

BHESCo Impact report: assessing the financial and environmental impacts of BHESCo interventions 2016-2023

Dr Timothy Laing,
University of Brighton



1. Introduction

This report examines the impact of the various intervention programmes implemented by Brighton, Hove Energy Service Co-operative between 2016 and 2023. This includes the

- SHINE
- Warmth for Wellbeing (W4W)
- BEC
- Big Energy Saving Network (BESN)

Impact monitoring is based on two key aspects.

- Descriptive analysis of intervention data from programmes
- Results from an evaluative framework to assess the environment and financial impacts of energy efficiency interventions. A guide to this framework, including how to operate it, is given in Appendix 1.

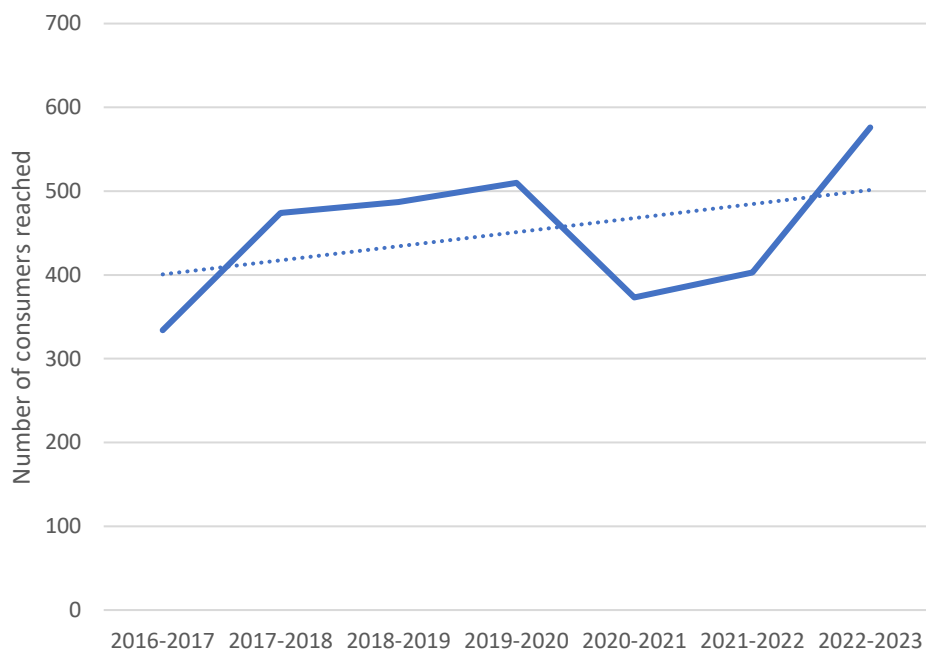
Section 2 outlines the descriptive analysis. Section 3 describes the results of the evaluative framework. Section 4 concludes.



2. Descriptive analysis

Since 2016 through programmes such as W4W, SHINE, BEC and BESN, BHESCo has reached 3,157 consumers, at an average of over 450 consumers per year – with an increasing trend over the time-period at a rate of 17 extra consumer per year (Figure 1).

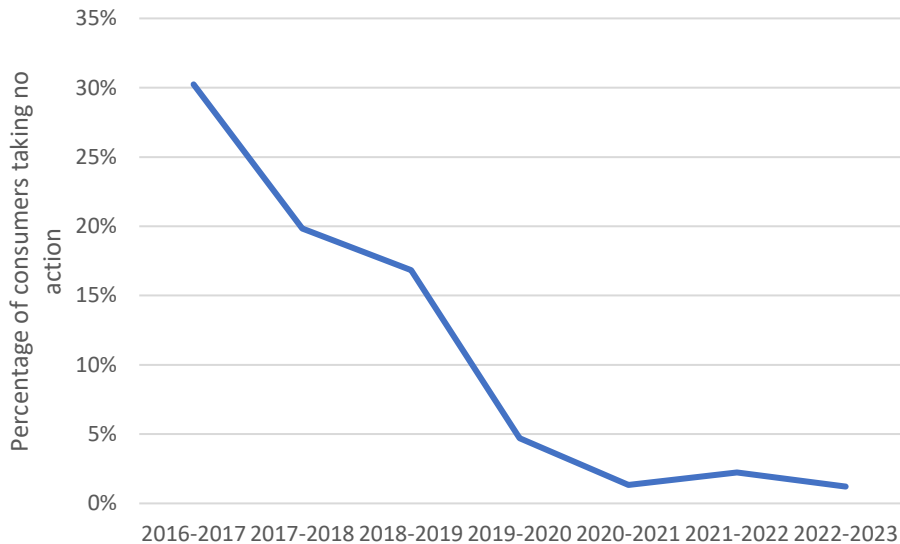
Figure 1: Customers reached by BHESCo (2016-2023) Source: BHESCo data



