Changing Energy Behaviour

An emerging opportunity

Simon C R Lewis — February 2012

We all need to use less energy. Some of us even *want* to use less energy. Over the last few years, a new industry has emerged offering consumers a range of ways to achieve this goal. Apart from the significant efforts towards energy-efficient *systems* (better-insulated houses, low-energy bulbs, high-efficiency appliances and so on), much of that industry is dedicated to monitoring, analysing and presenting *information* to the consumer.

It's a huge effort, and better ways are constantly being found to measure or uncover patterns of energy use, compute possible economy measures and suggest them to consumers. Some quite amazing insights and elegant information designs are possible.

But none of this will end up mattering if consumers don't actually **change their behaviour**. As consumers, we have to **do something different**, starting now and continuing every day, if we're actually to lower our individual energy bills and save our collective planet. Merely knowing what we **could** do is not enough. We have to actually **do** it.

This short paper is about how hard it is to get people to change their behaviour, why that is, and why a rapidly crystallising set of insights might be about to offer the best way to achieve that goal. For governments or other "not for profit" bodies that goal might be enough. The real trick though – the real insight – will be uncovering how to help users of energy to change their behaviour, **and** make money from doing so. That's the prize on the table.

A large number of people around the world are working to solve pieces of this puzzle. Many if not most of them are freely publishing their insights. The opportunity that this paper suggests is to rapidly and efficiently find, sort and bring those insights together. Then to use that synthesis to create and suggest a commercial solution to the challenge that would offer a step-change in results. And finally to find the most effective way to profit from having done so.

In the sections that follow, **Problems** lays out what we can already say about why this is hard. **Inspiration & Ideas** brings together some of the nuggets scattered on the surface that make us believe there is gold underneath, and discloses some of the sources of those nuggets. Finally, **Proposal** suggests a way to rapidly converge on the as-yet unidentified commercial solution we believe is there waiting to be uncovered by someone soon.

Executive Summary

1. For energy economy to work, people have to **change their behaviour**.

Otherwise, no savings will be made, and there's no point.

2. **Information alone** will not be enough to cause that change.

There's lots of evidence for that. If it was, no-one would smoke, or be overweight, and so on.

3. **Monetary savings** alone may not be enough to cause that change.

The amounts are too small, unless we can cleverly re-jig/augment the way they're delivered.

4. Other ways must be found to **motivate people**.

Because energy economy is still discretionary, and most people don't [yet] care enough.

5. Fortunately, ways **already exist** to motivate people.

Because motivating/influencing people is very attractive in lots of other places.

6. This creates a significant and **immediate opportunity**.

To create new systems based around **motivating** people to change their behaviour.

7. We could **start** now.

With the first steps being to pull together the many separate insights and techniques, and using them to generate concepts for a unique, effective and **desirable** energy economy proposition.

Problems

Let's start by considering why getting people to save energy is so hard, and why existing or proposed solutions fall short or are likely to do so soon. Although we'll touch briefly here on ideas for doing better, we'll leave those mostly for the next section.

How to lose weight

Just eat less. That's right – eat less. Or exercise more. It's that simple. It's a fact of life that if you eat fewer calories than you use, you'll lose weight.

So what's the problem? Why is that so hard? Why are so many people overweight? And why are so many people who actually *want* to lose weight failing to do so? Why is there a huge industry dedicated to finding and offering ways to help people do what they know how to do and want to achieve. Why isn't it as simple as giving everyone a set of bathroom scales, printing the number of Calories on every item of food, and telling people they should consume no more than 2000 or so Calories each day?

The problem is that food is nice, and eating it is pleasurable. By the magic of evolution, the more calorific the food, the more we desire it. It's programmed deep into our brains. It's not expensive either. Eating makes us feel comfortable, it cheers us up, it powers social occasions, and makes us feel better when we're lonely. It's addictive. Besides, diets can start tomorrow. What difference does a day make? It turns out that losing weight is hard, even though it's easy.

How to save energy

In a typical family home (mine) we consume nearly ten times[1] as much energy in gas and electricity as we do in food. Luckily, at present at least, it's still very cheap. My family energy bill is probably only about a quarter of what we spend on food[2]. And yet we're told we've got to save it – to save money, and to save the planet. Luckily, saving energy is nearly as easy as losing weight.

