E3G

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LOW CARBON, LOWER HEATING BILLS: FOUR STEPS TO UNLOCK UK HEATING BILL REDUCTIONS OF OVER £400

CHRIS GALPIN

Gas heating bills remain over a third higher than pre-crisis levels, and account for half of the average UK energy bill. Heat pumps could give households the opportunity to halve their heating bills – but only if policies change.

The only credible, long-term option to reduce UK heating bills is to replace imported fossil gas with cheaper electric alternatives. We recommend four actions to reduce electric heating bills, ensuring low-carbon heating offers reliably lower bills.

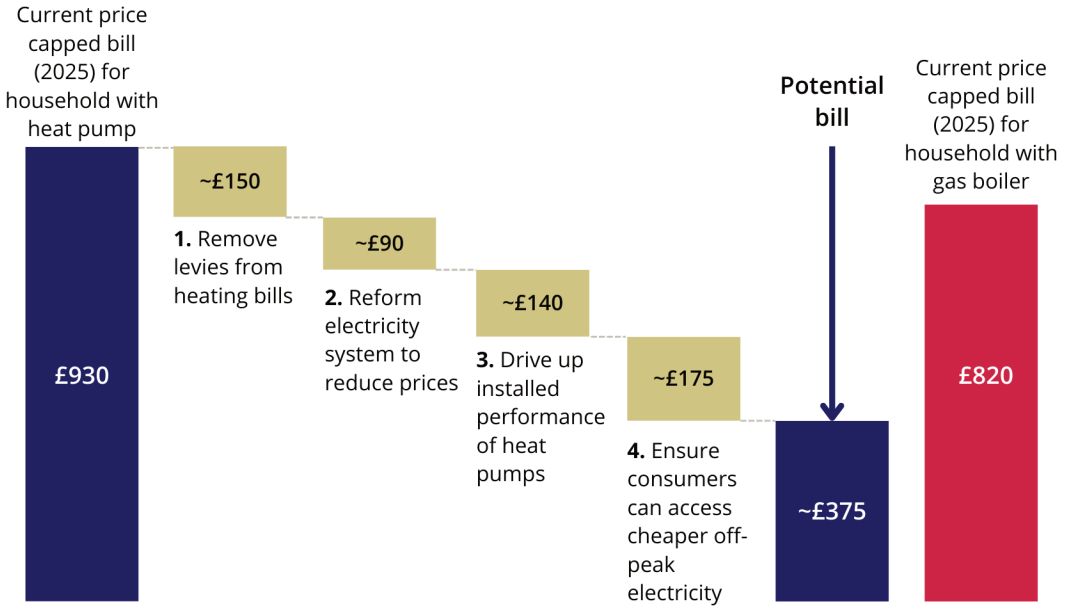
1. **Remove levies from electric heating.** Introduce an Affordable Electric Heating Tariff, and set out a longer-term roadmap for fully eliminating legacy policy costs from electricity bills. This would reduce annual heat pump running costs by **~£150 for the average household.**
2. **Reduce electricity prices further through electricity system reform.** Deliver reforms to maximise savings from a clean power system, such as improving Contracts for Difference auctions and clamping down on excess gas power station profits. These would reduce the cost of electricity for all uses, and lower annual heat pump running costs by **~£90 for the average household.**
3. **Drive up performance standards for low-carbon heating.** Monitor installed heat pump efficiency and set a target of increasing average performance by 25% (from SCOP 2.8 to SCOP 3.5). This would reduce annual heat pump running costs by **~£140 per year for the average household**.
4. **Ensure consumers can access cheaper off-peak electricity.** Unleash the potential of consumer-led flexibility for all, by introducing standards which ensure all new electric heating systems are "smart ready". This would enable annual heat pump bill savings of ~**£175 for the average household.**

In total, these actions would reduce estimated average heat pump running costs down to ~£375 per year – less than half the current running cost of a gas boiler (£820).[1] Where possible to do so, pairing heat pumps with solar panels or additional insulation offers even greater bill reductions.

These actions would also substantially reduce bills for households with less efficient forms of electric heating. These households include some of the poorest in the country, and are twice as likely as other households to experience fuel poverty. Our recommended actions could reduce energy bills for these households by over £1,200 per year.

These four reforms would give households the opportunity to halve their heating bill by switching from a gas boiler to a heat pump – reducing the average heating bill by over £400. We call on the government to implement these recommendations by the end of 2027.

Consumer heating bills could halve with heat pumps – if policies change



* All figures calculated for households with average heat demand.

[1] The methodology for all estimates presented in this briefing is set out in the Annexes, available from **https://www.e3g.org/publications/heat-pumps-could-have-potential-to-halve-uk-heating-bills/**

Electrification is the only solution to the energy bills crisis

Cost of living rises in the UK since 2022 have predominantly been driven by increases in gas prices. Gas prices remain over a third higher than pre-crisis levels, and energy now accounts for nearly 5% of average household spending.[2]

Once self-sufficient, the UK now imports nearly half of its gas from international markets, leaving it highly vulnerable to future price shocks.[3,4] However, increasing UK fossil fuel production by any meaningful amount is not an option. The UK's oil & gas fields are in decline and uneconomical, with continued production reliant on substantial government subsidy.[5,6,7]

The only option for the UK to reduce energy bills – and keep them permanently low – is to rapidly deploy low-cost renewable electricity and electrify end-uses like cars and boilers.

