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for energy consumers

Assessing the Distributional Impact of Economic Regulation

This document sets out our approach to assessing the distributional impacts of our policies. It will be of interest to those that want to know how we consider impacts on different groups of consumers in Great Britain. Please provide any comments to **chief.economist@ofgem.gov.uk**.

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Introduction

1. Ofgem's primary objective is to protect current and future energy consumers. As the energy market takes a more decentralised, decarbonised and digitalised path, we need to understand how the policy decisions we make can affect how the costs and benefits of using energy and participating in a smart energy system are distributed across different types of households. This is why in our Consumer Vulnerability Strategy - Consumer Vulnerability Strategy 2025 (PDF, 1,200KB) p.59, Ofgem (2019) - we committed to strengthening our approach to assessing the distributional impacts of our policies.

2. To this end, we have developed a framework that we can use, as appropriate, to understand the impact of our policies on particular groups of consumers who may be in vulnerable situations. It can also help us aggregate the impacts of our policies over time. Although it focuses on energy regulation, it is sufficiently general to contribute to wider discussion on distributional impacts of policies in other regulated sectors. It is designed to accompany our recently updated Impact Assessment (IA) guidance (Impact Assessment Guidance (PDF, 517KB)) and provide more detail for those who wish to understand our approach better.

3. This paper is structured as follows. In section 2 we provide a high level overview of our framework. In sections 3 and 4 we describe the framework in detail, and provide examples of how it can be applied in practice. In the annex we discuss the main dataset that we use in the framework and illustrate how energy expenditure varies for different groups of consumers across disposable income deciles.

4. This paper is intended to provide a general overview of our framework. Our IA guidance sets out precisely how and when we will apply it internally, which will depend on the specific considerations of the policy being considered. Although we may not be able to use the framework for every IA, we will decide whether it is appropriate to do so at the start of the IA process. Where we decide not to use it we will explain the reasons for that in the IA.

1. An Overview of the Framework

5. Our framework has two parts, illustrated in Figure 1 overleaf. The first is the quantitative analysis of how a policy affects the bills of households that differ in income and other characteristics. It allows us to produce these bill impacts for:

    - each of the statutory groups of consumers that we must have regard to when making decisions. Such groups can be summarised as low income; disability / chronic illness; pensionable age; and rural areas.
    - some consumers we identified in our Consumer Vulnerability Strategy. However, Data is not available for all characteristics of vulnerability identified.
    - a wider set of consumers that we have categorised into distinct groups of GB households ("consumer archetypes").

6. The second part of the framework allows us to produce qualitative commentary on how these consumer archetypes differ in socioeconomic and attitudinal characteristics. Combining this with the quantitative bill impacts, we can provide a more complete picture of how different types of consumers may be affected by a policy.

Quantitative Analysis

7. Using data on how household consumption varies by income quintile, we examine three types of impacts:
    - Absolute energy bill impact.
    - Bill impact as a percentage of income.
    - Equity-weighted £ bill

Qualitative Commentary

8. We provide additional context to the quantitative analysis by incorporating data on socioeconomic indicators, energy market engagements and household use of smart technology.

Categories of Households Covered

9. Statutory and Community and Voluntary Sector (CVS) groups: includes households with individuals who are disabled, of pensionable age, on low income, residing in rural areas, or unemployed. It also covers households without internet access and single-parent households.

10. Consumer Archetypes: Great Britain's population is segmented into distinct household groups known as "archetypes", differentiated by income, consumption patterns, market engagement, and energy usage.

11. Our framework uses three groups of data to help us assess impact:

- Disposable income and energy expenditure – to assess how a policy may affect how much consumers spend on energy as a proportion of their income.
- Socio-economic factors such as age, disability status, and employment status – to assess how a policy may affect vulnerable groups.
- Attitudinal and technology adoption, such as engagement in the energy market and electric vehicle uptake – to give insight into how policies may affect those with different attitudes towards and experiences of the energy market. It is worth noting that in time we aim to build on this data with more information on consumers' actual consumption profiles and the extent to which they can shift their consumption flexibly throughout the day.

2. Quantitative analysis - impact on energy bills for different groups of consumers

12. We use three metrics to calculate how the distributional impact of policies vary with income for different groups of consumers:

- Absolute pound (£) savings or costs.
- Savings or costs as a percentage of disposable income.
- Equity-weighted pound (£) savings, capturing the fact that an additional unit of income improves the welfare of a low-income household more than that of a higher-income household. This is based on the standard economic principle of diminishing

marginal utility of income and in addition to providing absolute (£) savings, it is standard practice to apply equity/distributional weights, as set out in HM Treasury (2022, p.96), The Green Book: Central government guidance on appraisal and evaluation (PDF, 1,320KB).

13. The framework is sufficiently flexible to handle a range of different policies that we may implement. This ranges from policies whose impacts are straightforward in that they affect all consumers in a similar way, such as reducing their bills by a given percentage, to cases where the impact on consumers – and in particular whether or not they benefit from the policy – will depend on their level of energy consumption. Again, we aim to build on these examples and adapt the framework in time for examples where impact may vary according to consumers' consumption profiles. To illustrate these two cases, we provide examples based on the statutory groups of consumers set out previously, but results could also be produced for a wider set of consumer groups for which we have income and expenditure information. We discuss this in the final part of this section.

