

Insights paper on households with electric and other non-gas heating

Research Paper

Publication date: 11 December 2015

Team: Consumer Vulnerability Team

Email: vulnerability@ofgem.gov.uk

Overview:

In Great Britain (GB), around 4m households do not use mains gas for heating. These non-gas households are a priority area for our Consumer Vulnerability Strategy, in part because they are more likely to be fuel poor. Just over half of all non-gas households use electricity as their primary heating source, which Ofgem regulates.

In this report, we analyse the experience of consumers with electric heating, and look at the demographics to see who they are. We also outline what we propose to do next.

In fulfilling our commitment to the Energy and Climate Change Committee, we also include some thinking on options to better protect consumers in other non-gas sectors, where there are currently no direct sectoral regulators, ie heating oil, LPG, solid fuel and district heat.

The report will inform our own work to improve the experience of non-gas consumers, but we hope that it will also be of use to other organisations.

Context

Ofgem is the Office of Gas and Electricity Markets. We are the independent regulator of the electricity and gas system in Great Britain. Our principal objective is to protect the interests of existing and future energy customers. We have particular duties to have regard to the interests of consumers in vulnerable situations.

Energy is an essential service. It requires a regulatory approach that reflects this. Our Consumer Vulnerability Strategy (CVS) was published in July 2013. It aims to protect and empower customers in vulnerable situations, so as to reduce the likelihood and impact of vulnerability and ensure all customers can access market benefits.

In 2014 we identified non-gas households as a priority area for our CVS largely because they are more likely to be fuel poor. This insights paper is the next phase of our work in this area, following our investigation into the dynamic tele-switching market, and the conclusion of our recent review of Fuel Poor Network Extension Scheme. The paper includes our analysis of the demographics and market experience of electric heating customers who comprise the majority of non-gas households, and are within our remit to protect. It is intended to enhance the evidence base in this area and inform our regulatory activity.

In line with our CVS ways of working, and our Corporate Strategy, we use our expertise and knowledge to inform the wider policy debate where it can benefit energy consumers. In January 2015, Ofgem's CEO Dermot Nolan made a commitment to the Energy and Climate Change Committee (ECCC) to submit a paper to the UK government which set out options to better protect consumers that use other non-gas fuels. In fulfilling our commitment to ECCC, this report also offers thinking on potential options for those non-gas sectors, where there are currently no direct sectoral regulators, ie heating oil, LPG, solid fuel and district heat.

Associated documents

Appendices for insights paper on households with electric and other non-gas heating, November 2015: <https://www.ofgem.gov.uk/publications-and-updates/insights-paper-households-electric-and-other-non-gas-heating>

The state of the market for customers with dynamically teleswitched meters, July 2013 (Reference number 133/13): <https://www.ofgem.gov.uk/ofgem-publications/82288/state-market-customers-dynamically-teleswitched-meters.pdf>

Dynamically teleswitched meters and tariffs – Research into consumer experience, November 2014: <https://www.ofgem.gov.uk/publications-and-updates/dynamically-teleswitched-meters-and-tariffs-%E2%80%93-research-consumer-experience>

Contents

Executive Summary	4
1. Background	8
Why are we publishing this insight paper?	8
What is non-gas heating?	9
What is electric heating?	10
How much does it cost to heat a home?	13
2. Physical characteristics of dwellings and social characteristics of households with electric heating	16
Background and limitations	16
Physical characteristics	18
Social characteristics	21
3. Customer experience and engagement of households with electric heating	26
Consumer queries and complaints	26
Satisfaction	30
Awareness and understanding	32
4. Tariffs and switching for households with electric heating	35
Available Time of Use tariffs and meters	35
Available Economy 7 tariffs	36
Suitability of Economy 7 tariff	42
Switching	45
Barriers to switching and choosing the best deal	49
Chapter summary	50
5. What will the future look like for households with electric heating?	51
Low carbon energy and flexible demand	51
Innovation and non-traditional business models	52
Smart meters	53
Policy costs in future	54
6. Our work to protect the interests of households with electric heating	56
General consumer protection	56
Specific regulatory actions for electric heating and other non-gas customers	56
Administering government schemes	58
7. Other non-gas fuels	60
Background	60
Current consumer protection framework	65
Strengthening non-gas consumer protections	73
8. Conclusion and way forward	82
Research gaps	82
Actions to address findings for electric heating	83
Other non-gas heating fuels	83
Next steps	84

Executive Summary

Around 4m households in GB do not use mains gas to heat their homes. Of these, more than half use electricity, which we regulate, as their main source of heating. This paper seeks to further develop our evidence base on these households. We want to ensure that current and future electric heating consumers are not at a disadvantage because of their heating fuel and can access market benefits.

The remaining households use other non-gas heating fuels, such as heating oil, liquid petroleum gas (LPG), solid fuels or district heating. These are not subject to a sectoral regulator in the way that gas and electricity markets are. Although we do not regulate these markets, we recognise our role in supporting governments and wider policy makers where we can to make a positive difference to all energy consumers. In line with our commitment to the Energy and Climate Change Committee in January 2015, we have outlined some high-level thinking on five potential approaches to improve consumer protection in those markets. This is to inform any policy discussion in this area.

Characteristics

Types of electric heating

The majority of electric heating households (1.7m) use heating systems with the capability to store heat. This allows households to use cheaper electricity at night to charge the heating system, and to release heat during the day. Almost all of these are storage heaters. A substantial minority (0.5m) use direct-acting heating systems without storage functionality, which instead generate heat instantly when needed, and use electricity at that time. The majority of these are electric room heaters. There is also a small (less than 100K) but increasing number of households that use heat pumps as their main source of heating. Heat pumps extract heat from outside, but need electricity to run. The conclusions below do not refer to households using heat pumps unless stated.

Demographics and distribution

- There are around 1.8m electric heating households in England (8%) with higher proportions in Scotland, 0.3m (13%), and lower proportions in Wales, where there are less than 100,000 (5%), homes using electric heating.
- In Great Britain, 25% of flats use electric heating compared to only 4% of houses. Dwellings with electric heating systems tend to have a lower energy efficiency rating, partly reflecting the higher running costs of using electric heating. For example, in England, 2% of dwellings with mains gas heating are 'F' or 'G' rated, compared to 14% of dwellings with storage heating systems, and 57% of dwellings with direct-acting heating systems.
- Households that use electric heating tend to be of lower income. In England, around a third have incomes of less than about £14,500. This combined with higher costs of heating, means these households are more likely to be fuel poor.

- Electric heating is more likely in single adult households and households with no children. There is generally no significantly increased likelihood of householders having a long-term illness or disability. Households in the private-rented sector and social housing are more likely to have storage heating systems whilst direct-acting electric heating systems can be found disproportionately in the private-rented sector but not social housing.

The consumer experience and engagement

Energy bills

- In general terms, electric heating tends to be more expensive than heating with mains gas, in particular when using direct-acting electric room heaters. Heating costs however depend on a range of factors such as size and insulation of property, type of energy tariff, heating needs and ability to shift and manage energy use.
- Social and environmental levies are expected to negatively affect electric heating customers in particular those that do not benefit from support (eg energy efficiency measures). One study calculated that by 2020, households with electric heating will pay 19% of the levies but only receive 7% of the benefits.

Tariffs and switching

- The vast majority of storage heating customers are on Economy 7 tariffs (which provide 7 hours of cheaper electricity at night and more expensive electricity during the day). We find that tariff choice for these customers is comparable to customers with single-rate meters. Similarly to single-rate tariffs, there is less choice for prepayment (PPM) customers compared to direct debit customers. This is significant as electric heating customers are more likely to be on PPMs.
- Some suppliers (including three of the six largest) offer dual fuel discounts for customers that have both their gas and electricity supply with them. Electric heating customers do not generally benefit from these as they do not usually have a gas connection. The average discount is £18. There are also some deals that are only available to dual fuel customers (7 tariffs), these however do not tend to be cheaper but fixed for longer than comparable tariffs of the same supplier. Customers with electric heating on the other hand do not have to pay a standing charge for gas (around £79).
- There are indications that switching rates for electric heating customers, and more generally customers with ToU meters, are lower than the average, in particular in Scotland. Customers can face particular barriers when trying to move to a cheaper tariff. This is especially the case with ToU meters other than Economy 7 (for example Economy 10 which provides 10 hours of cheaper electricity at night, afternoon and evening and more expensive electricity in the remaining time). There is generally less tariff choice for these customers and finding the right tariff is more difficult as there is no simple overview of available tariffs.

- In particular, a large number of households with ToU meters in Scotland have dynamically teleswitched meters (DTS). These meters allow for remote controlling of the heating load. Our previous assessments showed that customers with these meters have more limited tariff choice. However, with some exceptions, they did not appear to be paying higher prices as a result when compared to other tariffs available in the same region. The Competition and Markets Authority (CMA) has also noted these challenges.

Customer satisfaction and complaints

Available research suggests that the majority of households with storage heaters seem satisfied with their heating system and feel they understand arrangements at least fairly well. But, there is a significant minority that feels less positive. In particular, significantly fewer households feel able to keep warm than households with mains gas heating. Further, just over half believe that more information and advice would help them save money.

Electric heating and ToU customers most commonly seek advice on bills and switching issues, then on faulty meters, and whether the ToU tariff they are on is right for their needs. Although these kinds of queries are not unique to electric heating consumers, there are some particular problems within them. For example, billing complaints include suppliers reading the peak and off-peak register of the meter the wrong way round, leading to incorrect bills; or faulty meters which could lead to the heating and other appliances coming on at the wrong time, with customers charged peak rates as a result.

Future electric heating consumers

The energy market is changing, creating unique challenges and opportunities for electric heating households in the future. Smart metering and new technologies can potentially address many of the problems electric heating customers currently face, eg fixing problems with transposed meter readings and barriers to switching. Increasing automation could help consumers who find it hard to manage their energy.

As more renewables come onto the grid, generation will become more distributed and more variable. To make the most of this, we need to find ways to produce and consume energy more flexibly. Potential changes to the way suppliers are charged for the electricity their customers consume (“half-hourly settlement”) can affect the type of ToU tariffs suppliers offer in the future. We recognise that it is important to assess the impact of these changes on different consumer groups. Customers with certain electric heating systems and ToU tariffs already help to smooth demand throughout the day. At a high-level, we would expect these customers to continue to benefit in the future when the need for flexibility increases, particularly with the potential for automation.

Other non-gas fuels

Households using electric heating are covered by our general consumer protections, including support for customers in vulnerable situations. However, LPG, heating oil, solid fuels and district heat are not regulated by Ofgem in the same way as mains gas and electricity. There are voluntary industry safeguards and oversight by the CMA and Trading Standards, however, there is a disparity in the safeguards for consumers using these fuels.

This paper outlines initial thinking on five potential options to improve consumer protection that government could adopt to address some of the challenges faced by consumers in these sectors. These options have been set out at a high-level only and detailed analysis would be required in regard to the level of intervention required, legislative and resource requirement to deliver and potential competition impacts. We do not intend to conduct any further analysis or research in such areas where we have limited, or no regulatory remit - unless specifically requested by government to do so.

Next steps

We will of course continue to protect the interests of households with electric heating through our general consumer protection work as well as our targeted work for non-gas households. This includes the Fuel Poor Network Extension Scheme (FPNES) and our work on DTS. In addition following this analysis we intend to:

- 1. Further develop our evidence base on electric heating** – given the importance of electric heating customers benefitting from available support schemes, we will actively monitor the take up of Ofgem-led or administered support schemes by these customers, such as ECO2 and FPNES. As smart meters could address several problems consumers face, we will also monitor the take-up of smart meters by customers using ToU meters. Further, we will consider how best to include households with electric heating in any work on assessing the impact of ToU tariffs that may become available (under “half-hourly settlement”) on different consumer groups.
- 2. Help improve access to information and tools** which can support consumers when switching and managing their energy use - we will review information for electric heating and ToU customers in our ‘Be an Energy Shopper’ campaign and support Citizens Advice Service in improving information for electric heating consumers. There is clearly scope for better tools and information to help electric heating consumers. We will consider this further in light of the findings of the CMA investigation.
- 3. Regulatory agenda** - the findings of this paper are informing our future regulatory agenda, including prioritising the second phase of our smart metering consumer empowerment and protection programme. For example, as part of phase one of this programme, we have consulted on measures to help limit the detriment arising from billing problems, including that experienced by some customers with electric heating.

It is our intention that this insights paper will be used by the UK government, devolved governments, consumer representatives and industry in their work to support and improve the experience of electric heating and other non-gas households. To help facilitate this and to understand how we can work in partnership to deliver the best outcomes for electric heating consumers, we will organise a workshop to discuss the findings of this paper next year.

1. Background

Chapter Summary

We are publishing this paper as part of implementing our Consumer Vulnerability Strategy which identifies non-gas households as a priority for Ofgem.

The emphasis of this report is on households that use electric heating. These customers are within our remit to protect and make up just over half of all households that do not use mains gas for heating purposes. About 2.2m households (8.5%) in GB use electric heating with higher proportions in Scotland (13%) compared to England (8%) and Wales (5%)

Electric heating encompasses (a) electric storage heating systems that store heat by using cheaper electricity at night, (b) direct-acting electric heating systems that generate heat when needed and mostly use standard single-rate electricity, and (c) heat pumps. Heating with electricity can be significantly more expensive than heating with mains gas, in particular for households that use direct-acting radiators or older storage heaters.

The report also considers regulatory arrangements for households that use other non-gas heating fuels, specifically oil, LPG, solid fuel and district heating.

Why are we publishing this insight paper?

1.1 Our Consumer Vulnerability Strategy¹ identifies non-gas households as a priority area for Ofgem. It is also an important area for the UK government, highlighted in DECC's Fuel Poverty Strategy² and for the devolved governments. The aim of this paper is to further develop our evidence base in this area.

1.2 In January 2015, Ofgem's CEO Dermot Nolan made a commitment to the Energy and Climate Change Committee (ECCC) to submit a paper to the UK government which sets out options to improve consumer protection for non-gas customers.

1.3 We consider the issues faced by electric heating consumers to be the main focus of our work on non-gas issues, largely due to our regulatory remit.³ So we

¹ Ofgem, 2015, "Consumer Vulnerability Strategy Progress Report: September 2015", (https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/ofgems_cvs_progress_report_22.09.2015_for_website_final.pdf)

² DECC, 2015, "Cutting the cost of keeping warm. A fuel poverty strategy for England", (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408644/cutting_the_cost_of_keeping_warm.pdf)

³ We note however that we do not regulate the marketing and sale of heating systems which is done by other authorities, such as the Advertising Standards Authority (ASA) and the Trading Standards Institute.

have focused our efforts on analysing the issues faced by these consumers. This is to inform our own decision-making and to be a useful resource for the UK government, devolved governments, consumer representatives and industry in their work to support and improve the experience of households. We looked at better understanding and explaining:

- the demographics of this customer segment,
- the customer experience,
- our own activities to support electric-heating customers.

1.4 We also wanted to identify if further regulatory action is needed. So this report outlines our next steps to support electric heating customers.

1.5 In fulfilling our commitment to ECCC, chapter 7 sets out initial thinking on options to improve consumer protections in other non-gas sectors, where there are currently no direct sectoral regulators. We intend for this report to provide government (and other interested stakeholders) with a further insight into the issues faced by these consumers and inform any future decision regarding the regulatory framework(s) of these sectors. We consider that the publication of this report constitutes fulfilment of our commitment to the ECCC. Consequently, we do not intend to conduct any further analysis or research in such areas where we have limited, or no regulatory remit - unless specifically requested by government to do so.

What is non-gas heating?

1.6 Most households in Great Britain (GB) use mains gas for heating (22m). However, around 4m use other heating fuels as their main heating source. The majority of these (2.2m) use electricity. The remainder use heating oil, LPG, solid fuel and communal or district heating (DH). Electric heating is the main non-gas heating source in Scotland and England, while heating oil is the most important non-gas heating source in Wales.⁴

⁴ The percentages reported in this report can, on occasion, add up to more or less than 100% due to rounding. Source of data: English Housing Survey, 2013 (covering the years 2012/13 and 2013/14), Scottish Household Survey, 2013; Living in Wales Survey, 2008 as reported in Consumer Focus, 2011, "Off-gas consumers – Information on households without mains gas heating" (<http://www.consumerfocus.org.uk/publications/off-gas-consumers-information-on-households-without-mains-gas-heating>). No survey that covers physical inspections has been carried out in Wales since then.

Table 1: Number and proportion of GB households by main space heating fuel

	England		Scotland		Wales		GB	
	<i>000's</i>	<i>%</i>	<i>000's</i>	<i>%</i>	<i>000's</i>	<i>%</i>	<i>000's</i>	<i>%</i>
Mains gas	19,229	85	1,870	78	995	79	22,094	84.2%
Communal & DH ⁵	396	2	25	1	5	0	426	1.6%
LPG	147	1	21	1	25	2	193	0.7%
Heating oil	821	4	140	6	143	11	1,104	4.2%
Solid fuel	137	1	26	1	37	3	200	0.8%
Electricity	1,853	8	316	13	63	5	2,231	8.5%
Other / unknown	0	0	4	0	0	0	4	0%
Total	22,583	100	2,402	100	1,268	100	26,254	100%
Non-gas heating (including communal/DH)	3,353	15%	532	22%	273	22%	4,158	16%
Non-gas heating (excluding communal/DH)	2,957	13%	507	21%	268	21%	3,732	14%

What is electric heating?

1.7 Chapter 7 provides more information on the types and characteristics of heating oil, LPG, solid fuel and district heating. There are many different technologies that comprise electric heating. In a very simplified way and for the purpose of this analysis only, we categorise them as follows.

⁵ Table 1 sets out that around 426,000 households use "communal and district heating". This covers heat generated onsite and distributed to different dwellings in one building ("communal heating") as well as households connected to a "district heating" scheme with heat generated centrally and distributed to multiple buildings. The heating sources for this are not fully recorded in housing surveys; however it is recorded that of these 28,570 households in England and 2,766 households in Scotland are served by heat from a Combined Heat and Power (CHP) plant (this sector is expected to grow in the future) – the remainder from dedicated boilers. We would expect the majority of the remaining households to be connected to a heat network with heat generated by mains gas boilers – this could be for example managed by their housing association (with the supply of gas to the housing association being within Ofgem's regulatory remit). However, it is not clear from the data how many households pay a heat energy supplier directly for their heat and how many are billed for example by their housing association with the housing association being billed for gas by a gas supplier or similar. A DECC commissioned study estimated in 2012 that around 2,000 district and communal heat schemes were supplying heat to over 210,000 households – this estimation did not include communal heat schemes with less than 10 dwellings/units per building, which could account for the difference in numbers as well as a different sampling/survey methodology and difference in timing. Most heat networks surveyed in the DECC commissioned study used gas to generate heat and were located in London, and again only a minority used CHP, for more information see DECC, 2013, "Summary evidence on district heating networks in the UK" (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212565/summary_evidence_district_heating_networks_uk.pdf). DECC are working to strengthen their evidence base on the numbers of district and communal heating schemes through a notification requirement in the Heat Networks (Metering and Billing) Regulations 2014.

Table 2: Simplified overview of electric heating

	Heating systems with thermal storage	Direct-acting heating systems without thermal storage	Heat pumps
How it usually works	Generate and store heat, usually at night when electricity is cheaper, and release heat during the day. ⁶	Do not store heat, instead generate heat instantly when needed and use electricity at that time	Convert energy in the ground or air into heat and require electricity to run
Type of tariffs ⁷	Time of Use tariffs, mostly Economy 7	Mostly single-rate tariffs but some suitable for certain Time of Use tariffs, eg Economy 10.	Single-rate tariffs or certain Time of Use tariffs
Households in GB ⁸	1.7m	0.5m	Less than 0.1m
Examples of common heating systems	Majority are storage heaters (1.6m). Some households use electric central heating systems with thermal storage	Majority are electric room heaters (0.4m), such as fixed panel heaters, convector heaters, and portable electric radiators. Some households have electric central heating systems without thermal storage	Air source heat pumps, ground source heat pumps

1.8 We note again that this is a very simplified categorisation for the purposes of this paper only and there are differences between heating systems within in each category, ranging from portable room heaters to fixed radiators and central heating system. For simplicity, we refer to the first group as “storage heating systems” and to the second group as “direct-acting heating systems”.

1.9 This insight paper predominantly focuses on customers using storage heating systems and direct-acting electric heating given heating costs and customer numbers. But where we can, we include information for households with heat pumps as this segment of the market is likely to grow.

⁶ Households with storage heaters might however consume a proportion of electricity during the day/evening at a higher rate to top up temperatures when storage heaters have run out of stored heat. This can be through separate direct-acting heaters or as part of one integrated unit.

⁷ Single-rate, or “unrestricted”, tariffs are tariffs that have a single unit rate. The majority of customers in GB are on single-rate tariffs. ToU, or “restricted”, tariffs are tariffs that have more than one unit rate, for example a cheaper rate that applies for consumption during the night and a higher rate during the day.

⁸ This refers to household where the electric heating system is the main source of space heating. Electric heating is also a popular form of secondary heating, see BRE, 2013, “Energy follow up survey 2011. Report 5 secondary heating systems” (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/274774/5_Secondary_Heating.pdf)

1.10 Households with storage heating systems usually have special Time of Use (ToU) meters which allow them to benefit from associated ToU tariffs. The most common ToU meters/tariffs are Economy 7 meters/tariffs. These usually provide seven hours of cheaper electricity during the night but more expensive electricity during the rest of the day. This means that households will usually have to pre-plan their heating needs to some extent to ensure that heaters are charged up overnight (at a cheaper rate) when needed the next day. Households might also consume a proportion of electricity during the day/evening at a higher rate to top up temperatures when storage heaters have run out of stored heat.

1.11 Households with direct-acting electric heating systems will mostly be on a single-rate electricity tariff, and will therefore pay the same unit rate at all times during day and night (which will usually be between the peak and off-peak rates of Economy 7 tariffs). However, it is also possible to use ToU tariffs that offer cheaper electricity at certain times throughout the day and more expensive electricity during the rest of the day, such as Economy 10, which might be suitable for example for households with direct-acting electric boilers (ie central heating systems).⁹

1.12 In almost all cases, households that use electricity for space heating also use electricity for water heating. Customers on ToU tariffs can heat up water over night for the release during the day, while customers with standard single-rate electricity will not be able to benefit from cheaper water supply at off-peak periods.

1.13 Further, some households that use other forms of space heating – in particular non-gas heating – might use electricity for water heating. This is usually single-rate electricity. However, the vast majority of households that use electric water heating also use electricity for space heating.¹⁰

1.14 Property owners may have various reasons for installing storage heating systems or direct-acting heating systems as opposed to mains gas heating. This includes generally lower capital costs as well as safety considerations around using mains gas heating in high rise flats.¹¹ Further, households off the gas grid might find electric heating to be the best option for them.

⁹ Economy 10 tariffs offer 10 hours of cheaper electricity in the night, afternoon and evening and more expensive electricity during the rest of the day. However, the English Households Survey suggests – while the data is not entirely clear – that about 63% of households in this category uses single-rate electricity, while the remaining customers seem to have some kind of ToU meter (which is usually recorded as an “Economy 7” meter in which case customers are unlikely to benefit from cheaper electricity at “off peak” periods given the lack of storage functionality – it is possible that these are Economy 10 or other types of meters or that these are Economy 7 meters that were left in households that replaced storage heaters with direct-acting heating). The SAP 2012 methodology and fuel costs assumes that households with direct-acting radiators are able to consume 0% of electricity for space heating purposes at off-peak periods if they use Economy 7 meters, and 50% if they use Economy 10 meters. The equivalent figures for direct-acting electric boilers are 10% and 50%. Electricity consumed outside the off-peak periods will be more expensive compared to single-rate tariffs (http://www.bre.co.uk/filelibrary/SAP/2012/SAP-2012_9-92.pdf).

¹⁰ In Scotland for example 94% of households that use electricity for water heating also use electricity for space heating. Of those using other non-gas fuels for space heating, only 6% use electricity for water heating.

¹¹ This was partly triggered by a gas explosion in 1968 in a 22-storey tower block (Ronan Point) in East London

How much does it cost to heat a home?

