


# Review of gas and electricity levies and their impact on low carbon heating uptake

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September 2021

DOI: <http://dx.doi.org/10.7488/era/1364>

## Executive summary

### Aims

This evidence review seeks to understand whether rebalancing of levies and charges between electricity and gas supplies might impact the deployment of low carbon and renewable heat in both domestic and non-domestic settings.

The strengthened climate change targets, including the need to reduce emissions by 75% by 2030 across the UK, is anticipated to require a very rapid ramp-up in deployment rates of low carbon and renewable heating technologies. This transition is likely to require a shift away from gas fired heating to electric heating technologies. However, there are concerns that the current structure of gas and electricity levies and charges may provide a disincentive for consumers to make this transition given the price differential between gas and electricity.

The research aims for the project were to investigate, set-out, and analyse low carbon levies, including:

1. Describing the current energy policy levies implemented by the UK government that consumers in Scotland face, including the policy intent behind these, the charging basis, and impact on Scottish consumer bills (gas and electricity).
2. Setting out the role and value of these levies in supporting Scottish energy policy.
3. Forecasting the costs of these levies on domestic and non-domestic bills over the period to 2024-25.
4. Analysing the impact of levies on low carbon heating uptake.
5. Identifying potential alternative options for energy levy recovery.

Please note the findings in this report reflect the information that was available at the date of drafting, November 2020. Any developments since this period are not reflected within the text or analysis.

## Findings

The key project findings are:

### What are energy levies and how are they recovered

- Energy policy costs to support renewable asset deployment and targeted social measures are currently recovered through consumer energy bills, with the majority placed on the electricity bill.
- Energy suppliers are not directly obligated via policy or regulation in how they look to recover scheme costs. However, as commercial entities their typical approach is to align recovery and exposure of these costs. As the majority of levies are charged on a supplier on the basis of electricity volumes (MWh) supplied, the result of this is that the majority of costs are placed on the unit rate of the electricity tariff (i.e. per kWh).
- Currently there are no gas-specific policy costs placed on consumer bills, with all policy costs relating to either electricity only schemes (e.g. the support of renewable electricity generators), or dual fuel considerations (i.e. addressing fuel poverty through the Warm Home Discount (WHD)).
- The costs of the energy levies are extensive, with ~£10bn/year spent and therefore recovered through GB consumer bills.

### The value and impact of levies to Scotland

- The growth in renewable capacity in Scotland and the resultant emissions reduction have been a beneficiary of the renewable generation levies.
- Levies as a whole are a component of energy costs. Given the bulk of the combined levy cost is applied to electricity bills, this may exacerbate the problem of fuel poverty for those households with electric heating.

### Forecasting the costs of these levies on domestic and non-domestic bills

- The costs of levies have been forecast for three different domestic consumer archetypes on an annual basis over the period to 2024-25. This analysis indicates that levies will comprise between 17% and 28% of electricity and gas spend (depending on consumer archetype) for 2024-25. This equates to an annual levy cost of between £174 and £233 depending on consumer archetype.
- Cost forecasts of levies for non-domestic consumers have been produced for two non-domestic building consumption profiles in Scotland (a gas using, and non-gas using profile) on an annual basis over the period to 2024-25. This analysis highlights that levies will comprise between 30% (gas using) and 38% (non-gas using) of overall electricity and gas bills in 2024-25. This equates to an annual levy cost of £1849 and £1120 respectively.

### The impact of levies on low carbon heating uptake

- Evidence suggests that energy pricing is not the main consideration in the use of heating technologies by domestic or non-domestic consumers, other considerations including upfront costs are significant.
- Under current energy tariff structures, heat pumps are unlikely to offer running cost savings compared to gas boilers as a result of the electricity demand associated with running a heat pump. Indicative analysis highlights that the

removal of levies in their current energy tariff structure would bring the running costs of heat pumps and gas boilers considerably closer together in a typical domestic situation.

### **Alternative options for energy levy recovery**

There are a number of different potential options for reform that could potentially address this issue, subject to further consideration of their wider impacts. These include:

- Moving levy cost recovery to a non-energy volumetric basis. This could include a flat per household charge, or linkage to specific metrics such as location, income, or heating fuel.
- Splitting the recovery of levy costs between gas and electricity tariffs.
- Introduction of a 'heating allowance' to remove the levying of policy costs on energy used for heating purposes.
- Encouraging voluntary actions by suppliers to rebalance levy cost recovery away from electricity.
- Moving levy costs from energy bills to general taxation.

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# 1. Introduction

## 1.1 Policy context

Scotland's climate change targets, including the need to reduce emissions by 75% by 2030, is likely to require a very rapid ramp-up in deployment rates of low carbon and renewable heating technologies. This transition is likely to require a shift away from gas fired heating to electric heating technologies. However, there are concerns that the current structure of gas and electricity levies and charges may provide a disincentive for consumers to make this transition given the price differential between gas and electricity.

Understanding the current structure and balance of levies and charges on the supply of electricity and gas, and how this may have a contributory impact on the rate of deployment, and whether changes to the balance of levies across the respective fuels, could play a part in driving greater uptake of renewable and low carbon heating technologies.

## 1.2 Objectives

The research draws on desk-based research and analysis to:

1. Describe the current energy policy levies implemented by the UK government that consumers in Scotland face, including the policy intent behind these, the charging basis, and impact on Scottish consumer bills (gas and electricity).
2. Set out the role and value of these levies in supporting Scottish energy policy.
3. Forecast the costs of electricity and gas levies on domestic and non-domestic bills on an annual basis over the period to 2024-25.
4. Review the evidence on the role of relative electricity and gas pricing on consumer uptake of low carbon heating technologies.
5. Identify potential alternative options for energy levy recovery.

# 2. What are energy levies and how are they recovered?

## 2.1 Introduction

There are a number of environmental and social policies in the GB energy market. Some of these are funded through commitments placed on energy companies. As part of their bills, domestic and non-domestic energy consumers face a number of levies intended to support measures such as the deployment of low carbon and/or renewable sources and the installation of energy efficiency measures. For the purpose of this report, these costs have been broken down as follows:

### **Renewable, low carbon and capacity support**

- These are the Renewables Obligation (RO), the Feed-in Tariff (FiT) and Contracts for Difference (CfD) schemes – these being introduced on electricity bills to support investment in low carbon and/or renewable electricity generation technologies.

- This also includes the cost associated with the Capacity Market (CM) on electricity bills, the purpose of which is to ensure that sufficient reliable generation capacity is available to meet peak demand.

#### **Direct affordability measures**

- These are measures intended to directly reduce domestic customers' electricity and/or gas bills – these being the Energy Company Obligation (ECO, which supports the deployment of energy efficiency measures) and the Warm Home Discount (WHD, which is a one-off payment towards the energy bills of eligible customers).

#### **Other charges**

- These are specific components of GB fiscal policy which do not currently relate to domestic customers – they are the Climate Change Levy (CCL, a consumption tax which is currently only levied on non-domestic customers) and the proposed Green Gas Levy (UK Government proposals for which included introducing it in 2021 and applying the costs according to the number of domestic and non-domestic meter points suppliers serve, the expectation being that these costs are passed onto customers).

As presented in Table 1, the levies have been introduced by UK Government and apply either UK or GB wide. Overall the total value to be recovered via the various levies is significant, worth approximately £10bn/yr.

Table 1: Overview of energy levies

Levy	Electricity, gas or both	Description and purpose	Legislation	Year begun	Year Expired (if applicable)	Legislated cost recovery cycle	Typical Charging Basis by Suppliers (Domestic)
<b>Renewables Obligation (RO)</b>	Electricity	Historically the primary means of incentivising large-scale (capacity >5MW) renewable electricity generation projects, the RO requires licensed electricity suppliers to source a certain percentage of their supply from accredited renewable generation.	Established by <a href="#">The Renewables Obligation Order (2002)</a> and <a href="#">The Renewables Obligation (Scotland) Order 2002</a>  The schemes are managed by the English and Scottish Governments (separate provisions exist for the RO in <a href="#">Northern Ireland</a> ) and applied on a common basis with administration by Ofgem	2002	Closed to new applications in 2017. The enduring nature of the subsidies mean that costs are expected to start reducing from their peak in the late 2020s, but will remain on customer bills until c. 2037	Annual	Volumetric and included within a customer's unit rate(s) for electricity
<b>Feed-in tariff (FIT)</b>	Electricity	The FIT scheme was introduced to support the deployment of small-scale (capacity <5MW) renewable electricity generation projects. The scheme requires electricity suppliers to pay fixed tariffs to small scale renewable generators for electricity generated and exported to the grid. It provides up to 25 years of subsidy for eligible installations.	The <a href="#">Feed-in Tariffs Order 2012</a> established the scheme on a UK-wide basis, with administration by Ofgem's E-Serve division.	2012	Closed to new applications in 2019	Quarterly	Volumetric and included within a customer's unit rate(s) for electricity
<b>Contract for Difference (CfD)</b>	Electricity	The CfD replaced the RO as the government's main method of incentivising large-scale renewables. CfDs provide support for 15 years for eligible installations with generator's receiving a top up to their 'strike price' if the wholesale price is below this level. A transition arrangement between RO and CfD (the Final Investment Decision enabling for Renewables, FIDeR) was established in 2015 ahead of the full CfD roll out in 2017	The <a href="#">Contracts for Difference (Allocation) Regulations 2014</a> established the scheme on a UK-wide basis, with administration by the <a href="#">Low Carbon Contracts Company (LCCC)</a> .  The CfD Supplier Obligation (SO) is the mechanism by which the LCCC collects money from electricity suppliers in order to make payments to CfD generators	2015 under FIDeR, and introduced fully in 2017	N/A – currently ongoing with the next CfD allocation round (AR4) scheduled for December 2021 and the policy subject to five year review cycle, with next review in 2024.  CfD contracts granted for 15 years.	Quarterly	Volumetric and included within a customer's unit rate(s) for electricity

<b>Capacity Market (CM)</b>	Electricity	The CM was introduced as a means by which to ensure that sufficient reliable generation capacity was available to meet demand. Contracts are awarded under the CM on an auction basis, typically one year (T-1) or four years (T-4) in advance of need, with these being of up to 15 years in duration.	The <a href="#">Electricity Capacity Regulations 2014</a> established the scheme on a GB-wide basis, with administration by National Grid ESO in its role as <a href="#">delivery body</a> for the scheme	Initial auctions held in 2014 for 2018	N/A – currently ongoing	Annual	Volumetric based on consumption over the winter peak periods (4-7pm) and included within a customer's unit rate(s) for electricity
<b>Energy Company Obligation (ECO)</b>	Both	ECO is a GB-wide scheme that places obligations on energy suppliers to deliver energy efficiency and cost saving measures to domestic premises if they meet certain participation thresholds (i.e. number of customers and gas and electricity volume supplied)	The <a href="#">Electricity and Gas (Energy Company Obligation) Order 2014</a> established the scheme on a GB-wide basis with administration by Ofgem	2013	To be extended to 2026 under the November 2020 <a href="#">Ten Point Plan</a>	ECO phases have varying durations, although annual is commonly applied	Observed supplier practice is to apportion this on a volumetric basis and include it within a customer's unit rate(s) for electricity/gas as applicable
<b>Warm Homes Discount (WHD)</b>	Both	WHD is a GB-wide scheme that places legal obligations on energy suppliers to provide eligible households with a one-off annual discount on their energy bills if they meet certain participation thresholds (i.e. number of customers supplied)	Established under the <a href="#">Warm Home Discount Regulations 2011</a> , the WHD is subject to ongoing review and has been set at £140 since 2014-2015	2011	N/A – currently ongoing	Annual (one-off payments made toward winter energy spend)	Observed supplier practice is to apportion this on a volumetric basis and include it within a customer's unit rate(s) for electricity/gas as applicable
<b>Climate Change Levy (CCL)</b>	Both	The CCL is a commodity tax on the supply of energy in Great Britain with rates varying to reflect the carbon intensity of the different types of energy, e.g. electricity, gas, LPG	CCL is set by <a href="#">HMRC</a> and typically escalates on an RPI-indexed basis. However, in <a href="#">Budget 2020</a> it was announced that electricity rates would be frozen, while gas rates continue to increase (potentially by more than RPI) such that they were at parity by 2025	2001	N/A – currently ongoing	Annual	N/A - not currently applied to domestic consumers, businesses with consumption less than 12MWh/yr, and non-commercial activities of charities
<b>Green Gas Levy (GGL) – pending and currently set for introduction in 2021</b>	Gas	The GGL will be a new levy introduced on licensed gas suppliers to support growth in biomethane and green gas on the GB network. It is currently subject to ongoing consultation	The proposed approach in the <a href="#">Consultation Document</a> is an initial per meter point levy to support biomethane production under the Green Gas Support Scheme (GGSS) before transitioning to a volumetric levy for 2024-25	2021 (Proposed)	Not stated – subject to ongoing consultation	Annual (Proposed)	Initial proposed per meter point levy of the scheme, it is expected to be levied on customer gas bills via the standing charge initially

Source: Cornwall Insight



## 2.2 Renewable, low carbon and capacity support measures

The combined total expenditure associated with energy levies is significant. In order to keep a limit on the cost associated with this government-established renewable generation support, the Levy Control Framework (LCF) was introduced in 2011 as an annual expenditure cap<sup>1</sup>.

The LCF was intended to manage levy costs by providing a specific framework against which to consider policy decisions and costs. However, analysis from the Office for Budget Responsibility (OBR) in 2015 indicated that the LCF had been breached due to the greater than expected success of the renewable support schemes.

Figures from BEIS indicate that this overspend was approximately £1bn per annum by 2020-21 compared to a budget of £7.6bn<sup>2</sup>. As a result, in the 2017 Spring Budget it was announced that the LCF would be replaced by a new control mechanism. The 2017 Autumn Budget announced that there would be a moratorium on new low carbon subsidies through the Control for Low Carbon Levies (CLCL), and that until the total burden of existing low-carbon costs falls in real terms, there would be no further low-carbon costs added to the electricity bill.

This new control extends to 2024-25 and rules out any further spend except for the £557mn<sup>3</sup> in total already committed for less established technologies<sup>4</sup> under the CfD or when aggregate levies are forecast to fall or reduce energy bills in the round<sup>5</sup>.

### 2.2.1 Renewables Obligation (RO)

Introduced in April 2002<sup>6</sup>, the Renewables Obligation (RO) is a mechanism that was used by the Government to incentivise the deployment of large-scale renewable electricity generation projects (>5MW) on a GB-wide basis, with support provided over a 25-year timeframe. Eligible technologies were as follows:

Table 2: Renewable Obligation eligible technologies

Biogas (anaerobic digestion, AD)	Wind power
Biomass (co-firing of biomass is also eligible)	Solar PV
Biomass Combined Heat and Power (CHP)	Landfill gas
Hydroelectric	Sewage gas
Tidal power	Wave power

Source: Ofgem

<sup>1</sup> <https://www.gov.uk/government/collections/levy-control-framework-lcf>

<sup>2</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/572521/LCF\\_Lesson\\_Learned\\_Report\\_FINAL\\_18-11-16-1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/572521/LCF_Lesson_Learned_Report_FINAL_18-11-16-1.pdf)

<sup>3</sup> <https://www.gov.uk/government/news/government-confirms-up-to-557-million-for-new-renewable-energy-projects>

<sup>4</sup> Advanced Conversion Technologies (ACT), Anaerobic Digestion (AD) >5MW, Dedicated biomass with CHP, Floating offshore wind, Geothermal, Remote island wind >5MW, Tidal stream and Wave

<sup>5</sup> The text of the legislation states “energy bills” although the focus is on electricity levies. We have therefore retained the government’s wording

<sup>6</sup> <https://www.legislation.gov.uk/ukxi/2002/914/contents/made>

The scheme was subject to extensive change over its lifetime, with a phased closure of the scheme to new generation having concluded in March 2017<sup>7</sup> with early exits for solar PV and onshore wind.

Under the RO, all licensed suppliers are mandated to source a specified proportion of electricity volume to supply their customers from generation that receive Renewables Obligation Certificates (ROCs) for the output of their assets. The total size of the obligation to the sector is determined by BEIS on an annual basis, with individual suppliers' obligations based on its total supply of electricity to customers in the GB market.