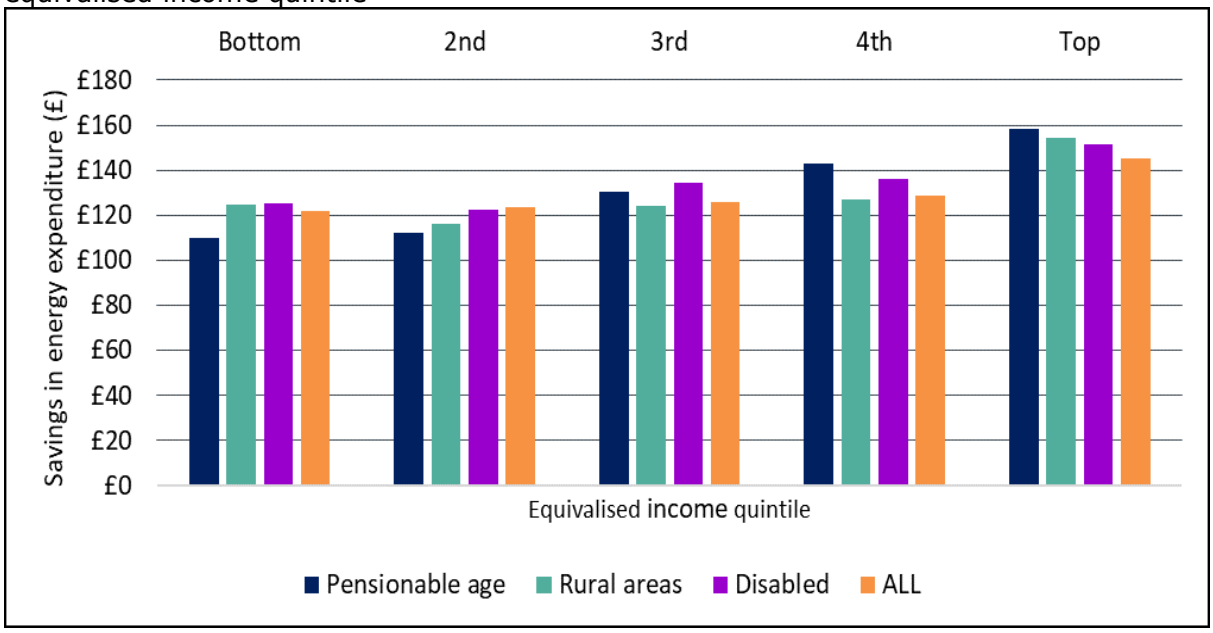
Simplest case: everyone's energy bills decrease or increase by the same percentage

14. It is possible to have a policy that decreases or increases the bills of households by the same percentage across all types of households, independent of their level of consumption. So, while the absolute pound savings will vary with energy consumption, the percentage change in the bill will be the same for all. In such a case, we can calculate distributional impacts by assuming that the energy expenditure of all consumer groups changes by this fixed percentage. Consider a policy such as the Default Tariff Cap (DTC), which sets the maximum amount that suppliers can charge per unit of energy consumed for customers on default and standard variable tariffs. As an instance, an impact assessment of ours from 2018 (Appendix 11 - Statutory Consultation – Default tariff cap - Draft impact assessment (PDF, 1,963KB)) showed that this would save a consumer with typical consumption on these tariffs around £95 annually, or around £0.006 per unit of energy. Essentially, we set separate DTC levels for gas and electricity (rather than per unit of energy). The DTC also sets the standing charge. If the overall energy consumption of any given household remains relatively unchanged in response to this policy (i.e. energy needs do not change a result of the reduction in price, and consumers do not

feel the need to consume more) our data on energy expenditure suggested this saving corresponded roughly to a 10% reduction in the bills of default and standard variable tariff customers, on average.

15. Using the Office for National Statistics' Living Costs and Food Survey data on energy expenditure by income, we can show that this reduction in energy expenditure of £95 results – according to the 2024 version of our distributional framework – in the absolute £ savings, shown in Figure 1.

Figure 1: Impact of the fixed reform on Electricity and Gas bills, by categorical group and equivalised income quintile



Source: Ofgem analysis of data from the Living Cost and Food Survey

Table 1: Policy savings per categorical group and income quintile on Electricity and Gas bills

Consumer Type	Bottom	2nd	3rd	4th	Top
Pensionable Age	£110	£112	£130	£143	£158
Rural Areas	£125	£116	£124	£127	£154
Disabled	£125	£123	£134	£136	£151
All	£122	£124	£126	£129	£145

