HPA UK

Heat Pump
Association UK

hpauk.org.uk

January 2026

From Carbon to Competitiveness:

The UK opportunity associated with decarbonising residential heating

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Executive Summary

Decarbonising how we heat our homes is not only essential for meeting the UK's climate commitments, it is also a major economic, employment and societal opportunity. Modelling using the UK Government's 2025 *Carbon Budget and Growth Delivery Plan*[1], shows that the electrification of residential space heating delivers wider benefits beyond reducing UK carbon emissions. It provides an opportunity to stimulate significant economic growth, create skilled jobs across the country, improve public health, and strengthen the UK's energy security.

The Changing Heating Landscape

Government assumptions set out within the *Carbon Budget and Growth Delivery Plan*[1] suggest that the number of residential hydronic heat pumps in service will rise from 0.5 million in 2025 to 2.5 million by 2030, and 9.3 million by 2035. With direct electric heating also seeing modest growth, whilst fossil fuel central heating boiler numbers are expected to decline.[2]

Economic Growth

By 2035, the total Gross Value Added (GVA)[3] generated by manufacturing, installing and operating residential space heating appliances could rise from £12.2 billion today to reach £22.5 billion in 2035 – an 85% increase. This demonstrates that decarbonising heat in homes through electrification should not be viewed as a cost burden, but as a driver of opportunity.

The economic opportunity associated with hydronic heat pumps alone could increase GVA by £14 billion over the course of the decade and, by 2031, heat pumps are predicted to overtake fossil fuel boilers as the largest contributor to GVA in this sector. Excluding energy consumption, hydronic heat pumps are expected to account for 88% of GVA in the residential space heating sector by 2035.

[1] https://www.gov.uk/government/publications/carbon-budget-and-growth-delivery-plan
[2] The appliances included in the scope of the report are fossil fuel central heating boilers, hydronic heat pumps for space heating via wet central heating systems, and direct electric heating. These represent the majority of heating appliances predicted as being in use during the period considered (2025-2035). The full report includes commentaries on the potential impacts of other heating appliances and systems.
[3] The economic value is reported in terms of Gross Value Added (GVA) which comprises both direct and indirect GVA. Direct GVA is the value created directly by the activity under consideration. Indirect GVA is value added in upstream industries supporting the direct activity.

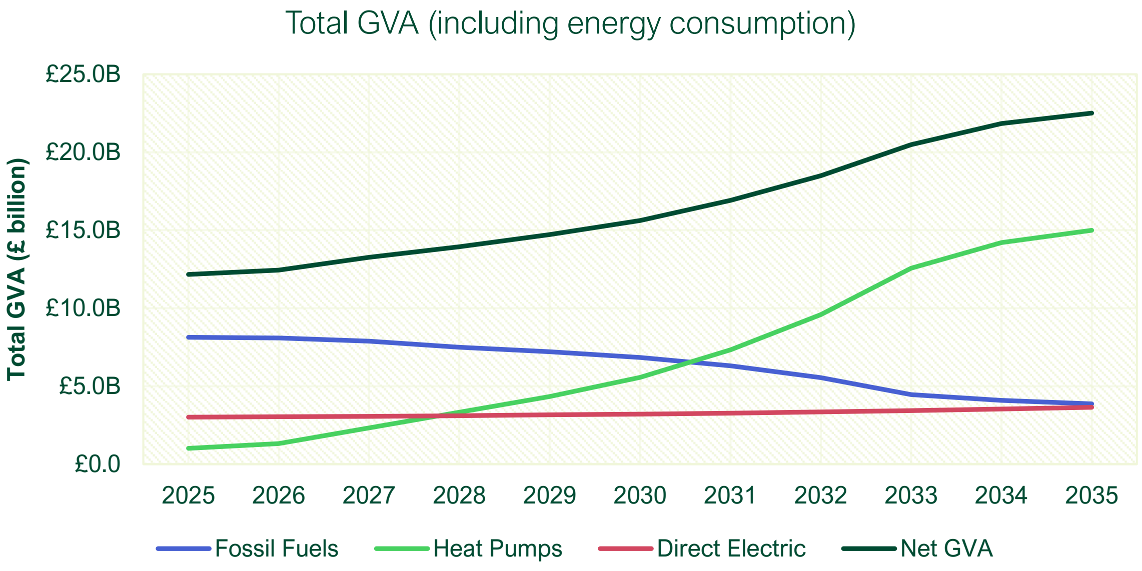


Figure 1 - Total GVA for residential space heating appliances (including energy consumption)

The UK manufacturing opportunity for hydronic heat pumps is significant, provided investment is stimulated and supported. The analysis shows that manufacturing could expand between 15-fold and 27-fold by 2035 for the UK market alone, while export opportunities could grow this even further.

Employment Growth

Heat pump deployment will create tens of thousands of skilled UK jobs. For all residential space heating appliances, employment is estimated to double from 69,000 full-time equivalent (FTE) jobs in 2025 to 144,000 FTE in 2035.

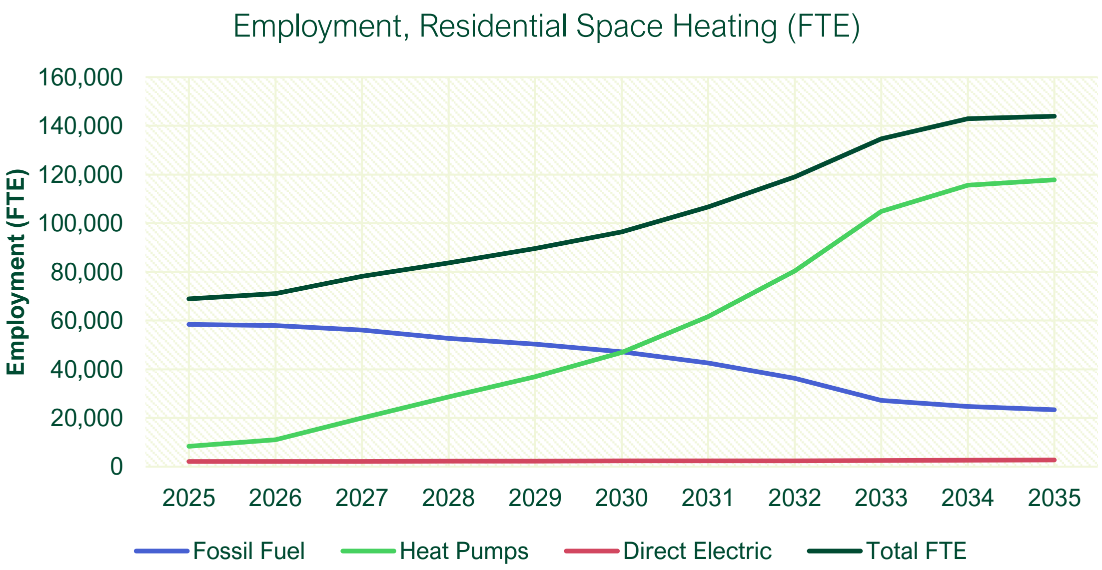


Figure 2 - Employment relating to residential space heating

Fossil fuel activities will increasingly focus on servicing existing heating appliances, while installation will switch towards low-carbon heating, primarily hydronic heat pumps. Overall, between 2025 and 2035 heat pump related jobs will grow by over 110,000 FTE to account for 82% of employment in the residential space heating sector by 2035. This growth provides opportunities both for workers transitioning from fossil fuels and for new entrants.

Energy Security

Each heat pump installed reduces the UK's reliance on imported gas. The switch to heat pumps and other low-carbon heating appliances could reduce the annual demand for gas by 63 TWh from 2025 to 2035, a fall of 22%, which is enough energy to run the London Underground for 75 years.

In combination with the anticipated reduction in gas used in electricity production by 2035, the UK's overall reliance on imported gas could be reduced by 62%, strengthening our energy security by increasing the use of homegrown electricity.

Improving Public Health

Replacing fossil fuel boilers reduces harmful emissions of fine particulates and nitrogen oxides (NOx), which contribute to respiratory and circulatory illnesses, including asthma, coronary heart disease, strokes, and lung cancer.

Today, 25% of UK air pollution relates to emissions from fossil fuel boilers. It is estimated that by 2035. the number of central heating boilers in service will reduce from current levels by 24%, which would represent a 6% reduction in overall air pollution, improving health outcomes throughout the UK.

Climate Change

By 2035, the installation of hydronic heat pumps could abate around a third of greenhouse gas emissions associated with residential space heating. Measured as carbon equivalent, 17 million tonnes of carbon ($MtCO_2e$) would be annually abated by 2035 with other low-carbon heating appliances potentially adding a further 1 $MtCO_2e$. This is equivalent to 20 million passenger flights from London to New York.

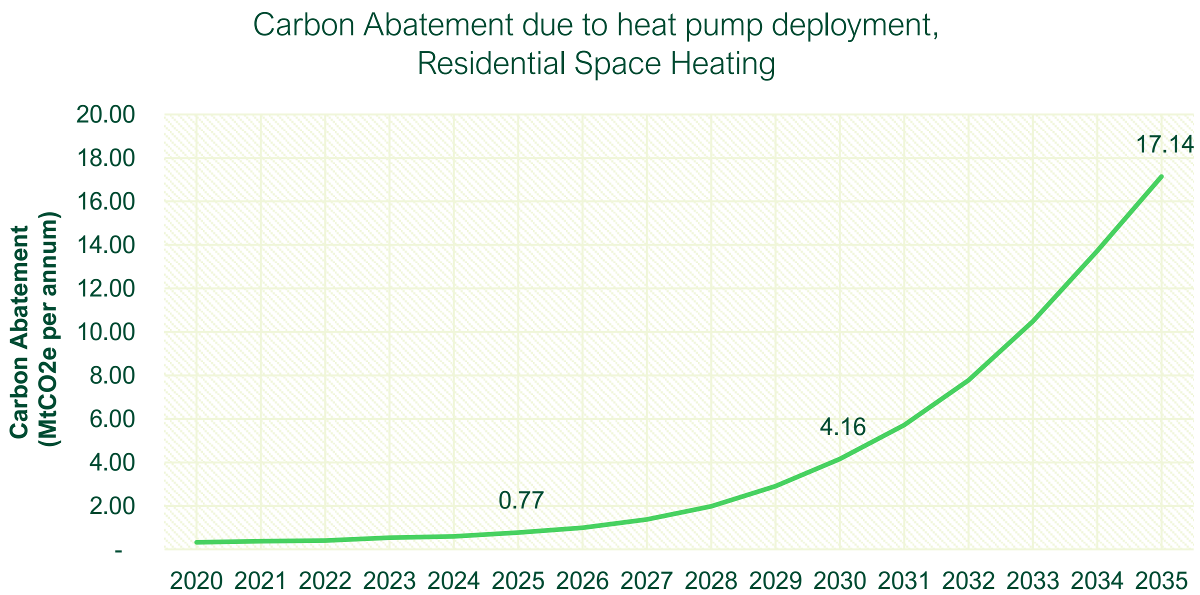


Figure 3 - Carbon abatement from heat pump deployment for residential space heating

Evaluation Approach

A detailed methodology is included in the appendix. The analysis is based on the residential space heating appliance installation levels needed to meet the assumptions published in the *Carbon Budget and Growth Delivery Plan*[4] which is the formally published plan by which the UK Government intends to meet the Sixth UK Carbon Budget (2033-2037). It also draws on evidence and modelling for the years 2025-2035 included in the Climate Change Committee (CCC) report *The Seventh Carbon Budget – advice for the UK Government*[5].

The evaluation is focused on space heating appliances which serve individual homes, and it does not consider larger heat networks for residential heating or low-carbon hot water appliances, both of which are identified as likely to add further value and employment. The phrase 'residential space heating sector' is used throughout this report in reference to hydronic heat pumps, fossil fuel boilers and direct electric heating equipment and includes the provision of domestic hot water where it is supplied by the space heating appliance.

[4] https://www.gov.uk/government/publications/carbon-budget-and-growth-delivery-plan
[5] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

1. Introduction

The United Kingdom is committed to a legally binding target of achieving a 100% greenhouse gas emissions reduction by 2050. This is embodied in the Climate Change Act[6]. To meet this target, residential space heating must undergo a transformation from predominantly natural gas central heating boilers to predominantly electrical heat pump systems with wet central heating systems (hydronic heat pumps). Whilst carbon reduction is a critical outcome from an accelerated electrified heating appliance roll out, the primary focus of this report is to identify the economic and societal benefits of decarbonising residential space heating in line with the projections set out in the *Carbon Budget and Growth Delivery Plan*[7], which is the formally published plan by which the UK Government intends to meet the Sixth UK Carbon Budget (2033-2037).

The scope of this report includes homes heated by individual appliances, for which deployment and financial data is more readily available. Heat networks used to provide residential space heating are excluded from this report but will have additional economic and societal value. The phrase 'residential space heating sector' is used throughout this report in reference to hydronic heat pumps, fossil fuel boilers and direct electric heating equipment and includes the provision of domestic hot water where these systems provide such.

The economic value is reported in terms of Gross Value Added (GVA), which comprises both direct and indirect GVA, defined as follows:

- Direct GVA is the value created directly by the activity under consideration
- Indirect GVA is value added in upstream industries supporting the direct activity

When taken together, the total GVA quantifies the benefit to the UK economy. Financial figures in this report are presented in real terms using 2025 values.

The analysis is based on the residential space heating appliance installation levels needed to meet the assumptions published in the *Carbon Budget and Growth Delivery Plan*[7] which is the formally published plan by which the UK Government intends to meet the Sixth UK Carbon Budget (2033-2037). It also draws on evidence and modelling for the years 2025-2035 included in the Climate Change Committee (CCC) report *The Seventh Carbon Budget – Advice for the UK Government*[8]. This is presented in section 3, while the other assumptions made are detailed in Appendix A (methodology). The potential for assumptions to vary the calculated outcomes (sensitivities) has been considered, and where the effect is potentially significant, such sensitivities are discussed in the main body of the report. Minor sensitivities, with impacts <3% are discussed in Appendix A.

The structure of the report considers GVA for residential space heating by each of the following steps in the supply chain, for manufacturing (section 4), installation (section 5), servicing (section 6) and energy consumption (section 7). The combined direct GVA is presented in section 8, the indirect GVA in section 9 and the total GVA in section 10.

[6] The 2019 amendment to the 2008 Climate Change Act introduced the legally binding "net zero" target for 2050. Section 1 (the target for 2050) states: "It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline."
[7] https://www.gov.uk/government/publications/carbon-budget-and-growth-delivery-plan
[8] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

Employment associated with residential space heating is presented in section 11.

Other aspects of the supply chain, and heating systems, excluded from the scope of this study, also have the potential to deliver additional GVA, and this is discussed further in section 12.

Section 13 presents data specific to hydronic heat pump deployment for residential space heating and includes economic growth (section 13.1), employment growth (section 13.2), resource development (section 13.3), regional breakdown of GVA and employment (section 13.4), health benefits (section 13.5) and greenhouse gas abatement (section 13.6).

2. Scope

The scope of this report covers residential space heating in the United Kingdom and presents results for the period 2025-2035. Both existing and new residential buildings are included.

The Climate Change Committee (CCC) report *The Seventh Carbon Budget – advice for the UK Government (CB7)*[9] suggests that the future composition of residential space heating would be:

- 78% hydronic heat pumps, including shared ground loops
- 13% direct electric heating
- 9% heat networks

The scope of this report includes homes heated by individual appliances, for which deployment and financial data is more readily available. Heat networks used to provide residential space heating are excluded from this report but will have additional economic and societal value. The phrase 'residential space heating sector' is used throughout this report in reference to hydronic heat pumps, fossil fuel boilers and direct electric heating equipment and includes the provision of domestic hot water where these systems provide such.

2.1 Appliance/system types included

Included in the scope are the appliances used in the majority of UK residential properties that are heated by individual appliances, including:

Fossil Fuel Central Heating Boilers	Natural gas
	Liquified petroleum gas
	Liquid fuel
	Solid fuel
Hydronic Heat Pumps	Air-to-water heat pumps (including exhaust air)
	Ground/water source heat pumps (including those connected to shared ground loops)
Direct Electric Heating	Storage heaters
	Radiant heaters

[9] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

2.2 Appliance/system types excluded

The following related equipment is excluded:

- **Air-to-air heat pumps** are excluded from the report because there are no predicted deployment scenarios for them in the *Carbon Budget and Growth Delivery Plan*[10].
- Homes heated via **heat networks, district heating, or combined heat and power** are excluded from the report but would represent a small fraction of additional GVA in residential space heating.
- **Thermal energy storage systems** are excluded but may be considered as an alternative to direct electric heating for some applications.
- Hot water provision is excluded where it is not provided by the space heating system (i.e. **immersion heaters, instantaneous electric water heaters, solar thermal heating or domestic hot water heat pumps**).
- **Secondary heating, such as fires and stoves**, are not within the scope of this report.
- **Cooking-only appliances** are not within the scope of this report.

The report adopts the Climate Change Committee (CCC) position stated in *The Seventh Carbon Budget – advice for the UK Government* (CB7)[11] that hydrogen would not play a significant role in residential heating.

3. Projected Appliance Deployment

The estimation of economic value in the residential space heating sector is primarily dependent on the assumptions made regarding the deployment of low carbon heating and the consequential displacement of fossil fuel heating.

In October 2025, the UK Government published the *Carbon Budget and Growth Delivery Plan*[10] which included spot figures for the cumulative number of heat pumps installed by the end of 2023, 2025, 2030 and 2035 as shown in Table 3.1[12].

Table 3.1 – Carbon Budget and Growth Delivery Plan (Extract from Appendix C of the Plan)

Sector	Deployment Assumption[13]	Unit	2023	2025	2030	2035
Heat & Buildings	Cumulative heat pumps installed domestically	Million installations	0.3	0.5	2.5	9.3

10 https://www.gov.uk/government/publications/carbon-budget-and-growth-delivery-plan
11 https://www.theccc.org.uk/publication/the-seventh-carbon-budget/
12 The figures relate to hydronic heat pumps installed to provide space heating and exclude domestic hot water heat pumps
13 The report states "these are illustrative and should not be interpreted as government targets"

To determine annual installation rates, the profile from *The Seventh Carbon Budget – advice for the UK Government* (CB7)[14] has been used, which is expressed in terms of the percentage of existing homes heated by heat pumps at the end of each year. Figure 3.1 shows this for the years 2025 to 2035.