UK must electrify heat to reap the full benefits of Clean Power 2030

Previous E3G analysis found reforms to the power system could ensure Clean Power saves households over £200 per year by 2030 – based on existing electricity consumption.[8] But this is only scratching the surface. Clean Power is also an enabler for further household bill reductions as consumers transition to electric vehicles and electric heating, as shown in Figure 1. This will make household energy bills much more responsive to electricity price reductions, as well as ending these households' exposure to volatile gas and oil markets.

[2] ONS (2025). **Family spending in the UK - Office for National Statistics**

[3] UK government (2024). **Digest of UK Energy Statistics (DUKES): natural gas - GOV.UK**

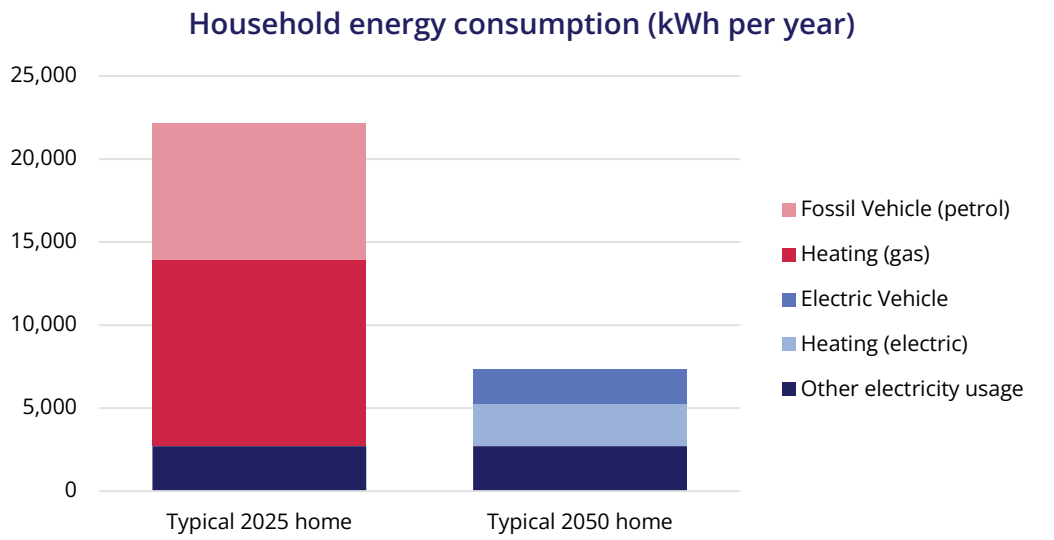
[4] E3G (2023). **Assessing the UK government's response to the gas crisis - E3G**

[5] Green Alliance (2022). **The last drop: why it is not economic to extract more oil and gas from the North Sea**

[6] Paid to pollute (2021). **UK has given £14 bn in subsidies to oil & gas industry since signing Paris Agreement**

[7] Uplift (2025). **Why Trump is wrong on North Sea oil and gas**

[8] E3G (2025). **The UK's clean power mission: Delivering the prize**



Source: E3G analysis, see **Annex A** for details.

Figure 1: Typical household energy consumption in 2050 could be a third of what it is now due to electrification of heat and transport. This opens the door for cheaper electricity to deliver significant bill reductions.

Electric vehicle drivers are already beginning to feel some of these benefits: electric cars can be significantly cheaper to run than petrol or diesel alternatives.[9] But more needs to be done to unlock energy bill savings for electric heat. Heating costs make up half of an average consumer's energy bill, and over three-quarters of UK households still rely on gas boilers for heating.[10] Failing to take further action to reduce gas usage and facilitate electrification would be a missed opportunity to reduce energy bills and eliminate fuel poverty.

Maximising cost reductions is key to unlocking a clean heat mass market accessible to all households

Under the previous Conservative government, over half of those who received grants for heat electrification were wealthier "able to pay" households.[11] This approach is not sustainable, either financially or politically. Delivering reliable running costs reductions would make it easier to ensure low- and middle-income

[9] RAC (2025). **The costs of running an electric car**

[10] English Housing Survey (2020). **English Housing Survey 2019 to 2020**

[11] E3G analysis of UK government statistics indicates 45% of households supported since 2020 received full funding, while 55% of households were wealthier "able to pay" households who also contributed their own funding. See **Annex A** for more details.

households are also able benefit from clean heat – and provide opportunities for fuel poverty reduction alongside decarbonisation.

Greater running cost savings would give "able to pay" households a stronger incentive to invest in clean heat retrofit without such extensive dependence on upfront cost subsidies.[12] This would also make loans and other finance options more attractive for consumers who are not able to fund upfront capital costs themselves. This could free up more public funding for those in greatest need of energy bill reductions or least able to fund upfront investment themselves.

A more progressive approach to retrofit should:

> Prioritise public grant funding towards social housing and fuel-poor households most in need of support.

> Gradually transition support for "able-to-pay" households from public grants towards greater use of low-interest finance.

