

# Written evidence from the Department for Business, Energy and Industrial Strategy (BEIS) (BUS0001)

## **Boiler Upgrade Scheme inquiry: BEIS written evidence request**

### **Summary**

The £450m Boiler Upgrade Scheme (BUS) opened to applications earlier this year, with the primary objective of providing targeted support to the supply chain for heat pumps. By the end of October, 8,904 voucher applications had been received by Ofgem<sup>1</sup> and the market has responded positively with a range of new consumer offers around the grant model, including low-cost finance. Ofgem are processing voucher and redemption applications promptly and there has been positive feedback on scheme delivery from industry.

### ***Public awareness***

#### **1. Working with Ofgem, what steps has the Government taken to make the public aware of the Boiler Upgrade Scheme?**

BEIS carried out extensive engagement with industry and key stakeholder groups during development of the scheme to gather feedback and raise awareness of the policy. This included a series of workshops, targeted bilateral meetings, as well as publication of a draft of the scheme legislation in December 2021 to increase understanding of scheme requirements. BEIS and Ofgem also worked together to coordinate our communications approach around the launch of the scheme which included emails to stakeholders, launch events, and social media announcements.

The primary source of information for consumers is the Boiler Upgrade Scheme (BUS) gov.uk page<sup>2</sup>. Ofgem also publish extensive information on their own website, which includes written guidance for property owners<sup>3</sup> to help the public understand how the scheme works and key eligibility requirements.

BEIS have produced additional resources for stakeholders to share with the public to promote the scheme, including a Local Authority Toolkit<sup>4</sup> and a Consumer Information Leaflet.<sup>5</sup> We have also developed case study

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<sup>1</sup> Ofgem, 2022. BUS Monthly Scheme Update: <https://www.ofgem.gov.uk/publications/bus-monthly-scheme-update>

<sup>2</sup> BEIS, 2022. Apply for the Boiler Upgrade Scheme: <https://www.gov.uk/apply-boiler-upgrade-scheme>

<sup>3</sup> Ofgem, 2022. BUS guidance for property owners: <https://www.ofgem.gov.uk/publications/boiler-upgrade-scheme-guidance-property-owners>

<sup>4</sup> BEIS, 2022. BUS Local Authority Toolkit: Local Authority toolkit: <https://beis.frontify.com/d/FBNvrYFu7HJ3/boiler-upgrade-scheme>

content for use in targeted media outlets. We continue to support consumer organisations including Which?, Energy Saving Trust and the Consumer Codes with their public information and communications. The scheme is represented in other Government communications such as the 'find ways to save energy in your home (help to heat)' tool.<sup>6</sup>

## **2. How is the Government monitoring levels of public awareness of the scheme?**

There are established industry feedback loops that cover topics such as customer demand and public awareness, including Ofgem-led scheme stakeholder forums and regular bilaterals with key trade associations. BEIS reviews scheme demand on a weekly basis and refreshes application forecasts on a monthly basis.

Monitoring is in place on the BUS gov.uk page to check the number of visitors to the page. We also monitor analytics from the Local Authority Toolkit, such as views to the website and the number of assets (leaflets, videos etc.) downloaded.

We receive frequent updates from Energy Saving Trust on their BUS information page and statistics such as page views, time spent on the page and frequently asked questions.

The Government evaluation plan for the scheme intends to conduct research with property owners with a BUS installation to investigate how they first became aware of the scheme and where they accessed further information about it. The evaluation will run from early 2023 to mid-2025 and findings will be published annually.

## **3. What sources of public information can consumers use to reach decisions about installing low-carbon heat in their property?**

There are various sources of information available on gov.uk including the BUS page, a tool to check if a heat pump is suitable for your home,<sup>7</sup> the 'find ways to save energy in your home page' and the 'find a heat pump installer' page.<sup>8</sup> Energy Saving Trust also host information on low carbon heating technologies and suitability for different homes.

On the BUS specifically, there is a consumer information leaflet and Ofgem's guidance for Property Owners. We have provided information on BUS to Local Authorities, energy suppliers and consumer groups, via a toolkit, to host on their own channels.