If they are unable to source ROCs, suppliers can pay a buy-out value, which is an RPI indexed-linked amount set annually by Ofgem. In calculating RO consumer costs, it is normally assumed by Cornwall Insight and suppliers' own pricing models<sup>8</sup> that suppliers fulfil their full obligations at ROC buy-out value<sup>9</sup>. This is effectively the maximum price that they could pay for a ROC.

This value is multiplied by the target number of ROCs that suppliers must submit at the end of each year (also known as a "compliance period"). This target is expressed in ROCs per MWh supplied, allowing a unit cost of the scheme to be estimated. As ROC prices are closely correlated to the buy-out, and suppliers typically acquire ROCs at a relatively low discount (1-10%) to the buy-out price<sup>10</sup>, this provides a reliable benchmark for RO cost forecasting.

With support granted for eligible RO projects for up to 25 years, the cost of subsidies will continue to be included in consumer bills until 2036-37. However, after April 2027 a fixed price certification scheme will replace the existing scheme and it will be fixed at the 2027 buy-out rate plus 10% for generators. This Fixed ROC price will remain inflation-linked (RPI) thereafter, reflecting the prevailing approach applied to the buy-out price<sup>11</sup>.

As the volume of renewable generation capacity in receipt of such support will decline as the 25-year period expires, the total cost should decline from the late 2020s onwards ahead of 2036-37.

Among the other reforms to the scheme, in 2019 an amendment was introduced that reduced the liability for the RO as paid by Energy Intensive Industries (EIIs) by up to 85%<sup>12</sup>. Those organisations which meet the exemption criteria are granted an EII exemption certificate which must be passed to their supplier. Through this scheme suppliers have their levy cost liability reduced, as the exemption is applied by deducting EII exempt electricity from the calculation of each supplier's market share for the purposes of calculating costs. Suppliers then pass these savings through to the EII exempt end consumer through their energy bill.

<sup>7</sup> <https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-guidance-closure-scheme-england-scotland-and-wales>

<sup>8</sup> i.e. the systems used by each supplier to calculate their respective tariff levels and structures for end users

<sup>9</sup> The buy-out price for the 2021-22 obligation period is £50.80 per ROC (<https://www.ofgem.gov.uk/publications-and-updates/renewables-obligation-ro-buy-out-price-and-mutualisation-ceilings-2021-22>)

<sup>10</sup> This is based on Cornwall Insight's experience in the market

<sup>11</sup> This reflects the expectation by BEIS that ROC values will not fall below the buy-out price, nor will there be an oversupply of ROCs in the final decade of the scheme

<sup>12</sup> In order to qualify for the EII exemption, customers must meet a number of requirements, including a minimum energy intensity, and inclusion within a list of eligible sectors maintained by BEIS.

This was established as a means by which to help mitigate the impact of these charges on the bills of such customers in order to help them retain their relative competitiveness in global export markets.

The exemption increases charges for all other (non-EII) consumers as it lowers the demand base over which scheme costs can be recovered. As the EII scheme covers ~6% of electricity volumes, it is estimated to add ~5% to the total cost of the RO, FiT, and CfD schemes for non-exempted customers. While BEIS identified this in its impact assessment as a negative consequence in its decision to implement the scheme<sup>13</sup>, the overall benefits for EII customers, including preventing carbon leakage and retaining jobs were considered to be more important.

As a supplier's obligation the cost is directly tied to the volume of electricity supplied. The commercial incentive is therefore on suppliers to place the full RO cost on the electricity unit rate. The original RO legislation, however, focuses upon the means by which a supplier may discharge their obligations under the scheme rather than the means by which the resultant cost is recovered from its own customer base.

### 2.2.2 Feed-in Tariff (FiT)

Like the RO, the Feed-in Tariff (FiT) scheme was designed to encourage the development of low-carbon generation, but to smaller capacity installations. The scheme was introduced in April 2010<sup>14</sup>, and – as with the RO – administered by Ofgem and support provided for a minimum of 20 years.

Eligible generators up to 5MW were able to receive a tariff from a licensed electricity supplier of their choice for the electricity they generate. There is also a guaranteed minimum payment for any electricity the site does not use and instead exports back to the network. The eligible technologies were solar PV, wind, micro-CHP (up to 2kW), hydroelectric and AD with different levels of support for each technology and capacity.

Suppliers recover the costs of FiTs by levying a cost on each unit of electricity they sell. There is an Ofgem led redistribution process 'levelisation' that ensures all suppliers receive sufficient money to pay their generators. This ensures FiT scheme costs are distributed across all licensed electricity suppliers based on their share of the GB electricity supply market. The cost of the FiT programme is set in every quarter (also known as a "levelisation period") based on tariff rates, power demand, and the electricity generated from accredited FiT sites. As with RO and CfD, exemptions are in place for EIIs.

As costs are spread via the levelisation process and based upon a supplier's volume of electricity supplied the commercial incentive is for the supplier to place the whole FiT cost on the electricity bill via the unit rate.

### Mutualisation

Both the RO and FiT schemes are subject to a process of mutualisation, i.e. in the event of a shortfall in the relevant funds to cover payments associated with the scheme then this shortfall is recovered across all suppliers in the schemes. In recent years, this mechanism has been utilised due to suppliers exiting the market prior to fulfilling their obligations under the relevant schemes – particularly under the RO.

<sup>13</sup> <https://www.gov.uk/government/consultations/implementing-an-exemption-for-energy-intensive-industries-from-the-indirect-costs-of-the-ro-and-the-fits>

<sup>14</sup> <https://www.legislation.gov.uk/ukxi/2010/678/contents/made>

When triggered, this implies an additional cost associated with the schemes for all remaining suppliers, which is then typically passed on to consumers. RO mutualisation has been triggered in 2017-18 and 2018-19, with non-defaulting suppliers invoiced for their individual mutualisation payments based on their share of the total payments made under the respective schemes.

### 2.2.3 Contracts for Difference (CfD)

The Contracts for Difference (CfD) scheme was introduced in April 2015<sup>15</sup> as the replacement support mechanism for larger scale low-carbon generation<sup>16</sup>. These initial CfDs were awarded under a transition mechanism – the Final Investment Decision enabling for Renewables (FIDeR<sup>17</sup>) scheme – for the move from RO to CfD, with eight projects receiving support under FIDeR.

Contracts are allocated by technology types and into allocation rounds (AR), with these being awarded on an auction. Auctions are run by the government-backed Low Carbon Contracts Company (LCCC). Similar to the banding of support under the RO, CfDs are broken up into “pots” which contain established technologies such as wind and solar, or less established technologies such as wave and tidal. There have also been bilaterally negotiated CfDs, notably for the EDF Energy Hinkley Point C nuclear plant.

Generation assets bid for a share of an allocation round budget and, if successful, are guaranteed a CPI-indexed “strike price” for any electricity that it produces. As long as the strike price exceeds the wholesale price of electricity, a premium is paid for every MWh generated to top up income received up to the strike price. In the event that the strike price is above the wholesale price, then a corresponding payment must be made by the generator.

This structure implies that a higher wholesale price is associated with a lower overall CfD payments and vice versa. The key benefit from a developer perspective is the certainty of wholesale price revenue, thereby mitigating the potential risk associated with their investment.

The CfDs themselves are private law contracts between individual generators and the government-backed LCCC. These contracts are typically 15 years in duration and typically awarded through the aforementioned auction process. However, there are exceptions – notably in the case of nuclear assets such as Hinkley Point C which have 35-year CfDs under their bilaterally negotiated basis.

Under the CfD scheme, the LCCC sets an Interim Levy Rate (ILR) three months in advance of a given quarter on the basis of which suppliers make daily interim rate payments to LCCC on every unit of electricity that they supply during the quarter<sup>18</sup>. These CfD Supplier Obligation payments are charged on a £/MWh<sup>19</sup> basis and then subject to reconciliation against actual generation and supply data on an ex post basis.

<sup>15</sup> Note a number of contracts for support generating assets were granted prior to this under the Final Investment Decision Enabling for Renewables (FIDeR) process. These are technically separate from the CfD scheme but as the costs are recovered via the CfD levy, we have treated them as part of the CfD for the purposes of this report

<sup>16</sup> <https://www.gov.uk/government/collections/electricity-market-reform-contracts-for-difference>

<sup>17</sup> <https://www.nao.org.uk/wp-content/uploads/2014/06/Early-contracts-for-renewable-electricity1.pdf>

<sup>18</sup> The ILR is an estimate of the income from suppliers required to enable LCCC to make CFD payments to generators during a quarter. LCCC must set the ILR at least a quarter in advance of the quarter to which it will apply, though they are able to change the rate with a minimum of 30 days’ notice in exceptional circumstances

<sup>19</sup> This includes operational cost levy (charged to suppliers on a per unit basis on their volume supplied) and reserve fund elements (based upon a supplier’s market share).

From April 2017, the CfD scheme became the sole incentive for new low-carbon generation above 5MW as the RO was closed to new capacity. However, with the RO remaining in operation until 2037, the two schemes will overlap, meaning that both elements will be contributing to electricity bills. As with the RO, there are exemptions in place for EIs<sup>20</sup> which operate on the same basis.

As with the RO, the levying of CfD costs on a volumetric basis on electricity supplied provides a commercial incentive for suppliers to cover costs via the electricity bill on a per unit basis.

#### **2.2.4 Capacity Market (CM)**

The Capacity Market (CM) is a central auction process that incentivises market participants to make reliable capacity available and provides revenues for doing so. The costs of the CM are levied on suppliers based on their volumetric market share in the periods 16:00 to 19:00 from November to February in the relevant charging year. For half-hourly metered customers, this is based on actual usage, while for non-half hourly metered customers (i.e. domestic households), this is based upon consumption profiles which reflect statistically robust averages for customer usage.

Contracts for existing plant are one year in length, those for refurbishing plant up to three years, and new build plant can receive up to 15 year contracts. This, combined with holding auctions up to four years in advance for capacity, means that CM contracts will continue to be in place for a significant period of time and therefore impacting on consumer bills.

Although CM charging would be expected to be charged on a peak volume basis, this approach is reliant on suppliers being able to measure this volume across their entire customer base. However, as such metering data may not be available for all consumers – notable domestic customers which (in the absence of smart meters) would be non-half-hourly metered – this lends itself to a per unit charge on customer electricity bills in order to recover the costs incurred by suppliers.

It is anticipated that for larger users, costs will initially be based on supplier forecasts and will be reconciled to actual data when available. For smaller customers – such as domestic users – that do not have such a reconciliation process in their contracts, a flat per unit fee approach is therefore seen as the norm.

## **2.3 Direct affordability measures**

### **2.3.1 Energy Company Obligation (ECO)**

Established in April 2013, the Energy Company Obligation (ECO) is a UK government-directed energy efficiency scheme in GB. Energy suppliers have a legal obligation to participate if they meet the thresholds presented in Table 3, with this being based upon the number of domestic customers and the volume of energy supplied to domestic customers within that period. Participation is mandatory if a supplier has a qualifying supply of electricity or gas (as applicable) and the qualifying number of domestic customers. These two criteria operate as follows:

- If the customer number threshold is met, a supplier is set a share of the target, referred to as its total home-heating cost reduction obligation.

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<sup>20</sup> <https://www.gov.uk/government/consultations/energy-intensive-industries-exemption-from-indirect-costs-of-the-contracts-for-difference-scheme>



- This obligation is then set based upon that company's share of the market based upon its volume of gas or electricity (as applicable) supplied.

Suppliers which do not meet these criteria may participate on a voluntary basis.

Table 3: Energy supplier ECO participation requirements

	3 December 2018 to 31 March 2019	1 April 2019 to 31 March 2020	1 April 2020 to 31 March 2021	1 April 2021 to 31 March 2022
Number of domestic customers	>250,000	>200,000	>150,000	>150,000
Electricity supplied to domestic customers	500GWh	400GWh	300GWh	300GWh
Gas supplied to domestic customers	1400GWh	1100GWh	700GWh	700GWh

Source: Cornwall Insight

Total ECO performance, defined as the overall home-heating cost reduction, is based upon a total scheme expenditure which is apportioned on an annual basis. For example, under the current iteration of the scheme (ECO3, 2018 to 2022), energy suppliers must achieve cost savings of £8.253bn in aggregate<sup>21</sup>.

Common measures available through ECO include loft insulation, cavity wall insulation, solid wall insulation, boiler replacement or repair or connection to a district heating system, where such infrastructure is present. Under ECO, these measures do not need to be installed by a customer's incumbent supplier<sup>22</sup>, as they may be provided by any participating energy supplier.

Individual household eligibility is dependent on a number of factors, including what benefits (if any) the householder receives, the potential level of cost savings that could be achieved and what improvements would be made. Households may also be able to apply for more than one of these ECO measures. The Scottish Energy Statistics Database<sup>23</sup> shows that – as at the end of 2019 – there had been approximately 313,000 ECO measures delivered across approximately 264,000 households.

As with other schemes, mutualisation is present under the ECO, however it is less explicit as suppliers can trade their obligation under a market-based mechanism established in 2017<sup>24</sup>, and therefore these obligations should be met by the counterparty. However, we understand that undelivered obligations are added to the following year's obligation, and therefore costs are spread proportionately by ECO obligation.

As suppliers' ECO requirement, and therefore costs, are based upon their customer energy consumption volumes the incentive is on suppliers to recover the costs from both

<sup>21</sup> <https://www.legislation.gov.uk/ukxi/2018/1183/contents/made>

<sup>22</sup> Or their subcontractors

<sup>23</sup> <https://www2.gov.scot/Topics/Statistics/Browse/Business/Energy/Database>

<sup>24</sup> <https://www.ofgem.gov.uk/environmental-programmes/eco/contacts-guidance-and-resources/eco-guidance-and-associated-documents>

the gas and electricity bills, although there is no explicit requirement to do so, nor is there a requirement to allocate the cost across one or more of the given bills in a prescribed manner.

### 2.3.2 Warm Homes Discount (WHD)

The Warm Homes Discount (WHD) is a GB-wide support scheme administered by Ofgem E-Serve and suppliers that provides assistance to low-income and vulnerable households by providing them with an annual rebate of £140 on energy bills. The participation rules relating to the number of customer numbers seen in ECO also apply here, but the energy volume thresholds do not.

A suppliers' WHD spend requirement, and therefore cost, is based upon their market share of the core group (those customers in receipt of the Guarantee Credit element of Pension Credit, who automatically receive WHD) and non-core group (customers in or at risk of fuel poverty, the application of which is subject to some limited discretion by suppliers). This market share is based upon the suppliers' customer numbers (gas and electricity) compared to total customer numbers.

The WHD also contains a reconciliation process which is designed to ensure that the cost of the core group rebates is shared equitably between the scheme's participating electricity suppliers, such that no supplier is unduly disadvantaged as a result of having a higher number of customers eligible for the rebate.

Under WHD mutualisation exists such that if a scheme supplier (or suppliers) fails to make a payment, other scheme suppliers make up the shortfall based on their market share. In this case Ofgem will calculate the mutualisation amount by allocating the missing payment(s) between all the scheme suppliers other than the defaulting suppliers, in proportion to their market share.

As with ECO, the commercial incentive under WHD is for suppliers to recover costs split between the gas and electricity bill, although there is no explicit requirement to do so, nor is there a requirement to allocate the cost across one or more of the given bills in a prescribed manner<sup>25</sup>.

## 2.4 Other charges and schemes

### 2.4.1 Climate Change Levy (CCL)

The Climate Change Levy (CCL) is a commodity tax on the supply of electricity and gas (amongst other fuels) in Great Britain and is set by HMRC on an inflation-indexed basis. Industrial, commercial, agricultural, and public service consumers are all liable for the charge. It does not apply to domestic consumers, very small businesses with consumption less than de minimis thresholds (12MWh/yr for electricity and 52.8MWh/yr for gas), and non-commercial activities of charities.