> Mobilise further private investment via rental sector regulation.

However, for this approach to be successful, simply achieving "parity" of running costs is not enough. Government should aim to maximise running cost savings, to deliver the greatest possible mobilisation of private investment and finance, and ensure public grant funding delivers substantial energy bill reductions.

Four steps to unlock the full potential for lower heating bills

Increasing the availability of low-cost renewable electricity is only one of several actions with the potential to lower electric heating costs. Ensuring heating systems are operating at the highest possible efficiencies and are not let down by poor quality installations could also deliver major savings. This can be complemented further by using electricity in a smarter way: prioritising usage at times when renewables are abundant and other demand is low.

Realising more affordable electric heating relies on four steps:

1. **Removing levy costs from electricity used for heating.**
2. **Reducing electricity prices through electricity system reform.**

[12] E3G (2024). **Creating a heat pump mass market in the UK**

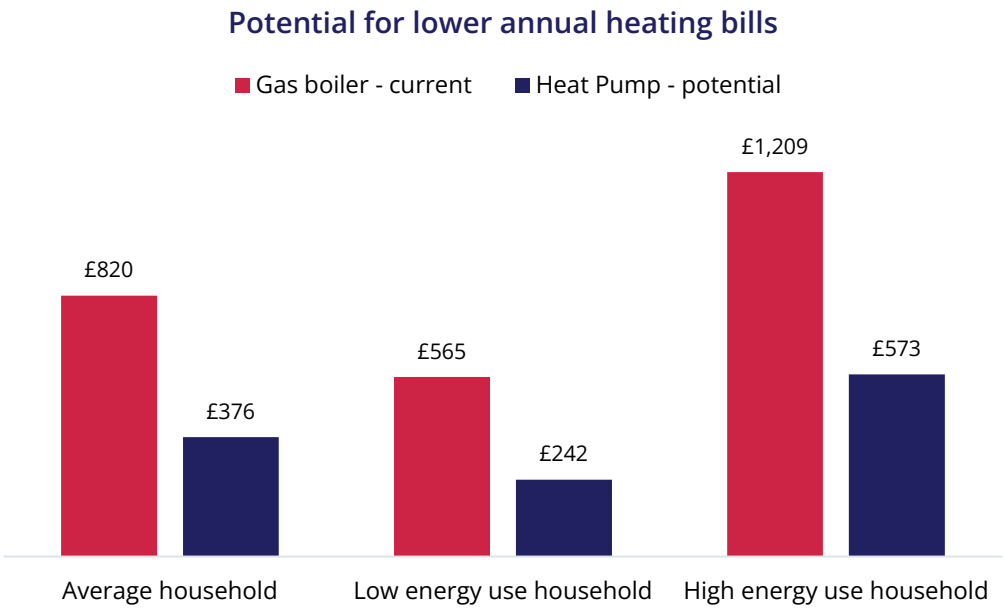
3. **Improving installed performance**; too many heating installations are falling short of their full potential.

4. **Removing barriers to consumer-led flexibility**; ensuring consumers can make the most of cheaper off-peak electricity.

Delivering on all four of these actions would reduce average annual heating bills by over £550 for households with a heat pump, and over £1,200 for households using other electric heating technologies.

Figure 2 sets out how the resulting running costs for a heat pump in 2030 would compare with current running costs for a gas boiler, for both average, low-consumption and high-consumption households.

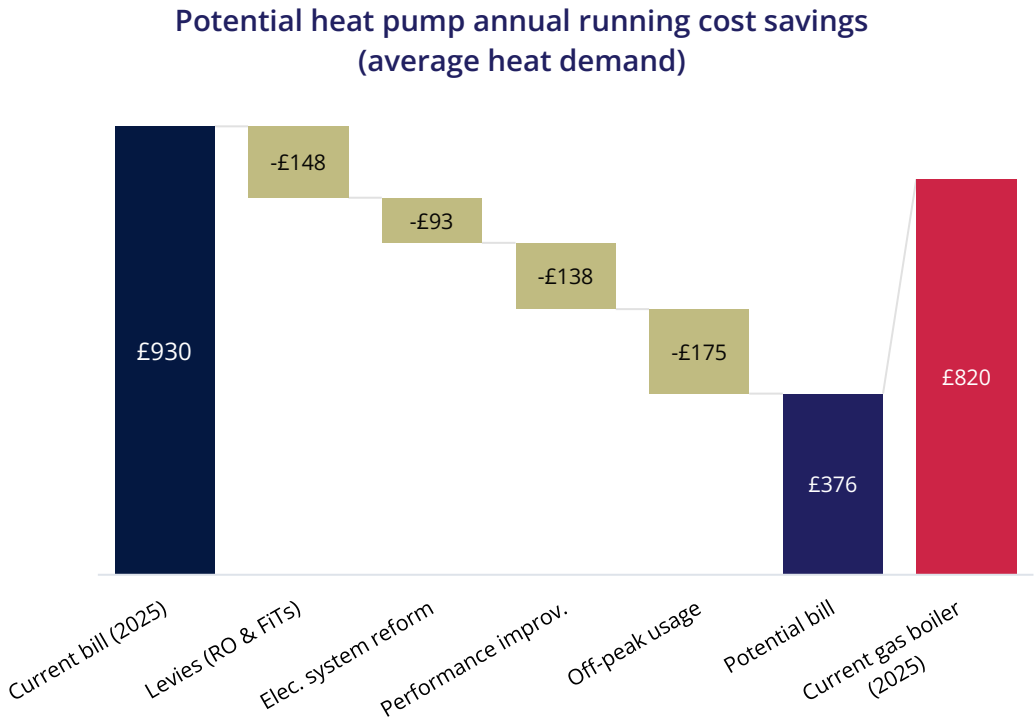
Figure 3 sets out the savings achieved through each our four recommended steps, respectively for households with heat pumps and for households with "direct electric" forms of resistive heating. Detailed methodology underlying this analysis can be found in Annex A.[13]