1.15 Table 3 indicates the annual fuel costs for heating and lighting for a typical two-bedroom flat. The information has been provided to us by the Building Research Establishment (BRE). The table indicates that, in this scenario, households with direct-acting electric panel heaters that use standard single-rate electricity tariffs face significantly higher heating costs than households with storage heaters that use Economy 7 tariffs, or households with modern gas boilers. The calculations use the government-approved "Standard Assessment Procedure" (SAP) 2012 methodology and fuel costs which is used for Energy Performance Certificates (EPCs). However, this means that fuel prices are not necessarily in line with currently available energy tariffs.¹²

1.16 The table also shows that direct-acting panel heaters require less electricity than storage heaters to achieve the same level of comfort. This is because storage heaters usually emit a certain amount of heat when not needed whereas direct-acting radiators only use electricity when needed at the time of heating. This also explains why modern electric storage heaters can be cheaper to run than older storage heaters.¹³

Table 3: Space and water heating costs for a typical two-bedroom flat in Great Britain, using SAP 2012 methodology and prices

Heating system	SAP total fuel costs in £/yr	Space heating (kWh/yr)	Water heating (kWh/yr)	Pumps and fans (kWh/yr)	Lights (kWh/yr)
Electric panel heaters (single-rate tariff)	1,171	6,206	2,224	0	452
Old electric storage heaters (Economy 7)	760	7,453	2,223	0	452
Modern electric storage heaters (Economy 7)	673	6,682	2,223	0	452
Modern gas boiler ¹⁴	512	6,460	2,814	75	452

¹² Fuel prices are not necessarily in line with currently available energy tariffs. Therefore, we also show results from recent Sutherland tables for Scotland as another example (which use selected, up-to-date, fuel prices/tariffs). Further, these calculations do not capture capital costs and maintenance costs. See here for the complete methodology and fuel cost assumptions used in SAP 2012: http://www.bre.co.uk/filelibrary/SAP/2012/SAP-2012_9-92.pdf. Note that for storage heaters in this example it is assumed that 85% of the space heating energy (and a similar percentage of the water heating energy) is provided using electricity at off-peak times with the remainder at on-peak times to top up temperatures in the evening when heat stored the previous night has been exhausted. This can be through separate direct-acting heaters or as part of one integrated unit.

¹³ The amount of heat required is affected by how 'responsive' the storage heaters are. Older types of storage heater emit a significant proportion of their heat during the night so needs to store more to make up for this.

¹⁴ The majority of households in GB heat with new gas condensing boilers.

1.17 The widely-used Sutherland tables show a similar picture, with direct-acting electric radiators that use single-rate electricity being the heating system with the highest running costs.¹⁵ The table below shows a summary of the results for Scotland as an example.

Table 4: Comparative space and water heating costs for Scotland based on the Sutherland tables, July 2015

Heating fuel	Heating system	3 bedroom house	Flat
Electric ¹⁶	Electric storage heaters (Economy 7)	1478	1040
	Direct-acting electric radiators (single-rate tariff)	1865	1301
	Air source heat pump(HP): Radiators	1078	788
	Air source HP: Underfloor	856	630
	Ground source HP: Radiators	923	682
	Ground source HP: Underfloor	738	550
Gas	Old gas fired boiler (tariff 1)	1064	765
	Old gas fired boiler (tariff 2)	970	700
	New gas condensing boiler (tariff 1)	889	648
	New gas condensing boiler (tariff 2)	811	594
LPG	Old LPG fired boiler	1562	1092
	New LPG condensing boiler	1286	908
Oil	Old oil fired boiler	911	631
	New oil condensing boiler	747	521
Solid ¹⁷	Wood Pellets	1125	769
	House coal	1046	711
	Anthracite Nuts	946	640
	Anthracite Grains	843	575

1.18 Although this broadly indicates the fuel and running costs of different heating systems, there are a range of factors to be aware of:

¹⁵ For GB, the Sutherland tables are available for South East England, South West England and Wales, Midlands, Northern England, and Scotland. The Sutherland tables take into account maintenance costs. The tables rely on selected, up-to-date, gas and electricity tariffs in different regions. For gas, Sutherlands calculate costs based on two different gas tariffs. Therefore, two cost figures are shown ("tariff 1" and "tariff 2") for households with gas boilers. The consumption assumptions here are based on DECC's "National Energy Efficiency Data" (NEED). The table for Scotland assumes space and water heating requirement for a 3 bedroom house of 9,863kwh heat, and 2,500kwh hot water; and for a flat of 7,000kwh heat and 1,500kwh hot water.

¹⁶ Note that Sutherland Tables include a standing charge for electricity of £99.97 in these calculations of heating costs for households with electric heating systems. This however will need to be paid by customers using other heating fuels as well for their electricity supply. Further, Sutherland assume that households with storage heaters pay by direct debit whereas other electric heating households (including heat pumps) pay by on receipt of bill. A 9% direct debit discount on the unit rates (ie total cost minus standing charge) would need to be applied to those paying on receipt of bill if they were to pay by direct debit as well. We have not altered Sutherland's calculations but readers need to be mindful of this. In the example of storage heaters, Sutherland assume that direct-acting radiators are used in the bedrooms (with electricity charged at higher peak rates) and a certain percentage of water heating is also provided at higher peak rates.

¹⁷ For context, in Scotland for example, 11,500 households use house coal which is the most common form for solid fuel heating, followed by around 6,500 households that use wood (chips, logs or pellets), and 2,000 households that use anthracite nuts or grains.

- This is not a complete economic assessment as it does not take into account the generally lower capital costs of electric heating systems, the potential cost of a gas connection, nor any potentially available support (eg the Renewable Heat Incentive for heat pumps, or Fuel Poor Network Extension Scheme for gas connections).
- There might be other instances where certain electric heating systems could be a more economic option, for example direct-acting heating in newer, very small and very well-insulated flats or for households that are less likely to be at all home day or have less ability to pre-plan their heating needs.
- There are a range of heating technologies that fall within the categories of storage and direct-acting heating systems for the purposes of this paper. All of these have different capital and running costs. Some of these, including direct-acting heating systems, might be more or less suitable to work with (different types of) ToU tariffs, such as Economy 7 or Economy 10.
- ToU tariffs, including Economy 7, mean that prices will be higher outside of the “off-peak” period compared to single-rate tariffs, thus increasing the cost of running other appliances (eg fridge or washing machine) during those times.
- Prices of different fuels vary by region which again impacts on the relative running costs of different heating systems.

1.19 Therefore the cost figures in this chapter should only be seen as examples for possible fuel and running costs. In reality this will depend on a range of factors, such as exact heating system, region, tariff, correct installation of appliances as well as size and insulation of property so need to be assessed on a case by case basis.

2. Physical characteristics of dwellings and social characteristics of households with electric heating

Chapter Summary

This chapter sets out physical characteristics of dwellings with electric heating and the social characteristics for the households living in those dwellings.

- In Great Britain, 25% of flats use electric heating compared to only 4% of houses.
- Homes with electric heating systems tend to have a lower energy efficiency rating, partly reflecting the higher running costs of using electric heating. In England, 2% of dwellings with mains gas heating are 'F' or 'G' rated, compared to 14% of dwellings with storage heating systems, and 57% of dwellings with direct-acting heating.
- Storage heating systems can be found disproportionately in private-rented and social housing while direct-acting heating systems can be found disproportionately in the private-rented sector.

Households living in these properties are more likely to be:

- of lower income. In England, around a third fall in the lowest income quintile, with incomes of less than about £14,500.
- fuel poor. In Scotland for example, 48% of households with storage heating systems and 68% of households with direct-acting electric heating are in fuel poverty, compared to 31% of households that use mains gas.
- single adult households and households with no children. There is generally no significantly increased likelihood of householders having a long-term illness or disability (with the exception of storage heating households in Scotland).

Background and limitations

2.1 Annex 1 sets out a detailed analysis of physical and social characteristics for households that use electric heating. This chapter summarises some of the findings.

2.2 There are however some important limitations to keep in mind for the purpose of this analysis:

- For Wales, there are no up-to-date housing surveys that cover physical inspections. The latest one was conducted in 2008 – the results were

analysed by Consumer Focus in 2011 and we refer to them here where possible but given this limitation, the majority of this section covers England and Scotland only.¹⁸

- It is not always clear in household surveys which heating systems have storage capacity and which do not, Annex 1 sets out the methodology used as a proxy for these types of heating systems.
- Statistics for households with direct-acting heating systems are based on small sample sizes so need to be treated with caution.¹⁹
- Different heating systems make up the broader categories of storage heating system and direct-acting heating system without storage capacity. Therefore, results in this chapter should not be used to derive conclusions for particular heating systems within these categories. Due to the small sample size, it is however not possible to disaggregate results further. Further analysis with larger datasets would be needed to understand the physical and social characteristics better for households with particular types of heating systems within the two broader categories we have created for the purpose of this analysis.
- This chapter shows descriptive statistics which describe dwellings or households with certain heating systems. Descriptive statistics do not reveal reasons for certain patterns nor cause and effect. For example, a household with storage heating might be more likely to be in fuel poverty not necessarily because of the cost of heating (due to the heating system or for example level of insulation) but because storage heating systems are more likely in social housing with households being more likely to be of lower income.

¹⁸ Statics for Scotland are based on our analysis of the Scottish Household Survey (SHS) for the combined years of 2011 to 2013 to achieve a sufficiently large sample size (which can therefore differ from published statistics that only use the latest household survey). For England, statistics are based on our analysis of the English Housing Survey (EHS) 2012/13 and 2013/14. For Wales, the latest housing survey (2008) has been analysed and published by Consumer Focus, 2011, "Off-gas consumers. Information on households without mains gas heating" (<http://www.consumerfutures.org.uk/reports/off-gas-consumers-information-on-households-without-mains-gas-heating>). Where possible and sensible, we use their analysis to summarise some key statistics for Wales in areas where those are less likely to have changed significantly. However, most statistics in this chapter refer to England and Scotland only. The report by Consumer Focus may however be of interest to readers for further statistics on Wales. Note that the analysis only considers inhabited dwellings.

¹⁹ See Annex 1 how we have defined storage heating systems and direct-acting heating without storage functionality for the purpose of this analysis. This is largely based on whether heating systems were defined as mostly using off-peak or peak electricity as a proxy as this referred largely to the heating system as such rather than actual tariff. Only 202 cases of households in the latter category are recorded in the EHS, and only 119 in the SHS. Therefore results need to be treated with caution. Annex 1 sets out when sub-samples include results based on less than 30 cases. Further note that heat pumps have been excluded from this analysis and have been recorded under "other heating" as set out in detail in the Annex. Going forward, once more heat pumps have been installed, any analysis could be more sensibly conducted separately for this group.

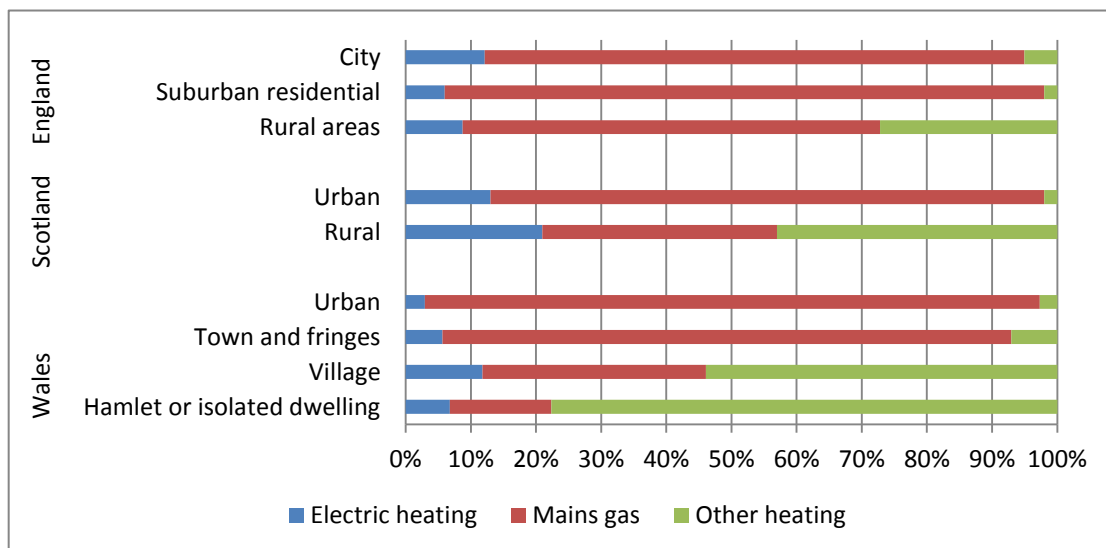
Physical characteristics

2.3 As mentioned in the previous chapter, the proportion of households that use electric heating is larger in Scotland (13%). Annex 1 sets out a detailed analysis by region and local authority and shows that the proportion of households that use electric heating on some Scottish islands is particularly large, with 50% of households on the Shetland Islands using electric heating. In England, the South West has the highest proportion with 13% of households using electric heating. In Wales, 15% of households in mid-Wales use electric heating.

2.4 The majority of households that use electric heating use some form of storage heating system (1.7m out of 2.2m), usually storage heaters. The remaining households use direct-acting heating systems without storage functionality, mostly room heaters using single-rate electricity. The proportion of households using direct-acting heating systems is smaller in Scotland (around 10% of households with electric heating).

2.5 Homes that use electric heating can be found in both urban and rural areas. In Scotland for example, 21% of rural households use electric heating as opposed to only 13% of urban households. In England on the other hand 12% of households in cities (and 6% of households in suburban residential areas), but only 9% of households in rural areas use electric heating. Figure 1 shows that this is significantly different for other non-gas heating sources which are predominantly in rural areas.²⁰

Figure 1: Main heating fuel by location in England, Scotland and Wales²¹



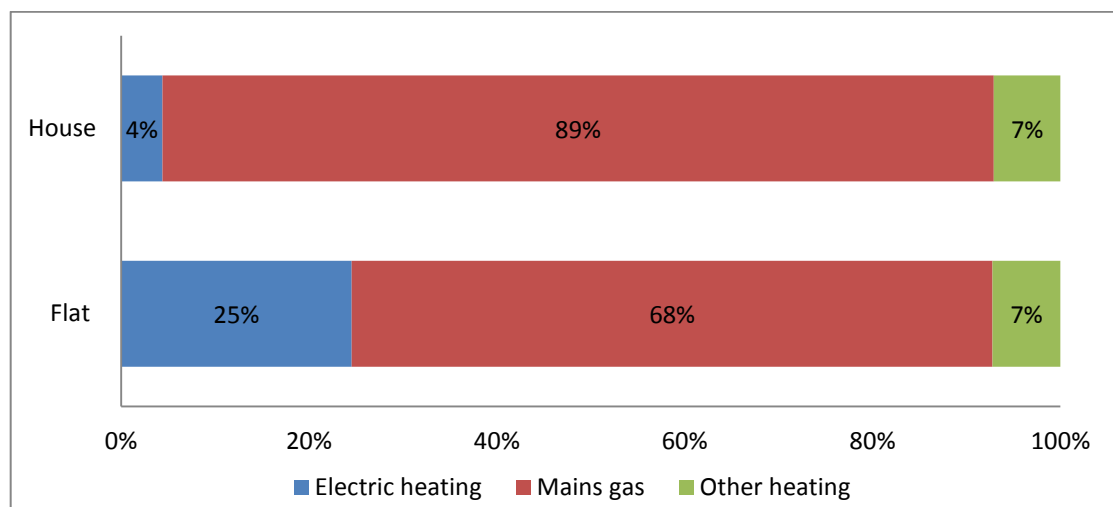
²⁰ This refers to the proportion of non-gas households in rural areas but there will be differences within this group, eg heat networks being more likely in urban areas.

²¹ "Other heating" contains households that do not use electric or mains gas heating, for example households that use oil, LPG, solid fuel, and communal heating. For the purpose of this analysis it also contains households that use heat pumps.

2.6 The majority of electric heating systems can be found in flats. 25% of all flats in Great Britain use electricity for heating, compared to only 4% of houses.

2.7 Further, storage heating systems can be found disproportionately in social housing. In England, 11% of households that rent from registered social landlords and 22% of households that rent from housing associations in Scotland use storage heating systems. Direct-acting heating on the other hand can be found disproportionately in the private rented sector, with 43% of all direct-acting heating systems being installed in such properties in England, and 34% in Scotland even though the private rented sector only makes up 19% of properties in England and 11% in Scotland. This could also be linked to the fact that these heating systems can be found disproportionately in flats which are generally more likely to be in the private-rented sector than houses.

Figure 2: Main heating fuel by dwelling type in Great Britain

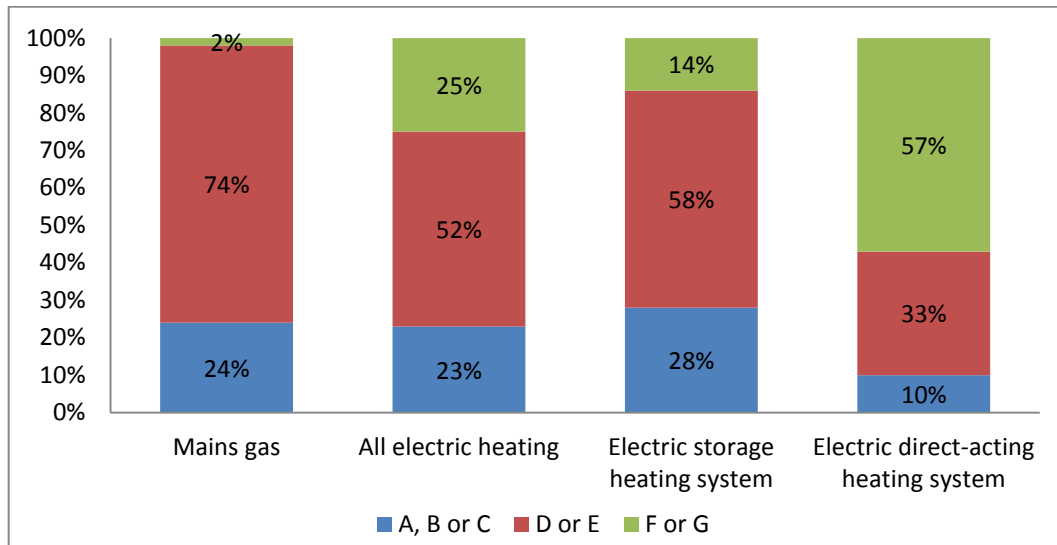


Energy efficiency

2.8 Dwellings with electric heating are more likely to have lower energy efficiency ratings, such as “F” or “G”. In particular 57% of direct-acting electric heating dwellings in England are “F” or “G” rated, compared to only 2% of mains gas dwellings. The picture is similar in Scotland, with 44% of dwellings with direct-acting heating being “F” or “G” rated compared to 1% of mains gas dwellings.

2.9 It is important to note that the energy efficiency rating is based on the overall efficiency and fuel costs for heating and lighting a property, taking into account various factors such as insulation levels, window glazing, and the particular type of heating system. Hence, the lower energy efficiency rating will partly or mostly be due to the nature of the heating system as such.

Figure 3: Energy Efficiency Rating in England²²



2.10 The picture is somewhat mixed with regards to wall type and levels of insulation. Dwellings with direct-acting electric heating systems are more likely to have solid walls (or other non-cavity walls) which are generally more difficult to insulate than cavity walls. In England for example, 48% of dwellings with direct-acting heating have solid or other non-cavity walls compared to 31% of mains gas dwellings. Dwellings with storage heating systems are however less likely to fall in this category (26%).

2.11 Among households with cavity walls, the likelihood of these not being insulated is mostly higher for electric heating dwellings. In England, 54% of dwellings with storage heating systems and 53% of dwellings with direct-acting heating with cavity walls have no insulation compared to only 39% of mains gas households. In Scotland, differences are smaller and dwellings with storage heating systems are in fact slightly more likely to be insulated (70%) than mains gas dwellings (67%).

2.12 In the case of dwellings with solid walls, differences between electric heating and mains gas dwellings are relatively small. In fact, electric heating dwellings are slightly more likely to be insulated than mains gas dwellings²³ but overall around 90% of properties with solid walls in England and Scotland are not insulated.

2.13 Partly due to being less energy efficient, electric heating dwellings are far more likely to fail relevant housing standards in England²⁴ and Scotland²⁵.

²² See Annex 1 for the Scottish statistics.

²³ The difference is greatest between storage heating dwellings and mains gas dwellings in Scotland with 26% of storage heating dwellings with solid walls being insulated compared to only 7% of mains gas dwellings with solid walls.

²⁴ In England, 80% of dwellings with direct-acting heating, and 51% of dwellings with storage heating systems fail the government's Decent Home Standard compared to only 16% of mains gas dwellings. This is mainly for not being considered to have efficient heating and effective insulation but also for failing minimum safety standards. The cost of works required to meet the Decent Home Standard is

Further, dwellings with storage heating systems are more likely to have older heating systems while those with direct-acting heating are more likely to have newer ones. In England, in 63% of dwellings with storage heating systems, the heating system is older than 12 years, compared to 24% of dwellings with direct-acting electric heating and 23% for dwellings with mains gas heating. This indicates that direct-acting heating systems are more likely to have been installed (or replaced) relatively recently.

2.14 Some of these households appear to be connected to the mains gas grid. Consumer Futures previously pointed out that these could potentially switch to gas.²⁶

Social characteristics

Household composition and length of residency

2.15 Electric heating is more prevalent in single adult households and households with no children. In England, 59% of households with storage heating systems have only one adult, compared to 33% of households in main gas dwellings. Further, 84% have no children living in the property, compared to 69% of households with mains gas heating. In Scotland, the picture is similar.

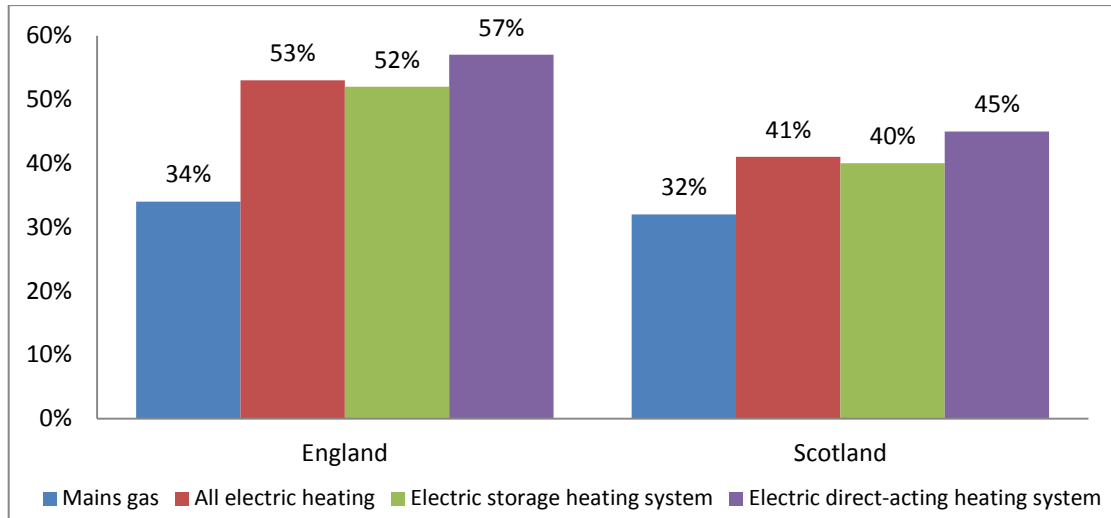
2.16 Households with electric heating tend to live in their homes for less time. In England, more than half of households in electric heating dwellings have lived there for fewer than four years, compared to only 34% of households in mains gas dwellings. Again, the picture in Scotland is similar. This could again be linked to the fact that electric heating is more likely in flats rather than houses.

relatively large for dwellings with direct-acting heating, with 53% needing an investment of above £5,000 – whereas in the case of storage heating dwellings, the costs are significantly lower (78% of dwellings that failed the standard would require investments of less than £2,000). The Decent Home Standard applies to social housing in England and covers properties rented out by councils and housing associations.

²⁵ In Scotland, 97% of dwellings with direct-acting heating fail the Scottish Housing Quality Standard (SQHS) compared to 50% of mains gas dwellings. This is mainly because room heaters are not considered energy efficient in the SQHS but also because these dwellings can fail on other fronts as well. All social rented dwellings in Scotland must meet its criteria by 2015.

²⁶ Consumer Focus, 2011, "Off-gas consumers. Information on households without mains gas heating" (<http://www.consumerfutures.org.uk/reports/off-gas-consumers-information-on-households-without-mains-gas-heating>).