Just turn it off. Or at least turn it down. Or use it less often. Or buy a more efficient product (including a more efficient home, or make your existing home more efficient by insulating it). That's about it. Those are really the only ways of using less energy.

So what's the problem? Why is that so hard? Why do we struggle to make a real and lasting dent in our energy bills?

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[1] According to our latest bill, our house consumed an average of 62 kWh of gas and electrical energy each day last year. I reckon the two adults and two children inside together consume around 6000 Calories of food each day, which is equivalent to about 6.9 kWh.

[2] £1400 per year on gas and electricity = £3.80 per day. Four times that is about £15 per day – a reasonable food budget for a family of four.

The problem is that consuming energy is also nice. It makes us warm and comfortable. Some people like leaving the light on in the hall at night because it makes them feel safe and costs only a few pence. They like having fluffy towels from the tumble dryer, and they want to empty the washing machine in the evening rather than be forced to do it in the morning just to save a few pence using the night-time tariff. A warm shower in the morning is a deserved luxury before the hard day ahead (I myself save energy by showering in the dark – try it if you've not done so). And to paraphrase a comment from a participant in one recently published field study, *"if I'm going to watch TV, I'm going to watch TV."*

So saving energy is easy, except that it's hard. In fact, if people are to do something different:

- They must know **what** to do (information);

- They must **want** or at least be prepared to do it (motivation);

- They must be **able** to do it (capability);

- They must actually **do** it (action);

- They must see that it **worked** (feedback);

- They must feel **rewarded**, and hence motivated to repeat the process (stickiness).

That's a lot to ask. Although the industry is getting much better at the first item on the list (information), it stumbles almost immediately on the second (motivation), and only achieves mixed scores on the remaining items, with the real challenge being to achieve the last one. So why are these things so hard?

The rational actor fallacy

Some of us (especially *"people like us"* who work in the new energy industry), believe that we're rational creatures. We believe that if we're shown the right information – such as the information below – that we'll act in ways to maximise our return on that information.

In other words, if we're told that switching off a light will save us 10p, we'll switch it off. Or if we're told that buying a new fridge will pay back the capital cost through energy savings over 2.5 years after which we'll be in profit, then we'll go out and buy it. The term *homo economicus* is sometimes applied to this imaginary (or at least, rather rare) creature – the people like us.

But the emerging truth is that for everyone else, **information alone** is not enough to change our behaviour. If it was, bathroom scales would eradicate obesity, and no-one would smoke.

There is a lot of evidence supporting this idea that information alone is not enough, and that other ways of encouraging change are more effective. So much so that the UK government, after decades of trying to change public behaviour using either legislation (including taxation), or public information campaigns (leaflets and advertising), is being persuaded to try a range of different so-called behavioural-science based approaches[3]. And of course, there are many carefully designed (and for their creators, profitable) programmes offering effective weight loss and stop-smoking techniques that are based on much richer insights and mechanisms than information alone.

These behavioural approaches are part of an emerging arsenal of approaches from many sources, any of which – or any combination of which – might be the key to the behaviour change we need.

But there are other problems too.

The psychology of money

Money is a funny thing. The value we attach to any amount of money depends on the context and on the "reality" of that money. This psychology is well understood, and is certainly either consciously or instinctively exploited by those who want to sell us things, or otherwise transfer money from our pockets into their own.

For example, many people would not worry about a £2 difference in the price of the new £450 TV they're buying. It's too small to bother about. But when a £10 product in a supermarket is offered with £2 off, that's a significant saving, and worth pursuing. But it's the same £2! It's obviously a difference **percentage**, but the buying power of that £2 (a good bar of chocolate, for example), is **the same** in both cases. Why do we work differently to get it?

Another well-known phenomena is *loss aversion*. We are likely (some say) to be about twice as upset (whatever that means) about losing some money as we are happy about gaining the same amount. Since many transactions can be re-expressed as either a loss or a gain, this asymmetry is worth knowing about and exploiting.