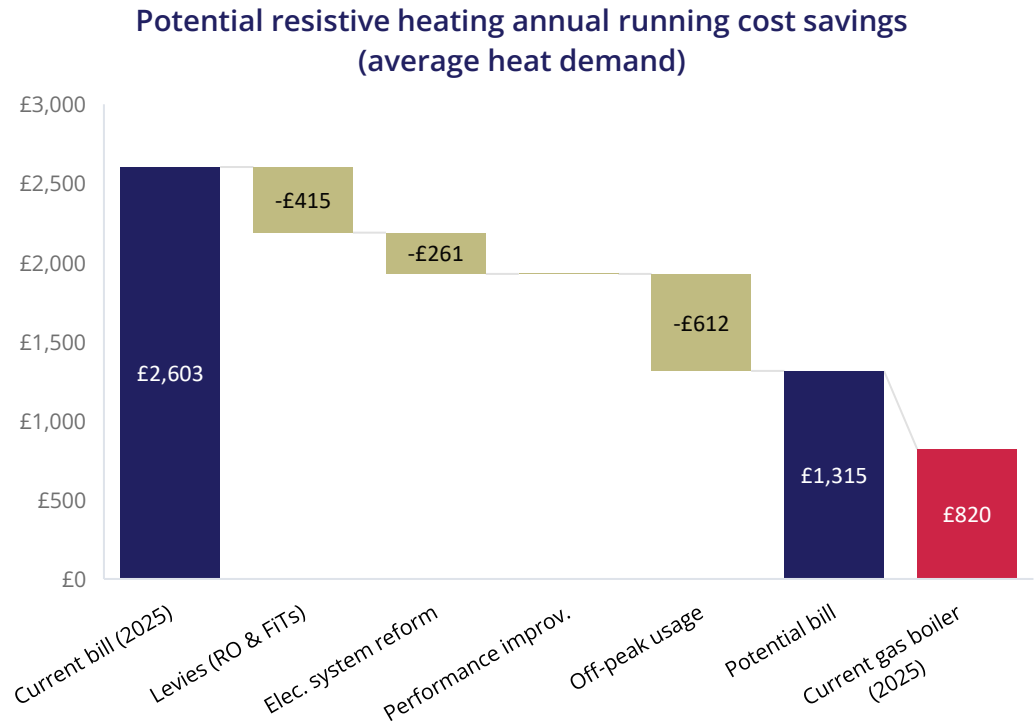


Source: E3G analysis, see **Annex A** for details.

Figure 2: Our recommendations could reduce heat pump running costs to less than half the current running cost for a gas boiler, for households of all levels of energy use.

[13] Annexes available from **https://www.e3g.org/publications/heat-pumps-could-have-potential-to-halve-uk-heating-bills/**





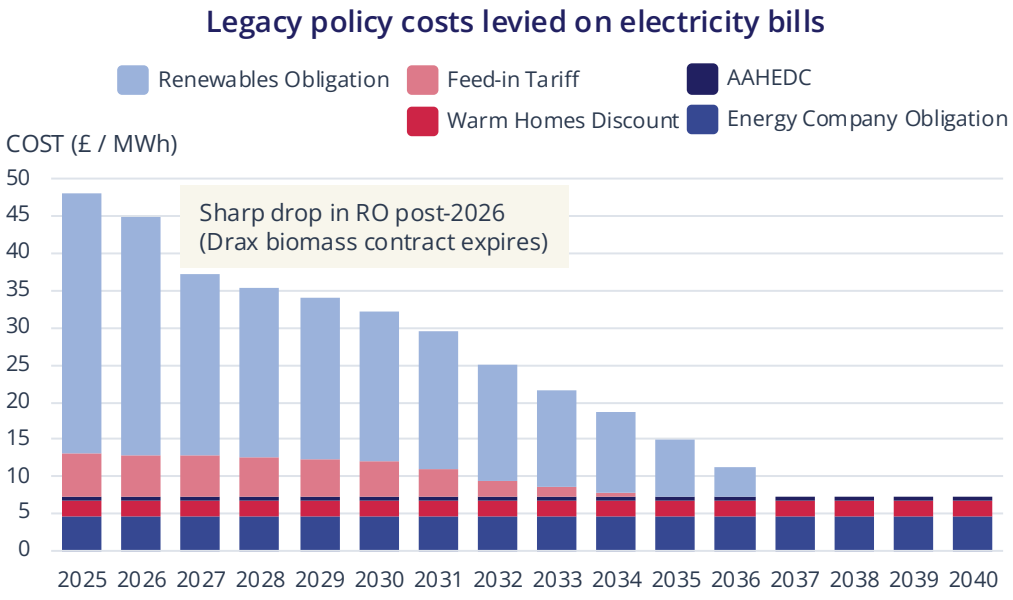
Source: E3G analysis, see **Annex A** for details.

