Making a positive difference
for energy consumers

Applying behavioural insights to forward looking charging reform

Results from a literature review by Ofgem's Behavioural Insights Unit

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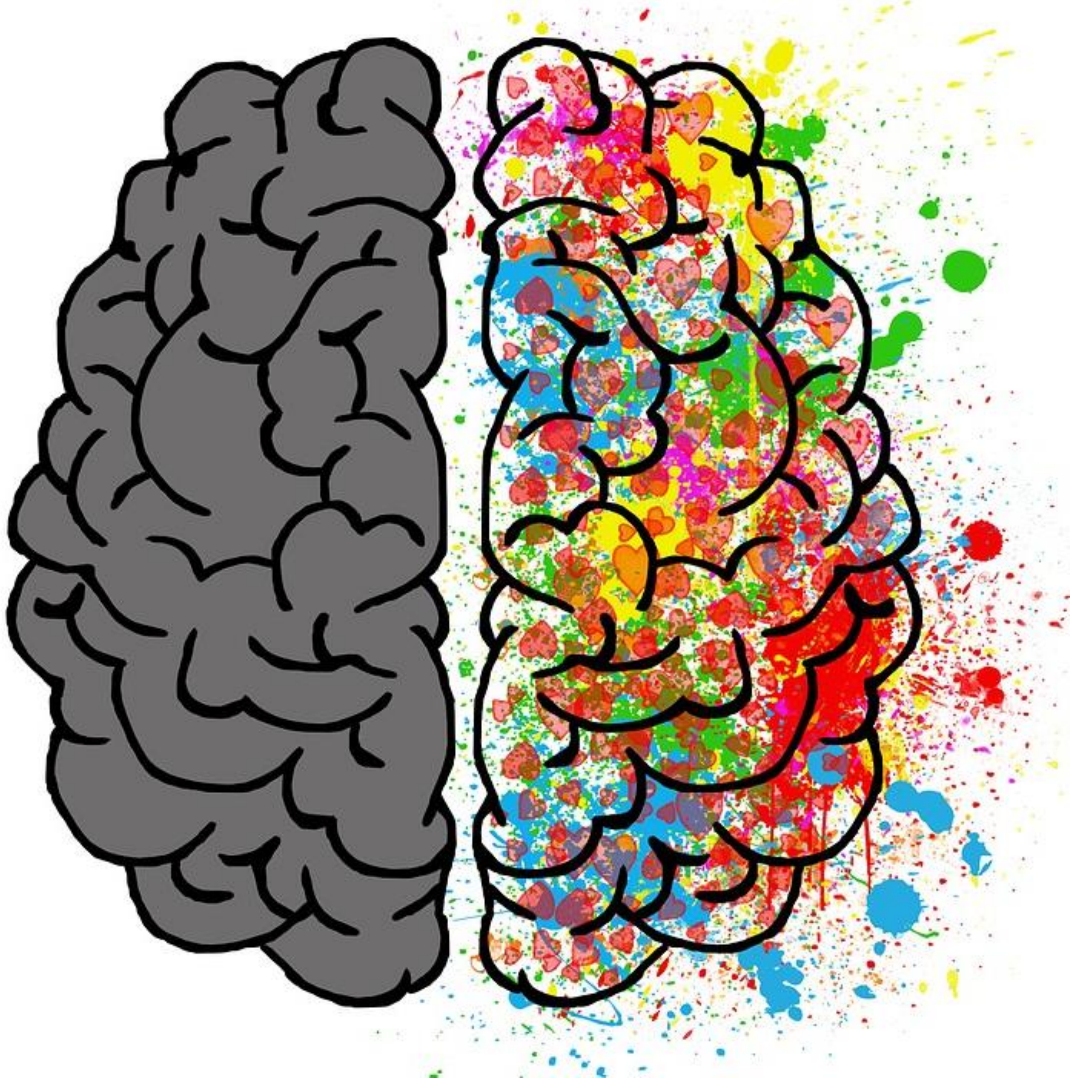
Contents

Our go-to model of human decision making, founded in classical economics, frequently fails to capture real-world human behaviour.

To improve the predictive power of their models, behavioural science ('insights') units have sprung up across governments and regulators in Great Britain and around the world.

The Behavioural Insights Unit at Ofgem was established in 2016 to apply behavioural science to the regulation of the British energy market.

By considering models from a whole range of social science disciplines, from economics to psychology and sociology, Ofgem will be better able to understand consumer choices, supplier conduct and other business decision making to achieve its key aim of delivering positive outcomes for consumers.



This literature review was aimed at answering four main research questions:

1. How demand flexible are small users*?
2. What do small users need to help them be demand flexible?
3. Would small users be able to identify how much electricity they need to meet their basic household energy needs?
4. What other factors affect whether small users will respond to price signals?

*Small users are those users who do not have a specified capacity and are usually not on a current transformer connected metering system.

Review methodology

Searches were conducted in Google Scholar using a range of keywords to identify literature to answer the research questions outlined on the previous slide.

Social science research in the energy sector is at a relatively early stage compared to some other sectors. To expand the evidence base, keywords were targeted at reaching research across energy as well as two other consumer sectors that are also affected by capacity constraints (broadband and mobile phones).

International evidence was included in the review, and geographic locations of research are noted throughout. The next series of slides summarises the evidence obtained through the searches conducted, structured according to each of the research questions.

There are limitations to the extent to which evidence collected on the behaviour of consumers during trials is likely to generalise to a real-world scenario in which these products are widely commercially available once regulatory reforms have taken place. The research is limited to evidence that is published and therefore publically available (it is possible, for example, that private companies are conducting their own research on consumer engagement which remains unpublished)

The content of this review was prepared by Ofgem's Behavioural Insights Unit and does not necessarily represent the position of the Authority*. To the extent that this review contains any errors or omissions, they should be attributed to the individual author(s), rather than to Ofgem. External sources are cited throughout however any conclusions drawn from these materials are the authors' own and are not held to be the views of the author of the source material.

The Behavioural Insights Unit is grateful to two peer reviewers for their comments on drafts of this review: Jacopo Torriti, Professor of Energy Economics and Policy at the University of Reading and Karl Purcell, Programme Manager at the Behavioural Economics Unit at the Sustainable Energy Authority of Ireland.

Energy tariffs

Broadband contracts

Mobile phone contracts

*Ofgem's governing body is the Gas and Electricity Markets **Authority** and is referred to variously as GEMA or **the Authority**.

Research question 1

How demand flexible are small users?

Consumers do adjust their electricity consumption patterns in response to time of use (TOU) style* electricity tariffs (see [1], [2], [3] and, in particular, [4] which reviews 30 trials on the impact of TOU tariffs on electricity demand across GB and internationally). There are **six** main caveats to this statement:

1. This is based on studies assessing response to volumetric TOU electricity pricing (£kWh), in which the average demand reduction at peak is 15%, because capacity tariff programmes (£kW) are not well evaluated (for a summary of capacity based pricing programmes in the EU, see [5])

2. The overwhelming majority of these studies relied on consumers manually responding to price signals as opposed to having any form of automation to respond to price signals on their behalf

3. There are large, but mostly unexplained, variations in responsiveness to TOU tariffs across consumers

4. Consumers are inattentive to complex pricing structures, including changes in dynamic marginal electricity price, and will also respond to non price-based signals

5. Responsiveness varies depending on the design of the end-user's tariff

6. Responsiveness depends on whether the tariffs are implemented by mandate or on a voluntary opt-in or opt-out basis

Points 3-6 will be covered in more detail on subsequent slides.