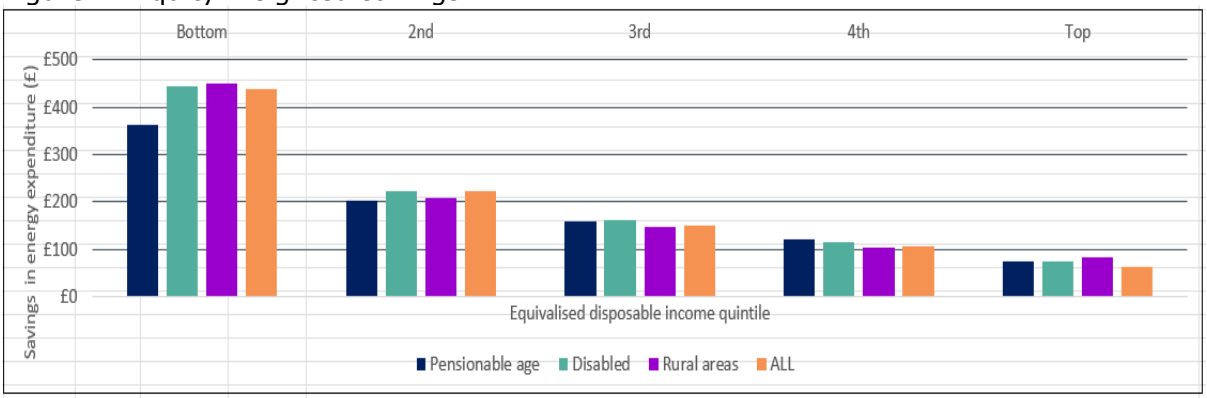
Source: Ofgem analysis of data from the Living Cost and Food Survey

16. Households in the top income decile generally have the highest energy consumption and so their absolute savings are higher, but the differences in savings across the remaining 4 quintiles are smaller. Within a quintile we can see significant variation in how the savings of the statutory groups of consumers compare to the average; in a number of cases their savings are higher due to higher energy use. In general, there

may be substantial variation of consumption between different households in the same income quintile, and thus also variation in savings.

17. We can then show the impacts based on equity-weighted savings. This approach increases the value of each £1 of savings to those of lower income. As Figure 2 shows, this results in a much higher value of saving to the lowest income consumers than is the case in Figure 1.

Figure 2: Equity-weighted savings



Source: Ofgem analysis of data from the Living Cost and Food Survey
Note: These figures are not real pounds, but adjusted savings to capture the higher value of an additional pound of income to a low-income household than a high-income household. For a discussion, see HM Treasury (2022, p.96) The Green Book: Central government guidance on appraisal and evaluation (PDF, 1,320KB).

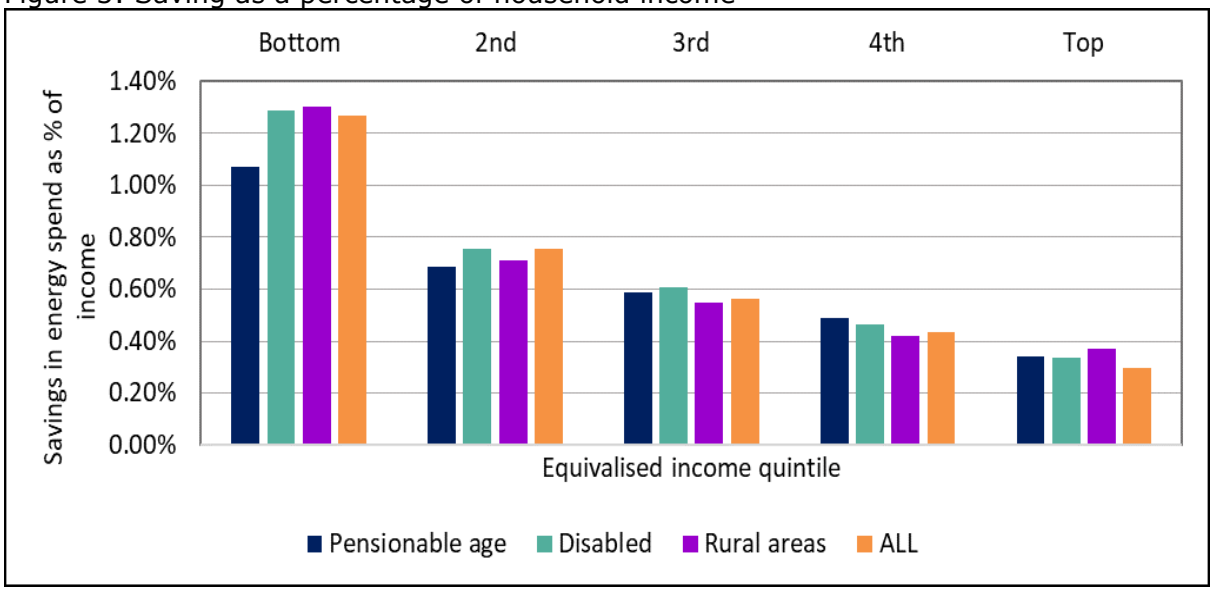
Table 2: Equity Adjusted Results

Consumer Type	**Bottom**	**2nd**	**3rd**	**4th**	**Top**
Pensionable Age	£363	£202	£158	£120	£74
Rural Areas	£450	£208	£147	£103	£83
Disabled	£443	£222	£163	£115	£73
All	£439	£222	£151	£106	£62

Source: Ofgem analysis of data from the Living Cost and Food Survey

18. The savings as a percentage of household income are shown in Figure 3. As energy expenditure is a higher proportion of income for lower income households, the percentage savings are decreasing across the income quintiles.