Figure 4: Per cent of households that spent fewer than four years in current residency



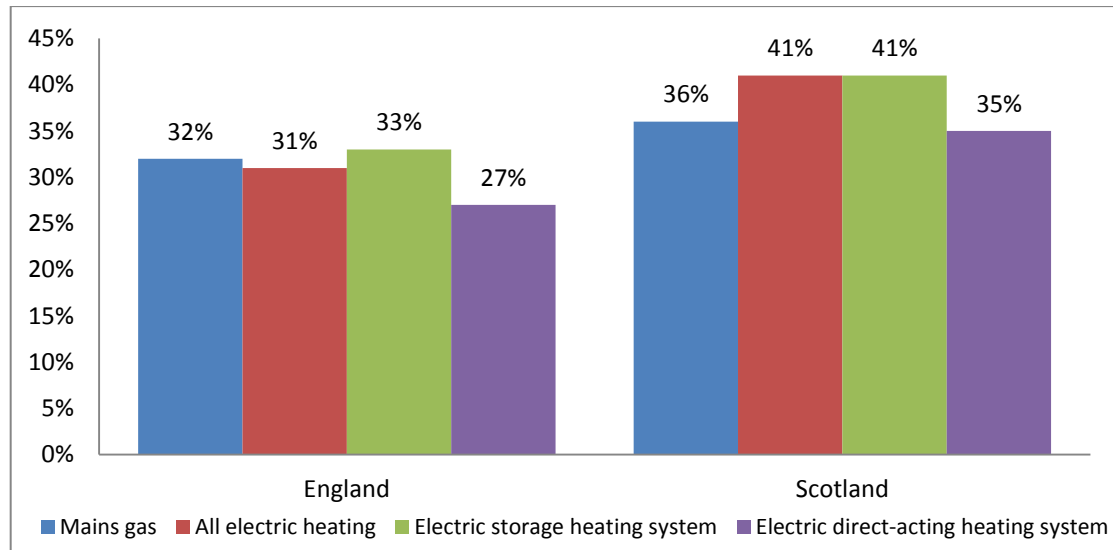
Income, vulnerability and fuel poverty

2.17 Households that use electric heating tend to be of lower income than households with mains gas heating. In England, 36% of storage heating customers and 31% of customers with direct-acting heating belong to the lowest income quintile (ie lowest 20% of households), that is they have less than around £14,500 per year.²⁷ In Scotland, the picture is a similar one with 28% of households with direct-acting heating having a household income of less than £300 per week compared to only 14% of households in mains gas heating premises.

2.18 There is no clear picture with regards to long-term sickness or disability. Figure 5 shows that in England, households with direct-acting heating systems are less likely to have a family member that is sick or disabled, while in Scotland, households with storage heating systems are more likely but those with direct-acting heating are less likely to fall in this category.

²⁷ This is based on income including benefits and before housing costs are deducted. On an equivalised basis (accounting for differences in family structure) and after housing costs: 26% of households with off-peak storage heating fall in this category, compared to 29% of households with direct-acting heating and 20% of households with mains gas heating. See Annex 1 for details.

Figure 5: Per cent of households with at least one household member that has long-term sickness or disability

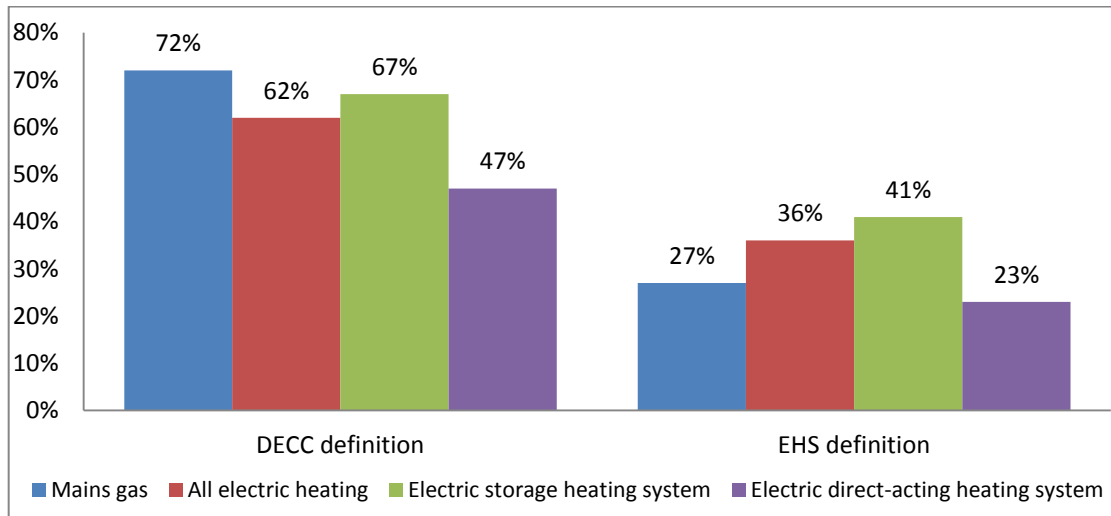


2.19 This is also reflected in statistics that seek to assess whether households are in vulnerable situations. According to DECC’s definition of vulnerability (used for fuel poverty purposes for England), households that use electric heating are less likely to be in vulnerable situations than households that use mains gas heating. This is because this definition considers households to be vulnerable if they have children, the elderly or those with long-term illnesses or disabilities. As described above, electric heating households are not generally more likely to fall in these categories.

2.20 The definition used by the English Housing Survey (EHS) on the other hand considers households in vulnerable situations if they receive certain means-tested or disability-related benefits.²⁸ Under this definition, households with storage heating systems are more likely to be vulnerable and households with direct-acting heating systems less likely.

²⁸ A household is modelled to be vulnerable by the EHS if any of the following conditions apply to the household reference person and any partner: (a) In receipt of means tested benefits or tax credits with a relevant income below the threshold, (b) attendance allowance, (c) Disability Living Allowance, (d) Industrial injuries disablement benefit or (e) war disablement pension.

Figure 6: Per cent of households considered in vulnerable situations in England, according to DECC’s definition for fuel poverty purposes and the definition used by the EHS



2.21 The lower income and higher fuel costs of households with electric heating systems are also reflected in the fuel poverty statistics. In both, England and Scotland, households that use electric heating are more likely to be fuel poor than mains gas households. This is particularly the case for households that use direct-acting heating.

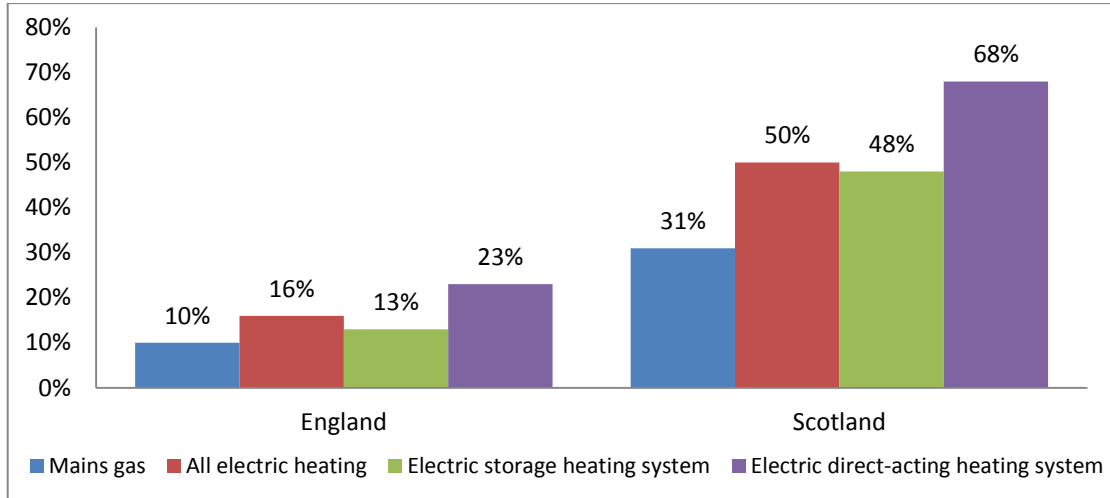
2.22 Note that that the definitions of fuel poverty are different in England and Scotland so statistics for both countries cannot be compared.²⁹ Further note that these numbers need to be treated with some caution as energy costs are not derived based on actual tariffs that households are on – instead DECC and the Scottish government have to make certain assumptions to calculate this.

2.23 Differences are relatively small when it comes to ease of paying heating bills: In England, 23% of households with storage heating systems and 25% of households with direct-acting heating find it difficult to meet their heating costs, compared to 20% of households with mains gas heating. This could also be linked to the fact that households with direct-acting heating are less likely to be at home all day and are more likely to be at home only in the evening and thus have lower heating needs.³⁰

²⁹ In England, fuel poverty is measured by the “Low Income High Costs” definition, which considers a household to be in fuel poverty if they have required fuel costs that are above average (the national median level), and were they to spend that amount they would be left with a residual income below the official poverty line. In Scotland, a household is in fuel poverty if, in order to maintain a satisfactory heating regime, it would be required to spend more than 10% of its income (including Housing Benefit or Income Support for Mortgage Interest) on all household fuel use. Statistics excludes households where this information is missing.

³⁰ In England, only 32% of households with direct-acting heating are at home all day, compared to 49% of households with storage heating systems and 44% of mains gas households.

Figure 7: Per cent of households in fuel poverty by heating fuel in England and Scotland



3. Customer experience and engagement of households with electric heating

Chapter Summary

This chapter summarises the experience of electric heating households. Reviewing available evidence, we find that:

- Most electric heating households seem satisfied with their heating system and feel they understand arrangements at least fairly well. But a significant minority feels less positive. In particular, a significantly smaller proportion of households feel able to keep their home warm compared to mains gas households.
- Many find it challenging to manage their energy. Some do not understand how to get maximum benefit from their ToU tariff and heating system. Just over half of electric heating consumers believe that additional information and advice would help save money.
- Electric heating customers most commonly seek advice from Citizens Advice Consumer Service on bills, switching, faulty meters and whether the ToU tariff they are on is right for them. While these kinds of complaints are not unique to electric heating consumers, there are some particular issues within them. For example, billing complaints include suppliers reading the peak and off-peak register of the meter the wrong way round, leading to incorrect bills.

3.1 This chapter outlines our findings on electric heating customers' experiences of using this heating system and engaging in the energy market. It draws on consumer contacts data from front-line advice agencies, such as Citizens Advice Consumer Service and Energy Savings Trust (EST), as well as customer experience surveys.

Consumer queries and complaints

3.2 We analysed the queries and complaints that Citizens Advice Consumer Service received over the period of six months from October 2014 to March 2015. Six hundred and eighty-six unique contacts were made to Citizens Advice Consumer Service over issues related to electric heating, "non-gas" and ToU tariffs. Table 5 shows the top complaints and queries. A detailed analysis of all the findings can be found in Annex 2.

Table 5: Customer contacts received by Citizens Advice Consumer Service, October 2014 – March 2015

Issue	Contacts	Per cent
Bill issues	171	23%
Switching	101	13%
Faulty meter	93	12%
Suitability of ToU tariff	64	9%
Gas bill despite no gas usage	62	8%
Advice on alternative heating systems	62	8%
Meter readings transposed	50	7%
Meter change issue	50	7%
Complexity	37	5%
Miscellaneous	27	4%
Affordability challenges	19	3%
Faulty heating	15	2%
Total ³¹	751	100%

3.3 The table shows that customers were mainly concerned about their bills. This included receiving incorrect bills, receiving very high bills or being back billed. This was followed by switching queries and often involved customers with more complex ToU meters (eg DTS, Economy 10) having difficulties comparing deals and understanding what the options are, for example:

- *A caller from Suffolk is on an Economy 18 meter and struggles to find other suppliers that can support it. The caller wishes to know what she can do regarding the matter.*

3.4 The third most frequently-raised issue was concerns around meters not working correctly, such as consumers suspecting meter clocks to be out of sync (ie switching between “peak” and “off peak” register at the wrong time) or consumption not being registered correctly on the meter.³² For example:

- *A caller from England with storage heaters noted that the bill of her mother in law, who is on the Priority Service Register, was very high. They did not manage to get the supplier to investigate this and therefore arranged for an electrician to investigate. The electrician reported that the problem of high usage was due to the off-peak timer being set 12 hours out of sync. As the meter was locked he was unable to correct the fault. The caller contacted the supplier who said that they would arrange for someone to check the meter and that, if wrongly set, a refund would be made on the next bill. The suppliers also offered an insulation check which the caller declined as it had been done before. No date was given for the*

³¹ The total number of contacts (751) is higher than the total number of unique contacts (686) as some contacts fall into several categories. See Annex 2 for an explanation.

³² It has recently emerged that some of SSE’s Economy 10 meters may have been affected by a manufacturing fault that results in the time-clock being out of sync following power cuts. Some of the consumer contacts in this category relate to this and we have engaged with SSE on this. SSE is either reprogramming or replacing affected meters and adjusting customer accounts to ensure no one is left financially disadvantaged.

meter check and no one has come since. The customer is now frightened to use her storage heaters.

3.5 This was followed by queries about the suitability of customers' ToU tariffs. These were often complaints by customers on ToU tariffs that found out that they are better off on a single-rate tariff and so feel they have overpaid. This also includes general queries from customers to understand whether they are better off on a ToU or single-rate tariff or whether they can have a single-rate tariff even though they have a ToU meter (these are mostly mains gas households rather than households with electric heating). For example:

- *A caller from Worcestershire phoned his supplier a week ago to enquire what tariff he is on to compare deals. The caller found out that he was on an Economy 7 tariff. The caller had not been aware of this and never requested this. The caller feels he has been overcharged. The supplier has now offered the customer £200 compensation which the customer is not satisfied with.*

3.6 Other issues included receiving a gas bill despite not using gas (in most cases this was suppliers asking customers to pay a standing charge for a gas meter that is not being used), customers seeking advice on alternative heating systems as well as complaints that suppliers transpose peak and off-peak meter readings leading to incorrect bills.

3.7 We have also received information from local Citizens Advice in England and Wales as well as Scotland. For England and Wales, 51% of affected electric heating clients either had a disability or long-term health condition, with 52% being single, 26% retired and 23% unemployed.³³ Affordability concerns were the main reason for these customers contacting their local Citizens Advice. This accounted for over a third of contacts, for example:

- *A local Citizens Advice in London reported in December 2013 that a single female living with her 5 year old child in a privately rented flat was paying £40 a week for electricity that was mainly the result of storage heaters. She turns these off and sleeps in the front room with her daughter but this has led to mould and damp appearing on the walls. Her landlord has offered to provide plug-in electric heaters, but these are also expensive to run.*

3.8 Analysis by Citizens Advice Scotland of consumers contacting their local Citizens Advice also highlighted concerns about affordability.³⁴ The problems were

³³ The analysis has been published here: <https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/Energy%20Consultation%20responses/IntelligenceForOfgemOnElectricOnlyHomes.pdf>. Percentages relate to cases where this information has been collected. Note that there is no overall statistical data collected by the Citizens Advice service about the number of problems of local Citizens Advice clients who are off-gas grid. The data here is based on evidence forms, which are anonymised case studies submitted where advisers consider that the client's problem cannot be solved through advice alone, but also requires a change in policy, legislation or practice. Note that in some instances the heating source of those recorded here was unclear.

³⁴ The analysis has been published here: http://www.cas.org.uk/system/files/publications/off_gas_evidence_to_upload.pdf

particularly acute when households relied on old storage heating systems. The cases also demonstrate a lack of understanding about the support schemes which are available to consumers, highlighting the importance of timely advice, for example:

- *A North of Scotland local Citizens Advice reports of a client who lives alone in local authority rented accommodation. The client has storage heaters and is finding it difficult to heat his home. He has been informed that he may be entitled to £135 for Scottish Health Welfare Fund for help with heating costs and he would like to apply. (Here the client is confusing the Scottish Welfare Fund and the Warm Homes Discount).*

3.9 EST Scotland reported that only a relatively small percentage of their consumer contacts relate to electric heating. The bulk of enquiries about electric heating come from areas that are off the mains gas grid. EST Scotland advised that the majority of these enquiries are about existing storage heating systems and potential options to replace those. EST Scotland also reports that more recently consumers have become increasingly aware of new electric heating systems coming on the market.

3.10 EST England and Wales also advised that customers asking specifically about electric heating do not make up a large proportion of their contacts (about 70 contacts per month which constitutes about 0.5% of all contacts).³⁵ The majority of these customers call to:

- ask for financial support to change their heating systems and improve the energy efficiency of their homes,
- discuss Economy 7 tariffs, eg whether a customer should switch tariffs and/or suppliers,
- seek support to find someone to install or fix a heating system.

3.11 Similar to EST Scotland, EST England and Wales also report that there is a small but increasing proportion of customers that seek advice on new direct-acting radiators such as "infrared heating" which have been advertised to them by doorstep sellers. This includes customers that use mains gas heating and are considering whether to switch. EST also receives some queries from heat pump customers mainly about accessing RHI funding.

3.12 Ofgem does not regulate the advertisement, sale and installation of heating systems. Nevertheless we note that the Advertising Standards Authority (ASA) ruled several times against claims made by some electric heat

³⁵ This covers customers that seek to discuss issues linked to electric heating. This includes customers with mains gas heating that seek to switch to electric heating. It is likely that there are more customers with electric heating systems that seek advice on other issues, such as insulation or installing a gas boiler. These calls are not necessarily included in this figure and are not easily identifiable by the customers' current heating source.

manufacturers. This was mainly on the basis of misleading advertising, exaggerated claims, and inability to substantiate claims.³⁶

Satisfaction

3.13 Besides analysing customer contacts from front-line advice agencies, we have reviewed available evidence to assess customers' satisfaction as well as perceived suitability and customers' understanding of their heating, tariff and metering system.

Overall satisfaction

3.14 Satisfaction could be influenced by a range of factors, such as heating costs and the ability to keep warm. Research of available literature and data suggests that the majority of electric heating households are relatively satisfied with their heating system but satisfaction levels are lower than for mains gas households and consumers are less likely to feel warm:

- Consumer Futures and Ipsos Mori research (2011)³⁷ suggests that while the majority of 68% of storage heating households are satisfied with their heating system, 25% are dissatisfied. This compares to 91% of gas heating households (on ToU tariffs) being satisfied. The study also indicates that 59% of storage heating users consider their heating system right for their needs. This is compared to 89% of gas heating households on ToU tariffs. Over a third (37%) of storage heating households believe it is not the right kind of heating system for them (compared to 9% of mains gas households on ToU tariffs).
- Similarly, research by Gill Wales³⁸ suggests that 74% of electric heating households in England are satisfied with their heating system (taking into account cost and performance), while 24% are not very or not at all satisfied.
- Some studies have sought to explore the levels of satisfaction by customers changing their heating system, eg from electric heating to mains gas heating or from electric heating to other forms of electric heating. The studies indicate a positive experience for customers that have switched (mostly from storage heating) to heat pumps³⁹ and mains gas⁴⁰

³⁶ See for example https://www.asa.org.uk/Rulings/Adjudications/2015/3/Fischer-Future-Heat-UK-Ltd/SHP_ADJ_288734.aspx , https://www.asa.org.uk/Rulings/Adjudications/2013/1/Bright-Networks-Ltd/SHP_ADJ_206461.aspx , https://www.asa.org.uk/Rulings/Adjudications/2012/7/Sunflow-Ltd/SHP_ADJ_194079.aspx , https://www.asa.org.uk/Rulings/Adjudications/2012/6/Rointe/SHP_ADJ_186824.aspx , https://www.asa.org.uk/Rulings/Adjudications/2012/5/Cornwall-Heating-Solutions-Ltd/SHP_ADJ_186015.aspx , https://www.asa.org.uk/Rulings/Adjudications/2011/1/Rointe/TF_ADJ_49624.aspx

³⁷ Consumer Futures, 2012, "From devotees to the disengaged"

(<http://www.consumerfutures.org.uk/wpfb-file/from-devotees-to-the-disengaged-pdf>)

³⁸ Based on 219 non-gas users in England whose main heating fuel is electricity. The research has been provided to us by Citizens Advice but has not been published.

³⁹ EST, 2013, "The heat is on: heat pump field trials: phase 2"

([http://www.energysavingtrust.org.uk/sites/default/files/reports/TheHeatisOnweb\(1\).pdf](http://www.energysavingtrust.org.uk/sites/default/files/reports/TheHeatisOnweb(1).pdf)); NEA and Aragon Housing Association, 2014 "Heat Pump Trials in a range of Bedfordshire off gas properties"

as well as one study that indicates a less positive experience for customers that have switched from solid fuel to direct-acting heating.⁴¹

Ability to keep warm

3.15 Overall, available research and data suggest that most electric heating consumers are content with their ability to keep their home warm. However, the numbers appear significantly lower than for households with mains gas heating. Reasons for this being the inability to heat to comfortable temperatures as well as high costs leading to self-rationing:

- The Scottish Household Survey suggests that 42% of electric heating households in Scotland do not feel their heating keeps them warm enough compared to 23% of mains gas homes in Scotland.⁴²
- Similarly, using data from the EHS, we found that in England about 22% of households with storage heating systems and 18% of households with direct-acting heating systems find it difficult to heat their living room, compared to 11% of mains gas households. This is mainly because households find it not possible to heat the room to a comfortable temperature but also because of the costs of heating.⁴³
- A qualitative survey by SPA⁴⁴ in 2011 suggested that electric heating (mainly storage heating) customers show particular discontent with their heating system. Users of storage heaters cite expensive bills and inefficiency of units. Storage heaters are seen as inefficient by most users as consumers have to plan for cold weather to set the correct level, and are perceived as not giving out the same level of heat as other central

([http://www.nea.org.uk/Resources/NEA/Publications/2013/Aragon%20Final%20Report%20\(V12\)_06-03-2014.pdf](http://www.nea.org.uk/Resources/NEA/Publications/2013/Aragon%20Final%20Report%20(V12)_06-03-2014.pdf)); NEA and Affordable Warmth Solutions, 2013 "Monitoring Air Source Heat Pumps in Domestic Properties" (<https://www.affordablewarmthsolutions.org.uk/media/98746/Monitoring-air-source-heat-pumps-in-domestic-properties.pdf>); Consumer Focus Scotland, 2012, "21st century heating in rural homes (<http://www.consumerfocus.org.uk/scotland/publications/21st-century-heating-in-rural-homes>)

⁴⁰ See NEA, 2013, "Community evaluation of the North Bransholme Community Energy Saving Programme"

(http://www.riverside.org.uk/pdf/Final%20report%20CESP%20evaluation%20E%20ON_Riverside2_HG%2029%2008%2013.pdf).

⁴¹ A NEA study has assessed the experience of residents of a housing estate in central England that replaced solid fuel heating with direct-acting electric boilers. The study found that residents have seen a large increase in energy bills (almost double), that residents started reducing energy consumption due to costs and a lack of understanding on how to use the new heating system. See NEA, 2015, "Electric Boiler Assessment Project" (www.nea.org.uk)

⁴² Scottish Household Survey (<http://www.gov.scot/Resource/0046/00465627.pdf>). It includes those that have responded 'never' or 'only sometimes'.

⁴³ Further, the aforementioned research by Gill Wales suggests that 69% electric heating households in England say their home is easy to keep warm with 26% saying it is difficult. 20% of households did not have the heating on as much as they wanted with 58% of those saying it was because they could not afford it. One in four (26%) of those who could not heat their homes enough said it caused health problems or stress for their families.