Another interesting effect is illustrated by this thought experiment. Imagine you have pre-ordered and received a cinema ticket costing £10. You go to the cinema and discover that you've lost the ticket, but they're still available at the door for the same price. Do you buy another and see the film, or do you curse your carelessness and go home? Most people would do the latter. Now imagine that you can't pre-order, you can only get tickets at the door. When you get to the cinema, you realise you've lost a £10 note from your wallet, but you still have plenty of cash. Do you buy a ticket and see the film? Of course you do. Different behaviour, even though in both cases you would "spend" £20. Still believe in *homo economicus*?

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[3] www.instituteforgovernment.org.uk/publications/2/

We all know that displaying *kWh* on an in-home display isn't meaningful to most people. It's much better to appeal direct to people's wallets by displaying money instead. The trouble is that these sorts of psychological effects work against us when we try to use money to motivate people to change their energy consumption. The amounts are too small, and too abstract.

If a domestic energy bill is £1000 a year, that's about £80 a month, or £20 a week, or less than £3 a day. If, by changing my behaviour, I can save 10% of that each day, it's still only 30p. Worse than that, that piffling amount will likely be spread over several different behaviour changes, so that every time I turn off a light, or do the washing at 30°C (which I worry doesn't really clean my clothes anyway), I'm perhaps saving less than 10p. In other words, nothing!

And it's worse even than that. If I'm not the bill payer, I'll never even see the 10p I've just saved through my sacrifice. Even if I am the bill payer, I'll not see the 10p either because it will disappear into some notional reduction in my bill many months in the future (notional, because tariff increases will wipe it out in real terms). Either way, it's not 10p I can go and **spend**, even if there was anything I could buy for that amount. We need to look for ways to **crystallise** and **accumulate** the savings achieved by behaviour change.

Let's contrast energy with the success of retail loyalty cards. These typically offer only around a 1% return on money spent (versus perhaps 10% energy savings), and yet consumers will happily conform to the required behaviour in order to achieve that reward, perhaps because it comes in the form of tangible, spendable, cash-equivalent vouchers or other rewards that create **anticipation** beforehand, and **delight** when they're received. [Note that the reward in the case of loyalty cards is for **spending** money, not for **saving** it. That's an important distinction, from which an interesting possibility emerges, but describing that possibility is not our mission here.]

Here's a final depressing thought on the psychology of money. Although there are individuals and families struggling with fuel poverty (and for whom necessity has made them the leaders in understanding how to conserve it in certain ways), there is another group of much larger users of energy for whom *affluence buys ignorance*. If I can afford the £120 per month that my energy direct debit costs (and frankly, hidden among the £50 Sky bill, and the £50 gym membership, and the £200 car payment, and the £500 mortgage payment, it pretty soon disappears), I may not want to be reminded that I'm spending £4 every day on energy. It's only a couple of cappuccinos after all (for which, of course, I have a loyalty card so that every tenth one is free – go figure). So why would I **bother** to save just 10% of it?

We're going to need a bigger motivation than persuading people to save money they never see and certainly never get to spend on themselves.

Family life

Unfortunately, we're not only not rational, and don't care about saving 10p, we mostly live in groups. This means that although there is just one household energy bill, there are usually several people involved in the energy-consuming behaviours contributing to it. To change **family** energy bills we must therefore influence **family** behaviours, or more effectively we must hook-into existing behaviours and bend them to our needs. [This last point is a rather important one, to which we will return shortly.]

Existing energy-efficiency approaches are largely geared around supplying information to the **bill-payer**, who may not even be the major consumer of energy in the home. Even if that bill payer were a rational actor, these approaches offer him or her little or no support in encouraging the other **bill-agnostic** members of the household to change their behaviour. I

might turn the lights off, and have shorter showers, but does anyone else in the house care?