Figure 3: Saving as a percentage of household income



Source: Ofgem analysis of data from the Living Cost and Food Survey

Table 3: Savings in Electricity and Gas bills expenditure as a % of income

Consumer Type	Bottom	2nd	3rd	4th	Top
Pensionable Age	1.07%	0.69%	0.59%	0.49%	0.34%
Rural Areas	1.30%	0.71%	0.55%	0.42%	0.37%
Disabled	1.29%	0.75%	0.61%	0.47%	0.34%
All	1.27%	0.75%	0.56%	0.43%	0.29%

Source: Ofgem analysis of data from the Living Cost and Food Survey

Complex cases: A matrix of winners and losers, where the percentage impact on bills depends on energy consumption

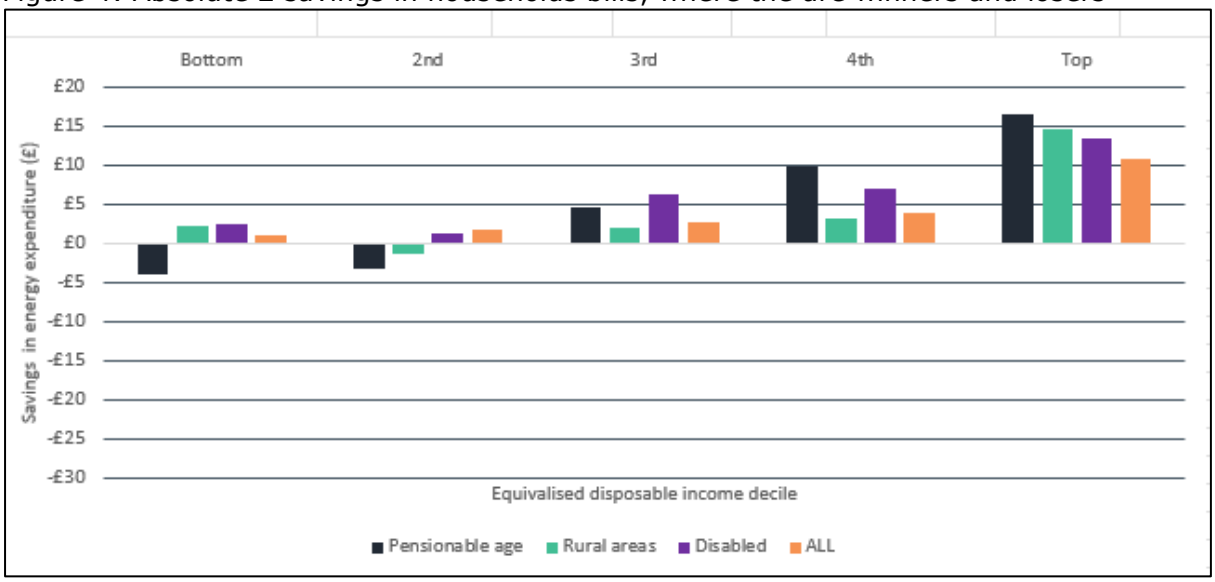
19. The framework can accommodate the assessment of more complex cases, where the percentage impact that a policy has on the energy bills of a household will vary depending on the level of consumption. There are a range of potential scenarios. To better understand these, we:

I. Estimate the relationship between savings and consumption, ie, what the level of savings would be at any given level of consumption. We do this by calculating the absolute £ savings that the policy would generate for each of the low, medium and high categories of Ofgem's Typical Domestic Consumption Values (TDCV) for electricity, gas or both combined (depending on which is relevant to the policy). Typical domestic consumption values are calculated by taking the lower, median and upper quartiles of household energy consumption, averaged over two years.

See Ofgem (2020) Decision on revised Typical Domestic Consumption Values for gas and electricity and Economy 7 consumption split (PDF, 204KB).To illustrate how this works, consider a hypothetical policy that has the following effect: households with a low TDCV pay £30 less as previously; those with medium TDCV consumption pay the same; and those with high consumption pay £5 more. We can use this information to derive a continuous relationship between consumption and savings; we call this the "savings estimator".

II. We use the savings estimator to calculate the average level of savings that each type of household would get, given their level of energy consumption and income. The results are presented in Figure 4, which shows which of the statutory groups win (positive bars) and lose (negative bars). As in the previous example, we can also generate results as a proportion of income (Figure 5) and equity weighted savings.