* We use the term 'TOU' as a generic term to refer to a class of electricity tariffs in which the unit price of electricity varies depending on the time of day or season. There are many different types of TOU tariffs, such as static TOU tariffs in which the price might vary at fixed times across the day and week and real-time pricing tariffs, in which the price may track the half hourly wholesale price. Capacity charges could also vary by time.

3. There are large, but mostly unexplained, variations in responsiveness to TOU tariffs across consumers

"…field trials have anecdotally found that 70 to 80% of the aggregate peak demand reduction from a TOU tariff can come from only 20 to 30% of the TOU participants. In other words, some customers will not respond to TOU tariffs at all, some will respond a little, and some will respond a lot" [6: p.20].

This is also reflected in UK studies that have shown a wide range of bill impacts for customers enrolled onto TOU tariffs as part of their participation in trials [7].

A key concern is whether these differences in responsiveness could be due to socio-economic variables, however the evidence so far for this is slim. For instance, the Irish Smart Meter trials [8] (widely considered to be one of the most robust trials of smart meters and TOU tariffs) found that households headed by consumers with higher levels of education and from higher social grades reduced their overall energy usage by more than those from lower grades/educational backgrounds – however, social grade and educational background had much less of an impact on people's ability to reduce their peak demand (which is the key aim of TOU tariffs).

Consumers in receipt of the Free Electricity Allowance (for the elderly, carers in receipt of specified allowances or customers in receipt of specific disability benefits) were also found to reduce their peak demand [8].

Consumer trials do not always report the impact that TOU style tariffs had on energy bills, however comparing results across those which do report customer bill impacts reveals that there is a large variation in the impact of these tariffs on consumer bills – although the average bill impact is positive (the average trial participant saved money), some customers save much more than others whilst some consumers end up paying more than they did on their previous (flat-rate) tariff.

Trial location	Proportion saving money	Average saving	Average loss	Maximum saving	Maximum loss
United States	-	$57	-	-	-
United States	56%	$89	$80	$396	$274
United States		$60			
United States	-	$305	-	-	6.3% of total bill relative to flat rate
UK (Low Carbon London)	75%	£21	-	£148	£40
UK (CLNR)	60%	£31	£25	£376	£191

Source: [7]

Notes: Column 1 presents the proportion of people who saved money on the tariffs and columns 2-5 the average saving, average loss, maximum saving and maximum loss respectively relative to the customers' previous tariff. The hyphens indicate missing data.

4. Consumers are inattentive to complex pricing structures, including changes in dynamic marginal electricity price.

A central assumption in economics is that consumers optimise in line with marginal price.

The implication is that, each unit increase in £kW, will result in a corresponding unit decrease in household kW (subject to budget constraints) and therefore that higher prices will lead to greater demand response alleviation on networks.

However evidence suggests that the primary assumption laid out above is not valid

- Subjects in laboratory experiments show cognitive difficulty in understanding non-linear pricing [9]
- Field experiments across a range of sectors show that consumers are not fully attentive to complex pricing structures [e.g. 10-11]
- Three known studies in the energy sector find evidence that this is also true of how consumers respond to non-linear changes in electricity price (see next slide)

3. Consumers are inattentive to complex pricing structures, including changes in dynamic marginal electricity price.

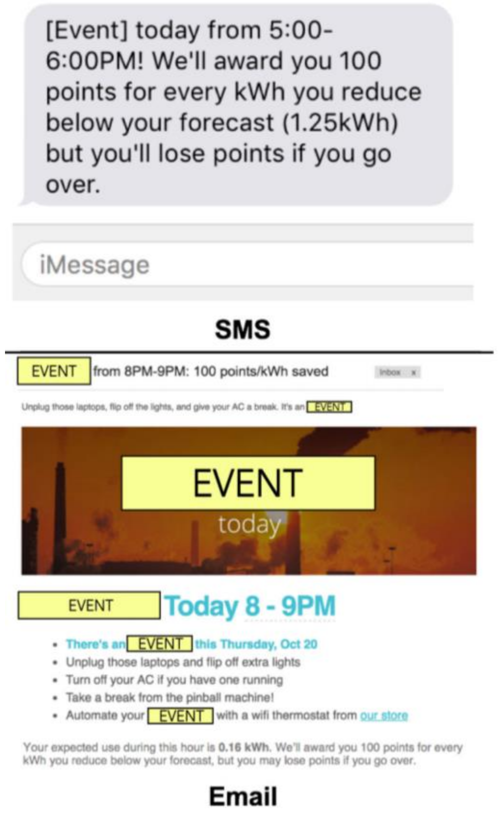
Study 1: Evidence based on price variation across California’s electricity service areas from 1999-2007 which use increasing block pricing for residential consumers shows that consumers respond to changes in the lagged average price rather than the marginal price [12]

Study 2: Evidence from California (5,531 households) over a 90 day period found that a price increase of 31% caused consumption to fall by 11% on average, whereas a price increase of 1875% caused an average reduction of 13% [13].

Study 3: Evidence from Ireland’s smart meter and TOU tariff trials found that whilst peak electricity usage was lower amongst those on tariffs with higher peak rates, the difference in peak energy usage was small relative to the difference in price, and they concluded demand is relatively inelastic [8].

The implication is that very strong price signals are unlikely to deliver much stronger behavioural impacts than weak/moderate signals, at least in the absence of automation (for which there is still limited evidence over what impact it would have on responsiveness)

Figure 3: Example of SMS and Email Event Messaging

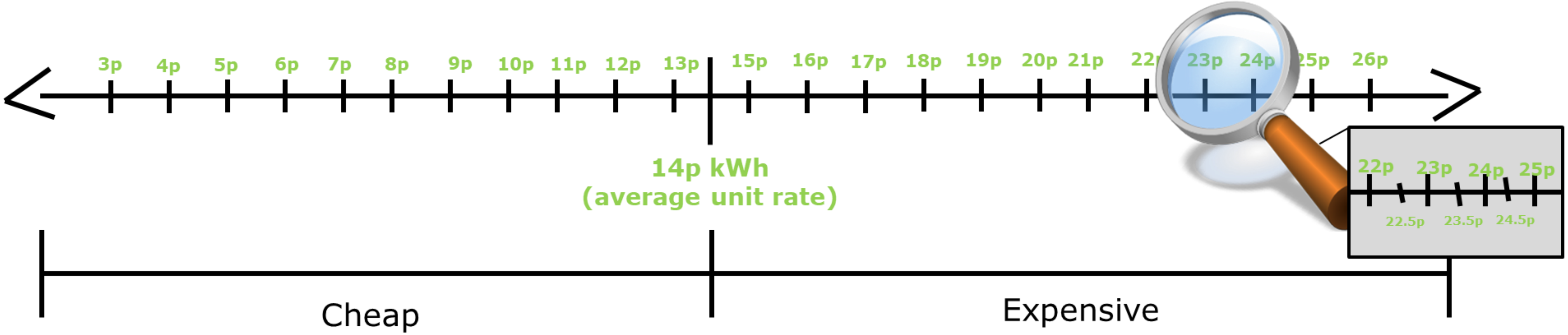


Source: Image reproduced directly from [13: p. 51].