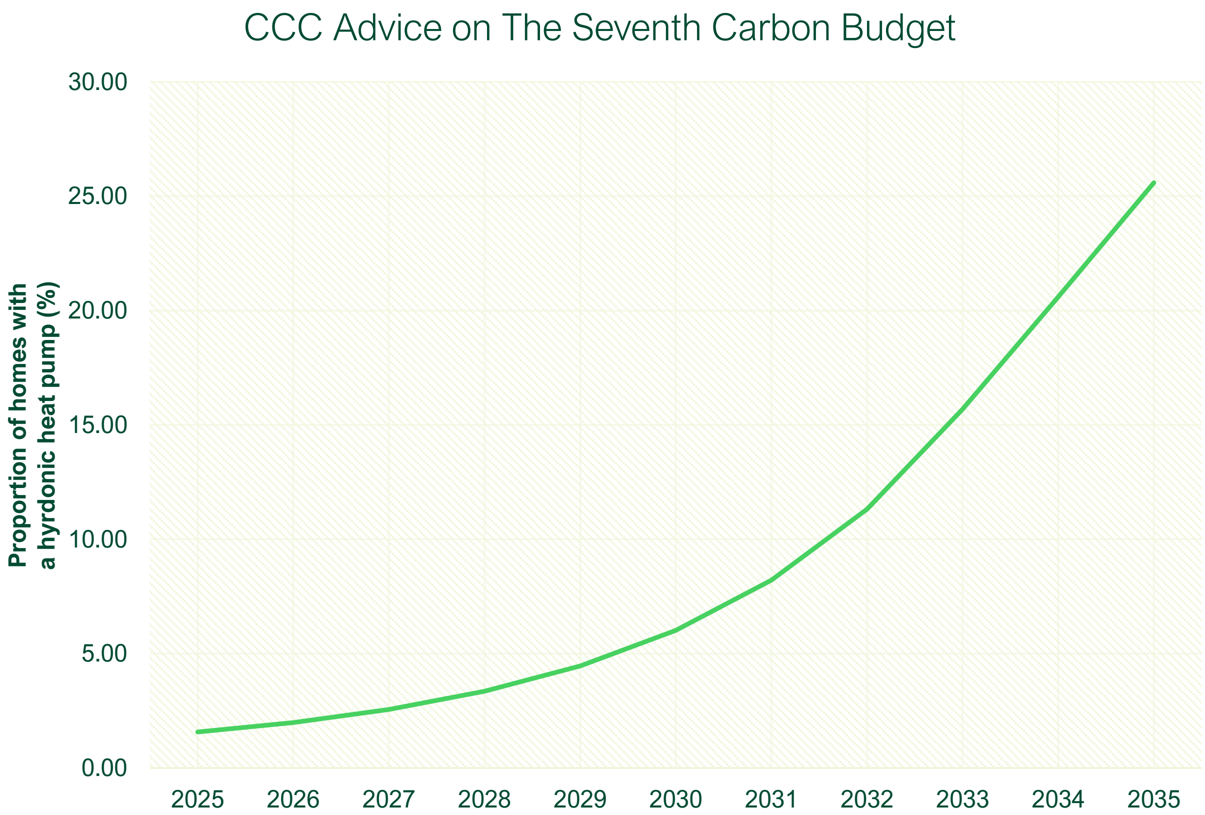


Figure 3.1 – Proportion of homes with a hydronic heat pump, 2025-2035

This provides a profile for retrofit hydronic heat pump installations. To project a hydronic heat pump deployment profile in newly built residential buildings, the assumptions associated with the implementation of the Future Homes Standard and the Scottish New Build Heat Standard presented in the HPA report *Projecting the Future Domestic Heat Pump Workforce (background and methodology)*[15] have been used.

CB7 is used as the basis for modelling the increase in market share for direct electric heating, reported as rising from 8% in 2025 to 13% in 2040, and with an annual installation rate of 210,000 by 2040. The rise in installation rate from 2025 to 2035 is assumed to be in proportion to the CB7 profile for low-carbon heating systems.

The rate at which fossil fuel appliances are replaced by the deployment of low carbon heating is in proportion to the initial distribution of appliances by fuel type in 2025, so that the timescale for their replacement is the same irrespective of fuel type.

[14] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/
[15] https://hpauk.org.uk/wp-content/uploads/2024/11/HPA-Projecting-the-Future-Domestic-Heat-Pump-Workforce-Background-and-Methodology.pdf

The resultant profile is as shown in Figures 3.2 (annual) and 3.3 (cumulative).

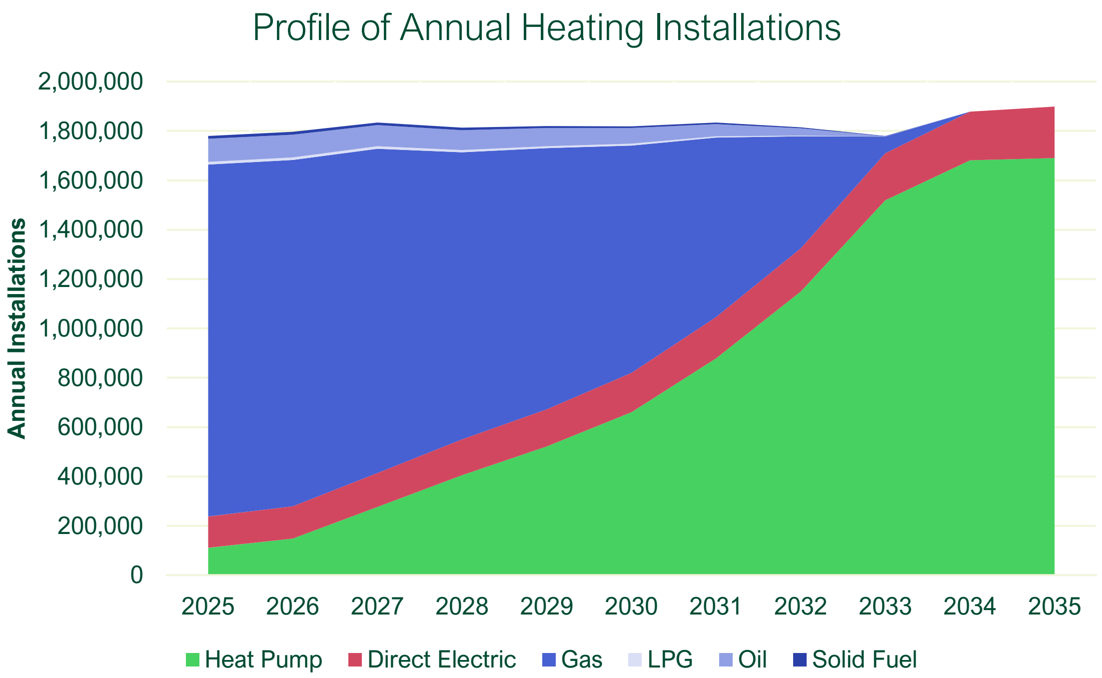


Figure 3.2 – Assumed profile of annual residential space heating installations (UK)

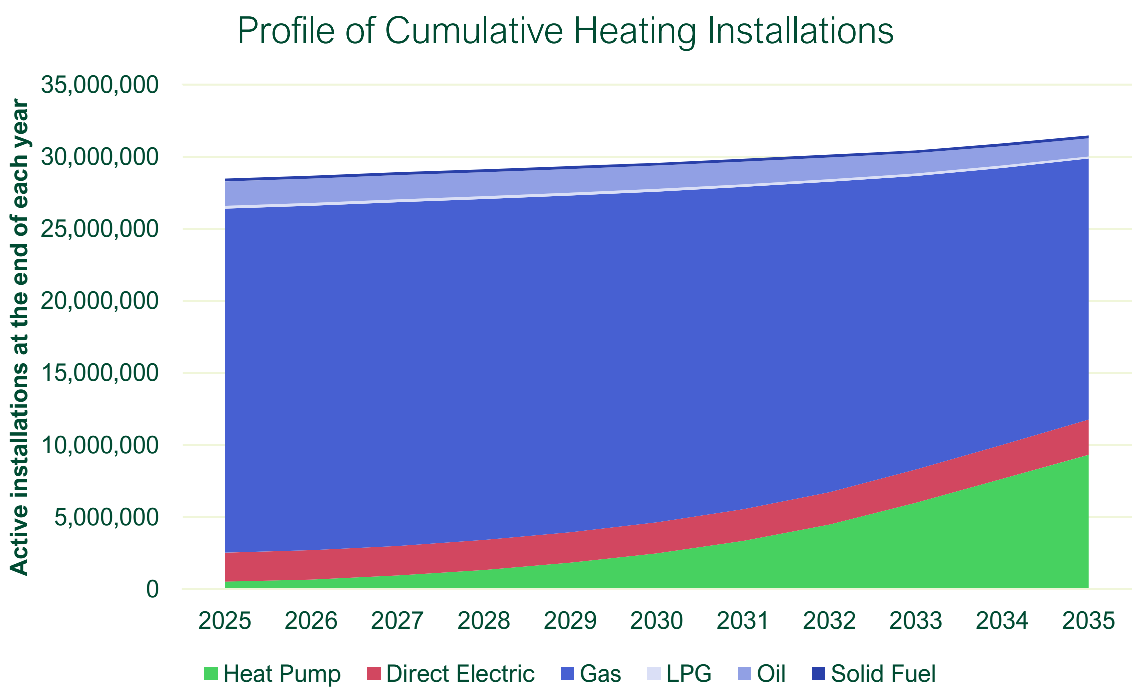


Figure 3.3 – Assumed profile of cumulative residential space heating installations (UK)

Other assumptions are described in detail in Appendix A, which also considers the sensitivity of the modelled GVA to variations in key assumptions.

4. Appliance Manufacturing

This section considers the economic value of manufacturing residential space heating appliances in the UK for sale in the UK market. Manufacturing of component parts is not directly modelled but is included within the calculations of indirect GVA considered in section 9. Manufacturing for export is excluded from the model, see section 4.2.

4.1 Direct GVA, UK Heating Appliance Manufacturing for UK Sales

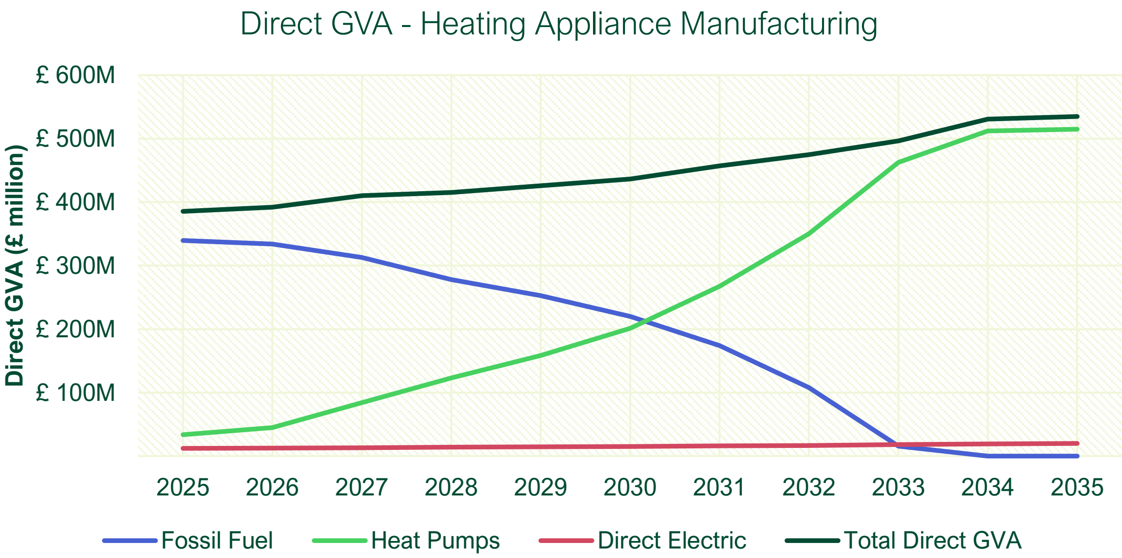
Over the course of the next decade, the number of hydronic heat pumps used for residential space heating expected to be sold in the UK will total 8.8 million appliances. The scale of the UK manufacturing opportunity is significant, and the industrial infrastructure in the UK is well placed to respond to the challenge, provided investment can be secured[16]. As part of the UK Government's modern industrial strategy publications, the *Clean Energy Industries - Sector Plan* specifically identifies heat pumps as representing one of the areas with the greatest growth potential[17].

The opportunity to switch to hydronic heat pump production is not simply to maintain parity, but to increase revenues and profits by utilising transferable skills to manufacture a higher value product in terms of value per unit.

For this report, two main scenarios relating to UK sales satisfied by UK manufactured[18] space heating appliances have been modelled:

1. Where the relative percentage of UK sales satisfied by UK manufactured products remain unchanged throughout the period for fossil fuel (80%), hydronic heat pumps (33.5%) and direct electric (18%). **This is used as the baseline for other sections of the report and is shown in Figure 4.1**.
2. Where the share of UK sales of hydronic heat pumps satisfied by UK manufactured products grows at a rate based on *Heat Pump Manufacturing Supply Chain Research Project (BEIS, 2020)*[16], rising from 33% to 59% over the course of a ten-year period while UK fossil fuel boiler manufacturing maintains the existing percentage share of a falling market. This is only used in this section of the report to show the sensitivity of the GVA model to assumptions about manufacturing levels. **This is shown in Figure 4.2.**

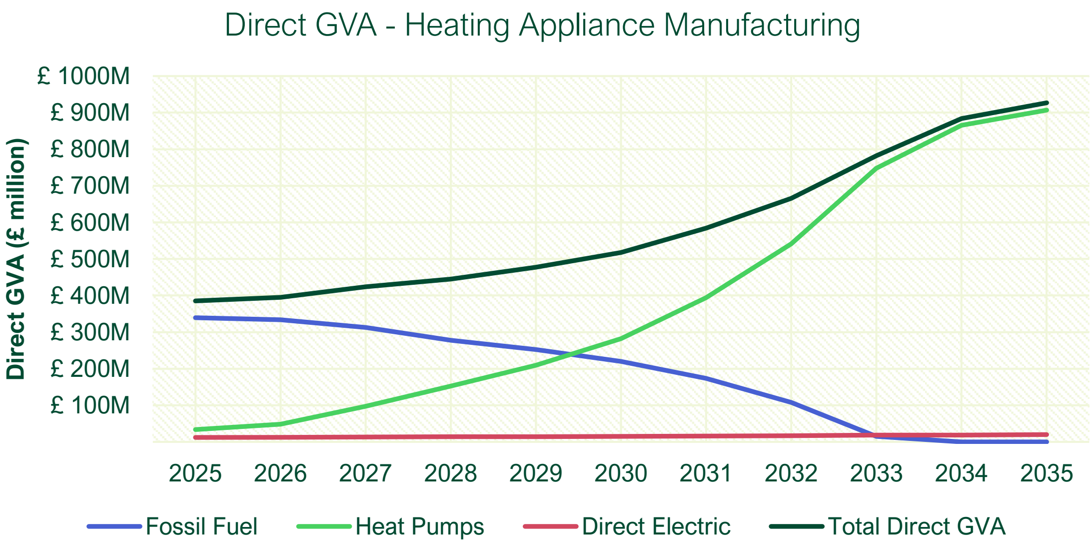
[16] https://www.gov.uk/government/publications/heat-pump-manufacturing-supply-chain-research-project
[17] https://www.gov.uk/government/publications/clean-energy-industries-sector-plan
[18] UK manufacturing is defined as to be wholly produced, manufactured, or assembled within the UK, or have been significantly changed through a treatment or process within the UK.



Year	2025	2030	2035
Total direct GVA (£ million)	£ 385.4 M	£ 436.6 M	£ 534.8 M
Net increase in direct GVA due to decarbonisation		£ 51.2 M (13%)	£ 149.4 M (39%)

Figure 4.1 – Direct GVA for UK Heating Appliance Manufacturing if relative UK-made share of sales is maintained

Figure 4.1 shows an increase in direct GVA of 13% by 2030 and 39% by 2035, raising the total direct GVA from £385 million in 2025 to £535 million in 2035. To achieve this, while the market share has been assumed to remain static, the UK hydronic heat pump manufacturing capacity will need to grow by a factor of x15 to 566,000 units by 2035. For this scenario, the rate of manufacturing hydronic heat pumps reaches a maximum in 2035 because it is supplying a steady-state demand for replacing appliances reaching the end of their service life (both fossil fuel and low-carbon appliances). Further growth would rely on increasing the market share of UK manufacturing, which is considered in the following scenario.



Year	2025	2030	2035
Total direct GVA (£ million)	£ 385.4 M	£ 517.7 M	£ 926.9 M
Net increase in direct GVA due to decarbonisation		£ 132.3 M (34%)	£ 541.5 M (141%)

Figure 4.2 – Direct GVA for UK Heating Appliance Manufacturing if UK-made hydronic heat pump share of sales increases

Figure 4.2 shows the potential for the direct GVA to rise by more than double to just under £1 billion, but this would require the UK hydronic heat pump manufacturing capacity to grow by a factor of x27 to 997,000 units by 2035.

4.2 Manufacturing for Export

Manufacturing GVA quantified in this report relates to sales within the UK. Although export is outside the scope of this report, the market for heat pumps outside the UK is large and expected to grow[19]. The UK Government's *Modern Industrial Strategy 2025*[20] sets an ambition for the UK to become a world leading exporter of low carbon products and identifies heat pumps as one of the clean energy industries with the greatest growth potential. It identified an export potential of up to £500 million per year. However, the expected rapidly increasing UK market demand would undoubtedly compete for any local production capacity.

In recent years, the export market for heat pumps has varied significantly. Figure 4.3 shows the export value in $million as reported via the *United Nations COMTRADE database*[21]. The data suggests that the fall from 2023 to 2024 centred around reduced demand in the key export destinations of Sweden, Ireland and France. This database reports exports for all sizes and applications of heat pumps and gives little data on which to suggest the scale of future GVA contribution, in addition to that within the scope of this report.

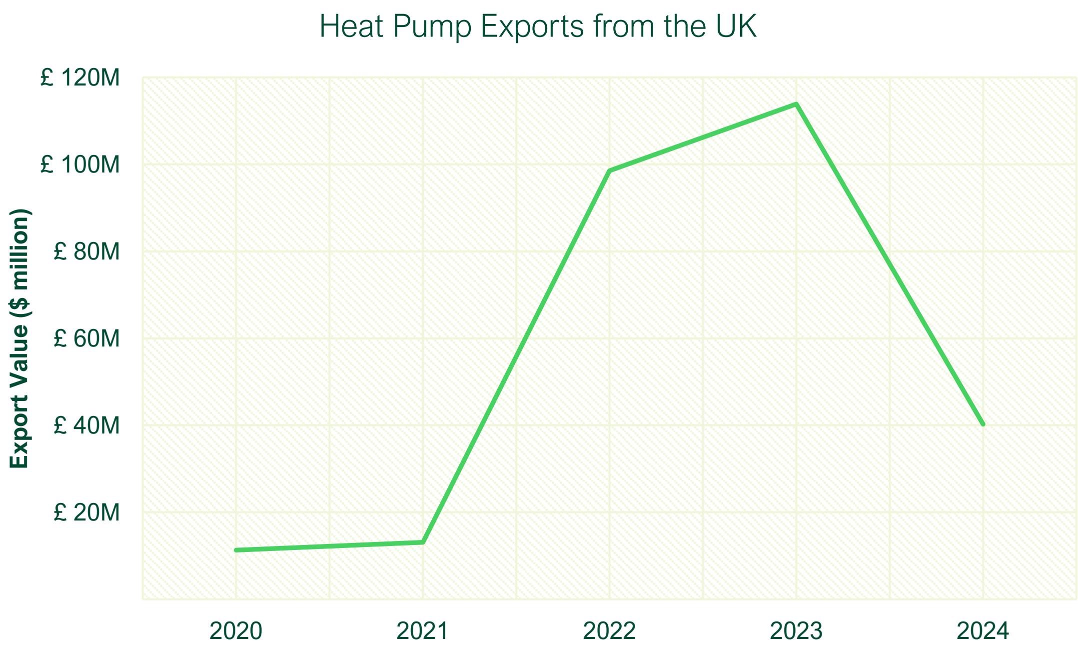


Figure 4.3 – Value of UK exports of heat pumps, 2020-2024

[19] https://www.iea.org/reports/renewables-2025
[20] https://www.gov.uk/government/collections/the-uks-modern-industrial-strategy-2025
[21] https://comtradeplus.un.org/

4.3 Appliance Component Part Manufacturing

The manufacturing value quantified in this section relates specifically to the production of hydronic heat pumps, central heating boilers and direct electric heating appliances.

