Heat Pump Supply Chain readiness to deliver Net Zero Homes

Heat Pump Association February 2025

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Introduction

In October 2023, Keir Starmer pledged at the Labour Party Conference to 'get Britain building again', later confirming Labour's mission to accelerate housebuilding with the target to build 1.5 million new homes over the next 5 years[1]. This new build housing target coincides with the Government's ambition to implement the Future Homes and Buildings Standard (FHBS) in 2025.[2] The introduction of the FHBS will likely result in the majority of new build homes being heated by a heat pump or low carbon heat network due to the proposed tightening of energy efficiency requirements. This ambition aligns with the need to decarbonise heat from all buildings if the UK is to meet its legally binding carbon emission reduction targets.

This paper reflects the UK domestic heat pump market in its totality. It highlights the developed and scalable nature of the UK heat pump sector's supply chain, concluding that supply chain readiness is strong and able to exceed the demand that FHBS implementation, along with anticipated growth in the retrofit market, could bring.

Setting out the current policy and heat pump market context, including heat pump deployment projections, this paper evidences the strength of the current supply chain, citing the latest UK Heat Pump Factory Gate sales and EU hydronic heat pump sales data. Additionally, it examines the current workforce, estimated future workforce requirements and current UK training rates.

It concludes by providing confidence to the Government and the market, that the scale of growth required in the heat pump product supply chain and workforce is both understood by the sector and can be met and exceeded, as long as policy certainty is delivered.

[1] Labour Party (2023). Labour will build 1.5 million homes to save the dream of home ownership. Available at: https://labour.org.uk/updates/stories/just-announced-labour-will-build-1-5-million-homes-to-save-the-dream-of-homeownership/

[2] MHCLG (2024). The Future Homes and Buildings Standards Consultation. Available at: https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation/the-future-homes-and-buildings-standards-2023-consultation

1. Policy and Market Context

Policy context

In 2019, the UK Government committed to a legally binding target to reduce greenhouse gas emissions to net zero by 2050[3]. As part of a phased approach, the Government also committed to an interim target of reducing emissions by at least 81% (against 1990 levels) by 2035[4]. Accounting for 17% of carbon emissions in 2023[5], the decarbonisation of heat in buildings plays a central role in progress towards these goals. Fossil fuel heating will need to be replaced by electrified, low carbon heating technologies in the majority of the UK's c.29 million homes in order to reach net zero emissions[6].

Heat pumps are a proven, efficient, scalable low-carbon heating solution with the current potential to reduce carbon emissions from heating by over 75% relative to fossil fuel heating solutions[7], which will increase further as the electricity grid decarbonises. The Climate Change Committee's (CCC) Balanced Net Zero Pathway projects that of the low carbon heating systems installed in all homes by 2050, approximately 75% of these will be heat pumps[8].

[3] BEIS (2019). UK becomes first major economy to pass net zero emissions law. Available at: https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law]

[4] UK Government (2024). PM Statement to the House of Commons on the G20 and COP29 Summits. Available at: https://www.gov.uk/government/speeches/pm-statement-to-the-house-of-commons-on-the-g20-and-cop29-summits-21-november-2024

[5] CCC (2023). Progress in reducing emissions: 2023 Report to Parliament. Available at: https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/

[6] DESNZ (2023). Heat pump investment roadmap: Leading the way to net zero. Available at: https://www.gov.uk/government/publications/heat-pump-net-zero-investment-roadmap/heat-pump-investment-roadmap-leading-the-way-to-net-zero