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<sup>5</sup> BEIS, 2022. BUS consumer information leaflet:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1063493/bus-installer-leaflet.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1063493/bus-installer-leaflet.pdf)

<sup>6</sup> BEIS, 2022. Find ways to save energy in your home: <https://www.gov.uk/improve-energy-efficiency>

<sup>7</sup> BEIS, 2022. Check if a heat pump could be suitable for your home: <https://www.gov.uk/check-heat-pump>

<sup>8</sup> BEIS, 2022. Find a heat pump installer: <https://www.gov.uk/guidance/find-a-heat-pump-installer>

A variety of industry stakeholders, including large energy suppliers, have also published dedicated information about the scheme and developed consumer offers which BEIS have welcomed.

### ***Scale of the scheme***

#### **4. In the department's view, what would be an acceptable level of take-up at this stage in the scheme?**

During the first year, a bedding-in period for a demand-led scheme like BUS can be expected as the numbers of installers to have created a BUS Account grows, and the industry as a whole becomes more familiar with the scheme. From May 2022 through September 2022 the BUS received an average of 1,446 applications per month.<sup>9</sup> This is within the demand range projected in the BUS Final Impact Assessment (IA).<sup>10</sup>

Since the BUS budget was announced in October 2021, macroeconomic developments are likely to have impacted consumer demand to some extent. However, BEIS continues to engage with industry to understand their plans to scale up heat pump installations under the BUS over the scheme's lifetime and to promote the scheme to installers and consumers.

#### **5. The Government set a target to install 600,000 heat pumps a year by 2028. What analysis underpins this target?**

As outlined in the Net Zero Strategy, Government and the Climate Change Committee expect that 600,000 heat pumps per annum by 2028 is the minimum level of deployment needed, even in a scenario where hydrogen plays a significant role in heating buildings. This also keeps us on track to scale up deployment of heat pumps in the 2030s in the case of a full electrification of heating scenario, where heat pumps are the predominant future heating technology. This level of deployment makes significant contributions to carbon budgets 5 and 6.

#### **6. Given the current rate of uptake, does the Department expect the whole £450million budget for the Boiler Upgrade Scheme to have been spent by 2025?**

BEIS monitors deployment and wider scheme metrics, for the purpose of assessing scheme performance and benefits as well as to assess the need for any adjustments to the scheme.

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<sup>9</sup> BEIS, 2022. BUS official statistics: <https://www.gov.uk/government/collections/boiler-upgrade-scheme-statistics>

<sup>10</sup> BEIS, February 2022. BUS Final Impact Assessment: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1055336/boiler-upgrade-scheme-final-impact-assessment.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1055336/boiler-upgrade-scheme-final-impact-assessment.pdf)

For the 2022/23 financial year, the full budget of £150m remains available for installers and consumers to take-up, but current forecasts suggest that it will not be fully allocated by the end of the financial year.

BEIS is engaging with industry on their plans to scale up their BUS voucher application numbers considerably over the scheme's lifetime. These plans increase the likelihood that the respective £150m budgets in Years 2 and 3 of the BUS will be allocated.

### ***Consumer-installer relationship, consumer confidence***

#### **7. What assessment has the department made of the availability of low-carbon heat installers and what steps, if any, are planned to ensure sufficient numbers of installers are available to underpin take-up of the scheme and the wider 600,000 target?**

BEIS is working closely with industry to ensure that sufficient installers are available to install heat pumps. There are currently over 1,300 businesses in the UK certified with the Microgeneration Certification Scheme (MCS) to install heat pumps, estimated to employ over 4,000 installers. As MCS certification is only required for installations receiving Government grant funding, the total number of installers is likely to be greater.

BEIS launched the latest phase of the Home Decarbonisation Skills Training competition on 20<sup>th</sup> September 2022. This £10 million competition is funding training for people working in the energy efficiency, retrofit and low carbon heating sectors in England. The previous £6m phase of this scheme in 2020 and 2021 supported almost 7,000 training opportunities, including training for over 2,000 heat pump installers. Existing heating engineers can train to install heat pumps in one week, and industry expects training capacity will be able to meet demand for heat pump upskilling as heat pump deployment increases.

### ***Performance***

#### **8. What assessment has the Department made of how well air source and ground source heat pumps perform to meet home heating and hot water needs in a real-world environment?**

BEIS is currently assessing the in-situ performance of heat pumps installed in a representative range of UK homes, using data from the Electrification of Heat Demonstration Project<sup>11</sup>. Early insights from the Demonstration Project indicate that there are high levels of satisfaction with the performance of the heat pumps installed in the trial.

