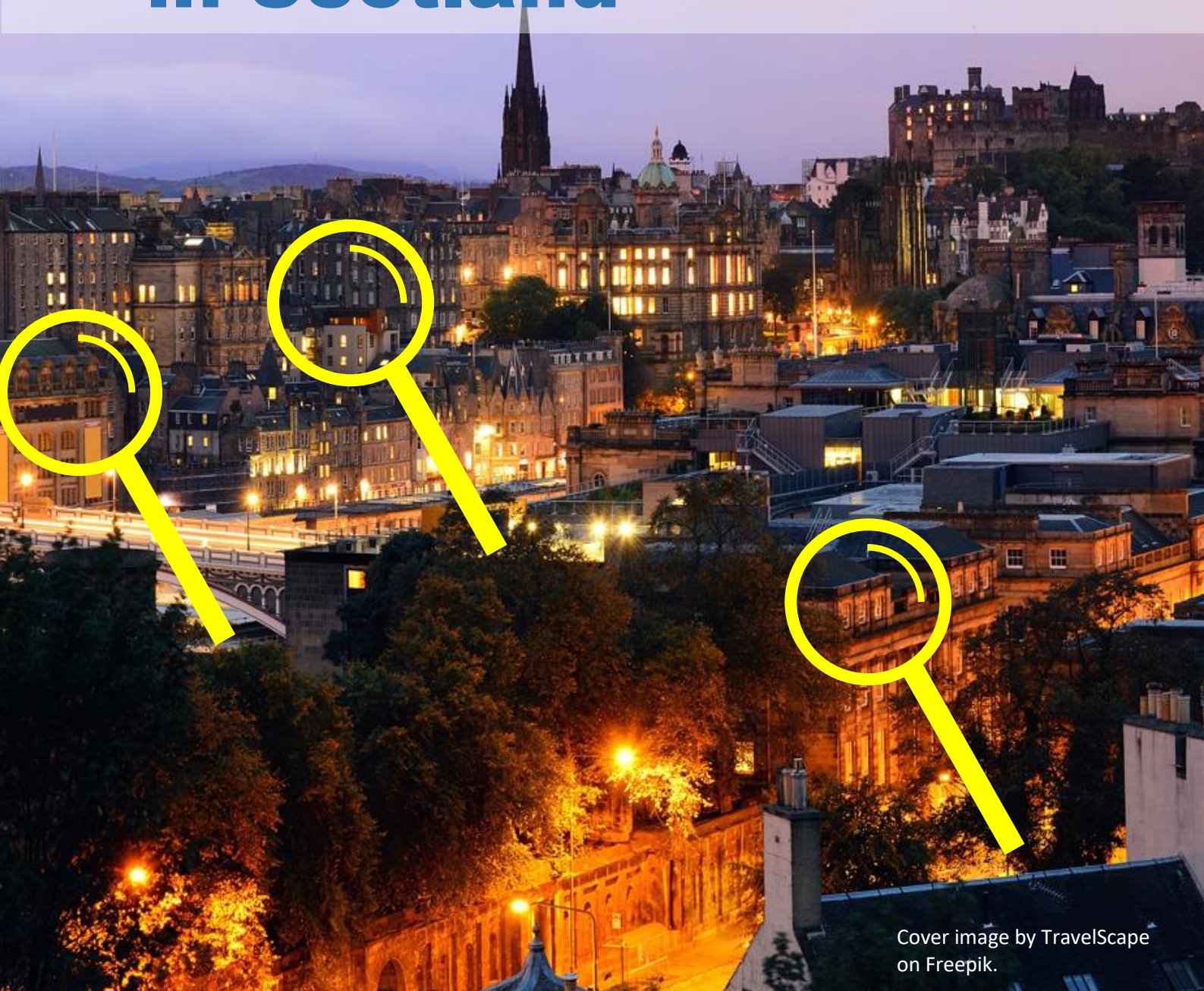


Finding the Fuel Poor in Scotland



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Finding the Fuel Poor in Scotland

This report uses household energy consumption and other data provided by the energy supplier Utilita about 2,600 households in Scotland. All of the households have dual-fuel gas and electricity supplies, and all have smart prepayment meters. (Note that across Scotland, 19% of homes have prepayment meters¹.)