⁴⁴ The sample size is small so results need to be treated with some caution. See SPA, 2011, "Consumers' Experience of Off-Grid Energy Final Report"

(http://webarchive.nationalarchives.gov.uk/20140402142426/http://www.ofg.gov.uk/shared_ofg/mark-et-studies/off-grid/final-report.pdf)

heating options even at their maximum. Therefore, many households use supplementary sources such as open fires or plug-in electric heaters.⁴⁵

Awareness and understanding

Customers understanding of their heating system and tariff options

3.16 Operating electric heaters, such as storage heaters, and understanding ToU tariffs and meters can be complex and difficult. There are indications that while the majority of customers have a reasonable level of understanding, a significant minority of customers has difficulties:

- The aforementioned Consumer Futures and Ipsos Mori study indicates that 64% of storage heating households feel they understand their meters and bills at least fairly well, but the remainder rate their understanding lower than this.⁴⁶ It suggests that just over half of households with storage heating believe additional information or advice would help them make better use of their tariff and heating system. Most popular is information on when it is cheaper to use electricity (22% of storage heat users) and on how to compare prices between suppliers (17%).⁴⁷
- Research we commissioned on DTS, conducted by Big Sofa⁴⁸, suggests that consumers may be spending more than they need to due to low awareness and understanding of DTS arrangements and tariffs as well as problems understanding how to operate their heating system.
- For heat pumps, available studies also indicate that customers need information to ensure that they can use heat pumps effectively and reduce energy costs.⁴⁹

⁴⁵A DECC and BRE study found that 45% of storage heating households use supplementary heating to keep warm, mainly direct-acting electric radiators. This is however slightly lower than the percentage of central heating customers that use supplementary forms of heating (49%). Further, a large proportion of households use other heating systems as "alternative heating" in rooms that are not heated by the main heating system. Households using storage radiators as their main heating are most likely to use an alternative heater. See DECC/BRE, 2013, "Report 5: Secondary heating systems" (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/274774/5_Secondary_Heating.pdf)

⁴⁶ There is no significant difference between storage heating households and households that use mains gas heating in combination with a Time of Use meter and tariff.

⁴⁷ Fewer ToU customers request more information on how to switch suppliers (6%), understanding their bill and meters (4%), or how to use storage heaters or other appliances off-peak (4%). These figures are slightly lower than for ToU customers with gas central heating. The study suggests that this might reflect their lower interest in switching and greater cynicism about switching found among some of the case study interviews.

⁴⁸ Big Sofa, 2014, "Understanding the consumer experience of Dynamically Teleswitched (DTS) meters and tariffs" (https://www.ofgem.gov.uk/sites/default/files/docs/2014/11/understanding_the_customer_experience_of_dts_meters_and_tariffs_final_version_0.pdf)

⁴⁹ The aforementioned EST study indicates that whilst customers provide positive feedback on heat pumps, they often require more information. The study found varying levels of understanding amongst customers on how to best use the various controls in order to achieve the best performance from the equipment. Similarly, the aforementioned NEA studies on heat pumps indicate that it is

3.17 Our consumer contacts analysis shows that the complexity of the heating, meter or tariff system has been one reason why consumers contacted Citizens Advice Consumer Service. Often the complexity is causing other problems, such as switching problems for example when customers do not understand their metering system and available tariffs. In particular, it is more difficult for customers with ToU meters other than Economy 7 (eg Economy 10 or DTS) to find a suitable tariff as for example switching sites can only be used for single-rate and Economy 7 tariffs. Often the only option consumers have is to contact suppliers and/or find the relevant Tariff Information Labels online and calculate costs assuming they know what meter they have. This can also make switching more difficult:

- *A caller from Somerset has two meters for electricity and does not have gas at all. The first meter is a credit meter; the 2nd meter is a multi-rate meter. The caller would like to change suppliers but does not understand what meter she has got.*


Options to improve energy efficiency or heating system

3.18 It is important for consumers to understand how to optimise energy use by using the appliances in the house. However, consumers also often have options to reduce heating costs by improving the energy efficiency of their home, including upgrading their heating system. However, evidence suggests that electric heating customers might be less in control of these things (eg because they rent their property) or do not take them into account when moving into a property:

- The Consumer Futures and Ipsos Mori research suggests that storage heating households tend to have less control over choosing their heating system either because they do not own their property or cannot afford to install a new heating system. The study shows that 29% of electric storage customers feel they have no options to make their home more energy efficient compared to 18% of gas central heating customers.
- Although consumers can consider the heating costs when choosing a property, our EHS analysis shows that only a minority look at the Energy Performance Certificate (EPC) when moving into a house. This is particularly the case for electric heating customers (only 28% of households with direct-acting heating compared to 51% of mains gas customers). And even of those households that see the EPC, the majority of households (76%) do not take it into account when choosing a property.

3.19 Consumers do however seek information on the costs of upgrading or investing in alternative heating sources. Our consumer contacts analysis set out above show that customers contact Citizens Advice Consumer Service and in particular EST to get more information and advice on changing or upgrading their

important to support households to understand their heating needs and how to achieve these as well as to support consumers on the choice and potential changing of energy tariffs as explained above.



Insights paper on households with electric and other non-gas heating

heating system or installing energy efficiency measures. Queries often focus on the financial support available to change/upgrade the heating system, understanding the comparative costs of different heating systems and queries how to get connected to the gas system.

4. Tariffs and switching for households with electric heating

Chapter Summary

Most electric heating households use Economy 7 electricity tariffs. For these customers:

- There is a similar number of Economy 7 tariffs that customers can choose from compared to single-rate tariffs with significant savings potential.
- Electric heating customers, and more generally customers with ToU meters, are more likely than mains gas households to be on PPM meters. They will have less choice than direct debit customers.
- Economy 7 tariffs are suitable for customers that can consume a significant proportion of their consumption at off-peak periods, such as households with electric storage heating systems.

We also find:

- There are indications that switching rates for electric heating customers as well as more generally customers with ToU meters are slightly lower and the market share of the ex-regional monopoly suppliers is higher for customers with ToU meters.
- Customers can face particular barriers when trying to move to a cheaper tariff. This is particularly the case with ToU meters other than Economy 7 (eg Economy 10). There is generally less tariff choice for these customers and finding the right tariff is more difficult.
- In particular, a large number of households with ToU meters in Scotland have dynamically teleswitched meters (DTS). Our previous assessments showed that customers with these meters have more limited tariff choice. However, with some exceptions, they did not appear to be paying higher prices as a result when compared to other tariffs available in the same region.

Available Time of Use tariffs and meters

4.1 Customers with storage heating and some customers with direct-acting heating systems will usually be on some sort of ToU or dedicated heating tariff with meters that can record consumption at different times. The most common ToU meters are Economy 7 meters with electricity tariffs offering around 7 hours of cheaper electricity. The duration and exact timing varies but could be for example between midnight and 7am. Analysis by Consumer Futures and Ipsos Mori indicates that 80% of customers with storage heating use an Economy 7 tariff while other ToU tariffs were more popular with customers that use mains gas heating.

4.2 Other, less widely used meters are Economy 10 meters that offer cheap electricity at certain hours in the night, afternoon and evening and some meters have more than two registers (to record off-peak and peak consumption), for example with a separate register to record the electricity consumed by the heating system.

4.3 Around 160,000 customers in GB have dynamically teleswitched (DTS) meters.⁵⁰ These are all in Scotland and represent a large proportion of households with ToU meters in Scotland.⁵¹ These are meters that allow for remote control of the heating load, typically the ex-regional monopoly suppliers. We assessed DTS tariffs in 2013 and concluded that there were barriers to market entry in the DTS market, less vigorous competition and more limited switching options for DTS customers. However, with some exceptions, they did not appear to be paying higher prices as a result when compared to other tariffs available in the same region.⁵² We have continued to internally monitor this market segment and, as of March 2015, we have found no main changes relative to our 2013 Report conclusions. The CMA has also noted the challenges that DTS customers face and consulted stakeholders about the expected impact of smart meters in terms of facilitating switching.⁵³

4.4 Each of these meters and tariffs might be more or less suitable for individual households, depending on the type of electric heating system, when consumers use energy (eg time of day) and their heating needs. As Economy 7 is by far the most widely used ToU meter in GB, this chapter provides an analysis of available Economy 7 tariffs.

4.5 For the avoidance of doubt, Economy 7 and other ToU meters are only available for electricity. There are no equivalent ToU meters for the supply of gas, ie customers will always pay the same unit rate throughout the day for their gas supply.

Available Economy 7 tariffs

4.6 We have analysed Economy 7 tariffs that were available on 01 July 2015. For this we used our average consumption value for customers with ToU meters, which is 4,300kwh per year. For the purposes of this report, we assume that 40%

⁵⁰ Revised figure as of the 31st December 2014. The number is down from 550,000 in 2012 due to the removal of the dynamic functionality of E.ON's DTS meters in East Midlands; this does not mean the meters have been physically replaced: they are still installed, but are used in a static way, in the same way as an Economy 7 meter.

⁵¹ In 2012, there were about 79,400 households in South Scotland with DTS meters and 81,700 households in North Scotland. Overall, there are about 158,000 ToU customers in South Scotland (that is households in Profile Class 2) and 302,000 in North Scotland. Therefore, DTS customers make up around 52% of ToU customers in North Scotland, and 26% in South Scotland.

⁵² Ofgem, 2013, "The state of the market for customers with dynamically teleswitched meters" (<https://www.ofgem.gov.uk/publications-and-updates/state-market-customers-dynamically-teleswitched-meters>)

⁵³ CMA, 2015, "Energy market investigation. Provisional findings report" (https://assets.digital.cabinet-office.gov.uk/media/559fc933ed915d1592000050/EMI_provisional_findings_report.pdf) and CMA, 2015, "Energy market investigation Notice of possible remedies" (https://assets.digital.cabinet-office.gov.uk/media/559aac8eed915d1592000023/EMI_Remedies_Notice_-_Final.pdf)

of this is used at off-peak times.⁵⁴ We note that whilst these are typical consumption figures, the actual annual consumption and relative off-peak consumption will be different for electric heating households (which will likely have a higher annual consumption as well as greater relative off-peak consumption than Economy 7 customers without electric heating).⁵⁵

4.7 We compare this with single-rate tariffs by using the same assumptions, ie annual consumption of 4,300kwh per year. We look at the highest and lowest tariffs on the market as well as average savings from moving from a standard variable tariff (SVT) of the six largest suppliers to the lowest tariff on the market. We also consider savings that can be made by switching to a cheaper tariff with the same supplier.

4.8 A high proportion of ToU customers (see table 6) as well as electric heating customers are on prepayment (PPM) tariffs. The differences are particularly large in Scotland where 34% of customers with ToU meters are on PPM tariffs compared to 20% of customers with single-rate meters that are on PPM tariffs. The household survey data also shows that, in England, 22% and 25% of households with storage heating or direct-acting heating systems, respectively, use PPM meters compared to 15% of households with mains gas. We have therefore analysed tariffs for both, direct debit as well as PPM customers.

Table 6: Per cent of PPM customers by meter type, June 2015⁵⁶

	Per cent of customers with single rate meters that are on PPM tariffs	Per cent of customers with ToU meters that are on PPM tariffs
Scotland	20%	34%
England and Wales	16%	20%
Great Britain	16%	22%

Direct debit

For direct debit customers, we found⁵⁷:

⁵⁴ This is based on the Common Distribution Charging Methodology (CDCM) model using data from distribution network operators and other sources which indicates that the average (mean) ToU consumer uses around 42% of energy at off-peak periods. We use 40% in this report for simplicity purposes and in line with how we calculated distribution charges for Economy 7 customers in our recent report on "Regional differences in network charges" (<https://www.ofgem.gov.uk/publications-and-updates/regional-differences-network-charges>).

⁵⁵ Data we obtained from the DECC suggests that the mean electric storage heating customer uses 13,000kwh electricity per year of which 74% is used at off-peak periods. However, the National Household Model used to derive this uses the aforementioned SAP methodology rather than actual consumption data, which is known to overestimate actual average gas and electricity consumptions. We have therefore not used this for this calculation. See further information in section "Suitability of Economy 7 tariffs"

⁵⁶ Source: DECC, September 2015, Quarterly Energy Prices Tables (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/463046/QEP_Sept_2015_Tables.pdf)

⁵⁷ Source: Ofgem analysis using Energylinx data. This considers Economy 7 and single-rate tariffs available for 30.09.2015 for electricity only (ie excludes dual fuel tariffs). It is a GB average assuming

- The number of single fuel Economy 7 tariffs (57 tariffs) available is comparable to the number of single rate tariffs (58 tariffs). The same applies to the number of fixed tariffs.
- Across all standard variable tariffs (SVT) of the six largest suppliers, the median Economy 7 customer faced an average⁵⁸ annual electricity bill of £648. Switching to the lowest available tariff results in an average saving of £162.⁵⁹
- Customers with this consumption pattern are generally better off on Economy 7 tariffs compared to single-rate tariffs.
- Figure 8 shows the differences between regions and the average prices for variable as well as for short, medium and long term fixed tariffs. The figure indicates that fixed tariffs, in particular short fixed tariffs, are on average significantly cheaper than variable tariffs.⁶⁰
- Switching tariffs without switching suppliers (ie internal switching) can also result in savings. For those suppliers that offer more than one Economy 7 tariff, the average price difference between their highest and lowest tariff was £84 per year.

Table 7: Number of direct debit tariffs and bill impact in £ per year

		Economy 7	Single rate
Number of tariffs ⁶¹	Total number of tariffs	57	58
	Number of variable tariffs	27	28
	Number of short fixed tariffs	20	20
	Number of medium or long fixed tariffs	10	10
Annual electricity bill in £	Highest tariff	891	954
	Lowest tariff	486	519
	Average standard variable tariff (SVT) of the six largest suppliers	648	682
Savings potential by switching supplier or tariff in £	External switching: Average savings by switching from SVT of the Big 6 to lowest available tariff of any supplier	162	163
	Internal switching: Average savings from switching tariffs with same supplier ⁶²	84	74

4,300kwh electricity consumption per year of which 40% is consumed off-peak for Economy 7. For standard variable tariffs, paper billing has been assumed. This applied to all variable tariffs apart from those where only paperless billing was available. For all non-standard tariffs, in particular all fixed tariffs, paperless/online billing has been assumed. The analysis includes all tariffs that were available GB-wide, ie in all distribution regions.

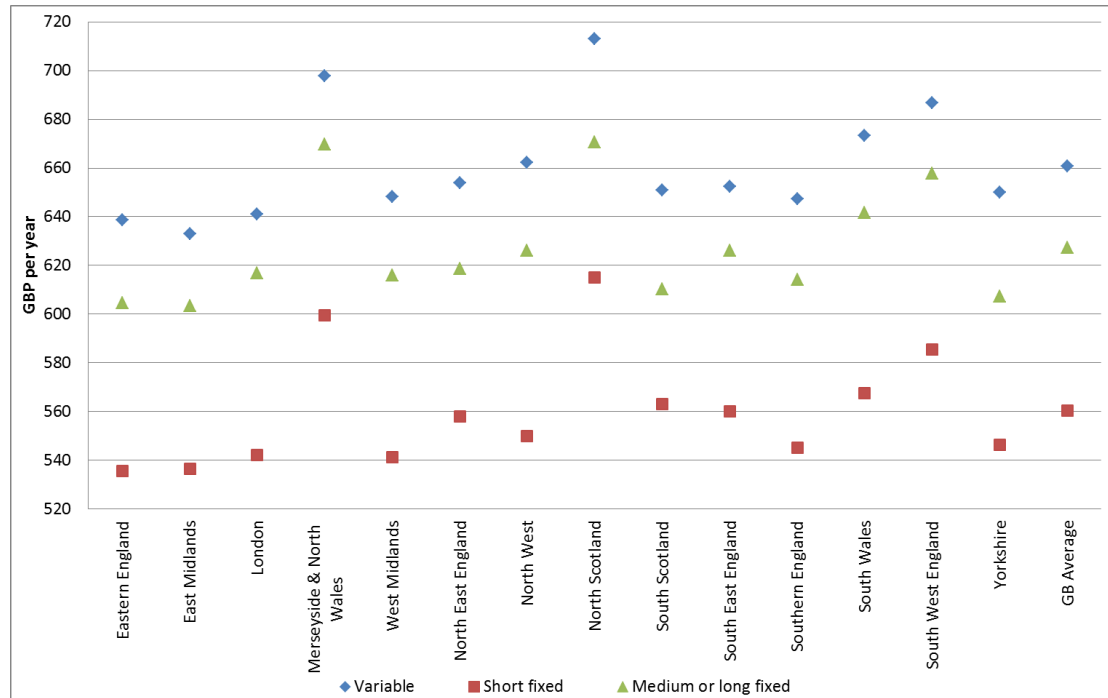
⁵⁸ This is a simple (ie unweighted) average of all six SVTs assuming paper billing. It does not take into account the number of customers on particular tariffs or region.

⁵⁹ This takes into account all GB-wide available tariffs, whether variable or fixed.

⁶⁰ Note that paper billing was assumed for standard variable tariffs, whilst paperless billing was assumed for all non-standard tariffs, including non-standard variable tariffs and all fixed tariffs.

⁶¹ Here, short fixed tariff are defined as those fixing prices for up 18 months. Medium and long fixed tariffs are tariffs that are fixed for 18 months or longer.

Figure 8: Average annual bill per tariff per region for direct debit customers



Prepayment tariffs

4.9 As is the case for customers on single-rate PPM tariffs, choice is more limited for Economy 7 PPM customers. Our analysis of Economy 7 PPM tariffs shows:

- Slightly lower number of Economy 7 PPM tariffs (16 tariffs) than single-rate PPM tariffs (19 tariffs) and significantly fewer PPM tariffs than direct debit tariffs, in particular fixed tariffs (only four fixed PPM tariffs compared to 30 fixed direct debit tariffs).
- The SVT of the six largest suppliers are on average £38 more expensive for PPM customers compared to direct debit customers. This is comparable to the additional costs of PPM customer with single-rate tariffs (assuming the same annual consumption). Switching from a SVT of the six largest suppliers to the lowest available tariff results in an average savings of £43.

⁶² This is the average savings that consumers can make by switching from the highest to the lowest tariff with their existing supplier. It accounts for all suppliers with more than one tariff, ie does not include suppliers with only one tariff where switching tariffs is not possible (customers might still be able to save money for example by switching from paper billing to paperless billing).

Table 8: Number of Prepayment tariffs and bill impact in £ pear year⁶³

		Economy 7	Single rate
Number of tariffs ⁶⁴	Total number of tariffs	16	19
	Number of variable tariffs	12	15
	Number of short fixed tariffs	1	1
	Number of medium or long fixed tariffs	3	3
Annual electricity bill in £	Highest tariff	739	841
	Lowest tariff	644	679
	Average standard variable tariff (SVT) of the six largest suppliers	686	721
Savings potential by switching supplier or tariff in £	External switching: Average savings by switching from SVT of the Big 6 to lowest available tariff of any supplier	43	42
	Internal switching: Average savings from switching tariffs with same supplier ⁶⁵	25	38

Dual fuel discounts

4.10 Some suppliers offer dual fuel discounts for customers that have their gas and electricity supply with the same supplier.⁶⁶ These discounts are open to both, Economy 7 and single-rate customers. However, electric heating customers are unlikely to benefit from these dual fuel discounts unless they use gas for other purposes, eg cooking.

4.11 However, it is worth highlighting that electric heating customers without a gas meter do not pay a standing charge for gas (albeit sometimes a different standing charge for Economy 7 tariffs which can be higher or lower).

4.12 Table 9 shows the average standing charges for Economy 7 and single-rate tariffs for all tariffs for which dual fuel discounts were available on 31 September.⁶⁷ Overall, eight suppliers (including three of the six largest suppliers) offered such discounts for 20 tariffs. The average discount was £18.

⁶³ Source: Ofgem analysis using Energylinx data. This considers Economy 7 and single rate tariffs available for 30.09.2015 for electricity only (ie excludes dual fuel tariffs). It is a GB average assuming 4,300kwh electricity consumption per year of which 40% is consumed off-peak for Economy 7. Source of tariff data: Energylinx. Same assumptions have been used as for the direct debit analysis with regards to paper billing.

⁶⁴ This includes tariffs that are available in all distribution regions. Here, short fixed tariff are defined as those fixing prices for up 18 months. Medium and long fixed tariffs are tariffs that are fixed for 18 months or longer.

⁶⁵ This is the average savings that consumers can make by switching from the highest to the lowest tariff with their existing supplier. It accounts for all suppliers with more than one tariff, ie does not include suppliers with only one tariff where switching tariffs is not possible (customers might still be able to save money for example by switching from paper billing to paperless billing).

⁶⁶ Suppliers offer dual fuel discounts because it can be cheaper for them to manage the combined supply of gas and electricity for one customer account compared to supplying two different customers, one with gas and one with electricity.

⁶⁷ This excludes deals that are only available to dual fuel customers.

4.13 Across all 20 tariffs that offered dual fuel discounts, customers on Economy 7 deals without any gas supply paid on average a standing charge of £79. This is significantly lower than the total costs of standing charges for dual fuel customers even after deducting the dual fuel discount (£144).

Table 9: Standing charges for tariffs that offer dual fuel discounts, direct debit, tariffs available for 31.08.2015, North West distribution region, in £

Standing charges	Gas	83
	Electricity (single-rate)	80
	Electricity (Economy 7)	79
Dual fuel discount		18
Total cost of standing charges after dual fuel discount	Single-rate tariff, dual fuel	145
	Economy 7, dual fuel	144
	Single-rate tariff, single fuel	80
	Economy 7, single fuel	79

4.14 However, six suppliers offer additional direct debit tariffs (in total seven tariffs) that are only available to dual fuel customers. This applies to Economy 7 as well as single-rate tariffs. These are all fixed tariffs. They tend to be fixed for longer but do not tend to be cheaper than other fixed tariffs of the same supplier (in fact can be more expensive). Two suppliers only offer their fixed tariffs to dual fuel customers which tend to be cheaper than their variable tariffs. Further, some tariffs come with additional rewards (eg gift vouchers or free gas appliance safety inspection). For PPM customers, the number of tariffs available for dual fuel customers is similar to the number of tariffs available to single fuel customers.

Network charges

4.15 Distribution charges vary by region as well as for customers with ToU meters compared to customers with single-rate meters in the same region. Generally, consumers with ToU meters pay significantly lower distribution charges for their off-peak consumption compared to charges levied on consumers with single-rate tariffs; however, they pay slightly higher charges for their peak consumption.

4.16 This can differ by region. For example, based on indicative numbers for 2015/16 for customers with Economy 7 type meters, we expect the off-peak charge to be 67% lower in North Scotland and 88% in South Scotland relative to the distribution charge levied on customers with single-rate meters in those regions. Differences are higher in other regions with up to 98% in South East England. We also expect the peak charge to be higher in some regions than in others compared to single-rate tariffs in the same region: For example, in South Scotland and South East England we expect this to be 24% and 23% higher, respectively, relative to the distribution charge levied on customers with single-

rate meters in those regions. This compares to for example 14% in North Scotland or 8% in South Wales.⁶⁸

4.17 We have recently published a report on regional differences in network charges.⁶⁹

Suitability of Economy 7 tariff

4.18 Whether customers are better off on Economy 7 compared to single-rate tariffs depends primarily on the relative split between peak and off-peak consumption. Customers that use a higher relative proportion of electricity at off-peak hours are more likely to benefit from being on an Economy 7 tariffs. Further, the absolute annual consumption can influence the relative merits of each tariff as standing charges can sometimes be higher for Economy 7 tariffs compared to single-rate electricity tariffs. Tables 7 and 8 showed that customers using 4,300kwh of electricity per year, of which 40% at off-peak periods, tend to be better off on Economy 7 tariffs.

4.19 As mentioned above, data we obtained from DECC suggests that the mean electric storage heating customers uses 13,000kwh electricity per year of which 74% is used at off-peak periods. However, the National Household Model used SAP methodology to derive this, which is known to overestimate actual average gas and electricity consumptions. Hence, actual peak and off-peak consumption are likely to vary.⁷⁰

4.20 We have assessed the relative off-peak consumption necessary for customers to be better off on Economy 7 tariffs assuming an annual consumption of 4,300kwh. This is partly in response to several stakeholders pointing out that it would be useful to have such an analysis. Figure 9 shows that on average⁷¹, customers need to consume at least 31% of their electricity at off-peak periods to be better off on Economy 7 tariffs compared to a comparable single-rate single fuel tariff with the same supplier. However, this varies significantly from tariff to tariff (9% to 55%).