CCL rates are charged on electricity, gas, and solid fuels used by business consumers on a kWh basis (or kg for solid fuels). The rates for these are set out in Table 4:

<sup>25</sup> We also note that the Scotland Act (2016) assigned certain powers to Scottish Ministers regarding support schemes aimed at reducing fuel poverty in Scotland. These powers, which were introduced in December 2017, enable Scottish Ministers to design a fuel poverty scheme for Scotland. However, it is noted that such a mechanism is subject to the approval of the Secretary of State for Energy, while powers relating to elements of the WHD are also the remit of the Secretary of State for Energy, including supplier participation thresholds and the overall costs of the scheme

Table 4: Climate Change Levy (CCL) rates

Taxable commodity	Rate from 1 April 2018	Rate from 1 April 2019	Rate from 1 April 2020	Rate from 1 April 2021	Rate from 1 April 2022	Rate from 1 April 2023
Electricity (£ per kilowatt hour (KWh))	0.00583	0.00847	0.00811	0.00775	0.00775	0.00775
Gas (£ per KWh)	0.00203	0.00339	0.00406	0.00465	0.00568	0.00672
LPG (£ per kilogram (kg))	0.01304	0.02175	0.02175	0.02175	0.02175	0.02175
Any other taxable commodity (£ per kg)	0.01591	0.02653	0.03174	0.03640	0.04449	0.05258

Source: HM Treasury

Historically, CCL rates have increased annually in line with RPI inflation. However, it was announced in Budget 2016<sup>26</sup> that the rates for gas and electricity would be rebalanced in order to reflect the changing carbon intensity of the electricity network and to reflect revenues lost from the closure of the government's Carbon Reduction Commitment (CRC) scheme<sup>27</sup>. The combined impact of these measures was that the CCL rates for gas and electricity would reach parity by 2025. The rebalancing of gas and electricity CCL rates is interesting in that it is looking to explicitly freeze the CCL electricity costs (as of Budget 2020) and increase gas costs under the tax.

Unlike the other schemes the CCL is explicitly charged on both gas and electricity on a defined unit rate basis, with the level of the charge set by government as opposed to being dictated by scheme uptake. This means that it is relatively straight forward to rebalance the costs via changes to future rates in comparison to other schemes where explicit changes to legislation would be required.

## 2.4.2 Green Gas Levy (GGL)

A new Green Gas Levy (GGL) was announced in the March 2020 Budget with the objective of supporting biomethane injection into the gas network.

BEIS's central scenario (as presented in the consultation for the levy) suggests all gas users would expect to see their annual bills increase by approximately £1.40 at the start of the levy in 2021, rising to approximately £6.90 at the peak of the levy in 2028.

While BEIS has considered the impacts of distinguishing between large non-domestic, domestic and microbusiness consumers from scheme inception, it has concluded that a flat rate per meter approach is the only feasible option to deliver at this time due to the technical complexity of taking a volumetric approach (related to the current gas charging system). However BEIS are looking to move the scheme towards a volumetric basis via 2024-25 or as soon as possible thereafter).

BEIS said that this approach avoids any particular group of bill-payers being unacceptably burdened with higher costs relative to their gas consumption. As such, this approach lends itself to recovery via the standing charge element of the bill, although it

<sup>26</sup> <https://www.gov.uk/government/publications/budget-2016-documents/budget-2016>

<sup>27</sup> <https://www.gov.uk/government/collections/crc-energy-efficiency-scheme>



should be noted that the GGL is still subject to ongoing consultation and therefore the above methodology could be subject to change<sup>28</sup>.

Based upon the consultation document issued by BEIS in September 2020, the proposed approach is an initial per meter point levy to support biomethane production under the Green Gas Support Scheme (GGSS) before transitioning to a volumetric levy for 2024-25, or as soon as possible thereafter. The commercial incentive for the GGL would therefore be to recover the cost fully from the gas bill, via the standing charge, until the scheme moves to the volumetric charging approach at which point costs should be recovered from the gas unit rate.

## 2.5 Levy recovery and the role of the supplier

When the gas and electricity industries were privatised, the markets were designed with suppliers as the main intermediary between customers and the energy system, this is known as the “supplier hub” model. This means that the supplier is the primary hub of the market and are responsible for managing nearly all energy market activities through a wide variety of commercial contracts and regulated industry codes. Ofgem states<sup>29</sup> that the core obligated activities which suppliers are responsible for are:

- Providing the commercial point of interface between the consumer and the energy system – the retail part of energy supply
- Paying for (and recovering from its customers) the costs incurred from the energy system, including network charges, wholesale costs, system operator costs and policy costs
- Metering energy consumption, including provision of meters, and appointment of agents
- Delivery of relevant government energy policies, such as RO and ECO
- Meeting regulatory standards for customer service and interactions

From the perspective of energy levies, suppliers act as the collector of revenues associated with these levies from consumers. However, the manner in which they recover said levies is not always prescribed or dictated by legislation.

## 2.6 Factors influencing cost recovery

For each of the policy levies we consider that there are a number of different factors that can lead to how costs are applied to consumer bill. These are examined below, but fundamentally they either specify how the cost should be recovered, or provide a commercial driver to the supplier to recover it in a specific manner, due to how the supplier is charged. While there is not a binding obligation on the supplier to recover the cost in a specific manner, parties operating in a competitive market suppliers will look to align their cost recovery with cost exposure to minimise their risk.

- **Policy design** – energy policies, both low carbon and social, are given power by legislation. This means that the design of the policy and legislation that gives it force can be a key driver for how costs are recovered.

<sup>28</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/919901/consultation-green-gas-levy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/919901/consultation-green-gas-levy.pdf)

<sup>29</sup>[https://www.ofgem.gov.uk/system/files/docs/2017/11/future\\_supply\\_market\\_arrangements\\_-\\_call\\_for\\_evidence.pdf](https://www.ofgem.gov.uk/system/files/docs/2017/11/future_supply_market_arrangements_-_call_for_evidence.pdf)

- The majority of the policy costs are placed on the electricity bill as opposed to the gas bill. This reflects the fact that most policies to date have been to support low carbon electricity generation and associated deployment targets of these technologies. As a result of this, the majority of policy spending to date has been on renewable electricity generation, predominantly under the RO, but with increasing spend under CfD as well.
- Additionally, where costs may be more applicable to the gas bill, such as heat decarbonisation costs through the Renewable Heat Incentive (RHI), these have to date been recovered through general taxation. This is expected to change going forwards, with the GGL to be recovered from the energy market based upon gas meter numbers, and later supply volumes. However, it should be noted that RHI and forecast GGL costs are relatively small compared to electricity generation policy costs and so even if these had been placed on the gas bill, the majority of costs would still be on the electricity bill.
- As noted below the majority of GB energy policy costs are charged on a volumetric basis, which in turn provides a commercial incentive for suppliers to in turn recover them in this manner.
- **Regulatory obligation** – as licensed and regulated parties, suppliers are exposed to a number of obligations and requirements on how they operate in the market. This could be extended to include how policy costs are recovered from end consumers.
  - The default price cap in some ways represents this driver. By limiting the maximum tariff level suppliers can charge, and providing a clear methodology for how this price is calculated, including policy cost recovery, the price cap acts to support supplier cost recovery in a specified manner.
- **Commercial incentive** – suppliers are private companies that operate in the commercial market. Policy levy charges represent a significant cost to suppliers and therefore suppliers need to ensure they are correctly forecasting the level of the costs they will be exposed to and recovering sufficient monies to pay these costs. The failure to recover sufficient revenues to pay industry costs has been a factor in numerous domestic supplier exits, particularly with regards to the RO. The most common approach to deliver this is to recover the costs from end consumers in the same manner as which the supplier will be exposed, i.e. based on the same fuel and charging basis.
  - Commercial incentives can be the result of a number of factors, including policy design, market pressures, or supplier strategy.

As discussed above, we consider that the primary driver for suppliers recovering the costs from consumers is how suppliers are exposed to these costs under the current charging methodology for recovering the costs from suppliers.

For the majority of the policy schemes, suppliers' charges are linked to the volume of energy they supply, and specifically for low carbon support schemes (the RO, CfD, and FiT), the volume of electricity supplied. This clearly places the incentive, and we would argue good business practice, on suppliers to look to ensure that they recover the costs in a manner which aligns to their exposure i.e. on the volumetric (unit rate) element of the electricity tariff (and gas where both fuels consumption is used in the calculation e.g. as with ECO).

## 3. What is the value of levies to Scotland?

The Scottish Government has pursued renewable and low carbon energy targets, as well as associated targets on emission reduction, including as part of its December 2017 “Scottish Energy Strategy: The Future of Energy in Scotland”<sup>30</sup>. This was the first formal energy strategy issued by the Scottish government, although energy policy considerations (such as energy efficiency and renewable heat) pre-date this.

The growth in renewable capacity in Scotland and the resultant emissions reduction have been a beneficiary of the renewable generation levies discussed. In addition, it is expected that the targets of improving energy efficiency and reducing fuel poverty will also have been ameliorated by the direct affordability measures intended to address such issues, i.e. the WHD and ECO.

As such, the levies represent an important contributing factor to meeting Scottish Government policy aims on energy, low carbon generation, and fuel poverty.

### 3.1 Cost recovery considerations

Energy policy costs are set and recovered on a GB-wide basis. This means that regardless of where the generation asset is located within GB, the cost of the subsidy associated with it is spread across all GB consumers. As noted above, Scotland has a significant volume of subsidised renewable generation located within it, reflecting the positive conditions for renewable generation, particularly wind generation. This has allowed Scotland to achieve the significant decarbonisation progress indicated.

However, it also provides a benefit to Scotland by spreading the cost of supporting these assets over the larger GB consumption volumes. If this were not the case, and levy costs were recovered solely from Scottish consumers then the impact on consumer energy bills would be significantly greater.

For example, if the cost of RO supported generators located in Scotland was recovered solely from Scottish consumers, the cost would be higher than the cost under the current GB wide methodology<sup>31</sup>. Likewise, if costs from affordability programmes such as the WHD were solely recovered from Scottish consumers then the cost would be higher than the current GB wide equivalent.<sup>32</sup>

<sup>30</sup> <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2017/12/scottish-energy-strategy-future-energy-scotland-9781788515276/documents/00529523-pdf/00529523-pdf/govscot%3Adocument/00529523.pdf>

<sup>31</sup> BEIS data shows 32GW of renewable generation is supported by the RO, with 12.1GW located in Scotland (~38%). Using the total 2018-19 RO cost of £6.4bn, the Scottish share would be ~£2.4bn for the year. Using the 2019 Scottish electricity consumption figure of 33,914GWh, this provides an annual cost of £70.8/MWh for the RO if Scottish assets' costs were recovered solely from Scottish consumers. This compares to the cost of £23.57/MWh currently seen.

<sup>32</sup> BEIS [data](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1012948/HEE_Stats_Release_-_Final_-_Aug_21.pdf) shows that ~50% more ECO measures are installed on a population basis in Scotland compared to England. 124 ECO measures were installed per 1,000 households in Scotland in comparison to 82 per 1,000 households in England. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1012948/HEE\\_Stats\\_Release\\_-\\_Final\\_-\\_Aug\\_21.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1012948/HEE_Stats_Release_-_Final_-_Aug_21.pdf)

## 3.2 Scottish energy and emissions policy

At the core of the December 2017 Scottish Energy Strategy<sup>33</sup> was the pursuit of broader 2030 and 2050 targets relating to the deployment of renewable energy, heat and transport – as well as increased productivity of energy use. In response to the Energy Strategy a number of policy commitments and targets were established, including:

- Generation of the equivalent of 100% of Scotland’s own electricity demand from renewable sources by 2020
- An average grid emissions intensity for Scotland of 50gCO<sub>2</sub>e/kWh for 2020
- A target of net zero emissions by 2045 as established in the Climate Change (Emissions Reduction Targets) (Scotland) 2019<sup>34</sup>
  - Interim targets include tables of 56% by 2020, 75% by 2030, 90% by 2040
- The designation of energy efficiency as a National Infrastructure Priority, with this being achieved with the aid of the Scotland’s Energy Efficiency Programme (SEEP<sup>35</sup>) – resulting in the Energy Efficient Scotland to improve domestic property stock and remove poor energy efficiency of the home as a driver of fuel poverty.

In addition, the 2018 Climate Change Plan<sup>36</sup> set out Scotland’s decarbonisation targets for 2018-32, with the government targeting a 66% emissions reduction against 1990 levels. The plan also introduced policies aimed at increasing the level of renewable electricity generation, including securing routes to market for a range of renewable technologies, and continued support for offshore wind development.

To date, the move towards decarbonisation has focused on electricity generation, and been primarily supported by subsidy schemes and support payments. However, Scotland (and the UK as a whole) will face wider challenges associated with matters such as the decarbonisation of heat and transport. While the decarbonisation of electricity supply has been a relatively “arms-length” issue for the average consumer, the pursuit of heat decarbonisation may prove comparatively more disruptive as a result of required changes to housing stock and consumer behaviour.

## 3.3 Renewable energy target

As stated above, the Scottish Government has a target to generate the equivalent of 100% of Scotland’s own electricity demand from renewable sources by 2020. In 2019, the equivalent of 90.1% of Scotland’s gross electricity consumption was from renewable sources, up from 76.7% in 2018.

According to the Scottish Government, “*Scotland's ability to meet the 100% target by 2020 will depend on how much renewable electricity generation increases and gross consumption decreases (due to energy efficiency) in the next year*”<sup>37</sup>. As such, this highlights the importance of potential levy support in the pursuit of this 2020 target.

In examining the country’s generation mix, we note that (according to data from BEIS and the Scottish Government), as of 2019 installed renewable capacity in Scotland was 11.9GW with a further 13.9GW planned. This may be compared with a total of 7.3GW in

<sup>33</sup> “Scottish Energy Strategy: The future of energy in Scotland”, December 2017

<http://www.gov.scot/Resource/0052/00529523.pdf>

<sup>34</sup> <https://www.legislation.gov.uk/asp/2019/15/contents/enacted>

<sup>35</sup> <http://www.gov.scot/Topics/Business-Industry/Energy/Action/lowcarbon/LCITP/SEEP>

<sup>36</sup> <http://www.gov.scot/Resource/0053/00532096.pdf>

<sup>37</sup> “Annual Compendium of Scottish Energy Statistics”, August 2020

2014 with a large proportion of the growth coming from onshore wind (up from 5.1GW in 2014 to 8.3GW in 2019) and offshore wind (0.2GW to 1.0GW over the same period).

According to the Scottish Government, this move was “*driven by privatisation and subsidy schemes introduced to encourage the development of low carbon and renewable technologies*”<sup>38</sup>. This therefore acknowledges the role that energy policies have had in supporting Scottish decarbonisation.

According to the latest (November 2020) information from Ofgem, there was approximately 12.1GW of installed capacity accredited under the RO in Scotland<sup>39</sup> and a further 0.77GW accredited under the FiT scheme<sup>40</sup>. Therefore, the majority of renewable capacity in Scotland has been installed with schemes whose costs are recovered through levy support at the GB level.

### 3.4 Fuel poverty

The Scottish Government issued a Draft Fuel Poverty Strategy in June 2018<sup>41</sup> which highlighted that the eradication of fuel poverty is crucial to achieving a fairer, socially just and sustainable Scotland. It sets out four drivers of fuel poverty which need to be addressed: energy costs, low income, poor energy efficiency of the home and how energy is used in the home.

The Scottish Government’s previous definition of fuel poverty was defined in the Scottish Fuel Poverty Statement (FPS) published in 2002 as, “*A household is in fuel poverty if 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.*” However, the Fuel Poverty Act (Targets, Definition and Strategy) (Scotland) Act 2019<sup>42</sup> expanded this definition to include a quality of life consideration such that a household would be deemed to be in fuel poverty if:

“(a) *in order to maintain a satisfactory heating regime, total fuel costs necessary for the home are more than 10% of the household’s adjusted net income (after housing costs), and*

*(b) after deducting such fuel costs, benefits received for a care need or disability (if any) and the household’s childcare costs (if any), the household’s remaining adjusted net income is insufficient to maintain an acceptable standard of living.”*

In addition, a definition of “extreme fuel poverty” was established under which a table of 20% was applied in part a of the definition. The Act also introduced a statutory target so that by 2040 as far as reasonably possible no household in Scotland is in fuel poverty and, in any event:

“(a) *no more than 5% of households in Scotland are in fuel poverty*

*(b) no more than 1% of households in Scotland are in extreme fuel poverty*

*(c) the median fuel poverty gap of households in Scotland in fuel poverty is no more than £250 adjusted in accordance with Section 5(5) (of the Act)<sup>43</sup> to take account of changes in the value of money”*

<sup>38</sup> <https://www.gov.scot/publications/annual-compendium-of-scottish-energy-statistics/>

<sup>39</sup> <https://www.renewablesandchp.ofgem.gov.uk/Default.aspx>

<sup>40</sup> <https://cfr.ofgem.gov.uk/#/>

<sup>41</sup> <https://www.gov.scot/publications/draft-fuel-poverty-scotland-2018/>

<sup>42</sup> <https://www.legislation.gov.uk/asp/2019/10/enacted>

<sup>43</sup> i.e. “*the percentage increase or decrease in the annual average consumer prices index over the period from 2015 to the year to which the target relates*”



Using the Scottish Government’s definition, the prevailing rate of fuel poverty is lower than that in 2012-2015, with extreme fuel poverty seeing a decrease from the peak in 2013. However, the definition notes that factors such as income levels, type of heating (those households with electric heating have higher rates of fuel poverty than those with gas heating) and energy efficiency of housing stock are all among the determinants as to whether a household is in fuel poverty.