Figure 3: Our recommendations offer significant benefits for households using direct electric heating, as well as having the potential to make heat pumps a much more attractive alternative to gas boilers.

Step 1 – Remove policy levies from electricity used for heating

E3G previously set out how UK government can both achieve its Clean Power targets and reduce electricity bills for households at the same time.[14] However, delivering these bill reductions will require policy changes.

Policy costs currently make up over 15% of electricity unit prices, accounting for a substantial proportion of the overall electricity bill, as shown in Figure 4. These levies artificially make electricity more expensive relative to gas, distorting the market and discouraging private investment in electrification. This distortion can lead to negative outcomes, as electricity is a more efficient and lower-carbon option for many end-uses, including domestic heating.



Note: AAHEDC = Assistance for Areas with High Electricity Distribution Costs

Source: Baringa, Power market projections and energy systems analysis

Figure 4: While legacy policy costs will reduce over time, they continue to add to electricity bills over the next decade.

[14] E3G (2025). **The UK's clean power mission: Delivering the prize**

Removing levies from electricity used for heating could be done in one of three ways:

> Taking legacy costs into government debt.

> Rebalancing levies between electricity bills and gas.

> Introducing a targeted exemption for electricity used for heating.

Moving legacy costs into government debt would be the most progressive option. However, this would cost £5–12bn per year, depending on whether non-domestic bills (such as industrial electricity users) are also included. While this would be our preferred approach, it seems unfeasible given the UK's current fiscal and political context.

Rebalancing levies between electricity and gas, so that costs fall more evenly across fuel types, is an alternative option. This would provide a strong incentive in favour of decarbonisation. It would also benefit consumers who pay most for their energy (those using non-smart resistive electric heating). However, upwards pressure on gas heating bills is likely to be politically unpopular, and would place further pressure on fuel-poor households who use gas.

Our recommendation is to introduce an immediate targeted levy exemption for electricity used for heating, while working towards a longer-term solution for removing levies from electricity bills more broadly. E3G has previously set out how such a targeted levy discount could substantially reduce the cost of intervention while still unlocking a mass market for clean heat.[15] More details on how a targeted exemption could work in practice can also be found in Annex B.[16]

[15] For more details, see: E3G (2023). **Electricity levy rebalancing: Make clean heat accessible to all UK households**

[16] Annexes available from **https://www.e3g.org/publications/heat-pumps-could-have-potential-to-halve-uk-heating-bills/**

Step 2 – Reform the electricity system to lower prices

Removing levies is the largest single opportunity for government to reduce the cost of electricity and could be implemented rapidly within this parliament. However, there are a range of other, smaller actions which could collectively deliver further reductions in electricity prices.

These actions include steps to reduce the price of new renewable generation. Government has already confirmed plans to extend the duration of Contracts for Difference, as proposed in E3G's 2025 paper on lowering electricity prices.[17] However, further action could also be taken to reduce uncertainty on future transmission network charges, reduce inframarginal rent, and lower financing costs for new renewables.

Other savings could be found by making better use of digital technology in operating the power system, encouraging consumer-led flexibility, and taking steps to clamp down on excess gas power station profits.

Our previous proposals for an Electricity Bills Charter (Figure 5) demonstrated how a coordinated strategy could lower bills by over £200 for an average household by 2030.[18] Government should publish its own comprehensive Electricity Bills Strategy by the end of 2026, setting out a package of reforms to lower electricity prices by the end of this parliament.

Step 3 – Improve installed performance

Heat pumps are exceptionally efficient. For every unit of electricity input, they can heat a home by as many as 4 or 5 units (i.e. an effective efficiency of 400% or 500%).

However, many of the heat pumps installed in consumer homes are falling short of this full potential. Heat pumps installed as part of UK government's Electrification of Heat Demonstration Project were found to be on average 278% efficient.[19]

[17] E3G (2025). **The UK's clean power mission: Delivering the prize**

[18] E3G (2025). **The UK's clean power mission: Delivering the prize**

[19] Energy Systems Catapult (2024). **Electrification of Heat Demonstration Project Summary Report** p32

E3G's Electricity Bills Charter

Reduce the cost of renewables

- **Extend Contracts for Difference by 10 years** to reduce typical household bills by £30 in 2030.
- **Move from auctions to bilateral cost-based negotiations** to keep prices low when all offers of renewable capacity need to be accepted.
- **Reduce financing costs** through public sector investment – via GB Energy or the National Wealth Fund – or green interest rates.

Move levies off bills

- **Shift legacy costs to general taxation** to reduce typical household bills by £80 in 2030.

Reduce wholesale costs

- **Ensure consumers can benefit from off-peak electricity and smarter tariffs.** Using electricity more smartly will reduce costly curtailment of wind energy.
- **Strengthen gas plant regulation** so that plants cannot generate unjustified profits when backup power is needed.