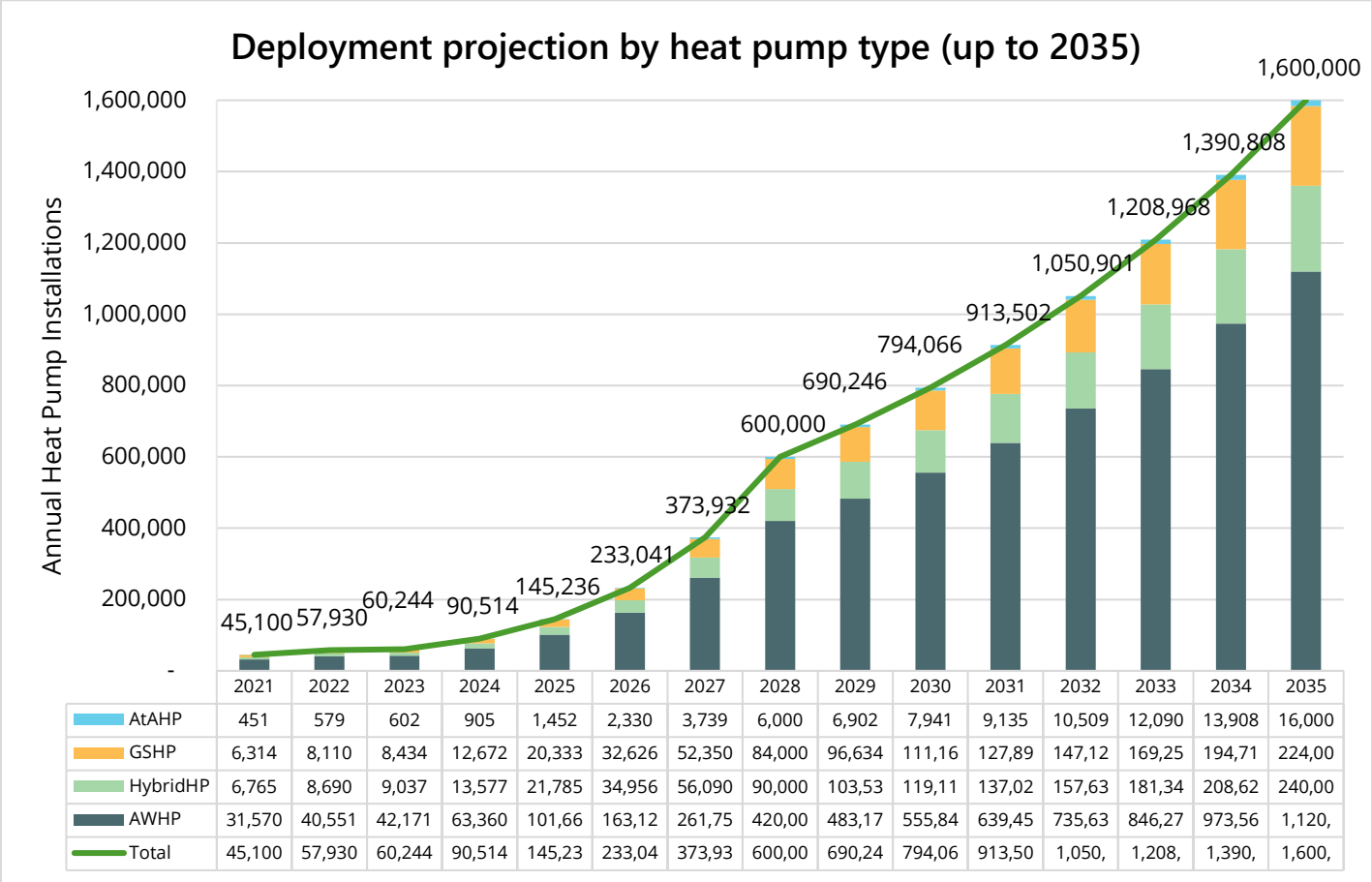
[7] Emissions savings calculated using historical heat pump efficiencies taken from the following trials and extrapolated: DECC (2012) Detailed analysis from the first phase of the Energy Saving Trust's heat pump field trial, DECC (2013) Detailed analysis from the second phase of the Energy Saving Trust's heat pump field trial, UCL (2017) FINAL REPORT ON ANALYSIS OF HEAT PUMP DATA FROM THE RENEWABLE HEAT PREMIUM PAYMENT (RHPP) SCHEME, ESC (2023) Electrification of Heat - Interim Heat Pump Performance Data Analysis Report. Future efficiency increases according to CCC (2020) Sixth Carbon Budget. Emissions factors according to DESNZ (2023) Green Book.

[8] CCC (2020). The Sixth Carbon Budget. Pg 115. Available at: https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf

In November 2020, the previous UK Government set a target to achieve 600,000 heat pump installations per year by 2028[9], rising to 1.6 million per year by 2035[10]. Reaching this level of deployment will require a substantial increase in heat pump installations from the current level of nearly 100,000 heat pumps sold in 2024[11]. This increased level of deployment will necessitate a significant expansion in the overall size of the heat pump supply chain including manufacturing, workforce, and supporting elements.

[9] HM Government (2020). The Ten Point Plan for a Green Industrial Revolution. Available at: https://assets.publishing.service.gov.uk/media/5fb5513de90e0720978b1a6f/10_POINT_PLAN_BOOKLET.pdf
[10] NAO (2024) 'Decarbonising home heating. Available at: https://www.nao.org.uk/reports/decarbonising-home-heating/
[11] HPA (2024). Statistics. Available at: https://www.heatpumps.org.uk/resources/statistics/

Heat Pump Deployment Projections



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
AtAHP	451	579	602	905	1,452	2,330	3,739	6,000	6,902	7,941	9,135	10,509	12,090	13,908	16,000
GSHP	6,314	8,110	8,434	12,672	20,333	32,626	52,350	84,000	96,634	111,16	127,89	147,12	169,25	194,71	224,00
HybridHP	6,765	8,690	9,037	13,577	21,785	34,956	56,090	90,000	103,53	119,11	137,02	157,63	181,34	208,62	240,00
AWHP	31,570	40,551	42,171	63,360	101,66	163,12	261,75	420,00	483,17	555,84	639,45	735,63	846,27	973,56	1,120,
Total	45,100	57,930	60,244	90,514	145,23	233,04	373,93	600,00	690,24	794,06	913,50	1,050,	1,208,	1,390,	1,600,

Figure 1: Deployment projections by heat pump type – based on 600,000 installations annually by 2028 and 1.6m installations annually by 2035. Note: AtAHP = Air-to-air heat pump, GSHP = Ground-source heat pump, HybridHP = Hybrid heat pump, AWHP = Air-to- water heat pump. Exhaust Air Heat Pumps are included in the AWHP category and the GSHP category includes those connected to a Shared Ground Loop.

Figure 1 above sets out an indication of the annual heat pump installation rate needed to meet the previous Government's 600,000 heat pumps installed a year by 2028 target and 1.6m installations annually by 2035[12]. This data makes provision for the additional 1.5 million net additional dwellings in England announced by the Labour Party.

Additionally, it is vital that the supply chain is aware of what will drive the estimated heat pump deployment projects. Figure 2 below looks into the policy contributions to total heat

[12] Note at the time of writing (January 2025) Government are yet to confirm a possibly updated target.

pump deployment up to 2028.[13] Future policy levers are unknown, but the scale of growth required is illustrated in Figure 1.