Figure 4: Absolute £ savings in households bills, where the are winners and losers



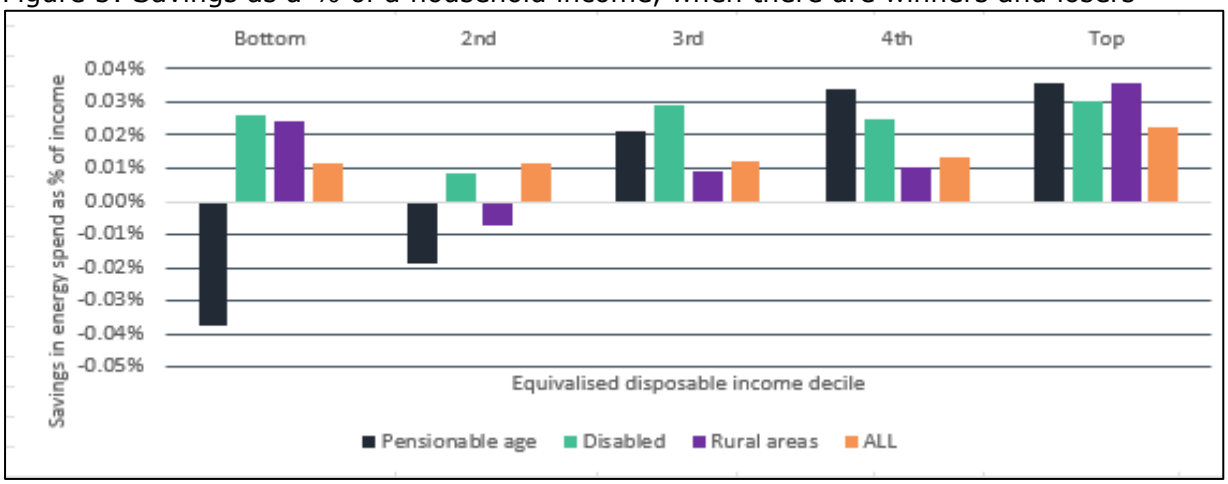
Source: Ofgem analysis of data from the Living Cost and Food Survey

Table 4: Policy savings per categorical group and income quintile on Electricity and Gas bills

Consumer Type	Bottom	2nd	3rd	4th	Top
Pensionable Age	-£4	-£3	£5	£10	£17
Rural Areas	£2	-£1	£2	£3	£15
Disabled	£3	£1	£6	£7	£14
All	£1	£2	£3	£4	£11

Source: Ofgem analysis of data from the Living Cost and Food Survey

Figure 5: Savings as a % of a household income, when there are winners and losers



Source: Ofgem analysis of data from the Living Cost and Food Survey

Table 5: Savings in Electricity and Gas bills expenditure as a % of income

Consumer Type	**Bottom**	**2nd**	**3rd**	**4th**	**Top**
Pensionable Age	-0.04%	-0.02%	0.02%	0.03%	0.04%
Rural Areas	0.02%	-0.01%	0.01%	0.01%	0.04%
Disabled	0.03%	0.01%	0.03%	0.02%	0.03%
All	0.01%	0.01%	0.01%	0.01%	0.02%

Source: Ofgem analysis of data from the Living Cost and Food Survey

3. Estimating bill impacts for a wider set of consumers - Ofgem's Consumer Archetypes

20. Ofgem commissioned the Centre for Sustainable Energy (CSE) to construct a series of 24 *consumer archetypes* using the Living Cost and Food Survey (LCFS) and English Housing Survey (EHS), among other data sources, to try to understand how different types of consumers are impacted by bill changes as a result of Ofgem policies and changes to energy costs. Each consumer archetype represents a portion of domestic consumers who share some common characteristics. The archetypes have been created by clustering based on a number of variables, including income, disability benefit, number of children, main heating fuel, payment method and energy consumption, among others. This resulted in 24 consumer archetypes from A1 through to J24, where each letter coincides approximately with a different income decile. While the above examples focus on the statutory group of consumers that we must have regard to, we can now calculate these types of bill impacts for any group of consumers that we have income and expenditure data for.

21. As part of our extensive work on consumer vulnerability, we are able to segment Great Britain's population into distinct groups of households, called "archetypes", that differ in a range of socioeconomic and behavioural characteristics. Since the archetypes group households together based on their similarity across a number of variables, this allows us to see how different policies impact different archetypes, for example through the archetype's typical consumption. Consequently, we can see how the policy impacts consumer archetypes across a number of household characteristics including income, age, energy consumption (including the distribution within the archetype), disability benefit recipience, payment method, Government Office Region, fuel type, receipt of warm home discount or winter fuel allowance etc.

    Each archetype approximates a relatively large group of consumers; therefore, it is best to think of each archetype as representing and providing information on a cohort of similar households in society, rather than just describing one household, or 24 households in total.

22. Ofgem previously commissioned the Centre for Sustainable Energy (CSE) to develop an initial set of archetypes (Centre for Sustainable Energy (2014) "Beyond average consumption"). In October 2019, when we published our new Consumer Vulnerability Strategy, we committed to updating the archetypes to ensure that they are representative of consumers in the market today. CSE has developed a new set of 13 archetypes using new sources of data (including the Ofgem Consumer Engagement Survey), adding more detail and variety of indicators. There are four stages in developing the archetypes:
    1. Compiling an energy consumer data set,
    2. Calculating energy consumption data,
    3. Generating energy consumer archetypes, and
    4. Analysis, profiling and reporting on the archetypes.