Unleash an efficiency revolution

- **Upgrade buildings and electrify heating** to reduce energy demand.
- **Reform pricing systems** so that the cheapest resources are always used to meet demand. Allow communities to benefit from cheap power produced locally.
- **Use digital technologies** to improve efficiency in both production and consumption of electricity.

Together, these measures could lower typical household electricity bills by over £200

Figure 5: E3G's Electricity Bills Charter for reducing electricity bills by £200 a year

While average heat pump performance (~278%) is already much better than a gas boiler (85–90% efficiency), there is still a lot of potential for further improvement. The maximum efficiency which can be achieved will vary for different homes, but some heat pump installers already regularly achieve outcomes significantly better than the national average. For example, the "Heat Geek" installer network boasts an average performance of over 420%.[20] Even improving average performance from 278% to 350%[21] would reduce heating bills by 20%.

Most of these potential improvements will not come from heat pumps themselves, but from improving installation practices and system design. The use of unnecessary ancillary products, as well as poor design of pipework and

[20] HeatGeek (2023). **The secret to high heat pump efficiencies**

[21] I.e. a change in Seasonal Co-efficient of Performance from 2.78 to 3.5

radiators, can drastically reduce the overall performance of an installation. Examples of poor practice reported by installers include:[22]

> Failures to properly insulate outdoor pipework.

> Lack of proper weather compensation, or other problems with controls, sensors or commissioning.

> Incorrect pipe sizing, emitter sizing or flow rates.

> Unnecessary use of buffer vessels, or other superfluous components (e.g. valves, pumps).

> Flow and return pipework the wrong way around or improperly connected.

Several of these issues also affect boiler installations, many of which operate at poor efficiency,[23] reflecting an opportunity to raise the bar across the heating sector.[24] However, heat pump systems have much more to gain from good design.

Some caution should be taken when viewing performance metrics in isolation – higher efficiencies must not come at the expense of a reduction in consumer comfort, or excessive increases in upfront cost. However, there is clearly ample scope for improvement by addressing negative practices, without compromising on other outcomes. For policymakers, the greatest potential gains will come from "raising the floor" and addressing sub-average performance, rather than pushing for ever-higher performance at the upper end of the market.

The first step in addressing poor practice is to measure in-situ performance. Many heat pumps built in the UK already come with the capability needed for this monitoring. Despite this, government schemes do not require any oversight of installed heat pump performance and rely instead on a tick-box approach to quality assessment.

Introducing performance monitoring as standard would allow government and installer certification schemes to identify potentially underperforming installations, for example those less than 300% efficient. Installers who regularly deliver underperforming installations could then receive additional support to develop and improve. Note that this should not be a case of "punishing"

[22] Feedback from installers, primarily collected via LinkedIn during June 2025.

[23] UK government (2009). **In-situ monitoring of efficiencies of condensing boilers and use of secondary heating trial: final report**

[24] UK government (2022). **Improving boiler standards and efficiency consultation**

installers for honest mistakes, but rather supporting these installers to increase in knowledge and competence through on-the-job learning and improvement.

Voluntary initiatives to monitor heat pump performance, such as Heatpumpmonitor.org, have already captured a wealth of valuable data.[25] However, voluntary monitoring is always likely to remain limited to the highest performing installers, and is unlikely to be adopted by those with the greatest potential for improvement. Expanding this monitoring and mobilising influential voices in the sector to promote best practice raise the bar for expected minimum performance.

Upcoming energy smart appliance regulations offer the opportunity to ensure that all new electric heating systems are "monitoring-ready" as standard. Government has indicated it plans to introduce smart appliance licensing by the end of 2027, which will include a requirement for all energy smart appliances to have a built-in meter able to measure electricity consumption to an appropriate degree of accuracy.[26] This is set to apply to hydronic heat pumps, storage heaters, heat batteries, hot water-only heat pumps, and direct electric hot water cylinders up to 45 kW. We recommend expanding the scope of this regulation over time to include all forms of electric heating.

Upgrading outdated, inefficient and non-smart forms of electric heating

Households which rely on outdated forms of electric heating (i.e. not heat pumps or smart-enabled electric heating) currently have some of the highest energy costs in the country and are twice as likely to be in fuel poverty as other households.[27, 28] These households are also likely to experience fuel poverty more deeply – with double the "fuel poverty gap" compared to other households (i.e. they would need twice as much additional income to no longer be fuel-poor).