The indirect GVA arising from manufacturing will include the production of component parts, such as compressors and internal appliance control components, and is discussed in section 9.

The Heat Pump Investment Accelerator Competition[22] recognises the critical nature of component part manufacturing and seeks to support increasing UK share of this type of manufacturing in the years ahead. This would be **additional value** to the GVA modelled here.

4.4 Ancillary Equipment Manufacturing

This report excludes the values arising from the UK based manufacturing of ancillary equipment such as hot water storage cylinders, pipework, emitters, heating system controls, etc.

The *Heat Pump Manufacturing Supply Chain Research Project Report*[23] notes that UK manufacturing of ancillary components will be well placed to benefit from an expansion in hydronic heat pump manufacturing. While there would be overlap, with such ancillary equipment also used in fossil fuel heating, it is expected that future ancillary equipment manufacturing would deliver **additional value** to the GVA modelled here.

[22] https://www.gov.uk/government/publications/heat-pump-investment-accelerator-competition
[23] https://www.gov.uk/government/publications/heat-pump-manufacturing-supply-chain-research-project

5. Installation

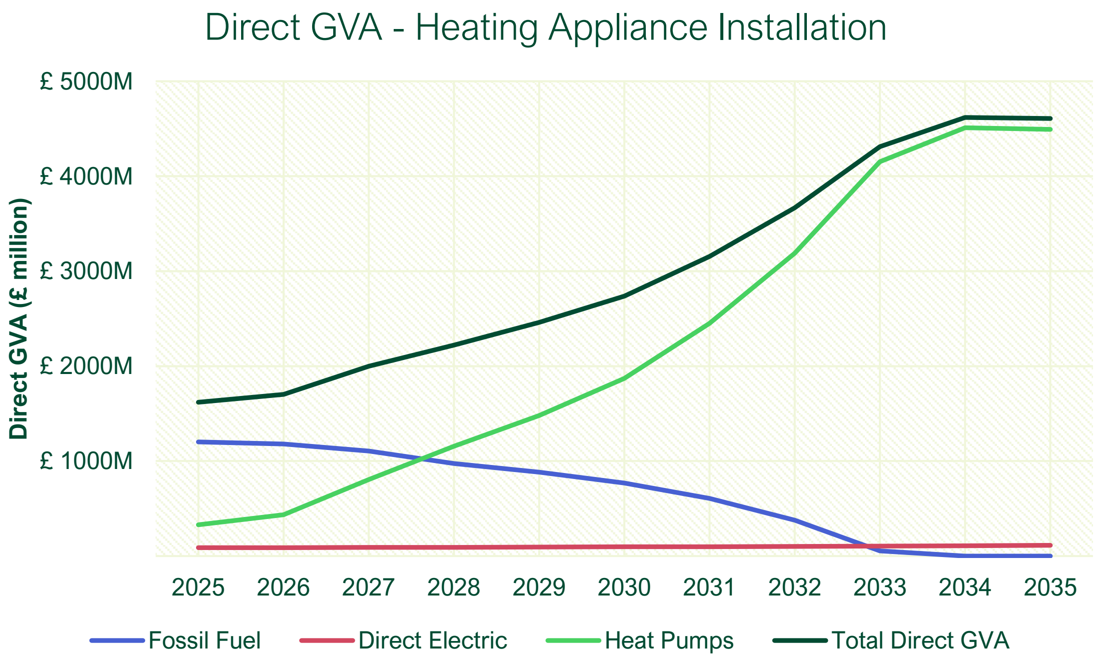
This section considers the economic value of installing residential space heating appliances in the UK. Installations are driven by end-of-life replacement, home improvement decisions (including energy efficiency considerations) and the transition to low carbon heating.

5.1 Direct GVA, Installation

Installation is a significant contributor to GVA in the residential space heating sector, only behind energy consumption. To avoid double counting the manufacturing related GVA from section 4.1, the direct GVA presented here is that relating to installation labour[24].

The annual installation rates assumed are as discussed in section 3 and are as per Figure 3.2.

Figure 5.1 shows the net GVA arising from the transition of heating appliance installation from fossil fuel dominance (85% of new installations in 2025) to hydronic heat pump dominance (78% of new installations in 2035).



Year	2025	2030	2035
Total direct GVA (£ billion)	£ 1.62 B	£ 2.74 B	£ 4.61 B
Net increase in direct GVA due to decarbonisation		£ 1.12 B (69%)	£ 2.99 B (184%)

Figure 5.1 – Direct GVA for UK heating appliance installation

This shows that the direct GVA associated with heating appliance installations would increase by 69% by 2030 and by 184% by 2035, raising the total direct GVA from £1.6 billion in 2025 to £4.6 billion in 2035, assuming heating appliance deployment is achieved as projected in section 3.

[24] Installation labour relates to those roles directly involved in physical installation such as heating, plumbing, electrical and groundworks activities.

5.2 Sensitivities

The dominant sensitivity of installation related GVA is the installation profile. As discussed in section 3, this report is specific to one installation profile.

The sensitivity of modelled GVA to a range of installation related assumptions are reviewed in Appendix A (methodology), and none of them would impact GVA modelled outcomes by more than 3% except for the assumptions relating to future cost savings from installation efficiency gains.

The baseline assumption is taken from *The Seventh Carbon Budget – advice for the UK Government* [25], Figure 7.2.4 of which shows a cost reduction from a nominal £11.4k in 2025 to £10.0k in 2035. In the HPA report *Projecting the Future Domestic Heat Pump Workforce (background and methodology)*[26] installation efficiencies were identified and suggest a 13% saving in installation time could be achieved by 2035. In the Government's *Clean Energy Jobs Plan-Technical Annex*[27] (2025) it is suggested that installation effort would reduce by 50% by 2035. The direct GVA from these three scenarios, together with one showing the results where costs remain at current levels, are shown in Figure 5.2.

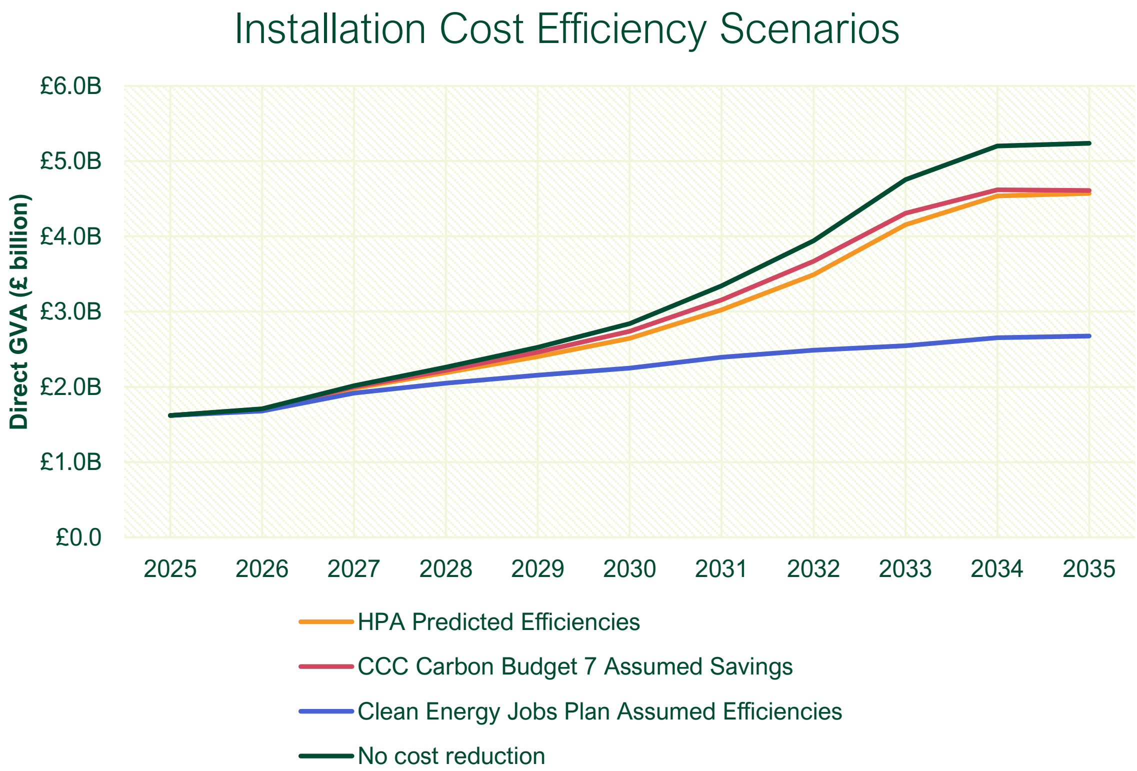


Figure 5.2 – Total direct GVA for UK heating appliance installation with four cost efficiency scenarios

As Figure 5.2 shows, the assumption of a 50% reduction in installation effort would significantly differ from the baseline used in the model, reducing the direct GVA from installation by £1.9 billion from the baseline, a 42% reduction. For reference, it would reduce the total GVA for the heating appliance sector by 8.6% in 2035.

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[25] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/
[26] https://hpauk.org.uk/wp-content/uploads/2024/11/HPA-Projecting-the-Future-Domestic-Heat-Pump-Workforce-Background-and-Methodology.pdf (Table 7)
[27] https://www.gov.uk/government/publications/clean-energy-jobs-plan

Nevertheless, even at this lowest-cost scenario, the installation of hydronic heat pumps delivers an increase in direct GVA of £1 billion and an increase in total GVA of £2.4 billion compared to maintaining current levels of fossil fuel boiler deployment.

As Figure 5.2 also shows, the HPA identified potential efficiencies produces a direct GVA profile which is very close to the baseline for *The Seventh Carbon Budget – advice for the UK Government*[28], in fact having a negligible impact on total GVA of 0.15%.

If no cost savings were realised the direct GVA for installation would be £0.6 billion higher than the baseline.

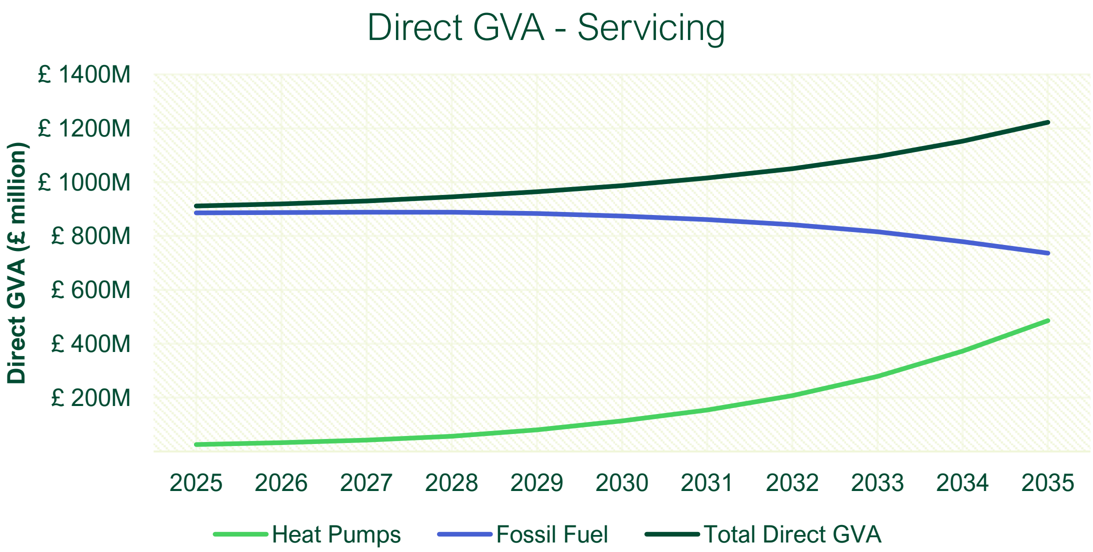
6. Servicing

This section considers the economic value of servicing residential space heating appliances in the UK. The scale of servicing activity is directly linked to the number of active appliances installed and the consumer choice around carrying out regular servicing. Servicing covers routine inspection, maintenance, and adjustment of appliances.

6.1 Direct GVA, Servicing

The input to determining direct GVA is based on the cumulative installations as shown in Fig 3.3. It has been assumed that two-thirds of appliances will be serviced each year (see Appendix A). It is generally the case that direct electrical heating appliances are not subject to regular servicing.

Figure 6.1 shows the direct GVA arising from servicing activities.



Year	2025	2030	2035
Total direct GVA (£ billion)	£ 0.91 B	£ 0.99 B	£ 1.22 B
Net increase in direct GVA due to decarbonisation		£ 0.08 B (8%)	£ 0.31 B (34%)

Figure 6.1 – Direct GVA for UK heating appliance servicing activities

[28] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

By 2035, the installed stock of fossil fuel central heating boilers will still form the majority of active residential heating systems, having fallen from 26 million (91%) in 2025 to 20 million (63%) by 2035. As a result, the rate at which the transition to low carbon heating increases the economic value is slower than for installation activities.

Figure 6.1 shows that the direct GVA associated with heating appliance servicing would increase by 8% by 2030 and by 34% by 2035, raising the total direct GVA from £0.9 billion in 2025 to £1.2 billion in 2035, heating appliance deployment is achieved as projected in section 3.

6.2 Sensitivities

The dominant sensitivity of servicing related GVA is the total installed stock of appliances. As discussed in section 3 this report is specific to one installation profile and hence the assumed total stock is fixed for the scope of this report.

The baseline assumption assumes that the current servicing costs do not reduce in the period to 2035. Within the Government's *Clean Energy Jobs Plan- Technical Annex*[29] (2025) it suggests that servicing effort for hydronic heat pumps could be reduced from 0.4 FTE days to 0.25 FTE days to become comparable with that for gas boilers. The direct GVA from these two scenarios are shown in Figure 6.2.

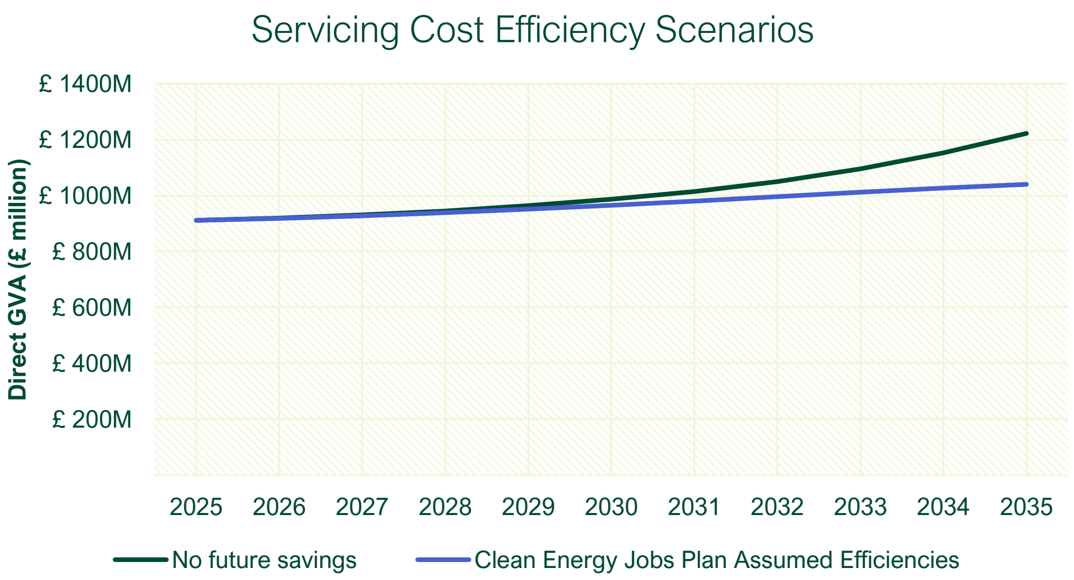


Figure 6.2 – Total direct GVA for UK heating appliance servicing with two cost efficiency scenarios

As Figure 6.2 shows, the assumption of a 0.15 FTE days reduction in servicing effort would differ from the baseline used in the model, reducing the direct GVA from servicing by £0.2 billion from the baseline, a 15% reduction. For reference, it would only reduce the total GVA for the heating appliance sector by 0.8% in 2035, which is at a sufficiently low level to be considered within the error for margin within the model. As a result, at this lowest-cost scenario, the servicing of hydronic heat pumps delivers an increase in direct GVA by 2035 of £0.13 billion as opposed to £0.31 billion.

Sensitivity to other assumptions gives a greater variance, because the range of fees quoted for servicing is broad, and the assumptions about the percentage of appliances being serviced are

[29] https://www.gov.uk/government/publications/clean-energy-jobs-plan

more subjective. This is discussed in detail in Appendix A, with assumptions around fees having the potential to vary from the baseline by -2.0%/+2.9% and for the assumed percentage of appliances serviced could vary from the baseline by -2.3%/+1.1%. This is at a sufficiently low level to be considered within the error for margin within the model.

6.3 Replacement Parts

The calculated direct GVA presented in this report excludes the value related to the supply of replacement parts in maintaining appliances, although some service plans will include an element of this.

In broad terms, the likely economic value for supplying spare parts is uncertain and would depend on a combination of the cost of the parts and the likelihood of required replacement, for which there is insufficient data at this time.