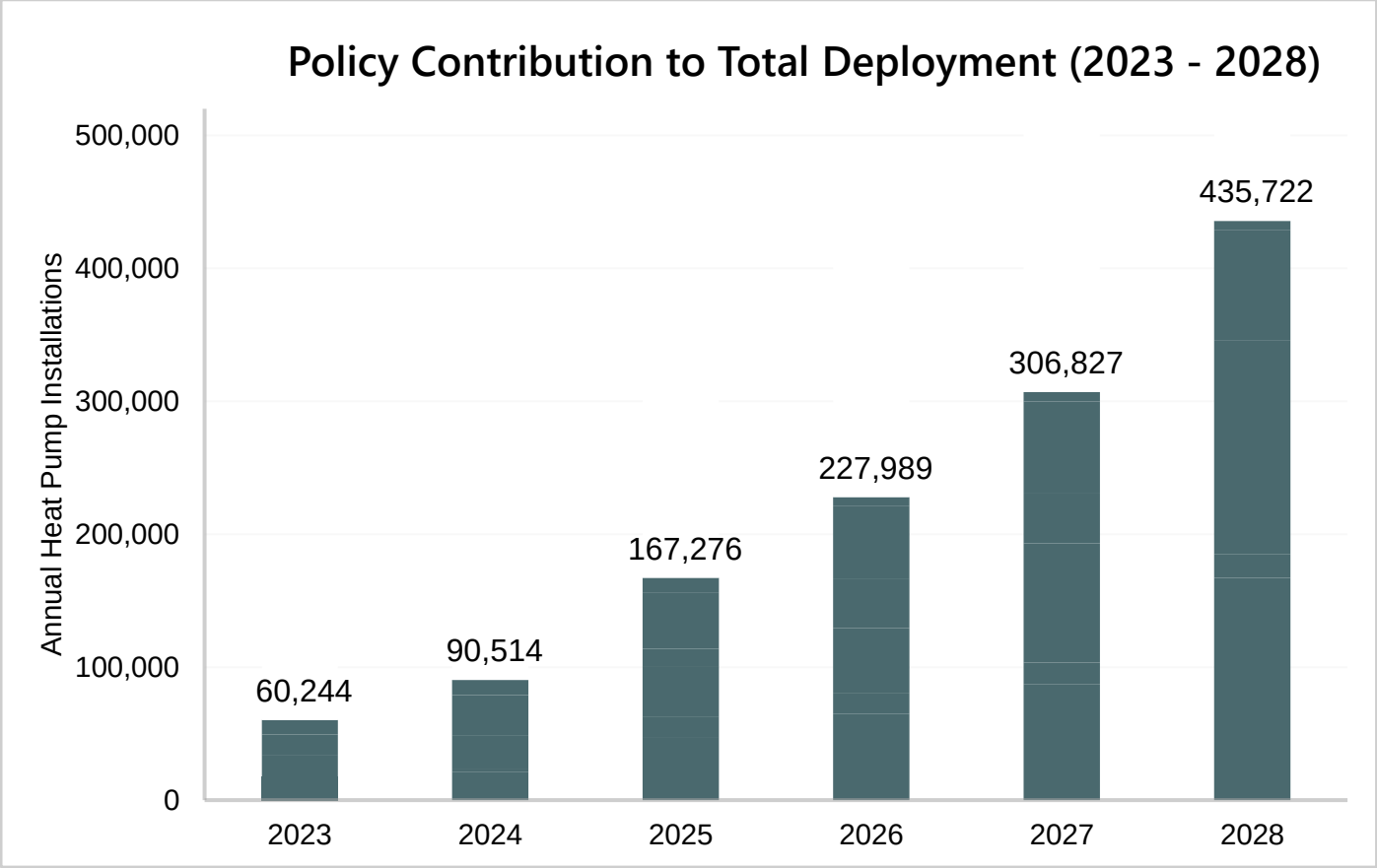


Figure 2: Government Policy contributions to Heat Pump Installations. Note: The above is based on existing Government published Impact Assessments and is very much an assumption based model.

The estimates in Figure 2 are based on an interpretation of heat pump deployment projections. The modelling combines both policy-driven and non-policy-driven heat pump sales estimates derived from HPA sales data. Policy deployment projections were derived from the latest publicly available impact assessment at the time of data collection in autumn 2024[14]. In addition to this modelling, the sector is eagerly awaiting the details of Labour's Warm Homes Plan and the possible impact this could have on heat pump deployment.

[13] Note that this was drafted in November 2024 (where delays to the FHBS were evident) thus this is based on available Government published public impact assessments and HPA's interpretation of those.

[14] It should be noted that some of these impact assessments are several years old. These figures are liable to change, if the policy framework changes.

2. The Strength of the Heat Pump Supply Chain

The heat pump sector in the UK and Europe has established itself as a dynamic and adaptable industry, ready to meet the growing demand for low carbon heating solutions. With a mature manufacturing base, a robust network of suppliers, and a skilled workforce, the supply chain is well-positioned to scale up production and deployment in response to national housing and climate goals.

This section explores the current strengths of the UK heat pump supply chain, highlighting current sales to the UK market, its manufacturing base, and its growing workforce. By examining the sector's capabilities this section makes the case for leveraging these strengths to meet the ambitious acceleration of heat pump deployment within the UK in line with Government targets.