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<sup>11</sup> Energy Systems Catapult, 2021. Electrification of Heat Demonstration Project, Heat Pump Installation Statistics: <https://es.catapult.org.uk/report/electrification-of-heat-installation-statistics/>

Two previous reports have also shown that households are satisfied with their heat pumps, including for thermal comfort. The evaluation of the Domestic Renewable Heat Incentive<sup>12</sup> Scheme – which ran from 2014 to 2022 – showed high satisfaction with both Air Source Heat Pumps and Ground Source Heat Pumps amongst applicants who responded to an evaluation survey.<sup>13</sup>

## **Energy efficiency**

### **9. What assessment has the Department made of the energy efficiency of heat pumps in a real-world environment?**

The Renewable Heat Premium Payment Scheme monitored the real-world performance of around 300 air source heat pumps and 100 ground source heat pumps from 31 October 2013 to 31 March 2015. This showed median Seasonal Performance Factors of 2.44 for air source heat pumps and 2.71 for ground source heat pumps, which is around three times more efficient than a modern fossil fuel boiler.

However, we consider data from the Renewable Heat Payment Scheme to be outdated and underestimate current performance of heat pumps. The Electrification of Heat Demonstration Project will provide an updated assessment of the efficiency performance of heat pumps in UK housing stock and our analysis of monitoring data from the project will be published in due course.

### **10. What factors and evidence did the department take into account when determining the energy efficiency eligibility criteria for the scheme? (*by energy efficiency eligibility criteria, we mean the requirement to have an EPC with no outstanding recommendations for loft or cavity wall insulation*)**

BEIS analysis suggests around 90% of homes in Great Britain<sup>14</sup> have sufficient energy efficiency and internal electrical connection capacity to accommodate a heat pump system. BEIS recognises that the energy efficiency of a building can improve heating system performance and the achieved efficiency of a heat pump system.

The minimum insulation requirements for this scheme – loft and cavity wall insulation – are relatively low-cost measures that will have a positive

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<sup>12</sup> BEIS, 2017. Renewable Heat Incentive Evaluation: [www.gov.uk/government/collections/renewable-heat-incentive-evaluation](http://www.gov.uk/government/collections/renewable-heat-incentive-evaluation)

<sup>13</sup> The percentage of Domestic RHI applicants who responded to surveys between 9th April 2014 and 30th April 2016 that were either fairly satisfied or very satisfied with their technology were 78% for ASHPs and 83% for GSHPs. Amongst new applicants following April 2016 up to the 20th of September 2017, satisfaction rose to 83% for ASHPs and 87% for GSHPs.

<sup>14</sup> BEIS, 2017. National Housing Model: [www.data.gov.uk/dataset/957eadbe-43b6-4d8d-b931-8594cb346ecd/national-household-model](http://www.data.gov.uk/dataset/957eadbe-43b6-4d8d-b931-8594cb346ecd/national-household-model)

impact on running costs. This builds on the eligibility criteria of the Domestic Renewable Heat Incentive, which also required that an EPC had no outstanding recommendations for loft or cavity wall insulation and is therefore familiar for industry. Introducing additional energy efficiency eligibility criteria would have complicated the design of the scheme for installers and consumers.

The requirement for an EPC also provides a level playing field when performance estimates and expected running costs are being calculated for customers, in line with MCS installation standards.

## **Cost**

### **11. What assessment has the department made of how the overall lifetime cost of air and ground source heat pumps compare to fossil fuel boilers and hydrogen boilers, including the upfront costs for the unit and labour, associated installation costs (insulation, pipework), and running costs?**

The upfront cost today of installing an air source heat pump (ASHP) in a domestic property, ranges from £7,000 to £14,000<sup>15</sup>. The wide range in these costs is due to the diverse characteristics of individual properties. From May 2022 through September 2022, the median installation cost for households redeeming an ASHP voucher on BUS was £12,869, with the median ASHP capacity being 10kW. This is a higher capacity than is needed for most of the housing stock and therefore we expect that the cost of an ASHP for the average household will be lower. Under the BUS, BEIS is aware that one installer has made the first offer to a consumer of a £2,500 heat pump, taking into account the grant. We have also seen consumer offers of 0% finance over periods of up to 5 years.