The energy data covers the period from January 2019 (before the sharp energy price rises) to May 2023. Four complete heating seasons are covered. After cleaning the data to account for households without continuous consumption data, we have 809 unique homes and only 642 homes with at least a whole year of data. A separate report has been prepared from a much larger sample of households in England and Wales. (After data cleaning this was left with 11,500 households.) The analysis reported here uses the same techniques but is more limited.

Household and dwelling characteristics

Tables 1 and 2, and Chart 1 (below) indicate important characteristics of the sample of Scottish households and dwellings. Overall, the sample over-represents households with bill payers aged from 35 to 65 compared to all Scottish households, and under-represents those below 35 or above 65. However, there are more households on the Priority Services Register (which protects vulnerable households against disconnection, and ensures they are reconnected as soon as possible), compared to the whole of Scotland. Far fewer of our sample have Economy 7 or any kind of off-peak electricity compared to Scottish homes as a whole.

Almost all the households are on Utilita's Smart Energy tariff (with prepayment, and smart meters, which allow customers to top up using an app rather than having to go to a shop to make payments).

Table 1: Household characteristics

	This sample	All Scotland*
Proportion age 18-35	23%	29%
Proportion age 35-65	63%	41%
Proportion age 65+	14%	31%
Priority Services Register (PSR)	28%	20% (electricity), 15% (gas)**
Smart Energy tariff (gas and electricity)	99.8%	-
Economy 7/Smart Energy	0.2%	10% ¹

*Figures for Scottish household ages are from Scottish Household Survey 2019². The age bands are slightly different from the Utilita data, but this is the closest available. **The Energy Consumers Commission in Scotland estimated that 43% of Scottish households should be eligible for the PSR, but currently only 20% are registered for electricity and only 15% for gas.

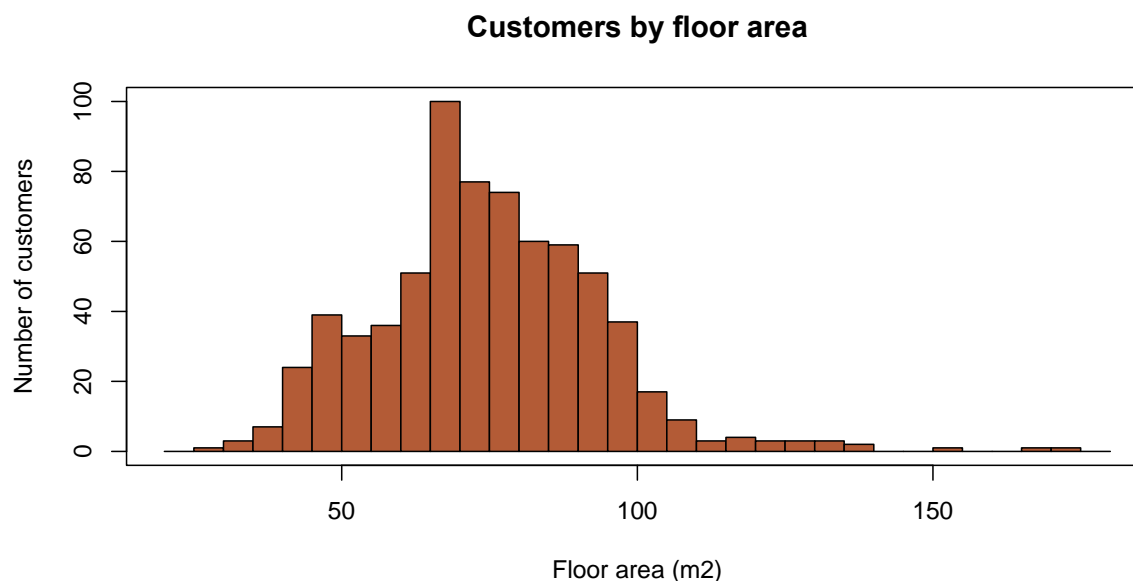
EPCs were available for 698 of the dwellings, see Table 2. The sample is skewed towards more energy-efficient dwellings than Scottish homes as a whole, with proportionately more in bands A-C, and hardly any in bands F-G. We obtained the floor areas and the ratings from EPC records.

¹ <https://www.gov.scot/publications/scottish-house-condition-survey-2019-key-findings/pages/6/>

² <https://www.gov.scot/publications/scottish-household-survey-2019-key-findings/pages/4/>

The mean dwelling size is 75 m² and the median is 74 m². This is significantly smaller than the average floor area for homes in Scotland, 97m².³ Chart 1 shows the distribution of sizes.