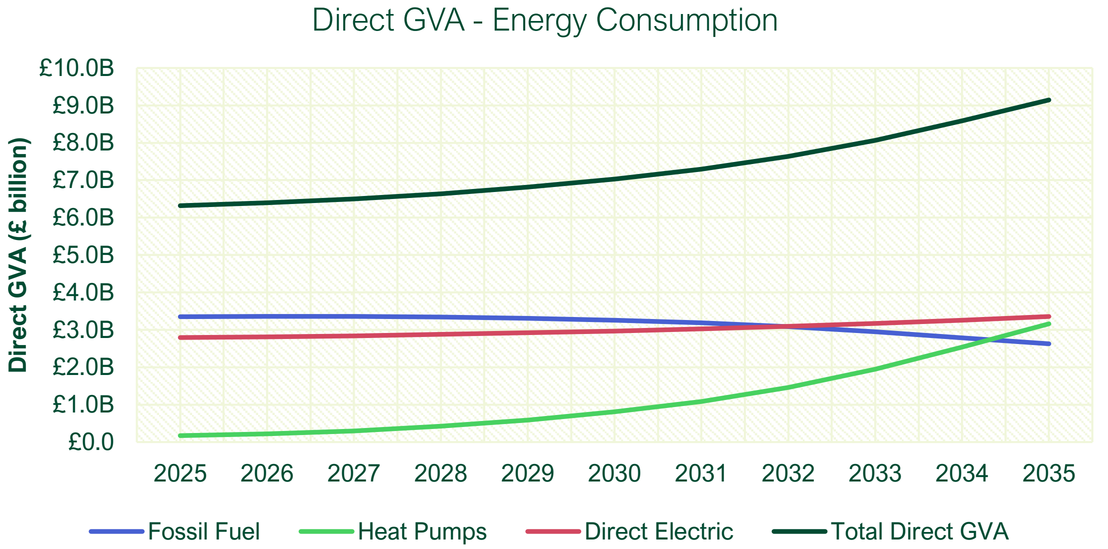
7. Associated Energy Production and Distribution

This section considers the economic value associated with producing and supplying energy for residential space heating appliances in the UK. Energy demand is influenced by the energy efficiency of buildings (i.e. the heat required) and the efficiency of the appliance in converting supplied energy into useful heat. The economic value to the UK also depends on the extent to which the energy source is produced in the UK.

7.1 Direct GVA, Energy Production and Distribution

Energy consumption is the highest contributor to GVA in the residential heating sector. This is currently dominated by the production and distribution of fossil fuels, primarily natural gas, which will, over time, be replaced largely by the production and distribution of electricity.

The direct GVA resulting from energy use in residential heating, for the appliance types considered within the scope of this report (see section 2), is shown in Figure 7.1.



Year	2025	2030	2035
Total direct GVA (£ billion)	£ 6.32 B	£ 7.03 B	£ 9.15 B
Net increase in direct GVA due to decarbonisation		£ 0.71 B (11%)	£ 2.83 B (45%)

Figure 7.1 – Direct GVA for Energy Consumption by heating appliances

The sensitivity of GVA to increasing renewables in electricity production is discussed in section 7.2, but the high level of imported natural gas (56%) for heating contrasts with the lower imported fuel inputs for electricity production (36%), such that the net increase in direct GVA is positive despite the greater energy efficiency of hydronic heat pumps reducing overall energy use. As shown in Figure 7.1, the direct GVA associated with heating appliance energy consumption would increase by 11% by 2030 and by 45% by 2035, raising the total direct GVA from £6.3 billion in 2025 to £9.1 billion in 2035, provided heating appliance deployment is achieved as projected in section 3.

Energy consumption for residential space heating will reduce much further after 2035, as a complete phase out of fossil fuel heating is envisaged by 2050. Figure 7.2 shows the energy consumption profile to decarbonise as envisaged for *The Seventh Carbon Budget – advice for the UK Government*[30].

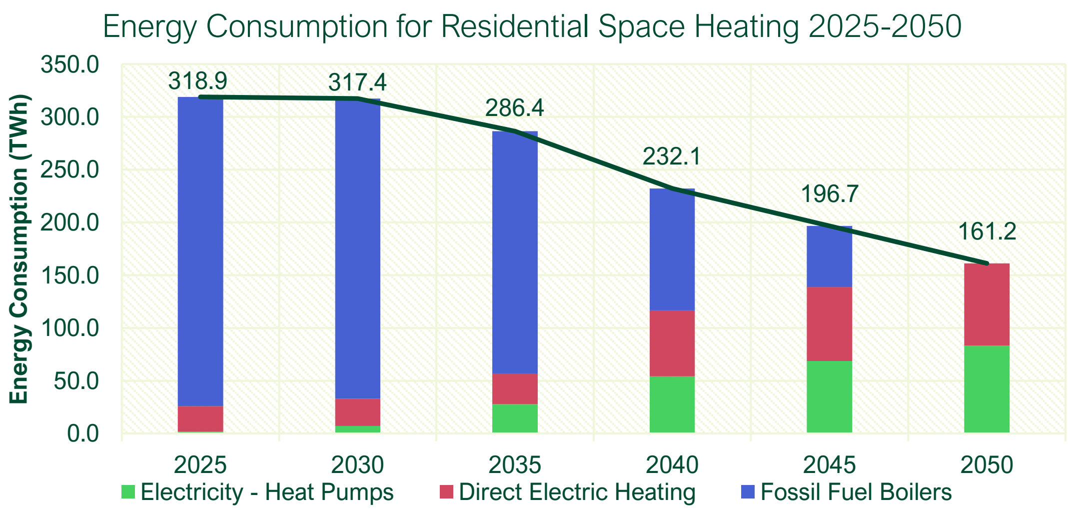


Figure 7.2 – Energy consumption for residential space heating to 2050

[30] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

The energy consumed in this illustration will have fallen to 50% of 2025 levels, from 319 TWh to 161 TWh. Despite this, the higher UK economic value of electricity supply compared to gas supply, resulting from the falling degree of fuel imports required for electricity production plus the value added in electricity production processes, means that even at this degree of reduced energy, the direct GVA is modelled to rise by a factor of almost 3, as shown in Figure 7.3.

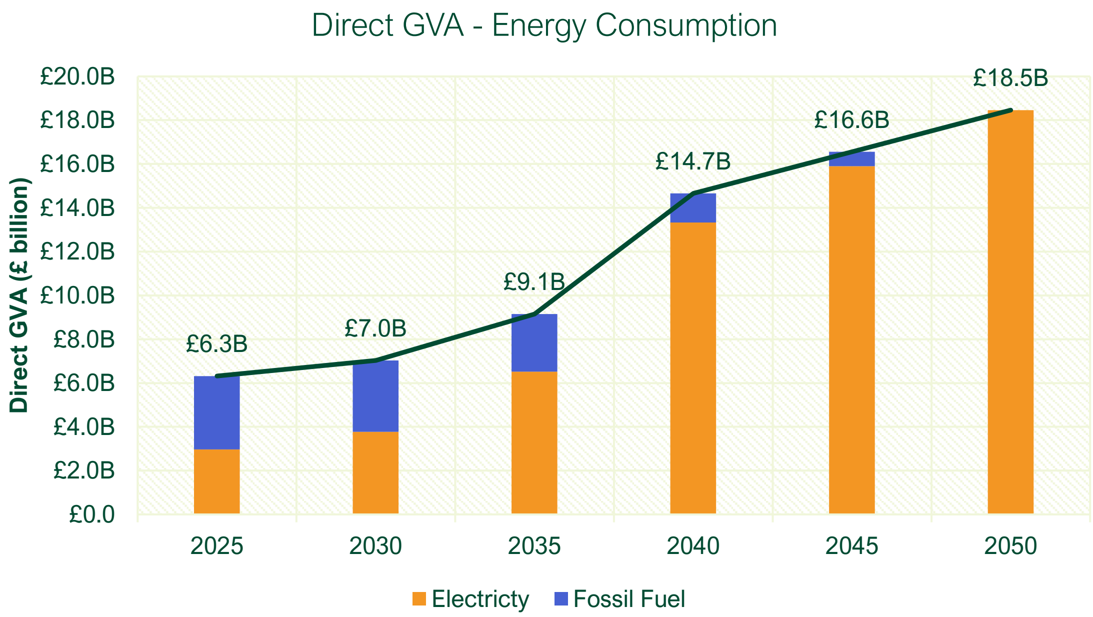


Figure 7.3 – Direct GVA for energy consumption in residential space heating

7.2 Sensitivities

For the results reported in Figure 7.1, it is assumed that the extent to which energy is imported to the UK remains at the same level as in 2024 as reported in the Digest of UK Energy Statistics (DUKES)[31]. DUKES data shows that 56% of natural gas was imported in 2024, with oil/petroleum at 72% and solid mineral fuel at 94%.

Although only 8% of electricity was directly imported, considering the extent to which input fuels were themselves imported, DUKES indicates that 36% of the fuel inputs to electricity generation were imported.

The Government's *Clean Power 2030 Action Plan*[32] describes a pathway to reducing the use of gas in electricity generation from 32% in 2023 to less than 5% from 2030, while *The Seventh Carbon Budget – advice for the UK Government* [33] targets 3% unmitigated gas (i.e. gas without carbon capture and storage) by 2035.

Reducing the reliance on imports for electricity production is discussed further in section 7.3 (energy security), but its impact on economic value is difficult to predict with any certainty, because, while the UK energy input element would grow, the GVA associated with it will depend on the capitalisation approach taken for investment in renewables. As a result, the GVA contribution modelled for this report is conservative and likely to rise further than projected over time.

31 https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes
32 https://www.gov.uk/government/publications/clean-power-2030-action-plan
33 https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

Other sensitivities are detailed in Appendix A with none of them impacting the GVA modelled outcomes by more than 3%.

7.3 Energy Security

In the period covered by this report, 2025-2035, the number of natural gas central heating boilers in service is modelled as reducing by 5.8 million. This is equivalent to a 63 TWh reduction in total annual gas consumption, representing a 22% reduction in natural gas use for residential space heating.

The equivalent residential heating via hydronic heat pumps would require an additional 19 TWh of electricity supply per annum.

For the years 2025 and 2035, Figures 7.4 and 7.5, respectively show the primary uses of natural gas (excluding exports) in the UK and the source of natural gas (using net import after exported gas). The figures for 2025 are based on DUKES[34], the 2035 prediction for gas use for residential space heating is from the deployment of low carbon heating modelled, as described in section 3, while that for electricity generation is from *Clean Power 2030 Action Plan*[35].

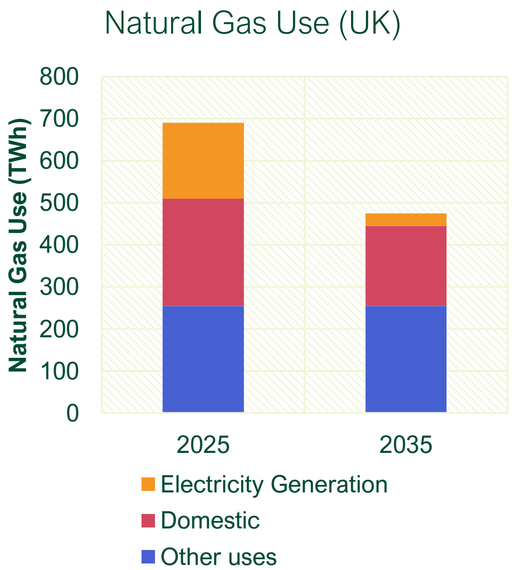


Figure 7.4 – Natural Gas use in the UK

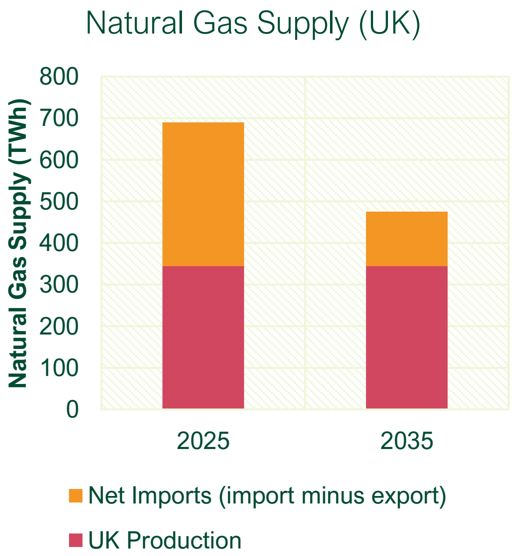


Figure 7.5 Natural Gas supply to the UK

This simplified presentation assumes that other uses of gas (primarily industrial processes) will remain the same in this timescale, in part because this landscape is unclear. While the largest reduction in gas demand (70%) will be from electricity generation, the deployment of low-carbon residential space heating, largely hydronic heat pumps, will contribute 30% of the reduction.

With this caveat, reductions in gas use for residential heating and cooking, together with reduced use in electricity generation, are modelled as lowering total gas demand by 31% by 2035 and, provided UK production levels are maintained, reducing the need for imported gas by 62% from 345 TWh in 2025 to 130 TWh in 2035.

[34] https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes
[35] https://www.gov.uk/government/publications/clean-power-2030-action-plan

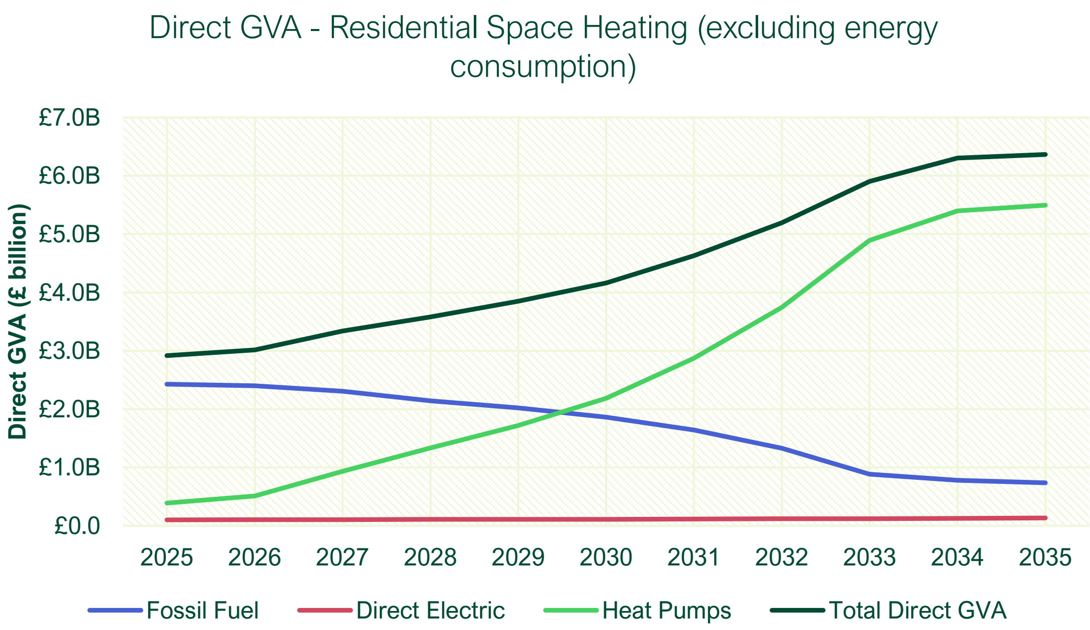
8. Direct Gross Value Added – All Activities

This section presents the direct GVA for all activities associated with residential space heating appliances in the UK, drawing together the values detailed in sections 4-7.

In section 8.1 the totals are presented without energy consumption to show the direct GVA associated immediately with appliance manufacturing, installation, servicing. In section 8.2 the totals are presented together with those for energy consumption to show the full impact of the modelled transition to low carbon residential space heating over the period 2025-2035.

8.1 Direct GVA excluding Energy Consumption

Summing together the main outputs of sections 4 (manufacturing), 5 (installation) and 6 (servicing), the total direct GVA associated with residential space heating (excluding energy consumption) is presented in Figure 8.1.



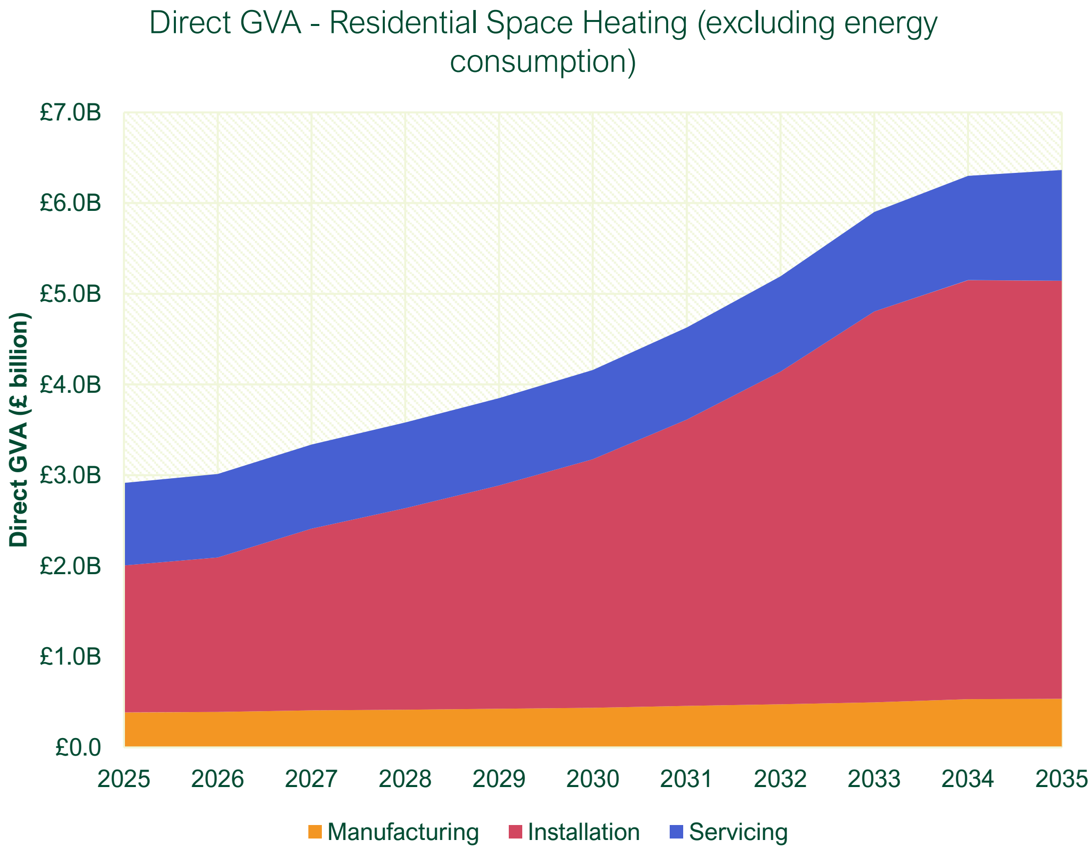
Year	2025	2030	2035
Total direct GVA (£ billion)	£ 2.92 B	£ 4.16 B	£ 6.37 B
Net increase in direct GVA due to decarbonisation		£ 1.24 B (43%)	£ 3.45 B (118%)

Figure 8.1 – Direct GVA for residential space heating (excluding energy consumption)

Figure 8.1 shows the net effect of direct GVA rising, with hydronic heat pump related GVA outpacing the falling GVA associated with fossil fuel use.

It shows that the total direct GVA would increase by 43% by 2030 and by 118% by 2035, raising the total direct GVA from £2.9 billion in 2025 to £6.4 billion in 2035, provided heating appliance deployment is achieved as projected in section 3.