Why might consumers be inattentive to marginal price changes?

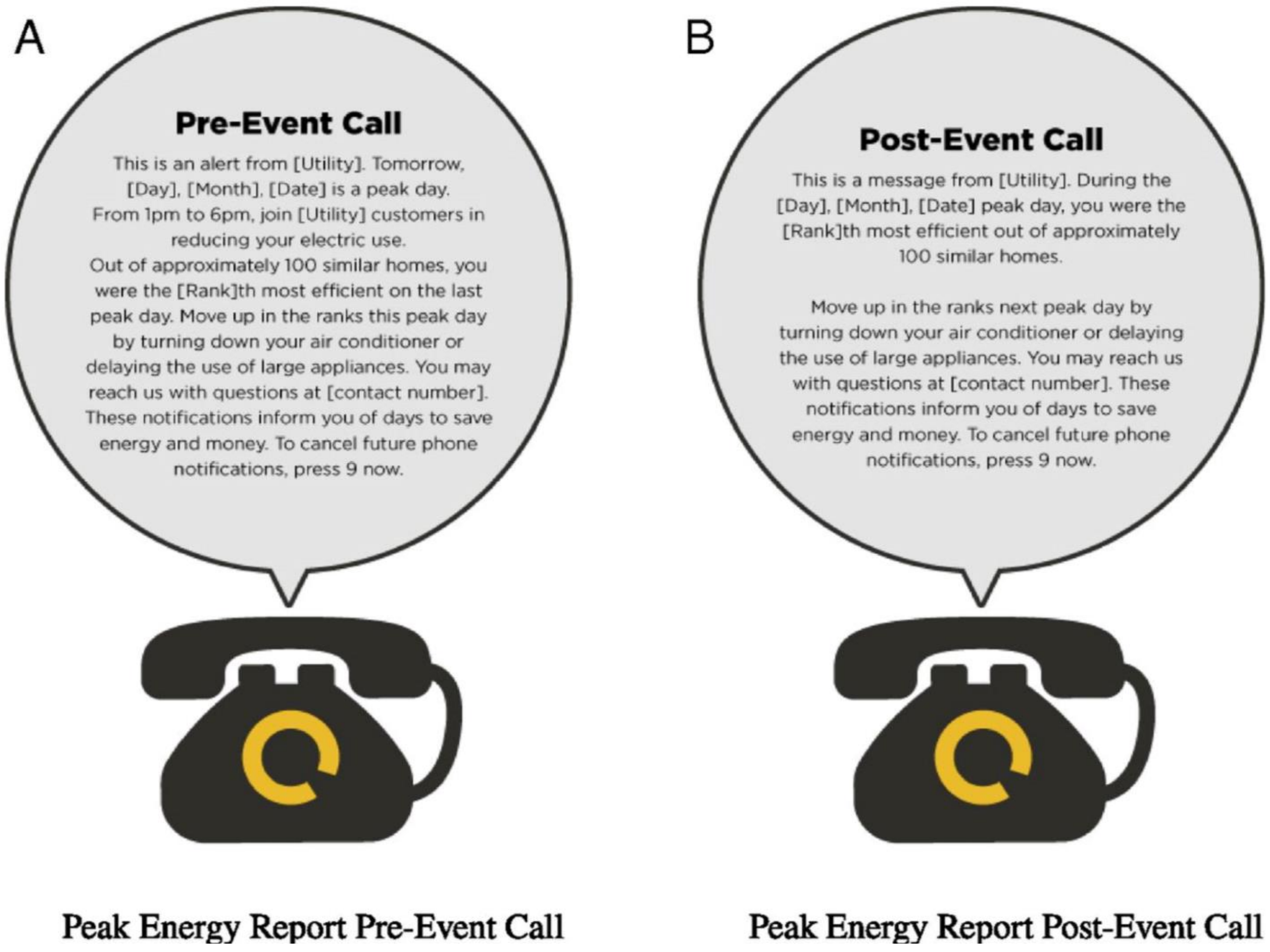
People have a limited capacity to process information – to help them cope with information overload, they use simple rules of thumb (or mental shortcuts) that are broadly accurate but not intended to be precise or reliable for every situation.

So this… (an infinite number of bits of information that would require a lot of mental effort to process and respond to)



…becomes this (2 bits of information that requires very little mental effort to process and respond to)

Reference dependent preferences: another reason people are likely to use a rule of thumb such as 'cheap' and 'expensive' rather than responding to the full variation in unit price, is that evidence shows people have 'reference dependent preferences' – they measure their wealth (or utility) in terms of deviations from a specific reference point, in this case, the average unit rate on a flat-rate tariff. Anything below that unit rate is cheap, and above it is expensive. This would explain why consumers in study 2 on the previous slide reduce consumption by 11% in response to a 31% price increase but then only by a further 2% in response to a price increase of 1875%.



Source: Image reproduced directly from [14: p. 5295].

An OPower study [14] in 2014 with 42,000 customers in California found that it was possible to reduce peak demand by 2-4% without providing any financial incentives.

Instead, participants were called up one day in advance of a peak event (e.g. in California, a particularly hot day) asking them to reduce their electricity use between a particular time period, whilst trying to create an element of competition between houses of a similar type: "*Out of approximately 100 similar homes you were the [Rank]th most efficient on the last peak day. Move up the ranks this peak day by turning down your air conditioner or delaying the use of large appliances*" (these were automated phone calls which people could opt-out of).

Participants were given no financial reward for reducing their peak demand and nor were they financially penalised for not reducing their peak demand – yet they reduced their peak demand by 2-4% relative to a control group that was not issued with these telephone notifications.

These findings suggest an important role for social nudges in encouraging peak demand reduction, particularly given that the evidence shows that not all customers would be able to avoid consuming at peak times, when prices on a TOU tariff would be higher. However, it is plausible that such an approach would not be as effective for encouraging day-in day-out DSR, as it is for critical peak events.

5. Responsiveness varies depending on the design of the end-user's tariff

The extent to which consumers will adjust their consumption habits manually will depend crucially on the design of the tariff. In general, research shows that more basic tariffs yield larger responses – albeit it is impossible to prove it is the simplicity of the tariff rather than differences in price that account for the difference in adoption rates (but simpler tariffs are also rated more highly in consumer surveys [6]).

	Current Trends	High Renewables	Electrification	Electrification w/Automation [1]
Static TOU				
Opt-in	5%	5%	7%	8%
Opt-out	3%	3%	4%	N/A
iTOU				
Opt-in	N/A	10% [2]	N/A	N/A
CPP				
Opt-in	10%	10%	14%	16%
CPR				
Opt-in	8%	8%	11%	12%
Opt-out	4%	4%	5%	N/A
SHR				
Opt-in	3%	3%	5%	Varies [3]

Key for tariff names

Static TOU = fixed variation in price across day or week

iTOU = inverted TOU (cheaper overnight)

CPP = critical peak pricing

CPR = critical peak rebate

SHR = smart home rate (a half hourly priced TOU tariff)

Source: Graph reproduced directly from [6: p.19]

4. Responsiveness varies depending on the design of the end-user's tariff

Consumers will respond to the whole package passed through by the retailer, not just the specific part that aims to influence the cost-reflective portion of people's network usage.