BEIS estimates that the average upfront cost of installing a gas boiler (excluding VAT) is approximately £2,600 (2020 prices),<sup>16</sup> although this will vary with property characteristics.

In the Heat and Buildings Strategy we set out our ambition to work with industry to reduce the upfront costs of heat pumps by 25-50% by 2025 and so that heat pumps are as cheap to buy and run as gas boilers by 2030.

The lifetime costs for heat pumps will depend on the achieved in-situ performance of the installed system, shaped by a range of factors including the building characteristics and levels of energy efficiency,

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<sup>15</sup> BEIS, 2021. Heat and Buildings Strategy: <https://www.gov.uk/government/publications/heat-and-buildings-strategy>

<sup>16</sup> BEIS, 2021. Marketing Mechanism Impact Assessment: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1026488/heat-market-mechanism-impact-assessment.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026488/heat-market-mechanism-impact-assessment.pdf)

weather and usage patterns, the heat pump itself and the supporting ancillary equipment such as radiators and controls.

However, the main factor affecting the relative running costs of heat pumps and fossil fuel boilers are the relative prices of electricity and gas/oil. At present, the electricity price is set to a large extent by the gas price and the Review of Electricity Market Arrangements (REMA) is considering how to address this issue.

It is not possible to make robust comparisons of the lifetime costs of hydrogen boilers at this stage as, unlike heat pumps, 100% hydrogen for heating is not yet an established technology. Further work is required to understand the costs, benefits and feasibility of using hydrogen for heating. However, we expect the upfront capital cost of hydrogen-ready boilers to be the same as the cost of natural gas boilers.

### ***Suitability***

- 12. For what proportion of the UK's housing stock does the department estimate heat pumps could provide heating and hot water, with (a) no or minimal preparatory work (e.g. loft insulation) and (b) more extensive preparatory work (e.g. changing radiators, double-glazing)? (by preparatory work, we mean work that may be required beyond the installation of the heat pump unit)**

According to BEIS analysis, around 90% of homes in Great Britain have sufficient insulation measures to support low temperature heat pumps for thermal comfort based on modelling characteristics taken from the various national housing surveys<sup>17</sup>. The use of high temperature heat pumps may be able to increase this further.

The surveys have insufficient details about radiator sizes to assess their suitability for heat pumps, but a separate study commissioned by the UK Government<sup>18</sup> suggests 90% of UK homes may require changes to radiator sizes to work with a heat pump operating with a flow temperature below 55°C and meet heat demand on a peak winter day. Technologies, like high temperature heat pumps, will likely reduce the need to make changes to radiators.

- 13. What assessment has the department made of the levels of insulation required in the main types of UK housing stock in order**

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<sup>17</sup> BEIS, 2017. National Housing Model: [www.data.gov.uk/dataset/957eadbe-43b6-4d8d-b931-8594cb346ecd/national-household-model](http://www.data.gov.uk/dataset/957eadbe-43b6-4d8d-b931-8594cb346ecd/national-household-model)

<sup>18</sup> BEIS, 2021. Domestic heat distribution systems, evidence gathering: [www.gov.uk/government/publications/heat-storage-and-distribution-systems-hds](http://www.gov.uk/government/publications/heat-storage-and-distribution-systems-hds)

**for air source and ground pumps to operate at what it deems to be an acceptable level of energy efficiency?**

According to BEIS analysis, around 90% of homes in Great Britain have sufficient insulation measures to support low temperature heat pumps for thermal comfort.

**14. What plans does the department have to review the levels of grants for different technologies and the technologies that are covered by the scheme?**

The technologies covered by the scheme are those that can be deployed at scale and offer the greatest carbon savings. However, we continue to monitor uptake under the scheme and will consider relevant evidence in support of amending these where this is available and consistent with our wider decarbonisation strategy.

***Targeting by income-bracket and alternative schemes/products***

**15. What steps is the Government taking to ensure low-income households can afford the shift to low-carbon heat systems?**

The Government wants to make the transition to low carbon heating affordable and achievable for all. Working with industry we have set an ambition to reduce the upfront cost of a heat pump by at least 25-50% by 2025 and so that heat pumps are as cheap to buy and run as a gas boiler by 2030.