Chart 1: The distribution of dwelling floor area. The sample size is 698 homes.



A high proportion of the homes have EPC rating A-C: substantially more than in the Scottish Housing Survey (2021) which found only 52% were A-C.

Table 2: EPC ratings in 2022 for the Utilita sample (for 698 homes, have an EPC).

	This sample	All Scotland*
Proportion age A-C	63%	45%
Proportion age D-E	37%	41% (Band D only)
Proportion age F-G	0.3%	14% (Bands E-G)

*Figures for Scottish EPC ratings are from Scottish Household Survey 2019, and the published bands do not exactly match our breakdown.⁴

The homes without EPCs seem to have similar energy efficiency to the others, based on their annual energy consumption, which averages between the A-C rated cases and D-E cases.

Weather

The data does not include addresses for the households (for data protection reasons). We used weather data for a single location in Scotland – the weather station at Glasgow/Bishopton. The weather data includes mean, maximum and minimum temperature by day for the whole period. From this we computed degree days for each year using a base temperature of 15.5°C. This was used as a measure of how much heating was needed during the year. 2020/21 was the coldest year, and 2021/22 the mildest.

Table 3: Degree days by year (year starts 1st May)

Year	2019/20	2020/21	2021/22	2022/23
Degree days	2375	2495	2111	2188

³ <https://www.gov.scot/publications/scottish-house-condition-survey-2021-key-findings/pages/1-key-attributes-of-the-scottish-housing-stock/>

⁴ <https://www.gov.scot/publications/scottish-house-condition-survey-2019-key-findings/pages/6/>

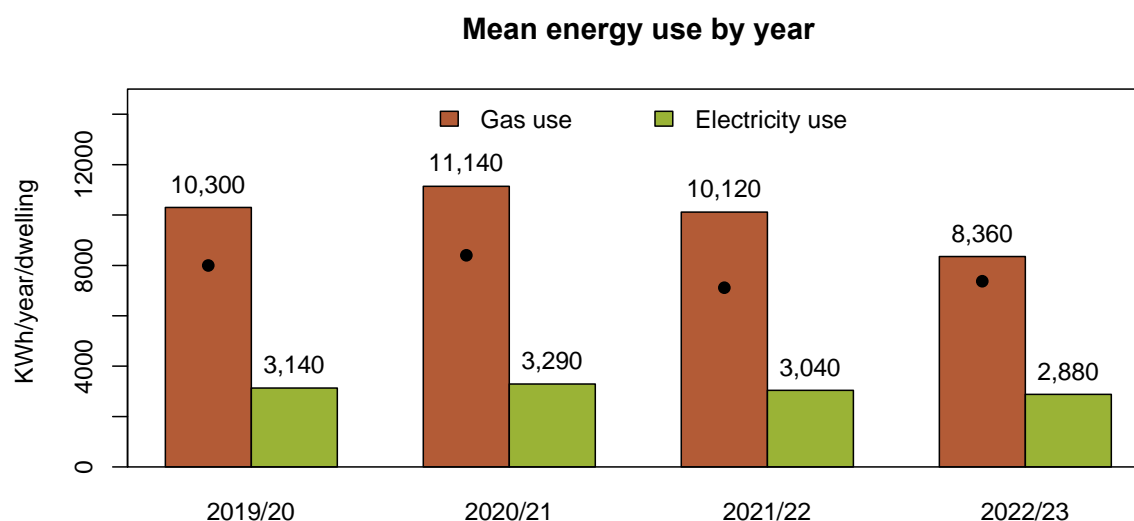
Annual Energy consumption

We have used 1st May as the start of each year, since that allows each year to include a whole heating season and fits with the data available.

Chart 2 below shows the mean energy consumption each year for gas and electricity. Note that for all years, average energy use among this sample was lower than Ofgem’s 2022 Typical Domestic Consumption Values for gas, and a little higher for electricity: 12,000kWh (Medium) for gas, and 2,900 (Medium) for electricity. In all years energy use is dramatically lower than the Scottish House Condition Survey estimate of how much is needed to keep a home comfortable (see below).