When gathering evidence on this question ("How demand responsive are small users?"), it would be valuable to start by considering **how** future tariffs could be designed as evidence from time of use tariff studies show that tariff design is highly likely to affect consumer response.

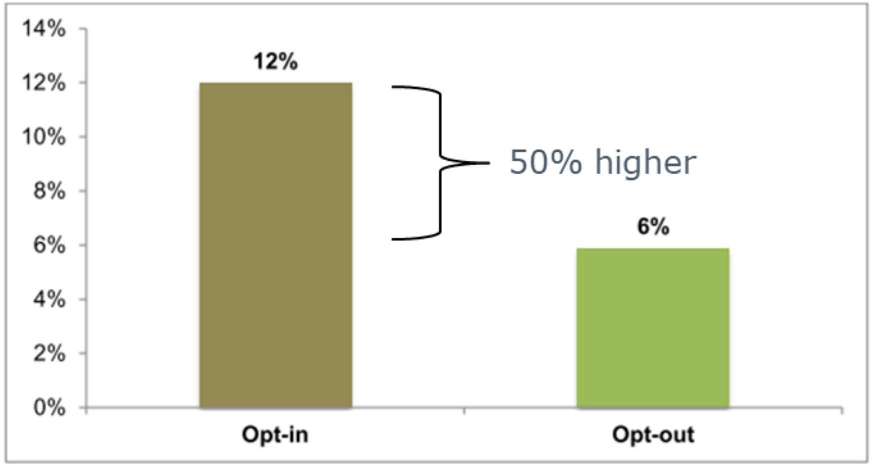
" …there are several advantages to relying on retailers to deliver simple pricing messages to customers. Complex network tariffs do not mean complex retail tariffs. Retailers already manage complex cost structures that are not passed through to customers. If cost-reflective network tariffs imply a certain degree of complexity, retailers should be able to manage this complexity just as they manage complex wholesale costs." [15: p.41].

6. Responsiveness varies depending on how consumers are enrolled onto the tariff

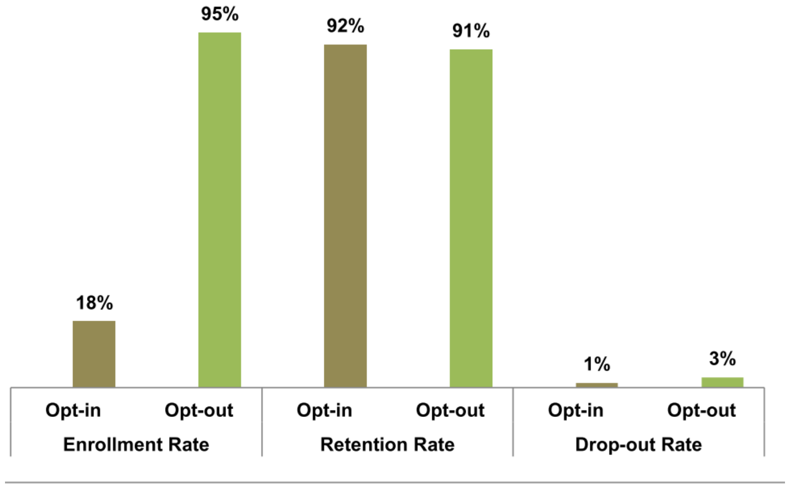
In general, TOU tariffs have been rolled out in one of three ways in industry trials as well as commercially:

1) Mandatory (as in Italy – see [16])
2) Voluntary but opt-in (people have to actively sign up)
3) Voluntary but opt-out, as in some parts of the US (people are enrolled automatically, but can ask to be 'opted out' to stay on a flat-rate tariff)

These methods translate into different levels of average peak demand reduction, with customers who have enrolled under an opt-in system tending to reduce their peak demand by substantially more than those who have been enrolled by default, whether they are given the option to opt-out (graph 1) or not [17]. However, US trials show that, overall peak demand reductions are higher under opt-out than opt-in systems because enrolment rates are substantially lower under opt-in than opt-out systems, as would be expected (graph 2 below).



Graph 1: Peak load reduction across opt-in and opt-out groups (Sacramento Municipal), image reproduced directly from [17: p.31].



Graph 2: Enrolment, retention and drop-out rates across opt-in versus opt-out enrolment systems, image reproduced directly from [17: p.26].

Research question 2

What could help consumers be demand flexible?

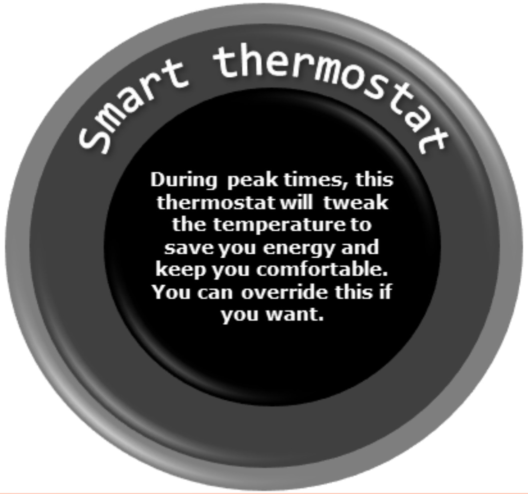
1. Automated response to price signals

2. Simplicity in tariff design or the user experience

3. Information about price and tips on how to respond

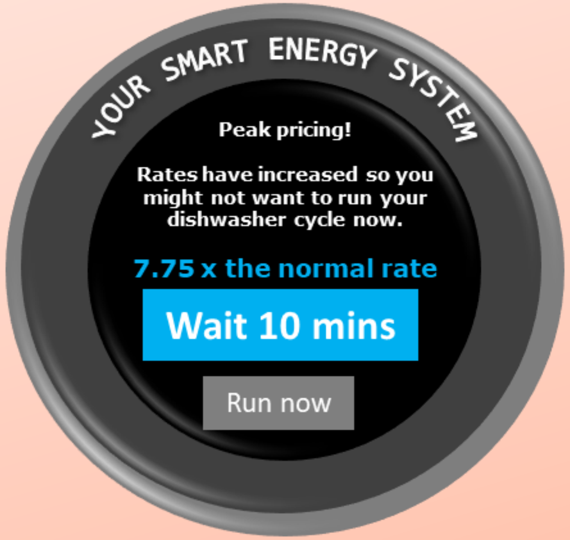
(There may be others, but this is all the evidence reviewed can point us to at this point)

1. Automation



Automation increases the level and reliability of response to time of use tariffs [4, 13] and it is plausible that this would be the case for capacity based tariffs too.

Automation causes responses that are five times larger than the average effect [13] and, for critical peak pricing events, helps people to respond more quickly [18] however automation does not entirely solve inattention to changes in marginal price – notably consumers' likelihood of overriding the automation does not increase linearly with increases in the reward/penalty [13].



It would be useful to conduct research on more sophisticated forms of automation that could potentially decrease people's likelihood of overriding automation when prices are especially high (to correct for people's inattention to marginal price changes).

For example, if a consumer tries to override an automated demand response event, issuing messages such as "are you sure you want to override this time? It is X times the price?" as in our illustrative example alongside.

2. Simple tariff design or user experience

Static TOUs are more popular than dynamic or real-time TOUs [6], suggesting that simple tariff designs will be more popular than complex ones. [based on options without automation].