It is recognised that low carbon heating measures can be costly to install and out of reach for many low-income families. Therefore, we will deliver upgrades to over half a million low income and fuel poor homes in the coming years through our Social Housing Decarbonisation Scheme, Home Upgrade Grant (HUG) and Energy Company Obligation Scheme. Under HUG Phase 2 there are separate funding pots per household for energy efficiency upgrades and low carbon heat such as heat pumps, to ensure these measure types do not complete with each other, and to help drive the deployment of low carbon heat.

**16. What factors and evidence did the department consider when determining to fix the level of grants available through the scheme regardless of household income?**

Delivering support through an upfront grant was recommended by the Climate Change Committee and by industry. This was supported by evidence from the Domestic Renewable Heat Incentive which indicated that the high upfront cost of low carbon heating was one of the key



barriers to deployment. The single level of support for each technology covered by the scheme is intended to provide a simple and straightforward customer offer and builds on lessons about scheme delivery learned from the Green Homes Grant Voucher scheme. Varying grant values by household income would have increased the complexity of the scheme for installers and consumers, as well as leading to additional fraud, audit and compliance considerations.

There are a range of other government schemes targeting the low-income and fuel poor segments of the market, including the Home Upgrade Grant, Local Authority Delivery scheme and the Social Housing Decarbonisation Fund.

### *Monitoring and evaluation*

#### **17. Working with Ofgem, how is the Government monitoring the rollout of the scheme, and what arrangements are in place to make improvements as required?**

Ofgem share BUS monitoring data with BEIS each week featuring the latest figures for installer accounts, the various stages of vouchers at each stage of the application process and spend to date. Insights on scheme rollout are also gained from correspondence and stakeholder engagement, in addition to regular updates from Ofgem on enquiries, the scheme audit function and installer forums. These insights, together with the robust governance framework that has been developed jointly with Ofgem, help BEIS to quickly identify and rectify any emerging issues. Monthly data provides additional detailed insights into the nature of the scheme's rollout which enables forecasting of future rollout trends. Both BEIS and Ofgem publish monthly BUS statistics on their websites.

In addition to ongoing monitoring work, BEIS is commissioning an evaluation of the scheme. Research activities carried out throughout the evaluation will provide regular, timely insights into scheme delivery, impacts, and progress being made towards meeting the scheme's objectives.

Alongside the monthly project governance and ongoing stakeholder engagement, BEIS's monitoring and evaluation evidence will be used to inform decisions about potential scheme improvements.

### ***Working with Ofgem***

#### **18. How does the Department work with Ofgem to support its administration of the Boiler Upgrade Scheme in a practical sense?**

- a. How regularly does the Department meet with Ofgem to discuss the delivery of the scheme?

BEIS and Ofgem have close working arrangements on the scheme. In the development of the scheme and its early delivery, BEIS and Ofgem have met at Ministerial and Senior Civil Servant level on a weekly basis. Wider governance includes monthly Project and Cost Control Boards, a fortnightly Delivery Working Group, as well as Quarterly Assurance Meetings which focus on audit and fraud considerations. In addition to this, informal ad hoc engagement takes place at working level on most days. A joined-up approach to stakeholder engagement is in place, with close collaboration on stakeholder communications.

### ***Feedback mechanisms***

#### **19. Does the Department have any mechanisms through which it can receive feedback about the delivery of the Boiler Upgrade Scheme from installers, consumers and third parties?**

There are multiple feedback mechanisms including regular meetings that both BEIS and Ofgem hold with installer groups, MCS and large suppliers. These meetings are held to receive both industry and consumer feedback and areas to review. MCS have also surveyed installers experience of the scheme. Feedback can also be submitted directly via the scheme mailbox.

The scheme evaluation will conduct research with installers and property owners with a BUS installation to hear directly about their experiences of scheme delivery. The evaluation will gather feedback from Ofgem administrative staff about their first-hand experiences of delivering the scheme. The evaluation also intends to carry out research with non-participants such as installers who have created an account for BUS but have not completed an installation, and property owners who dropped out of the scheme, to gain insights into any barriers that they have encountered.