The majority of these consumers attended a 1-1 advice session (70%) and of these consumers reached, 89.8% were reported to have taken some form of action, including switching supplier (9.9%), applying for a grant or debt write-off (5%) or applying for fuel vouchers (13.7%). What these statistics hide, however, is how the types (and amount) of support that BHESCo have provided has shifted as the energy market itself has changed. Perhaps the most descriptive statistic in this regard is the fact that in the 2016-2017 programmes 30% of consumers took no action (Figure 2), however as the turmoil of Covid and the energy price surge kicked in through 2020 this number fell to under 2%.

Figure 2: Percentage of consumers reached who took no action 2016-2023 (Source: BHESCo data)





The types of action also shifted as the market has changed. A key area of support in the pre-covid period was to encourage customers, where relevant, to shift supplier and on to cheaper tariffs. 18% of customers in 2017 undertook this action, with at least 14% doing so up to 2019. However, as the market experienced the turmoil relating to price rises due to the Ukrainian conflict, the logic and efficacy (and indeed ability) to switch supplier has fallen and the amount of customers taking this action fell to under 1% by 2021 and onwards (Figure 3).

Figure 3: Percentage of customers reported to have switched supplier 2016-2023 (Source: BHESCo data)

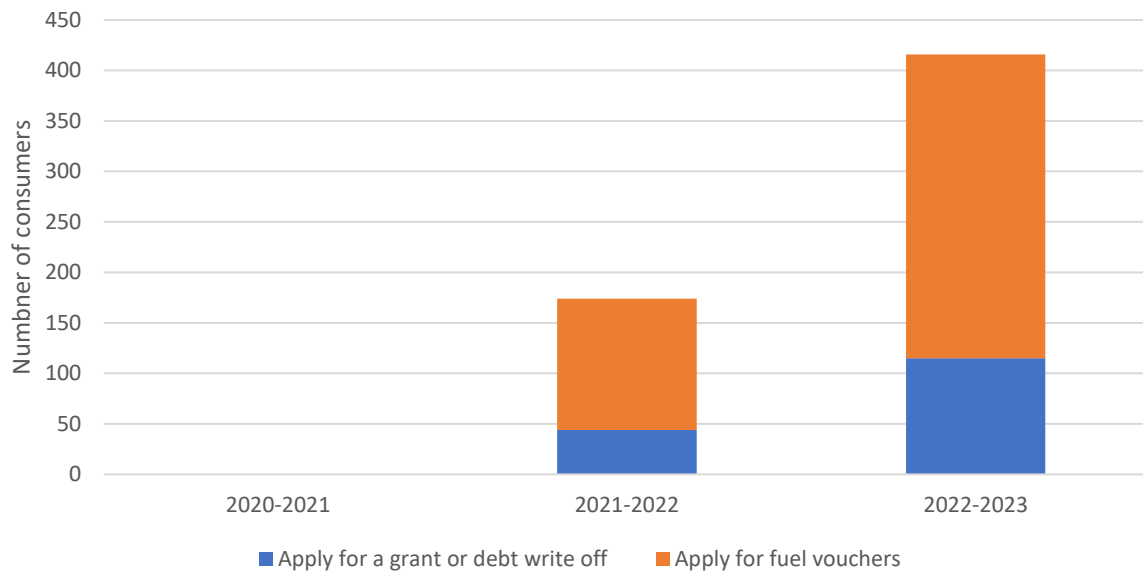


As the ability to switch supplier to avoid price rises has fallen away, and energy prices have spiked, the number of consumers applying for financial support has



rocketed, from zero in 2020 to 72% of all customers reached in 2022-2023 – with the majority of these directed to apply for fuel vouchers (Figure 4).