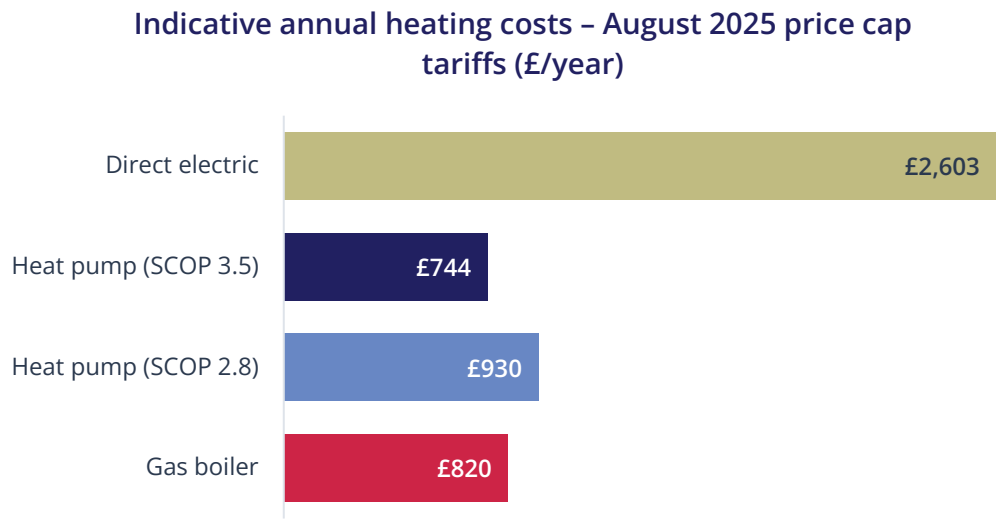
In part, this is because electric heating can be over three times more expensive to run than a gas boiler for the same heating output, as shown in Figure 6. In practice, electrically heated homes are often smaller than average, but median fuel costs for these households are still nearly £500 per year greater than average costs for households using gas as their main fuel.[28]

[25] Open Energy Monitor (2025). **HeatpumpMonitor.org Results**

[26] UK government (2025). **Delivering a smart and secure electricity system: implementation - government response**

[27] Kensa (2024). **Aid for Fuel-Poor Homes through Ground Source Heat Pumps | Kensa**

[28] UK government (2025). **Annual Fuel Poverty Statistics report 2025**



Source: E3G analysis based on available tariffs for a property in London. Average heating usage. See **Annex A** for more details.

Figure 6: Direct electric heating can be over three times as expensive to run as other forms of heating for the same heating output.

Supporting these homes to upgrade to more modern forms of electric heating could deliver a drastic reduction in their energy bills, as well as reducing pressures on the electricity system and reducing the need for new network expansion. Even where a home is not suitable for a heat pump, upgrading these systems so they can benefit more readily from off-peak rates could deliver meaningful reductions in heating costs. This in turn, would have the potential to deliver significant fuel poverty reductions.

Step 4 – Remove barriers to consumer-led flexibility

Heat electrification offers unique opportunities for consumers to reduce their bills by adopting a time-of-use tariff. Some existing electricity tariffs already offer lower prices for off-peak electricity. For example, Octopus's "Intelligent Go" tariff offers 75% cheaper electricity overnight, while EDF's Heat Pump Tariff offers 40% cheaper rates in two windows, from 4am to 7am and from 1pm to 4pm.[29]

However, many of these tariffs operate at a loss, and are only available to a small number of customers. Our assessment is that these tariffs are experiments

[29] All tariffs' figures from March 2025 based on quotes for a property in London.

designed to gauge consumer willingness to respond, and policy barriers prevent them being offered more widely. Smart tariffs like these could be viable at scale, but only subject to changes in policy.

The barriers to widespread consumer-led flexibility in electric heating come in two forms: a power market over-burdened by fixed costs, and poor smart-readiness among electric heating technologies.

Price signals for smarter usage drowned out by fixed costs

Fixed costs now make up over 30% of the average electricity bill; as well as policy levies, these include a proportion of network charges and other energy system costs.[30] However, these costs effectively drown out the price signals from the actual cost of energy – which would otherwise offer low prices when electricity is abundant, and higher prices when it is scarce. Without these price signals, there is limited incentive for end-users to shift their demand off-peak. Currently available "smart" tariffs rely on manufacturing artificial signals, mimicking what could be the case if policy were to change in future.

Reforming fixed costs so they vary in a way which more closely reflects the availability of renewable energy and network capacity could make time-of-use tariffs much more financially attractive, and deliver reductions in overall energy system costs.

Poor smart readiness among electric heating technologies

There are also challenges associated with the technologies which are being installed in consumers' homes. For consumers to effectively engage with smart tariffs, they must be able to:

> Monitor their electricity usage in half-hourly increments.

> Control their electricity usage in half-hourly increments.

> Automate this process in a way which delivers comfortable temperatures in their home (e.g. via a smart thermostat).

Some heat pump models made in the UK already include the capability to monitor electricity usage and respond to smart signals. However, lack of consistent standards can make it challenging for consumers to access these benefits. For example, they may find certain tariffs are only available for

[30] E3G (2025). **The UK's clean power mission: Delivering the prize**

products from a certain manufacturer, or that their smart thermostat only works fully with certain products.

As competitive smart tariffs become more widely available in future, early heat pump adopters may find themselves unable to access these new opportunities. The UK must act quickly to future-proof new installations and ensure all new systems are "smart-ready". This will mean introducing standards to require minimum levels of smart functionality, and ensuring a minimum level of interoperability between manufacturers. Government has consulted on proposals to introduce regulations for energy smart appliances, which could set this standard as the default for hydronic heat pumps; these regulations should be introduced as soon as possible, and extended to all forms of electric heating.