Figure 8.2 shows how the total Direct GVA breaks down into manufacturing, installation and servicing.



Year	2025	2030	2035
Manufacturing			
- Direct GVA	£0.39 B	£0.44 B	£0.53 B
- % of total direct GVA	13%	10%	8%
Installation			
- Direct GVA	£1.62 B	£2.74 B	£4.61 B
- % of total direct GVA	56%	66%	72%
Servicing			
- Direct GVA	£0.91 B	£0.99 B	£1.22 B
- % of total direct GVA	31%	24%	19%

Figure 8.2 – Direct GVA for residential space heating (excluding energy consumption), by activity

Figure 8.2 shows that installation activities, which already represent over half of the direct GVA associated with space heating when excluding energy consumption, would increase its proportion of the total direct GVA from 56% in 2025 to 72% in 2035. Installation activities will contribute £2.99 billion of the net increase of £3.45 billion from 2025 to 2035. The increasing economic value of installation activities has the effect of reducing the share of direct GVA from manufacturing and servicing but not the actual value, which increases for all activities.

Figures 8.3 and 8.4 show the comparative contributions from manufacturing, installation and servicing for hydronic heat pumps and fossil fuel heating.

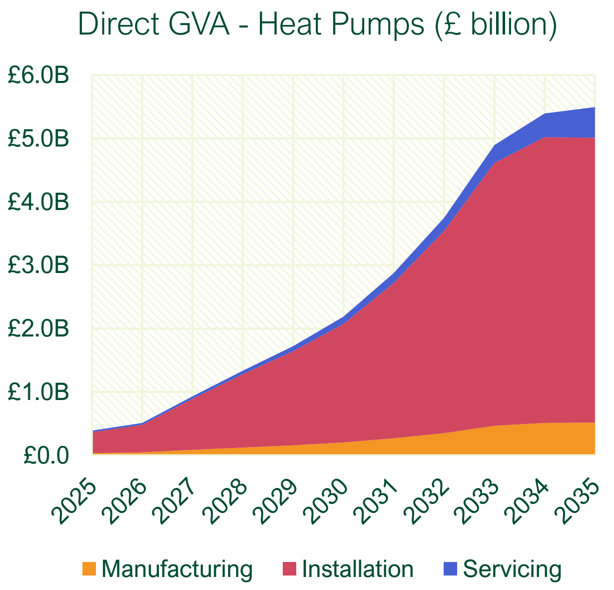


Figure 8.3 – Direct GVA, hydronic heat pumps by activity

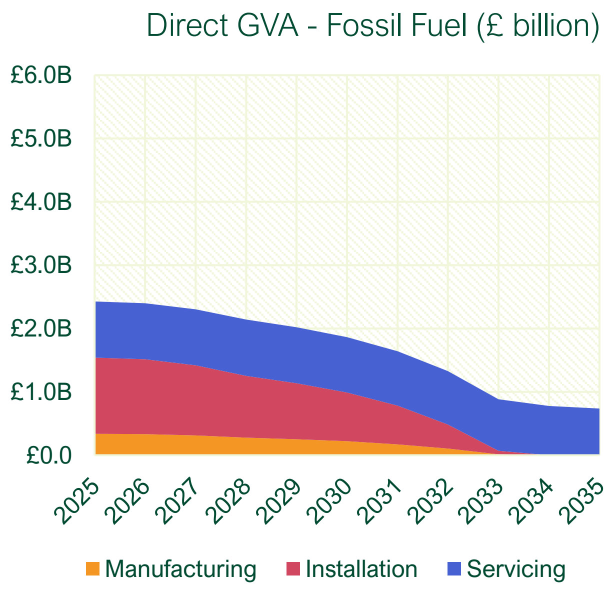
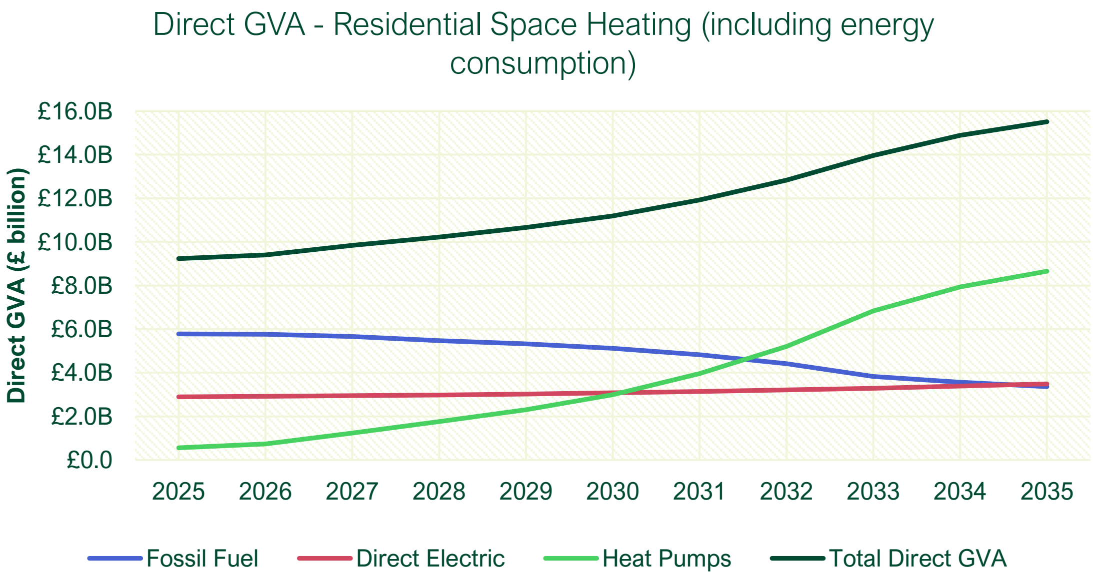


Figure 8.4 Direct GVA, fossil fuel heating by activity

8.2 Direct GVA including Energy Consumption

Summing together the main outputs of sections 4 (manufacturing), 5 (installation), 6 (servicing) and 7 (energy consumption), the total direct GVA associated with residential space heating (including energy consumption) is presented in Figure 8.5.

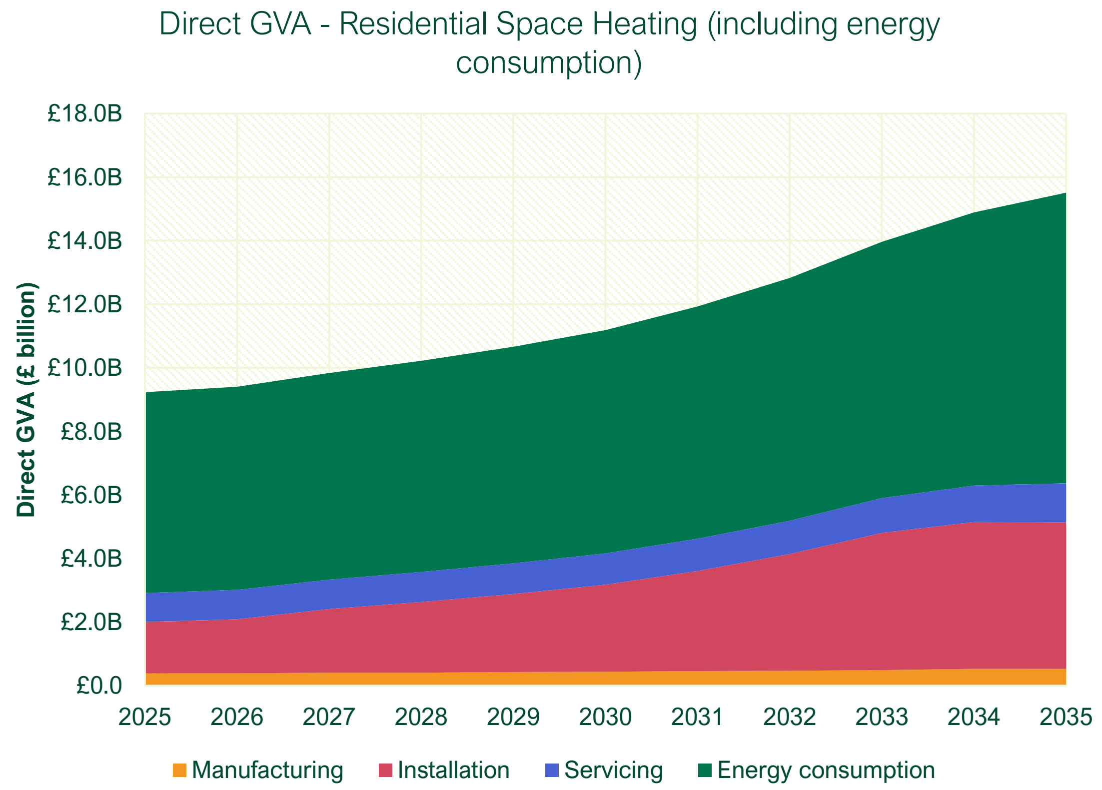


Year	2025	2030	2035
Total direct GVA (£ billion)	£ 9.24 B	£ 11.19 B	£ 15.51 B
Net increase in direct GVA due to decarbonisation		£ 1.96 B (21%)	£ 6.27 B (68%)

Figure 8.5 – Direct GVA for residential space heating (including energy consumption)

Figure 8.5 shows the net effect of direct GVA rising, with hydronic heat pump related GVA outpacing the falling GVA associated with fossil fuel use, such that by 2031 heat pumps are predicted to overtake fossil fuel boilers as the largest contributor to GVA in the residential space heating sector. It shows that the total direct GVA would increase by 21% by 2030 and by 68% by 2035, raising the total direct GVA from £9.2 billion in 2025 to £15.5 billion in 2035, provided heating appliance deployment is achieved as projected in section 3.

Figure 8.6 shows how the total direct GVA breaks down into manufacturing, installation, servicing and energy consumption.



Year	2025	2030	2035
Manufacturing			
- Direct GVA	£0.39 B	£0.44 B	£0.53 B
- % of total direct GVA	4%	4%	3%
Installation			
- Direct GVA	£1.62 B	£2.74 B	£4.61 B
- % of total direct GVA	18%	24%	30%
Servicing			
- Direct GVA	£0.91 B	£0.99 B	£1.22 B
- % of total direct GVA	10%	9%	8%
Energy Consumption			
- Direct GVA	£6.32 B	£7.03 B	£9.15 B
- % of total direct GVA	68%	63%	59%

Figure 8.6 – Direct GVA for residential space heating (including energy consumption), by activity

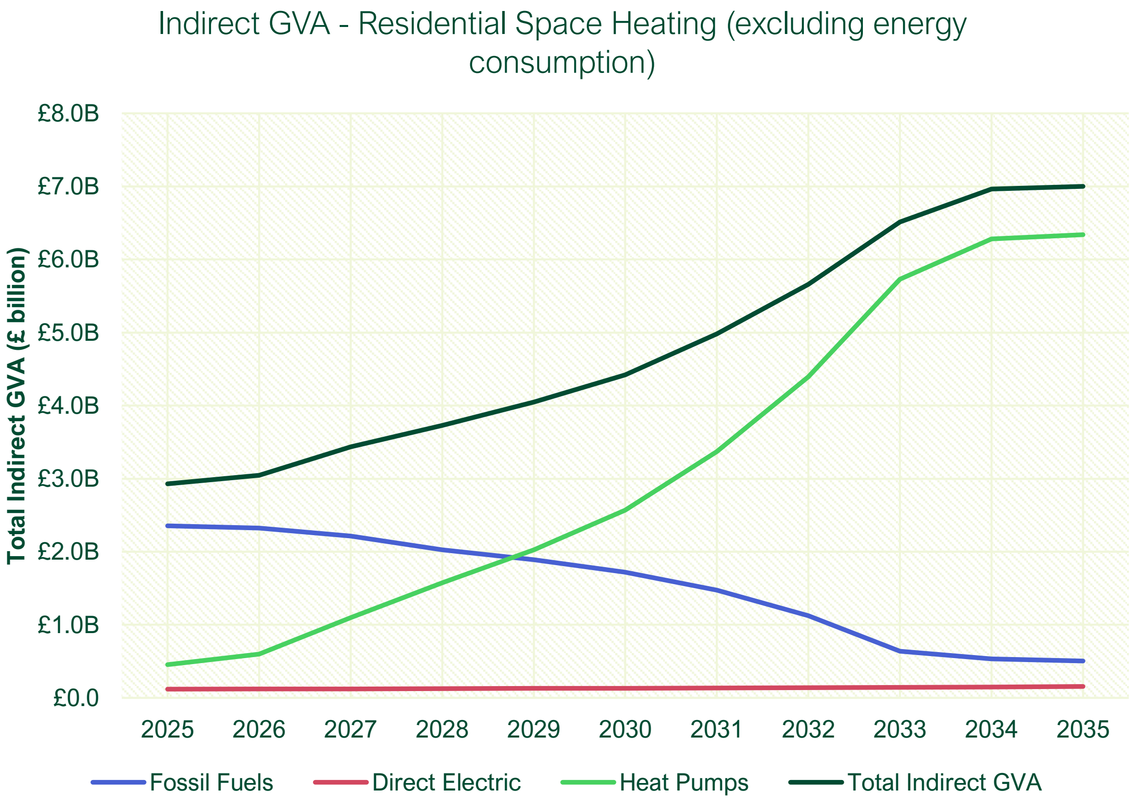
Figure 8.6 shows that, provided heating appliance deployment is achieved as projected in section 3, energy consumption represents the greatest component of the total direct GVA associated with residential space heating and more than doubles the total direct GVA when added to the figures presented in section 8.1.

9. Indirect Gross Value Added

The direct GVA figures reported in earlier sections represents the economic value created inside the activity itself (i.e. manufacturing, installation, servicing, and energy production and supply). To determine the full economic value, it is necessary to determine the indirect GVA created outside the activity, into its upstream supply chain[36].

Indirect GVA has been quantified for manufacturing, installation and servicing of residential space heat appliances. The indirect GVA production and supply of energy has been excluded as being too far removed from the residential space heating sector.

Figure 9.1 shows the indirect GVA for residential space heating by appliance type and in total.



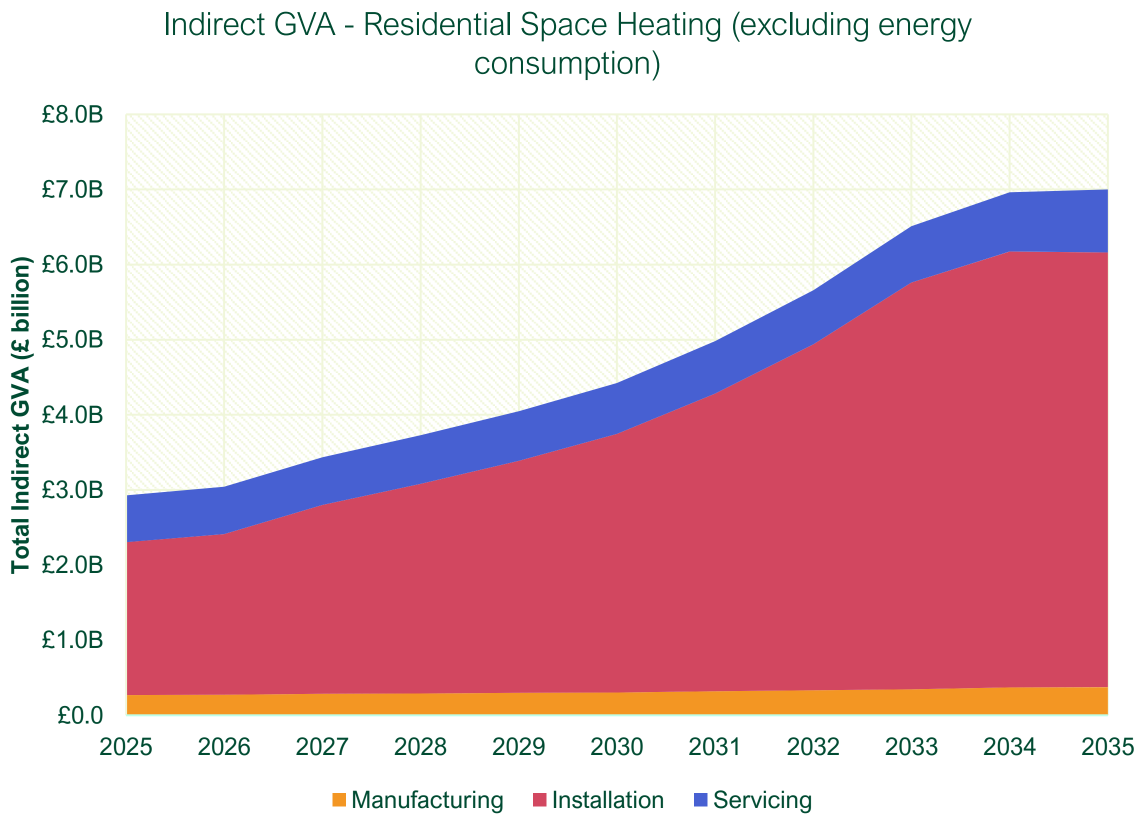
Year	2025	2030	2035
Total indirect GVA (£ billion)	£ 2.93 B	£ 4.42 B	£ 7.00 B
Net increase in indirect GVA due to decarbonisation		£ 1.49 B (51%)	£ 4.07 B (139%)

Figure 9.1 – Indirect GVA for residential space heating

Figure 9.1 shows the net effect of indirect GVA rising, with hydronic heat pump related GVA outpacing the falling indirect GVA associated with fossil fuel use and shows that the total indirect GVA would increase by 51% by 2030 and by 139% by 2035, raising the total indirect GVA from £2.9 billion in 2025 to £7.0 billion in 2035, provided heating appliance deployment is achieved as projected in section 3.

[36] Note that the installation direct GVA excluded equipment cost to avoid this being double counted as direct in manufacturing and indirect in installation.

Figure 9.2 shows how the total Indirect GVA breaks down into manufacturing, installation and servicing.



