpose it should be stopped.

Action: Science & Technology Committee – Insist on an evidence based policy, not a policy of technical illiteracy and vested interests which need to generate spurious evidence, which is what appears to have been the case with the smart metering programme.

Please write to your MP and members of the Science and Technology Committee. This has all of the hallmarks of the next major Government IT disaster. Ministers should have a vested interest. It is worth pointing out to them that unlike previous mistakes which have just registered on Treasury spending budgets, this one will show up on 30 million energy bills, just in time for voters to show their feelings at the next election. Even if Ministers don't care about energy policy (which they don't), they might show a bit more interest if they realise this is about their own political survival.

Nick Hunn

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