The dots on the columns for gas in Chart 2 are an indication of the degree days. Given that most gas use is for space heating (with less used for hot water and cooking) you would expect that the size of the columns to correlate with the position of the dots. However, in the year 2022/23, gas use declined considerably even though degree days slightly increased. This indicates that households were substantially underheating compared to previous years, very likely because of energy price rises.

Chart 2: Mean energy use by year. Sample size is approximately 2,000 cases (homes/years) from 640 unique homes. The smallest season sample is 450, from 2022/23.



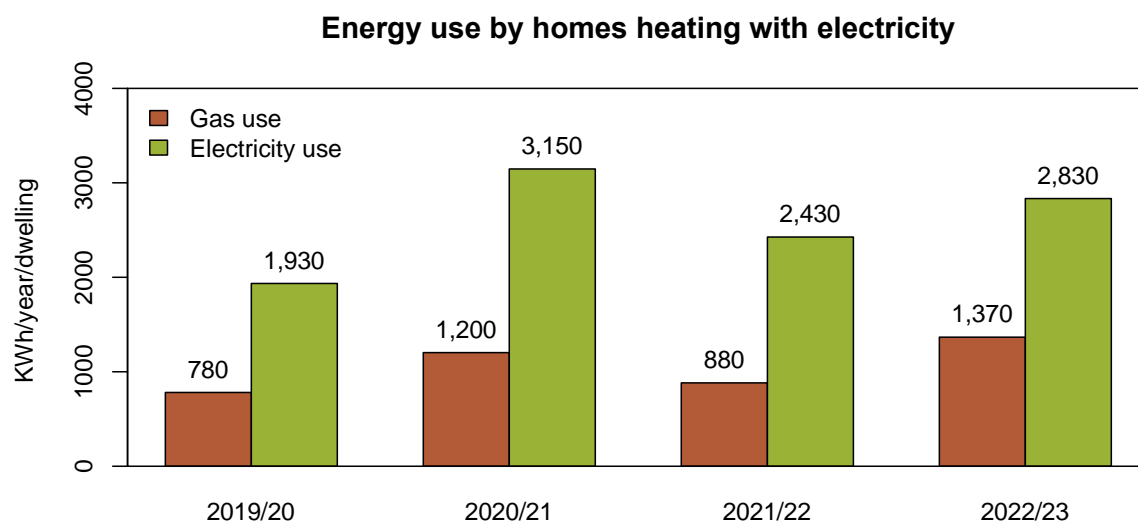
Some struggling households appear to have given up heating with gas altogether. Possibly they used electricity to heat just one room, instead of the central heating, (or possibly they supplemented electric heating with alternative heat sources such as a wood stove). We assume homes are using electricity for space heating if they use more electricity than gas and the annual gas consumption is less than 4,000 kWh – a reasonable amount for hot water only. On this basis, Table 4 shows how many were doing this in each year. There was a substantial increase in 2022/23.

Table 4: Proportion of homes using electricity for space heating. The sample sizes are the same as Chart 2 above.

	Proportion using electricity for heating
2019/20	4.3%
2020/21	3.9%
2021/22	4.7%
2022/23	6.5%

These homes are using much less energy overall than those using gas for heating. The electricity use is similar to homes using gas for heating, so perhaps they are finding alternative fuels. Their total energy use is tiny compared to estimates of what is needed to be comfortable: The Scottish House Condition Survey in 2019 estimated that an average Scottish household would need 28,427kWh a year to be comfortable in 2019 (not an especially cold year)⁵ – more than ten times as much as these very low consumers used in 2019/20.