Citizens Advice estimated that 229,938 households received the WHD in Scotland in 2018. This represents 9.3% of Scottish households, against 25% of Scottish households that were defined as being in fuel poverty in 2018.<sup>44</sup>

In the context of Scottish domestic customers, the presence of electric heating and its impact on the proportion of the bill comprised of levies is important from a fuel poverty perspective given Scottish government data on fuel poverty. According to the August 2020 Annual Compendium of Scottish Energy Statistics 2020, August 2020 Update<sup>45</sup>, those households with gas as their main fuel type are “*significantly less likely to be in fuel poverty*”, with its tables stating that 22% of gas households are in fuel poverty compared to 43% of households that use electric heating.

Direct affordability measures are intended to help alleviate fuel poverty across their GB-wide customer base. However, it is noted that the levies as a whole are a supportive factor to energy costs and may be a factor in pushing households into fuel poverty. Given that the bulk of the combined levy cost is applied to electricity bills, this may exacerbate the problem of fuel poverty for those households with electric heating<sup>46</sup>.

### 3.5 Employment

According to the Scottish Government’s August 2020<sup>47</sup> “Annual Compendium of Scottish Energy Statistics”, employment in the energy sector stood at 69,000 jobs in 2018. Of this, the low carbon and renewable energy sector directly supported 23,100 FTE jobs as well as contributing £6.4bn to the country’s economy<sup>48</sup>.

Reflecting the growth in wind capacity, the Scottish Government’s data indicates that the onshore wind sector directly supported approximately 2,900 FTE jobs in Scotland and generated £2.08 billion in turnover in 2018. Offshore wind generated £0.26 billion in turnover in 2018 and has directly supported approximately 1,700 FTE jobs in Scotland, although this is expected to grow as capacity increases.

<sup>44</sup> [https://www.cas.org.uk/system/files/publications/mind\\_the\\_fuel\\_poverty\\_gap\\_06.08.pdf](https://www.cas.org.uk/system/files/publications/mind_the_fuel_poverty_gap_06.08.pdf)

<sup>45</sup> <https://www.gov.scot/publications/annual-compendium-of-scottish-energy-statistics/>

<sup>46</sup> [https://www.eas.org.uk/en/fuel-poverty-overview\\_50439/](https://www.eas.org.uk/en/fuel-poverty-overview_50439/)

<sup>47</sup> <https://www.gov.scot/publications/annual-compendium-of-scottish-energy-statistics/>

<sup>48</sup> “Renewable” = renewable electricity, heat and energy from waste and biomass; “Low carbon” = nuclear, energy efficient products, low carbon financial and advisory services, LEVs, infrastructure, fuel cells and energy storage

## 4. Forecast of levies and impacts on domestic customer bills

### 4.1 Forecast approach

Cornwall Insight modelling of the component elements of a domestic electricity and gas bill is presented over the period 2020-21 to 2024-25 inclusive and in real 2020-21 terms. This analysis is based upon the output of Cornwall Insight's quarterly (September 2020) Third Party Charges (TPC) report.

As stated above, for the purpose of this analysis, it is assumed that all levies are recovered on a volumetric (per unit) basis, including ECO and WHD for which it is assumed that the cost associated with schemes are recovered by suppliers by apportioning the cost across their entire domestic customer base.

For illustrative purposes only, we have encompassed supplier operating costs through the application of the relevant sections of the Ofgem default tariff price cap (operating costs, EBIT and headroom) for the applicable customer archetypes on a standard credit payment basis.

For the purpose of this analysis, our assessment of domestic customers utilises the Ofgem TDCV<sup>49</sup> values as archetypes. These TDCV tables are industry standard national average values for the annual usage of both gas and electricity customers, and are used – among other areas – on price comparison websites as the basis for customer bill calculations and by suppliers for tariff price estimations. The following archetypes are therefore presented on a national average basis:

- Archetype 1 (“average” customer, gas heating, standard credit payment, national average)
  - Electricity
    - The medium Profile Class 1 Ofgem TDCV is used for a “typical” domestic customer (this is the “domestic unrestricted” band).
  - Gas
    - The prevailing medium gas TDCV is applied for Profile Class 1 electricity customer.
- Archetype 2 (electric heating, standard credit payment, national average)
  - Electricity
    - The medium Profile Class 2 (domestic restricted a.k.a. Economy 7) TDCV is used as a proxy for a household with electric heating given that analysis from Ofgem states that “around 90%”<sup>50</sup> of Profile Class 2 meters are Economy 7 meters.
  - Gas
    - The prevailing low gas TDCV applied for a Profile Class 2 electricity customer given the assumed absence of gas for heating purposes.
- Archetype 3 (electric heating, no gas connection, standard credit payment, national average)

<sup>49</sup> <https://www.ofgem.gov.uk/gas/retail-market/monitoring-data-and-statistics/typical-domestic-consumption-values>

<sup>50</sup> <https://www.ofgem.gov.uk/ofgem-publications/160329>

- Electricity
  - The medium Profile Class 2 TDCV is used as a proxy for a household with electric heating given that analysis from Ofgem states that “around 90%”<sup>51</sup> of Profile Class 2 meters are Economy 7 meters.
- Gas
  - No gas demand.

As the level and design of GGL remains under ongoing consultation, it is **excluded** from this analysis. However, given its relatively low level, both at introduction and by its peak as defined in the consultation (£6.90 for a standard household) it is not expected to materially alter the analysis.

Table 5: Ofgem TDCVs (January 2020 release)

	kWh	TDCV
Gas	Low	8,000
	Medium	12,000
	High	17,000
Electricity: Profile Class 1	Low	1,800
	Medium	2,900
	High	4,300
Electricity: Profile Class 2	Low	2,400
	Medium	4,200
	High	7,100

Source: Ofgem

As stated above, these are national average tables as Ofgem does not apply region-specific TDCVs on the grounds that to do so would “increase the complexity” of its approach. However, in its 2020 TDCV decision document<sup>52</sup>, Ofgem provided average consumption by region for information purposes only and on the basis that such information should **not** be used as TDCVs. For the purpose of completeness, these are presented for the Scottish regions in Table 6

<sup>51</sup> <https://www.ofgem.gov.uk/ofgem-publications/160329>

<sup>52</sup> [https://www.ofgem.gov.uk/system/files/docs/2020/01/tdcvs\\_2020\\_decision\\_letter\\_0.pdf](https://www.ofgem.gov.uk/system/files/docs/2020/01/tdcvs_2020_decision_letter_0.pdf)



Table 6: Ofgem average domestic energy consumption

Average Consumption (kWh)	Gas	Electricity Profile Class 1	Electricity Profile Class 2
Northern Scotland	13,607	3,157	6,293
Southern Scotland	12,892	2,919	4,248

Source: Ofgem

## 4.2 Summary of levy impact on typical domestic consumer bills.

Given Cornwall Insight modelling of these levies and the other components of domestic energy bills using the approach above, we note the following outputs:

- In real terms with a 2020-21 base year and for a typical domestic customer with gas heating (Archetype 1), levies represent an average of approximately 17% of their energy bill (excluding VAT) over the forecast period to 2024-25, equivalent to approximately £174 per annum.
  - In examining the component elements, this equates to approximately 26.3% for electricity (c. £151) and 5.1% for gas (c. £23).
- In real terms with a 2020-21 base year, and for a typical domestic customer with electric heating and lower than average gas demand (Archetype 2) over the forecast period to 2024-25, levies represent an average of approximately 21% of their energy bill (excluding VAT), equivalent to approximately £233 per annum.
  - In examining the component elements, this equates to approximately 28.2% for electricity (c. £218) and 4.3% (c. £15) for gas.
- In real terms with a 2020-21 base year and for a typical domestic customer with electric heating and no gas demand (Archetype 3) over the forecast period to 2024-25, levies represent an average of approximately 28% of their energy bill (excluding VAT), equivalent to approximately £218 per annum.

Table 7: Archetype 1 GB energy levies 2020-21 to 2024-25: Typical domestic energy consumer with gas heating (£, Real 2020-21 terms)

Electricity and gas spend	2020-21	2021-22	2022-23	2023-24	2024-25
Total £ (exc. VAT)	987.41	1,048.04	1,036.04	1,035.97	1,035.40
- Of which Levies (£)	174.72	173.33	171.33	175.25	173.64
- Of which Levies (%)	17.7%	16.5%	16.5%	16.9%	16.8%

Source: Cornwall Insight analysis

Note: Electricity Typical Domestic Consumption Value (TDCV) as defined by Ofgem = 2,900kWh; Gas TDCV = 12,000kWh

Table 8: Archetype 2 GB energy levies 2020-21 to 2024-25: Typical domestic energy consumer with electric heating and lower than average gas demand (£, Real 2020-21 terms)

Electricity and gas spend	2020-21	2021-22	2022-23	2023-24	2024-25
Total £ (exc. VAT)	1,098.29	1,145.82	1,133.26	1,136.36	1,138.73
- Of which Levies (£)	234.47	232.65	229.94	235.71	233.56
- Of which Levies (%)	21.3%	20.3%	20.3%	20.7%	20.5%

Source: Cornwall Insight analysis

Note: Electricity TDCV as defined by Ofgem = 4,200kWh; Gas TDCV = 8,000kWh

Table 9: Archetype 3 GB energy levies 2020-21 to 2024-25: Typical domestic energy consumer with electric heating and no gas demand (£, Real 2020-21 terms)

Electricity and gas spend	2020-21	2021-22	2022-23	2023-24	2024-25
Total £ (exc. VAT)	754.59	777.23	768.78	774.61	779.71
- Of which Levies (£)	218.63	216.97	214.42	220.27	218.28
- Of which Levies (%)	29.0%	27.9%	27.9%	28.4%	28.0%

Source: Cornwall Insight analysis

Note: Electricity TDCV as defined by Ofgem = 4,200kWh; Gas = 0kWh

The above analysis indicates that levies represent a larger proportion of energy bills for those customers that have electricity as their source of heating than those customers who have gas heating. Additional information is presented in the Annexes.

We also note that – due to the different ‘cost to serve’ applied by Ofgem to different payment types – the percentage of the bill comprised of levies varies if a customer is on standard credit (as above) payment terms, direct debit (defined by Ofgem as “Other” for the purpose of this report) and pre-payment meter (PPM). These are summarised as follows (percentage of total bill comprised of levies, arithmetic average 2020-21 to 2024-25, real 2020-21 terms).

Table 10: GB energy levies 2020-21 to 2024-25 as percentage of bill (annual arithmetic average) by Archetype (Real 2020-21 terms)

Payment type	Archetype 1	Archetype 2	Archetype 3
Standard Credit	17.0%	20.6%	28.3%
Direct Debit	18.2%	21.3%	29.7%
PPM	17.5%	21.3%	29.3%

Source: Cornwall Insight

### 4.3 Summary of levy impact on typical non-domestic consumer bills.

Cornwall Insight have examined the impact of levies on non-domestic consumer bills based upon information provided by Scottish Government. These consumption figures were provided by Scottish Government to reflect consumption profiles of different non-domestic buildings in Scotland, based on a variety of data sources characterising the non-domestic stock and BSRIA rule of thumb values. These are illustrated in Table 11.

Table 11: Non-domestic customer profiles provided by Scottish Government

Non-domestic Customer type	Annual electricity demand (kWh)	Annual gas demand (kWh)
Archetype 1: Median gas-using non-domestic building	25,000	65,000
Archetype 2: Median non-domestic building not using gas	20,000	0

Source: Scottish Government

In terms of the immediate impact of levies, the main change between domestic and non-domestic consumers is that the latter are liable for CCL but not liable for ECO and WHD. The net result of this difference is that levies represent a larger percentage of the typical non-domestic bill than the typical domestic bill, noting the following outputs:

- In real terms with a 2020-21 base year and for an Archetype 1 non-domestic customer, levies represent an average of approximately 29% of their energy bill (excluding VAT) over the forecast period to 2024-25, equivalent to approximately £1,749 per annum
  - In examining the component elements, this is approximately 39.5% for electricity and 14% for gas – noting that the percentage for gas increases over the review period given the forecast increase in CCL rates for gas
- In real terms with a 2020-21 base year and for an Archetype 2 non-domestic customer, levies represent an average of approximately 38.9% of their energy bill (excluding VAT) over the forecast period to 2024-25, equivalent to approximately £1,119 per annum

*Table 12: Archetype 1: Median gas-using non-domestic building GB energy levies 2020-21 to 2024-25 (£, Real 2020-21 terms)*

<b>Electricity and gas spend</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	5,753.22	6,165.93	6,077.02	6,121.80	6,102.21
- Of which Levies (£)	1,669.28	1,682.20	1,728.65	1,818.19	1,848.85
- Of which Levies (%)	29.01%	27.28%	28.45%	29.70%	30.30%

Source: Scottish Government, Cornwall Insight analysis

*Table 13: Archetype 2: Median non-domestic building not using gas GB energy levies 2020-21 to 2024-25 (£, Real 2020-21 terms)*

<b>Electricity and gas spend</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	2,748.21	2,910.85	2,871.30	2,934.23	2,909.56
- Of which Levies (£)	1,124.30	1,110.72	1,104.20	1,134.23	1,120.28
- Of which Levies (%)	40.91%	38.16%	38.46%	38.66%	38.50%

Source: Scottish Government, Cornwall Insight analysis

## 5. Impact of levies on low carbon technology uptake

This section explores the impact of the levies discussed above on consumer uptake of low carbon technologies. Specifically, this section focuses on the impact of fuel costs over other drivers of technology uptake (such as upfront price, incentive schemes and carbon savings), with the impact of levies themselves not separable from the impact of fuel cost for electricity and gas.

Regarding technology types, the focus here is on a subset of those defined as “no and low regrets strategic technologies” in the Scottish Government’s Heat in Buildings Strategy<sup>53</sup>, namely heat pumps to replace either high carbon heating systems in off-gas grid properties or gas boilers. Energy efficiency measures and heat networks are also noted under the strategic technologies, and are important technologies in heat decarbonisation. However the impact of levies on these technologies is beyond the scope of this report.

This section includes a review of existing research on these matters as well as potential solutions, and identifies gaps that merit further research.

### 5.1 Role of energy pricing in technology uptake

The role of electricity and gas pricing in the uptake of these technologies must be considered in the context of the current policy support outlined in the Annex and market context outlined later in this section.

Research relating to the impact of ongoing (primarily fuel) costs in investment decisions is described in the subsections below, with the landscape materially different for business and domestic consumers.

#### 5.1.1 Influence of energy pricing on non-domestic consumers

It is generally recognised that the paths to decarbonisation for non-domestic consumers are heterogeneous due to the diverse needs of these consumers, tenure type, and the wide range of buildings that businesses operate in.

Many of the issues relating to the domestic roll-out of technologies (payback times, upfront costs, consumer awareness and inertia and uncertainty over future costs) will apply in the non-domestic sector. However, there are other key considerations. Some of these were set out by the UK Green Building Council in September 2020<sup>54</sup>, and include:

- The perception that using heat pumps will require high levels of structural intervention at the point of installation, linked to the lack of awareness of technologies
- The absence of energy performance data and associated carbon emissions for buildings and spaces
- The split between landlords (who choose and install building heating systems but do not pay bills) and tenants (who pay energy bills but cannot choose the heating systems)
- Long payback periods extending beyond short-term business leases

<sup>53</sup> <https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings-consultation/>

<sup>54</sup> <https://www.ukgbc.org/ukgbc-work/unlocking-the-barriers-to-low-carbon-heat-an-industry-view/>

- Additional costs being passed on to the customers of that business, affecting competitiveness

The final two points here reflect the impact of energy prices on non-domestic consumers, with higher prices increasing payback times and directly impacting competitiveness. It is not clear to what extent prices would need to reduce to sufficiently shorten payback times and remove this as a barrier, as this would require further research.