Lack of consumer awareness of potential savings from off-peak tariffs

Some consumers may not be aware of the opportunities to substantially reduce their bills by changing tariff or setting their heating to operate at particular times, unless they have switched from another electric heating technology with the potential for demand shifting (e.g. electric storage heaters). We recommend that government closely monitor the uptake of smart heating tariffs, and act to raise consumer awareness of these opportunities to reduce energy bills.

Solar panels and better insulation can reduce bills even further

Pairing heat pumps with solar panels or additional insulation offers the opportunity for even greater energy bill savings.

> **Insulating a loft and/or cavity walls**: Could deliver savings of £200–£630 per year for households running a heat pump with all the recommendations set out above already implemented. Households with a gas boiler could save £335–£875.[31]

> **Installing solar panels:** Could deliver savings of £325–£850 per year for a typical 3.5 kW installation (depending on operating conditions, location and tariff).

[31] See Annex A for the methodology underpinning the estimates for savings with insulation and solar panels, available from **https://www.e3g.org/publications/heat-pumps-could-have-potential-to-halve-uk-heating-bills/**

These savings will not be available to all households. For example, not all households will have the roof space or appropriate location for solar, and many households either do not have cavity walls or lofts, or have already taken steps to insulate them. However, there are still millions of households which could yet benefit from these measures. E3G analysis of CCC data suggests around 9 million homes still require loft and/or cavity wall insulation, with nearly 6 million of these being relatively low cost and easy to treat.[32] Meanwhile, there are over 17 million households with the potential for rooftop solar that do not yet have panels installed.[33, 34]

Recommendations

Implementing the following changes could reduce average heating bills by over £550 for households with a heat pump, and over £1,200 for households with resistive heating.

Remove levies from electric heating

> Urgently introduce a targeted levy exemption for electricity used for heating, reducing electric heating bills by at least £150 per year.

> Set out a longer-term roadmap for removing legacy policy costs from all electricity bills, either by taking costs into government debt or gradual rebalancing from electricity onto gas, as gas bills decrease or government finances improve.

Reduce electricity prices further through electricity system reform

> Publish a comprehensive Electricity Bills Strategy by the end of 2026, setting out a package of reforms to lower electricity prices by the end of this parliament.

> Continue to reform Contracts for Difference (CfDs). Reduce uncertainty regarding future transmission network charges and take actions to reduce excess profits (e.g. excessive inframarginal rents).

> Introduce lower interest rates for renewable energy projects, further reducing the cost to finance new renewable energy.

[32] E3G analysis of CCC (2025). **Residential Buildings Archetype Dataset**

[33] Ecotricity (2023). **Over 65% of homes in Britain can work for solar panels**

[34] UK government (2025). **Solar photovoltaics deployment** – over 1.5m installations as of March 2025

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- Strengthen gas plant regulation so that plants cannot generate unjustified profits when backup power is needed.
- Make better use of digital technologies and artificial intelligence to reduce energy system costs. This should include improving the efficiency of how the electricity system is operated, as well as optimising production and demand processes.

Drive up performance standards for low-carbon heating

- Support households with outdated electric heating to switch to more efficient options, such as heat pumps or more flexible forms of resistive heating. Launch a targeted campaign to encourage users of outdated electric heating systems to adopt heat pumps.
- Extend the scope of Energy Smart Appliance regulations to include all forms of electric heating, including direct resistive heating.
- Require all new electric heating systems (including heat pumps) to include electricity usage and heat output monitoring as part of a new "smart-ready" standard (as part of the Energy Smart Appliance regulations).
- Once the smart-ready standard comes into force, require all new heating systems installed under Boiler Upgrade Scheme to report on installed Seasonal Coefficient of Performance (SCoP).
- Set a target of increasing average heat pump performance from SCOP 2.8 to SCOP 3.5. Commission the Heat Pump Association to develop a performance improvement roadmap setting out how this target will be met by 2030. Set average heat pump performance as a key performance indicator for installer certification schemes.
- Support innovation which has the potential to improve installed performance. This could include AI-backed design tools which automatically identify common mistakes and propose solutions, supporting installers to learn and avoid common errors.

Ensure consumers can access cheaper off-peak electricity

- Strengthen price signals for flexibility by making all per-unit electricity charges and levies vary by time of use – including CfD levies and network costs.

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- Require all new electric heating systems (including heat pumps) to meet a new “smart-ready” standard (e.g. as part of the Energy Smart Appliance Regulations). The new standard should ensure heat pumps have the functionality needed to engage with smart tariffs as standard, and ensure interoperability across energy suppliers.
- Complete the introduction of Market-Wide Half Hourly Settlement.
- Contact all households with a heat pump to ensure they have access to independent information about choosing the best available energy tariff.
- Monitor the proportion of households supported to install a heat pump who go on to adopt a smart tariff.
- Invest in innovation to confirm the potential for heat pump load-shifting, and address barriers to consumer uptake. This should include greater support for automation of load-shifting.

About E3G

E3G is an independent think tank working to deliver a safe climate for all.

We drive systemic action on climate by identifying barriers and constructing coalitions to advance the solutions needed. We create spaces for honest dialogue, and help guide governments, businesses and the public on how to deliver change at the pace the planet demands.

More information is available at **www.e3g.org**