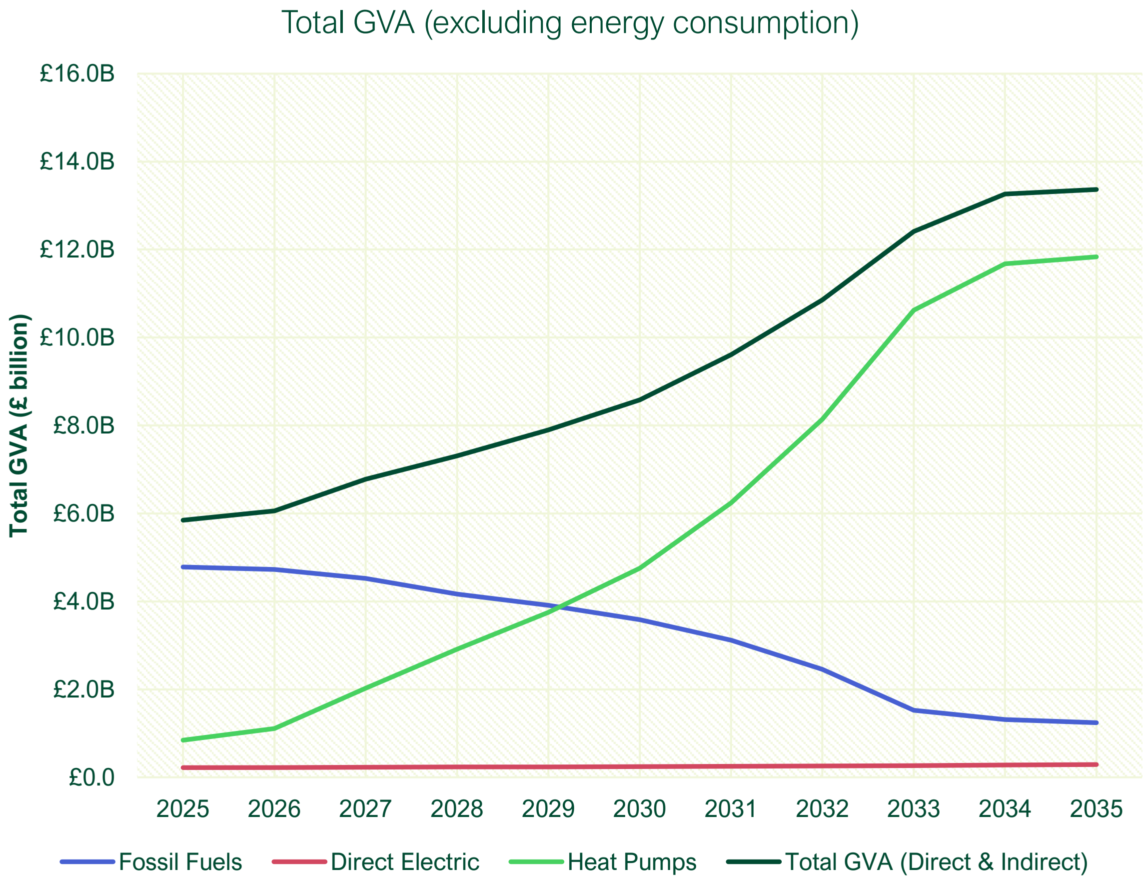
Year	2025	2030	2035
Manufacturing			
- Indirect GVA - % of total indirect GVA	£0.27 B 9%	£0.31 B 7%	£0.37 B 5%
Installation			
- Indirect GVA - % of total indirect GVA	£2.03 B 69%	£3.44 B 78%	£5.79 B 83%
Servicing			
- Indirect GVA - % of total indirect GVA	£0.63 B 21%	£0.68 B 15%	£0.84 B 12%

Figure 9.2 – Indirect GVA for residential space heating (by activity)

10. Total Gross Value Added

The total GVA presented in this section combines the direct GVA from section 8 with the indirect GVA from section 9 and is presented both excluding energy consumption (to reflect the activities immediately associated with residential space heating) and then including energy consumption to provide the full Gross Value Added within the scope of the report.

The Total GVA resulting from manufacturing, installing and servicing of residential space heating appliances, within the scope of this report (see section 2) is shown in Figure 10.1.

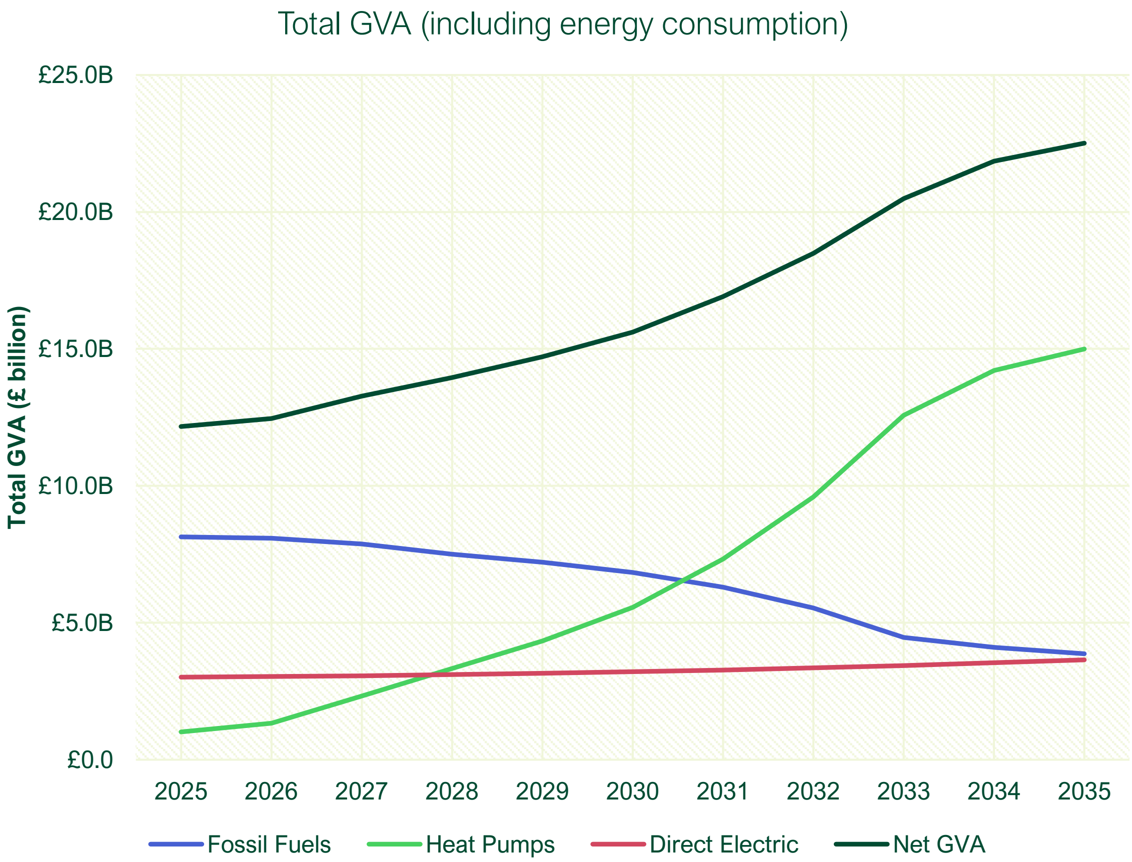


Year	2025	2030	2035
Total GVA (£ billion)	£ 5.85 B	£ 8.58 B	£ 13.37 B
Net increase in total GVA due to decarbonisation		£ 2.74 B (47%)	£ 7.52 B (129%)

Figure 10.1 – Total GVA for residential space heating (excluding energy consumption)

Figure 10.1 shows the net effect of total GVA rising, with hydronic heat pump related GVA outpacing the falling GVA associated with fossil fuel use. It shows that the total GVA would increase by 47% by 2030 and by 129% by 2035, raising the total GVA from £5.8 billion in 2025 to £13.4 billion in 2035, provided heating appliance deployment is achieved as projected in section 3.

As discussed in section 7, the value of energy consumed by residential heating appliances is a significant contributor to the overall economic value of the sector. Figure 10.2 presents the total Gross Value Added for the residential heating sector, including energy consumption.



Year	2025	2030	2035
Total GVA (£ billion)	£ 12.17 B	£ 15.61 B	£ 22.51 B
Net increase in total GVA due to decarbonisation		£ 3.45 B (28%)	£ 10.35 B (85%)

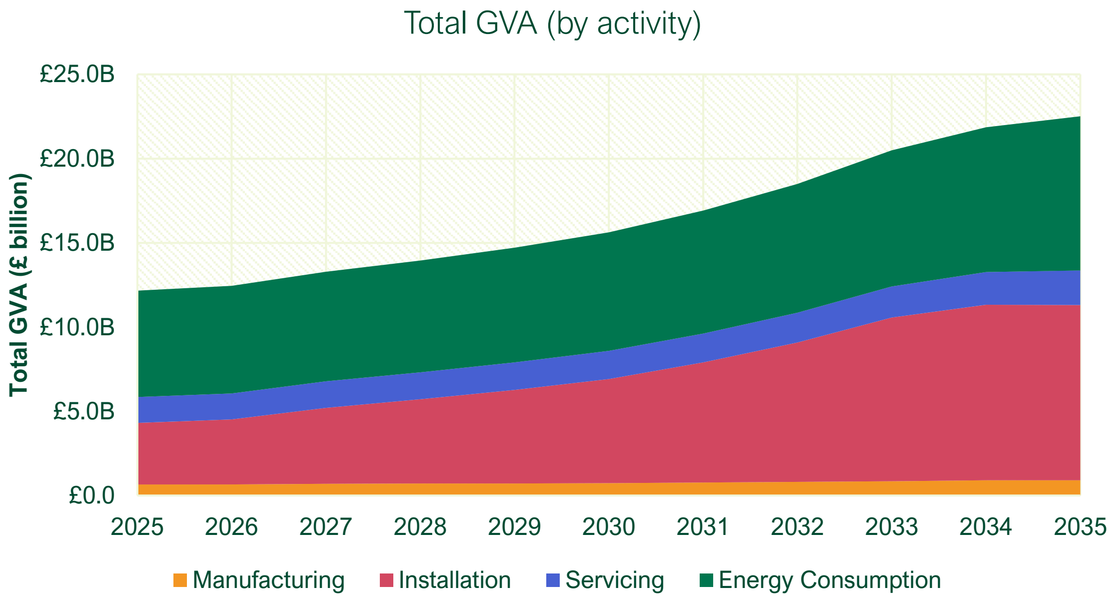
Figure 10.2 – Total GVA for residential space heating (including energy consumption)

Figure 10.2 shows the net effect of total GVA rising, with hydronic heat pump related GVA outpacing the falling GVA associated with fossil fuel use and shows that the total GVA would increase by 28% by 2030 and by 85% by 2035, raising the total GVA from £12.2 billion in 2025 to £22.5 billion in 2035, provided heating appliance deployment is achieved as projected in section 3.

This demonstrates that the electrification of residential space heating, as envisaged under the *Carbon Budget and Growth Delivery Plan*[37]*,* has the potential to add £10.3 billion value to the UK economy over the next 10 years.

[37] https://www.gov.uk/government/publications/carbon-budget-and-growth-delivery-plan

Figure 10.3 shows how the total GVA breaks down into manufacturing, installation, servicing and energy consumption.



Year	2025	2030	2035
Manufacturing			
- Total GVA	£0.65 B	£0.74 B	£0.91 B
- % of total GVA	5%	5%	4%
Installation			
- Total GVA	£3.65 B	£6.18 B	£10.40 B
- % of total GVA	30%	40%	46%
Servicing			
- Total GVA	£1.54 B	£1.66 B	£2.06 B
- % of total GVA	13%	11%	9%
Energy Consumption			
- Total GVA	£6.32 B	£7.03 B	£9.15 B
- % of total GVA	52%	45%	41%

Figure 10.3 – Total GVA for residential space heating (by activity)

Figure 10.3 shows that, provided heating appliance deployment is achieved as projected in section 3, energy consumption represents the greatest component of the total GVA associated with residential space heating in 2025 (52%) but the increase in installation activities means that installation is delivering the largest component of total GVA by 2035 (46%) with energy consumption close behind (41%).

All components of total GVA (manufacturing, installation, servicing and energy consumption) increase during the period 2025-2035, as shown in Table 10.1.

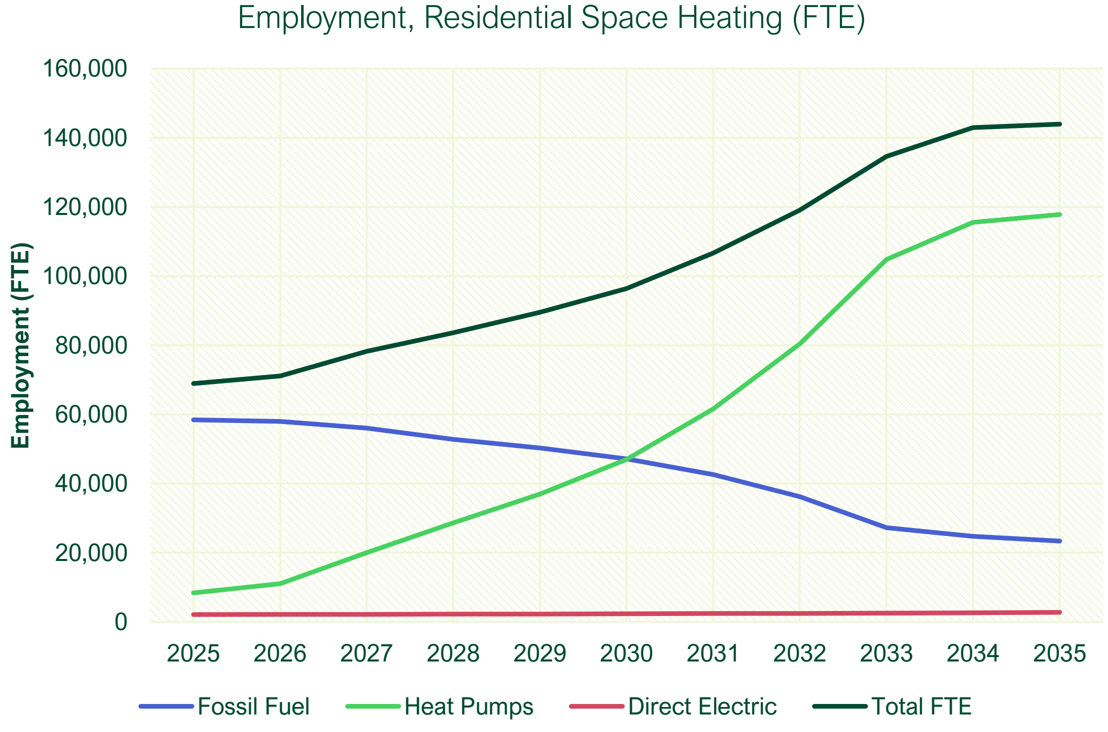
Table 10.1 – Net Increase in Total GVA, 2025-2035

Activity	Total GVA in 2035	Increase in Total GVA over 2025	
	£ billion	£ billion	%
Manufacturing	£ 0.91 B	+£ 0.25 B	+39%
Installation	£ 10.40 B	+£ 6.74 B	+184%
Servicing	£ 2.06 B	+£ 0.52 B	+34%
Energy Consumption	£ 9.15 B	+£ 2.83 B	+45%
TOTAL VALUE	£ 22.51 B	£ 10.35 B	+85%

11. Employment

In October 2025, the Government's *Clean Energy Jobs Plan*[38] identified the potential for the total (direct and indirect) jobs supported in the clean energy sector for heat and buildings to grow from a 2023 level of 66,000 to 248,000 by 2030. These figures cover a broader scope than this report, covering all building types and include work on energy efficiency measures such as insulation.

Figure 11.1 shows the full-time-equivalent employment (FTE) for direct and indirect roles associated with residential space heating manufacturing, installation and servicing between 2025-2035. See Appendix A for methodology.



Year	2025	2030	2035
Total Employment (FTE)	68,926	96,425	143,942
Increase in total employment from 2025		27,499 (40%)	75,016 (109%)

Figure 11.1 – Employment relating to residential space heating

The FTE associated with hydronic heat pump installations assumes that time efficiencies will arise as market demand increases, based on the labour cost savings set out in *The Seventh Carbon Budget – advice for the UK Government*.[39]

Figure 11.1 shows that the total employment levels would increase by 40% by 2030 and by 109% by 2035, raising the total FTE from 68,926 FTE in 2025 to 143,924 FTE in 2035, provided heating appliance deployment is achieved as projected in section 3.

[38] https://www.gov.uk/government/publications/clean-energy-jobs-plan
[39] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

12. The Potential for Additional Benefits Outside the Scope of the Report

12.1 Observations on Low Carbon Heating beyond the scope of the report

Some of the heat pump related technology excluded from this report would also contribute to the economic and societal value that could be delivered by the sector.

Some of these may be installed in place of the hydronic heat pumps covered in the report, such as hybrid heat pumps or air-to-air heat pumps. In such cases, the benefits are likely to be comparable to that included in the report.

Heat networks (or district heating) connect multiple buildings to a centralised heating source using a network of underground pipes. They enable the use of heat from large-scale sources such as waste industrial heat, water bodies, and sewage, and can incorporate large heat pumps. Heat networks of this type are expected to heat 9% of homes by 2040[40]. In this case, the economic value would be additional to the benefits reported.

Space heating of commercial buildings and industrial processes falls outside the scope of this report but will also be an area where decarbonisation is heavily dependent on heat pump deployment. This is another area where the economic and societal value would be additional to the benefits reported.

The potential for thermal energy storage systems (TESS) falls outside the scope of this report and, to date, little evaluation has been carried out on its potential deployment. The equipment is high-value, and it is therefore likely that the economic value associated with the installation of TESS would be additional to the benefits reported. Domestic hot water heat pumps have been increasingly installed in the UK, with 10,772 sold in 2024[41]. These are more expensive to install but more efficient than immersion heaters and instantaneous hot water appliances, and as such will deliver both reduced emissions and increased economic value compared to the alternatives. The GVA from this sector has not been captured by this report.

Solar thermal hot water systems are installed at a modest level, with 180 MCS certified installations in 2024. These would contribute a relatively small additional economic value to that reported.

While other technologies may emerge, they are only likely to be at a scale that would impact the total economic values reported within the margin of error of the figures reported.

[40] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/
[41] https://www.heatpumps.org.uk/resources/statistics/

12.2 Observations on other supply chain elements that could add value beyond that reported

UK manufacturing of low carbon heating technology has been considered where it is in scope for supply to the UK market. The global market for such technologies also presents a significant export opportunity for adding UK GVA and employment. This is discussed in section 4.2.

The manufacturing of component parts for inclusion in low carbon heating appliances will not be completely covered by the modelled indirect GVA for hydronic heat pump manufacturing and has the potential for export. This is discussed in section 4.3.

The manufacturing of ancillary equipment, such as hot water storage cylinders, pipework, emitters, heating system controls, etc, is additional to the manufacturing GVA included in the report. This is discussed in section 4.4.

The activities of wholesalers and distributors will have a greater benefit than that calculated as indirect GVA of installation, not least because they will supply a wider scope of consumables and equipment than that included within the scope.

The value of supplying replacement parts as part of servicing has not been quantified but could add further value. This is discussed in section 6.3.

The increased employment resulting from the decarbonisation of residential heating will require an increase in skilled resources which, in turn, will bring economic value and employment in training and education. This is discussed in section 13.3.

The regulation of installation activities is delivered through government authorised and UKAS accredited certification schemes, which will grow in proportion to the overall activities within the scope of the report and hence also deliver additional GVA.

13. The Economic and Societal Impact of Hydronic Heat Pump Deployment 2025-2035

The role played by the deployment of hydronic heat pumps in delivering the growth described above for the economic value and employment associated with decarbonising residential space heating is significant. This section presents the values specific to hydronic heat pump activities and provides additional analysis and information relating to resource development, regional breakdowns, health benefits and carbon abatement.