Responses to a BEIS call for evidence around low carbon heating in non-domestic buildings<sup>55</sup> additionally suggested that many business consumers were unlikely to plan ahead for heating purchases, and that many sales were “distress purchases” after a breakdown. This would typically be sought as quickly as possible and utilise a heating technology familiar to the consumer.

The evidence presented above suggests that energy pricing is not the main consideration in the use of heating technologies by non-domestic consumers. Consumers themselves may not have a choice over their heating technologies, and those that do (i.e. landlords) are more likely to consider upfront costs over running costs. Other structural barriers such as the absence of performance data also have an impact.

### 5.1.2 Influence of energy pricing on domestic consumers

There is a range of research that touches on domestic consumer issues with low carbon heating uptake, although much of this focuses on general barriers, and may only briefly mention (if at all) the role of electricity and gas pricing.

Research published by ClimateXChange in October 2020<sup>56</sup> notes that upfront costs often take precedence in consumer considerations over running costs. It cited evidence from BEIS in 2019 that 60% of owner-occupiers thought renewable heating would be expensive to install, but only 9% thought it would be expensive to run. However, the study did note that long-term running costs may represent a barrier, with some evidence suggesting payback times were a key concern, with payback times of more than 10 years considered unreasonable.

A study from The Energy Technologies Institute and Energy Systems Catapult (2019)<sup>57</sup> noted the importance of relative electricity and gas pricing. Despite stripping out the costs of “VAT, supplier operating costs and any taxes and obligations on the energy industry”<sup>58</sup>, it found that, on current projections, the ratio of costs between gas and electricity is unlikely to favour a switch to electric heating via a heat pump until “sometime after 2040”.

Indeed, the research suggested gas becoming relatively cheaper than electricity between 2020 and 2030, and the gap between the fuels stabilising between 2030 and 2040. The methodology used for forecasting prices in this study is relatively opaque and appears to be limited, with the report noting that price forecasts “include projections of the carbon intensity of the electricity supply but exclude external factors such as policy and regulation and market behaviour”. Although the study does not breakdown costs within this, the discrepancy could be due to anticipated electricity network costs or levies that are not fully stripped out in the study.

<sup>55</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/762546/Future\\_Framework\\_for\\_Heat\\_in\\_Buildings\\_Govt\\_Response\\_2\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/762546/Future_Framework_for_Heat_in_Buildings_Govt_Response_2_.pdf)

<sup>56</sup> <https://www.climateexchange.org.uk/media/4298/attitudes-and-awareness-low-carbon-heating-oct-2020.pdf>

<sup>57</sup> <https://es.catapult.org.uk/reports/pathways-to-low-carbon-heating-dynamic-modelling-of-five-uk-homes/>

<sup>58</sup> It is unclear whether or not this includes all of the levies outlined in this report

This is backed up by BEIS research on heat pumps from 2016<sup>59</sup>, which compares energy, carbon and resultant cost savings from heat pumps against gas boilers. This found that while energy savings would be between 61-72% for heat pumps, with carbon savings of 30-50%, costs would increase by between 0-39%. Even hybrid heat pumps, which use a combination of electricity and gas for fuel, have fuel cost increases of 0-19%, with lower energy and carbon savings. This study also notes that energy price volatility adds to the uncertainty around savings, although it did not project how the relative savings would play out in future years.

BEIS claims that domestic consumers “*heavily discount future savings*” in investment decisions, with more emphasis put on upfront costs. This factored in to the decision to move away from a tariff-based support scheme (RHI) to an upfront grant-based scheme (Clean Heat Grant).

Research on pricing in energy markets published by Energy Systems Catapult<sup>60</sup> in 2018 focuses on electricity pricing, looking at the impact of rebalancing unit rates and standing charges. As noted earlier in this report, the majority of levies are charged on a volumetric basis (i.e. on the unit rate). While the Energy Systems Catapult findings focus on network costs, the results remain relevant when considering levies. Moving more electricity costs onto a standing charge (fixed) basis would improve the case for heating options that use electricity as a fuel, as payback times are shortened and running costs compared to the counterfactual are decreased. The report recommends a number of other proposals to support heat pump uptake, including:

- Removing the burden of policy costs on electricity tariffs
- Designing tariffs to allow for load management
- Minimise fixed costs apportioned to heat pump load
- Application of a carbon tax to residential gas use

A report from the Committee on Climate Change<sup>61</sup> in 2017 also noted the issue, stating that low carbon heat was paid for through taxation (i.e. RHI costs) whereas low carbon electricity was paid for through electricity bills. It noted the imbalance of costs on electricity bills and the absence of a carbon price on gas meant costs fell more heavily on electrically heated households, and greater subsidy was required to compensate consumers switching to heat pumps from gas boilers.

## 5.2 Low carbon heat market context

The roll-out of heat pumps is at an early stage in the UK, particularly when compared with other countries. This is important to consider as it impacts the type of consumers that have experienced the technology, the policy shaping future uptake and the costs associated with installing the technology.

The early stage of adoption in the UK is shown by the comparison with other European countries in Figure 1 .

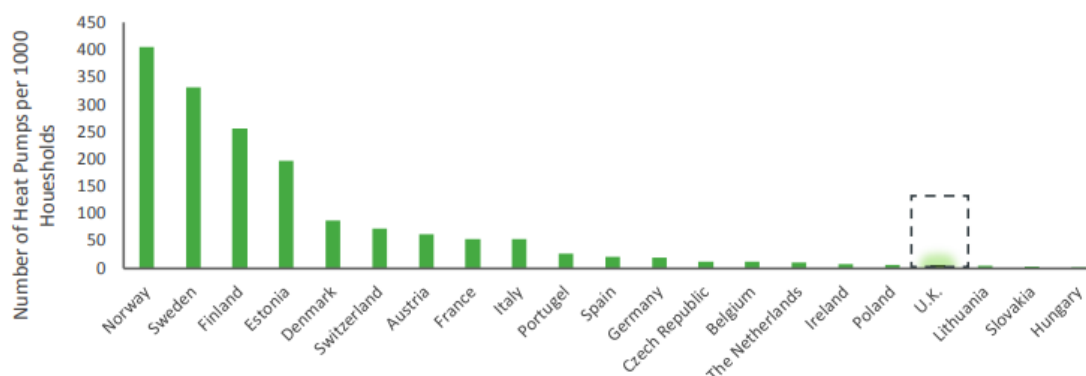
<sup>59</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/565248/Heat\\_Pumps\\_Combined\\_Summary\\_report\\_-\\_FINAL.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/565248/Heat_Pumps_Combined_Summary_report_-_FINAL.pdf)

<sup>60</sup><https://es.catapult.org.uk/reports/cost-reflective-pricing-in-energy-networks/>

<sup>61</sup><https://www.theccc.org.uk/wp-content/uploads/2017/03/Energy-Prices-and-Bills-Committee-on-Climate-Change-March-2017.pdf>



Figure 1: Number of heat pumps per 1,000 households in European countries (note UK highlighted), Heat Pump Association



Source: Heat Pump Association

As noted in other research, while other European countries have greater levels of heat pump adoption, the conditions for this mass market uptake are unlikely to be replicated in GB under current market conditions. Reasons for this include:

- The high upfront cost of systems, both due to an immature market and disruptive work required to existing buildings
- Limited savings compared to the incumbent technology and fuel price (primarily gas heating, which is a cheap fuel)
- Low consumer awareness of low-carbon heating systems

The first two points here are covered in this section of the report. Consumer awareness research was published by National Grid in September 2020<sup>62</sup>, finding that around half of consumers surveyed had never heard of heat pumps (compared to 20% having never heard of biomass boilers). Further research from ClimateXChange<sup>63</sup> published in October 2020, pulling together results from a range of other studies, found similar results, with around 30% of consumers aware of air source heat pumps across the UK. For ground source heat pumps, around 30-40% of respondents were aware.

The ClimateXChange study found there were only small differences in attitudes between Scottish consumers and those in the rest of GB. Key differences included higher awareness of biomass boilers and ground source heat pumps amongst Scottish consumers, but less openness to considering different kinds of heating systems (26% said they would consider other kinds of heating systems, compared to 36% in GB).

The low levels of deployment of low carbon heating are important, as it suggests that current consumers with low carbon heating will be early adopters, and therefore not representative of how the majority of consumers would interact with energy consumption and services. It also means that the efficient costs of installation are unlikely to have been found, as the number of installations has been relatively limited. As such, support schemes remain an important driver of uptake, at least in the near term.

### 5.3 Cost comparison of heating types when levies are excluded from costs

Table 14 shows typical running costs for gas and oil boilers, as compared to heat pumps. The results of this simple calculation verify the claims in other research that,

<sup>62</sup> <https://www.nationalgrid.com/document/134296/download>

<sup>63</sup> <https://www.climatexchange.org.uk/media/4298/attitudes-and-awareness-low-carbon-heating-oct-2020.pdf>



under current tariff structures, heat pumps are unlikely to offer savings, particularly against gas boilers.

The impact of the levies described earlier in this report can be shown by removing them from this calculation. As noted earlier in this report, typical electricity levies add around 5.2 p/kWh, whereas gas levies add approximately 0.2 p/kWh. Reducing the unit rates by these amounts would bring annual running costs for a heat pump and gas boiler closer together.

Table 14: Typical running costs for gas and oil boilers, and electric heat pumps

Heating technology	Typical annual consumption	Typical fuel cost (excluding standing charges for gas and electricity)	Indicative annual running cost	Typical fuel costs (excluding levies)	Indicative annual running cost (excluding levies)	Impact of current levy approach
Gas boiler	12,000 kWh <sup>64</sup>	3.0 p/kWh <sup>65</sup>	£360	2.8p/kWh	£336	Absence of levies on gas bills lead to low unit rates and cheaper running costs
Oil boiler <sup>66</sup>	12,000 kWh	4.9 p/kWh	£588	-	-	-
Heat pump	2,880 kWh based on a COP of approximately 3 <sup>67</sup>	16.2 p/kWh <sup>68</sup>	£467	11.0p/kWh	£317	Levies applied on a volumetric basis lead to higher running costs for all electrified heating systems

Source: Cornwall Insight

It should be noted that these figures are indicative for the purposes of a high-level comparison. In practice there is a high degree of uncertainty over the performance of different heating systems in different settings, with a wide range of factors including specific design of the heating system, outside air temperature, and energy efficiency performance of the building playing a major role in the running costs of different technologies.

<sup>64</sup> Based on Ofgem's medium TDCV which represents the median of gas consumption over the previous two years <https://www.ofgem.gov.uk/publications/decision-typical-domestic-consumption-values-2020>

<sup>65</sup> Source: Cornwall Insight

<sup>66</sup> <https://www.which.co.uk/reviews/home-heating-systems/article/home-heating-systems/oil-central-heating-aP9gU4u5O8aO>

<sup>67</sup> <http://www.networkrevolution.co.uk/wp-content/uploads/2015/01/CLNR-L091-Insight-Report-Domestic-Heat-Pumps.pdf>

<sup>68</sup> Source: Cornwall Insight

## 6. Analysis of routes for achieving a different balance

As discussed in Section 3, the predominant reason that the majority of energy levy costs are placed on the electricity bill is that suppliers' cost exposure under the schemes is based on volumetric electricity supplied. This means that while, in most cases, there is not a direct policy or regulatory obligation on suppliers to recover the costs via electricity unit rates, commercial drivers strongly incentivise suppliers to recover the costs in this manner, and that this is therefore reflected in how suppliers' design their tariffs.

This section therefore examines the potential routes that could be used to achieve a different balance of levy recovery. A summary of the options and the identified strengths and weaknesses of these is presented in Table 15.

Table 15: Summary of levy recovery options

Option	Summary	Strengths	Weaknesses	Commentary
Non-volumetric charging basis	<p>Alteration of the supplier charging basis of the existing policy schemes from volumetric to non-volumetric.</p> <p>This could take the form of a per meter point charge (as proposed for the GGL), a household charge, or potentially a flat supplier charge.</p>	<p>Straightforward arrangement for suppliers and systems to implement.</p> <p>Provides high degree of cost certainty and predictability.</p> <p>Removes disincentive to change heating fuel.</p>	<p>Does not provide cost reflective charges.</p> <p>Potential to penalise low users compared to high users.</p>	<p>The proposed GGL would operate on this basis initially. This suggests that the arrangement is acceptable to BEIS.</p> <p>However, the GGL is proposed to move to a volumetric basis in the mid-term to provide for more cost reflective charges. This combined with the broader market usage of cost reflective charges indicates that non-volumetric charges are less likely to be attractive to BEIS or Ofgem as a potential supplier charging methodology.</p>
Split between electricity and gas	<p>The supplier charging methodologies could be updated to change the cost recovery calculation to take into account both electricity and gas volumes supplied.</p>	<p>Removes the disincentive to switch heating technology, and could potentially provide an incentive to switch depending on weighting.</p> <p>Relatively straight forward to implement.</p> <p>Maintains cost reflective charges.</p> <p>Potential to reduce fuel poverty instances in electrically heated homes.</p>	<p>Gas consumption volumes are harder to forecast for levy recovery than electricity volumes due to strong inverse correlation with ambient temperature and weather conditions.</p> <p>Questions over fairness as the majority of policy costs are electricity related and not all consumers are connected to the gas network.</p> <p>Potential to increase fuel poverty rates in gas heated homes.</p>	<p>This should remove the disincentive for electric heating, as the change in heating fuel would not impact the exposure to levy costs. However, it could introduce other potential issues, including arguments around charging electricity decarbonisation costs on gas, and 'fairness' concerns as only 85% of households in GB (and only 79% in Scotland) are connected to the gas system, while ~9% of Scottish homes use a fuel other than electricity or gas for heating.</p>
Heating allowance	<p>The exact design of a heating allowance would depend on the final policy. However, it could include an arrangement whereby the scheme is designed so that households are charged the same levy costs for their 'heating' consumption regardless of technology or fuel.</p>	<p>Could allow the fair division of levies between different heating technologies and fuels.</p> <p>Could be used for broader policy considerations.</p>	<p>Potential to cross reserved/ devolved policy areas.</p> <p>The introduction of a heating allowance would be a significant undertaking. It would require the development of accurate and justifiable methodologies for the allowances.</p> <p>Such a scheme would likely increase the complexity of the energy market.</p> <p>The industry data flows currently used for levy cost allocation do not go down to the individual household level of granularity.</p>	<p>To date, heating allowances have not been used in the GB energy market, meaning that this would represent a significant deviation from current practice.</p>
Licence condition	<p>A licence condition could be introduced to require suppliers to split the charges between gas and electricity, recover the charges in a manner which does not disadvantage non-gas heating types, or another solution.</p>	<p>Does not require changes to the scheme designs.</p>	<p>Without accompanying policy change suppliers would remain exposed to the commercial risk of being charged on one basis and recovering costs on another.</p>	<p>Given the general preference for cost reflective charges across the GB (including BEIS approach to policy cost recovery and network charging regimes), and the core scheme design, we do not think it is likely that Ofgem would unilaterally take action to implement such an obligation.</p>

<p>Voluntary actions</p>	<p>Suppliers could voluntarily alter how they price tariffs in regards to levy costs.</p> <p>This would depend on individual actions by specific suppliers, but could either include specific 'low carbon heating tariffs' or a supply book wide decision.</p>	<p>Does not require changes to the scheme designs or regulations.</p> <p>Market direction of travel may lead to some suppliers taking this action without official intervention.</p>	<p>Unlikely to cover the whole market, leading to confusion and not benefiting all customers.</p> <p>Unlikely to see high take-up due to commercial incentives from policy design – this approach would require suppliers to bear an additional volume-related commercial risk.</p> <p>Potential for gains to be lost if suppliers cease to take voluntary actions.</p>	<p>In the competitive market suppliers can take voluntary actions to support their branding or align with customer needs. This has been seen for issues such as green power supply or voluntary provision of the WHD.</p> <p>Voluntary actions by suppliers to recover levies costs on a different basis to how they face them would expose them to significant commercial risks. Therefore, we do not consider it likely that this would be an attractive option for suppliers.</p>
<p>Movement to general taxation</p>	<p>Removal of energy policy costs from the energy bill and instead funded through general taxation.</p>	<p>Removal of levies from customer bills should remove the higher rate of charges on the electricity bill and therefore the barrier to low carbon heating.</p> <p>Reduced energy costs would lower fuel poverty rates.</p> <p>Recovery of policy costs through taxation could potentially be less regressive than recovery through energy bills.</p>	<p>Requires consent of HM Treasury to move charges from energy bills to taxation.</p> <p>Significant legislative changes would be needed to enact.</p>	<p>The movement of levies to general taxation is an issue that has been considered and discussed many times in the energy industry.</p> <p>The announced Net Zero Review<sup>69</sup>, includes within its scope the consideration of whether levies should be recovered from taxation. This could suggest that the government is seriously considering moving the levies to taxation.</p> <p>However, against this, the annual costs of taking the levies onto taxation would be significant, and looking ahead government finances will need to bear the cost of COVID-19 policies and so movement to taxation may be less viable.</p>