23. The archetypes contain four years of data from the LCF on important indicators such as energy spend and household income, age, disability status and whether they live in a rural area. They also contain a wider set of socioeconomic and attitudinal indicators.

20. The archetypes are summarised in Table 1 below from the Sheet 'Headline Statistics' of the 2024 Archetypes version and the of the Sheet 'Example B Winning or Losers' of 2024 Distributional Framework. The archetypes can be found here: 2024OfgemFinalEnergyConsumerArchetypes V3 (Excel, 328KB). Columns (2), (4), (5) and (6) provide the quantitative information we need to calculate the average bill impact for any given archetype. For each archetype, we also have information on how energy consumption varies across each disposable income decile, allowing us to produce impacts by income decile and graphs similar to those in Figures 1 to 5 if required.

Table 1: summary of the 2024 consumer archetypes

Archetypes	**Number of Households**	**Heating Fuel**	**Average household gross income**	**Average Electricity consumption (kWh)**	**Average Gas consumption (kWh)**	**Main attributes (key words)**
A1	578,333	Mains gas	£15,643	2,742	10,933	lowest income; mains gas; retired; 75+ years old; single adults; owner-occupied; urban; not early adopters; no internet connection; no degree or higher
A2	868,191	Mains gas	£17,327	2,849	9,464	low income; housing association; single adults; 55+ years old; prepayment meter; WHDS eligible; good EPC rating; no degree or higher

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
A3	883,413	Mains gas	£18,195	3,519	10,622	low income; mains gas; retired/unoccupied < 65 years old; prepayment meter; housing association/local authority; disability benefits; mobility disability; CWP eligible; WHDS eligible; good EPC rating; no degree or higher
B4	731,318	Electricity	£18,776	4,811	-	low income; electric heating; retired/unoccupied; 65+ years old; purpose-built flats; owner-occupied/housing association; high electricity consumption

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
B5	465,288	Electricity/ Other (Solid fuel/LPG)	£22,423	6,597	-	low income; electric/solid fuel/LPG heating; 45+ years old; retired/unoccupied; disability benefits; high electricity consumption
B6	920,172	Mains gas	£24,869	3,028	10,525	low income; mains gas; private rented/local authority; 45-74 years old; low gas consumption; early adopters
C7	659,595	Mains gas	£29,257	3,649	13,119	lower-middle income; mains gas; purpose-built flats; housing association/local authority; full-time/part-time employed/ 25-54 years old; early adopters; high proportion BAME.

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
C8	228,477	Electricity	£32,240	5,587	-	lower middle-income; electric heating; purpose-built flat; private rented/local authority; full-time/part-time employed; 1 child; 25-54; early adopters; high proportion BAME.
C9	3,408,514	Mains gas	£32,344	3,337	13,685	lower-middle income; couples/single adult woman; retired; 65+ years old; owner occupied semi-detached/terraced dwellings; average energy consumption; WFP eligible.

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
D10	1,163,946	Mains gas	£31,819	3,881	13,981	lower-middle income; mains gas; disability benefits; mobility & dexterity disability; retired/unoccupied; owner occupied; semi-detached/terraced; 55+ years old; not early adopters; CWP & WFP eligible.
D11	1,197,075	Mains gas	£40,980	2,482	8,782	lower-middle income; low energy consumption; good EPC rating; purpose-built flats; full-time employed; 25-74 years old; early adopters; urban; low scheme eligibility.

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
D12	1,457,829	Mains gas	£38,927	3,952	16,065	lower-middle income; retired 65+; owner occupied; detached; couples; high gas consumption; not early adopters; eligible for WFP; suburbanites.
E13	690,892	Mains gas	£38,351	5,075	16,722	middle income; <35-54 year old unoccupied/retirees; 1+ children; disability benefits; early adopters; high energy consumption; CWP & WHDS eligible; prepayment meter; hard-pressed living

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
E14	1,178,684	Mains gas	£43,026	4,070	14,606	middle income earners; 2+ children; 25-54 year olds; full-time/part-time employed; private-rented/owner occupied; urban; early adopters.
F15	323,433	Other (solid fuel/LPG)/ Electricity	£46,005	6,883	-	middle income; other/electric heating fuel; 2+ children; full-time/self-employed; 25-54 year olds; early adopters; high electricity consumption.
F16	989,639	Electricity	£50,721	4,317	-	middle income; electric heating; has degree or higher; purpose-built flats; 16-54 year olds; good EPC rating; full-time employed; couple/single adult man; early adopters

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
G17	163,166	Oil/Other (solid fuel/LPG)	£44,586	5,901	-	Upper middle income; Oil/Other heating system; unconventional housing; Owner occupied; self-employed; couple/single adult; 45+ year olds; rural; unknown EPC rating
G18	667,836	Other (solid fuel/LPG)	£49,265	5,294	-	Upper middle income; Other heating fuel; owner occupied; full-time employed/retired 65+; low scheme eligibility.
H19	675,712	Oil	£52,621	4,907	-	Upper-middle income; oil heating fuel; retired 65+/full-time employed; poor EPC rating; rural; owner-occupied; detached/semi-detached; WFP eligible.