On the other hand, it is also plausible that more complex tariff designs, when coupled with automation, could be even more popular that static TOUs, since automation can take the hassle out of ensuring peak consumption is minimised. In other words, what matters most may be the simplicity of the end user experience, rather than the simplicity of the tariff design itself.

Further research is required to validate whether consumers will be most drawn to simple tariffs, with minimal price bands, or whether they would be equally or more likely to adopt complex tariffs that provide sufficient automation that there is very little need for them to be actively engaged in managing their usage to avoid peak prices.

3. Information provision

A study shows that Information about electricity use and prices on an In-Home Display (IHD) can improve price responsiveness to a CPP tariff, potentially because it makes people more attentive to the change in the price.

Without the digital screen, responses ranged from 0-7% compared to 8-22% with the screen [19].

IHDs may not be the primary means by which consumers are engaged to respond to changes in price signals however we are unaware of any published studies demonstrating the extent to which alternatives, such as apps, help consumers to respond to price signals.

Figure 1: In-Home Display (1)

Figure 2: In-Home Display (2)

Source: Image reproduced directly from [19: p. 40].

In order to be demand-flexible, consumers need products and services to prompt and help them to be so. In 2017, a study was conducted in which 11 EV manufacturers were interviewed to measure their perceptions of the GB market potential for demand-side response using EVs. The findings identify a risk that the EV market will outpace the availability of demand-side response products and services to which EV owners can sign up, suggesting that market development should be just as much a focus for research as potential consumer response to price signals.

"Findings indicate manufacturers view significant potential in this market, but believe time is needed (i.e. in the 2020s) for the EV market to develop before there is enough system/consumer demand for flexibility using EVs. They believe better price signals are needed, and prefer a consumer-led approach (rather than, for example, mandatory smart charging). Most manufacturers recognise they have a role in making flexibility a viable offering, but for it to succeed it needs coordination with other players, notably energy suppliers, aggregators, network operators and consumers. Governments should have a role in encouraging and brokering such partnerships. There was little evidence of concern that network constraints resulting from multiple EVs charging on the same circuit could act as a brake on sales. "
[20: p.646].

Research question 3

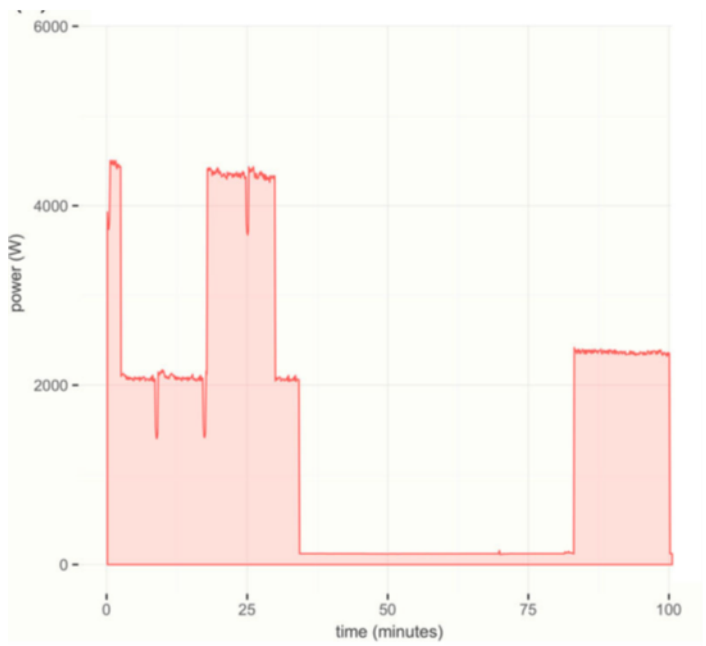
Would consumers be able to identify how much electricity they need to meet their basic needs?

Would consumers be able to identify how much electricity they need to fulfil their basic consumption needs?

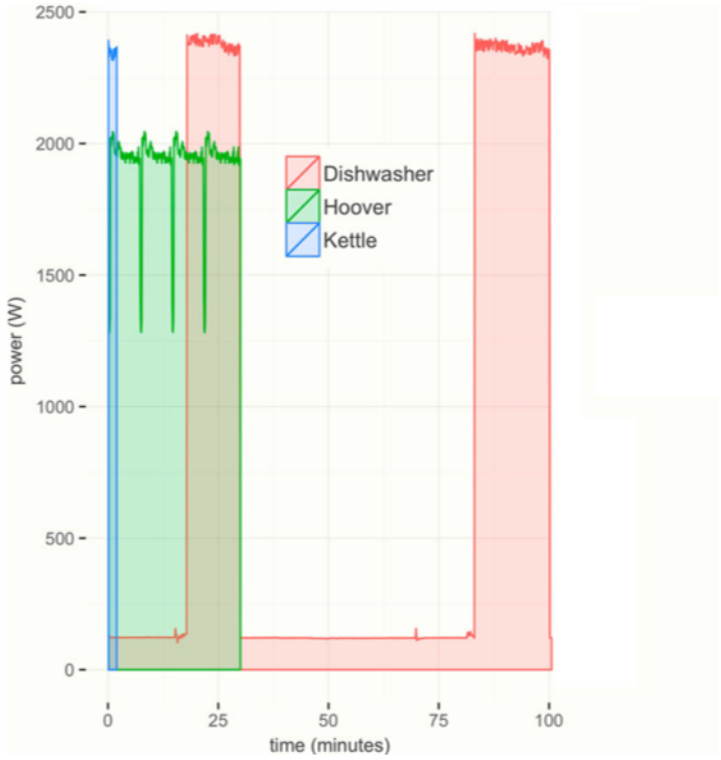
For the purposes of this research we have not defined what basic consumption needs are. However, we can imagine that basic consumption needs may include activities such as running the dishwasher or using a kettle or hoover. These images show the combined power consumption of three common household appliances (a dishwasher, kettle and hoover) over time.

For each of these images, labelled A-C, can you say whether a dishwasher uses more electricity in kWh than a hoover or kettle?

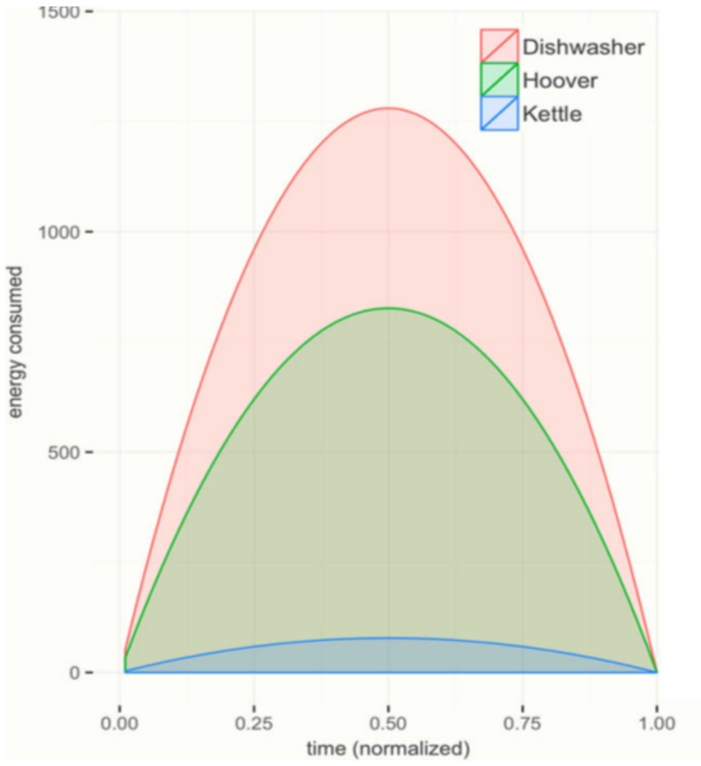
(A)



(B)



(C)



Source: Images reproduced directly from [21: p. 239]

A recent study [21] put those exact images and questions to a sample of university students, who are likely to have had more recent experience of reading graphs than the average member of the population.