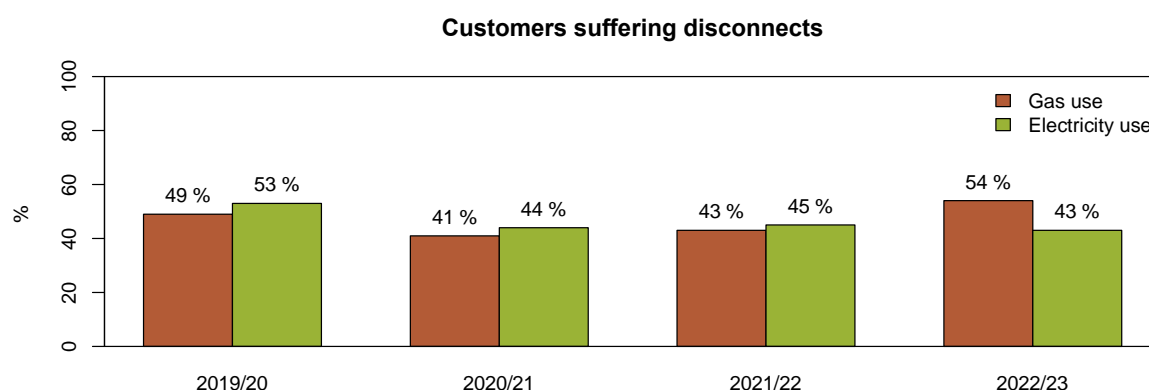
Chart 3: Mean energy use for homes apparently heating with electricity, by season. The sample sizes are very small – only 95 cases from 50 unique homes.



Self-disconnections

Self-disconnection occurs for prepay customers when the money on the meter runs out. We have only counted disconnections of more than 5 minutes – less than that could be due to forgetfulness and causes little inconvenience. The proportion of homes affected is shown in Chart 4.

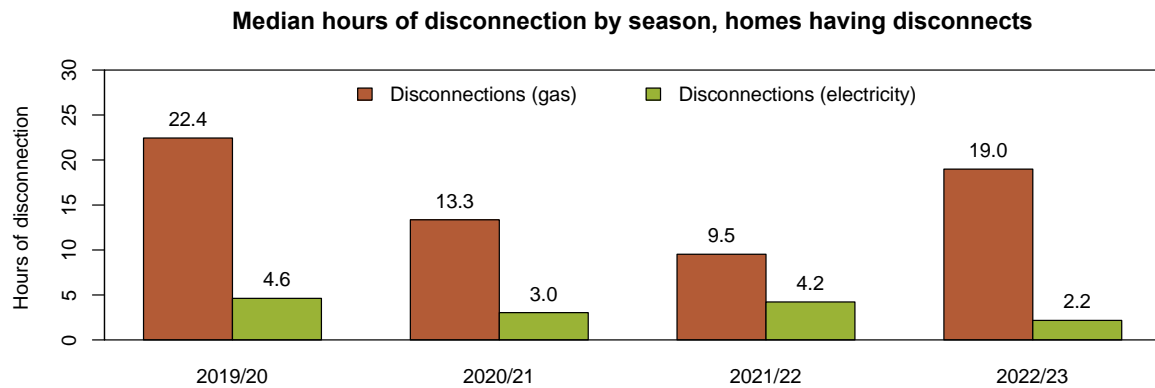
Chart 4: The proportion of homes self-disconnecting at least once during the year. Total sample size is 2,000, from 640 unique homes.



⁵ <https://www.gov.scot/publications/scottish-house-condition-survey-2019-key-findings/pages/6/>

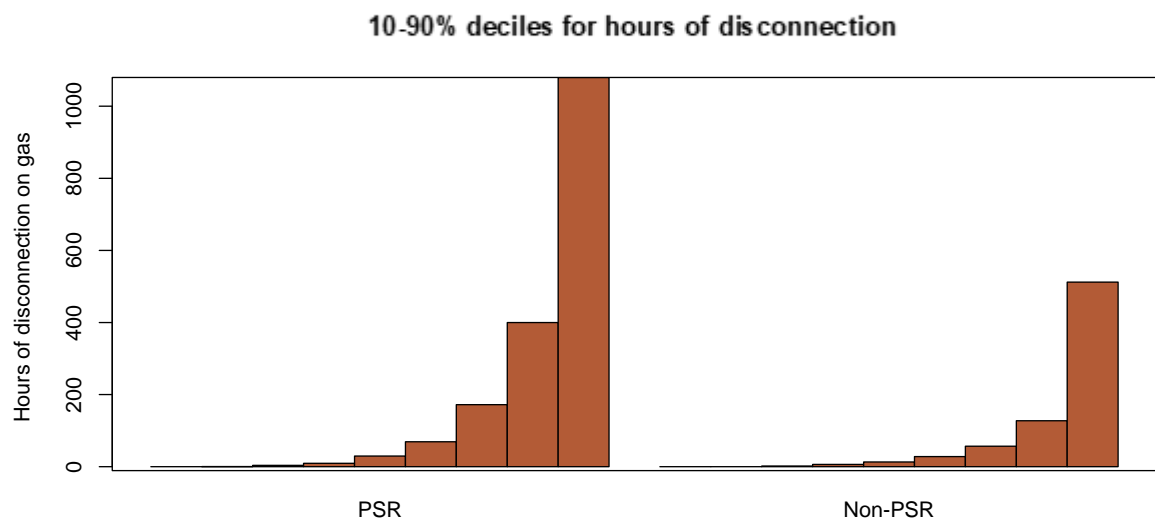
Although homes were clearly underheating more in 2022/23 than in earlier years, they did not have more disconnections than in 2019/20. The main difference is that they were more likely to disconnect from gas than from electricity. (They almost certainly prioritised electricity to run cold appliances, lights and other appliances.) Total hours disconnected from gas were generally shorter in 2022/23 than in 2019/20. The distribution is very skewed, so we compared using medians rather than means.