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
H20	3,540,270	Mains gas	£58,924	3,143	11,677	upper-middle income; mains gas; early adopters; 25-54 years old; full-time employed; below average consumption.
J21	2,210,494	Mains gas	£59,668	4,070	15,461	High income; mains gas; 1 child; full-time employed; 25-54 years old; early adopters; owner-occupied/private rented; semi-detached/terraced; high ECO eligibility.
J22	1,792,593	Mains gas	£68,332	4,684	18,530	High income; no children; mains gas; highest gas consumption; 45-64 years old; full-time employed; early adopters; has degree or higher.

Archetypes	Number of Households	Heating Fuel	Average household gross income	Average Electricity consumption (kWh)	Average Gas consumption (kWh)	Main attributes (key words)
J23	1,956,103	Mains gas	£74,795	4,532	16,330	High income; mains gas; 2+ children; 35-54 years old; full-time employed; owner-occupied; semi-detached/terraced; early adopters; urban.
J24	231,658	Oil	£78,813	7,523	-	Highest earners; 1+ children; oil heating; highest electricity consumption; rural; full-time employed; owner-occupied; poor EPC rating; early adopters.

Qualitative - assessing broader impact on groups of consumers

21. Income analysis is important. However, on its own, it is limited in what it can tell us about the complexity of non-average households. There are a multitude of socio-economic variables that we can use to describe these households, and which we can then use as the basis of assessing qualitatively how policies could affect them.

22. This is where consumer archetypes bring a richness to understanding the impacts of policies and improve our analysis of impacts. In addition to the income and expenditure data that we illustrated in section 3, they also contain wider indicators of vulnerability such as energy debt, households in poverty, and whether there is internet access at home. These are particularly important for improving our understanding of the number and characteristics of households with characteristics of vulnerability.

23. The archetypes also inform our understanding of consumers' attitudes to the energy market and related technologies. For example, they use information from Ofgem's Consumer Engagement Survey to identify consumers' history of engaging in the energy sector, whether they use smart phones to access the internet, and whether they have a hybrid or electric vehicle. As data on consumption profile becomes more available in future, we aim to add this to the archetypes as well.

Using the archetypes to qualitatively assess impact

24. In addition to calculating the average bill impact that a policy has for a given consumer archetype, we can look at the other characteristics to see if they are likely to experience a comparatively positive/negative impact as a result of the policy.

25. For example, for the DTC, a household that is retired, has internet at home and has a positive attitude to engaging in the energy market, is more able and likely to investigate their tariff options, or they may already be on a cheaper tariff despite the cap. Low income households that work full time and have not engaged in the energy market may be more likely to benefit from the policy that caps the unit price of their standard variable tariff.

26. In the context of the number of households affected and the total and average impact on bills, we can provide a qualitative commentary for each of the consumer archetypes. The extent to which we do this will depend on the policy under consideration. Table 2 below shows a few selected archetypes as examples.

Table 2: impact descriptions for selected archetypes of a simple policy, illustrative

Archetype	**Households**	**Key Characteristics compared to Great Britain average**	**Impact on energy bill and incomes (AHC)** **Average**	**Impact on energy bill and incomes (AHC)** **Total**	**Commentary**
A1	578,333	Lowest income Mains gas Retired 75+ years old Single adults Owner-occupied Urban Not early adopters No internet connection No degree or higher	£93 bill decrease 0.59% gross income increase	£54m bill decrease/gross income increase	This group sees a medium % income increase given their low income level. They generally experience a positive and medium/high impact from the policy.
A2	868,191	Low income Housing association Single adults 55+ years old Prepayment meter WHDS eligible; good EPC rating; No degree or higher	£133 bill decrease 0.77% gross income increase	£116m bill decrease/ gross income increase	This group sees a relatively higher % income increase given their low income level. They also are more likely to experience a positive and medium/high impact from the policy.

Archetype	Households	Key Characteristics compared to Great Britain average	Impact on energy bill and incomes (AHC) Average	Impact on energy bill and incomes (AHC) Total	Commentary
…					
J24	231,657	Highest earners 1+ children Oil heating Highest electricity consumption Rural Full-time employed Owner-occupied Poor EPC rating	£83 bill decrease 0.10% gross income increase	£20m bill decrease/ gross income increase	This group sees the smallest percentage increase given their high income level and small increase in utility bills. As one of the wealthiest archetypes, they are less affected by the policy.
All Great Britain	26,982,631				

Combining the quantitative and qualitative analysis

27. Bringing the quantitative and qualitative analysis together gives us a rich picture of how our policies could affect consumers. It helps us to understand where our focus needs to be, and if we need to mitigate any negative impacts. So for example for low income consumers, the DTC:
    - benefits low-income consumers more than higher income consumers – they experience a higher saving as a proportion of household income. Low income consumers of a pensionable age benefit the most.
    - these consumers are more likely to have experienced fuel debt, to have no internet connection, and never to have switched.