Source: Cornwall Insight

<sup>69</sup> <https://www.gov.uk/government/publications/net-zero-review-interim-report>

## 6.1 Policy design

As previously discussed, how a policy is designed is the major driver of how and why suppliers assign the costs of that policy to their tariffs. Therefore, altering the policy design should lead to suppliers altering their tariff approach as well. There are a number of potential options which could be progressed, which are summarised below:

- **Split between electricity and gas** – the majority of policy costs are tied to electricity volumes supplied. The volumetric approach to levy recovery could be retained but with the supplier charging methodologies updated to change the cost recovery calculation to take into account both electricity and gas volumes supplied. This is already used for the ECO scheme costs and so is a proven solution. Assuming the intent is to equally split levy costs between gas and electricity and given the differences in typical annual gas and electricity consumption (e.g. using prevailing central TDCVs of 2,900kWh electricity and 12,000kWh gas) it is expected that the levy methodologies would be constructed to reflect this difference in volumes.
  - This should reduce the disincentive for heating fuel switching as the levy costs would be split between both fuels and so the increase in electricity consumption (and therefore levy costs) offset by the decrease in gas consumption (and levy costs). However, it could introduce other potential issues, including arguments around charging electricity decarbonisation costs on gas, ‘fairness’ concerns as only 85% of households are connected to the gas system (noting the current concerns over the fairness of arrangements that place the full cost of electricity and so result in higher costs for electrically heated homes), and the potential increase in fuel poverty rates for gas heated homes, although this could be balanced against the potential decrease in fuel poverty for electrically heated homes
  - Potentially, if required this could be extended further to weight the costs so that they are more heavily charged on gas consumption than electricity. This would have the benefit of further incentivising consumers to move to low carbon heating sources. However, this would likely have negative impacts on fuel poverty by increasing the cost of heating for the majority of consumers who use gas for space heating
  - While not directly stated in the Energy White Paper<sup>70</sup>, the overall Paper’s aims of decarbonisation, increasing uptake of heat pumps, and ensuring a fair transition suggest that, when taken together, the government may be open to dialogue on this area
- **Non-volumetric charging basis** – policy costs could be recovered on a non-volumetric basis, such as a per meter point, a flat supplier charge regardless of size, or charge bands not linked to consumption volume (instead for example potentially linked to household income, or other factors such as size or location). This would remove the additional cost penalty for customers using electric low carbon heating, as they would no longer face a higher charge for consuming increased electricity volumes.
  - However, while this would remove the cost disadvantage for electric heating, it also could be considered a regressive levy as it would place the same level of cost for low and high consuming households. We have

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[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/945899/201216\\_BEIS\\_EWP\\_Command\\_Paper\\_Accessible.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf)

already seen proposals for meter point-based cost recovery for the GGL criticised on these grounds. Additionally, in general we observe that Ofgem and BEIS favour cost-reflective charging options where possible, with volumetric based charging typically seen as a ‘fairer’ solution as it links consumer levy costs to overall volumes of energy consumed<sup>71</sup>

- **‘Heating allowance’** – in addition to the more straightforward solutions above, other solutions less aligned with the current GB approach could be considered. This could take the form of a ‘heating allowance’. The exact design of this would depend on any final policy developed. However, it could include an arrangement whereby the scheme is designed so that households are charged the same levy costs for their ‘heating’ consumption regardless of technology or fuel. Alternatively, arrangements could include only charging policy levies on ‘non-heating’ electricity use to ensure that households pay the same levies regardless of fuel type; or other designs. Regardless of the exact solution, it is likely that this would require significant development as a concept. Depending on the route taken it could see the establishment of ‘heating budgets’ for different technologies (defined by expected MWh requirements for heat for different technologies and household types), above which the levies are charged onto consumers, or research into, and agreement on the ‘non-heating’ use expected of households, either as a whole or based on different categories.
  - This option would likely be more complicated to implement and operate due to the increased complexity and need to individually consider and track each household’s usage against its allowance for subsidy schemes. While this is delivered for individual tariffs, currently industry dataflows used for domestic consumption for subsidy schemes do not allow for household by household consumption to be split out in this manner. The move to smart meters and market wide half hourly settlement may help address this issue
  - Further, this option would require the development of the heating allowances for the different technologies and household types. This is likely to be a controversial process (given its impact on costs and wide range in consumption patterns) and would require detailed real world data to support
  - Finally, this option represents a significantly broader reform than the other options. The introduction of a heating allowance and change in energy cost charging to high and low bandings could represent a major alternative to the retail market, beyond merely impacting low carbon heat uptake.

The time required to implement a policy change through changes to the secondary legislation that governs the policy schemes’ cost recovery would depend on the exact nature of the change, BEIS’s workload at the time, and the level of industry support or opposition to the change. However, policy changes normally have a significant development and implementation timeline, particularly when they concern cost recovery. Therefore we would expect a timeline of at least 12-18 months to develop the change and likely similar to implement.

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<sup>71</sup> Excluding to the consideration of heat decarbonisation (and the potential associated increase in electricity volumes from gas to electric heat fuel switching) higher electricity consumption volumes is typically assumed to reflect greater household size, usage and spending

## 6.2 Licence condition

As licensed parties operating in a regulated market, suppliers can be required to act in certain ways via their supply licences. Therefore, a potential solution could be to place an obligation on suppliers via their supply licence as to how the costs of levies are applied to tariffs, and therefore consumers.

Ofgem already uses the supply licences to drive supplier pricing behaviour through the price cap, restrictions on payment type differentials, and chargeable supply services. Therefore this is an area with some precedent.

A licence condition could be introduced to require suppliers to split the charges between gas and electricity, to recover the charges in a manner which does not disadvantage non-gas heating types, or another solution.

A potential benefit of using the licence over policy design is that the licence can be more principles-based and less prescriptive, i.e. (as with other licence conditions) the requirement could state that it is up to suppliers to ensure costs are recovered in a manner which does not advantage gas heating. This would potentially allow for supplier differentiation and avoid the requirement for a centralised policy and methodology to be fully developed and prescribed for splitting the cost recovery.

Instead, it would move the obligation onto suppliers and potentially allow for flexibility by Ofgem in how it judges this. However, it is likely that Ofgem would still need to develop an internal view on acceptable methodologies, even if this is not made public, to allow it to undertake enforcement action.

However, there are a number of potential downsides to a regulatory obligation without corresponding changes to the legislation or market environment. If the supplier is still being charged based on the current methodology, then requiring them to recover the costs in a different manner would expose them to significant commercial risk. For example if a supplier were charged policy costs based solely on electricity supply volumes, but obligated to recover the costs equally over gas and electricity supply volumes, it could be exposed to costs it may not be able to recover if it had a large number of high electricity-consuming customers and low gas usage customers.

Therefore different suppliers and parts of the industry would face a range of impacts from this approach. This could lead to increased supplier failures, and is unlikely to be an acceptable position for suppliers or the regulator to take. It would also likely result in suppliers increasing the risk premium used to hedge many of the costs in fixed retail tariffs. However, this would be mitigated if policy changes were implemented at the same time.

The time required to implement a regulatory change would depend on the exact nature of the change, Ofgem's workload at the time, and the level of industry support or opposition to the change. However, regulatory change is rarely rapid, and taking into account the required statutory engagement timelines and previous changes, we would not expect a timeline shorter than 12 months to design and approve the change. In addition to this, implementation time would also be required to give suppliers time to prepare, likely a minimum of another 12 months.

## 6.3 Voluntary actions

In addition to commercial incentives suppliers also act based upon brand and market positioning considerations. One key area which suppliers are looking to build a positive brand around is green energy supply, supporting net zero, and enabling technology.



Therefore, there could be the potential for suppliers to voluntarily reform how they look to recover levy costs. This could support the positioning of the supplier as a party looking to support low carbon heating and decarbonisation.

However, as a voluntary action there would be no way of ensuring that suppliers did undertake such an offer, or that it was offered on an enduring basis. This could lead to a situation whereby only some customers benefit as only a limited sub-set of suppliers look to undertake voluntary actions.

Additionally, while there may be brand advantages to suppliers positioning themselves in this way, as noted policy costs are a significant cost and suppliers would therefore be putting themselves at risk by not aligning their cost recovery with charging basis. As such, we do not consider it likely that a majority of suppliers would be keen to undertake action on a voluntary basis.

Unlike the other options, changes through voluntary actions could in theory be implemented considerably faster, as no policy or regulatory documents need to change.

## 6.4 Movement to general taxation

A final potential option would be to move the levy recovery from energy bills to general taxation. This would remove the cost recovery from energy tariffs and so remove the cost-disincentive for electric heating.

The broader macro-economic impacts of moving levy costs from the energy bills to taxation are beyond the scope of this project. However, from a consumer bill perspective the movement of levies from energy suppliers would remove the disincentive for electric heating as a result of levy costs, and more broadly reduce end consumer energy bills, which would also be expected to lower fuel poverty rates more broadly.

As previously noted, the RHI is currently paid for through general taxation. Initially however, it was proposed that the RHI be funded via an industry levy in a similar manner to other schemes. This was eventually rejected and moved to taxation due to a combination of factors, including the complexity of implementation and delivery, and negative impacts on fuel poverty and industrial competitiveness. This shows that the impacts of levy costs on fuel poverty, particularly in relation to heating sources, have been an issue and concern throughout the lifetime of policy costs.

The movement of policy costs to general taxation would be a major undertaking that would move significant costs to the public accounts and would likely face a high level scrutiny from within government, the energy sector, and other parties. Therefore this is expected to be the longest implementation timescale of any of the considered options, and would likely have to be aligned to a major energy policy reform, such as one driven by a white paper.

The cost of bringing energy policy levies onto general taxation would be significant. The schemes cost ~£10bn/year currently and are expected to increase in the short term.

The Net Zero Review includes the consideration of whether energy policy costs should be moved to general taxation and the impact of this. This suggests that there may be willingness to consider this if there is a consumer benefit to recovering some or all policy costs through taxation. Further, in the interim report published 17 December 2020, the Treasury notes that *“in some countries financing the costs through energy bills has been highly regressive, as lower income households spend a higher proportion of their*



*incomes on energy*<sup>72</sup>. While not identifying specific levies or countries, this does suggest government awareness of the impacts of recovering levies costs through the energy bill on fuel poverty, if not heat decarbonisation.

However, set against this, the proposed GGL will see the cost of supporting new bio-methane injections into the gas grid move from taxation (as it currently is under the non-domestic RHI) to customer bills. This suggests that the Treasury may be keen to continue to see support costs funded through end user bills<sup>73</sup>. This position may be exacerbated by the impact of the COVID-19 costs on the government's spending and debt.

## 6.5 Domestic vs non-domestic considerations

In addition to the areas raised above, different considerations for household and business customers may be relevant. This is due to both the differences in usage volumes and profiles between these customer types, and existing differences between treatment of levies between these customer groups. These differences may impact upon which solution is more suitable for different customer types, and potentially lead to either different solutions being applied, or not capturing a segment of the market under the changed rules.

Under the current arrangements, there are a number of differences between scheme applicability and costs for business and household consumers. The policy costs associated with affordability policies (WHD and ECO) are domestic only, and would therefore not be applied to non-domestic customer bills. This means that any changes that impacted these schemes' cost recovery would not affect business consumers.

Additionally, some non-domestic consumers, those covered by the EII scheme, are exempted from a significant proportion (up to 85%) of the main policy costs (the RO, FiT, and CfD). Therefore, the removal of policy costs from the bill may remove distortions between those industries classed as energy intensive and those that are large consumers but do not fall under this categorisation.

When considering how changes to policy cost recovery may impact upon the different sections of the market, it is necessary to consider some key differences between the two sectors. One key difference between business and household customers is the affordability focus – for households this is in regards to fuel poverty while for businesses it is instead competitiveness. While these link to energy cost they may need to be treated differently. Fuel poverty is more likely to be a direct concern and impact to households compared to competitiveness, as for most non-EII businesses energy costs are a small part of their cost base. Additionally, fuel poverty has typically had a higher priority for policy makers and policy design. Therefore, we would expect that the relative impacts on household customers would be greater than for business customers.

## 6.6 Other considerations

Further to the other areas examined, some considerations will apply regardless of the rebalancing approach. These are overarching drivers and so should be considered for each option.

<sup>72</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/945827/Net\\_Zero\\_Review\\_interim\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945827/Net_Zero_Review_interim_report.pdf)

<sup>73</sup> This can be seen in BEIS's statement in the Future Support For Low Carbon Heat Consultation "In the new Green Gas Support Scheme, we have an opportunity to learn from the RHI and other schemes in achieving the best balance between investor certainty and value for the taxpayer"

The potential unintended consequences from changes to energy policy cost recovery and overall energy prices should be considered. If household energy costs are made noticeably cheaper through levy reform (for example through moving policy costs onto taxation) then, if household energy demand is price elastic, there may be an increase in energy usage due to the lower per unit cost. While this may have benefits in individual cases, e.g. health benefits where homes have not been kept at ideal temperatures, it could have a negative impact on carbon emissions if it results in significant increases in energy usage.

Finally, the overarching objective of any rebalancing of levy costs will also be critical. As previously discussed, such a rebalancing could impact on both non-gas heating technology uptake and fuel poverty. While these two are linked to the recovery mechanism used for energy policy costs, they are separate issues and would be influenced differently by different arrangements. Therefore, any changes would need to have a clear set of objectives to focus on and an understanding of the impacts on other consumer issues.

## 6.7 Overall considerations

As set out above, there are a number of potential options and routes that could address the cost differential between gas and electricity tariffs as caused by levy costs.

However, as well as the individual merits and demerits of the potential solutions set out above, we note the following may act as barriers to reforming the current approaches to policy cost recovery:

- Functioning of the current arrangements – while as discussed, the current levy cost recovery approach increases the cost of electric-based heating, it otherwise functions as intended. The linkage of electricity generation support scheme costs to volumes of electricity supplied is a conceptually logical approach, with the costs of decarbonising the specific fuel, electricity, placed on the consumption of that fuel. Further, from a commercial perspective, the energy retail market is based around unit rate volumetric consumption charges as the primary mechanism of tariff charging with unit rates typically accounting for ~80-90% of typical household electricity bills, and standing charges the remaining 10-20%. Therefore, the volumetric charging of policy costs to suppliers allows for suppliers to align their tariff design methodologies to their cost exposure and therefore reduce commercial risks.
- Stakeholder resistance – while heat decarbonisation and fuel poverty reduction are important priorities (and required by statute), given the scale of levies and their market wide impacts, potential changes may be met by stakeholder resistance. This may include parties who are used to the current arrangements, parties concerned by potential fuel poverty impacts on gas heated homes, and those who may lose out under different arrangements. Possible arguments that could be put forwards in opposition to changes could include the successful functioning of the current methodology and the logic of recovering electricity decarbonisation costs from electricity consumption.
- Time required to implement a change – energy levy costs are a significant proportion of supplier costs and are driven by policy requirements. Therefore the timescales required to review, change, and implement changes in this space would be significant, and we would not expect a change to be implemented less than two years after its initial review, and could potentially be longer depending on the scale of the change and the other workstreams active at the time.