How much better it would be if we could directly engage with individual family members, incent and reward them each separately (as well as collectively), and encourage and facilitate a positive **dialogue** about energy **between them**. For example, what if we could give each appliance in the home an owner, and make them responsible for (and the beneficiary) of, savings achieved in using that appliance. Then they might be more motivated to change their behaviour. But wait a minute…

People don't consume energy

A leading commentator in this space (Elizabeth Shove) contests very powerfully that people don't think of themselves as "consuming energy". Instead, they engage in the everyday activities of life that happen to use energy. People don't consume gas; they heat their home. People don't consume electricity; they watch the television. People don't consume hot-water; they shower every morning. People don't consume fuel; they travel to the shops. And so on…

This means that we should consider trying to move the dialogue between the user and the machine out of the domain of energy, and into the domain of the things the user actually thinks and makes decisions about. And talking about dialogues…

Wrong time, wrong place

If we want to offer people information about their energy usage, we ought to consider when and where they receive it. When do you look at your energy bill? Mine either arrives by email at a random moment, meaning that I rarely get around to opening it, or it's there on the doormat when I come in through the door in the pouring rain with my hands laden with bags. Assuming it gets opened, I rarely get to the back page where my energy breakdown might be offered.

Similarly, some energy management services assume the user actively "sits up" at an energy-management dashboard (whether on the web, on a dedicated display, or even a smart phone), explicitly interacts with it (motivated by a presumed desire to understand his energy consumption), and then, like a sort-of home facilities manager, makes active decisions about changes to household policy that will have beneficial effects on energy consumption.

It is, with the right motivation, just about possible to **imagine** this behaviour. But we must ask, in the context of the messy, busy, convenience and leisure-driven behaviours that constitute ordinary everyday life for most people, is it likely that energy will be high enough on most people's agenda to motivate this behaviour as the norm? **Really?** Instead of the energy dashboard then, we should again be looking to move the dialogue away from energy *per se*, and into other spaces of human life that do hold some interest for ordinary people.

People are busy, and when they're at home the boring and worthy obligations in life (like energy bills and money generally) come a long way behind the relaxing and enjoyable things (like checking Facebook or watching X-Factor). With this in mind, we should not be trying to introduce a new, separate, **obligation** on users to "manage" their energy, but instead look where possible to hook into existing behaviours, motivations and preferences.

In other words if we're seeking to motivate people to change their behaviour, it makes little sense to add a new behaviour (managing energy), that we then **also** have to motivate people to do. This probably also explains the relatively minority appeal of home accounting software…

Inspiration and Ideas

So much for the bad news. In the previous section we looked at the possibility that it won't be enough "just" to offer people information and insights into their energy usage, and to tell them what they **could** do to reduce it. For the reasons we've discussed (and perhaps many others), even if they looked at and absorbed all that information (assuming it comes in the right form and at the right moment to the right person), and even if they agreed with it and formed an intention to act upon it, it may very well still not actually cause them to take action to change their behaviour. Information alone is not enough. Instead, we might think of what we'll need as the top two-and-a-half sections of this stack:
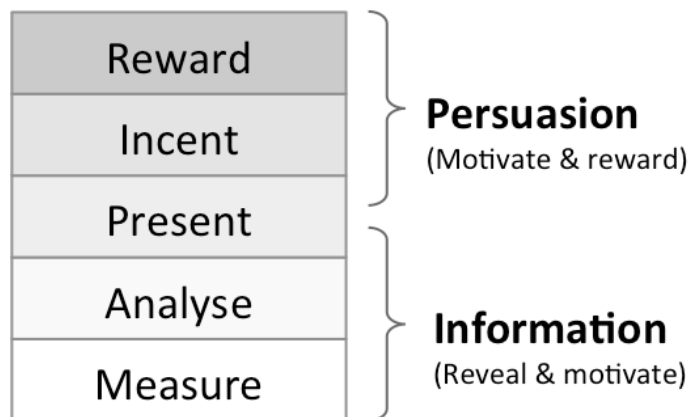
In this picture, the key elements are **incent** and **reward**, which themselves might break down into smaller parts (not shown) including *enable*, *encourage*, *trigger*, *measure results*, *congratulate*, *celebrate*, *feed back*, *target*, *crystallise*, *magnify*, *augment*, and so on.

One of the key ways to conceive a system that delivers this is **not** to think about how to construct the *persuasion* layers **upwards** from the *information* layers, but instead to think **downwards** from the top. We should start with the question, *"what kind of rewards do we want to offer consumers for saving energy?"*, and then conceive a **system** (comprising both technical and business elements) to deliver those rewards in exchange for the desired behaviour. Such a system would be fed and enabled by measurement, analysis and information.