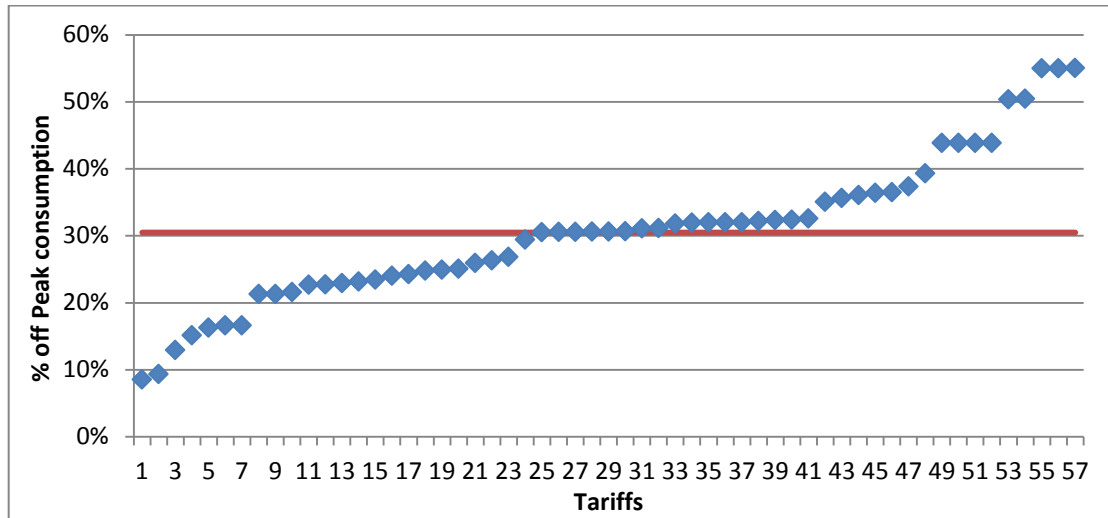
⁶⁸ Charges are determined by complex models to reflect the characteristics of individual distribution networks. These account for various factors such as peaks at substation levels which can be higher at night time in areas with high levels of electric heating, leading to higher off-peak charges within a distribution region compared to other distribution regions.

⁶⁹ Ofgem, 2015, "Regional differences in network charges" (<https://www.ofgem.gov.uk/publications-and-updates/regional-differences-network-charges>).

⁷⁰ DECC note they are aware of SAP's overestimation and make adjustments to take account of this when using the model for policy impact analysis. DECC are currently developing an alternative energy calculator which will estimate a more realistic energy consumption profile.

⁷¹ Note that this is a simple, unweighted average across all available tariffs across all 14 distribution regions.

Figure 9: Off-peak consumption needed for consumers to be better off on Economy 7 tariffs compared to single-rate tariffs⁷²



4.21 Similarly, we have calculated the relative savings that consumers can make by being on an Economy 7 rather than single-rate tariff. Across all tariffs⁷³ table 10 shows that households that consume 4,300kwh per year can save around 21% on Economy 7 tariffs compared to single-rate tariffs if they use around 70% of electricity at off-peak periods. Note that differences will be greater at a higher level of consumption as the standing charge proportion of the bill becomes smaller. Further, this is a simple average across all tariffs and results are likely to vary significantly by tariff so this is only for illustration.

4.22 The table shows that this varies somewhat across regions, with lower savings in North and South Scotland (compared to single-rate tariffs in the same region). There could be various reasons for this, such as potentially network charges as discussed above and other factors.⁷⁴

⁷² The figure shows the relative off-peak consumption needed to be better off on an Economy 7 tariff compared to a comparable single-rate tariff of the same supplier. This is a GB-wide average based on direct debit tariffs that are available in all distribution regions on 30 September 2015 and assumes an annual consumption of 4,300 kwh. Results will be different for tariffs available at different times. Results can also be different for different levels of consumption as the standing charges are not necessarily the same for Economy 7 and single-rate tariffs.

⁷³ Statistics are simple, unweighted averages across all GB wide available tariffs, assuming paper billing for standard variable tariffs and paperless billing for all non-standard tariffs (such as fixed rate tariffs) if available.

⁷⁴ We also note that the off-peak periods can differ. For example, in South Scotland, customers with White Meters (Economy 7 type meters) benefit from 8.5 hours of off-peak electricity, which is longer than customers in other regions.

Table 10: Economy 7 tariffs compared to single-rate tariffs assuming annual consumption of 4,300kwh across all GB-wide available tariffs

Region	Bill in £ across all single-rate tariffs	Costs on Economy 7 tariffs compared to single-rate tariffs assuming 0% to 100% of electricity being used at off-peak times				Break-even point ⁷⁵
		0%	40%	70%	100%	
Eastern England	623	17%	-4%	-20%	-36%	31%
East Midlands	620	18%	-4%	-21%	-37%	31%
London	632	17%	-5%	-21%	-37%	30%
Merseyside & North Wales	695	18%	-5%	-22%	-40%	30%
West Midlands	634	18%	-5%	-22%	-39%	30%
North East England	640	18%	-4%	-21%	-38%	32%
North West	653	16%	-6%	-22%	-38%	28%
North Scotland	688	17%	-2%	-17%	-32%	35%
South Scotland	632	18%	-3%	-19%	-34%	33%
South East England	648	18%	-5%	-22%	-40%	30%
Southern England	642	16%	-6%	-22%	-38%	28%
South Wales	670	17%	-6%	-23%	-40%	28%
South West England	682	18%	-5%	-23%	-41%	30%
Yorkshire	632	18%	-4%	-21%	-38%	31%
GB (simple average)	649	17%	-5%	-21%	-38%	31%

4.23 The analysis shows that consumers that can use a high proportion of energy at off-peak periods, such as households with electric storage heating, can save money on Economy 7 tariffs. However, given that some tariffs require a relative off-peak consumption of up to 55%, this is unlikely to work for customers that have less ability to shift consumption to off-peak periods.⁷⁶ Evidence suggests that this could be a problem for a number of ToU customers though not necessarily electric heating households:

- The aforementioned Consumer Futures and Ipsos Mori study suggests that (in 2011 when the study was conducted) a majority of households on ToU tariffs were using mains gas heating rather than electric storage heating. These households might therefore not be best placed to be on these tariffs unless they consume a significant proportion of their electricity at off-peak times which many are not doing according to the study. The study also finds that overall 24% of ToU tariff users believe they are on the wrong tariff. Among those who do not have storage heating and do not use appliances at off-peak times this rises to 35%.
- Our analysis of Citizens Advice Consumer Service data also found that tariff suitability is one of the main reasons consumers seek advice. These are often customers complaining that they are on a ToU tariff, or have

⁷⁵ This is the percentage necessary to be better off on Economy 7 tariffs compared to single-rate tariffs across all tariffs available GB wide. It is a simple, unweighted average across all tariffs.

⁷⁶ Note that this analysis does not mean that customers will be better off choosing tariffs on the left side of the graph compared to those further on the right. This is because the graph compares single-rate and Economy 7 tariffs of the same supplier that are otherwise comparable (eg same length of price fix); hence, both could be relatively cheap or expensive compared to other tariffs on the market.

been on a ToU tariff for many years in the past, despite being better off on a single-rate tariff. In many cases, customers have been unaware that they are on a ToU tariff and feel now that they have been overcharged. Sometimes this comes to light when switching suppliers, for example:

- *A caller from Bristol has recently transferred to a new supplier. The new supplier advised the caller that he has been on an Economy 7 tariff when he shouldn't have been. The caller has a pre-payment meter. The caller is now saving over £50 by not being on an Economy 7 tariff. The caller was on the Economy 7 tariff for around 6 years.*

4.24 The above will be mainly relevant for mains gas customers, but we note that electric heating customers also need to carefully consider the suitability of their ToU tariff if they do not use electric off-peak heating systems. Along these lines, one NEA study⁷⁷ points towards the importance of supporting customers with heat pumps on working out whether to retain their ToU tariff if this had been used previously for storage heaters. Further, these findings are relevant for electric heating customers because switching to other kinds of heating will not lower bills if customers stay on tariffs that are no longer suitable for their new heating system and lifestyle.

Switching

4.25 Although there is no definitive source on switching rates for electric heating customers, there are indications that self-reported switching rates are lower compared to the GB average. Further, actual switching rates of customers with ToU meters are lower than of customers with single-rate meters and the market share of the ex-regional monopoly suppliers is higher for this group.

4.26 Using our Retail Market Review (RMR) evaluation survey⁷⁸, we have tracked the switching rates of Time of Use customers as well as customers with and without mains gas supply (which could be using electricity or, for example, oil for heating). However, the survey does not track the switching rates of electric heating customers explicitly. As a proxy for electric storage heat customers, we have analysed the switching rates of those that identify as having no gas supply *and* being on a Time of Use tariff.⁷⁹

4.27 Our 2014 survey, found that 8% of our "electric heat proxy" households have switched in the last 12 months, compared to 14% of all other households (see Annex 3). Figure 10 shows the findings using our new 2015 survey. Here, we saw a smaller difference of 10% compared to 13%, which is not statistically

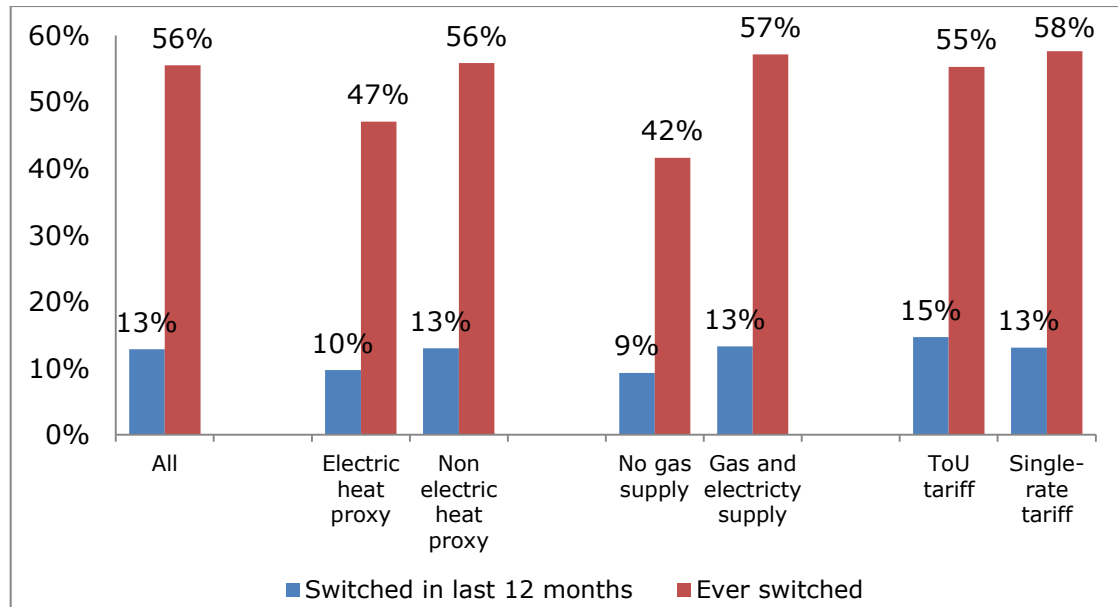
⁷⁷ NEA and Aragon Housing Association, February 2014 "Heat Pump Trials in a range of Bedfordshire off gas properties"
([http://www.nea.org.uk/Resources/NEA/Publications/2013/Aragon%20Final%20Report%20\(V12\)_06-03-2014.pdf](http://www.nea.org.uk/Resources/NEA/Publications/2013/Aragon%20Final%20Report%20(V12)_06-03-2014.pdf))

⁷⁸ Ofgem, 2015, "Domestic Retail Market Review evaluation survey: 2015 results"
(<https://www.ofgem.gov.uk/publications-and-updates/domestic-retail-market-review-evaluation-survey-2015-results>)

⁷⁹ This is not a perfect proxy as we explain in Annex 3 and the sample size is small with just over 220 observations, so results need to be treated with caution and should be seen in combination with the results presented for ToU customers and customers with no gas connection, where sample sizes are somewhat greater.

significant. It also shows that electric heating and non-gas customers also appear to be less likely to have ever switched their electricity supplier.⁸⁰ There could be various reasons behind any trends in self-reported switching, including socio-demographic factors, more complex metering arrangements or for example housing associations negotiating tariffs on behalf of residents (who are more likely to use electric heating).

Figure 10: Switching rates for customers that have switched their electricity supplier in the last 12 months or ever switched, RMR Survey 2015



4.28 Figure 10 indicates that the 12 months switching rates for ToU customers are slightly higher than for customers with single-rate tariffs. However, this is not the case in 2014 and could be somewhat distorted as this might exclude households that use ToU tariffs but do not know they are on such tariffs and are less engaged in the market. Further, given the small sample size, the difference is not statistically significant.

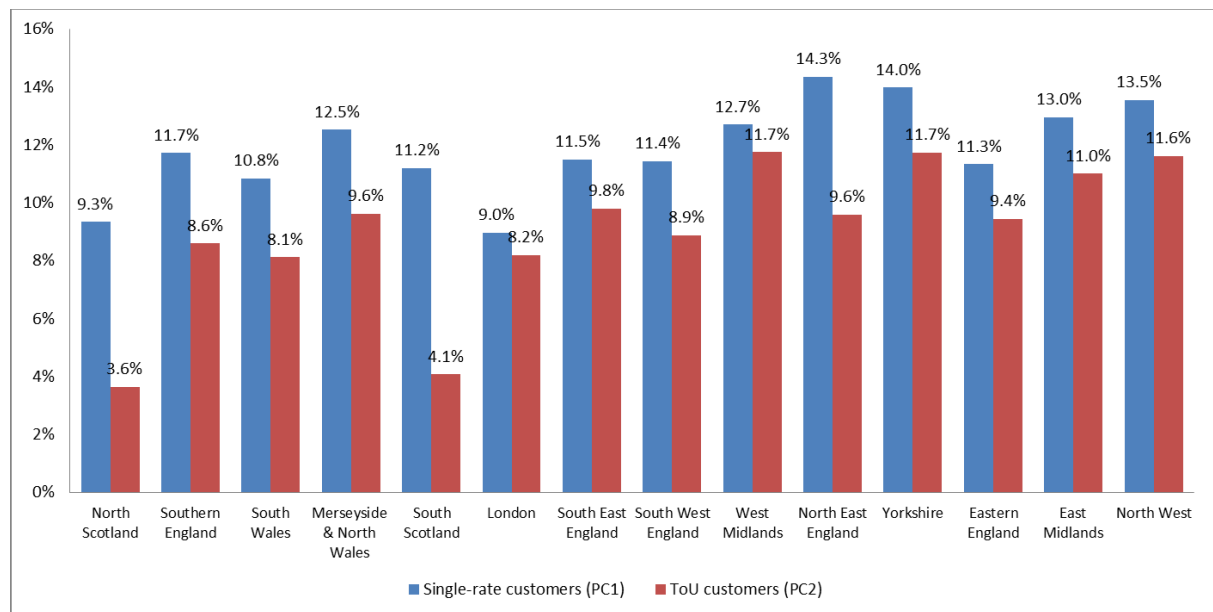
4.29 Figure 11 shows the actual switching rates of ToU customers (of which there are about 4.5m in GB) by meter points which are lower than switching rates for customers with single-rate meters in all distribution regions, in particular in Scotland. GB wide, the switching rate for customers with single-rate meters was 12% compared to 9.4% for customers with ToU meters over the 12 months from September 2014 to August 2015. While not all electric heating customers will have ToU meters and not all customers with ToU meters will use electric heating, this is nevertheless an important additional piece of information.

⁸⁰ Note that we see variation across sources generally for our “ever switched” data. We would not expect all consumers to be able to accurately recall if they have ever switched supplier, especially if it accompanied moving house, which may have an effect on the quality of the data. Further note that these customers might not have used electric heating in the past.

4.30 As explained above there could be various reasons for lower switching rates. This includes complex metering arrangements that can make switching more difficult. In Scotland in particular we outlined in our previous state of the market report on DTS that it is more difficult to switch for customers with DTS meters. As outlined earlier, DTS customers represent a large proportion of households in Scotland with ToU meters. The CMA has also noted the challenges that DTS customers face and consulted stakeholders about the expected impact of smart meters in terms of facilitating switching.⁸¹

4.31 Figure 12 shows the market share of the ex-regional monopoly suppliers for customers with ToU meters and single-rate meters. The market share of the ex-regional monopoly suppliers is general higher in the case of ToU customers compared to single-rate customers, in particular in Scotland.⁸² GB-wide the market share of the ex-regional monopoly suppliers is 31% for customers with single-rate meters compared to 45% for customers with ToU meters. British Gas (as a supplier that entered the electricity market at liberalisation) has a lower proportion of ToU customers compared to its share of single-rate customers.

Figure 11: Actual switching rates for single-rate and ToU customers by meter points, September 2014 - August 15⁸³



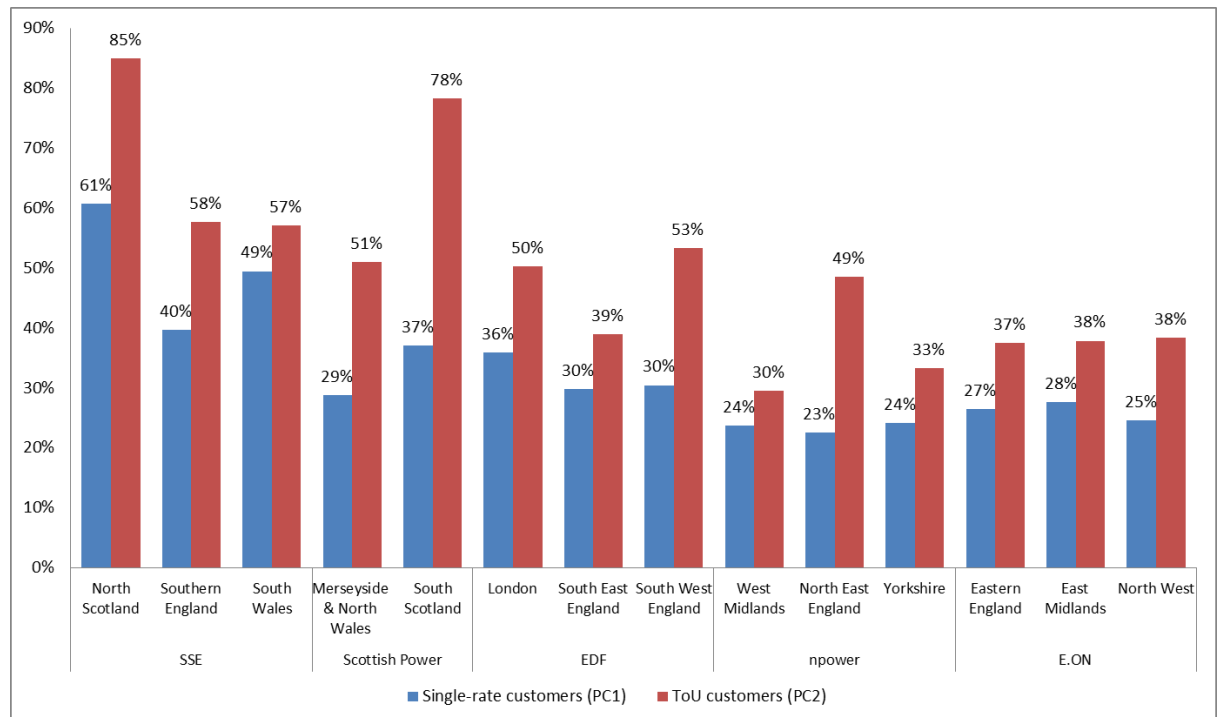
⁸¹ CMA, 2015, "Energy market investigation. Provisional findings report"

(https://assets.digital.cabinet-office.gov.uk/media/559fc933ed915d1592000050/EMI_provisional_findings_report.pdf) and CMA, 2015, "Energy market investigation Notice of possible remedies" (https://assets.digital.cabinet-office.gov.uk/media/559aac8eed915d1592000023/EMI_Remedies_Notice_-_Final.pdf)

⁸² This is in line with market share statistics we set out in our aforementioned assessment on DTS.

⁸³ Source: Ofgem analysis of data from Distribution Network Operators. The data is based on switching by meter point. Single-rate customers are here defined as those on Settlement Profile Class 1 (PC1) and ToU customers on Settlement Profile Class 2 (PC2). In reality, there are some customers in PC1 as well as PC2 with ToU meters that are on single-rate tariffs.

Figure 12: Market share of ex-regional monopoly suppliers for single-rate and ToU customers by meter points, August 2015⁸⁴



4.32 Whilst the following studies rely on data from 2011 or earlier, they nevertheless provide helpful insights on switching patterns as they are more specific for electric heating customers:

- The Consumer Futures and Ipsos Mori study in 2011 found that storage heating users are much less likely to switch supplier than those ToU customers with gas central heating tariffs (37% vs 57% who have ever switched). The study points out that while the overall rate of success in completing a switch is 90% among all ToU tariff users, among storage heating users it is slightly lower with 82%. It also concludes that 77% of those households who had switched are satisfied that the switch saved them money. The study points out that the lower switching rates for storage users is not unusual given their profile with energy consumers from similar backgrounds to this group also have lower switching rates.
- Data from the Centre for Sustainable Energy (CSE), which is based on Cost and Living Standard Surveys up to 2011 also suggest that only 10% of electric heating households have switched more than once, compared to a GB-wide average of 30%.⁸⁵

⁸⁴ Source: Ofgem analysis of data from Distribution Network Operators.

⁸⁵ CSE are a consultancy. Dataset underpins the CSE report "Beyond average consumption - Development of a framework for assessing impact of policy proposals on different consumer groups. Updated report to Ofgem by Vicki White", March 2014 (http://www.cse.org.uk/downloads/reports-and-publications/policy/beyond_average_consumption_update_2014.pdf)

- A qualitative survey by SPA⁸⁶ in 2011 suggested that there was little evidence of switching tariff or supplier by electric heating customers, mainly due to perception that a good deal now will be poor later and that all suppliers offer similar tariffs.

4.33 Overall, this suggests that electric heating and ToU customers may be less likely to switch their electricity supply compared to a GB average. Further, the market share of the ex-regional monopoly suppliers is higher for ToU customers, in particular in Scotland.

Barriers to switching and choosing the best deal

4.34 In our analysis, we have come across some potential barriers to switching to the best deal available for electric heating and ToU customers:

- As has been highlighted by some consumer contacts, it is more difficult for ToU customers to compare deals if they have a meter other than Economy 7. These customers first need to understand what metering arrangement they have and then find the right tariff. There is no easy overview of such tariffs as switching sites for example do not cover ToU tariffs other than Economy 7.⁸⁷ Customers will usually have to contact suppliers or look up Tariff Information Labels⁸⁸ on suppliers' websites and calculate costs after understanding their metering system.
- Although we have not analysed this in detail in this paper, there is less tariff choice for customers with less widely-used ToU meters, such as Economy 10 and DTS meters. However, in the case of DTS our previous research showed that, with some exceptions, customers did not appear to be paying higher prices as a result when compared to other tariffs available in the same region.
- ToU tariffs are not suitable for all lifestyles and heating systems. We have set out above that there appears to be a number of customers on ToU tariffs despite these tariffs not being suitable for their needs. When looking for tariffs, it is important that customers consider whether a ToU meter and tariff are suitable for their needs. In this context, we note that switching sites usually only show Economy 7 tariffs for customers that state they have Economy 7 meters (some do).⁸⁹ Hence, customers with

⁸⁶ SPA, 2011, "Consumers' Experience of Off-Grid Energy Final Report" (http://webarchive.nationalarchives.gov.uk/20140402142426/http://www.ofg.gov.uk/shared_ofg/mark-et-studies/off-grid/final-report.pdf)

⁸⁷ There could be a range of reasons that could make covering such tariffs on switching sites more challenging compared to Economy 7 tariffs, including the increased complexity of other ToU meters and tariffs and the cost involved in terms of changing systems given the lower number of customers.

⁸⁸ The Tariff Information Label is a table of key facts that would allow consumers to compare the price and non-price features of energy tariffs on a like-for-like basis.

⁸⁹ There may be practical issues making this more difficult. In particular, the analysis of Citizens Advice Consumer Service contacts data suggests that not all suppliers offer single-rate tariffs to customers with a ToU meter. This seems to have caused aborted switches and confusion for some customers. In the majority of cases, these appear to be customers that are already on a standard tariff with their current supplier but are finding it difficult to switch to another supplier that supports such arrangements or have difficulties understanding which suppliers offer such arrangements.

low off-peak usage might not be aware that single-rate tariffs could be more suitable.⁹⁰

- The analysis of consumer contacts data also shows that customers complain that a wrong registration of their meters, in particular on the national database, causes switching problems (and billing mistakes). This is often the case after a change of meters, for example when a customer had an Economy 7 meter replaced by a single-rate meter but the meter continues to be registered as an Economy 7 meter.