Even though image (B) separates out the power consumption of the different appliances using coloured lines, participants were no better able to correctly identify the energy intensiveness of the three appliances when presented with image (B) than with image (A), even though (A) doesn't separate out consumption by appliance at all. This is surprising because, when people are asked about how energy data visualisations could be made more useful for them, people often report that they would like to see their energy use disaggregated by particular appliances.

Image (C), on the other hand, did help participants to identify that the dishwasher is a higher consuming appliance in kWh than a kettle or hoover, because it accounts for the fact that, whilst kettles are more energy intensive, we don't tend to boil kettles for an hour whereas a dishwasher cycle will take about an hour to clean our dishes (the axis on graph C is normalized to a standard usage cycle of each appliance).

Graphs like image (B) are misleading (if you are trying to understand total consumption, as opposed to capacity) because the highest spikes belong to the kettle and dishwasher – if you don't know that you're meant to focus on the area under the line on the graph (rather than the height of the line), you will erroneously assume that it would be more important to avoid making cups of tea during peak times than it would be to avoid using the dishwasher.

Of course, graphs like the ones shown on the previous slide represent a relatively technical way of displaying information. Future studies could usefully test whether understanding could be improved using alternative data visualisation formats, such as bubble charts or pictographs which don't require an understanding of axes or units.

Nevertheless, In-Home Displays (the devices which accompany smart meters and show consumers their energy consumption in near real-time) show consumers their whole house consumption but are not currently set to breakdown energy use by appliance in any format. Consumers would therefore need supplementary information to help them make decisions over which devices to delay using at peak times, at least in cases where there is no automation to respond automatically to changes in price bands.

Would consumers be able to identify how much electricity they need to fulfil their basic consumption needs?

Energy literacy amongst consumers is relatively poor [7, 21-23], suggesting that a large proportion of consumers would struggle to accurately predict how much electricity they use to fulfil their basic consumption needs (and will not necessarily know what actions to take to best reduce their demand/power)

- In a nationally representative survey of British energy bill payers, approximately 50% were able to pick out the cheapest tariff from a menu of three tariffs when given all the relevant information [7]
- A qualitative study with British energy bill payers found that people struggled to pick out the highest consuming electrical appliance from a menu of three [21] (although participants were able to identify the appliance that was running at the highest capacity when shown a graph with power on the vertical axis and time on the horizontal axis)

This approach could create inequalities across consumers based on energy literacy, and potentially, across socio-economic status which is correlated with energy literacy (armed with all the necessary information, consumers in higher social grades were better able to identify the cheapest tariff for them when the menu of options included a TOU tariff than those in lower social grades – see [7]).

Research question 4

What other factors could affect whether consumers will respond to price signals?

What other factors could affect whether consumers will respond to price signals?

1. Bounded rationality

2. Status quo bias

3. Taxi-meter effects

4. Overconfidence (under-estimating usage)

Each of these are covered in more detail on subsequent slides.

Perfectly rational agents are assumed to be willing and able to process all information relevant to any decision they are making (like a computer) – or at least that, on average, our behaviour approximates full information processing capabilities.

Bounded rationality captures the finding that most people's abilities and willingness to process information is constrained by a number of psychological factors including our attention span and our cognitive capacity (or 'mental bandwidth' [see next slide]), which, in turn, is affected by concrete factors, notably our personal income [24].

”Every psychologist understands that we have very limited cognitive space and bandwidth. When you focus heavily on one thing, there is just less mind to devote to other things. We call it tunnelling — as you devote more and more to dealing with scarcity you have less and less for other things in your life…” [25]

Consumers tend to stick with the default option, even if it is substantially more expensive than the alternatives, including in the retail energy market where around 54% of consumers remain on suppliers' default tariff, which is usually around £300 more expensive per year than the cheapest available tariff on the market [26].