Understanding why something is hard, and what the specific challenges are is already half of the battle won. It's also a source of inspiration. Let's now look at where we might find some solutions. Fortunately, understanding how to influence other people's behaviour has long been a rather interesting topic to lots of people (whether for commercial, governmental, societal, managerial, or other reasons). This means that there are lots of different descriptions of human motivation, and many suggested approaches or "techniques" for encouraging behaviour change, each of which comes from a different context, background, or tradition.

The crucial task, not yet completed by anyone in the context of energy behaviour, is to really sort through all these disparate and separate techniques and insights, to either synthesise a solution, or to find the nugget from which a **radically different concept of how to encourage energy efficiency** can follow.

Just as we might imagine a platform that can measure, monitor and display energy usage, so we can imagine a second component – a **motivation platform** – to sit alongside the measurement and information platform, completing a system to actually deliver the behavioural changes we need, deliver the rewards to consumers for doing so, and deliver the commercial rewards to its creators.

Although we don't yet know what such a motivation platform might be like in detail, we can already talk about some of the places where it might draw inspiration.

Emotion

At present, and for the immediate future at least, the purchase of an energy efficiency system, or the subscription to an energy efficiency service, remains a discretionary purchase. It's not something anyone has to do; it must be something they want to do. Whilst people may justify a discretionary purchase with their head (*"this iPad will mean I don't have to buy a daily newspaper and will therefore pay for itself in just over a year"*), they really buy with their heart (*"I just love it"*).

We must find a way to make energy efficiency appeal to the heart – perhaps by making it about hearth and home and family. Alternatively, we must find a way to make energy efficiency addictive, as so many of the best services are.

Emotion can also lead to transmission between people (*"I've got this great new thing, you should get it too."*).

Intrinsic vs Extrinsic motivations

Up until this point, we have explicitly considered only what we might call the **intrinsic** motivation to save energy – that is, the direct effect of saving money (or for some people, the planet). We have also observed how relatively small the amounts of money involved are, and how they naturally appear only as notional amounts, never to be actually received. Although we'll touch on how we might deal with those issues in the next section, the necessarily small amounts involved may ultimately limit what we can do with this intrinsic motivation.

But what if we could introduce some other motivation from outside the energy world? Let's call it **extrinsic** motivation. Suppose the user worked to earn those rewards by executing energy saving behaviours, earning the intrinsic financial rewards, but being motivated really by the extrinsic "carrot", whatever that might be.

And what might it be? We need more time to consider this, but it's easy to imagine (for example), a retailer or other business wanting to give away promotional incentives (whether vouchers or whatever), and being prepared to do so in the context of an energy-saving system. Then, perhaps every £5 I save on energy (accounted for by the monitoring platform), gives me not only that £5, but also a £5 voucher. In this way, the intrinsic rewards are leveraged by the extrinsic rewards, to create a worthwhile incentive where perhaps none existed previously. Even

better, we could make things more specific. Turn your washing machine down to 30°C enough times and get a money off voucher for low-temperature washing detergent.

As always, the earliest ideas are never the best, but there is undoubtedly a thread here that could easily be pulled upon further.

Crystallising, accumulating and gaming

We talked earlier about how the amounts of money involved in making any individual behaviour change are tiny. Why would I get off the sofa to turn off a light to **save** 10p? But if every time I turned off a light, I **earned** 10p, and if I could see it building up, and if I could track my progress towards a specific goal (like buying a pair of shoes), and if the seller of that pair of shoes would help me towards my goal (extrinsic motivation), maybe we've got a better story.

What's important is to get consumers to think in terms of the money they're **earning** by conserving energy (money earned is money I can spend), rather than simply money they're **saving** (which, as we've observed, I never see anyway). It's even better if it's money **I** can spend personally, rather than just money saved from the **household** budget.

Imagine connecting this with Amazon, letting me select any item from my wishlist and target my energy savings towards it. Imagine each member of a family (especially the children) being able to do that separately. I suspect my kids would suddenly invoke pester power rather strongly if they knew that they could earn a new gizmo from Amazon by running around acting as household energy prefect for a few months.