Figure 4: Number of consumers applying for financial support 2020-2023 (Source: BHESCo data)



3. Assessing financial and environmental impact

In order to assess the financial and environmental impact of BHESCo's intervention programmes a framework was produced that evaluated the cost and emissions savings of the equipment installed through BHESCo programmes.

The framework is based on a number of assumptions and key parameters

- Each technology has an assumed energy savings (in KWh) per annum
- Each technology also has an assumed lifetime
- Both of these parameters were obtained from literature or product specifications
- Where multiple estimates were available for energy savings an average of the sample was used
- Historical average annual electricity prices and grid average emissions were used in the framework
- Future values of prices and emissions were set to 2022 levels.

Using this data an estimated number of the different categories of equipment was produced for each year. The categories are:



- LEDs
- Radflex
- Draught excluders
- Draught proofing
- Chimney balloons
- Secondary glazing film

The framework does not cover indirect energy, emissions or financial savings from other types of intervention by BHESCo such as advice to change supplier or advice on how to use energy-using equipment.

3.1 Financial savings

The framework captures both savings to date – but also those savings 'locked-in' until 2030 by equipment that is already installed, and is assumed to be still operating up to that date (Figure 5). This latter component is potentially significant and is actually almost 150% larger than the savings until 2023. This highlights that much of the impact of interventions already made by BHESCo is still to come.

The largest share of financial savings accrue from the use of Radflex (44% up to 2023, 49% up to 2030), and LEDs (32% up to 2023, 27% up to 2030). The former increases in importance up to 2030 due to the assumed longer lifetime of that piece of equipment compared to LEDs. Although other installations such as chimney balloons have a greater individual savings potential, they have been deployed in much smaller numbers and thus their financial savings in total is smaller.

The total scale of the financial savings from, what is just a subset of the total interventions undertaken by BHESCo, is significant. To 2023 savings are in the region of £300,000 across the individuals helped. This rises to almost £800,000 by 2030 on the basis of equipment already installed (based on projected lifespans).

Figure 5: Total financial savings from BHESCo's interventions Total to 2023 and Total to 2030