However, this can be considered in the context of the lifespan of the policy schemes, which are significant. Contracts signed under the CfD have a length of 15 years and additional contracts are still to be signed in future years auctions, and existing RO contracts run until 2037. Therefore, while a two year implementation timeframe is not insignificant, it would impact the schemes and their cost impacts for over a decade

- Policy position and workstreams – as noted the energy industry is undergoing a number of reviews currently, including the Net Zero Review, the GGL consultation, Energy White Paper, and Green Recovery Plan. Together these mean that a significant number of policy changes could be coming, including for levy recovery purposes. This represents a potential positive opportunity for changing policy levy recovery approaches as part of the wider reform packages. However, the volume of other changes may reduce the ability or desire to undertake further changes beyond this. As previously noted, some of the proposals appear to suggest different outcomes, such as the Net Zero Review considering placing levies on general taxation<sup>74</sup> and the GGL moving a previously tax funded support payment (bio-gas injection) to energy bills. Further, the GGL and its planned movement from meter based to volumetric indicates that BEIS still considers this the preferred levy recovery method. Therefore any movement to change the recovery process to improve low carbon heat uptake will need to consider the policy aims and future targets

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<sup>74</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/945827/Net\\_Zero\\_Review\\_interim\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945827/Net_Zero_Review_interim_report.pdf)

## 7. Findings and conclusions

### 7.1 Findings

The key project findings are:

#### What are energy levies and how are they recovered

- Energy policy costs to support renewable asset deployment and targeted social measures are currently recovered through consumer energy bills, with the majority placed on the electricity bill.
- Energy suppliers are not directly obligated via policy or regulation in how they look to recover schemes costs. However, as commercial entities their typical approach is to align recovery and exposure of these costs. As the majority of levies are charged on a supplier on the basis of electricity volumes (MWh) supplied, the result of this is that the majority of costs are placed on the electricity tariff.
- Currently there are no gas specific policy costs placed on consumer bills, with all policy costs relating to either electricity only schemes (e.g. the support of renewable electricity generators), or dual fuel considerations (i.e. addressing fuel poverty through the WHD).
- The upcoming introduction of the Green Gas Levy (GGL) will change this, but costs will remain significantly higher for electricity consumption compared to gas on both a p/kWh basis and total scheme cost basis.
- The cost of the energy levies are extensive, with ~£10bn/year spent and therefore recovered through GB consumer bills.
- The impact of these costs and their recovery via electricity bills is significant, increasing the cost of electricity to a point where it is over four times the price of the counterfactual fuel, gas

#### The value and impact of levies to Scotland

- The growth in renewable capacity in Scotland and the resultant emissions reduction have been a beneficiary of the renewable generation levies.
- Levies as a whole are a component of energy costs and may be a factor in pushing households into fuel poverty. Given the bulk of the combined levy cost is applied to electricity bills, this may exacerbate the problem of fuel poverty for those households with electric heating.

#### Forecasting the costs of these levies on domestic and non-domestic bills

- The costs of levies have been forecast for three different domestic consumer archetypes on an annual basis over the period to 2024/25. This analysis indicates that levies will comprise between 17% and 28% of electricity and gas spend (depending on consumer archetype) for 2024/25. This equates to an annual levy cost of between £174 and £233 depending on consumer archetype.
- Cost forecasts of levies for non-domestic consumers have been produced for two non-domestic building consumption profiles in Scotland (a gas using, and non-gas using profile) on an annual basis over the period to 2024-25. This analysis highlights that levies will comprise between 30% (gas using) and 38% (non-gas

using) of overall electricity and gas bills in 2024-25. This equates to an annual levy cost of £1849 and £1120 respectively.

### **The impact of levies on low carbon heating uptake**

- Evidence suggests that energy pricing is not the main consideration in the use of heating technologies by domestic or non-domestic consumers, other considerations including upfront costs are significant.
- Under current tariff structures, heat pumps are unlikely to offer cost savings against gas boilers as a result of the increase in electricity use associated with running a heat pump. Indicative analysis highlights that the removal of levies in their current energy tariff structure would make the running costs of heat pumps more favourable than a gas boiler in a typical domestic situation.

### **Alternative options for energy levy recovery**

There are a number of different potential options for reform that could potentially address this issue. These include:

- Moving levy cost recovery to a non-energy volumetric basis. This could include a flat per household charge, or linkage to specific metrics such as location, income, or heating fuel.
- Splitting the recovery of levy costs between gas and electricity tariffs.
- Introduction of a 'heating allowance' to remove the levying of policy costs on energy used for heating purposes.
- Encouraging voluntary actions by suppliers to rebalance levy cost recovery away from electricity.
- Moving levy costs from energy bills to general taxation.

## **7.2 Conclusions**

Under the current structure there is no financial incentive to switch fuel and, as long as this remains the case, energy consumers will not be incentivised by energy prices to switch heating technology to electric heating.

- Given the size of the contribution of space heating towards UK emissions, this lack of an incentive will hamper the ability of Scotland and the UK overall to meet its Net Zero targets.
- Any reform should be considered with a pragmatic and holistic outlook, as current policy mechanisms support Scottish consumers and generators in a range of ways, for example renewable generation, job creation, carbon emission reduction, and provision of social policies for the fuel poor and vulnerable

## 8. Annexes

### Annex 1: Methodology and forecast overview

#### COVID-19

Changes in demand related to the COVID-19 outbreak are expected to impact many of the charging elements within the forecast. Demand is an important determiner for many industry charges as many charges are typically levelised across the entire demand base.

Therefore, despite falling business demand and rising domestic demand, the impact to all user types on a p/kWh basis is in most instances identical. Lower net demand results in higher costs for all consumers. As an illustrative example, a 1% decrease in annual demand would result in a 1.02% increase in annual FiT costs, equivalent to £0.07/MWh when applied to our 2020-21 forecast, and so an increase of ~£0.20/yr for the average gas connected household.

The impact across levies will vary:

- Immediate cost increases – FiT
  - FiT costs are recovered from electricity suppliers through quarterly levelisation and an annual reconciliation. Lower system demand resulting from the COVID-19 outbreak, combined with the weather driven high solar load factors is currently expected to drive FiT costs up to an all-time high for Q220 (April–June)
- Mid-term cost increases – Contracts for Difference (CfD) and Capacity Market (CM)
  - CfD costs are set a quarter in advance and have been partially offset in the short term by a loan from the Department for Business, Energy and Industrial Strategy (BEIS) to the LCCC
  - CM costs are based on the winter (November to February) peak demand. Based upon the reduction in electricity demand recorded over the lockdowns to date, the greatest impacts of the COVID-19 outbreak on demand reduction fell outside of this period. CM charges are thus less directly affected than other charging elements by recent changes to demand
- No direct cost increase – For example Renewable Obligation (RO) costs have already been set for the current Compliance Period

Where possible, we have taken these impacts into consideration by altering our forecasts in line with our latest view on demand changes. This accounts for the current year 2020-21 and the impacts of lockdown, as well as beyond this to 2024-25.

#### Renewable and low carbon support measures

Our annual demand forecast for renewable schemes for 2020-21 reflects a gradual recovery in demand over the remainder of 2020-21. We now forecast a demand reduction of 7.9% below 2019-20 levels for Q320 (July – September). Q420 (October – December) and Q121 (January – March) are forecast to fall 6.7% and 1.3% below last year's levels.

Our demand forecast for the Capacity Market (CM) reflects our monthly demand view across the CM charging year (October – September) to reflect expected variations during the COVID-19 lockdown period.



For the **Renewables Obligation (RO)** our forecast includes the confirmed RO targets for the CP19 (2020-21) compliance period. Costs for 2021-22 onwards have been updated in line with our latest Long-term ROC Forecast.

Due to the nature of the scheme, **Contracts for Difference (CfD)** costs have an inverse relationship with the level of wholesale market prices. This means that where wholesale costs decrease, CfD costs are expected to increase as the top-up to the strike price will increase.

- Our forecast for 2020-21 reflects confirmation that a BEIS loan amount of £75.1mn has been used to offset increased CfD costs in Q1 (April – June) 2020-21, with collection deferred until Q1 2021-22
- The deferment of these costs, which mean lower customer bills in 2020-21 than would otherwise be the case, also means that our forecast for Q1 2021-22 costs has risen disproportionately compared to other quarters

Annual forecast **Feed-in-Tariff (FiT)** costs reflect higher than expected outturn costs for Q220 due to COVID-19 impacts on demand and generation output levels for the period (as previously stated), as well as our demand forecast for the rest of the year. Increases beyond 2020-21 have been impacted by changes to our long-term demand forecast based on trends from National Grid's 2020 Future Energy Scenarios:

- FiT liable demand for the April – June period fell 16.8% below last year's levels and was in line with our forecast for this period (0.2% difference)
- In our Q220 FiT Cost Forecast, published in May 2020, we projected FiT levelisation for Q220 at £8.94/MWh in our Central Scenario and £9.48/MWh in our High Scenario
- The subsequent increase in generation payments due to the record-breaking sunshine hours and exceptionally high load factors for solar PV sites pushed costs above our forecast level for the quarter, up to £9.88/MWh. This will act to increase annual costs for 2020-21

For **Capacity Market (CM)** costs, adjustments have been made this quarter in line with the capacity listed in the CM registers. Cost have also been updated with our latest forecast of the T-4 (2024-25) auction and our demand forecast has been updated in line with our latest view for 2020-21 and beyond.

### Direct affordability measures

**ECO** costs have remained relatively static due to only a very slight change in the proportion of exempt and eligible meter points being supplied by suppliers. When suppliers look at ECO costs per unit supplied, the cost profile is such that the rate of increase in costs per unit supplied is greatest when a supplier first breaches the volume threshold for supplier liability.

Costs will vary by scheme phase because the total exempt volume under the scheme is dependent upon:

- The number of suppliers in the market
- The distribution of market share across these suppliers
- Domestic customer demand (by supplier and in total) as this effects the size of the charging base over which the cost is recovered

As with the ECO scheme, **WHD** costs have remained relatively static due to only a very slight change in the proportion of exempt and eligible meter points being supplied by

suppliers. We think it likely that the government will include some form of energy bill rebate for the fuel poor throughout the lifetime of the forecasts (to 2024-25) for political reasons. Therefore, we have extended the costs of the scheme out to 2024-25, including an inflationary increase.

### **Green Gas Levy (GGL)**

As this is under consultation, we have not incorporated this levy into our forecasts. However, we note that this is expected to be a relatively low level compared to both other levies and the total customer bill. BEIS's impact assessment forecasts that the cost of the GGL will rise from £1.40/year for a domestic customer to £6.90/year at its highest.

## Annex 2: Supplemental analysis of levy impact

Table 16: GB energy levies 2020-21 to 2024-25, Domestic Archetype 1 (Electricity PC1 and Medium Gas TDCV, Real 2020-21 terms)

<b>Electricity (PC1)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total p/kWh (exc. VAT)	19.078	19.881	19.680	19.819	19.940
- Of which Levies (p/kWh)	5.206	5.166	5.105	5.245	5.197
- Of which Levies (%)	27.3%	26.0%	25.9%	26.5%	26.1%
<b>Electricity (PC1)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	553.26	576.56	570.72	574.75	578.27
- Of which Levies (£)	150.96	149.81	148.05	152.09	150.72
- Of which Levies (%)	27.3%	26.0%	25.9%	26.5%	26.1%
<b>Gas (Med. TDCV)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total p/kWh (exc. VAT)	3.618	3.929	3.878	3.844	3.809
- Of which Levies (p/kWh)	0.198	0.196	0.194	0.193	0.191
- Of which Levies (%)	5.5%	5.0%	5.0%	5.0%	5.0%
<b>Gas (Med. TDCV)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	434.15	471.48	465.32	461.22	457.12
- Of which Levies (£)	23.76	23.52	23.28	23.16	22.92
- Of which Levies (%)	5.5%	5.0%	5.0%	5.0%	5.0%
<b>TOTAL</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	987.41	1048.04	1036.04	1035.97	1035.40
- Of which Levies (£)	174.72	173.33	171.33	175.25	173.64
- Of which Levies (%)	17.7%	16.5%	16.5%	16.9%	16.8%

Source: Cornwall Insight analysis

Table 17: GB energy levies 2020-21 to 2024-25, Domestic Archetype 1 by levy (Electricity PC1 and Medium Gas TDCV, Real 2020-21 terms)

<b>Domestic Energy Cost</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
<b>Total £ (exc. VAT)</b>	987.41	1,048.04	1,036.04	1,035.97	1,035.40
Renewables Obligation (RO)	68.35	68.32	69.28	69.51	69.51
<i>%'age of total</i>	6.9%	6.5%	6.7%	6.7%	6.7%
Feed-in Tariffs (FiT)	20.74	19.11	19.49	19.58	19.69
<i>%'age of total</i>	2.1%	1.8%	1.9%	1.9%	1.9%
Contracts for Difference (CfDs)	26.83	30.83	32.97	34.89	35.96
<i>%'age of total</i>	2.7%	2.9%	3.2%	3.4%	3.5%
Capacity Market (CM)	14.17	10.90	5.84	7.82	5.46
<i>%'age of total</i>	1.4%	1.0%	0.6%	0.8%	0.5%
Warm Home Discount (WHD)	13.95	13.86	13.68	13.63	13.45
<i>%'age of total</i>	1.4%	1.3%	1.3%	1.3%	1.3%
Energy Company Obligation (ECO)	30.69	30.31	30.07	29.83	29.57
<i>%'age of total</i>	3.1%	2.9%	2.9%	2.9%	2.9%
<b>TOTAL</b>	174.72	173.33	171.33	175.25	173.64
<i>%'age of total</i>	17.7%	16.5%	16.5%	16.9%	16.8%

Source: Cornwall Insight analysis

Table 18: GB energy levies 2020-21 to 2024-25, Domestic Archetype 2 (Electricity PC2 and Low Gas TDCV, Real 2020-21 terms)

<b>Electricity (PC2)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total p/kWh (exc. VAT)	17.966	18.505	18.304	18.443	18.565
- Of which Levies (p/kWh)	5.206	5.166	5.105	5.245	5.197
- Of which Levies (%)	29.0%	27.9%	27.9%	28.4%	28.0%
<b>Electricity (PC2)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	754.59	777.23	768.78	774.61	779.71
- Of which Levies (£)	218.63	216.97	214.42	220.27	218.28
- Of which Levies (%)	29.0%	27.9%	27.9%	28.4%	28.0%
<b>Gas (Low TDCV)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total p/kWh (exc. VAT)	4.296	4.607	4.556	4.522	4.488
- Of which Levies (p/kWh)	0.198	0.196	0.194	0.193	0.191
- Of which Levies (%)	4.6%	4.3%	4.3%	4.3%	4.3%
<b>Gas (Low TDCV)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	343.70	368.59	364.48	361.75	359.02
- Of which Levies (£)	15.84	15.68	15.52	15.44	15.28
- Of which Levies (%)	4.6%	4.3%	4.3%	4.3%	4.3%
<b>TOTAL</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	1098.29	1145.82	1133.26	1136.36	1138.73
- Of which Levies (£)	234.47	232.65	229.94	235.71	233.56
- Of which Levies (%)	21.3%	20.3%	20.3%	20.7%	20.5%

Source: Cornwall Insight analysis

Table 19: GB energy levies 2020-21 to 2024-25, Domestic Archetype 2 by levy (Electricity PC2 and Low Gas TDCV, Real 2020-21 terms)

<b>Domestic Energy Cost</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
<b>Total £ (exc. VAT)</b>	1,098.29	1,145.82	1,133.26	1,136.36	1,138.73
Renewables Obligation (RO)	98.99	98.95	100.34	100.67	100.67
<i>%'age of total</i>	9.0%	8.6%	8.9%	8.9%	8.8%
Feed-in Tariffs (FiT)	30.03	27.68	28.22	28.35	28.52
<i>%'age of total</i>	2.7%	2.4%	2.5%	2.5%	2.5%
Contracts for Difference (CfDs)	38.85	44.65	47.75	50.53	52.08
<i>%'age of total</i>	3.5%	3.9%	4.2%	4.4%	4.6%
Capacity Market (CM)	20.52	15.79	8.45	11.32	7.90
<i>%'age of total</i>	1.9%	1.4%	0.7%	1.0%	0.7%
Warm Home Discount (WHD)	14.76	14.64	14.47	14.39	14.22
<i>%'age of total</i>	1.3%	1.3%	1.3%	1.3%	1.2%
Energy Company Obligation (ECO)	31.32	30.95	30.70	30.45	30.16
<i>%'age of total</i>	2.9%	2.7%	2.7%	2.7%	2.6%
<b>TOTAL</b>	234.47	232.65	229.94	235.71	233.56
<i>%'age of total</i>	21.3%	20.3%	20.3%	20.7%	20.5%