Chapter summary

4.35 In summary, our analysis shows that there are a range of Economy 7 tariffs that customers can choose from and save money by switching. Similar to single-rate tariffs, there is less choice for PPM customers. In general, Economy 7 tariffs are suitable for customers that can move a significant proportion of their consumption to off-peak periods, such as households with electric storage heating systems. However, the relative off-peak usage necessary to be better off on an Economy 7 tariff varies from tariff to tariff.

4.36 Our analysis also suggests that switching rates may be lower for electric heating as well as for ToU customers and the market share of the ex-regional monopoly suppliers is higher for ToU customers. In particular, customers with ToU meters other than Economy 7 are likely to find it more difficult to compare tariffs and switch.

⁹⁰ This is less of a concern for customers with electric storage heating systems and more for customers with less ability to shift load to off-peak periods, eg households with mains gas heating.

5. What will the future look like for households with electric heating?

Chapter Summary

The way the energy market is changing represents unique challenges and opportunities for electric heating households going forward:

- As more renewables come onto the grid, generation will become more distributed and more variable. Customers with certain electric heating systems and ToU tariffs already help to smooth demand throughout the day. At a high-level, we would expect these customers to continue to benefit in the future when the need for flexibility increases, particularly with the potential for automation.
- On the other hand, the costs of social and environmental policies are expected to increase bills for electric heating households in the near future; in particular for those that do not benefit from available support schemes.
- Smart metering and new technologies have the potential to address many of the problems electric heating customers currently face, eg fixing problems with transposed meter readings and barriers to switching. Increasing automation could help address challenges with energy management.

Low carbon energy and flexible demand

5.1 Energy scenario modelling generally shows decarbonisation of heat as an important part of decarbonising the economy. DECC's 2013 strategy "The future of heating – meeting the challenge" outlined electrification of heat (in particular in rural areas) as one pillar alongside heat networks. The domestic Renewable Heat Incentive (RHI) already incentivises households to install heat pumps (and other renewable heating systems) with the main beneficiaries so far being non-gas households.⁹¹ The National Grid "Future Energy Scenarios 2015" report forecasts that about 1.2m to 7.5m households could be served by heat pumps in 2030.⁹²

5.2 We expect to see more renewable electricity generators coming on to the system. Most of these renewables provide intermittent power, meaning they generate electricity when the wind is blowing or the sun is shining. They also tend to be more distributed than traditional generation technologies. These characteristics (alongside other trends such as the electrification of transport and

⁹¹ DECC, 2015, "Renewable Heat Incentive quarterly statistical release, deployment to September 2015" (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/469900/RHI_quarterly_statistics_-_September_2015.pdf)

⁹² <http://fes.nationalgrid.com/fes-document/>

heating) mean that we need to be more flexible⁹³ with how and when we consume and produce electricity.

5.3 Storage heaters and hot water tanks already help smooth demand throughout the day in winter by using electricity to generate and store heat in periods when demand from other consumers is low, for example during the night. Consumers see this benefit through lower off-peak rates if they are on ToU tariffs. At a high-level, we would expect electric heating to continue to play a valuable role in providing some of this flexibility with resultant financial benefits for consumers.⁹⁴

5.4 Potential changes to the way suppliers are charged for the electricity their customers consume ("half-hourly settlement") can affect the type of ToU tariffs suppliers offer in the medium to long-term. We will consider how best to include households with electric heating in any analysis to assess the impact of these changes on different consumer groups.

5.5 We also recently published a position paper on flexibility, setting out the priority areas we intend to work on over the next year to ensure regulation supports an efficient, flexible energy system.⁹⁵

Innovation and non-traditional business models

5.6 Some stakeholders are working on innovative models to improve the economics of electric heating for example by attempting to better capture the value of flexibility.

5.7 This includes a project on the Shetland Islands⁹⁶ that seeks to help balance the system and improve controllability and comfort by trialling a range of technologies and replacing old storage heaters and hot water tanks with more efficient ones. Another example is a project⁹⁷ involving a social housing estate with electric heating in London. It replaced older, complex ToU meters that made switching difficult with smarter ones that allowed for a better control of load and, in combination with other technological changes, cheaper purchasing of electricity from suppliers. Following our recent consultation on "non-traditional business

⁹³ Ofgem, 2015 "Position paper: Making the electricity system more flexible and delivering the benefits for consumers" (<https://www.ofgem.gov.uk/publications-and-updates/position-paper-making-electricity-system-more-flexible-and-delivering-benefits-consumers>). We also set out in the position paper that we will continue our engagement with the CMA and DECC on the next steps for wider "half hourly" settlement. Note that we define flexibility as 'modifying generation and/or consumption patterns in reaction to an external signal (such as a change in price) to provide a service within the energy system.'

⁹⁴ For a discussion of the potential role for electric space and water heating in the electricity system, see Sustainability First, 2014, Paper 11, "How could electricity demand-side innovation serve the electricity customers in the long-term" (<http://www.sustainabilityfirst.org.uk/docs/2014/Paper%2011%20%96%20How%20could%20electricity%20demand-side%20innovation%20serve%20customers%20in%20the%20longer%20term-%20Frontier%20Economics%20&%20Sustainability%20First%20-%20April%202014.pdf>)

⁹⁵ <https://www.ofgem.gov.uk/electricity/retail-market/market-review-and-reform/smarter-markets-programme/demand-side-response>

⁹⁶ For more information, see <http://www.ninesmartgrid.co.uk/>

⁹⁷ <https://www.affordablewarmthsolutions.org.uk/media/news/national-grid-energy-efficiency-innovation-award-scheme>

models”, we have received responses from stakeholders that seek to or have entered the energy market with a particular emphasis on electric heating systems and exploiting the flexibility they can provide.⁹⁸

5.8 These trials, schemes and non-traditional business models indicate that the changing nature of the energy system, in particular, the value of flexibility and the potential benefits that a smarter system can bring in this regard, could potentially affect the economics of some electric (space and water) heating systems. However, most of these projects are at an early stage and it is too early to draw robust conclusions.

Smart meters

5.9 Smart meters are the next generation of gas and electricity meters. They can bring significant benefits to consumers. The in-home display (IHD) will provide real-time information about energy consumption. Together with accurate bills, this will help consumers to manage their energy use and expenditure and reduce their carbon emissions. Smart metering will also facilitate suppliers and third parties in offering new and improved products and services.

5.10 Suppliers are obliged to roll out smart meters to homes and small businesses in Great Britain by the end of 2020. Government expects smart meters to facilitate a 20% take-up of static time-of-use tariffs (in addition to the existing group using Economy 7 and similar static ToU tariffs). This could increase competition and choice for electricity heating customers with the resultant benefits.⁹⁹

5.11 Smart metering can facilitate customers, suppliers or other third parties to automatically control household appliances should the customer so wish. There are various ways to achieve remote controlling, eg through “auxiliary load control switches” (ALCS) or “consumer access devices” (CADs). In particular, ALCS can be integrated into a smart meter, which is often referred to as “variant smart meters”. These variant smart meters are aimed at customers with certain Economy 7 and other ToU meters where the heating system is already on a separate electrical circuit to other electrical appliances and is switched on at certain times by the meter.¹⁰⁰

5.12 The first variant smart meters are expected to be available as of next year but there is still some uncertainty about timing. Further, there are some general technical issues that are currently being resolved by government and industry

⁹⁸ Ofgem, 2015 “Non-traditional business models: Supporting transformative change in the energy market” (<https://www.ofgem.gov.uk/publications-and-updates/non-traditional-business-models-supporting-transformative-change-energy-market>)

⁹⁹ DECC, 2014, “Smart meter roll-out for the domestic and small and medium non-domestic sectors (GB)” (<https://www.gov.uk/government/publications/smart-meter-roll-out-for-the-domestic-and-small-and-medium-non-domestic-sectors-gb-impact-assessment>)

¹⁰⁰ For a discussion of the technical details as well as challenges and opportunities of smart meters for electric heating customers, see Sustainability First, 2014, “Paper 11. How could electricity demand-side innovation serve the electricity customer in the long term”:

<http://www.sustainabilityfirst.org.uk/docs/2014/Paper%2011%20%96%20How%20could%20electricity%20demand-side%20innovation%20serve%20customers%20in%20the%20longer%20term-%20Frontier%20Economics%20&%20Sustainability%20First%20-%20April%202014.pdf>

that affect smart meters more generally (eg smart meter communication in high-rise flats). As such, the solutions offered by smart meters for all types of premises may be a few years off yet.¹⁰¹ However, on a high-level we would generally expect that¹⁰²:

- Smart meters have the potential to largely address many of the problems currently identified in this report, such as transposed readings, incorrectly set meter clocks, ease of switching for customers on less widely-used ToU meters (eg Economy 10 or DTS¹⁰³), getting a standard tariff for customers with ToU meters and vice versa.
- Smart meters can potentially change how some issues affect customers. They can make peak and off-peak consumption more transparent through in home displays and, in combination with automatic load control, could allow consumers to better manage their energy use and identify suitable tariffs. With more complex, dynamic ToU tariff (where prices vary depending on supply and demand), customers could change when they use energy in order to make savings; though such tariffs could also result in greater complexity.
- Smart meters are unlikely to solve certain issues described in this paper in particular those not linked to the metering system as such, for example customers' ability to make use of or understand energy efficiency options.¹⁰⁴

Policy costs in future

5.13 Another factor in determining the future experience of households with electric heating are energy bills. Policy costs which make up part of a consumer's bill are expected to increase for customers with electric heating.¹⁰⁵ DECC expects that households who use electric heating will, on average, see an increase in their energy bills of around 1.4% of their total expenditure in 2020 as a result of social

¹⁰¹ Timing is also important because there is some uncertainty around the extension of the radio teleswitching service which is needed for DTS and other teleswitched meters to function. The current contract between the Energy Network Association and the BBC (which provides the teleswitching service) ends on 1st January 2018 with an option to extend until the end of March 2020. This extension is subject to funds being made available for infrastructure improvements if these are required. There is less certainty about the extension of the radio teleswitching service beyond 2020. This is being discussed in DECC's Operational Delivery Group for Smart Meters.

¹⁰² For some of these impacts to materialise other changes might need to take place, eg half-hourly settlement for dynamic ToU tariffs.

¹⁰³ For a comparison of DTS and Smart Meters and the expected impact, see Ofgem, 2013, "The state of the market for customers with dynamically teleswitched meters" (<https://www.ofgem.gov.uk/ofgem-publications/82288/state-market-customers-dynamically-teleswitched-meters.pdf>)

¹⁰⁴ It is worth noting that energy efficiency advice will be offered to a customer when a smart meter is installed.

¹⁰⁵ This has been highlighted in CMA, 2015, "Energy market investigation. Updated issues statement" (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/404867/Updated_Issues_Statement.pdf) and analysed by the Institute for Fiscal Studies, 2013, "Energy use policies and carbon pricing in the UK" (<http://www.ifs.org.uk/publications/6915>) as well as Consumer Futures and Center for Sustainable Energy, 2013, "The hardest hit: Going beyond the mean. A report by CSE on the impact of energy policy on consumers' bills" (<http://www.consumerfutures.org.uk/files/2013/05/The-hardest-hit.pdf>)

and environmental policies (compared with estimated decreases of between 0.4% and 0.8% for households using other fuel types).¹⁰⁶

5.14 In a 2013 study, CSE and Consumer Futures found that electric heating households are the most adversely affected group. The report points out that they pay 19% of the total cost of energy policies yet only receive 7% of the benefits (eg insulation). They expect that only 27% of consumers with electric heating receive some form of benefit, compared to 40% of all consumers partly due to fewer opportunities to benefit (eg fewer cavities to fill).

5.15 The study estimates that consumers with electric heating who do not receive any benefits from support schemes face an average annual bill increase of £282 by 2020 due to policy costs, while those that benefit from support schemes can see their bills reduce by £258; the expected average impact is £48 (while bills are expected to be lower for households with mains gas, LPG, solid fuel, biomass and oil heating as a result of policies). This indicates the importance of ensuring that electric heating customers can benefit from available support schemes.

5.16 In summary, the drive to electrify heat and transport, the growing intermittency and distributed nature of generation, the potential benefits of non-traditional business models and innovation trials, as well as the roll out of smart meters mean that the market for electric heating is likely to change. This can affect the economics of electric heating. Further, the aforementioned CSE study for Consumer Futures estimates that electric heating households can, on average, benefit greatly from reduced costs if they can make use of available support mechanisms but if they don't, will see their bills increase as a result of policy costs.

¹⁰⁶ As set out in DECC's 2014 report on "Estimated impacts of energy and climate change policies on energy prices and bills" (<https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bills-2014>)

6. Our work to protect the interests of households with electric heating

Chapter Summary

Electric heating consumers benefit from the general regulatory controls we have in place for all electricity consumers, this includes protections for those in vulnerable situations. In addition, we have taken steps to explicitly address the needs of electric heating consumers, such as our work in relation to the Fuel Poor Network Extension Scheme, on DTS, and with regard to zero gas users with a gas meter. We also administer government schemes that can support electric heating customers, such as the Renewable Heat Incentive.

General consumer protection

6.1 Although we do not regulate other non-gas heating fuels, we do regulate the supply of electricity, which includes electricity used for heating space and water. As mentioned above, we do not regulate the marketing and sale of heating systems which is done by other authorities, such as the Advertising Standards Authority (ASA) and the Trading Standards Institute.

6.2 Electric heating consumers benefit from the regulatory controls we have in place for all electricity (and gas) consumers, including customers in vulnerable situations. These controls include but are not limited to:

- Our retail market reforms aimed at making the market simpler, clearer, and fairer
- Protections to ensure all customers are treated fairly, including customers in debt and on low incomes
- Access to the Priority Service Register services for consumers in vulnerable situations which helps ensure equal outcomes in terms of communication, safety and access to energy services and supply
- Safeguarding prepayment customers including ensuring that prepayment is only used where safe and reasonably practicable
- 'The Winter Moratorium', supply licence conditions which ensure certain groups of customers in vulnerable situations are not disconnected, especially during the winter months

Specific regulatory actions for electric heating and other non-gas customers

6.3 We have also undertaken a range of actions that benefit electric heating customers in particular. For example:

- **Standing charges** - The consumer contacts analysis outlined shows that many customers complained that they were charged a standing charge for a gas meter they do not use. We took action to better understand the issues raised by a range of stakeholders and challenged suppliers to review how they meet the needs of zero gas users. The six largest suppliers have now adopted certain measures to better protect customers in vulnerable situations. These include not recovering a standing charge from households who have not entered into an express contract and have never consumed gas on the premises, and removing a meter for free for households who do not intend to use gas in the future, if such action is required.¹⁰⁷
- **Fuel Poor Network Extension Scheme** - Using our price control mechanisms for gas distribution companies (GDPCR1 and RIIO-GD1)¹⁰⁸ we have provided for a mechanism called the Fuel Poor Network Extension Scheme (FPNES), which enables eligible households to switch to natural gas by helping towards the cost of connecting to the gas network where this is the best solution for the eligible household. The scheme is open to all eligible non-gas households, including electric heating customers.¹⁰⁹ In GDPCR1 approximately 43,000 fuel poor households were connected by March 2012. Following our review of the scheme, we expect at least a further 91,203 households to be connected in RIIO-GD1, ie by the March 2021. In addition, we recently introduced a mechanism within the scheme to encourage the gas distribution companies to also offer District Heating connections to eligible households, where this is the best solution for them.¹¹⁰
- **DTS households** - We have taken several actions to better protect the interests of customers with DTS meters. We held a roundtable in October 2013 with suppliers and consumer groups to explore DTS issues and potential solutions and referred our concerns to the Competition and Markets Authority (CMA) for consideration in their energy market investigation.¹¹¹ We are currently engaging with stakeholders on a number of fronts to address challenges.¹¹² We also supported Citizens Advice in producing an independent advice guide for DTS customers – this is available on their website.¹¹³

¹⁰⁷ The six suppliers adopted the following practices for households in vulnerable situations: (a) take reasonable steps to communicate options available to households who do not require a gas supply, (b) Do not recover a standing charge from households who have not entered into an express contract and have never consumed gas at the premises, (c) Offer to remove the meter for free for households who do not intend to use gas in the future, if such action is required. See our recent Consumer Vulnerability Strategy progress report for further information.

(https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/ofgems_cvs_progress_report_22.09.2015_for_website_final.pdf)

¹⁰⁸ GDPCR1 is the Gas Distribution Price Control Review (2008-2013). RIIO-GD1 is the current Price Control Review (2013-2021). RIIO stands for Revenue = Incentives and Innovation and Outputs.

¹⁰⁹ See the aforementioned Consumer Vulnerability Strategy progress report for further information.

¹¹⁰ Ofgem 2015, "Fuel Poor Network Extension Scheme final decision document"

(<https://www.ofgem.gov.uk/publications-and-updates/fuel-poor-network-extension-scheme-final-decision-document>)

¹¹¹ Ofgem, 2014, "Energy Market Investigation: Initial submission to the Competition and Markets Authority" (<https://www.ofgem.gov.uk/ofgem-publications/88901/submissiontocmafinafinalpdf.pdf>)

¹¹² See the aforementioned Consumer Vulnerability Strategy progress report for further information.

¹¹³ Advice guide available here:

http://www.adviceguide.org.uk/england/consumer_e/consumer_energy_supply_e/consumer_choosing

Administering government schemes

6.4 There are government support schemes for households that do not use mains gas for heating. These schemes are also open to electric heating customers. We administer several of these– eg Energy Company Obligation (ECO), Domestic Renewable Heat Incentive (RHI), and Warm Home Discount (WHD) - on behalf of government through Ofgem E-Serve:

- **ECO** - ECO is a UK government scheme to obligate larger suppliers to deliver energy efficiency measures to domestic premises and ECO's Home Heating Cost Reduction Obligation (HHCRO) particularly targets those in fuel poverty. Electric heating households can benefit from ECO for example through the installation of energy efficiency measures, including the replacement of broken down and older storage heaters with newer ones. Government introduced changes to ECO which came into effect on 01 April 2015 (known as ECO2). The changes included additional incentives to treat non-gas homes.¹¹⁴ Our internal monitoring shows that around 6% of approved measures (ie 94,877) may have benefitted electric heating homes under ECO1¹¹⁵, these were mainly insulation measures. Under ECO2, data of approved measures between 1 April 2015 and 22 October 2015 suggest that 5% of approved measures (ie 6,929) benefitted electric heating homes. Of these, 105 households benefitted from a new measure that allows older storage heating systems to be replaced with newer, more "efficient" ones. Although ECO2 has only been in place for a few months, it will be important to monitor the installation of measure to electric heating households to assess the impact of the policy changes.
- **Domestic RHI** - The Domestic RHI pays participants of the scheme that generate and use renewable energy to heat their households, and is open to homeowners, private landlords, social landlords and self-builders. The scheme is targeted at (but not limited to) non-gas customers as they are more likely to spend more money on their space and water heating, and using carbon intensive fuel sources. As of September 2015, over 42,000 accreditations under the domestic RHI have been awarded.¹¹⁶ Of these,

[and switching supplier e/dts energy meters.htm](#)

¹¹⁴ These changes include greater incentives on suppliers to install measures in non-gas heating homes. This includes for example a "non-gas" uplift to incentivise suppliers to install insulation measures as well as a new measure that incentivises the replacement of inefficient storage heaters with more efficient ones. No changes have been made to ECO on the incentives to move electric heating customers to other forms of heating, such as mains gas. Nevertheless, the data collection has been improved so we will, going forward, be better able to tell how many electric heating customers benefitted from a change in heating source.

¹¹⁵ ECO1 ran from 1 January 2013 to 31 March 2015. These figures represent all approved measures installed under the ECO scheme between these dates. Under ECO1, we only recorded the households heating system without specifying whether this is pre and post installation of measures. Therefore, it is possible that households switched from electric to gas heating with this being recorded under "gas heating". Hence, the estimate of households that benefitted under ECO1 by heating system needs to be treated with caution. As set out above, this has been rectified under ECO2 where the heating system pre and post measures is now recorded.

¹¹⁶ Ofgem, 2014, "Consumer Empowerment and Protection in Smarter Markets: Updated Work Programme" (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/423202/RHI_quarterly_release_March_2015_data_2.pdf)

21% were attributable to consumers that used electricity as their previous heating source.¹¹⁷ As part of administering the scheme, Ofgem E-serve collaborates with government and other stakeholders (eg Trading Standards Institute Consumer Codes) to enhance consumer protection where necessary, for example on strengthening standards for the sale of heat pumps).

- **The Warm Home Discount** - The WHD is an annual rebate of £140 open to all domestic electricity account holders who meet the WHD criteria. Rebates on electricity bills were chosen rather than other types of energy bills to ensure that the widest number of people possible would have access to the scheme - in particular, those living off the gas grid. Under the current WHD scheme, suppliers are able to meet part of their non-core spending obligation through funding certain Industry Initiatives to ensure assistance is offered to consumers who are "in or at risk of fuel poverty". This includes energy efficiency and energy use advice. Since 2015/16, non-gas customers qualify as being "in or at risk of fuel poverty" and suppliers can now offer such advice to non-gas households under the scheme.

¹¹⁷ DECC, 2015, "Renewable Heat Incentive quarterly statistical release, deployment to September 2015" (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/469900/RHI_quarterly_statistics_-_September_2015.pdf)

7. Other non-gas fuels

Chapter Summary

Other non-gas sectors - specifically heating oil, LPG, solid fuel and district heating - are not subject to a sectoral regulator in the same way as gas and electricity markets.

Some of the issues these customers face are apparent across all of these fuels, and may be particularly affecting vulnerable consumers, eg lack of protections for consumers in debt, lack of access to a mandatory Ombudsman, lack of Priority Service Register type services, or no requirement to provide energy efficiency information or advice.

This chapter includes high-level thinking on a few approaches to improve consumer protection, which government can consider. These would need to be developed in depth, post assessment of the relevant market.

Background

7.1 An unexpectedly cold winter in 2010/11 resulted in price spikes and significant supply shortages for a number of non-gas fuels. Reports emerged that consumers were left without access to heat for considerable periods of time, and experts claimed that similar situations were likely to emerge again. The events of 2011 prompted significant political and media backlash. The OFT launched a market study into Off-Grid markets in 2011, and the All-Party Parliamentary Group (APPG) on Off-Gas Grid launched an inquiry in 2012.

7.2 Non-gas fuels other than electricity are currently outside Ofgem's regulatory remit, and there is no direct sectoral regulator for these markets. This means that many of the services and standards which exist for gas and electricity customers are not in place for other non-gas customers that use solid fuels, heating oil, LPG or district heating.

7.3 Detriment experienced by consumers of these non-gas fuels has remained high on the political and ECCC agenda and Ofgem's opinion has been sought on potential solutions to the issues faced by consumers. In January 2015 our CEO, Dermot Nolan, made a commitment during evidence to the Energy and Climate Change Committee (ECCC) that Ofgem would provide the UK government with potential options to improve consumer protection for these customers.

7.4 In this chapter we highlight the main consumer issues that households that use heating oil, LPG, solid fuel or district heating face. For heating oil, LPG and solid fuels, the primary issues faced by these consumers pertain to gaps in consumer protections, some of which may be potentially leading to negative outcomes to consumers in vulnerable situations. There is inconclusive evidence that the current industry-led framework alone will fill these gaps. Many of the main issues facing district heat consumers stem from the more monopolistic nature of district heat networks.

7.5 We present some high-level options that could be looked into in detail to improve consumer protection. These options are not offered to be mutually exclusive, and government may wish to consider the merits of a regulatory

framework which includes several of the options offered. An assessment of the different fuels to determine the reference market is essential ahead of deciding on the appropriate regulatory approach.

7.6 For the avoidance of doubt, this report does not intend to advise government on whether further protections should be implemented, nor does it advise a particular action is taken. However, we recognise that the landscape of non-gas sectors is increasingly changing, and the issues faced by future non-gas consumers may not be the same as today. If government considers a need to take action in non-gas sectors, we consider that a holistic approach should be adopted, ie any action should fully take into regard this changing landscape to ensure a fit-for-purpose and enduring regulatory framework.