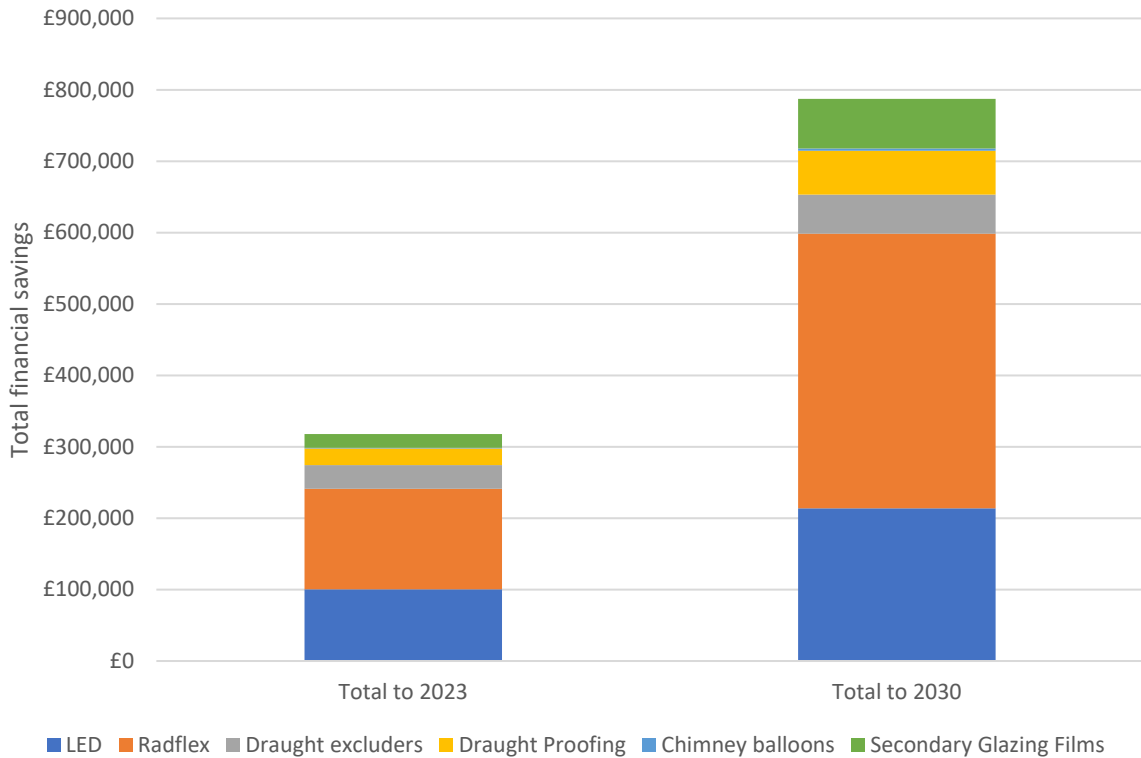
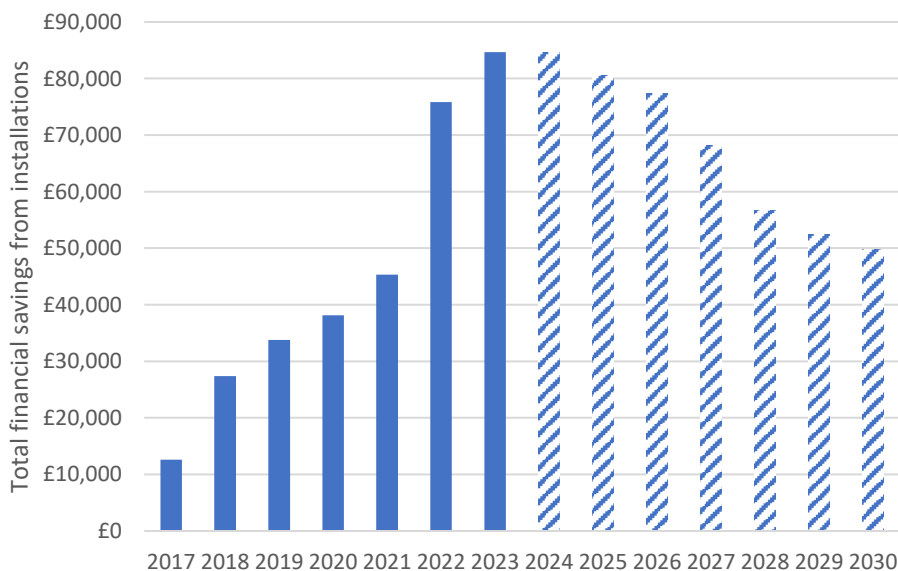


Figure 6: Total financial savings from installations per year



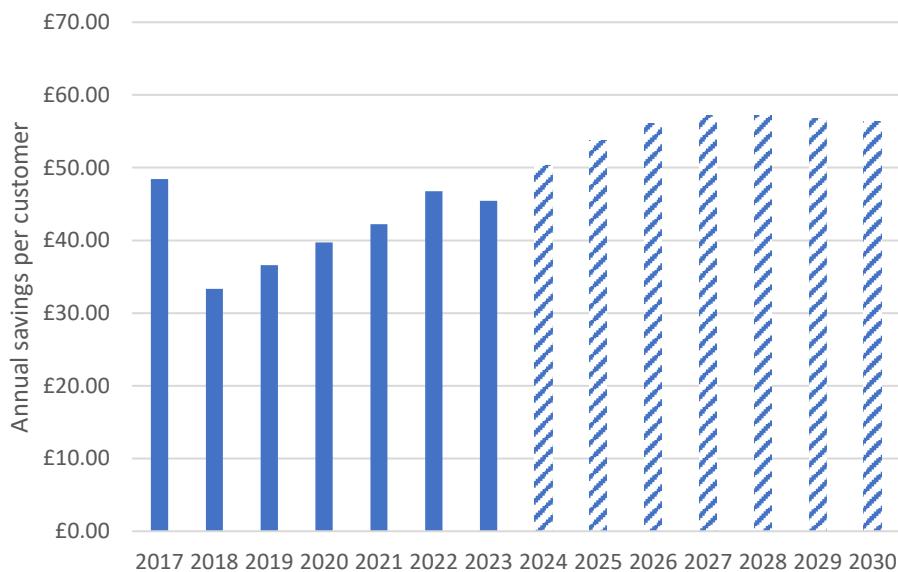
The total financial savings from installations have increased year-on-year up to 2023, as a greater quantity of equipment has been installed across BHESCo's customer base. The total savings from this subset of equipment is approaching £100,000 at