Chart 5: Median hours of disconnection for homes disconnected more than 5 minutes from gas or electric meter. The sample size is 1,160 cases, from 500 unique homes. The smallest season sample is 270, for 2021/22.



The proportion of homes on the PSR disconnected is similar to other homes (even though these households should have some protection). However, homes on PSR tend to have longer periods of disconnection. For gas, the medians are 29.87 hours/year for PSR homes compared to 12.3 for others – well over twice as long. For electricity, the medians are 5.8 hours for PSR homes and 3.1 hours for others. The distribution is shown in Chart 6, below.

Chart 6: The distribution (10% to 90% deciles) of hours of disconnection from gas for homes on PSR and others – all seasons combined, for homes having disconnections of any sort. The sample sizes are 350 for PSR and 810 for the others.



Comparison with England

We have compared the Scottish sample with the English sample for annual energy consumption and self-disconnections. For both sets of data we count 1st May as the start of the year, so that each year includes a whole heating season.

The main findings from this comparison are:

- The Scottish sample households are a little older: 14% are aged 65+ compared to 10% in England.
- The size of homes is similar, but in Scotland there are a higher proportion of homes with good EPC ratings from A-C (63% in Scotland cf 50% in England).
- Annual energy consumption in Scotland is higher for gas, but lower for electricity.
- Self-disconnections are broadly similar in the first three years but in 2022/23 the Scottish households were less likely to disconnect and did so for less time. 2019/20 was the worst year for disconnections in Scotland, while 2022/23 was worst in England.

Recommendations

Energy use by this sample of homes on prepay meters in Scotland is dramatically lower than the average estimated in the Scottish House Condition Survey for what is needed to keep a home comfortable. Among those using electric heating (even in spite of having a gas supply), they are using tiny amounts of energy, and they had to sacrifice comfort still further in order to cope with the energy price rises and avoid disconnections in 2022/23. The Energy Bills Support Scheme was not sufficient to stop gas disconnections among these households – nor even to stop disconnections among the vulnerable households listed on the Priority Services Register.

For this reason, households at risk of fuel poverty in Scotland need more financial help for the coming winter. This assistance should be paid directly to the gas and electricity accounts, or as a temporary reduced tariff (sometimes called a ‘social tariff’) so it is not diverted to meet other living expenses. The support should result in roughly halving the unit rates for electricity and gas, so that costs return to the level they were in 2019, before the high energy-price rises. Reducing tariffs for both electricity and gas means that households are not forced to juggle between energy uses, allowing their gas meters to run to zero and getting self-disconnected in order to continue topping up and staying connected to electricity.

Actual consumption data, as well as disconnection data for prepay customers, can be used as a basis for targeting support – possibly in parallel to means-tested benefits (which miss some fuel-poor groups). Energy suppliers already have access to consumption data, and they already know which households are self-rationing their energy use severely.

Thinking beyond the coming winter, households at risk of fuel poverty need Government support to pay for energy efficiency improvements that will remove them from fuel poverty forever. This will help to meet Scotland’s Net Zero objectives at the same time as addressing fuel poverty.

There is a good case for carrying out further analysis of energy-consumption data in Scotland before and after the recent energy price rises – especially linked to Cold Weather Payments. There is strong evidence from England that these payments are insufficient to prevent disconnections, and they do not go to all households that need additional support in very cold weather. Arguably, this is even more important in Scotland than England because of harsher winters. However, we were not able to examine Cold Weather Payments here.