Non-gas fuels

7.7 The four major fuel sources are:

- Heating Oil: Customers using heating oil (either in the form of kerosene or gas oil) will possess a large storage tank, typically between 1000-2500 litres connected to a boiler system. Heating oil is generally bought on demand through a spot market (i.e. distributors purchase heating oil on the wholesale market and sell to consumers for immediate delivery).
- LPG: There are two predominant forms of domestic LPG use:
 - Bulk LPG customers use a large tank, typically between 1,200 - 4,000 litres, located either above ground or underground. LPG bulk customers are contracted to a single supplier for two years, and various payment plans and delivery options exist. Metered estates may also exist where two or more tanks supply energy to a number of households. Cylinder LPG customers connect prefilled cylinders to their domestic energy supply. These can be bought through LPG suppliers or independent retailers (including grocery stores, post offices etc.). Cylinder LPG is commonly used in park homes and caravan parks where a bulk storage tank is not a suitable option but is also used in standard domestic housing.
- District heating: District heat networks transfer heat from a central heat generating plant to households through a system of insulated pipes. Consumers on district heating systems can be metered or unmetered and typically are unable to switch supplier due to the long-term nature of district heating contracts.¹¹⁸ The National Grid "Future Energy Scenarios 2015" report forecasts that up to 1.4m households could be served by district heating by 2035.¹¹⁹
- Solid fuels: Solid fuels cover a range of individual fuel types, including coal, peat, wood pellet boilers and may be burned in an open fire, stove or

¹¹⁸ Heat networks can be organised and managed in different ways as outlined in chapter 1. A more in-depth assessment would be required to consider the different arrangements in more detail and any implications these different arrangements might have.

¹¹⁹ <http://fes.nationalgrid.com/fes-document/>

boiler central heating system. Coal, coke, peat and wood logs are traditionally purchased on demand through a spot market. However, contracts are becoming more common, particularly for wood pellet systems.

Non-gas consumers

7.8 On average, non-gas households are more likely to be fuel poor than households with mains gas heating. In England, 13% of households not using mains gas (and not using electric heating) are fuel poor compared to 10% of households with mains gas heating. In Scotland, the equivalent numbers are 52% and 31%.¹²⁰

7.9 This trend is partly driven by lower average efficiency standards of the non-gas housing stock. The APPG on Off-Gas Grid concluded that lower efficiency standards of average non-gas housing stock are a significant contributor to fuel poverty across the UK. DECC's 2013 strategy 'Cutting the cost of keeping warm: a fuel poverty strategy for England' placed supporting non-gas homes as central in ambitions to tackle fuel poverty.¹²¹

7.10 The proportion of non-gas consumers is higher in Wales than England or Scotland, with heating oil being the most common heating source for areas in Mid-Wales. A report by Consumer Futures¹²² also highlighted some further trends for example that the number of heating oil, LPG and solid fuel consumers are disproportionately higher in rural areas / villages in all three countries. For district heat the opposite trend is observed. These consumers are disproportionately higher in urban areas / cities where high rise flats are more common.

Non-gas fuel costs

7.11 Space and water heating using fuels other than mains gas, can be (although is not always) substantially more expensive. The July 2015 Sutherland statistics illustrate the relative running costs for a variety of non-gas fuels assuming older, less energy efficient houses with conventional boilers (figure 13) as well as newer, more energy efficient houses with condensing boilers (figure 14). Some non-gas fuels (eg anthracite grains) have lower annual running costs compared with mains gas. Others (eg LPG) are typically considerably more expensive. Heating oil has historically been considerably more expensive than conventional gas, however has recently become less expensive due to developments in global crude oil markets.

7.12 A direct comparison of the running costs of district heat (which is not included in the Sutherland statistics) alongside other fuels is difficult. This is due

¹²⁰ Our analysis using the Scottish Household Survey (SHS) for the combined years of 2011 to 2013 and the English Housing Survey (EHS) 2012/13 and 2013/14. This excludes electric heating. It also excludes heat pumps so can be slightly different to figures quoted in Annex 1. As outlined earlier, fuel poverty is defined differently in England and Scotland, so numbers cannot be compared.

¹²¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408644/cutting_the_cost_of_keeping_warm.pdf

¹²² Off-Gas consumers (2011) Consumer Futures (<http://www.consumerfocus.org.uk/files/2011/10/Off-gas-consumers.pdf>)

to the unique characteristics of each network which determine how much consumers pay for their heat. A recent report from Which?¹²³ suggests that the unit rate for district heat can vary between 5.51-14.94 p/kWh (compared to 9.55-11.60 p/kWh for mains gas) depending on the efficiency of the network. As such, some district heat consumers may be paying considerably more for their space and water heating compared to mains gas, while others may be paying considerably less.

Figure 13: Trends in average annual running costs for space and water heating by fuel type, GB average for older houses and conventional boilers¹²⁴

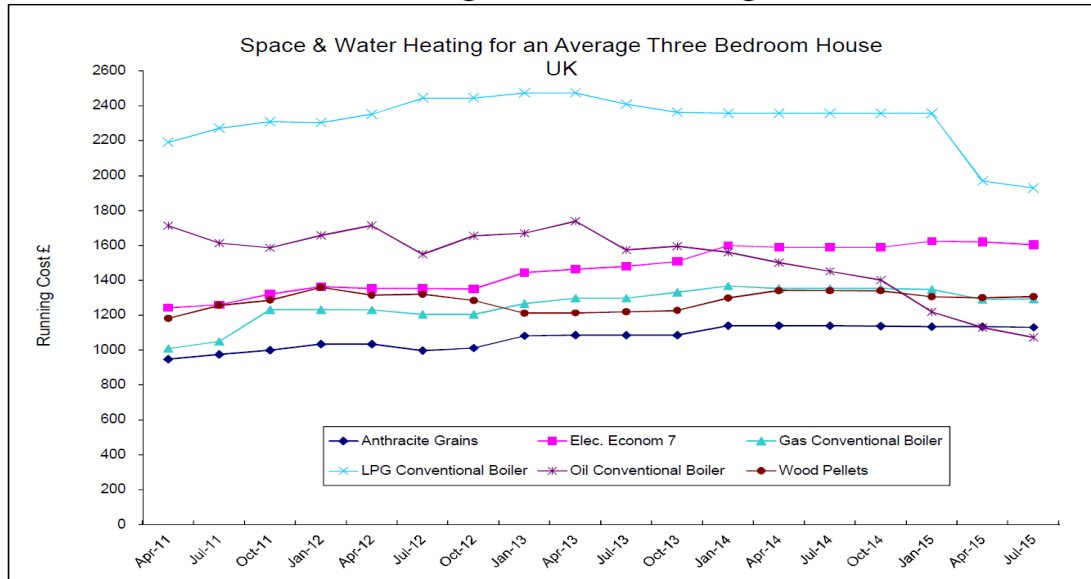
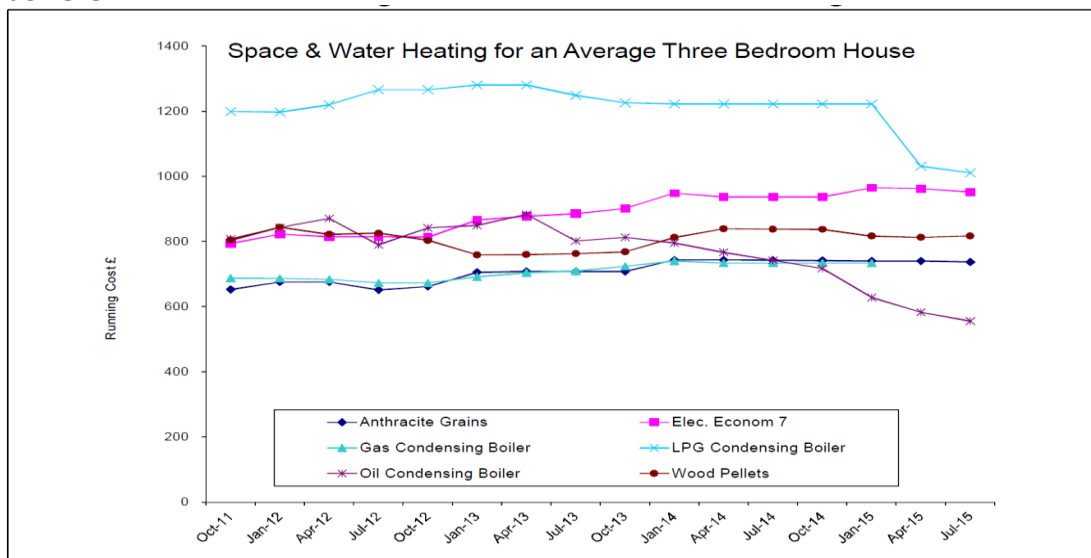


Figure 14: Trends in average annual running costs for space and water heating by fuel type, GB average for newer houses and condensing boilers



¹²³ Which? report, "Turning up the heat: getting a fair deal for district heating users" (March, 2015)

¹²⁴ Source: Sutherland Tables, July 2015. There has been a change in the methodology for calculating LPG prices which can explain part of the recent trend.

Off-Grid Energy Market Study

7.13 In recent years there has been significant political attention regarding the level of competition and consumer protections which exist in these sectors. This attention prompted the OFT to launch the Off-Grid Energy Market study in 2011.¹²⁵ The predominant focus of this study was on heating oil and LPG markets, although a high-level analysis on solid fuel markets was included as an annex.¹²⁶

7.14 The 2011 OFT investigation concluded that:

- In general, competition for heating oil was strong but less so for LPG where the Orders were still taking effect.
- 97% of off-grid households live in a location served by at least four suppliers, the median is eight, while less than 0.3 per cent have access to only one or two. The industry is fragmented – the largest player accounts for less than a fifth of the market and there are many small players and barriers to market entry are low in most areas.
- Overall most consumers 'do not consider it difficult or inconvenient to switch suppliers' and 'feel able to understand and compare prices'. Consumer loyalty to suppliers is extremely strong.
- There was no evidence of price fixing or other forms of collusion between heating oil suppliers - a variety of evidence that rival suppliers compete on price.
- Retail margins do not appear to be excessive. These reportedly account for around 10 to 15 per cent (5-8 pence/litre) of the price level, out of which distributors cover their own costs, and some profit. Of the variation in prices over time, over 90 per cent is explained by movements in the price of crude oil. The report stated: "We have, therefore, found no evidence of a competition problem that would require either Competition Act enforcement or intervention to regulate prices in this market".

7.15 Some politicians subsequently highlighted that the findings of the OFT market study were at odds with anecdotal evidence provided to them by their constituents.¹²⁷ The focus of the study was on how the market worked for the average consumer. It was beyond the scope of the study to examine the extent to which consumers in vulnerable situations were protected and could access market benefits.

7.16 As the market study mainly focused on LPG and heating oil consumers, there has been less scrutiny placed on consumer protection and competition in the solid fuel and district heat sectors. This is particularly important in relation to biomass, a market that has seen significant expansion as a result of the

¹²⁵ [Market study: Off-Grid \(OFT, 2011\)](#)

¹²⁶ [The solid fuel mini study is included in Annex N of the OFT Off-Grid market study - Annexes \(OFT, 2011\)](#)

¹²⁷ <https://appgonoffgasgrid.files.wordpress.com/2013/03/complete-off-gas-grid-report-and-evidence1.pdf>

incentives introduced by the domestic RHI scheme, and district heat where consumers have severely limited opportunities to switch.

Current consumer protection framework

Existing framework

7.17 Each of the four fuel sources are themselves very distinct markets, with unique consumer protection and competition issues. This section aims to outline the current framework which is in place in each sector.

7.18 Non-gas fuels are not subject to a sectoral regulator in the way that the supply of gas and electricity is regulated by Ofgem. The Competition and Markets Authority (CMA) and Trading Standards may intervene on the grounds of competition or consumer protection concerns (including breaches of UK and EU legislation) if a complaint from a customer or supplier meets its threshold for investigation. In practice, while these organisations do respond to issues and concerns raised, they are not playing an ongoing compliance cross-sector monitoring role.

7.19 A number of voluntary schemes and trade associations exist in the non-gas sectors, which include the Federation of Petroleum Suppliers (FPS), UK LPG, the Approved Coal Merchants Scheme (ACMS) and the newly established Heat Trust.¹²⁸ These voluntary bodies encourage their members to operationalise practices that often go above and beyond the minimum standards enshrined in legislation. Members within a trade association are often required to adhere to these codes; however, membership of a trade association is not mandatory in any of the UK non-gas sectors.

7.20 A number of industry trade associations have in place specific guidelines for addressing the needs of consumers in vulnerable situations. These include the UK LPG Industry Protocol for Vulnerable Customers¹²⁹ and the FPS policy for vulnerable consumers contained within their Code of Practice.¹³⁰ Industry-led action to address issues is a positive step; however, some stakeholders have raised some concerns about the extent to which suppliers are monitoring and taking action over any breaches of their codes and protocols.

7.21 Government has taken measures to improve consumer protection in liaising with industry and consumer groups, such as:

- Ministerial Roundtables: Since the All Party Parliamentary Group on Off Gas Grid completed their inquiry in 2013 the previous government DECC Ministers have held round-tables with Parliamentarians, the industry, consumer and age groups, buying groups, unions, and departments/public bodies to

¹²⁸ At the time of writing, The Heat Trust which was formally established in March 2015 is currently only requesting expressions of interest from prospective members. Their website states that they will be accepting formal applications soon (<http://heattrust.org/index.php/about>)

¹²⁹ <http://www.uklpg.org/advice-and-information/industry-protocol-for-vulnerable-customers/>

¹³⁰ <http://www.fpsonline.co.uk/eng/code-of-practice>

consider supply resilience of heating oil and LPG both generally and in particular in relation to vulnerable consumers and wider off-gas issues.

- Codes of Practice – self regulation: DECC has worked with the industry and consumer representative groups for the FPS (Federation of Petroleum Suppliers) to publish the aforementioned Code of Practice and a Customer Charter for heating oil.
- Buy Oil Early campaign: DECC coordinated with industry and consumer groups the Buy Oil Early campaign which gave consumers information on the benefits of buying heating oil before winter and a similar campaign for LPG.
- Oil Buying Groups: DECC has worked with industry and consumer representative groups to encourage buying groups to bring down the costs for consumers. ACRE, Citizens Advice, and the FPS have produced guidance on best practice for forming and operating oil buying clubs. This has run in parallel with BIS / Defra work on community buying.
- Resilience: The industry is currently exploring with DECC and Local Resilience Forums further measures such as an industry wide-definition of a vulnerable consumer to help prioritise deliveries in periods of high demand / disrupted logistics.

Consumer protection gaps in existing framework

7.22 Table 11 indicates some of the main consumer issues faced by non-gas consumers. These are based on comparisons from the markets which we do regulate, our discussions with relevant stakeholders and the OFT 2011 market study (for heating oil and LPG).

Table 11: Consumer protection issues in non-gas markets

Consumer protection issues			
Heating oil	LPG	Solid fuels	District heat
Lack of protection for consumers in debt / suffering financial difficulty			
No supplier of last resort. Suppliers have no obligation to ensure security of supply and governmental has little scope to intervene			
No formalised regulations on charging – may be scope for price discrimination and limited options for payment methods			
No access to mandatory independent alternative dispute resolution (ADR) or ombudsman. ¹³¹			
No Priority Services Register type services or equivalent non-financial services to address consumer vulnerability ¹³² . No requirement to provide energy efficiency information or advice			

¹³¹ Consumers have access to a cross-sectoral consumer ombudsman via the EU ADR Directive. However, resolving these disputes requires the approval of the company in question in order for the case to be considered by an ombudsman approved under the Directive by Trading Standards. Hence, non-gas consumers have no right to get their dispute settled by an ombudsman while gas and electricity consumers do through the Energy Ombudsman.

¹³² Trade associations have told us about their work with other agencies e.g. FPS is working with the

Prices are often negotiated, meaning customers less able to negotiate may be facing higher charges	Park home residents may be paying a premium for buying LPG from their park owner ¹³³ . Many may have limited alternative buying options	There are no requirements to display the energy contained within solid fuels ¹³⁴ , thus consumers may find it difficult to compare the efficiency of various products	Potential to exploit consumers with monopoly pricing. Contracts can be up to 80 years with no ability for consumers to switch supplier
Anecdotal evidence that prices quoted on order may change by the time of delivery ¹³⁵	Cylinder LPG has a number of uses. There are no systems in place to ensure customers using cylinder LPG for domestic heating are prioritised during high demand	No formal complaints handling process. Many small distributors with limited resources may have no complaints handling process at all	Estate agents may not fully inform prospective tenants / buyers on heating system or costs. Consumers may be put on heat networks without sufficient understanding of the implications
FPS Code of Practice outlines complaints process for members but no formal second tier process for complaints handling process. Many small non-member distributors with limited resources may have no complaints handling process at all	Metered estates, which can contain up to 300 households require unanimous agreement to switch supplier.	For some fuels, 'one-off' or emergency deliveries may be significantly higher in price, with potential issues of supply scarcity.	Bills can be difficult to interpret, and may omit important information such as a breakdown of costs included on the bill
	Park homes may not have the ability to switch supplier, or may not have sufficient awareness that they can buy LPG direct from the supplier		

7.23 Some issues (eg lack of protections for consumers in debt, lack of access to an Ombudsman, lack of PSR type services etc.) are apparent across all of these sectors, and this could be particularly affecting vulnerable consumers. Any action targeted at these sectors needs to take an in-depth look at this.

fire service to identify vulnerable customers. Trade associations have cited problems around data protection as a barrier to holding a Priority Services Register.

¹³³ We note that the resale of cylinder LPG to park home occupants is a separate market to that of LPG distribution.

¹³⁴ Trading standards do mandate that a weight in g / kg is displayed for all packaged solid fuel products and is included on all solid fuel delivery invoices. However this is not necessarily reflective of the amount of energy contained within the product.

¹³⁵ APPG

7.24 The main issues discussed focus primarily on consumer protection. We note that the 2011 market study found that, in general, competition for heating oil was strong but less so for LPG where the Orders were still taking effect. It would be necessary to assess whether this has changed before taking any action. In the case of district heat, competition issues play a much greater significance. This is due to the more monopolistic nature of this industry which creates a greater potential for consumer detriment.

7.25 In 2004 the Office of Fair Trading referred the Bulk LPG market to the Competition Commission. This resulted in two orders being imposed on the industry in 2006. These relate to bulk tanks and metered estates. Following the OFT market study in 2011, further changes were made to improve the effectiveness of these orders. The orders will be reviewed by the CMA in 2017

7.26 The following sections summarises some of the sector-specific consumer protection issues.

Heating Oil

Price transparency

7.27 Suppliers are ultimately responsible for setting prices (although this may be negotiated between the supplier and consumer) and can depend on a variety of factors (eg customer location and seasonal factors). A number of stakeholders raised concerns that prices quoted by heating oil distributors upon placing an order often change by the time of delivery. This practice is expressly prohibited by the FPS Code of Practice and we are not able to establish the extent to which abuse is widespread. It is of particular concern during the winter months where prices are more likely to increase, and when fuel poor consumers may be particularly prone to financial stress. Distributors are generally small and local knowledge is strong. Consumers are often rewarded for loyalty, either in terms of price, credit arrangements or priority of delivery. Consumers who regularly shop around, therefore, may miss out on these benefits.

7.28 VAT is charged at the reduced rate of 5% for heating oil. Consumers generally receive a single price amount (at the reduced VAT rate) on their invoice which covers both fuel and delivery. Combining fuel and delivery into a single price may provide some financial savings for consumers through this reducing the overall VAT paid, but this approach makes it difficult for consumers to determine how much they are actually paying for their fuel.

Seasonal price fluctuations

7.29 There is a strong seasonal demand for heating oil and prices typically rise with falling temperatures. In December 2010 cold weather, road access issues and increase demand spike saw significant price peak, seeing spikes of up to 80p from the 50-60p Dec average.

7.30 Firms make higher margins during the winter to compensate for the lower demand periods in summer. The OFT also note that the practice of increasing prices as a result of higher demand is common practice across other industries;

typical retail margins for heating oil are generally 10-15%, comparable to the electricity and gas markets.

Barriers to entry and competition

7.31 The OFT study determined that that heating oil price was significantly driven by changes in crude price, and that heating oil prices were competitive across the UK. In some cases, very remote areas with only one or two suppliers may experience detriment due to competition issues, however these account for only 0.3% of the market.

7.32 The heating oil industry is highly fragmented. The 10 largest suppliers supply less than half the market and most distributors only supply to their local areas. Barriers to entry are generally low, evidenced by the large number of small players in the market.

Vulnerable consumers

7.33 There is currently no formal or standardised process by which suppliers prioritise delivery during times of peak demand and / or poor weather. As distributors generally operate at a local level, it is likely that distributors do prioritise delivery on an informal basis, assisted by their knowledge of their consumer base. There have been industry observations that consumers may make claims (stating they are lower on fuel than they actually are for example) with the intent of obtaining a quicker delivery. This may make it difficult for suppliers to prioritise delivery to consumers who need it the most.

7.34 Self-disconnection also remains an issue pertinent to heating oil consumers. Gas and electricity suppliers have strict obligations preventing disconnection during winter months. Suppliers have no obligation to ensure a supply to customers in debt at any time of the year. Consumers who are in debt and are unable to heat their homes during cold periods may be exposed to serious health risks, particularly vulnerable consumers.

Complaints processes

7.35 There is no formal mandatory complaints handling process established across the industry, and many small distributors may not have any complaints handling process at all. There is no access to a mandatory ADR (such as the Energy Ombudsman).¹³⁶ The FPS may investigate complaints it receives and has told us that firms implement any findings or remedies. However the FPS is not able to take complaints about non-member suppliers. In addition the FPS is an industry organisation which may limit its perceived independence.

¹³⁶ As set out above, there is access to a cross-sectoral consumer ombudsman if the company in question approves for the dispute to be resolved by an Ombudsman.

LPG

LPG price and comparison with other fuels

7.36 Per unit, bulk LPG is cheaper than cylinder. Cylinders tend to be used where bulk is not suitable, ie small gardens, caravans, park homes etc. According to the Sutherland tables heating costs tend to be highest for households with LPG heating. However, a number of suppliers freeze prices during the winter months to provide certainty regarding how much LPG will cost during this high demand period. Some of the larger suppliers currently offer a range of payment options, including monthly direct debit to smear the costs out over the year.

Consolidation

7.37 Consolidation in the LPG market means customers in some areas may only have four suppliers to choose from. Other areas have more choice but across the UK four main suppliers account for over 90% of the market. LPG members, via UKLPG, have agreed a switching protocol that reflects the Competition Commission's 2006 Orders.

Park homes

7.38 Park homes are of particular concern in the LPG cylinder market. Anecdotal evidence suggests that a number of park home owners 'resell' LPG cylinders to park home residents, adding in their own margin.

7.39 This issue has been partially mitigated by new legislation that allows suppliers to enter park homes to supply gas without the park home owner's permission. As a result, park home residents may engage with suppliers directly. In theory, this avoids incurring the mark-up costs associated with park owners reselling cylinders. In practice however, some stakeholders suggested that access to park homes may still be heavily restricted.

7.40 Furthermore, allowing suppliers to access park homes may not encourage these consumers to engage directly with a supplier. For consumers who previously only had the option to purchase LPG from the park owner, a reluctance to change behaviours or a lack of awareness may still prevent them from engaging directly with the supplier, even if the cost will be lower.

Metered estates

7.41 Metered estates account for approximately 10% of the bulk LPG market and can supply heat to up to three hundred houses.

7.42 In 2006 the Competition Commission placed an Order on the LPG supply metered estates to address competition issues. Consumers on metered estates are now able to switch, provided they are outside of their 2 year exclusivity period and all consumers on the metered estate unanimously agree to switch. The requirement for a unanimous decision may act as a significant barrier to switching, particularly for larger estates where significant co-ordination would be required to prove a unanimous decision was reached.

Complaints processes

7.43 There is no formal mandatory complaints handling process established across the industry, and many small distributors may not have any complaints handling process at all. There is no access to a mandatory ADR (such as the Energy Ombudsman) but as set out above.¹³⁷

Solid fuels

Commodity quality

7.44 The 2011 OFT market study provides some indicative research which suggests that consumer experience is mixed. The report highlighted that some consumers were dissatisfied with the quality of the solid fuel sold by some suppliers, particularly wood. Lower quality solid fuels are less efficient, and may be more likely to expose consumers to harmful pollutants. Consumers felt that there was no way to determine the quality of their solid fuel before combustion took place.