current energy prices (Figure 6). Up to 2030 these savings continue but fall due to the assumption that some of the equipment will come to the end of its life.

The average annual savings per customer also grow up to 2030: up to the region of £60 per customer served, dependent on the assumption on future energy prices (Figure 7).

Figure 7: Annual savings per customer



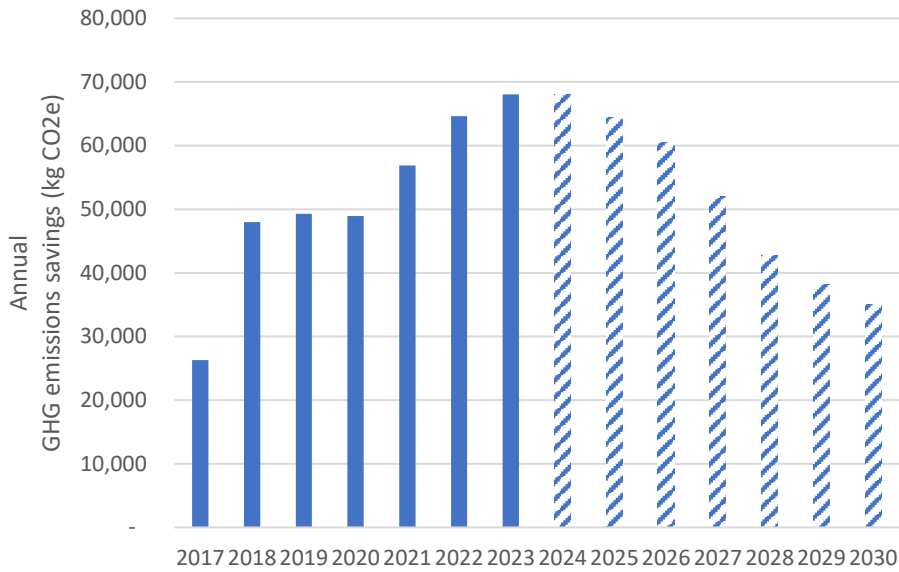
3.2 Emissions savings

Beyond the financial the interventions made by BHESCo also have led to savings in GHG emissions. The scale of these emissions depends on assumptions of energy saving, but also the emissions intensity of the energy used. As the UK has decarbonised its electricity grid the emissions per unit of energy saved has reduced, although there are wider environmental benefits from saving any unit of energy. The annual GHG emissions savings mirror financial savings, rising up to 2023 as the scale of equipment installed by BHESCo has increased, before falling to 2023 as some of this equipment starts to reach the end of its life (Figure 8).

The total scale of emissions savings is significant, close to 70,000 kg CO₂e in 2023- equivalent to almost 500,000 km of car driving.