UK Heat Pumps Factory Gate Sales

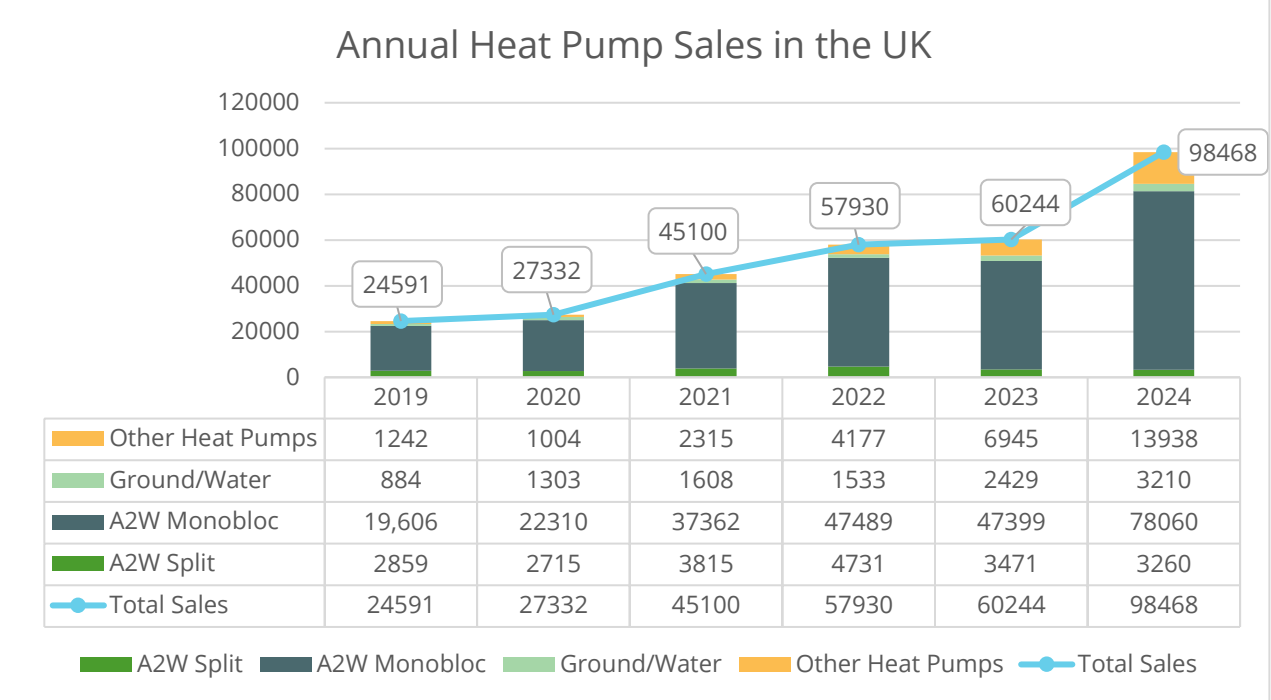


Figure 3: Annual Heat Pump Sales UK (Based on Factory Gate Sales Data). Note: This data includes factory gate sales of Air-to-Water monobloc units, Air-to-Water split units, Ground and Water Source units, and "other"- which includes Domestic Hot Water Heat Pumps, Exhaust Air Heat Pumps and Integrated Hybrid Heat Pumps. It does not include air to air heat pumps and therefore makes it incomparable to many EU data sources.

The graph above shows UK Hydronic Heat Pump Factory gate sales data from 2019 to 2024[15]. The data shows a total of 98,468 hydronic heat pumps, sold in the UK in 2024, which represents a 63% increase in the market relative to 2023 figures. This growth is largely driven by a 64% increase in Air to Water Monobloc sales, and a 100% growth in 'other heat pumps'.

Hydronic Heat Pump Sales (EU level)

The graph below shows EHPA member sales of Hydronic Heat Pump from 2019 to 2023. With over 1,800,000 hydronic heat pumps sold across the EU in 2022, dropping slightly to 1,600,000 in 2023. The scale of the European Market is evident, with the vast majority of UK Heat Pump manufacturers operating within both the EU and UK markets. For context, the UK hydronic heat pump market represented just 3% of the EU market in 2023.

