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ANALYSIS

The Cost of Not Zero for Households in 2026

How British households are paying lower bills thanks to net zero technologies

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Executive Summary

Successive Governments in the UK have implemented policies backing technologies that reduce our use of fossil fuels, such as renewables, insulation, heat pumps and electric vehicles. Successive fossil fuel crises over the past five years have added thousands of pounds to household bills for gas, electricity and fuels. The only households which have been in some way shielded from fossil fuel prices are those that have net zero upgrades.

This report finds that a typical household is likely to save almost £1,600 this year if it has four key net zero improvements: £330 from insulation upgrades and an electric heat pump, £650 from solar panels with a battery, and £600 from an EV, all supported by a specialist electricity tariff. However, many households do not yet have these upgrades, and the higher bills that they are still paying are the 'cost of not zero'.

For homes that had originally been at the worse level of EPC band F, with higher heating bills, the savings this year would be around £1,750. Again, many households are still paying these higher bills.

For each of these net zero technologies, either the upfront cost is already cost-competitive or Government support is available to assist households. The upfront costs are lower if, rather than being retrofitted into existing homes, the technologies are installed when homes are built. However, major improvements to building standards have been delayed by over a decade, and will finally come into force in 2027, over 20 years since the first Government consultation on zero carbon homes.

Heating a new home is cheaper than for the average home, but is costing more than it should – up to £460 more this year than if it had been built with better insulation and a heat pump to the standard that will finally be implemented in 2027. Added to the savings from solar panels and an EV, and the cost of not zero for a household in a new home can reach £1,700 this year.

Investment is clearly required, but in the background renewables are helping to protect households from volatile gas prices affecting electricity bills. Contracts for Difference contribute to greater price stability, and pay back to customers when wholesale prices are high. And all renewables help to push gas power generation off the system and so limit its opportunities to set higher prices, with large wind farms cutting the day-ahead wholesale price by up to a third last year, compared to if most of the wind power had instead been provided by gas power generation.

While not quantified in this analysis, fossil fuels also contribute to higher food prices through the costs of fertilisers and energy used throughout the supply chain, alongside the impacts of climate change in the UK and overseas, with foods hit by extreme weather rising in price four times faster than others.

Introduction

Net zero technologies bring multiple benefits, including lowering emissions of greenhouse gases that drive climate change, reducing bills (particularly for those least able to afford them), and reducing our reliance on energy imports and exposure to international energy markets – the importance of which has been highlighted by two fossil fuel crises in just five years.

However, despite these imperatives to help the climate, personal finances, UK finances and UK energy security, progress has been patchy. A series of policy decisions in the 2010s slowed the update of key technologies, such that millions of households have higher bills, higher greenhouse gas emissions and higher energy imports than those which have benefitted from net zero technologies.

This report estimates the savings that a household is likely to see this year due to better insulation and an electric heat pump, rooftop solar panels and a battery, and an electric car, coupled with a specialist electricity tariff. Conversely, these are the savings that many households have missed because of policy changes over the past decade and more – the 'cost of not zero' for households.

Heating Existing Homes

Most UK political parties have had a shared goal of upgrading UK homes, aiming to get as many as possible up to the energy efficiency standard of EPC band C. As a rule of thumb, for many homes this level of improvement requires two upgrades to building fabric: insulating the loft, floors or walls, or reducing draughts. It can also involve smaller upgrades such as new heating controls.

Insulation installation is supported by Government grants and loans.[1] Heat pumps for existing homes are supported by grants of £7,500.[2] The Government is funding research and innovation to reduce costs of heat pumps and their installation.[3]

In 2026, for homes with gas boilers, a home at EPC band C is expected to save about £140 compared to a band D home (the band with the largest number of homes), £250 compared to a band E home, and £300 compared to a band F home. This is based on price cap data for the first three quarters of the year (with prices from July having been pushed up by the war with Iran) and an assumption that prices remain flat from Q3 into Q4. There is the potential for the war to push those winter prices higher.[4]

Heat pumps offer the most significant reductions in emissions and imported energy for home heating. They can also provide cost savings compared to a gas boiler, particularly if a household has a specialist electricity tariff, which offers lower unit rates for several hours each day. And by encouraging 'demand-side response', these tariffs help to limit peak demand and hence mange system costs, benefitting all electricity bill-payers.