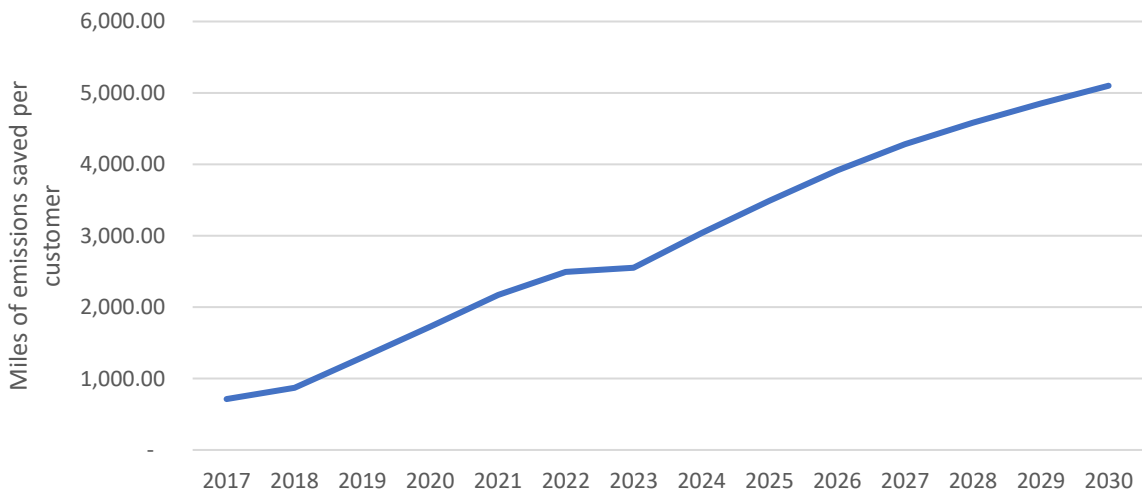
Figure 8: Total annual GHG emissions savings (kg CO₂e)





On a per customer basis the emissions savings have also increased year-on-year, and are anticipated to keep rising to 2030 on a cumulative basis – implying that by 2030, in total BHESCo will have helped to save emissions equivalent to approximately 5,000 miles of driving per customer (Figure 9).

Figure 9: Miles of emissions saved per customer



4. Key findings



A number of key findings have emerged from the evaluation of BHESCo's impact to date:

- BHESCo have helped over 3,000 people over the last seven years in a variety of ways to improve their energy use.
- The organisation is helping an increasing number of individuals year-on-year, even through the pandemic.
- The manner of support offered by BHESCo has adapted as the market has changed, from advice on switching supplier, to advice on financial assistance.
- The organisation has already helped consumer save over £300,000 in energy bills from its interventions to date, with existing interventions to date likely to save a much greater amount up to 2030.
- In addition to saving money the organisation has helped to save over 360 tonnes of CO₂, with the installed equipment potentially saving up to 700 tonnes by 2030.
- The emissions saved equate to avoiding driving 2.5 million miles by 2023, or potentially up to 5,000 miles per customer by 2030.



Appendix 1: Model guide

The evaluative framework consists of three main elements:

- **output sheets** that display the key findings (both financial and environmental) from the framework;
- **input sheets** that contain the key input parameters for the framework that can be amended as appropriate
- **technology specific data** these contain the input data on the amount of equipment installed by BHESCo on an annual basis – and can be updated as relevant. It also outputs technology-specific data on the financial and emissions savings.

Output sheets

- Savings Summary
 - o Displays cost savings and carbon savings annually, for each type of equipment and in total along with values for per customer, and equivalent emissions. Also generates cost savings chart to 2023 and to 2030.
- Charts
 - o Generates a range of charts for financial and emissions savings in total and per customer

Input sheets

- Parameters
 - o Contains a number of assumed parameters including emissions and financial savings per product and annual electricity prices and grid emissions factors.
- Electricity prices
 - o Contains raw electricity price data
- Elec carbon intensity
 - o Contains raw grid emissions factor data
- Number of consultations



- Contains raw data on total customers seen across BHESCo programmes.

Technology specific data

- LEDs
 - Contains data on number of LEDs installed annually along with financial and emissions savings
- Radflex
 - Contains data on number of Radflex installed annually along with financial and emissions savings
- Draught excluders
 - Contains data on number of draught excluders installed annually along with financial and emissions savings
- Draught proofing
 - Contains data on number of draught proofing installed annually along with financial and emissions savings
- Chimney balloons
 - Contains data on number of chimney balloons installed annually along with financial and emissions savings
- Secondary glazing film
 - Contains data on number of secondary glazing film installed annually along with financial and emissions savings