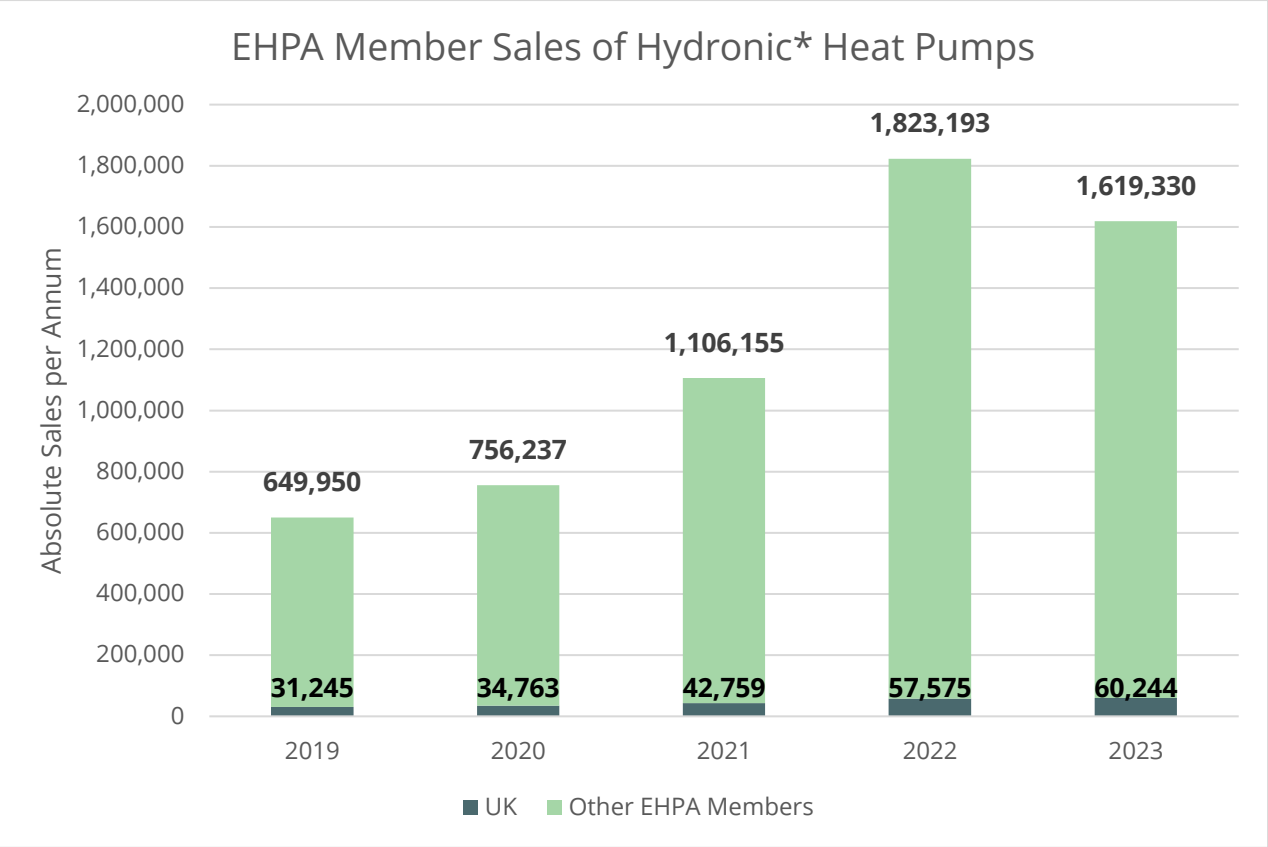


*Figure 4: Hydronic Heat Pump Sales. Note: *Hydronic heat pumps include air-to-water, hybrid and ground source heat pumps.*

[15] HPA (2024). Heat Pump Sales in the UK. Available at: https://www.heatpumps.org.uk/resources/statistics/

Manufacturing capabilities

The UK is set to become one of the largest markets in Europe for heat pumps, with projections of the installation of around 1.6 million units per year from 2035 to 2050[16]. The Government's Heat pump investment roadmap suggested that by 2028 up to 300,000 heat pumps could manufactured in the UK[17].

This creates a pivotal opportunity to attract investment in new UK manufacturing facilities. The heat pump transition also presents opportunities for installation, both of heat pumps and heat networks as well as the growth of local jobs for all those involved in the supply chain.

A recent report by the IPPR suggested that heat pump manufacturing should be a strategic priority for the UK, presenting not only an opportunity but a necessity[18]. The report additionally highlights that due to the UK's strong employee base of those skilled in manufacturing boilers, with stable and long-term policy, the UK has the potential to develop one of the largest domestic markets for heat pumps in Europe. Furthermore, the report highlights the possible regionally balanced growth the heat pump manufacturing market could bring the UK due to the existing manufacturing sites of many HPA members.

The UK is well placed to become a market leader in some areas of the heat transition, providing export opportunities in terms of both products and services. One potential area is in the space of shared ground/geothermal loops where the UK is a global leader in this nascent sector. There is increasing interest in Europe and the US of this technology creating opportunities for the UK to export in the future.

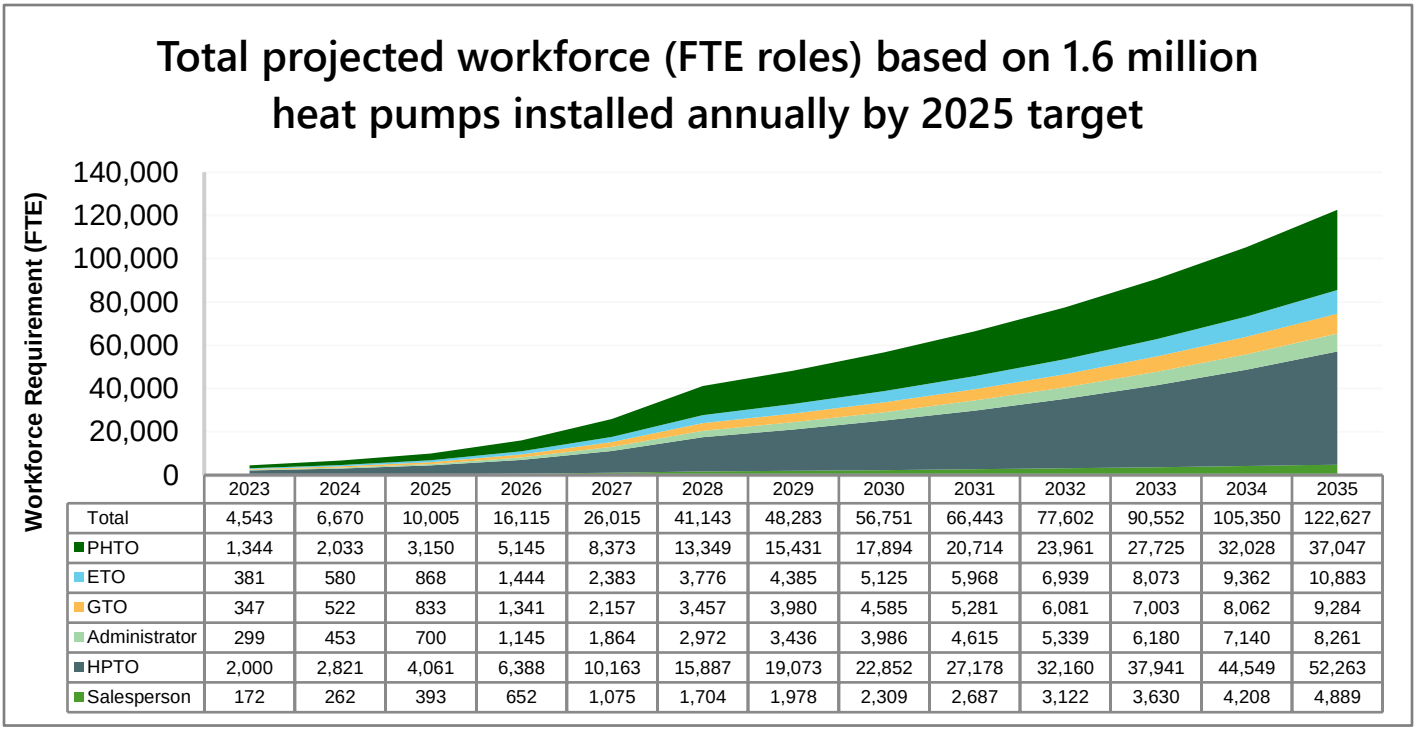
In confidence, HPA heat pump manufacturing members' provided data on their current installed factory line capacity for hydronic heat pump production, to serve the EU & UK markets. Data received has demonstrated they can exceed the UK demand for hydronic heat pumps in line with numbers projected in Figure 1 to 2028, whilst continuing to serve the EU market at levels set out in Figure 4, without current factory expansion.