Lack of consumer experience research

7.45 There has yet to be an extensive study which assesses the consumer experience and issues faced by solid fuel consumers. The OFT 2011 annex on solid fuels provided some high level analysis but made limited reference to biomass, a fuel which is growing in popularity, at least partially due to the Renewable Heat Incentive (RHI) scheme.

District Heating

7.46 One of the main attractions of heat networks is their potential to both reduce carbon emissions and operate in a highly efficient manner due to their ability to use low carbon fuels such as biomass, or to use waste heat from existing energy users or both.

7.47 However, customers connected to a district heat schemes can face particular challenges due to the potentially more monopolistic nature of these schemes.¹³⁸ In particular, consumers might sign long-term contracts with suppliers, which allow suppliers to recover the up-front capital required to build the network. This means that consumers can be tied into supply contracts for several decades, with no option to switch supplier.

¹³⁷ As set out above, there is access to a cross-sectoral consumer ombudsman if the company in question approves for the dispute to be resolved by an Ombudsman.

¹³⁸ It is potentially very difficult to introduce competition and choice into district heat schemes, given the current business model used by most schemes. In most cases the infrastructure could be prohibitively expensive to duplicate and may lead to inefficient overcapacity. However, exploring such options would require detailed assessments and it is worth noting that other business models exist which allow competition on the generation side (eg Denmark). Such models involve large networks which require heat produced from multiple generation facilities, which can compete on price.

Price transparency

7.48 The Which? report provides anecdotal evidence that a number of consumers felt misled during the purchase of their house by being told their heating system was 'low-cost' and 'environmentally friendly', later to find that they were paying more for their energy than other energy systems. This problem may be exacerbated by low consumer awareness of district heat schemes.

7.49 The Which? report also highlighted that price transparency was often poor and that consumers think standing charges are too high. Some suppliers do not provide sufficient cost information, such as a breakdown of the costs included on the bill. Consumers cannot (currently) easily compare what they pay to other schemes or forms of heating. However, Heat Networks (Metering & Billing) Regulations 2014 now require heat suppliers to ensure bills for metered properties are accurate, based on actual consumption, and that they clearly set out how the bill was calculated. There is also a requirement for energy costs to be provided in a format which enables customers to compare the charges of different energy suppliers.

7.50 In unmetered schemes, customers have less control over their bills if they are not individually metered and billed and low users may be paying more than reflective of their consumption. However, the Heat Networks Regulations 2014, establishes a duty to install individual meters where it is cost effective and technically feasible to do so.¹³⁹

Reliability

7.51 Which? also pointed out other concerns that some consumers have raised, such as concerns around the performance of the system (eg time it takes for water to heat up) and some concerns that some heat meters might not function properly, leading to billing errors.

Limitations of self-regulation

7.52 The new Heat Trust Scheme will start accepting members from autumn 2015 and seeks to address some of these consumer protection issues. However, stakeholders such as Which? and Citizens Advice have queried whether it will offer sufficient consumer protections.

7.53 Which?'s recent report states that government should look beyond voluntary self-regulation. Which? argues that the cost of membership and associated changes to comply with standards may deter suppliers from joining the Heat Trust. Which? is doubtful that the scheme itself will go far enough to deliver consumer protection or that it will be sufficiently resourced to handle significant numbers of consumer complaints and to put in place effective monitoring.

¹³⁹ The cost-effectiveness test is currently suspended, however, pending new guidance from the European Commission.

7.54 It may prove difficult for the Heat Trust to put in place sanctions on non-compliant members that will carry significant weight. Reputational approaches such as public written warnings or even expulsion from the Heat Trust will not be able to influence consumer behaviour as consumers are unable to use this information to switch.

7.55 The scheme will not cover issue of fair pricing, which is the major issue for most consumers; it will be difficult for a voluntary industry-led scheme to even discuss the issue of pricing, given competition law.

7.56 An additional challenge is the expected increase in the number of customers on district heat networks. Given the economics of constructing these networks, most customers who will be transferred to district heat networks will have come off the existing gas networks where the protection measures are very different. Customers could challenge why they are not afforded the same protections in terms of quality and loss of supply as they currently receive with an existing gas connection. This could be a block to people converting to heat networks.

Strengthening non-gas consumer protections

Limitations and considerations when developing remedies

7.57 If, following an assessment, there is recognition that a sector requires intervention to strengthen consumer protection, there are a number of approaches that can be explored further. However, we acknowledge that any remedial options may have limitations due to sector-specific factors and these should be taken into account when developing policies to address consumer issues. Further, strengthening non-gas consumer protection is a complex issue, and remedial actions may also have negative and/or unintended consequences. The following paragraphs highlight some of these limitations.

Priority Services Register (PSR)

7.58 Implementing PSR type services in non-gas markets could lead to industry specific databases where suppliers pro-actively identify and hold information on consumers in vulnerable situations. However, a number of stakeholders have highlighted data privacy issues around such a database. Some stakeholders raised concerns that suppliers may have an incentive to target customers with certain characteristics, in which their vulnerability may make them less able to negotiate on the fuel costs (eg heating oil). Concerns were also raised about who would administer this scheme, and how costs would be allocated.

7.59 It is worth noting that industry trade associations have made it clear that their members are proud of the customer service they offer their customers and that they already take steps to provide additional services to consumers. This has been boosted by vulnerable consumer codes of practice for the respective markets. They feel that this is an area of legitimate competitive differentiation and that formal intervention may not be necessary.

Impact on small companies

7.60 The heating oil market in particular is highly fragmented. Many suppliers are small local companies and may also offer a range of services, unrelated to the supply of heating oil. It is important to note that any intervention which will impose additional costs may disproportionately impact small suppliers and their ability to remain cost competitive with larger suppliers. Smaller suppliers who offer other services may also wish to replace heating oil distribution with other services in light of these associated costs. Consequently, regulatory intervention which imposes additional costs may increase consolidation / reduce the number of players in this market.

7.61 In the Cylinder LPG market, a significant portion of suppliers' business is selling to independent retailers such as caravan and park home owners, grocery stores, post offices etc. Any regulatory intervention should take into account that part of the LPG cylinder supply chain is ultimately outside the supplier's control.

End uses other than space water heating

7.62 In some cases, it may be difficult to identify if the end use of the fuel is for space and water heating. This is most prominent in the cylinder LPG market and solid fuels. In some cases, the end use may be relatively easy to determine (ie where the supplier installs a LPG cylinder to a domestic boiler system). However, in other situations (eg. purchasing from an independent retailer) it is often difficult to determine if the fuel was used for space and water heating or for other purposes. The same may be true for solid fuels, in particular biomass, which may be used for agricultural purposes. Any regulatory interventions in these markets may therefore impose unintended consequences on uses other than space / water heating, where consumer protection issues may be less prevalent.

7.63 The role of end uses other than domestic space and water heating may be significant. One large industry stakeholder highlighted that during summer months, there is more demand for cylinder LPG to fuel incubation in the pheasant farming industry than the demand for domestic heating purposes. There is also significant demand for cylinder LPG for barbecue fuel, gas refrigeration and construction machinery uses. This evidence suggests that for substantial periods throughout the year, domestic heating plays only a small role in the overall cylinder LPG market.

Market characteristics

7.64 Bulk and cylinder LPG markets observe notable differences in their operational costs, supply chain, existing regulatory framework and ability to switch. Any framework to improve consumer protection should be careful to take into account these differences.

7.65 There have been recent technological advancements which may help in assessing remedial options for bulk LPG consumers. Some suppliers have automated delivery systems in place where a storage tank can communicate directly (via SMS) with delivery systems. This system can automatically inform the supplier when fuel in the tank reaches a pre-determined level and will automatically prompt a delivery, without any intervention for the customer.

7.66 Furthermore, some large suppliers voluntarily offer price freezes over the winter months and offer various payment plans such as monthly direct debit.

7.67 These new developments exist within the current voluntary framework, and may warrant an assessment to see if consumers (particularly vulnerable consumers) are less likely to experience detriment as a result of these developments.

7.68 Similarly for district heating, any intervention can adversely impact the development of new business models and innovation more generally.

Options for strengthening consumer protections

7.69 One course of action is leave things as they are, allowing existing interventions to continue to operate, including existing commitments for the CMA to review the LPG market in 2017. This would mean no new associated costs and would allow resources to be utilised elsewhere.

7.70 If, following an assessment, there is recognition that a sector requires intervention to strengthen consumer protection, there are a number of approaches that can be explored further. Below we offer thinking on five potential options to improve consumer protection. The options are an initial list only and are necessarily mutually exclusive. A number of the options would require legislative change prior to implementation.

Option 1: Information and education

7.71 An existing body could assume more responsibility in the provision of information and educational material to non-gas consumers. Such information could include the financial benefits of switching, how to switch etc. This would have the most profound effect where the responsible body is able to achieve widespread exposure through various media. Citizens Advice and/or the Energy Saving Advice Service will likely play a role in this scenario, given its remit on energy education and advice.

7.72 Previous examples include the aforementioned 'Buy Oil Early' campaign by DECC, ACRE, Citizens Advice and FPS, which gave consumers information on the benefits of buying heating oil before winter (a similar campaign was also carried out for LPG) as well as the development of guidance on best practice for forming and operating oil buying clubs. Citizens Advice also has a guide highlighting the benefits of collective buying and how consumers can become involved in these schemes. Ofgem may also incorporate non-gas into their switching initiatives.

7.73 Other approaches to consider may include supplier ratings for non-gas suppliers, similar to the ratings used on Trip Advisor¹⁴⁰.

¹⁴⁰ Note TripAdvisor has recently been sanctioned by the Italian competition authority (AGCM) for the

Advantages	Disadvantages
If effective, will lead to improved consumer awareness of the benefits of engaging with their energy supply at relatively low cost	Does not address all issues faced by non-gas consumers. For example, providing information on the benefits of switching may be of limited relevance to consumers with limited switching options, such as very remote areas and metered estates
May increase awareness and uptake of support schemes available for non-gas consumers	The number of non-gas consumers is a small segment of UK consumers. Marketing budgets may be significant to ensure sufficient exposure, but may be of little relevance to the majority of UK consumers who use mains gas
Costs associated with information and education schemes not passed onto consumers through higher bills	No evidence to suggest that the Buy Early campaign had a significant effect on influencing consumer behaviour
Supplier rating may lead to more competition on non-price factors such as customer service	There may be difficulties in ensuring any supplier ratings are accurate, reliable and transparent

Option 2: Industry observer body

7.74 An independent organisation could take on the role as an independent observer with relevant trade associations across non-gas and work with relevant organisations such the Fuel Poverty Advisory Working Group on Off Gas. This would be on an informal and voluntary basis. We consider the prospect of this independent body being given a more formal role would act as a powerful incentive for industry to co-operate and deliver positive outcomes for consumers on consumer protection issues while allowing an independent body to better understand market dynamics and the customer experience.

7.75 Clarification would be needed from government on the legitimacy of the organisations role in these markets.

7.76 For district heat, this would involve working with the newly established Heat Trust. The independent observer could play a significant role in the development of this scheme, as and when suppliers agree to this voluntary scheme and help promote the benefits realised by the scheme.

misleading advertising claims relating to the truthfulness of the reviews published by their users on the site that according to the AGCM cannot be guaranteed. This case might trigger considerable risks also for other social media.

Advantages	Disadvantages
Consumer protection gaps could be identified earlier, and the independent observer could encourage protections to be offered to non-gas consumers that wouldn't otherwise be offered	Trade association membership is currently voluntary, meaning that this observer role would not be engaging with the whole market. Should this advisory role lead to further protections, this will incur costs to Code members and non-members may gain a competitive advantage
Relatively low cost option for industry, and unlikely to cause any pass-through costs to non-gas consumers	Independent observer does not have powers to intervene – this could lead to a perception of providing assistance to industry, thus challenging the independence and transparency of the organisation itself
	This role will incur costs associated with engaging in non-gas markets. These costs will not be able to be remunerated from trade association members

Option 3: Consumer Codes Approval Scheme approach

7.77 Government could provide an independent organisation (such as Ofgem, CMA, Trading Standards etc.) with approval powers for new and existing industry codes and guidance which would ensure adequate consumer protection. This could include pre-requisite conditions such as offering multiple payment options, ensuring vulnerable consumers are prioritised and ensuring consumers have access to an ADR/Ombudsman that is binding on members etc.

7.78 In practice, this would be a similar role to Trading Standards Institutes Consumer Codes Accreditation Schemes (CCAS). This approach would work on a two tier basis; firstly ensuring the relevant trade association produced a code that meets appropriate standards and secondly verifying that the trade association has proved the code is effective in practice. An online portal could be developed so consumers could access details of approved suppliers. The scheme would be self-financing. Membership of a trade association would remain non-mandatory but all members would have to demonstrate they abided by relevant codes.

7.79 The Heat Trust has been established as a voluntary scheme but this is a recent development. Such an approval role for district heat would work on the same two tier basis as above but may also have the benefit of raising awareness of the benefits of this scheme as district heat develops further.

7.80 Government may wish to consider the extent to which it needed to give the independent body formal powers via primary legislation (e.g. information gathering powers, market investigation referral powers, concurrent competition

powers, passing on costs to industry). It would also need clarification from government on their role in these markets. The CMA would retain competition powers and enforcement of consumer protection law.¹⁴¹ This option also leaves open the possibility of further intervention such as mandatory membership, licencing or direct regulation should an evaluation after an initial period suggest this approach was not delivering benefits for consumers.

Advantages	Disadvantages
Formal powers ensure consumer protection issues are addressed, with a clear remit to request information from suppliers. Access to an ADR that is binding for members will ensure consumers have an independent body to address complaints	If Code membership remains voluntary, this may further polarise the competitive advantage gained from non-membership, and may lead to members leaving the Code
CMA and Trading Standards will retain their powers. The approval body will provide a greater degree of ongoing monitoring in these markets and can refer the market for investigation if there is evidence of consumer detriment	An ADR/Ombudsman will have a role in resolving disputes, but will have no powers to enforce sanctions if members choose not to comply with the decision
Requiring approved industry codes to have appropriate PSR type services may ensure that the needs of vulnerable consumers are better addressed	There could be a legal risk if the approval body does not have powers set out in legislation
	More resource intensive than some alternative options, and need for primary legislation change means this option may be slow to implement

Option 4: Co-regulation with mandatory membership

7.81 Government could introduce a legislative change requiring membership of an industry trade association as a prerequisite for operating in non-gas markets. This option would not provide further powers to be transferred to an independent body, but would likely require some form of co-regulation between trade associations and an independent body. This co-regulatory approach would set up a monitoring and compliance framework to ensure non-members are not engaging in the market.

7.82 Industry has expressed concerns that regulatory intervention aimed exclusively at trade association members could reduce the attractiveness of being a member of a trade association. This approach would ensure that all suppliers operate on a level playing field and could lead to new trade associations which

¹⁴¹ Government may also wish to consider giving Ofgem concurrent competition powers, given the CMAs limited resources. We are currently engaging with our legal and enforcement teams to further clarify what this might look like in practice.

could compete directly with existing ones on quality of service. Mandatory membership would reduce incentives for suppliers to leave trade associations in order to offer a lower cost, lower quality service to consumers.

Advantages	Disadvantages
Creates a level playing field for industry. Currently, suppliers may incur additional costs for offering higher standards than some of their non-member competitors, giving rise to incentives to remain (or become) a non-member	Membership terms may mean that smaller suppliers or non-members are no longer able to operate in the market. We have no evidence to suggest that non-members are disproportionately causing consumer detriment, and some non-gas consumers may be adversely affected by players leaving these markets.
May encourage new trade associations to emerge, spurring competition on quality of service and the protections offered by their codes.	Without the role of an independent advisor approving or advising codes - there is no guarantee that all consumer protections will be addressed
As voluntary Codes are already in place, there is an existing framework for non-members to enter into, thus limiting the amount of resources needed to adapt to this change.	Membership fees would need to be set at a level to allow good monitoring and enforcement. These costs would be passed on to consumers.

Option 5: Mandatory sectoral regulation

7.83 There are a range of possibilities to introduce mandatory sectoral regulation in these non-gas sectors. This could be for example:

- Government, or a government appointed body could implement a mandatory licence that all suppliers are required to adhere. Legislation would be required to set up the scheme, appoint an overseeing authority and to pass on costs to industry. Such a licence regime might have to be different to the framework in place for gas and electricity given the vast differences between the markets. Due to the unique nature of these sectors, a different licence regime would need to be developed for each market. This licence regime could be simplistic in nature, mandating the minimal level of consumer protection offered to consumers in order to be able to operate in the market. There are a number of Ofgem initiatives that could provide a useful template for any such regime; such as the Smart Metering Installation Code of Practice (SMICOP) and draft non-domestic TPI Code of Practice.¹⁴²

¹⁴² The FCA consumer credit licence may also prove a useful resource for developing a non-gas licence regime. Consumer credit firms must be authorised by the FCA (or have interim permission) to offer consumer credit. This regime has particular relevance to heating oil markets, as suppliers in both markets tend to be small, locally serving suppliers with a wide range of services under their portfolio. However the number of consumer credit market participants reduced following the introduction of the authorisation regime. This was an acceptable outcome in consumer credit and had been anticipated by the FCA¹⁴². However in the heating oil and LPG market the consequences of any increasing barriers

- Government could establish a minimal level of consumer protection offered to consumers in order to be able to operate in the market through new legislation. Supplier obligations would be enshrined in law rather than licence conditions. This approach may have the benefit of avoiding the need for licence fees, which would likely lead to less impact on market participants. However, government (or a government appointed body) would still need to monitor compliance with this legislation, and government would need to consider how this monitoring activity would be funded in the absence of licence fees.

7.84 For district heating the above could be in the form of an economic price control-type mechanism. There are many different approaches one could adopt. By way of example, the gas and electricity transmission and distribution licensees are regulated under Ofgem’s RIIO model (Revenues = Incentives, Innovation and Outputs), which has been introduced recently replacing the previous RPI- X approach. This price control applies general principles of cost recovery, incentives companies to invest efficiently and deliver outputs to consumers.¹⁴³

7.85 This shows that there are many different approaches to designing a regulatory regime and any regime might need to be different for each fuel. Within each, there is also a scale running from a purely principles-based regulation approach at one end to one relying solely on prescriptive rules at other.¹⁴⁴

Advantages	Disadvantages
Industry-wide standards will ensure consumers receive a consistent level of service, regardless of who supplies them, this could include access to a mandatory ADR/Ombudsman	Regulation is more likely to lead to pass-through costs of regulation increasing the heating costs of non-gas consumers, potentially having a counter-productive impact on fuel poverty and may lead to suppliers no longer being able to operate in the market (this is not necessarily the case if protection is introduced by legislation)
Creates a level playing field for industry. Currently, suppliers may incur additional costs for offering	Legal risk of implementing regulation that may restrict market activities

to entry are likely to have a more negative impact.

¹⁴³ It is worth noting that, to our knowledge, no other country has adopted an interventionist economic price control mechanism for district heat, such as RPI-X or incentive based controls. However, the Netherlands recently capped the price of district heating at that of the gas counterfactual and Norway caps prices at the electric heating counterfactual. In Denmark, the sale of contracted heat is regulated using a cost-plus pricing method. Other nations, such as Sweden, have specific legislation in place for district heat contracts to protect consumers from monopolistic behaviours. (http://ei.se/Documents/Publikationer/lagar_pa_engelska/District_Heating_Act.pdf)

¹⁴⁴ A number of approaches have been adopted in other utility sectors; including a revenue cap, RPI-X where companies are expected to make efficiency gains, or RIIO which incentivises utilities to deliver outputs to their consumers. This approach would incur additional regulatory costs to industry which would be passed onto consumers. Costs for the regulating body could also be substantial.

<p>higher standards than some of their non-member competitors, giving rise to incentives to remain a non-member</p>	
<p>Similar initiatives are already in place (eg SMICOP, non-dom TPI code of practice, FCA consumer credit licence) to use as a template for non-gas mandatory codes</p>	<p>More resource intensive than alternative options, and need for primary legislation change means this may be slow to implement. In particular, resource implications for assessing price controls of hundreds (or thousands) of district heat networks appear substantial which raises questions of proportionality given current attempts by the Heat Trust to improve consumer protection.</p>

7.86 We note that the above options are set out at a high level, which government can consider. These would need to be developed and evaluated in depth, post assessment of the relevant market and consumer protection issues.

8. Conclusion and way forward

Chapter Summary

We will take several actions to address the findings of this paper.

For electric heating, we intend to:

- further develop our evidence base
- help improve access to information and tools
- use the findings to inform our regulatory agenda.

We will organise a workshop to discuss these findings further and explore how we can work in partnership to deliver improved outcomes for electric heating consumers.

For other non-gas fuels we consider this report to constitute fulfilment of our commitment to the ECCC. We do not intend to conduct any further analysis or research in such areas where we have limited, or no regulatory remit.

Research gaps

8.1 This paper has sought to provide further insight on households with electric heating to help inform any debate in this area and to help prioritise our own regulatory agenda. This was based on available data and research. There are however gaps in available research, including:

- Very little information is available on households that use direct-acting electric heating in particular in terms of their experience compared to households with storage heating. Data from household surveys is only partially helpful in particular as low sample sizes make a more precise disaggregated analysis difficult. This is however important as it is likely, for example, that there are significant differences between households that use direct-acting boilers, fixed radiators and portable heaters as well as compared to households with storage heating in terms of actual heating costs and thermal comfort.
- Little research is available on the total energy costs (rather than just heating costs) for households with different heating systems using different types of tariffs in different regions.
- Since 2008, no household survey has been conducted in Wales that covers a physical inspection of the property. This has limited our ability to understand the physical characteristics of dwellings and social characteristics of households with different types of heating systems in Wales.

Actions to address findings for electric heating

8.2 In this report, we have outlined several findings which we intend to follow up on to seek to improve the experience of electric heating customers. In particular:

- **Further develop our evidence base on electric heating** – given the importance of electric heating customers benefitting from available support schemes, we will actively monitor the take up of Ofgem-led or administered support schemes by electric heating customers, such as ECO2 and FPNES. As smart meters can address several problems consumers face, we will also monitor the take-up of smart meters by customers using ToU meters. This will also enable us to get a better picture of the number of customers on different ToU meters, in particular Economy 7, Economy 10, and DTS. We have already been in contact with suppliers on this. Further, we will consider how best to include households with electric heating in any work on assessing the impact of ToU tariffs that may become available (under “half-hourly settlement”) on different consumer groups.
- **Help improve access to information and tools** which can support consumers when switching and managing their energy use - we will review information for electric heating and ToU customers in our ‘Be an Energy Shopper’ campaign¹⁴⁵ and support Citizens Advice Service in improving information for electric heating consumers. There is clearly scope for better tools and information to help electric heating consumers. We will consider this further in light of the findings of the CMA investigation.
- **Regulatory agenda** - the findings of this paper are informing our future regulatory agenda, including prioritising the second phase of our smart metering consumer empowerment and protection programme. For example, as part of phase one of this programme, and specifically the smart billing work stream, we have consulted on measures to help limit the detriment arising from billing problems, including that experienced by some customers with electric heating.¹⁴⁶

Other non-gas heating fuels

8.3 In fulfilling our commitment to ECCC, we have set out high-level options to potentially improve consumer protection for customers using other non-gas fuels and where there are currently no direct sectoral regulators (ie heating oil, LPG, solid fuel and district heat). We hope this report will provide government (and other interested stakeholders) with a further insight into the issues faced by these consumers and inform any future decision regarding the regulatory framework(s) of these markets. We consider that the publication of this report constitutes fulfilment of our commitment to the ECCC. Consequently, we do not intend to conduct any further analysis or research in such areas where we have limited, or no regulatory remit - unless specifically requested by government to do so.

¹⁴⁵ <http://www.goenergysshopping.co.uk/en-gb>

¹⁴⁶ We have published our proposal on 06 August, see Ofgem (2015) “Smart billing for a smarter market: our proposals” <https://www.ofgem.gov.uk/publications-and-updates/smart-billing-smarter-market-our-proposals>

Next steps

8.4 We are organising a workshop to discuss the findings of this paper and how we can work in partnership to improve the experience of electric heating households. The workshop will take place next year.

Further information

8.5 More information on our work to support customers in vulnerable situations can be found on the Ofgem website at www.ofgem.gov.uk. We can be contacted at:

The Consumer Vulnerability Team
9 Millbank, London, SW1P 3GE
Tel: 020 7901 7000
Fax: 020 7901 7066
Email: vulnerability@ofgem.gov.uk