Much of the psychology of money has to do with "mental accounting" – even non-accountants mentally keep different money in different pots and account for it with different rules. That's why £2 off a £500 TV does not seem as important as £2 off a £10 product. It's especially why 10p off a £1000 energy bill seems irrelevant, and why if we can find ways to **accumulate** the 10p's into a pot, rather then knock them off the £1000 bill, we're likely to do better.

Once we have crystallised money as a proper motivator, we can also consider what we might call **"derivatives"**. For example (and suspending disbelief about practicality/legality/etc for the purposes of a thought experiment that might lead elsewhere), people love lotteries. The dream of winning £25,000 is well worth the price of a £2 scratch card to many people. How could energy conserving behaviours be recast as lottery entries? Could all the savings achieved across a population of players be pooled, and awarded once a week to a random winner, your chances of winning depending on how much you've contributed to the pool?

Thought of this way, the challenge of delivering energy-economy motivation becomes less a **technical** one, and more one of creative **psychological** and **financial** engineering. This sort of thinking can result in some very surprising (and in some cases rather successful) business models. As well as lotteries, there are some unusual and creative forms of auction as exemplified by things like Price Drop TV. How could we cross-pollinate these ideas with eBay, for example?

Retail and advertising

The energy industry has little experience of how to really excite and persuade consumers, but the retail and advertising industries are past masters. We should examine and understand the various ways in which they conjure enormous motivation out of almost nothing.

The advertising and marketing industry, for example, is very skilled at putting emotion into products. They also "add value" — persuading consumers to part with inflated sums for commodity products (mineral water, for example).

Retailers, in turn, are good at creating "games". Not in the entertainment sense, but in the sense of constructing deals that allow people to believe they are "gaming the system" – getting one over on the retailer, when in fact they are not. *Buy-one-get-one-free* is a now classic example. What could we learn from the very best retail practice?

Habits

A large proportion of our behaviour is defined not by conscious thought, but by habit. If we want to change behaviour, it therefore makes sense to consider which habits might be getting in the way of that change, and which new habits might be worth supporting the formation of.

Again, there is a significant body of knowledge and experience available on habits – how to break them, how to make them, and how to change them. We just have to tap into it, and turn it towards our purpose.

Persuasive technology

This term describes a research area that has been active for several decades, considering and classifying the ways in which technology can be said to (and therefore potentially used to) persuade people (usually in a benevolent rather than coercive way). It is a large area, worthy of further exploration, with a particular advocate being BJ Fogg of the Stanford Persuasive Technology Lab[4]. The *Fogg Behavior Model* describes a three-part mechanism for promoting desired behaviours and links it to technological ways of achieving each step:

$$\textbf{Motivation} + \textbf{Ability} + \textbf{Trigger}$$

This third element (trigger) is particularly relevant to our story. Being able to **remind** people to turn off lights at appropriate moments, or to check that they've put the washing machine on using an economical cycle might be vital elements in helping them **complete** an intention they'd already fully **committed** to. When combined with other elements, it allows us to come up with more creative ways of engaging consumers (for example, a text message saying, "*10p into the accounts of the first 1000 people to switch off a light right now. Go!*").

Insights from this area also include the idea of *behaviour chaining*, where a small behaviour will naturally lead to a larger one in due course, and to the idea (common to weight loss and addiction programmes) of not over-stretching the ambition ("*one day at a time*").

Curiously, it has also been demonstrated that people respond positively to **praise** received from a computer. In fact, so hard-wired is our desire and appreciation for positive feedback that people feel encouraged by praise from a computer even if they are told that the machine has been programmed to deliver it no matter how good or bad their performance is. This is a great example of the kind of stimulus/response behaviours that are deeply buried in our psyche, and which can be exploited to great effect, even by a machine.

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[4] There are lots of relevant websites, but www.behaviorwizard.org is particularly interesting.

Other academic research

A large body of academic literature going back over many years covers all sorts of aspects of human behaviour, how to understand and predict it, and how potentially to influence it. Particularly interesting is more recent work focussed in the energy domain where leading contributors include Sarah Darby at Oxford University, Elizabeth Shove at Lancaster, and Tom Hargreaves at the University of East Anglia.

Some of this work focuses on real world trials and insights (supporting the notions that information alone is not enough, for example), whilst other work tries to deliver even more actionable insights into the *socio-technical* nature of energy consuming habits in homes.