[16] NESO (2024). Future Energy Scenarios 2024. Available at: https://www.neso.energy/document/321041/download
[17] UK Government (2023). Heat Pump Net Zero Investment Roadmap. Available at: https://www.gov.uk/government/publications/heat-pump-net-zero-investment-roadmap/heat-pump-investment-roadmap-leading-the-way-to-net-zero#the-uk-is-leading-the-charge-towards-a-net-zero-nature-positive-future
[18] IPPR (2024). The Heatwave: Unlocking the Economic Potential of UK Heat Pump Manufacturing. Available at: https://www.ippr.org/articles/the-heatwave

However, to sustain and strengthen growth and encourage further investment in UK manufacturing a clear, credible heat decarbonisation transition plan is needed from the Government which includes a detailed heat pump installation pathway, supported by policy and regulatory change. The swift introduction of the FHBS is imperative to this.

Workforce Projections and Current Training Rates

Alongside, the importance of a strong manufacturing supply chain, the workforce on the ground to undertake heat pump installations is crucial. Figure 5 outlines the total Full Time Employed Workforce roles projected to be needed to meet the previous Government's target of 600,000 heat pump installations per year by 2028, rising to 1.6m heat pump installations per year by 2035. This data makes provision for the additional 1.5 million net additional dwellings in England announced by the Labour Party.



	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total	4,543	6,670	10,005	16,115	26,015	41,143	48,283	56,751	66,443	77,602	90,552	105,350	122,627
PHTO	1,344	2,033	3,150	5,145	8,373	13,349	15,431	17,894	20,714	23,961	27,725	32,028	37,047
ETO	381	580	868	1,444	2,383	3,776	4,385	5,125	5,968	6,939	8,073	9,362	10,883
GTO	347	522	833	1,341	2,157	3,457	3,980	4,585	5,281	6,081	7,003	8,062	9,284
Administrator	299	453	700	1,145	1,864	2,972	3,436	3,986	4,615	5,339	6,180	7,140	8,261
HPTO	2,000	2,821	4,061	6,388	10,163	15,887	19,073	22,852	27,178	32,160	37,941	44,549	52,263
Salesperson	172	262	393	652	1,075	1,704	1,978	2,309	2,687	3,122	3,630	4,208	4,889

Figure 5: Total projected workforce (FTE Roles) 1.6 million heat pumps installed annually by 2035. Note: PHTO = Plumbing and heating technical operative, ETO = Electrical technical operative, GTO = Groundworks technical operative, HPTO = Heat pump technical operative.

Recent analysis, conducted by the HPA, has focussed on the number of qualified and active heat pump installers required to meet the above workforce need.