Source: Cornwall Insight analysis



Table 20: GB energy levies 2020-21 to 2024-25, Domestic Archetype 3 (Electricity PC2 and no gas demand, Real 2020-21 terms)

<b>Electricity (PC2)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total p/kWh (exc. VAT)	17.966	18.505	18.304	18.443	18.565
- Of which Levies (p/kWh)	5.206	5.166	5.105	5.245	5.197
- Of which Levies (%)	29.0%	27.9%	27.9%	28.4%	28.0%
<b>Electricity (PC2)</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	754.59	777.23	768.78	774.61	779.71
- Of which Levies (£)	218.63	216.97	214.42	220.27	218.28
- Of which Levies (%)	29.0%	27.9%	27.9%	28.4%	28.0%
<b>TOTAL</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
Total £ (exc. VAT)	754.59	777.23	768.78	774.61	779.71
- Of which Levies (£)	218.63	216.97	214.42	220.27	218.28
- Of which Levies (%)	29.0%	27.9%	27.9%	28.4%	28.0%

Source: Cornwall Insight analysis

Table 21: GB energy levies 2020-21 to 2024-25, Domestic Archetype 3 by levy (Electricity PC2 and no gas demand, Real 2020-21 terms)

<b>Domestic Energy Cost</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
<b>Total £ (exc. VAT)</b>	754.59	777.23	768.78	774.61	779.71
Renewables Obligation (RO)	98.99	98.95	100.34	100.67	100.67
<i>%'age of total</i>	13.1%	12.7%	13.1%	13.0%	12.9%
Feed-in Tariffs (FiT)	30.03	27.68	28.22	28.35	28.52
<i>%'age of total</i>	4.0%	3.6%	3.7%	3.7%	3.7%
Contracts for Difference (CfDs)	38.85	44.65	47.75	50.53	52.08
<i>%'age of total</i>	5.1%	5.7%	6.2%	6.5%	6.7%
Capacity Market (CM)	20.52	15.79	8.45	11.32	7.90
<i>%'age of total</i>	2.7%	2.0%	1.1%	1.5%	1.0%
Warm Home Discount (WHD)	10.12	10.00	9.91	9.83	9.74
<i>%'age of total</i>	1.3%	1.3%	1.3%	1.3%	1.2%
Energy Company Obligation (ECO)	20.12	19.91	19.74	19.57	19.36
<i>%'age of total</i>	2.7%	2.6%	2.6%	2.5%	2.5%
<b>TOTAL</b>	218.63	216.97	214.42	220.27	218.28
<i>%'age of total</i>	29.0%	27.9%	27.9%	28.4%	28.0%

Source: Cornwall Insight analysis

Table 22: GB energy levies 2020-21 to 2024-25, Non-Domestic Archetype 1 by levy (Real 2020-21 terms)

<b>Non-Domestic Energy Cost</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
<b>Total £ (exc. VAT)</b>	5,753.22	6,165.93	6,077.02	6,121.80	6,102.21
Renewables Obligation (RO)	614.65	616.57	630.88	635.90	635.92
<i>%age of total</i>	<i>10.68%</i>	<i>10.00%</i>	<i>10.38%</i>	<i>10.39%</i>	<i>10.42%</i>
Feed-in Tariffs (FiT)	186.46	172.46	177.46	179.07	180.14
<i>%age of total</i>	<i>3.24%</i>	<i>2.80%</i>	<i>2.92%</i>	<i>2.93%</i>	<i>2.95%</i>
Contracts for Difference (CfDs)	274.11	313.02	334.72	352.71	360.64
<i>%age of total</i>	<i>4.76%</i>	<i>5.08%</i>	<i>5.51%</i>	<i>5.76%</i>	<i>5.91%</i>
Capacity Market (CM)	127.41	97.42	52.13	69.54	48.16
<i>%age of total</i>	<i>2.21%</i>	<i>1.58%</i>	<i>0.86%</i>	<i>1.14%</i>	<i>0.79%</i>
Warm Home Discount (WHD)	0.00	0.00	0.00	0.00	0.00
<i>%age of total</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>
Energy Company Obligation (ECO)	0.00	0.00	0.00	0.00	0.00
<i>%age of total</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>
Climate Change Levy (CCL)	466.65	482.72	533.46	580.97	623.99
<i>%age of total</i>	<i>8.11%</i>	<i>7.83%</i>	<i>8.78%</i>	<i>9.49%</i>	<i>10.23%</i>
<b>TOTAL</b>	1,669.28	1,682.20	1,728.65	1,818.19	1,848.85
<i>%age of total</i>	<i>29.01%</i>	<i>27.28%</i>	<i>28.45%</i>	<i>29.70%</i>	<i>30.30%</i>

Source: Scottish Government, Cornwall Insight analysis

Table 22: GB energy levies 2020-21 to 2024-25, Non-Domestic Archetype 2 by levy (Real 2020-21 terms)

<b>Non-Domestic Energy Cost</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>
<b>Total £ (exc. VAT)</b>	2,748.21	2,910.85	2,871.30	2,934.23	2,909.56
Renewables Obligation (RO)	491.72	493.26	504.70	508.72	508.74
<i>%'age of total</i>	17.89%	16.95%	17.58%	17.34%	17.49%
Feed-in Tariffs (FiT)	149.16	137.97	141.97	143.26	144.11
<i>%'age of total</i>	5.43%	4.74%	4.94%	4.88%	4.95%
Contracts for Difference (CfDs)	219.28	250.42	267.77	282.17	288.51
<i>%'age of total</i>	7.98%	8.60%	9.33%	9.62%	9.92%
Capacity Market (CM)	101.93	77.94	41.70	55.63	38.53
<i>%'age of total</i>	3.71%	2.68%	1.45%	1.90%	1.32%
Warm Home Discount (WHD)	0.00	0.00	0.00	0.00	0.00
<i>%'age of total</i>	0.00%	0.00%	0.00%	0.00%	0.00%
Energy Company Obligation (ECO)	0.00	0.00	0.00	0.00	0.00
<i>%'age of total</i>	0.00%	0.00%	0.00%	0.00%	0.00%
Climate Change Levy (CCL)	162.20	151.14	148.05	144.46	140.39
<i>%'age of total</i>	5.90%	5.19%	5.16%	4.92%	4.83%
<b>TOTAL</b>	1,124.30	1,110.72	1,104.20	1,134.23	1,120.28
<i>%'age of total</i>	40.91%	38.16%	38.46%	38.66%	38.50%

Source: Scottish Government, Cornwall Insight analysis

### Annex 3: Impact using region-specific network charging

We have assessed the national average domestic levy costs for the three archetypes against the different network charging component of bills for the relevant Scottish regions. In the case of electricity, an assessment is made using the above parameters but with transmission and distribution charging applicable to the Northern Scotland and Southern Scotland charging regions, while for gas the Scotland region is used (in both cases as per the relevant industry charging statements).

This analysis is presented below by Archetype and payment type to demonstrate the proportion of the total bill comprised of levies on an arithmetic average basis over the forecast period (2020-21 to 2024-25 inclusive, real 2020-21 terms).

The analysis indicates that the proportion of the total bill comprised of levies is below the national average for the Northern Scotland (electricity) and Scotland (gas) combination across all Archetypes and payment methods, while it is above the national average for the Southern Scotland (electricity) and Scotland (gas) combination. This reflects the contribution of transmission and distribution charges to the total bill, with these being determined under the relevant price controls, with the cost of the levies largely the same at the national level as for the aforementioned Scottish regions.

We therefore note that there is a locational aspect to the proportion of the total bill comprised of levies, in addition to a volumetric one and further consideration in respect of the payment type used by the customer.

Table 22: Energy levies 2020-21 to 2024-25 as percentage of bill (annual arithmetic average) by Archetype and payment method (Real 2020-21 terms): National average vs. Scotland regions

Payment method	Standard Credit			Direct Debit			PPM		
	1	2	3	1	2	3	1	2	3
Archetype									
National Average	16.9%	20.6%	28.2%	18.2%	21.3%	29.7%	17.5%	21.3%	29.3%
Cost (£)	£174	£233	£218	£173	£233	£218	£174	£233	£218
E = N. Scotland G = Scotland	16.5%	19.9%	26.7%	17.7%	20.6%	27.9%	17.1%	20.5%	27.6%
Cost (£)	£173	£233	£217	£173	£233	£217	£173	£233	£217
E = S. Scotland G = Scotland	17.1%	20.8%	28.3%	18.4%	21.5%	29.8%	17.7%	21.5%	29.5%
Cost (£)	£174	£233	£218	£173	£233	£218	£174	£233	£218

Source: Cornwall Insight



## Annex 4: Current low-carbon heating policy context

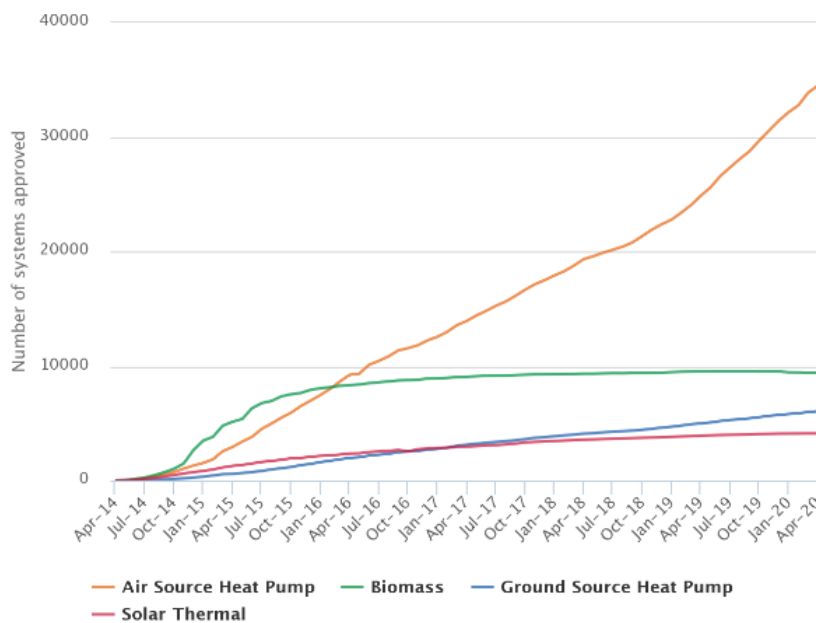
### GB-wide domestic low carbon heating policies

The primary support scheme for low carbon heating in GB is the Renewable Heat Incentive (RHI). It should be noted that as previously discussed, unlike support for renewable generation and electricity affordability measures, this is paid for through general taxation rather than a levy on consumer bills. The RHI is split into separate schemes for domestic and non-domestic consumers.

The domestic RHI is a tariff-based scheme, with quarterly payments made to consumer over seven years for approved systems. Payments are made on estimated system output. The tariffs have varied over time and are technology-specific. The domestic scheme has been active in its current form since 2014, and will run to March 2022. Technologies supported by the scheme include air and ground source heat pumps, biomass boilers and solar thermal systems.

To date, the majority of systems supported by the domestic RHI have been air source heat pumps, with over 30,000 approved between 2014 and April 2020, as shown below. 9,000 air source heat pumps had been accredited under the domestic RHI in Scotland by June 2020<sup>75</sup>, around 30% of all such heat pumps accredited under the scheme.

Figure 2: Approved heating systems under the domestic RHI since 2014, Ofgem



Source: Ofgem

A new grant scheme will replace the domestic RHI from 2022. The Clean Heat Grant is proposed to run for two years from the end of the RHI scheme until 2024, with a shift away from the tariff model to upfront consumer grants. This reflects upfront cost being raised as a barrier, and recommendations from the Committee on Climate Change and Public Accounts Committee to move towards a grant scheme.

<sup>75</sup> [https://energysavingtrust.org.uk/wp-content/uploads/2020/10/Renewable-Heat-in-Scotland-2019\\_new.pdf](https://energysavingtrust.org.uk/wp-content/uploads/2020/10/Renewable-Heat-in-Scotland-2019_new.pdf)

BEIS also notes that “consumers tend to heavily discount future tariff income”, making grants “more attractive to households and small and medium sized enterprises”. This new scheme, like the RHI, will be funded through taxation as opposed to energy bills.

Support under the Clean Heat Grant will be primarily for heat pumps, but will also be made available for biomass boilers in properties where heat pumps are demonstrably not a suitable heating system.

### **GB-wide non-domestic low carbon heating policies**

The non-domestic RHI is run on a similar basis to its domestic counterpart, although tariff payments are made over 20 years for approved systems and are based on metered (rather than estimated) output. The same technologies are supported (heat pumps, biomass boilers and solar thermal systems), alongside biomethane injection.

The majority of capacity under this scheme has been biomass, covering over 80% of capacity as shown in Table 23. As of June 2020, Scottish installations under the non-domestic RHI accounted for 20% of total installed capacity under the scheme.

Table 23: Renewable heat capacity supported under the non-domestic RHI as of January 2020, BEIS

Technology	Capacity (MW)
Air Source Heat Pump	15
Ground and Water Source Heat Pump	166
Biomass	4254
Biogas	306
Solar Thermal	5.6
CHP	308
<b>Total</b>	<b>5054.6</b>

Source: BEIS

Unlike the domestic scheme, the non-domestic RHI will not be extended beyond 2021, although some technical changes have been made to allow for commissioning up to March 2022.

The Clean Heat Grant noted above for domestic consumers will also provide support for small businesses, with a proposed capacity limit of 45kW per installation.

### **Scotland-specific low carbon heating policies**

Going beyond the GB-wide support schemes for low-carbon heating, there is additional support in place for Scottish consumers. Unlike the current GB-wide policies, these are all based on upfront capital funding. This is important as the capital cost of energy efficiency and installing new heating technologies is often significant, which can limit deployment to only those consumers who are able to afford the upfront cost. These Scottish schemes therefore support those who may not otherwise be able to afford different heating technologies.

This includes the Home Energy Scotland Loan targeted at homeowners, providing an interest free loan backed by the Scottish Government. This supports energy efficiency measures, but also low carbon heating systems. Technologies supported include heat pumps and biomass boilers/stoves (up to £10,000 of funding), (hybrid) solar thermal systems (up to £7,500 funding) and connections to low carbon district heating schemes

(up to £5,000). Additionally, cashback is available<sup>76</sup>, up to 75% (up to the value of £7,500) of the cost of a renewable heating system from late 2020 (the cashback is limited to 40% (up to £6,000) for energy efficiency measures).

Further to this, the Warmer Homes Scotland scheme provides further funding (often full funding) for energy efficiency and new (including low carbon) heating measures, for homeowners and private tenants in homes with poor energy performance. Applicants must also meet other criteria around receiving some form of benefit such as Universal Credit.

There are a variety of additional schemes that supplement this support for non-domestic low-carbon heat:

- The SME Loan scheme delivered through Zero Waste Scotland and funded by the Scottish Government
  - This is available to Scottish businesses that fall within the EU definition of SME, and provides cashback of 75% of costs of a renewable heating technology, up to £10,000 and subject to availability.
- The Low Carbon Infrastructure Transition Programme (LCITP), which will run until 2021<sup>77</sup>
  - This currently supports low carbon heating solutions in social housing, and has been used to support innovation projects involving primarily heat pumps among other technologies<sup>78</sup>
- The Salix Scotland Energy Efficiency Loans Scheme (SEELS) for the public sector
  - This supports projects with a maximum ten-year payback period with a cost of carbon less than £278/tonne over its lifetime

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<sup>76</sup> It is noted that cashback is subject to availability

<sup>77</sup> The Low Carbon Infrastructure Transition Programme (LCITP): call for evidence to support development of future programmes published in February 2021 seeks input on actions to modify and enhance the range of support mechanisms currently provided by Scottish Government through the Low Carbon Infrastructure Transition Programme (LCITP) for development and delivery of large-scale low and zero carbon heat in buildings projects. See: <https://consult.gov.scot/energy-and-climate-change-directorate/low-carbon-infrastructure-transition-programme/>

<sup>78</sup> <https://www.gov.scot/publications/capital-projects-supported-through-the-low-carbon-infrastructure-transition-programme/>

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