    The framework helps us to build evidence of distributional impact over time, allowing us to show how we predicted our policies would affect different groups of consumers.

We can aggregate quantitative impacts for different policies for each of the consumer groups, and look at the qualitative analysis as well. This helps us check if any groups have been unduly disadvantaged.

4. Opportunities for further developing the framework

28. This framework brings greater consistency and transparency to the distributional analysis that we do in our impact assessments. It provides us with a strong foundation, but we recognise there will be opportunities to develop it further in time. For example, the framework cannot easily help in assessing impact on consumers where it depends on their usage throughout the day. However, the roll-out of smart meters will provide us with more information on consumers' consumption profiles and how they use their energy day-to-day. If we can match this with our socio-economic data, it will help us understand how different groups of consumers may respond to our policies in future.

29. We welcome comments on the framework and how we might develop it in future. Please send any views to chief.economist@ofgem.gov.uk.

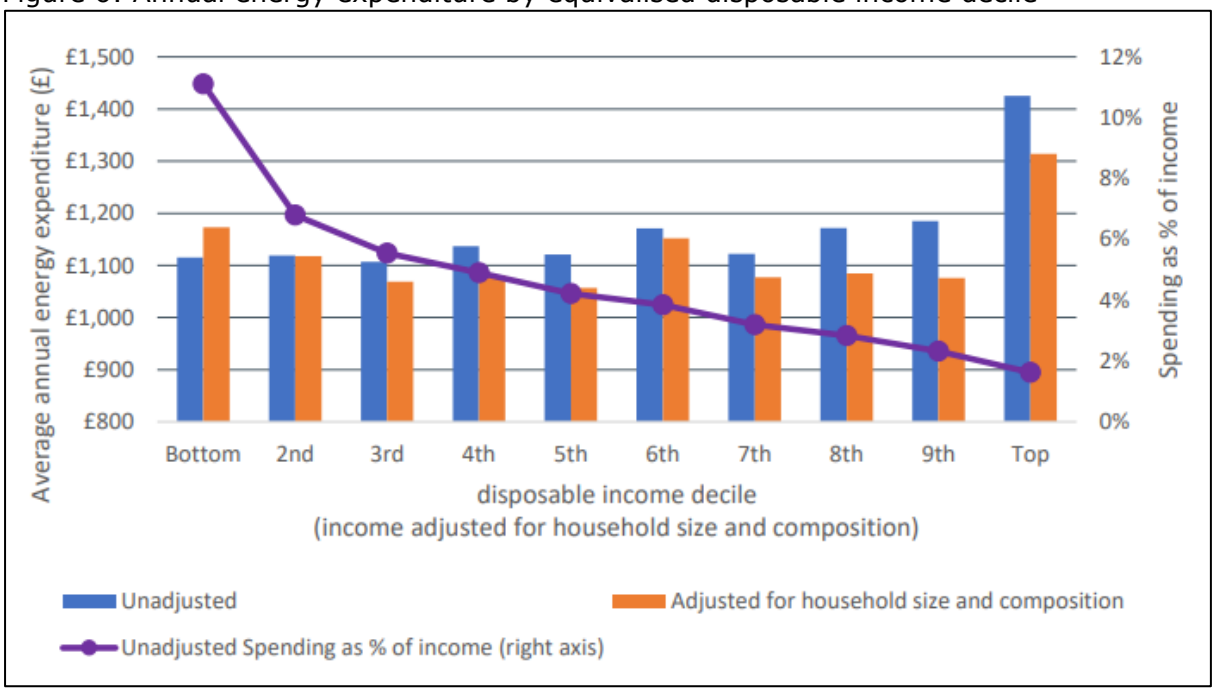
Appendix 1 Annex - Understanding how energy spend varies with income

30. In order to calculate how the bill impacts of a policy vary with household income and other characteristics, we need to understand how energy expenditure and consumption varies with income and other relevant characteristics.

31. The LCF is the primary source of information on household spending across the UK. Data from this survey forms the empirical foundations of our framework, both for assessing impacts by income decile and across consumer archetypes.

32. Households differ in size and composition. We follow standard practice and adjust incomes to capture the fact that a large household requires more income to attain the same standard of living as a smaller household. Specifically, this process is called equivalisation, as set out in HM Treasury (2018, p.97) The Green Book: Central government guidance on appraisal and evaluation (PDF, 1,320KB). We use a version of the OECD modified equivalence scale, where the first adult has a weight of 0.67, both a second adult and a child aged 14 or over each have a weight of 0.33, while a child aged under 14 has a weight of 0.2.

Figure 6: Annual energy expenditure by equivalised disposable income decile



Source: Ofgem analysis of ONS (2020) "Disposable income and energy expenditure for different fuel type households and household types, UK: financial year ending 2018." *Notes:* Energy expenditure figures are averages across households that consume both electricity and gas. The results do not materially change if we average across all households.