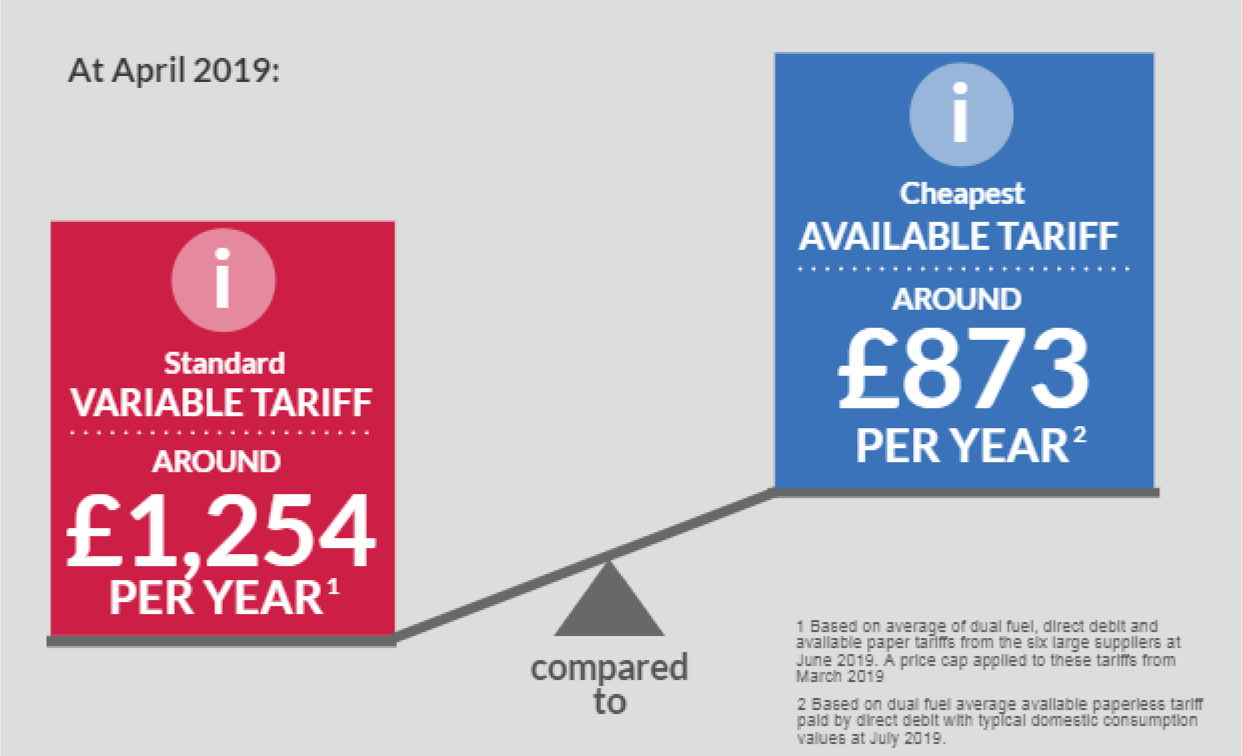
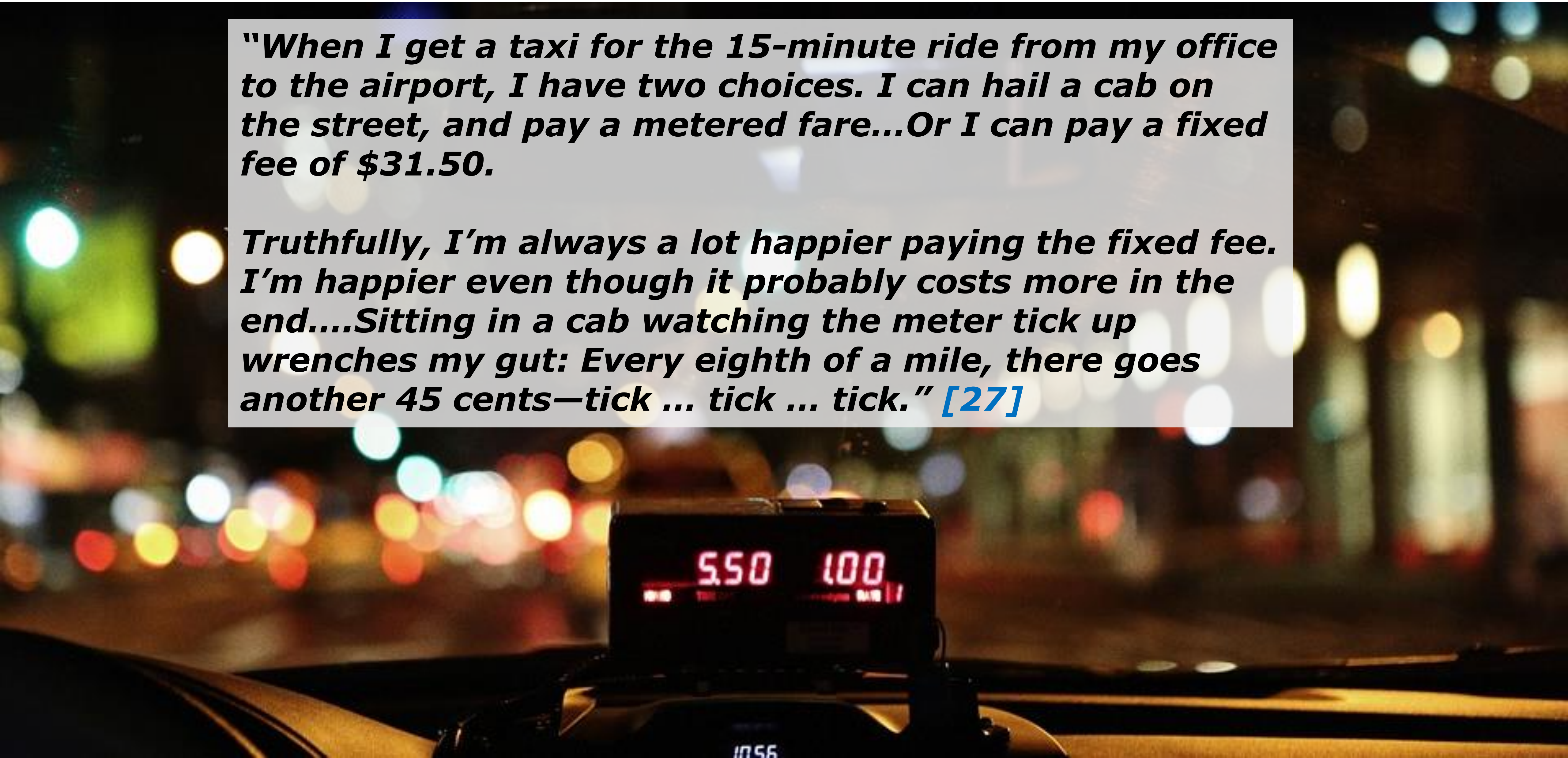


Image directly reproduced from Ofgem website: https://www.ofgem.gov.uk/publications-and-updates/infographic-bills-prices-and-profits ofgem Making a positive difference for energy consumers

What other factors could affect whether the options protect consumers?
Taxi-meter effects

"When I get a taxi for the 15-minute ride from my office to the airport, I have two choices. I can hail a cab on the street, and pay a metered fare...Or I can pay a fixed fee of $31.50.

Truthfully, I'm always a lot happier paying the fixed fee. I'm happier even though it probably costs more in the end....Sitting in a cab watching the meter tick up wrenches my gut: Every eighth of a mile, there goes another 45 cents—tick ... tick ... tick." [27]



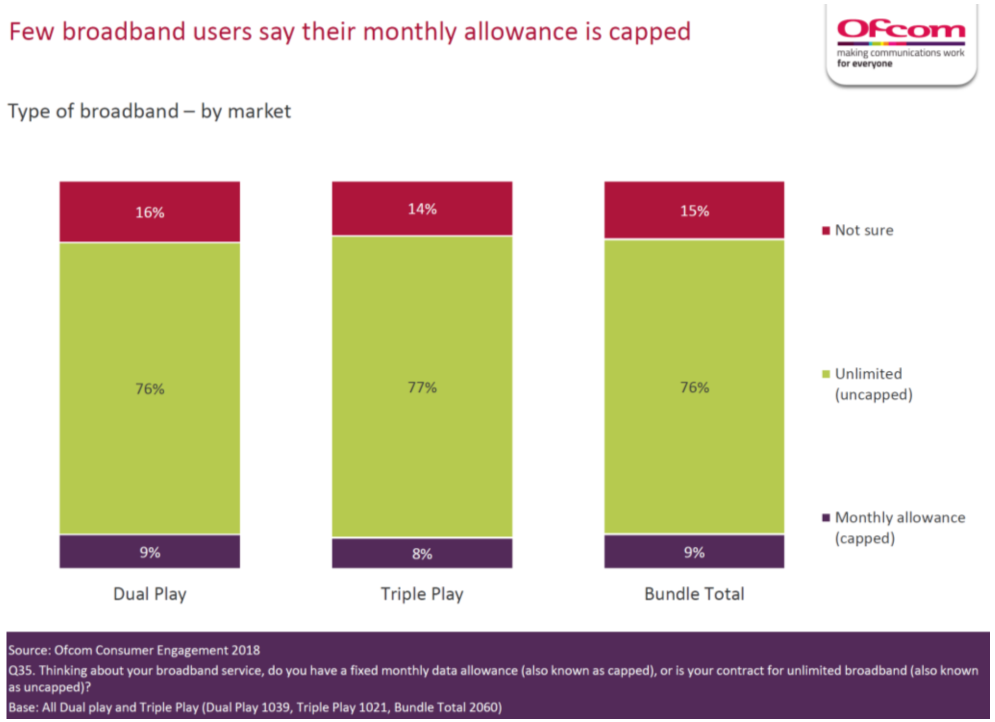
A study [28] looked at preferences for flat-rates in **phone bills** and found that the flat-rate bias is likely caused by:

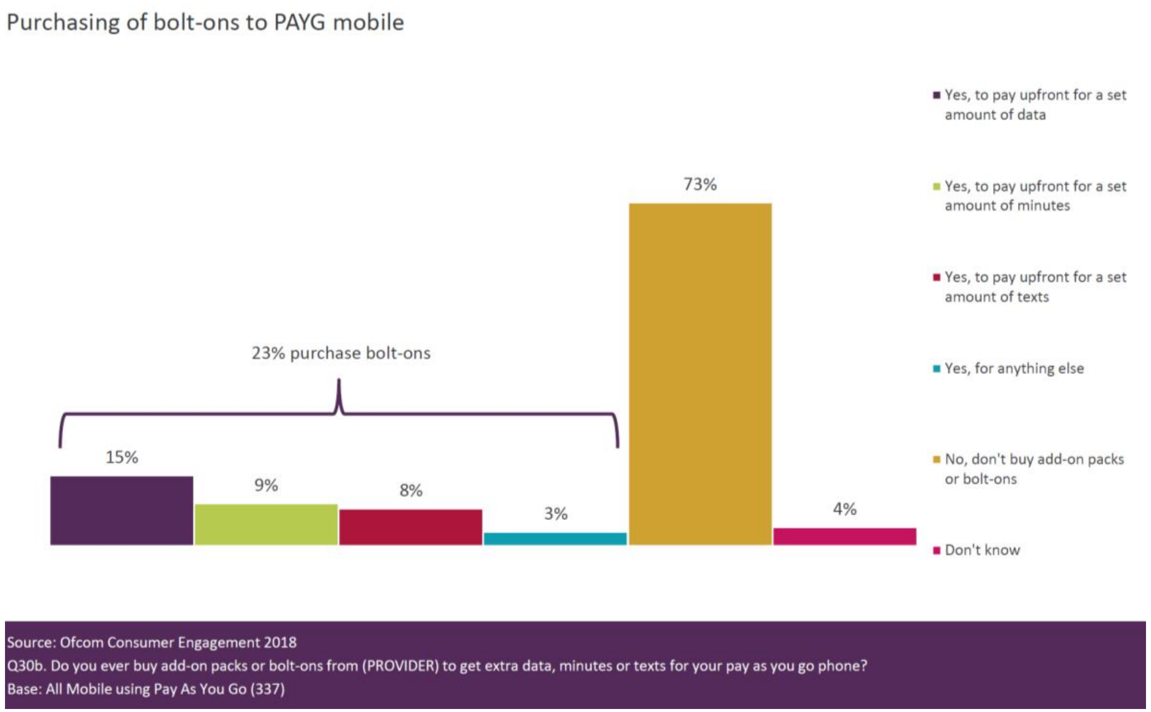
- **Insurance effect** – people's preferences for certainty
- **Overestimation** of their usage
- **Taxi-meter effect** – "*consumers actively avoid schemes where there is the possibility of feeling discomfort by mentally linking every extra unit of consumption to an increase in price. In other words, it's not just a fear that you might underestimate your phone use or the congestion on your morning commute— it's that consumers hate knowing that each extra minute or mile is costing them money. It appears that in general consumers want to enjoy a journey—or a phone call with a friend—without worrying about their wallets.*" [27]

What other factors could affect whether the options protect consumers?
Insurance and taxi-meter effects

Add-on services could be offered to help reassure customers who prefer not to have to worry about the link between how much energy they use and price. For example, mobile phone and broadband providers offer customers the option of signing up to monthly spending caps on their data, texts and phone call usage.

However – just because these services are on offer, doesn't mean people will use them. Ofcom's Consumer Engagement Survey [29] shows that very few broadband users cap their allowance and, for those on pay as you go mobile phone contracts, very few say they purchase add-on packs.





Source: Images reproduced directly from [29: pp. 70, 72].

In the US, like the UK and most of Europe, mobile phone companies typically offer consumers plans consisting of a fixed monthly fee, an allowance of minutes, and an overage rate for minutes beyond the allowance.

A study [30] obtained billing records for 2,332 student accounts managed by a major US university for a national US mobile phone service provider (2002-2005).

What other factors could affect whether the options protect consumers?
Overconfidence

The study found that a large fraction of consumers make "mistakes", in the sense that cumulatively over the duration of these contracts, an alternative plan would have been lower cost for the same usage (table bottom right) because they either use less or more data than in their allowance (table, top right). Although, as you can see, most people had consumed under their allowance (83%).

The average overage charge is 44% of the average monthly fixed-fee and represents 23% of average revenues for the mobile phone company (excluding taxes) [30].

In a similar way, it is likely that energy consumers could find it difficult to accurately estimate how much capacity they might need for their home energy.

This could suggest there could be risks with leaving consumers to make decisions over their energy requirements (e.g. capacity) unaided. Given the variation in energy literacy across the population, and disengagement with written information received from suppliers by some consumers [26], energy usage information alone is unlikely to help guide all consumers to the right decisions for them. For consumers who don't engage with written communication, non information-based solutions will need to be found to avoid consumer detriment.

TABLE 2—OVERAGES ARE LARGE AND FREQUENT
(*Plans 1–3, fall 2002 and 2003 menus*)

	Observations		Usage†	
	n	*n/N*	Mean	Standard deviation
Under allowance	6,097	83 percent	0.47	0.27
Over allowance	1,274	17 percent	1.43	0.44
Total	7,371	100 percent	0.63	0.47

†Measured as a fraction of included plan allowance.

TABLE 3—FREQUENCY AND SIZE OF EX POST "MISTAKES"
(*Fall 2002 menu*)

	Plan 0 customers	Plan 1 customers	Plan 2 customers
Customers	393 (62 percent)	92 (15 percent)	124 (20 percent)
Bills	5,495	893	1,185
Alternative considered	Plan 1, 2, or 3	Plan 0	Plan 0
Alternative lower cost ex post	5 percent	65 percent	49 percent
Conditional average saving†	11 percent*	42 percent**	37 percent**
Unconditional average saving†	NA	20 percent**	1 percent

†Average per month, as a percentage of plan 1 monthly fixed fee.
**99 percent confidence.
*90 percent confidence.

Source: Tables reproduced directly from [30: pp. 1796, 1708].

Evidence gaps summary and limitations

Coverage of research questions with existing literature

Research question	Coverage
1. How demand flexible are small users?	
2. What do consumers need to help them be demand-flexible?	
3. Would users be able to identify how much electricity they need to fulfil their basic household energy needs?	
4. What other factors affect whether consumers will respond to price signals?	

Ample evidence Some evidence Very little/no evidence

This does not mean that the only need for evidence is, for example, evidence over how to help consumers be demand-flexible - there are also questions that were not posed initially but which could be helpful for informing ways of making access and charging options more consumer friendly and therefore more effective.

- There are limitations to the extent to which evidence collected on the behaviour of consumers during trials is likely to generalise to a real-world scenario in which these products are widely commercially available once regulatory reforms have taken place

- The research is limited to evidence that is published and therefore publically available (it is possible, for example, that private companies are conducting their own research on consumer engagement which remains unpublished)

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Our core purpose is to ensure that all consumers can get good value and service from the energy market. In support of this we favour market solutions where practical, incentive regulation for monopolies and an approach that seeks to enable innovation and beneficial change whilst protecting consumers.

We will ensure that Ofgem will operate as an efficient organisation, driven by skilled and empowered staff, that will act quickly, predictably and effectively in the consumer interest, based on independent and transparent insight into consumers' experiences and the operation of energy systems and markets.

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