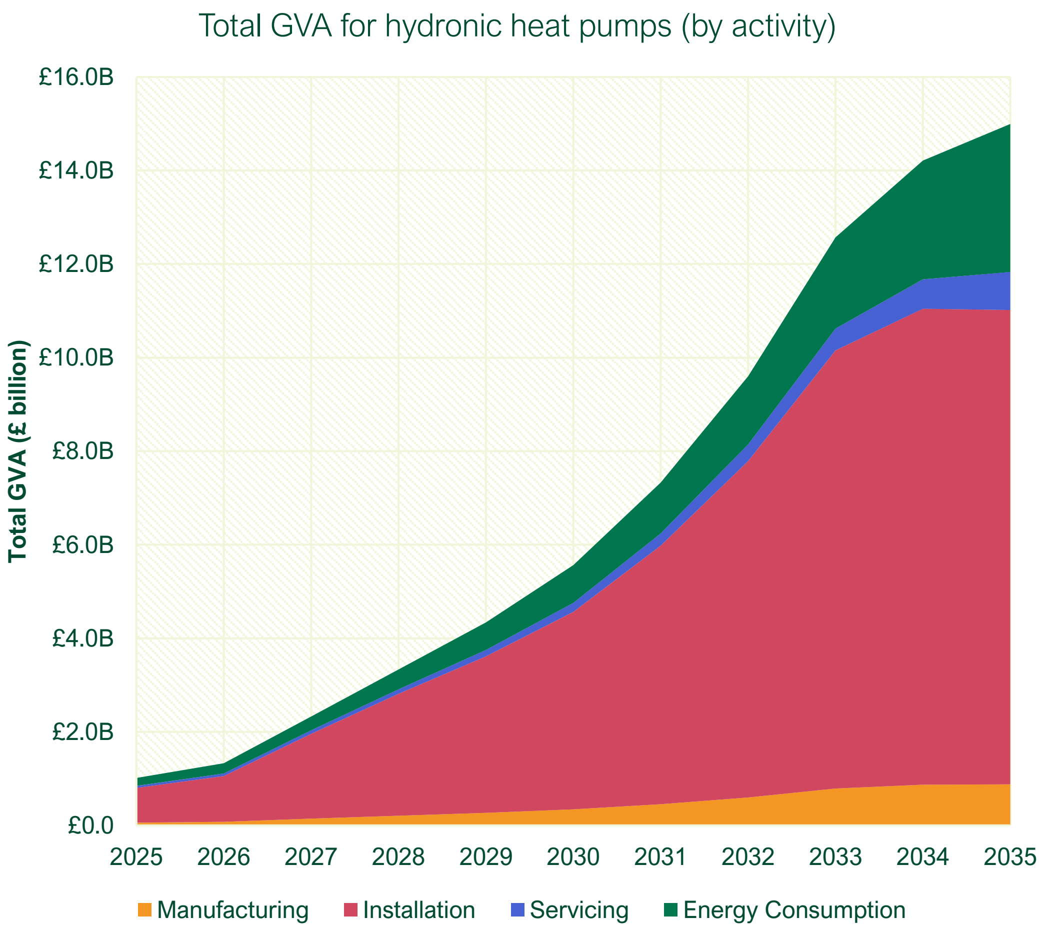
13.1 Economic Growth from Hydronic Heat Pump Deployment

Table 13.1 compares the 2035 GVA and net increase in GVA for fossil fuel boilers, hydronic heat pumps and direct electric heating combined, with that associated with hydronic heat pumps alone. It illustrates how the increase in GVA associated with hydronic heat pumps is higher than the net increase in residential space heating. For example, the total GVA including energy consumption associated with hydronic heat pumps alone increases by £14 billion from 2025 to 2035, while the net increase for residential space heating is just over £10 billion, provided hydronic heat pump deployment is achieved as projected in section 3.

Table 13.1 – GVA: Total Residential Space Heating versus Hydronic Heat Pumps

	All Residential Space Heating (within the scope of the report)		**Hydronic Heat Pumps (for residential space heating)**	
	2035	**Net increase 2025-2035**	**2035**	**Increase 2025-2035**
Total GVA (£ billion)				
• Excluding energy consumption	£13.37 B	£7.52 B	£11.83 B	£10.99 B
• Including energy consumption	£22.51 B	£10.35 B	£15.00 B	£13.98 B
Direct GVA (£ billion)				
• Excluding energy consumption	£6.37 B	£3.45 B	£5.50 B	£5.11 B
• Including energy consumption	£15.51 B	£6.27 B	£8.66 B	£8.10 B

Figure 13.1 shows the Total GVA for hydronic heat pumps broken down by activity, including energy consumption.



Total GVA (£ billion)	2025	2030	2035
Manufacturing	£0.06 B	£0.34 B	£0.87 B
Installation	£0.74 B	£4.22 B	£10.14 B
Servicing	£0.04 B	£0.19 B	£0.82 B
Energy Consumption	£0.17 B	£0.81 B	£3.16 B
Total	£1.01 B	£5.56 B	£15.00 B

Figure 13.1 – Total GVA for hydronic heat pumps used in residential space heating (by activity)

This shows the impact of hydronic heat pump installation and manufacturing related GVA growing in proportion to the annual deployment rate, and the GVA associated with servicing and energy consumption growing in proportion to the cumulative completed and active installations.

Provided hydronic heat pump deployment is achieved as projected in section 3, the increase in total GVA across each activity associated directly with hydronic heat pumps used for residential space heat by 2035 relative to 2025 would be:

- Manufacturing to increase by a factor of 15.3
- Installation to increase by a factor of 13.7
- Servicing by a factor of 18.9
- Energy consumption by a factor of 18.4

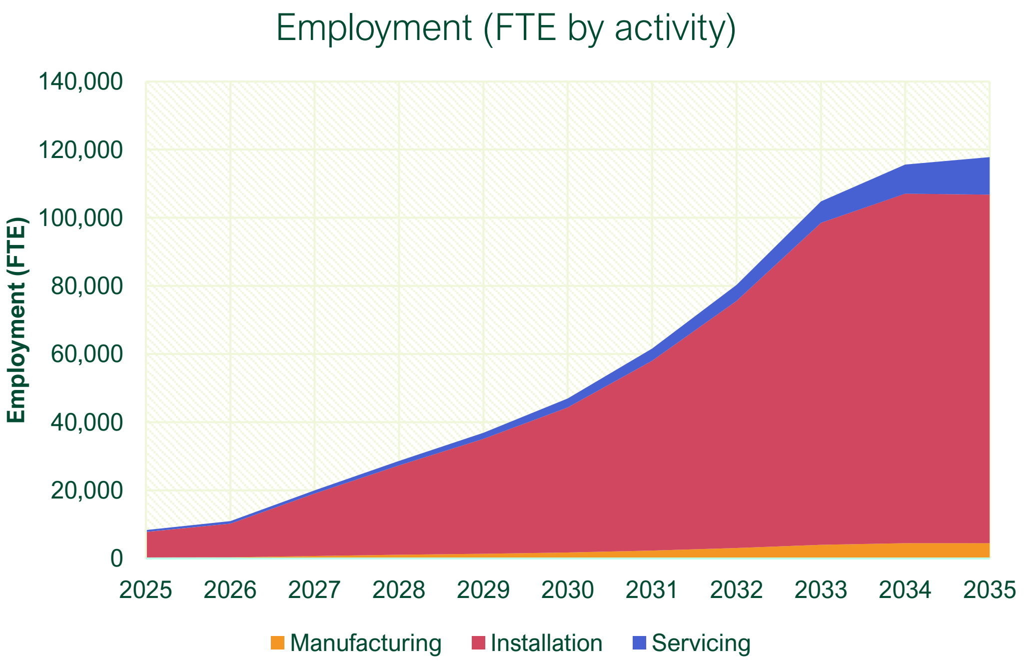
13.2 Employment Growth from Hydronic Heat Pump Deployment

Table 13.2 compares the 2035 employment and net increase in employment for fossil fuel boilers, hydronic heat pumps and direct electric heating combined, with the 2035 employment and increase in employment for hydronic heat pumps alone. It illustrates how the increase in employment associated with hydronic heat pumps is higher than the net increase in all residential space heating. The total employment associated with hydronic heat pumps alone increases by almost 110,000 from 2025 to 2035 while the net increase for residential space heating is just over 75,000.

Table 13.2 – Employment: Total Residential Space Heating versus Hydronic Heat Pumps

	All Residential Space Heating (within the scope of the report)		Hydronic Heat Pumps (for residential space heating)	
	2035	**Net increase 2025-2035**	**2035**	**Increase 2025-2035**
Employment (FTE) (excluding energy consumption)	143,942	75,016	117,813	109,438

Figure 13.2 shows employment broken down by activity.



Employment (FTE)	2025	2030	2035
Manufacturing	295	1,760	4,504
Installation	7,494	42,594	102,256
Servicing	586	2,572	11,053
Total	8,375	46,926	117,813

Figure 13.2 – Employment for hydronic heat pumps used in residential space heating (by activity)

Provided hydronic heat pump deployment is achieved as projected in section 3, the increase in employment for each activity associated directly with hydronic heat pumps used for residential space heating by 2035 relative to 2025 would be:

- Manufacturing to increase by a factor of 15.3
- Installation to increase by a factor of 13.7
- Servicing by a factor of 18.9

13.3 Resource Development for Hydronic Heat Pump Installers

One of the key questions regarding the resource requirements for hydronic heat pump deployment has been the extent to which capacity could transfer from the fossil fuel related workforce, largely gas engineers. Figure 13.3 is an illustration of the mix of starting points for future hydronic heat pump resource[42]. These figures are for those roles requiring competence in hydronic heat pump installation plus servicing and hence are a subset of the total FTE in Table 13.2.

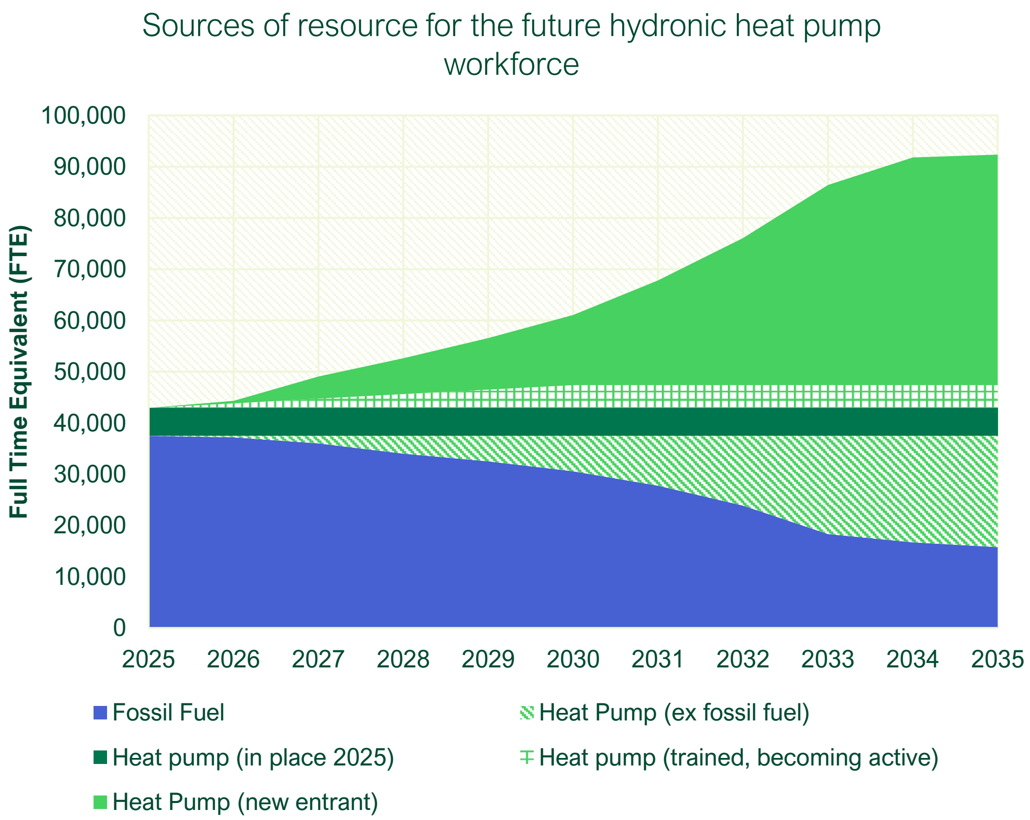


Figure 13.3 – Sources of resource for the future hydronic heat pump workforce

The position in 2035 can be summarised as follows. The demand for fossil fuel related resource will have fallen to meet a need for servicing alone and is only 42% of the 2025 level. In 2035, fossil fuel related resource will represent only 17% of the total FTE needed for residential space heating installation and servicing. The demand for hydronic heat pump resource will have grown to a point of 83% of the total resource illustrated. Table 13.3 quantifies the position in 2035.

[42] Direct electric heating is excluded from this consideration.

Table 13.3 – Heat Pump and Fossil Fuel Employment (installation and servicing) in 2035

Fig 13.3 key	Employment (Direct FTE)	Percentage of the total (%)	Notes
Fossil fuel servicing only	15,793	17%	No new installations, but still servicing a large proportion of residential properties.
Heat pump (ex-fossil fuel)	21,681	23%	Potential for transference of fossil fuel resource into hydronic heat pump installation and servicing.
Heat pump (in place 2025)	5,459	6%	The level of resource both trained and active in 2025.
Heat pump (trained, becoming active)	4,475	5%	The potential for those trained by 2025 to become active, or utilised to a greater extent by 2035[43].
Heat pump (new entrant)	44,945	49%	The additional resource to be trained as new entrants to the heating sector.

As shown in Table 13.3, the employment opportunity exists to bring significantly more individuals into the residential heating sector, which brings with it a training demand for upskilling over 20,000 FTE fossil fuel resource and new entrant training of around 45,000 FTE.

While not quantified in this report, it should be noted that hydronic heat pump training itself will bring additional economic value and employment benefits.

13.4 Regional Breakdown for Hydronic Heat Pump GVA and Employment

Most of the data used for this report relates to the United Kingdom as a whole. For hydronic heat pump installation and servicing, sufficient information is available to estimate the potential economic value and employment opportunities by Nation.

The *MCS Data Dashboard*[44] publishes installation information regionally, and as it covers around 60%[45] of heat pumps used in residential space heating installations, it is a reasonable proxy for regional installations in 2025.

To project future values, the regional Carbon Budget reports for Scotland[46], Wales[47] and Northern Ireland[48] present differing targets and predictions, and for different target years, but the summary in Table 13.4 shows that figures for low carbon residential heating are comparable to the UK modelling from *The Seventh Carbon Budget – advice for the UK Government*[49].

[43] For an explanation of labour utilisation and activity, and its potential to increase available resource, see *Projecting the Future Domestic Heat Pump Workforce (background and methodology)*. https://www.heatpumps.org.uk/resources/industry-reports/.
[44] https://datadashboard.mcscertified.com/InstallationInsights
[45] A comparison of the MCS Data Dashboard figures with the space heating UK heat pump sales data published by HPA at https://www.heatpumps.org.uk/resources/statistics/
[46] https://www.theccc.org.uk/publication/scotlands-carbon-budgets/
[47] https://www.theccc.org.uk/publication/wales-fourth-carbon-budget
[48] https://www.theccc.org.uk/publication/northern-irelands-fourth-carbon-budget/
[49] https://www.theccc.org.uk/publication/the-seventh-carbon-budget/

Table 13.4 – Comparison of Carbon Budget Target Advice by UK Nation

Year	Low carbon heating as a percentage of existing homes			
	United Kingdom	Scotland	Wales	Northern Ireland
2025	9.5%	10.0%		
2030	16.0%	17.0%		
2033	27.5%		25.0%	
2035	38.6%	40.0%		
2040	68.5%			67.0%

As a result, the profile of deployment can be combined to the housing stock for each nation to estimate GVA and employment as shown in Tables 13.5 to 13.9.

Table 13.5 – England: GVA (£ million) and employment (FTE) from hydronic heat pump installation and servicing

	2025	2030	2035
Direct GVA – installation	£ 255 M	£ 1,506 M	£ 3,753 M
Direct GVA – servicing	£ 20 M	£ 91 M	£ 406 M
Direct GVA – installation and servicing	***£ 275 M***	***£ 1,597 M***	***£ 4,159 M***
Total GVA -installation	£ 575 M	£ 3,398 M	£ 8,468 M
Total GVA - servicing	£ 34 M	£ 153 M	£ 684 M
Total GVA – installation and servicing	***£ 609 M***	***£ 3,551 M***	***£ 9,152 M***
Employment – installation and servicing	6,253 FTE	36,335 FTE	94,621 FTE

Table 13.6 – Scotland: GVA (£ million) and employment from hydronic heat pump installation and servicing

	2025	2030	2035
Direct GVA – installation	£ 37 M	£ 190 M	£ 401 M
Direct GVA – servicing	£ 3 M	£ 11 M	£ 43 M
Direct GVA – installation and servicing	***£ 40 M***	***£ 201 M***	***£ 445 M***
Total GVA -installation	£ 84 M	£ 428 M	£ 906 M
Total GVA - servicing	£ 5 M	£ 19 M	£ 73 M
Total GVA – installation and servicing	***£ 89 M***	***£ 447 M***	***£ 979 M***
Employment – installation and servicing	915 FTE	4,576 FTE	10,120 FTE

Table 13.7 – Wales: GVA (£ million) and employment from hydronic heat pump installation and servicing

	2025	2030	2035
Direct GVA – installation	£ 37 M	£ 150 M	£ 217 M
Direct GVA – servicing	£ 3 M	£ 9 M	£ 23 M
Direct GVA – installation and servicing	***£ 40 M***	***£ 159 M***	***£ 240 M***
Total GVA -installation	£ 83 M	£ 338 M	£ 489 M
Total GVA - servicing	£ 5 M	£ 15 M	£ 40 M
Total GVA – installation and servicing	***£ 88 M***	***£ 354 M***	***£ 529 M***
Employment – installation and servicing	905 FTE	3,619 FTE	5,446 FTE

Table 13.8 – Northern Ireland: GVA (£ million) and employment from hydronic heat pump installation and servicing

	2025	2030	2035
Direct GVA – installation	£ 0.3 M	£ 26 M	£ 123 M
Direct GVA – servicing	£ 0.02 M	£ 2 M	£ 13 M
Direct GVA – installation and servicing	***£ 0.3 M***	***£ 28 M***	***£ 136 M***
Total GVA -installation	£ 0.6 M	£ 59 M	£ 278 M
Total GVA - servicing	£ 0.03 M	£ 3 M	£ 22 M
Total GVA – installation and servicing	*£ 0.6 M*	*£ 62 M*	*£ 300 M*
Employment – installation and servicing	**6 FTE**	**636 FTE**	**3,102 FTE**

Table 13.9 – United Kingdom: GVA (£ million) and employment from hydronic heat pump installation and servicing

	2025	2030	2035
Direct GVA – installation	£ 329 M	£ 1,872 M	£ 4,495 M
Direct GVA – servicing	£ 26 M	£ 113 M	£ 486 M
Direct GVA – installation and servicing	***£ 355 M***	***£ 1,985 M***	***£ 4,981 M***
Total GVA -installation	£ 743 M	£ 4,224 M	£ 10,141 M
Total GVA - servicing	£ 43 M	£ 191 M	£ 819 M
Total GVA – installation and servicing	***£ 787 M***	***£ 4,415 M***	***£ 10,960 M***
Employment – installation and servicing	8,080 FTE	45,166 FTE	113,309 FTE

With regards to employment, it is important to note that the figures in Table 13.5 to 13.8 represent the demand in each nation. The location of employment will vary from these figures by travel between the nations.