Heat pumps can be installed in most types of homes.[5] This analysis considered heat pumps in homes rated EPC band C, in line with successive Governments' aims that as many homes as possible reach that level of efficiency.

A household with a heat pump avoids the gas standing charge (about £110 in 2026), and shifting its usage slightly to make more use of the lower heat pump tariff prices gives savings on the weighted average unit rate compared to gas.[6] For a home that has already been upgraded with insulation to EPC band C, heating in 2026 could cost around £190 less using an electric heat pump with a specialist tariff, compared to using a gas boiler.

So, a home rated EPC C and using a heat pump could be saving a total of £330 on heating bills this year compared to a typical home rated EPC D and using a gas boiler.

[1] See discussion of insulation schemes in Warm Homes Plan (DESNZ, Mar-2026)
[2] Boiler Upgrade Scheme (BUS) (Ofgem, accessed 8 Jun 2026). The BUS applies in England and Wales. Grants are for £7,500, and £9,000 in some cases. Home Energy Scotland provides similar support for heat pumps.
[3] Heat Pump Ready Programme (DESNZ, accessed 8 Jun-2026)
[4] For more details, see Methodology section.
[5] All housing types are suitable for heat pumps, finds Electrification of Heat project (Energy Systems Catapult, Dec-2021)
[6] For more details, see Methodology section.

Heating New Homes

Twenty years ago, the Government of the day consulted on 'zero carbon homes', in 2006.[7] After delays, it was expected that such standards would be implemented ten years ago, in 2016, requiring that new homes be built with very good energy efficiency, with heat pumps instead of gas boilers, and with solar panels. However, further delays mean that most new homes are still being built with poor energy efficiency, with gas boilers instead of heat pumps, and without solar panels. Furthermore, poor practices leading to the 'performance gap' mean that many new homes do not even meet existing regulations.[8]

The Zero Carbon Homes (ZCH) standard was expected to be adopted in 2016 but was scrapped. A representative of a major housebuilder told a Commons Select Committee that they lobbied against the ZCH standard.[9]

New homes built from 2016 would have been required to meet the ZCH 'basic' fabric energy efficiency level, needing about three-quarters as much (25% less) heat as under the 2013 Regulations. Poor building practices mean that new homes used about 10-15% more heat than stipulated in the 2013 Regs. Building to the ZCH basic standard would have saved a household about £170 in 2026 compared to actual practice, and installing a heat pump and using a specialised tariff would have taken the total to £390 for this year.[10]

New homes built from 2019 onwards would have been required to meet the ZCH 'advanced' level of fabric energy efficiency, such that they would have used less than half as much (55% less) energy as under the 2013 Regulations. This would have significantly widened the savings compared to the actual heat demand, which stayed fairly level, with a household saving £450 in 2026 due to insulation and a heat pump.[11]

The only meaningful upgrade to stipulated fabric energy efficiency has been the 2021 Regulations that came into force in 2022. The improvements were expressed in terms of greenhouse gas emissions, but translate into a reduction of about 20% in the energy needed for heating, which was still significantly worse than the ZCH advanced standard.

Standards will improve in 2027 with the implementation of the Future Homes Standard (FHS), after many years of slow consultation and delays. The FHS will be broadly the same as the planned ZCH standard, cutting heating demand by over half compared to the 2013 Regulations. Even the FHS has suffered delays: it was meant to start in 2023, but was pushed back to 2025, and again to 2027,[12] and will finally come into force a decade after the ZCH was expected and 20 years after the first consultation on zero carbon homes.

Solar Panels and Batteries

Rooftop solar panels capture the sun's energy and convert it into power to use in household appliances or to send into the local grid. A typical household solar array has a power rating of 3.5kW. Over the course of a year, and with a typical UK load factor, a household solar array generates about 15–20% more electricity than is used annually by a typical home,[13] but less than the demand of homes with a heat pump or an EV.

The proportion of this solar generation that is used in the home depends on the demand and usage patterns of the household, but the figure is about a quarter in many cases. The household avoids having to buy that amount of electricity from the grid, reducing its electricity bill. The rest of the solar

[7] See dates and discussion in Zero Carbon Homes (House of Common Library, Apr-2016)
[8] Various studies have found that new homes use more energy on average than is stipulated by the regulations in force at the time of construction. See discussion of the 'performance gap' in Heating Buildings (ERP, 2016)
[9] Energy efficiency: building towards net zero (HoC BEIS Committee, Jul-2019) – see page 56
[10] For more details, see Methodology section.
[11] For more details, see Methodology section.
[12] The Future Homes and Buildings Standards (MHCLG, Mar-2026)
[13] See Methodology section for more detail.

generation is exported to the grid, earning the household income via an export tariff. The household imports the rest of the electricity that it needs, for which it pays an import unit rate.

