Scenario Modelling on Social Energy Tariff proposal

Overview:

Scenario modelling was undertaken using the achieved sample from the 2023 Scottish House Condition Survey (SHCS) to model fuel poverty rates under a proposed social energy tariff, as well to provide an estimate of the total costs.

Under this proposal, eligibility for the social energy tariff is based on a combination of net household income before housing costs, the amount of people in the household, rural/urban location, and if a household member has a medical need which requires additional energy use[1]. With the energy tariff reduction dependent on the relationship between these eligibility criteria. This is set out in Table 1.

Methodology:

To derive the discount received under the proposed social energy tariff, households are assigned to one of 9 groups, based on the combination of the eligibility criteria they meet.

These 9 groups are set out in Table 1, alongside the discount they receive on their energy tariff and standing charge, how many of this type of household there are in Scotland, and what percentage of the group is fuel poor. Table 1 shows that of the 2.535 million households in Scotland, 660,000 (or 24%) would be eligible for a discount and that 83% of these households are in fuel poverty.

[1] It is not possible to measure if a household member has a medical need requiring additional energy use, using SHCS data. Therefore, we have used certain social security benefits a household receives as a proxy. The full list of social security benefits which make a household eligible can be found in the Annex.

Table 1: Proposed Energy Bill KWH reduction amounts under social tariff

Group ID	Net Household Income (before housing costs) £s	Household Composition	Rural / Urban	Medical Need	Energy Tariff unit price discount / removal of Standing Charge (SC)	Number of households	Percent of households in group in Fuel Poverty
A	Less than 15,000	1-3 people	Urban	No	30% + remove SC	233,000	95
B	15,000 – 20,000	1-3 people	Urban	No	20%	178,000	54
C	Less than 15,000	More than 3 people	Urban	No	30% + remove SC	7,000	100
D	15,000 – 20,000	More than 3 people	Urban	No	25%	8,000	100
E	Less than 15,000	1-3 people	Rural	No	35% + remove SC	45,000	98
F	15,000 – 20,000	1-3 people	Rural	No	25%	30,000	81
G	Less than 15,000	More than 3 people	Rural	No	35% + remove SC	[low]	100
H	15,000 – 20,000	More than 3 people	Rural	No	30%	[low]	100
I	Less than 20,000	All	All	Yes	50% + remove SC	155,000	94
J	More than 20,000	All	All	All	None	1,875,000	17
Total eligible households						660,000	83
Total non-eligible households						1,875,000	17
Total households Scotland						2,535,000	34

To estimate the impact on fuel poverty once households were assigned to a group, their modelled fuel bills were deconstructed into the standing charge and the kwh rate for each fuel type used. The applicable discount was then applied (see Table 1) to the unit rate of each fuel type used by the household, with the standing charge added back on for those households that do not qualify for the standing charge removal, and the household's modelled fuel bill is then rebuilt.

Using the new modelled fuel bills the fuel poverty calculation was then rerun in order to derive the fuel poverty rate under the proposed social energy tariff.

To estimate an approximate cost for the proposed social energy tariff, the new modelled bill was subtracted from the household's original modelled fuel bill. The difference for each household was then added together to produce estimated savings for households and an estimated cost of the proposed tariff. It should be noted that the fuel bill that is calculated as part of the SHCS is a modelled fuel bill based on a household's required energy use to meet one of four statutory heating regimes dependant on the characteristics of members of the household[2]. This differs from the actual energy use of the household, which may vary considerably depending on personal preference and priorities relative to other types of household expenditure. Due to this, the modelled fuel bills used as part of the fuel poverty calculation in the SHCS may overestimate how much a household actually pays for fuel.

In order to provide an estimated cost of the proposed social energy tariff calibrated to actual consumption, we have also used the ratio between the cost of the average modelled SHCS fuel bill with standing charges removed (£3,072) and the estimated average domestic gas and electricity fuel bill (£1,882), produced by the Department for Energy Security and Net Zero[3], which also exclude standing charges. This results in a ratio of 0.613.

To calculate calibrated fuel bills we applied the ratio (0.613) between the average SHCS modelled fuel bill (with standing charges removed) and the estimated average annual bill provided by DESNZ to each household's annual modelled energy consumption in the SHCS to create a calibrated energy use figure for each type of energy used in the household. We then applied the SHCS per unit rate to the new calibrated energy consumption and added in standing charges to create a new calibrated bill without the social tariff.

Using the eligibility criteria set out in Table 1, we then applied the discounts a household was eligible for to the per kwh price of the households energy. These unit rates where then combined with the households calibrated energy consumption in order to create a calibrated fuel bill under the proposed social energy tariff. The difference between these bills was then summed to derive the calibrated cost of the social tariff.

[2] The Fuel Poverty (Enhanced Heating) (Scotland) Regulations 2020

[3] Annual domestic energy bills - GOV.UK, Table 2.2.2 and Table 2.3.2. These tables already exclude the standing charges.

Discussion:

The fuel poverty rates for 2023 are compared to the fuel poverty rates for 2023 under the proposed social energy tariff in Table 2.