This difference can be indicated for 2025 by comparing the modelled FTE demand to the distribution of MCS certified hydronic heat pump installers[50], as shown in Table 13.10.

Table 13.10 – Comparison of 2025 resource demand and MCS certified contractors

	Modelled Demand (FTE)	Regional Percentage	MCS Certified Heat Pump Contractors	Regional Percentage
England	6,253	77%	1,816	82%
Scotland	915	11%	251	11%
Wales	905	11%	133	6%
Northern Ireland	6	0.1%	11	0.5%
United Kingdom	8,080		2,213	

This shows that currently, there are proportionally more contractors per FTE demand in England and fewer in Wales. This could either suggest higher numbers of employees per installer business in England, or greater travel to Wales from England.

[50] https://datadashboard.mcscertified.com/InstallationInsights (data obtained 04/12/2025)

13.5 Health Benefits from Hydronic Heat Pump Deployment

Burning fossil fuels produces emissions that are harmful to health as well as to the environment. The emission of fine particulates and nitrogen oxides (NOx) are a significant cause of respiratory and circulatory illnesses, including asthma, coronary heart disease, strokes, and lung cancer[51].

According to Cancer Research UK, approximately 1 in 10 lung cancer cases are associated with air pollution[52]. The *Heat and Buildings Strategy*[53]*,* published by the then Government in 2021, identified that around 25% of air pollution relates to emissions from gas boilers, and in Central London, the impact of policies to limit emissions from vehicles was reported in the research paper *Evidence of Heating-Dominated Urban NOx Emissions* as resulting in gas combustion in boilers being responsible for 72% of NOx emissions[54].

The CE Delft report *Health-related social costs of air pollution due to residential heating and cooking*[55] reports that the annual heath related social costs associated with residential heating and cooking in the UK was €2.7 billion in 2018.

The European Heat Pump Association (EHPA) report that replacing a gas boiler with a hydronic heat pump reduces the related nitrogen oxides (NOx) air pollution by 75% for that installation, and switching a wood burning stove for a hydronic heat pump cuts fine particulate matter emissions by 99%[56].

The WPI Strategy report *Reframing the heat pump debate*[57] identified a potential for 45,000 fewer NHS appointments each year by replacing all conventional boilers.

It is estimated that by 2035. the number of central heating boilers in service will reduce from current levels by 24%, which would represent a 6% reduction in overall air pollution, improving health outcomes throughout the UK. The complete phasing out of fossil fuel residential space heating is expected to cut associated emissions by 99% by 2050, and within the scope of this report, 33% of this reduction will have been achieved by 2035. This will begin to deliver tangible health benefits within the next decade.

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[51] https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution
[52] https://www.cancerresearchuk.org/about-cancer/causes-of-cancer/air-pollution-radiation-and-cancer/how-can-air-pollution-cause-cancer#:~:text=What%20is%20the%20cancer%20risk,these%20limits%2C%20including%20particulate%20matter.
[53] https://www.gov.uk/government/publications/heat-and-buildings-strategy
[54] https://pubs.acs.org/doi/10.1021/acs.est.4c13276
[55] https://cedelft.eu/wp-content/uploads/sites/2/2022/03/CE_Delft_210135_Health-related_social_costs_of_residential_heating_and_cooking_Def_V1.2.pdf
[56] https://ehpa.org/news-and-resources/press-releases/air-pollution-heat-pump-switch-crucial-for-health/
[57] https://www.wpi-strategy.com/reframing-the-heat-pump-debate

13.6 Greenhouse Gas Abatement from Hydronic Heat Pump Deployment

The deployment of low carbon heating is a key feature of the action required to combat the impacts of climate change. The United Kingdom is committed to a legally binding target of achieving a 100% greenhouse gas emissions reduction by 2050. This is embodied in the Climate Change Act[58].

In 2023, 13.5% of the UK's carbon emissions related to residential buildings, and primarily from heating and cooking[59]. The programme to decarbonise heating, largely by electrification, will run through to 2050 and the period covered by this report is transformational in that it envisages the end of new fossil fuel installations within the decade. By 2035 gas heating will be a legacy system, albeit still accounting for heating most residential properties.

The annual greenhouse gas emissions (expressed in terms of carbon abatement) saved by the deployment of hydronic heat pumps[60] is shown in Figure 13.4.

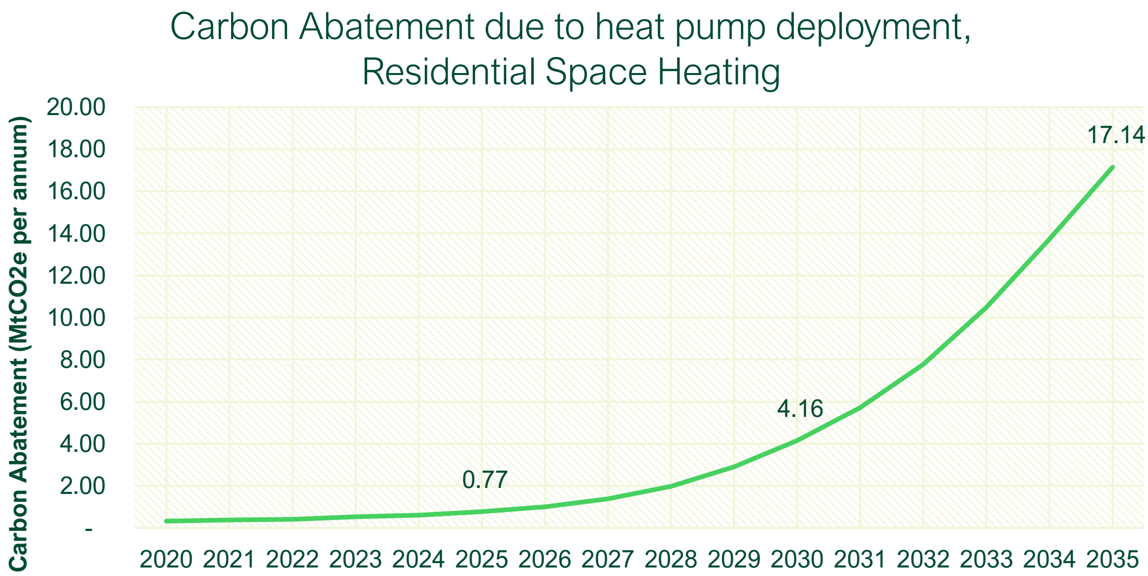

Figure 13.4 – Carbon abatement from hydronic heat pump deployment for residential space heating

This shows a significant increase in carbon abatement as the stock of installed hydronic heat pumps drives a cumulative improvement. The amount of greenhouse gases abated as a result of hydronic heat pump deployment (at the levels described in section 3) for residential space heating would rise by a factor of 5.4 by 2030 and by a factor of 22.3 by 2035 to the point where 17.14 $MtCO_2e$ per year is being abated by 2035. Other low-carbon heating appliances have the potential to add a further 1 MtCO2e.

Greenhouse gas emissions from residential buildings are estimated to have been 51.7 $MtCO_2e$ in 2023[59], and the identified abatement levels for 2035 would represent around one-third of this total.

[58] The 2019 amendment to the 2008 Climate Change Act introduced the legally binding "net zero" target for 2050. Section 1 (the target for 2050) states: "It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline."
[59] https://assets.publishing.service.gov.uk/media/6604460f91a320001a82b0fd/uk-greenhouse-gas-emissions-provisional-figures-statistical-release-2023.pdf
[60] Abatement resulting from increasing direct electrical heating has not been evaluated for this report.

Appendix A - Methodology

The modelling set out in this report is primarily based on a profile of residential space heating appliance installations as detailed in section 3, figures 3.2 (annual installations) and 3.3 (cumulative installations). It is assumed that the share of fossil fuel appliances replaced by hydronic heat pumps and direct electrical heating will be in proportion to the mix of fossil fuels in place at the start of the study, such that all fossil fuel types are phased out in the same timescale.

This appendix details the other assumptions made in the modelling and includes an evaluation of the sensitivity of the model to variance in these assumptions.

A list of source material is provided at the end of the Appendix.

Gross Value Added (GVA)

For appliance manufacturing, installation and servicing, direct GVA (dGVA) is obtained via the equation:

$$dGVA = PV \times dGVA(ratio)$$

where:

PV is the Production Value (or market value) of the activity

dGVA(ratio) = aGVA(ABS) ÷ Turnover(ABS)

The Office for National Statistics (ONS) dataset *Annual Business Survey* (ABS) is used to obtain aGVA(ABS) and Turnover(ABS) for the activities under consideration as follows:

Activity	**ONS (ABS) SIC Code Used**	**dGVA ratio**
Manufacturing (hydronic heat pumps)	SIC 28.25	0.347
Manufacturing (central heating boilers and direct electrical heating appliances)	SIC 25.21	0.310
Installation (all heating)	SIC 43.22	0.470
Servicing (all heating)	SIC 33.12	0.500

The Production Value (PV) is obtained as follows:

Activity	Production Value Approach
Manufacturing (hydronic heat pumps)	PV and UK-based manufacturing via data collected from manufacturers on behalf of HPA
Manufacturing (central heating boilers)	ONS dataset *UK manufacturers' sales by product* (ProdCom) for product code 25211200. It is assumed that 80% of central heating boilers sold in the UK are manufactured in the UK.
Manufacturing (direct electric appliances)	Derived from *Cost of Domestic and Commercial Heating Appliances*, Eunomia (2024). UK manufacturing volumes were from the report *Electric Storage Heating Radiators - Market Analysis*.
Installation (hydronic heat pumps)	Derived from costs reported in *The MCS Data Dashboard* with the proportion of installation labour derived from *Cost of Domestic and Commercial Heating Appliances*, Eunomia (2024)
Installation (all except hydronic heat pumps)	Derived from *Cost of Domestic and Commercial Heating Appliances*, Eunomia (2024)
Servicing (all)	Typical servicing prices obtained from *CheckaTrade* reports, applied to estimated rates of appliance servicing via surveys reported by *GoCompare* and *Money Supermarket*.

Total GVA (tGVA) and Indirect GVA (iGVA) are obtained via the equations:

tGVA = dGVA x Type I Multiplier

iGVA = tGVA – dGVA

The Type I Multiplier is obtained from the ONS dataset *UK input-output analytic tables*, as follows:

Activity	**CPA Code** (classification of products, goods and services)	Type I Multiplier
Manufacturing (all)	CPA_C28	1.699
Installation (all)	CPA_ F41, F42 & F43	2.256
Servicing (all)	CPA_C33OTHER	1.686

The approach for dGVA for Energy Consumption is based on identifying the proportion of energy supply (gas or electricity) used by hydronic heat pumps, fossil fuel central heating or direct electric heating. The total energy supply is obtained from the *Digest of UK Energy Statistics* (DUKES). The average heat demand per property is derived from the UK Government data *UK Heat Demand - National Energy Efficiency Data-Framework* (NEED). The energy supply for each appliance type applies energy efficiency factors to the heat demand and uses a SCOP of 2.8 for hydronic heat pumps, an in-situ central heating boiler efficiency of 85% and a direct electric appliance efficiency of 75%.

This proportion is then applied to the approximate aGVA reported for the supply of electricity (generation, transmission and distribution) and gas[61] (manufacture and distribution through mains) in the ONS dataset *Annual Business Survey (Section D)* using SIC codes 35.1 and 35.2 respectively.

Employment

For manufacturing, the ONS dataset *Employment multipliers and effects in the UK* is used for its reported *FTE per £m dGVA* and multiplied by *Type I FTE Multiplier* to give total FTE per £m which is then applied for all appliance types.

The labour intensity for hydronic heat pump installation is obtained from the HPA report *Projecting the Future Domestic Heat Pump Workforce (background and methodology)* and assumes that the efficiencies identified in that report will be progressively realised over the course of the period 2025-2030. This is divided by the dGVA determined in this report to obtain *FTE per £m dGVA* and multiplied by the 5-year average ratio of total jobs to indirect jobs from the ONS dataset *Low Carbon and Renewable Energy Economy* (LCREE)[62] to give total FTE per £m. The rate of employment *FTE per £m dGVA* is then assumed to be comparable for all residential space heating installation activities, irrespective of appliance type.

The labour intensity for servicing uses the FTE/service figures adopted in the *Clean Energy Jobs Plan* for hydronic heat pumps and central heating boilers, converted to an annual FTE using the value 230 days per FTE also cited in that report. Servicing is not expected to be undertaken for direct electric heating. A rate of employment is then determined by the following calculation:

FTE per £m dGVA = FTE/service ÷ dGVA/service

Employment associated with energy production and supply is outside the scope of this report.

The assumptions regarding the potential sources for hydronic heat pump installation and service resource are as follows:

- The demand, in direct FTE terms, is a direct output of the modelling based on the installation profile described in section 3, Figure 3.2 (annual installations), extracted for hydronic heat pump work alone.
- The modelling suggests that 5,459 FTE are already trained and active and this is taken as the baseline for the model.
- This demand is predicted to rise by 86,893 FTE (from 5,459 FTE to 92,353) in the period 2025 to 2035.
- One of the anticipated sources for resource is the transfer from fossil fuel heating, but in the period considered there will remain a significant demand for fossil fuel heating servicing which will require 42% of the fossil fuel heating resource to remain in that sector. The methodology is to assume the fall in required resource for fossil fuel heating will equate to a

[61] The aGVA for fossil fuel supply other than natural gas is assumed to be the same aGVA/appliance for the purposes of this report and is negligible in terms of reported total GVA.
[62] This approach aligns with that used in the *Clean Energy Jobs Plan*.

transfer of that existing resource to hydronic heat pump installation and servicing. Note that although there will be industry leavers in that time period, there will also be new entrants into the fossil fuel sector.

- In the HPA report *Projecting the Future Domestic Heat Pump Workforce (background and methodology)* it notes that not all trained individuals will initially become active in hydronic heat pump installation (referred to as an activity rate) and of those that do become active they will not be fully used on hydronic heat pump work until demand grows (referred to as utilisation). The modelling suggests that in the time period to 2030 the combination of increasing both activity rate (from 61% to 74%) and utilisation (from 48% to 72%) will enable the resource already trained to deliver a further 4,475 FTE by 2035 (an increase of 82%).
- The remaining demand of 44,945 FTE will have to be found from sources other than the existing space heating workforce, and as such represent new entrants for the sector.

Carbon Abatement from Hydronic Heat Pump Deployment

The carbon intensity for fossil fuel combustion is obtained for natural gas, burning oil, LPG, and coal from the Government dataset *Greenhouse gas reporting: conversion factors 2024* in terms of $kgCO_2e/kWh$. These values are fixed, whereas the carbon intensity of electricity production is predicted to fall in line with *The Seventh Carbon Budget – advice for the UK Government (Fig 5.7.2)*.

The carbon abatement is then calculated by considering the number of hydronic heat pumps in operation and split of fossil fuel appliance types likely to have been replaced.

The total kWh for electricity supplied to hydronic heat pumps is calculated for average heat demand and a SCOP of 2.8. The energy supplied is multiplied by the carbon intensity to derive the mass of carbon associated with hydronic heat pump use.

The energy that would have been consumed if the fossil fuel appliances were not replaced is determined by the average heat demand and average in-situ boiler efficiency of 85%. This is multiplied by the carbon intensity to derive the mass of carbon that would have been emitted of the fossil fuel appliances had remained in place.

Carbon abatement is the difference between the CO_2 equivalent total that would have been emitted if fossil fuel appliances were not replaced and the CO_2 equivalent total that would arise from electricity supplied for hydronic heat pump operation.

Evaluation of Sensitivities

The estimation of GVA is based on a broad range of assumptions as discussed above. The baseline model is set based on these assumptions and the residential space heating appliance deployment profile presented in section 3, Figure 3.3 of the report.

To evaluate the sensitivity of the model to variations in assumptions, each assumption in turn was adjusted, within realistic limits, and the percentage change in total GVA determined. The following table summarises the sensitivities evaluated. Where a sensitivity of over 3% was identified, it is discussed in the main body of the report.

GVA element	Variable considered	Sensitivity test	Sensitivity as % total GVA
Manufacturing	Percentage of sales made in the UK	The difference between maintaining current percentage versus increasing UK hydronic heat pump manufacturing from 33.5% to 59%	3.0% (discussed in section 4.1)
Installation	Mix of AWHP and GSHP	The impact of doubling the percentage of GSHP compared to current sales levels.	1.2%
Installation	Mix of fossil fuel appliances replaced	The difference between a proportion of appliances currently installed and the proportion of appliances being replaced under the Boiler Upgrade Scheme.	0.85%
Installation	Future cost savings	The difference between labour efficiency scenarios: • Baseline set to CB7 assumption • No efficiency change • Change suggested by *Clean Energy Jobs Plan*	-19.3% to +6.3% (discussed in section 5.2)
Installation	Mix of retrofit and newbuild	The impact of doubling the percentage of newbuild from 13% to 26%	0.47%
Installation	Assumed product life (replacement timescale)	The difference between 15 year, 17.5 year (the baseline assumption) and 20 year product life assumptions.	0.08%

Service	Future cost savings	The difference between labour efficiency scenarios: • Baseline , no efficiency change • Change suggested by *Clean Energy Jobs Plan*	0.81% (discussed in section 6.2)
Service	Assumed percentage of appliances serviced	The difference between appliances serviced at 50%, 67% (the baseline assumption) and 75%	-2.3% to +1.1%
Service	Assumed service fees	Considering the highest and lowest reported fees reported compared to the average used as a baseline.	-2.0 to +2.9%
Energy consumption	Assumed SCOP	The difference between the baseline SCOP of 2.8 and a range from 2.7 to 3.0	-0.9% to +0.5%
Energy consumption	Assumed hydronic heat pump energy demand	The impact of assuming a 15% energy demand uplift as reported in CB7.	2.1%

The value of energy production and distribution, as reported here, excludes taxes and levies such that the direct GVA figures reported would not be sensitive to rebalancing of energy pricing if this is done by adjusting policy costs and/or taxation.

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Heat Pump
Association UK

Find out more about HPA UK

hpauk.org.uk

info@heatpumps.org.uk

LinkedIn

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