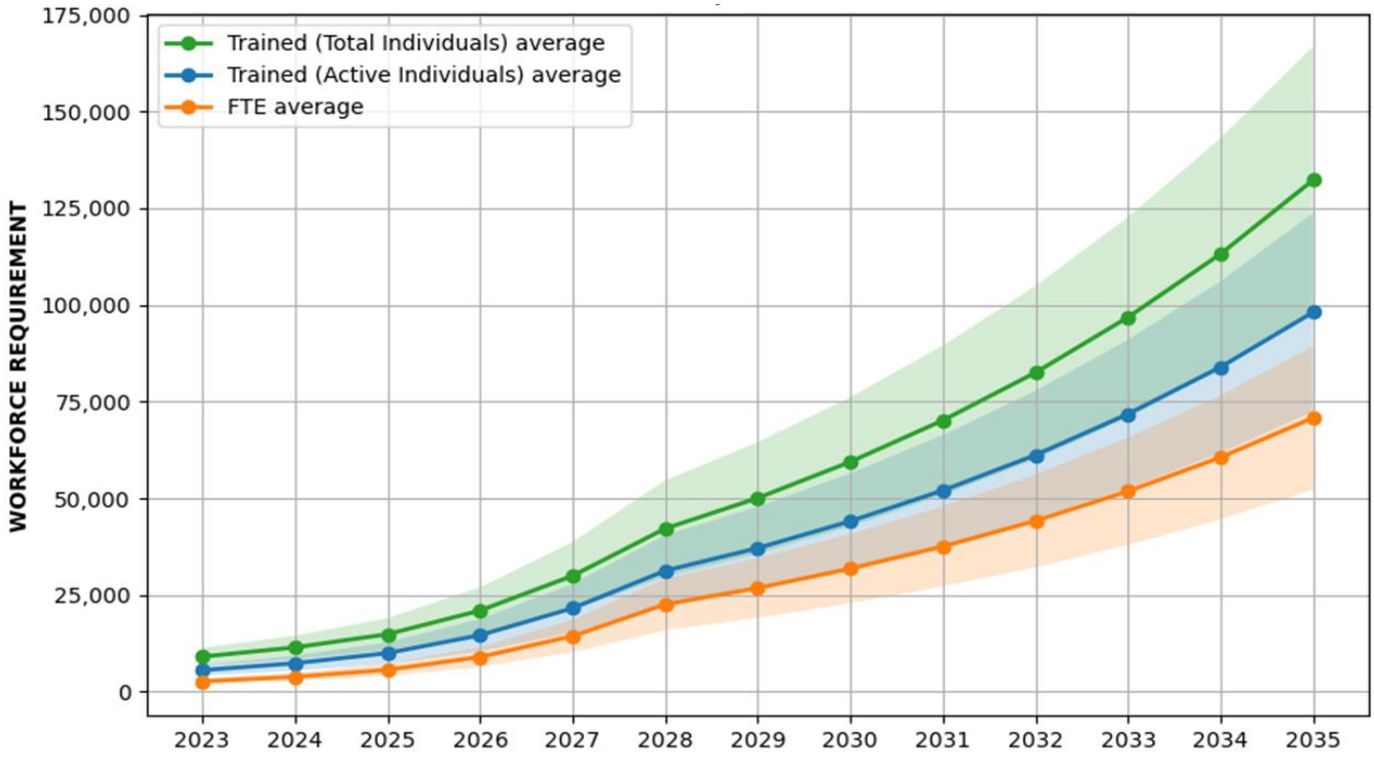


Figure 6: Number of qualified individuals needed to support the installation and maintenance requirements associated with meeting the 600,000 by 2028 and 1.6 million by 2035 previous Government targets.

The graph above shows the range and average number of individuals trained, active and qualified to install heat pumps that will be needed to meet the 600,000 heat pump installations annually by 2028 and 1.6 million installations by 2035. This considers the number of trained and active individuals and the total number of individuals that the sector will need to train. Shaded blocks represent the upper and lower limits of training needed.

Taken over the whole 12-year period between 2023 and 2035, an average of 10,267 individuals will need to successfully complete a heat pump training course per year. This is only 13% higher than the total number trained in 2024 (9,062) with 2024 figures showing a 15% increase relative to 2023. At this increasing rate, the sector is currently on track to deliver the average training rate required to meet the previous Government's 2035 target for 1.6 million heat pump installations.

Number of Individuals trained to install Heat Pumps in the UK

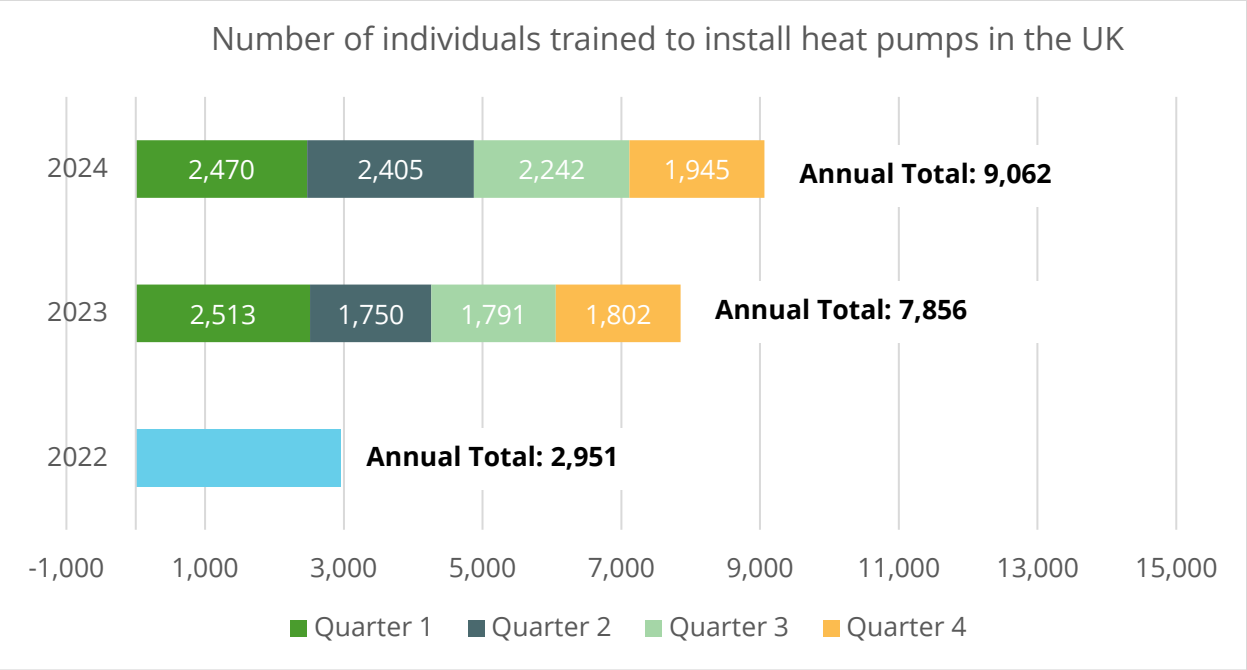


Figure 7: Number of individuals trained to install heat pump in the UK. Note: Data referenced in this graph is based on the number of individuals who have successfully completed one of the Heat Pump training courses that are eligible for the Heat Training Grant.