Like all academic research, this knowledge is not always easy-to-understand or make use of. But it is free and publically available, and because of the peer-reviewed nature of scientific research, usually extremely robust (compared, at least, to other more anecdotal sources). These factors make it worth the effort to mine and distil this important source of expertise.

Nudge, Herd, and Freakonomics

A number of more popular books have recently been published that lay out the emerging new field of "behavioural economics" for public consumption. These make a number of valuable insights much more accessible and are available as input for anyone attempting to solve a problem like ours. The task is simply to put the pieces together in our particular context.

Atomic insights

Finally in this section, here is a collection of separate simple observations from a variety of sources that represent the kinds of "grist for the mill" that we need to fully explore and incorporate into any attempt to conceive a new way of motivating people to save energy.

- What's the "etiquette" of energy in the home, and how can we respect it?

- It's often thought that *"behaviour follows belief"*. In fact, there's lots of evidence that *"belief follows behaviour"*. We should exploit this.

- *"Every measurement distorts what's being measured"*. So don't measure energy, measure people, and in a way that the distortion caused is the behaviour change you want.

- Things other than energy can motivate people to turn appliances off. Microsoft found that people turn off laptops at home not to save energy, but because of the noise they make!

- Goal-setting is a powerful motivator. People are strongly motivated to avoid the "cognitive dissonance" caused when their actions are inconsistent with what they've said in public.

- People on pay-as-you-go meters are much better at saving energy. Does this imply that supporting budgeting behaviours (maybe even per appliance) would be useful?

- It takes at least three months for any new habit to stick (for it to carry on when the reinforcement that started it is removed). How could we support that?

- We need to break away from thinking of the web, the smartphone, and so on as the only places human/system interaction could take place. Where else could it happen?

- Children (where present) may have a big role to play in energy economy. Leverage them.

- People need retrospective feedback (you **did** this, and it worked), as well a prospective feedback (**if** you did this, you'd save £X).

- A lot of people struggle with graphs, and particularly percentages.

- Disaggregating energy not just by which appliance used it, but also by which person used it, may be a real breakthrough.

- What other rewards (from government perhaps?) are available for being able to **prove** that your product really does cause energy conserving behaviour?

- It's not just about why someone will want this, it's also about why they'll want their friends to get it too. What causes a network effect? What's the adoption and spread logic?

- What are the motivations that people **already** have, which, if you offer an incentive, they will readily enact?

- Not money off; cash back!

- Start with a small target behaviour. Find out what's preventing it. Remove the obstacle.

- Getting people to **commit** to doing something is different to getting them to **do** it. How can they be reminded of the commitment, and triggered to do it.

- The paradox of choice = the more things we worry about, the less we actually do. Therefore, just start in one small place, and work from there.

- Permanent behaviour change is the hardest to induce – it's too daunting for people. So make it temporary. *"Just turn off the bathroom light this week."*

- Helping people to look good is a great motivator.

- Talking about ways you might persuade other people, persuades you yourself.

- Sometimes you want to do something, but you just need to be reminded to do it at the right moment.

- Different people have different motivations, even in the same household. Target them as individuals.

- Success leads to success (no matter how small).

- And so on…

Proposal

Let's summarise what we've discussed in the picture below. We can already offer consumers of energy great information and valuable insights into their usage, **and** tell them what they could do to reduce it. They **could** take action to reduce their energy usage, but almost certainly **lack** the motivation to do so. Mind the gap.

But what now? There are two straightforward steps that pave the way towards a solution to this problem, and more importantly towards an opportunity for whoever offers that solution.

1. Quickly pull together, organise, and understand the many separate processes and practices that have been documented and deployed as ways to motivate and change people's behaviour in other areas. Most of them are pointed at in this paper or are easily accessible.

2. Use that understanding as the input to a rapid innovation project, generating a series of concepts for a motivation platform – enabled by monitoring and information – that would drive consumers' energy economy behaviours.

When we've identified such a platform, we might need to consider whether and how to test the ideas, build a prototype, test again, refine, define a product, deliver and support it as a viable proposition. All those things represent the next level of challenge, but like energy conservation behaviours – one step at a time (starting now).