Table 2: Fuel Poverty Rates for 2023, comparing with and without social tariff

	2023 SHCS	2023 SHCS with proposed social energy tariff	Difference
Fuel Poor Households	861,000	726,000	135,000
Fuel Poverty Rate	34	29	5 pp
Extreme Fuel Poor Households	491,000	290,000	202,000
Extreme Fuel Poverty Rate	19.4	11	8 pp

As shown in Table 2, under this proposed social energy tariff the number of households in fuel poverty is estimated to be reduced by around 135,000 households or 5 percentage points. Furthermore, an estimated 202,000 fewer households would be in extreme fuel poverty, a reduction of around 8 percentage points.

It should be noted that the depth of fuel poverty for those households that remain in fuel poverty will also be reduced.

Table 3: Annual Cost per group

ID	Household count	Total cost of discounts	Average reduction received by household in group	Calibrated total cost of discounts	Calibrated average reduction per household
A	233,000	£242,925,000	£1,000	£177,722,000	£800
B	178,000	£90,267,000	£500	£55,289,000	£300
C	7,000	£8,609,000	£1,200	£6,137,000	£800
D	8,000	£5,949,000	£700	£3,644,000	£500
E	45,000	£73,268,000	£1,600	£47,504,000	£1,100
F	30,000	£29,240,000	£1,000	£17,909,000	£600
G + H	4,000	£7,506,000,	£2,100	£4,700,000	£1,300
I	155,000	£234,727,000	£1,500	£161,843,000	£1,000
J	1,875,000	£0	£0	£0	£0
Total	2,535,000	£692,490,000	£1,000	£474,904,000	£700

Table 3 shows the number of households in each group4, the estimated cost of the proposed social energy tariff per group, and the average reduction in bills per household for each group. It also includes the calibrated cost to show an alternative

[4] Due to small sample sizes groups G and H are combined for this table.

cost estimate. The sum of reductions in bills has been used as a proxy for the annual cost of the proposed social energy tariff.

On average, using SHCS modelled fuel bills eligible households would receive a £1,000 reduction on their fuel bill each year, with the total cost estimated to be approximately £692 million each year. For the calibrated cost, the average fuel bill reduction per household is £700 per year with the total cost to be approximately £475 million per year. The calibrated cost would therefore be roughly two thirds of the cost based on households heating their homes to the four statutory fuel poverty heating regimes.

Caveats:

The energy use figures used in the SHCS are based on modelled energy use and not actual household energy consumption. Modelled annual consumption is calculated based on households being placed on one of four heating regimes dependant on the characteristics of members of the household[5].

As the costs in this paper are based on modelled energy use and not actual consumption, which will vary depending on the household's behaviour, our cost estimates may not align with other sources.

Due to this we have provided estimated costs calibrated to DESNZ statistics on domestic energy use. However, the DESNZ statistics are based on gas and electricity only, not considering other fuel types. Therefore, if all fuel types were included the ratio between modelled fuel costs in the SHCS and estimated actual fuel costs provided by DESNZ may be slightly higher or lower. As the vast majority of household in Scotland use gas as their primary heating fuel (81%) we expect any differences to be minimal, however we are unable to quantify this.

It should be noted that the SHCS is not the official source for benefits data and relies on self-reported data gathered during the survey, therefore there may be differences with other administrative sources such as DWP data.

This analysis is based on 2023 SHCS data with no underlying changes aside from the proposed social energy tariff. Therefore, household incomes, and average fuel prices used reflect the values in the survey in 2023. Furthermore, the Cost of Living payments and the Energy Bill Support Scheme are included in this analysis[6]. This allows us to make a direct comparison to the most recent Accredited Official statistics on fuel poverty. As such, the fuel poverty rates under the proposed social energy tariff included in this analysis should be read as what fuel poverty would be in 2023 with a social tariff with all other factors remaining equal

[5] The Fuel Poverty (Enhanced Heating) (Scotland) Regulations 2020

[6] Eligibility criteria for the £900 COL payment, £150 Disability COL payment and £300 pensioner COL payment is available at Cost of Living Payments 2022 to 2024 while details of the EBSS are available at Help with your energy bills. For the £900 COL payment households had £601 added to their income, as the remaining £299 was paid at the start of 2024 so will be included in the 2024 key findings report. The £201 payment applied to household energy bills as part of the EBSS represents the portion of the total £400 paid in 2023.

For this analysis the number of people in a household includes everyone who lives at the address, including children, and those temporarily living away from home. For example, people working temporarily away from home, such as offshore workers, will count towards the number of people in the household.

Annex:

Table 4: Chosen social security benefits to approximate medical need requiring additional energy use and their counts in the 2023 SHCS

Benefit	Numbers of households recorded as in receipt in 2023 SHCS
Personal Independence Payment	287,000
Disability Living Allowance	97,000
Attendance Allowance	70,000
Severe Disablement Allowance	9,000
Incapacity Benefit	4,000
Industrial Injuries Disablement	8,000
Armed Forces Compensation	2,000
Child Disability Payment	22,000
Adult Disability Payment	31,000
Total	529,000
Total unique households	469,000
Total Eligible Households under proposed social tariff	155,000

It should be noted that some households in Table 4 above will receive more than one of the listed benefits. As such we have provided an estimate total number of unique households in receipt of one or more of these benefits.

Furthermore, not every household who receives on of the above benefits will be eligible for the proposed social tariff due to the income criteria. Therefore while we estimate 469,000 unique households are in receipt of at least one of the above benefits an estimated 155,000 (33%) would be eligible for the proposed social tariff.