Import tariffs are higher than export tariffs, so it is beneficial for the household to use as much of the solar power as possible. Heat pumps and EVs offer opportunities to use more of the solar power. A battery allows solar power to be stored for later use, such that most households can use 75–80% of their solar generation, such that the electricity bill would be an estimated £650 lower in this year.

Electric Cars

EVs offer significant cost savings for drivers compared to traditional petrol and diesel cars, and also compared to plug-in hybrids (PHEVs). Firstly, EVs are cheaper to buy: it became cheaper to buy a used EV than a petrol equivalent in October 2025,[14] and cheaper to buy a new EV than a new petrol car in April 2026.[15] Secondly, EVs have lower running costs, such that EVs have offered savings on a total cost of ownership basis for several years already, even before they reached parity of sale price.

Examples of lower running costs include servicing, which is cheaper because EVs have far fewer moving parts. But by far the largest saving is from energy costs. EVs use less energy because they are far more efficient than fossil fuel or hybrid cars. Plus, EVs can be charged in part using cheap overnight tariffs.

This year, an EV is likely to save about £600 on average on energy costs, compared to the annual mileage of an equivalent petrol car.[16]

[14] Used EVs selling at record speed with Tesla Model Y hottest car this October (Autotrader, Oct-2025) – This analysis notes price parity between 3–5-year-old used EVs and petrol cars in October 2025.
[15] New electric cars now cheaper than petrol on average for the first time (Autotrader, 17 April 2026)
[16] Weekly Road Fuel Prices (DESNZ, accessed 8 June 2026). See Methodology section for more detail.

Electricity Generation

Renewables are helping to protect electricity bills from gas prices. Firstly, Contracts for Difference (CfDs) help to stabilise prices by providing a fixed price to newer renewables projects, no-matter the volatility caused by gas power generation. The previous auction (in two parts, AR7 and AR7a) secured 14.7G of new capacity,[17] with prices that are similar to current wholesale prices.[18] The next auction (AR8) will be held later this year.[19]

Renewables also limit power prices by displacing gas power plants and hence limiting their opportunity to set higher prices. It is estimated that large wind farms cutting the day-ahead wholesale power price by up to a third last year, compared to if most of the wind power had instead been provided by gas power generation.[20] Similar effects are seen in other power trades (i.e. separately to day-ahead markets), and efforts are underway to estimate the overall effect on GB power prices and hence the effect on bills.

Food

The price of food is also affected by fossil fuels and climate change, adding costs that dissipate only slowly and never fully.[21]

Fossil fuels add costs at various points in agricultural and supply chains, including chemical feedstocks for fertiliser manufacture, fuels for farm machinery and transportation, and energy for processing, packaging and storage. It was estimated that fossil fuels added almost £240 to the average UK household food bill in 2022.[22]

Climate change, both in the UK and overseas, adds costs, estimated at almost £170 for 2022 and £190 for 2023,[23] and recent analysis of data up to summer 2025 found that foods hit by extreme weather are rising in price four times faster than others.[24]

[17] New auction delivers unprecedented clean, homegrown power (DESNZ, Feb-2026)
[18] CfDs pay back when the contracted strike price is below the wholesale price. CfDs for most renewables (except biomass and similar) are measured against the day-ahead wholesale power price – see IMRP dataset (LCCC, accessed 8 Jun 2026). The IMRP has been £94/MWh (simple average, real prices) since the start of the Iran war. Adjusting strike prices for inflation (from 2024 prices to real prices), solar and onshore wind are significantly below this recent average wholesale price, and offshore wind is just slightly above.
[19] Contracts for Difference (CfD): Allocation Round 8 (DESNZ, accessed 8 Jun 2026)
[20] Wind farms cut power prices by almost a third in 2025 (ECIU, Jan-2026)
[21] Rockets and Feathers (ECIU, May-2026)
[22] Climate, Fossil Fuels and UK Food Prices (ECIU, Nov-2023)
[23] Climate, Fossil Fuels and UK Food Prices (ECIU, Nov-2023)
[24] Foods hit by extreme weather rising in price four times faster than others (ECIU, Oct-2025)

Methodology & Data Sources

Insulation impacts for existing homes were calculated using gas demand at each EPC band and the estimated unit price of gas for 2026. Heat pump impacts for existing homes were calculated by converting gas demand into heat demand (using gas boiler efficiency) and then into electricity demand (using heat pump efficiency), applying unit prices to each demand level and deducting the gas standing charge. Gas demand by EPC band for existing homes was taken from Table 27 of NEED: Summary of Analysis 2025 (DESNZ, Jun-2025); the latest available value was from 2023, which was applied to 2026 as an approximation. Gas boiler efficiency was taken to be 85% for an existing home, and heat pump coefficient of performance (COP) was taken to be 3.0 for retrofit installation in an EPC band C home.

Gas boiler efficiency was taken to be 90% for new home, and heat pump coefficient of performance (COP) was taken to be 4.0. Actual gas demand for new-build homes was taken from New build energy consumption by year of build: England and Wales, 2023 (DESNZ, accessed May-2026) and compared with estimates of the gas demand under the 2013 Regulations that were in force, and the *heat* demand in the proposed ZCH 'basic' and advanced' fabric energy efficiency standards. It is estimated that actual demand was c.10-15% higher than stipulated by the 2013 Regs, that the ZCH basic level would have been c.25% lower than the 2013 Regs, and that the ZCH advanced level would have been c.55% lower than then 2013 Regs. The largest difference in actual and potential gas demand was seen in 2019, when the 'advanced' level would have been introduced i.e. these homes are paying the largest avoidable extra costs.

Standard electricity and gas unit rates (import tariffs) and the gas standing charge were calculated from the Energy Price Cap (default tariff) levels (Ofgem, accessed May-2026) for Q1–3 2026, and using the assumption that Q3 prices continue into Q4. Quarterly prices were weighted by typical quarterly domestic demand for gas and electricity, from Energy Trends 4.1 (DESNZ, 2026) and Energy Trends 5.2 (DESNZ, 2026), respectively.

Solar export unit rates were estimated to be 25% of the electricity import unit rate, based on a (non-exhaustive) survey of current solar tariffs. Solar panel size of 3.5kW is standard for UK homes – for example, see Solar Panels (EST, accessed Jun-2026). A load factor of 10% was applied, which is slightly lower than 11% for CfDs on the basis that home solar will sometimes have suboptimal alignment. Self-use was modelled at 25% without a battery and 75% with a battery on the basis of discussions in Solar PV and Batteries (NEA, accessed Jun-2026) and Self-Consumption of Solar PV Generated Electricity (Solar Blogger, accessed Jun-2026).

Note that the total saving of £840 from a heat pump and solar panels with a battery using a specialist tariff are compatible with figures in the Government's Warm Homes Plan (DESNZ, 2026), which says that a household can save £450-550 per year with a heat pump, solar (4kW) and battery (4kWh) and an extra £300 extra with smart tariff, giving a total of £750-850 total (depending on home type and level of insulation).

Petrol prices were taken from Weekly Road Fuel Prices (DESNZ, accessed 8 Jun 2026). The average price for 2026 was estimated using the average price to-date (144p/L) for the time to-date, and then two different methods for the rest of the year: using the average for year-to-date for the rest of the year (essentially assuming a symmetric price spike during the year); and assuming that prices remain at their current high of 158p/L for the rest of the year.

Petrol car fuel efficiency was estimated to be 8.8 miles per litre, on the basis of Government datasets: average mileage from Table NTS0901a (DfT, accessed May 2026), total number of cars from Table VEH1103a (DfT, accessed May-2026), mass of fuel used in UK from ECUK Table C8 (DESNZ, accessed May-2026), and conversion factors from mass of fuel to volume of fuel from GHG Conversion Factors 2025 (DESNZ, 2025).

EV charging prices were based on current values from ZapMap Price Index (ZapMap, accessed Jun-2026), and applying the 'John & Rosa' charging profile. EV driving efficiency was assumed to be 3.5 miles per kWh, and EV charging efficiency was assumed to be 90%.

Annual mileage for both cars was set at 6,200 miles from 2024, which is the latest available value for petrol cars from the National Travel Survey table NTS0901a (DfT, accessed May-2026). EVs are known to travel further, e.g. table NTS0901a states 8,900 miles for 2024, but the same figure was used for both cars for the purposes of simplicity and consistency with other recent analysis.