With over 7,800 individuals completing a recognised heat pump qualification in 2023, a 133% increase on 2022 levels, and 9,062 trained in 2024, a 15% increase on 2023 levels, interest in the training is growing[19].

Additionally, HPA members have over 260 UK wide training sites which in total have the capacity to deliver in the region of 30,000 training places for recognised heat pump training courses. This showcases the capability of the sector to train the new and existing workforce and demonstrates the availability and provision of courses are not the limiting factors in this instance.

[19] HPA (2024). Qualified Heat Pump Installers. Available at: https://www.heatpumps.org.uk/resources/statistics/

3. Realising the potential – The role of policy

In order to ensure the accelerated deployment of heat pumps at scale to unlock successful delivery of the FHBS, Labour's 1.5 million net additional dwellings target and meet the UK's legally binding net zero commitments which will include installing low carbon heating in the UK's existing homes - policy certainty is critical.

Clear timelines, targets and longer-term policy commitments will play a vital role in providing clear signals of demand to the market. Key decision makers in the policy space must seek to provide market confidence and clarity on the heat pump installation pipeline to boost demand visibility which in turn will encourage more installers to become qualified and actively install heat pumps, consequently driving further investment from the sector in training.

The clear timeline and targets must be supported by additional Government action to:

- Provide market confidence and clarity on the heat pump installation pipeline to boost demand visibility, encouraging more qualified installers to actively install heat pumps and driving further investment from the sector in heat pump manufacturing and training
- Publish the Warm Homes Plan to provide clarity for both the new build and retrofit sector in relation to expected heat pump deployment
- Publish a response to the Future Homes and Buildings Standard and Home Energy Model consultations without hesitation to provide clarity on intent and introduction timescales
- Fund a second heat pump accelerator competition to support the onshoring of UK manufacturing and enhance local economies and growth in green jobs
- Enhance and extend the Heat Training Grant in England to support installers to upskill in heat pump installations through the provision of a £500 grant often match funded by manufacturers
- Launch a targeted consumer awareness campaign to increase behaviour change and knowledge needed for both new build and retrofit properties
- Increase investment in new social housing properties with low carbon heating systems installed

- Consider action to encourage green mortgages and third-party finance arrangements at attractive interest rates to stimulate the market
- Increase consumer demand by reducing the price of electricity relative to gas

Conclusions and Recommendations

The heat pump sector understands the scale of growth anticipated over the next decade and stands ready to deliver. The foundations of a robust supply chain are in place, with capacity to scale up in response to growing demand planned for.

By providing consistent and clear signals, the government can unlock this potential, helping to ensure a sustainable, net-zero future for new and existing buildings.

Key recommendations to Government to support supply chain readiness to deliver:

- Provide market confidence and clarity on the heat pump installation pipeline to boost demand visibility, encouraging more qualified installers to actively install heat pumps and driving further investment from the sector in heat pump manufacturing and training
- Publish the Warm Homes Plan to provide clarity for both the new build and retrofit sector in relation to expected heat pump deployment
- Publish a response to the Future Homes and Buildings Standard and Home Energy Model consultations without hesitation to provide clarity on intent and introduction timescales
- Fund a second Heat Pump Accelerator Competition to support the onshoring of UK manufacturing and enhance local economies and growth in green jobs
- Enhance and extend the heat training grant to support installers to upskill in heat pump installations through the provision of a £500 grant often match funded by manufacturers
- Launch a targeted consumer awareness campaign to increase behaviour change and knowledge needed for both new build and retrofit properties
- Increase investment in new social housing properties with low carbon heating systems installed

- Consider action to encourage green mortgages and third-party finance arrangements at attractive interest rates to stimulate the market
- Increase consumer demand by reducing the price of electricity relative to gas

The HPA represents organisations across the complete heat pump supply chain. Within our membership, we represent heat pump manufacturers which provide around 90% of the volume of heat pumps currently sold in the UK market.

These manufacturers are acutely aware of the potential step change in anticipated demand for heat pumps in the UK market over the next 4 years, as set out in Chapter 1of this paper.

HPA heat pump manufacturing members stand ready to supply heat pumps to the UK market to meet the projected demand as outlined in Figure 1. For confidence to be provided for demand spikes resulting from the introduction of new policy initiatives that increases demand above the cumulative impact of the policies outlined in Figure 2, 12-18 months' notice would be optimal to enable investment and growth in the installed factory capacity to scale up the production of heat pumps in line with the increased numbers needed.

In confidence, HPA heat pump manufacturing members' provided data on their current installed factory line capacity for hydronic heat pump production, to serve the EU & UK markets. Data received has demonstrated they can exceed the UK demand for hydronic heat pumps in line with numbers projected in Figure 1 to 2028, whilst continuing to serve the EU market at levels set out in Figure 4, without current factory expansion.

However, to sustain and strengthen growth and encourage further investment in UK manufacturing a clear, credible heat decarbonisation transition plan is needed from the Government which includes a detailed heat pump installation pathway, supported by policy and regulatory change. The swift introduction of the Future Homes and Building Standard is imperative to this.

This paper is supported by the HPA and explicitly the following heat pump manufacturers: