SUSTAINABLE ENERGY ASSOCIATION

Rebalancing levies to lower bills and decarbonise heating: an essential step but not enough

SEA analysis of rebalancing levies on domestic heating

2025

Contents

Executive Summary

Levy rebalancing is needed to reduce the cost of electricity when focusing on heating homes and buildings, particularly as the UK is decarbonising – moving away from fossil fuel to electric heating systems. The Sustainable Energy Association's (SEA's) paper presents 4 Scenarios as to how levies may be 'rebalanced' to reduce running costs for electrically powered heating systems. However, our main conclusion is drawn: levy rebalancing alone will not be the sole-solution in incentivising consumers to make the switch away from fossil fuel systems.

Alongside levy rebalancing, the SEA recommends implementing wider electricity market reform, greater recognition/ implementation of demand side response and flexibility within policy, and supporting improvements to the efficiencies of heat pumps and direct electric heating. Greater financial support is therefore also required, complimented by a strong regulatory framework that progressively reduces the carbon intensity of heating systems, such as the SEA's Carbon Intensity Standard[1].

What is the problem?

Quoted often is the spark gap: historically high electricity prices versus the cost of gas. Currently, Ofgem's energy price cap indicates that the cost of electricity and gas per unit is 25.7p/kW and 6.3p/kW respectively[2] - making electricity four times more expensive than gas.

The high price of electricity is caused by wholesale gas and electricity prices, carbon taxes and policy costs[3]. These latter reasons are known as **levies**, which are placed on electricity bills to support social and environmental initiatives. Figure 1 below illustrates the various levy costs that are placed on gas and electricity.

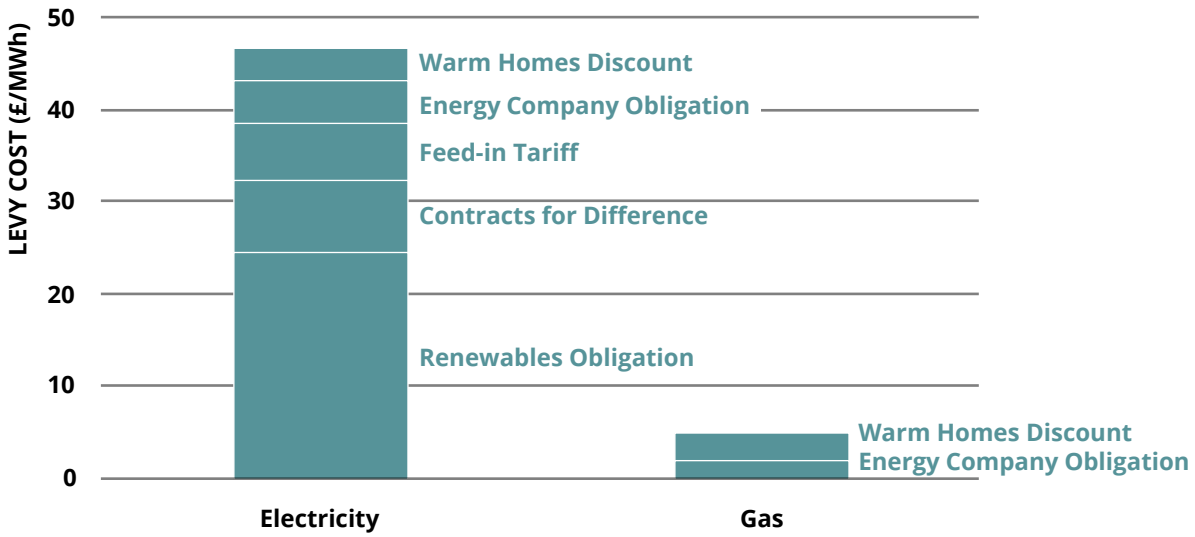


Figure 1: Levies on electricity and gas in 2020/21 (source : https://www.e3g.org/wp-content/uploads/E3G-Briefing-Make-clean-heat-accessible-to-all-UK-households.pdf).

Whilst we recognise the benefit of these levies to support these associated costs, it has meant electricity prices, particularly for home heating, are much higher than gas, at roughly a 4-to-1 ratio. These levies may be better placed on carbon intensive heating using fossil fuels.

So why do these levies need to be changed, or '**rebalanced**'? In 2024, an estimated 11% of households in England were living in fuel poverty[4]. This issue is made worse for households using old, less efficient and/or non-smart direct electric heating systems, as electricity is significantly more expensive than other heating sources. Further compounding the issue is the fact that fuel-poor households are less likely than non-fuel-poor households to use mains gas, and more likely to rely on electricity as the fuel for their main heating system[5].

High electricity costs disincentivise consumers looking to switch from fossil fuel heating and hot water systems to low carbon alternatives, such as heat pumps, infrared, radiant heating, smart storage heaters, and other direct electric technologies. This undermines the Government's broader policies and regulations designed to increase the uptake of these systems, such as funding programmes including the Boiler Upgrade Scheme (BUS), Energy Company Obligation (ECO), or Warm Homes schemes.

While these schemes help to offset the upfront cost of low carbon systems, they do nothing to reduce the additional running costs caused by current levies.

The electricity grid is also decarbonising, with the aim to be renewable (95%) by 2030[6], further highlighting the need to switch and incentivise more individuals to use electricity as their heating fuel source.

Methodology

We have developed four scenarios to compare how the electricity levy structure may change in the future. These are as follows:

Table 1: Levy rebalancing scenarios.

Scenario Number	Description
1	This is the counterfactual scenario and assumes no changes in the current levy structure.
2	This scenario assumes that all levies are removed from electricity and gas and funded by general taxation.
3	This scenario assumes that electricity levies are removed and are instead placed onto gas.
4	This scenario assumes that consumers receive a rebate for the £/MWh electricity policy costs they experience whilst running a clean heating system.

To support these scenarios, we have considered the upfront cost and running cost of different heating systems. The upfront cost is the total installation cost needed to install the heating system. The yearly running cost includes the annual fuel bill and the relevant standing charges. When calculating total lifetime costs, we modelled a 15-year period from 2027 to 2041. We then modelled total lifetime costs from 2027 to 2050 as this would highlight the fact that heat pump replacement costs would be cheaper than the original install. We assumed once the boilers broke down, they would be replaced by an air source heat pump in semi-detached properties with an existing we heating system.

Further details on the methodology can be found in Annex 1.

Results: Running Costs

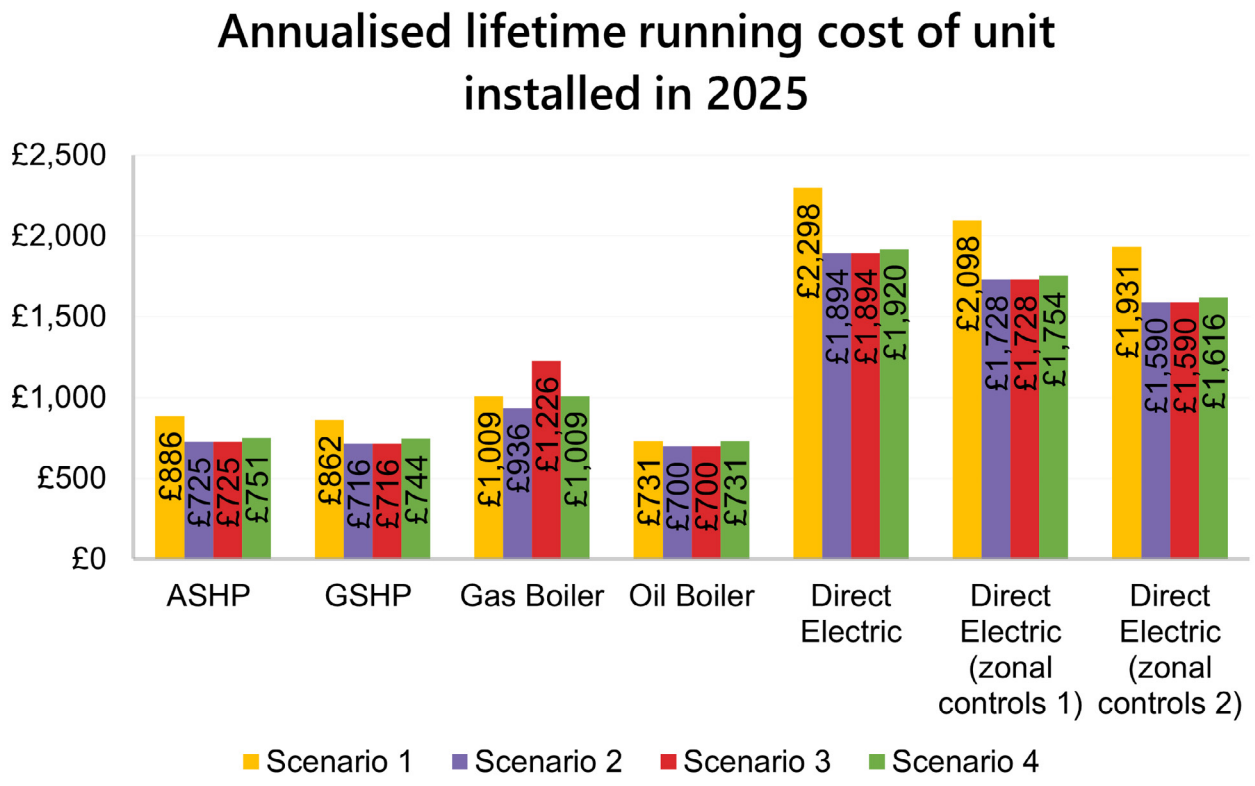


Figure 2: Annualised lifetime running costs of different heating systems installed in 2025, for a semi-detached property.

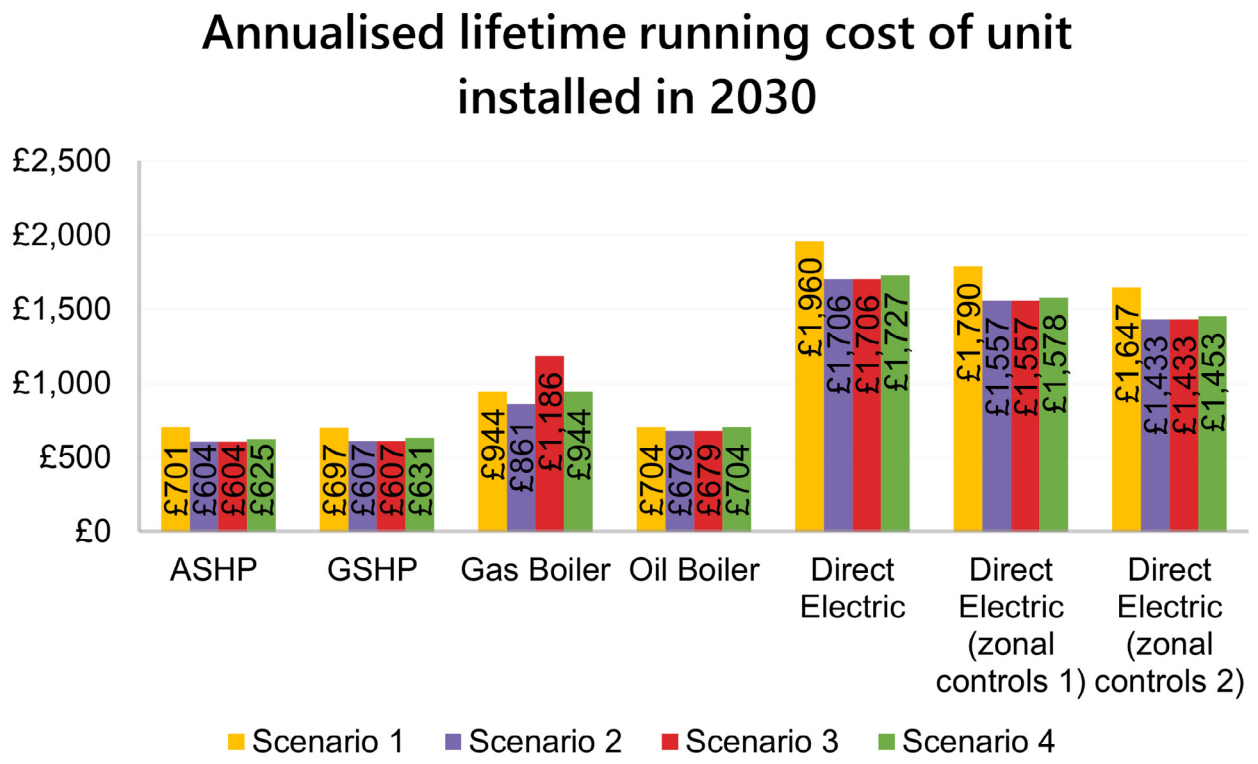


Figure 3: Annualised lifetime running costs of different heating systems installed in 2030, for a semi-detached property.

When focusing on the running costs alone of heating systems, rebalancing levies would make the cost of running heating systems more equitable. For example, comparing Scenario 1 vs. 2 for a semi-detached property in 2025 (Figure 2), the cost of running a heat pump reduces by £161/year and for direct electric heating by £404/year. Therefore, reducing the cost of electrically fuelled heating systems by removing the levies will reduce the additional disincentive these levies create in the uptake of these systems.

This is more impactful for those using direct electric, where removing levies would save ~£400 from annual bills. Fuel-poor households are also less likely than non-fuel-poor households to use mains gas, and more likely to rely on electricity as the fuel for their main heating system[7] – thus reducing the number of households in fuel poverty.

Focusing on the running costs for heating systems in 2030 (Figure 3), where electricity and fossil fuel prices are assumed to be lower, the cost of running a heat pump reduces by £97/year and for direct electric heating by £254/year (for Scenario 1 vs. 2).

The SEA is less supportive of Scenario 3 (moving electricity levies onto gas) as this shows running costs increasing by £217/year in 2025 for those using a gas boiler. Whilst this may not be a large bill increase for some consumers, for those living in fuel poverty it will have a much greater impact. Of those living in fuel poverty, 84% of households have a condensing or non-condensing boiler installed in their property[8] – with a large proportion of these being fuelled by gas.

We appreciate moving levies onto general taxation may be less preferable through Scenario 2. An electricity rebate (Scenario 4) would be the best option to ensure a technology agnostic approach whilst reducing bills for those using electrically powered heating. However, this Scenario would need sufficient planning and monitoring to make it effective (e.g. smart meters, ensuring all direct electric heaters can be recorded).

Results: Lifetime Costs
(First time heating)

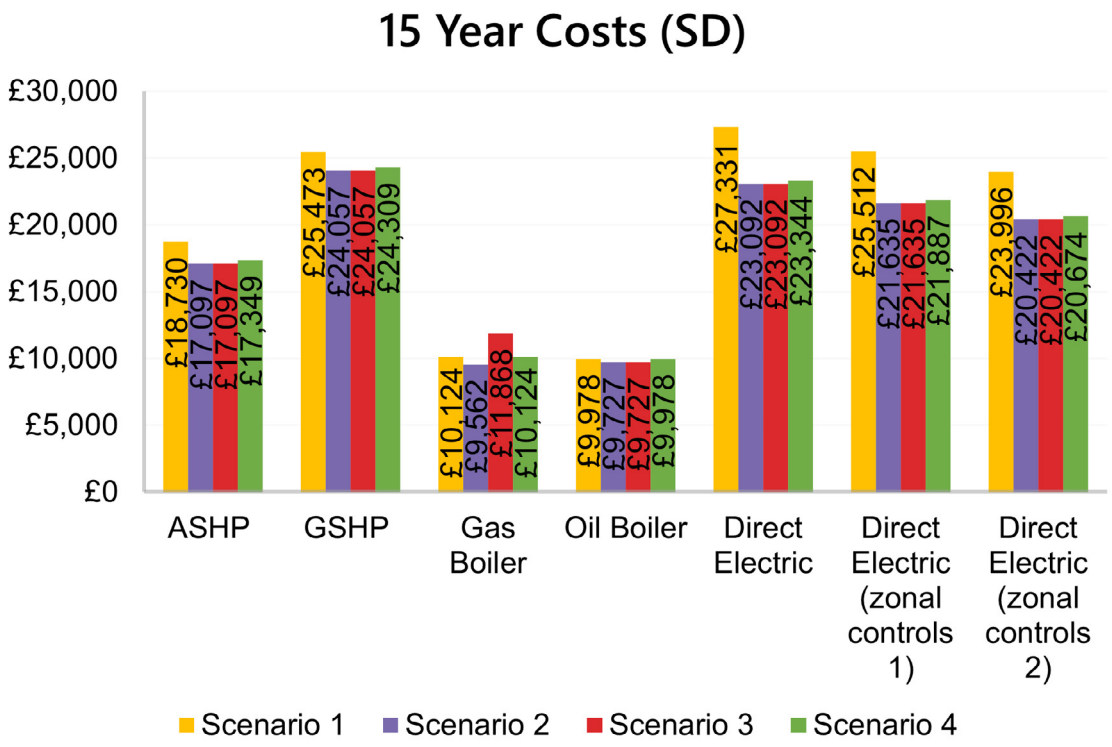


Figure 4: 15 year lifetime costs of different heating systems, in a semi-detached property with pre-existing wet central heating system.

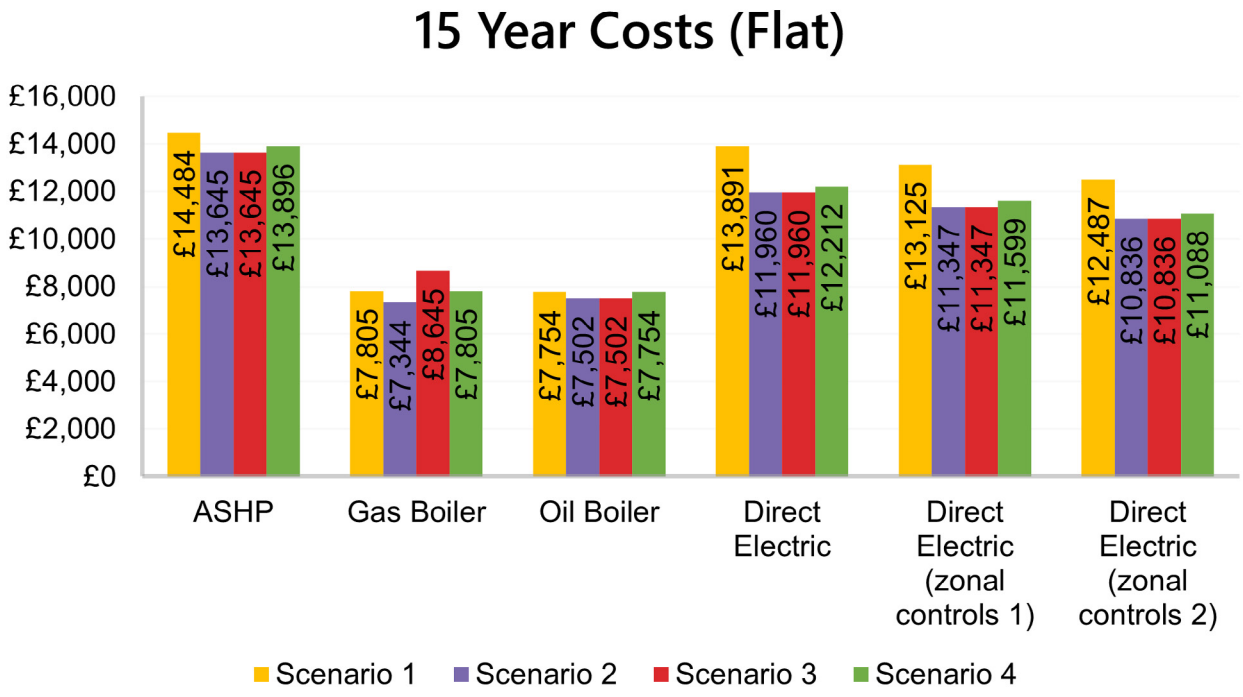


Figure 5: 15 year lifetime costs of different heating systems, in a flat without pre-existing wet central heating system.

Despite levy rebalancing reducing the cost of running heat pumps and direct electric heating, the lifetime costs are not as strongly impacted. These results show that even with levies removed, the cost of electrically fuelled heating systems are still substantially higher than fossil fuel heating systems for first time heating. For example, looking at Scenario 4 in a semi-detached property where levies have been moved onto gas (Figure 4), the lifetime cost of an ASHP is £25,519 – over double the cost of a gas boiler.

These results indicate that electricity levies are only part of the issue when looking at the lifetime cost of heat pumps and direct electric heating. To reduce the lifetime cost of these systems, we still need to address the higher capex costs, particularly for heat pumps.

The higher lifetime costs for direct electric heating systems can be attributed to the higher average running costs, rather than the capital costs of purchasing the heating system. However, levy rebalancing aids in reducing these costs and we can observe almost cost parity for heat pumps and direct electric systems – particularly for those with advanced zonal controls. For example, Figure 5 shows that in a flat, for Scenario 4, the lifetime cost of a direct electric heating system is ~£2,800 less than that of an ASHP.

Results: Lifetime Costs
(Replacements)

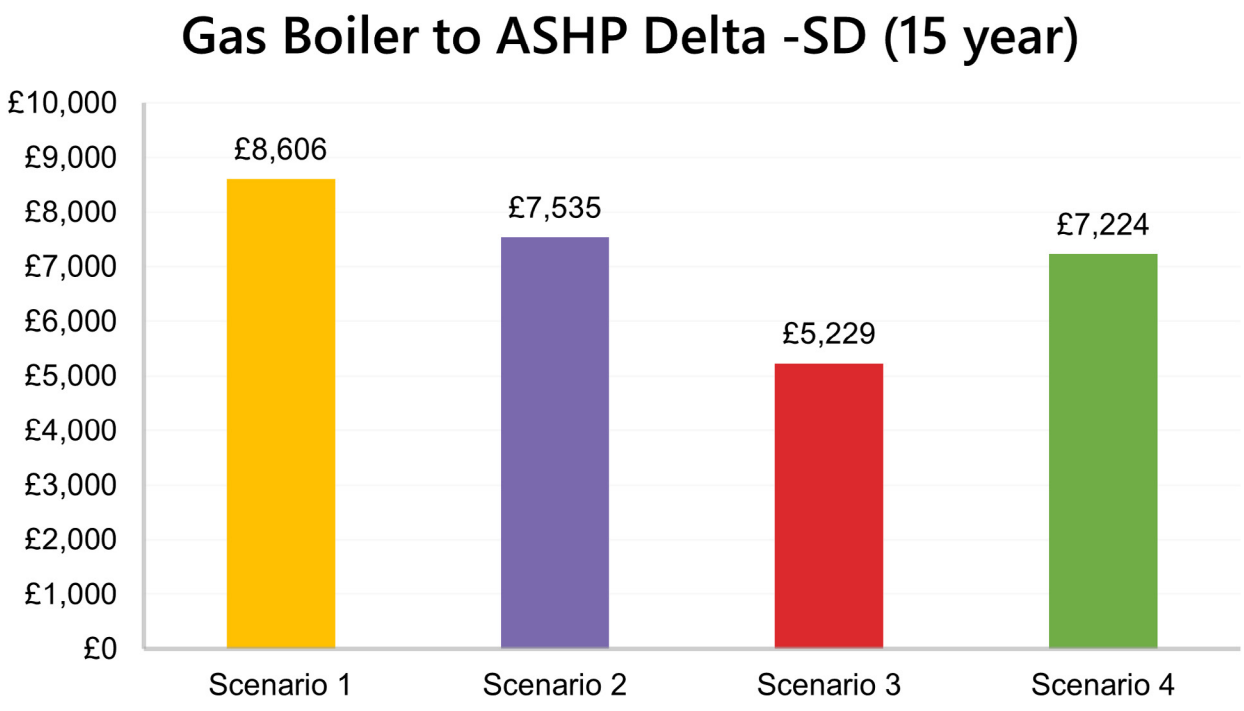


Figure 6: 15 year lifetime cost difference for replacing a gas boiler with an ASHP.

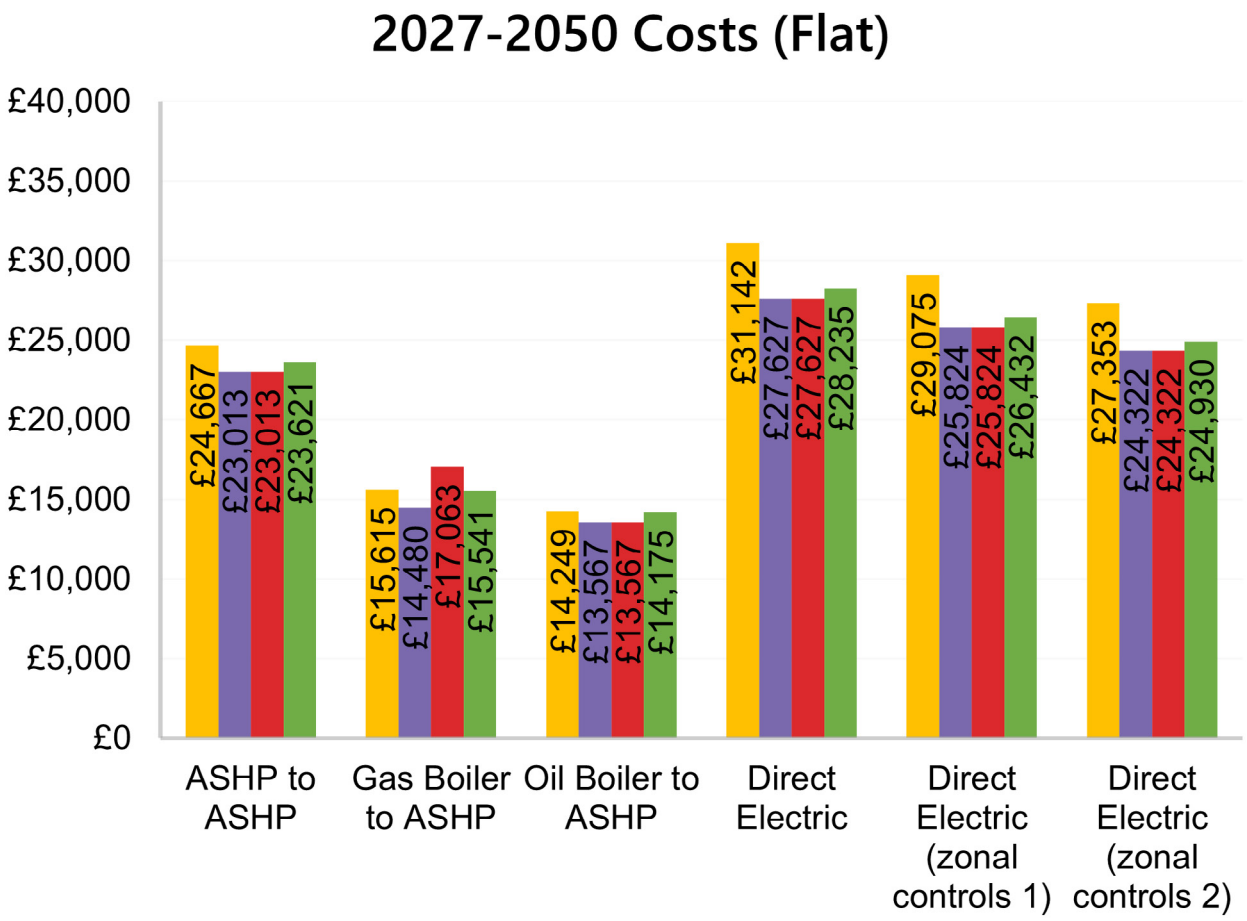


Figure 7: Cost of replacing heating systems in a flat, with no wet central heating system.

When looking at the lifetime cost of replacement heating systems, after levy rebalancing, similar conclusions can be drawn for replacement heating systems. Figure 6 shows the 15-year lifetime costs for a semi-detached property that replaces a gas boiler with an ASHP. We have chosen this situation as it will be the most common heating system upgrade for semi-detached properties that have a wet central heating system. After levy rebalancing, across all of our three Scenarios, the lifetime cost of installing a heat pump is still greater than the lifetime costs of a gas boiler. For instance, in Scenario 4, a household will still be paying £7,224 more for an ASHP compared to a gas boiler over the next 15 years.

Figure 7 shows a similar situation for flats, which do not have a wet central heating system. When a flat does not have pre-existing wet central heating system, direct electric systems are closer to being cost competitive to an ASHP. This is because to install the ASHP the owner needs to also incur the cost of installing the wet central heating system.

Please see Annex 2 for the additional results of this study.

Solution

Our results expose a key policy gap: Levy reduction alone will not tip the consumer market. The market is not going to transition to low-carbon heating without significant intervention by other means, above the need for levy rebalancing. Therefore, government and industry subsidies for low-carbon heating systems will still be a driver in increasing the uptake of these systems through the BUS, ECO or Warm Homes programmes. We may also see the cost of these technologies reduce over time as they become more competitive. Alongside levy rebalancing the SEA recommends, as per E3G's findings, implementing wider electricity market reform, greater recognition/implementation of demand side response and flexibility within policy, and supporting improvements to the efficiencies of heat pumps and direct electric heating to reduce costs even further for consumers[9].

However, these drivers alone may still never even out the playing field for low-carbon technologies. There are additional risks if subsidy schemes reduce in value (e.g. the BUS grant reducing over time), or if they become politically unfavourable and are scrapped. What is still missing is a regulatory driver to reduce the number of fossil fuel heating systems being installed over time so that the UK can reach its decarbonisation targets. The SEA propose to do this through a Carbon Intensity Standard. See our policy proposal below.

CASE STUDY

SEA Proposal: Carbon Intensity Standard (CIS)

- A phased approach to ending new fossil fuel heating systems through a Carbon Intensity Standard (CIS) for future domestic retrofits.
- Gradually lowers carbon limits for new heating installations and major component replacements (e.g. radiators) between 2029–2036.
- Promotes market-driven, technology-agnostic decarbonisation of home heating while complementing early subsidy schemes.
- Avoids "picking winners", provides regulatory stability and encourages investment in future heating technologies and infrastructure.
- Does not require one to "rip out one's boiler".

Space Heating	Step 0	Step 1	Step 2	Step 3	Step 4
Start Year	2025	2029	2031	2034	2036
End Year	2029	2031	2034	2036	N/A
Maximum CI ($kgCO_2e/kWh$	0.21429	0.20225	0.19565	0.05583	0.02500
Gas Boiler (70°C)					
Gas Boiler (55°C)					
Gas Boiler (40°C)					
Hybrid Heat Pump with Boiler at 70°C					
Direct Electric Heating					
Heat Pump					
Biomass Boiler					

See the full paper here.

The SEA's recommendations

The SEA recommends implementing levy rebalancing to reduce running costs of all electrically fuelled heating systems (Scenario 4 in our analysis). This is particularly beneficial for direct electric heating, achieving ~£400 reduction in annual bills and ~£4,000 reduction in lifetime costs. This Scenario would also support those in fuel poverty the most.

Our other key finding is that levy rebalancing alone is **not sufficient** to bring the lifetime costs of electric heating systems below the lifetime costs of fossil fuel systems. Therefore, the SEA recommends introducing a **Carbon Intensity Standard** as a regulatory driver to decarbonise heating. We would also recommend the Government to continue support through grant funding programmes for low-carbon heating, implementing wider electricity market reform, greater recognition/implementation of demand side response and flexibility within policy, and supporting improvements to the efficiencies of heat pumps and direct electric heating.

Annex 1: Methodology

Semi-detached property Assumptions

Consumer discount rate of 12.5% and heat and hot water demand of 11,525 kWh.

Heating System	Cost (£)	Lifetime (years)
Gas Boiler	2,634	15
Oil Boiler	4,531	15
ASHP	14,555	20
GSHP	25,000	20
Infrared Panels (Semi-detached)	6,930	20
Immersion Heater	240	3
Hot Water Cylinder	500	10

Flat property Assumptions

Consumer discount rate of 12.5% and heat and hot water demand of 4,667 kWh.

Heating System	Cost (£)	Lifetime (years)
Gas Boiler	1,956	15
Oil Boiler	3,364	15
ASHP	10,807	20
Infrared Panels (Flats)	4,455	20
Immersion Heater	240	3
Hot Water Cylinder	500	10

First Time Central Heating Assumptions

Heating System	Additional Capex Costs	
	Semi Detached	Flat
Gas	£1,020	£1,587
Oil	£2,494	£1,587
ASHP	£3,967	£3,400
GSHP	£3,967	N/A

Technology Assumptions

Zonal controls assume that the effective sCOP of a direct electric system is above 100%. Due to limited reputable evidence, we have modelled a sensitivity where the sCOP is 110% and another where the sCOP is 120%. This is indicative of what zonal controls could achieve.

Heating System	COP
ASHP	3.16
GSHP	3.72
Fossil fuel boiler	0.90
Direct electric heating system	1.00
Direct electric heating system (zonal controls 1)	1.10
Direct electric heating system (zonal controls 2)	1.20

Assumed Heat Pump demand uplift of 5% across all scenarios and archetypes.

Data Assumptions

Long run variable cost energy prices were taken from the Government's Green Book: Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK.
Standing charge and policy cost data was taken from Ofgem: Energy price cap (default tariff) levels | Ofgem.

Annex 2: Additional Results

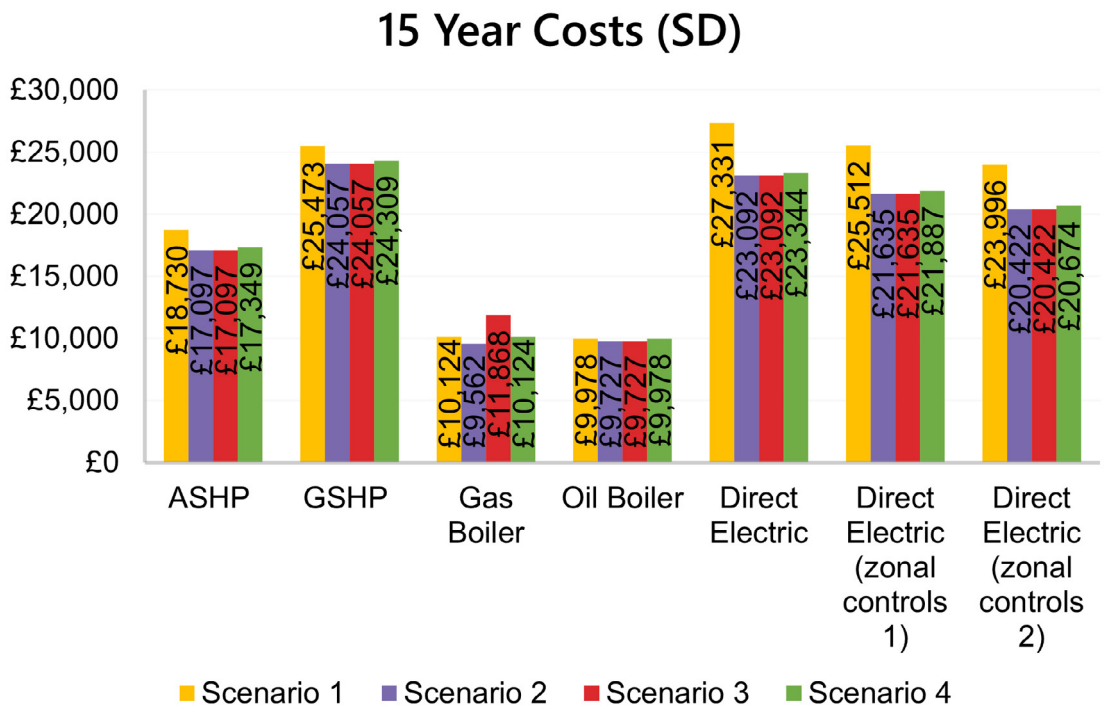


Figure: First time heating in a semi detached property, with an existing wet central heating system.

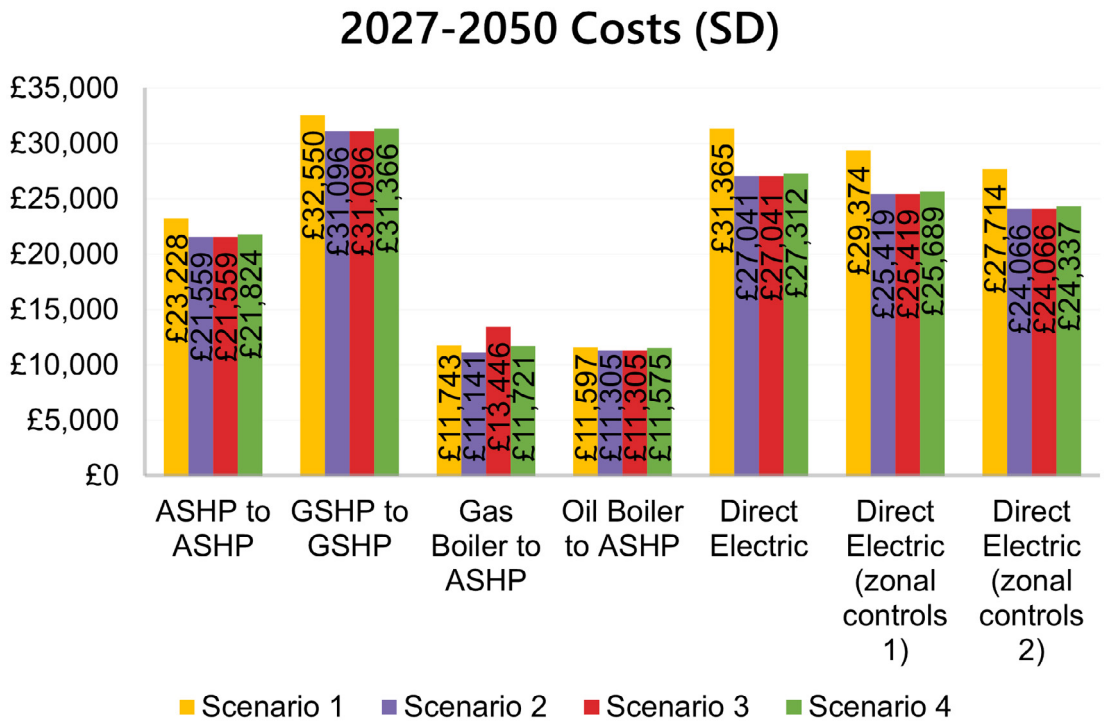


Figure: Replacement heating in a semi detached property, with an existing wet central heating system.

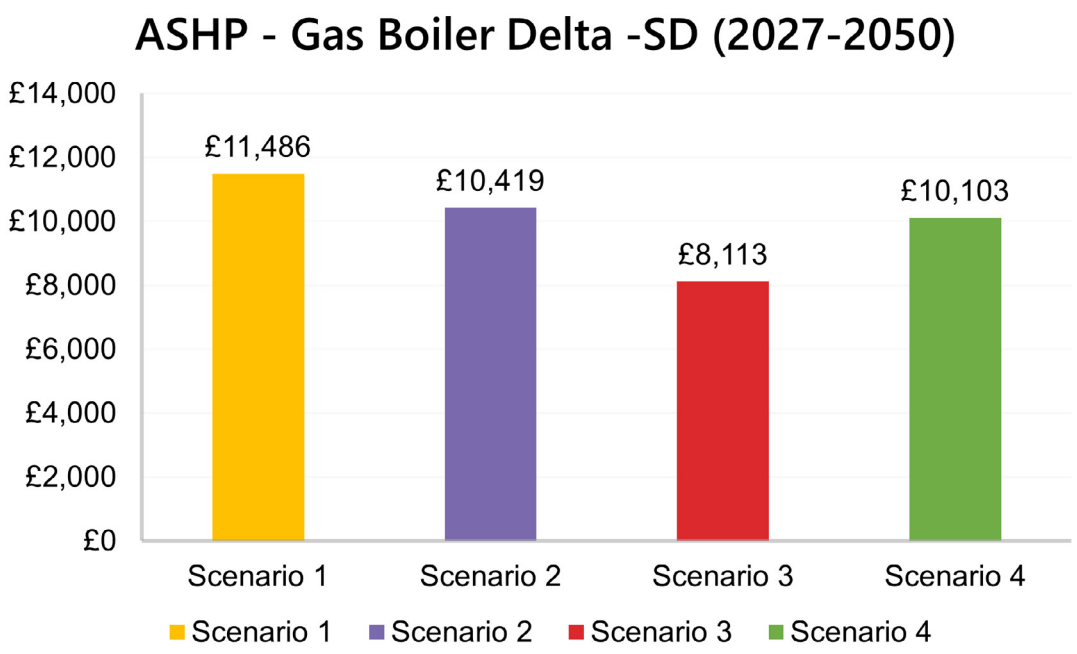


Figure: Cost difference for an ASHP replacing a gas boiler, replacement heating in a semi detached property, with an existing wet central heating system.

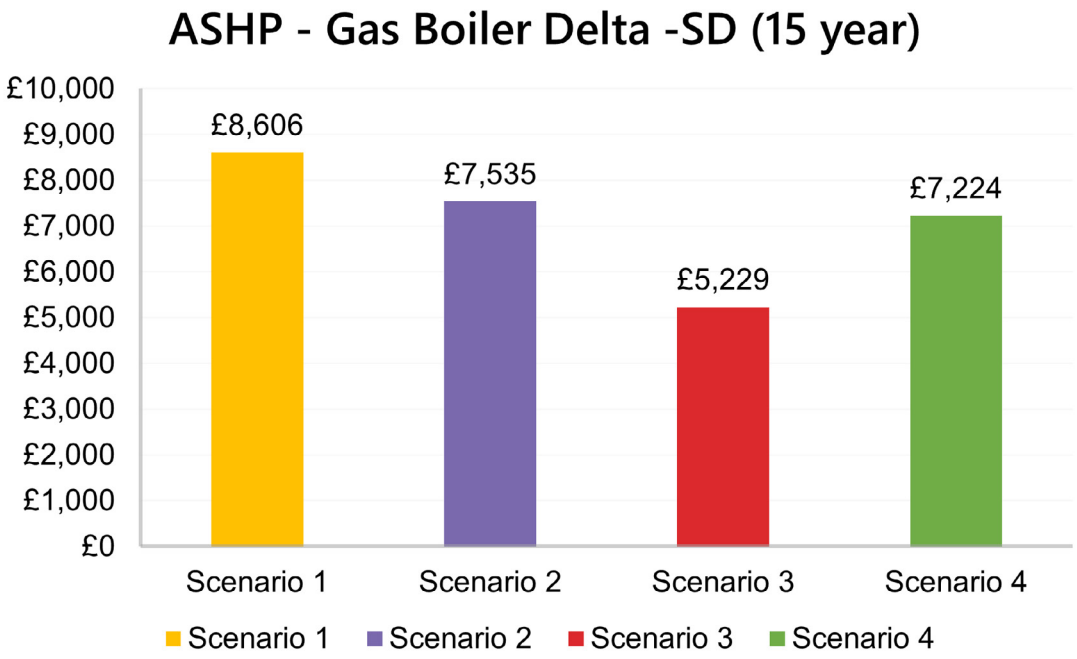


Figure: Cost difference for an ASHP replacing a gas boiler, first time heating in a semi detached property, with an existing wet central heating system.

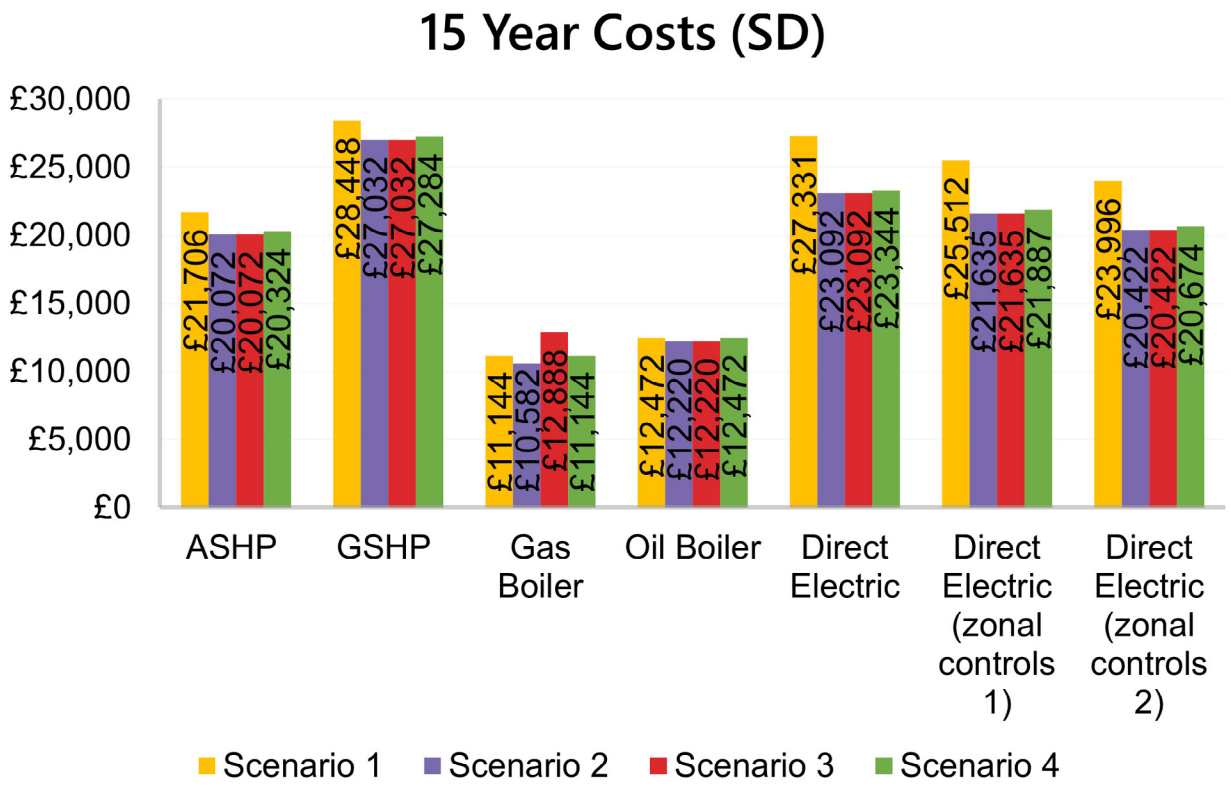
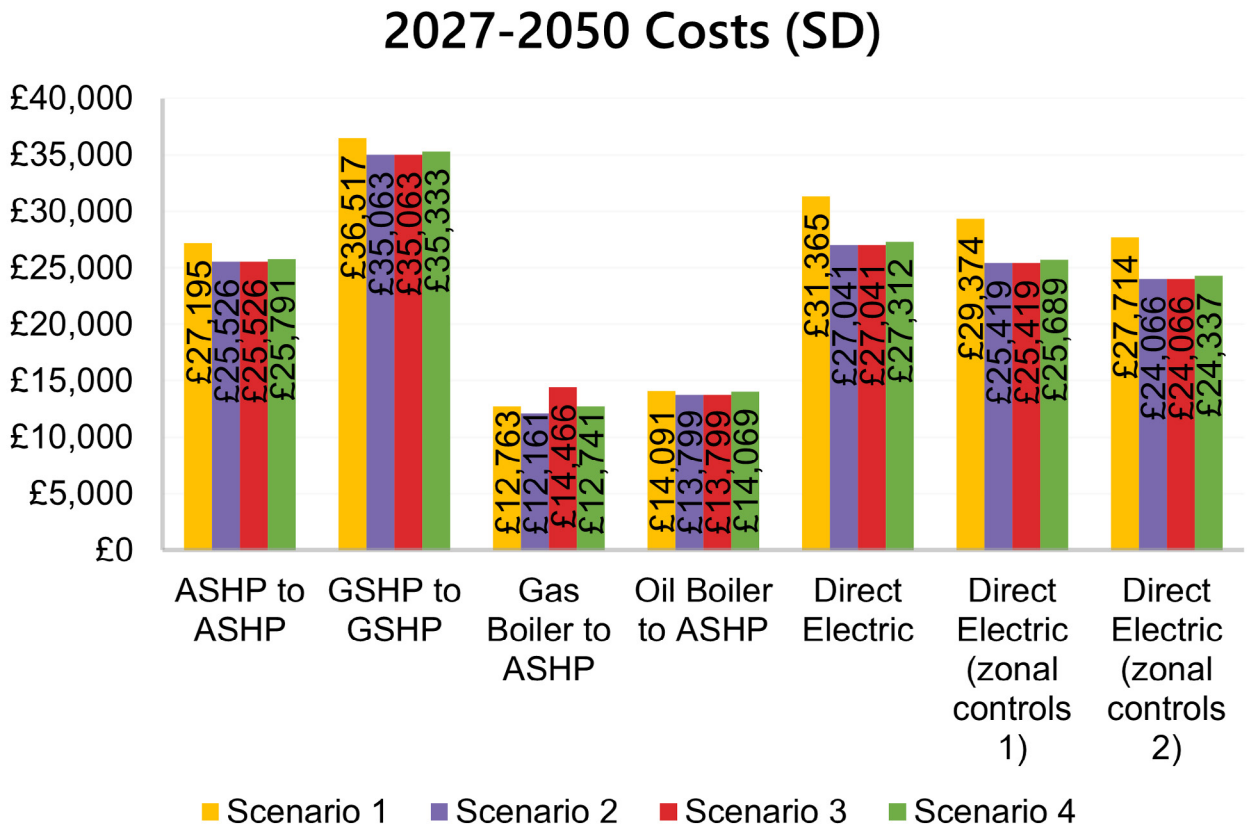


Figure: First time heating in a semi detached property, without a wet central heating system.



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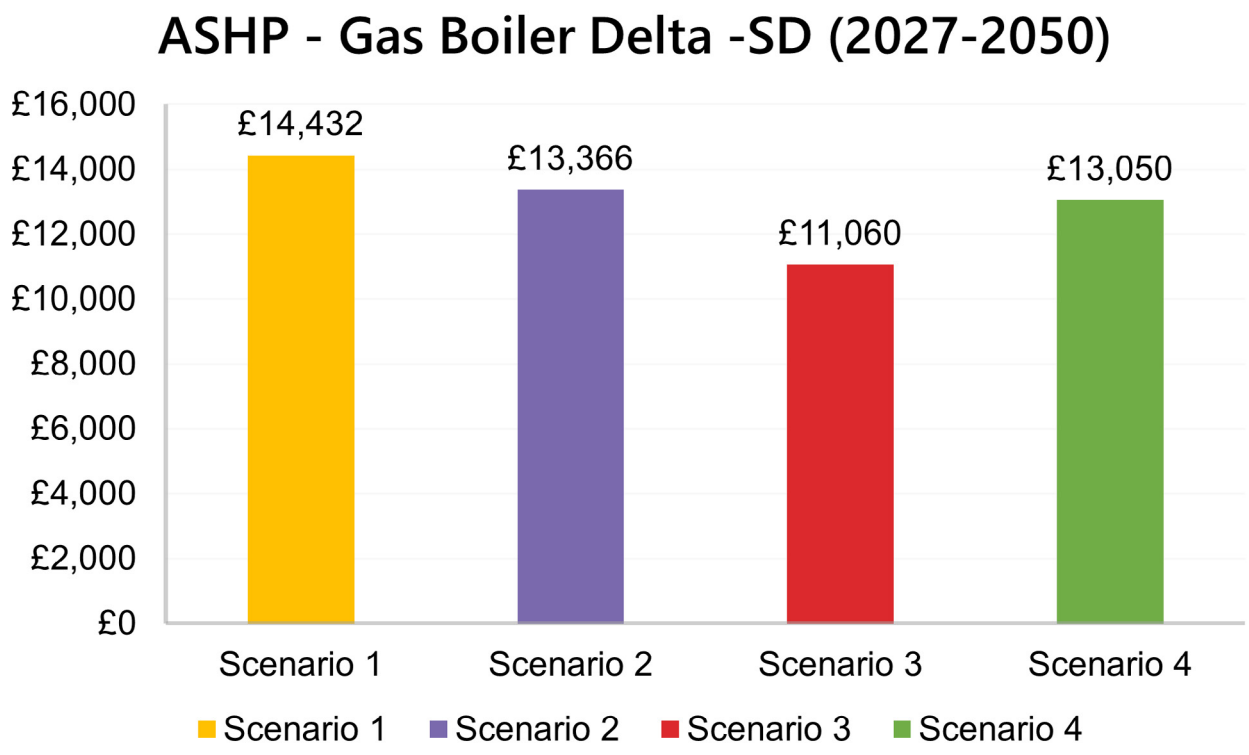
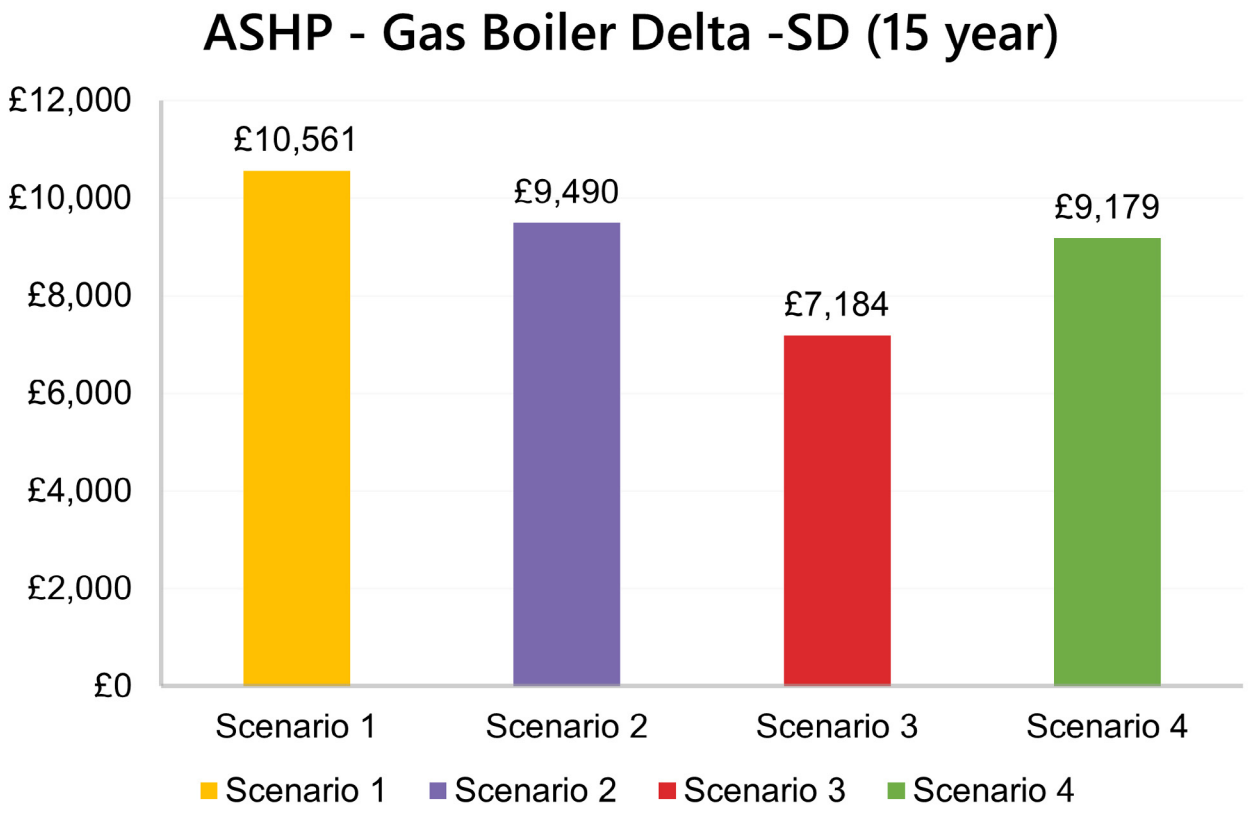


Figure: Cost difference for an ASHP replacing a gas boiler, replacement heating in a semi detached property, without a wet central heating system.



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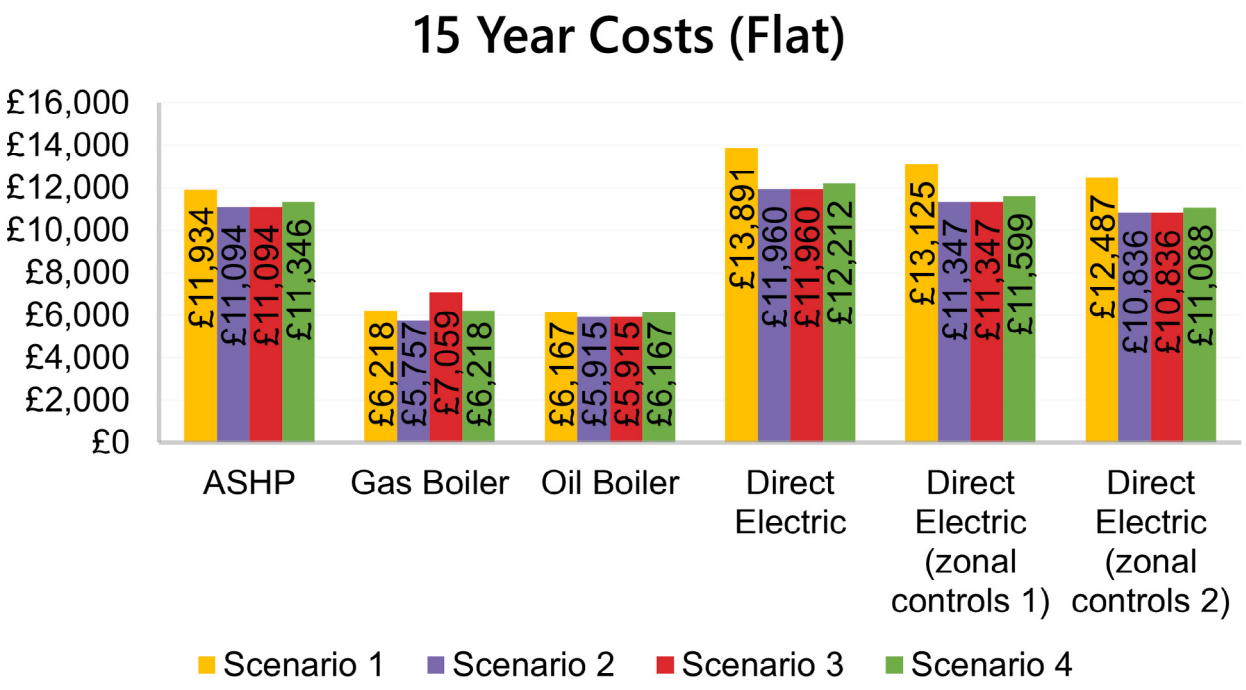
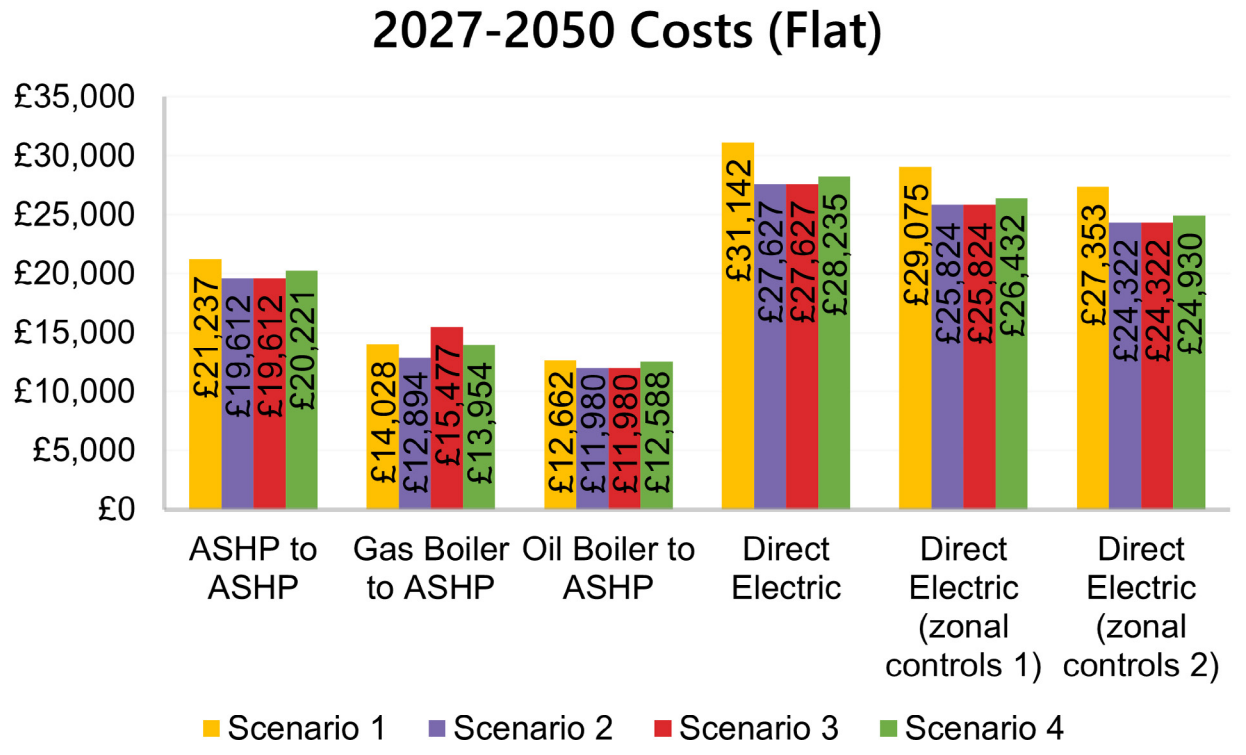


Figure: First time heating in a flat, with an existing wet central heating system.



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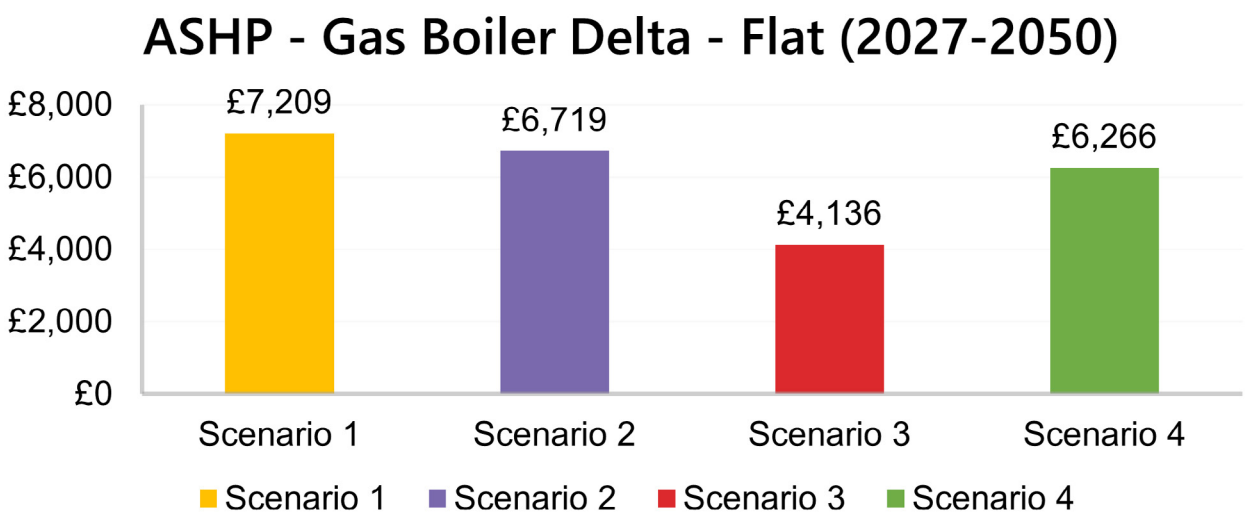

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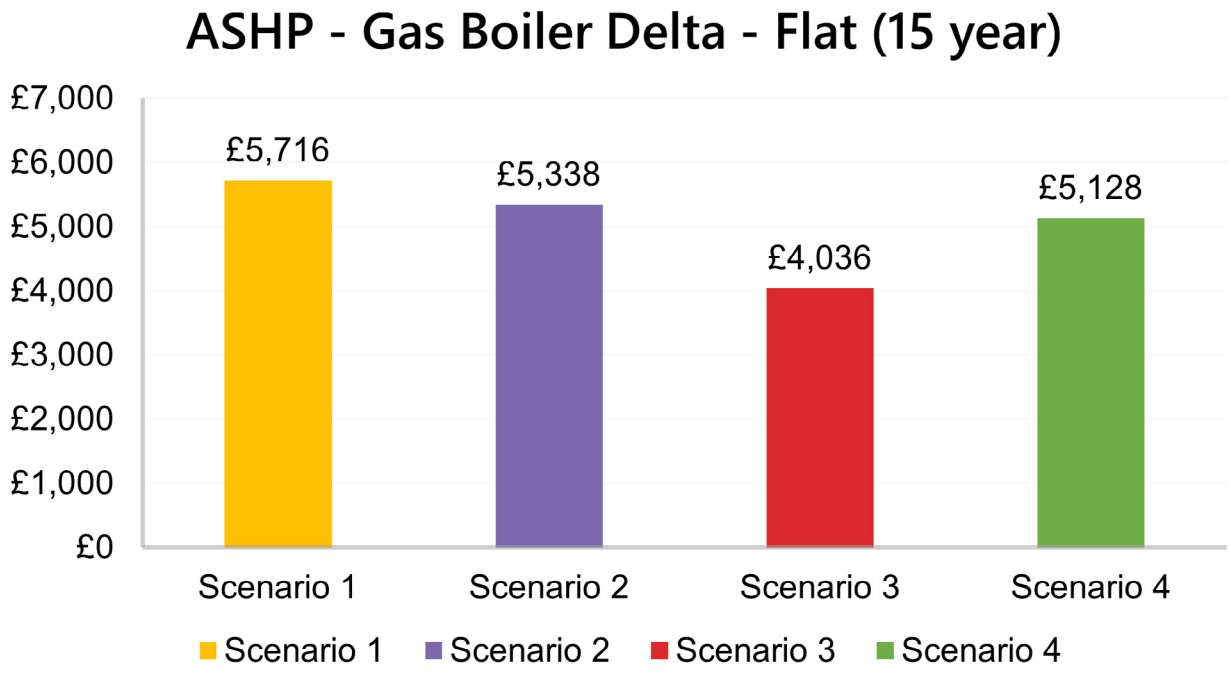

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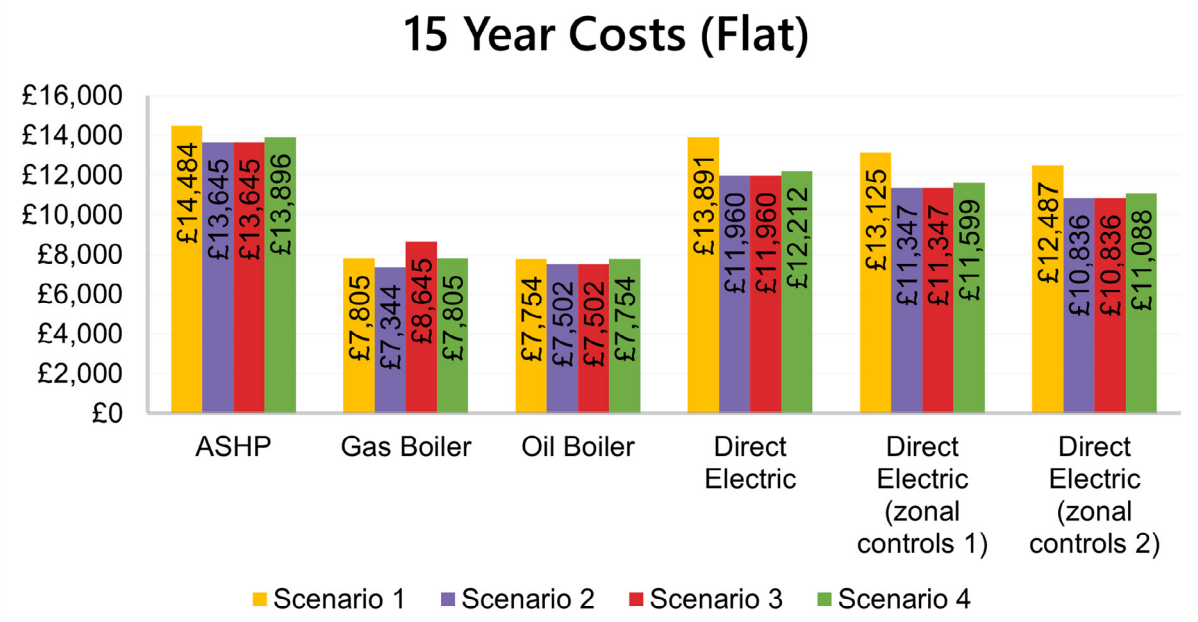
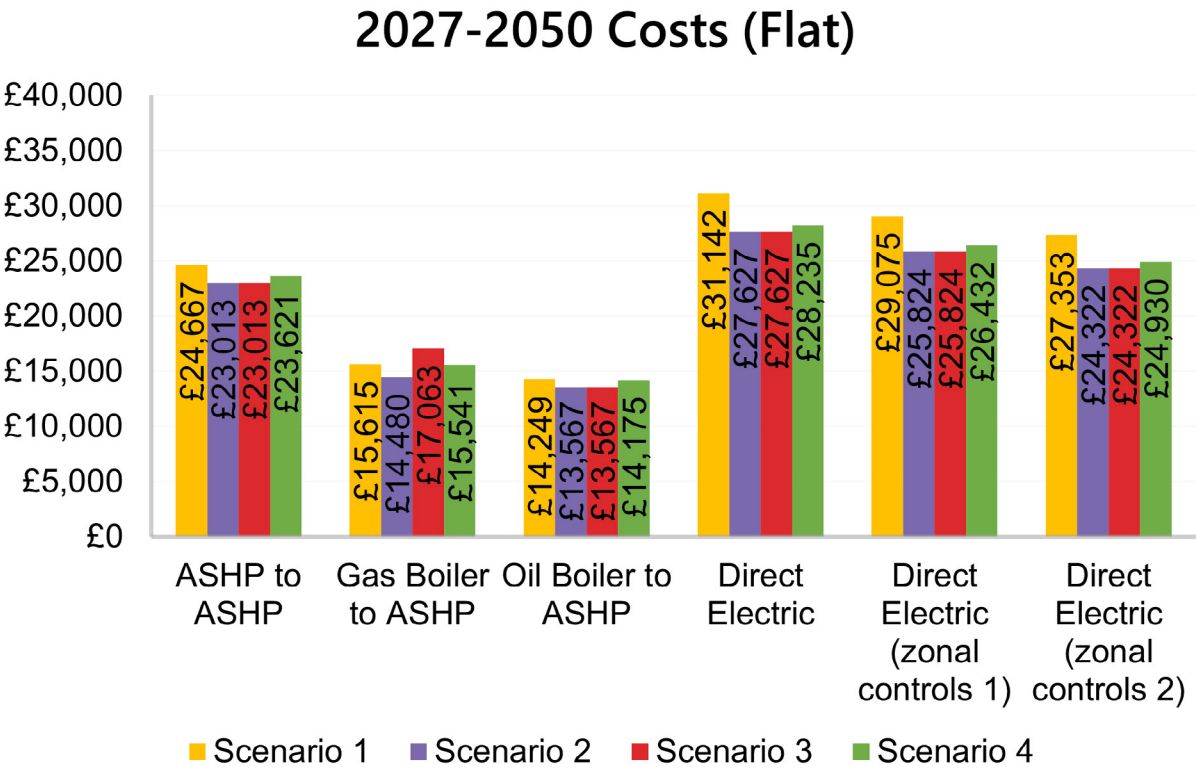


Figure: First time heating in a flat, without a wet central heating system.



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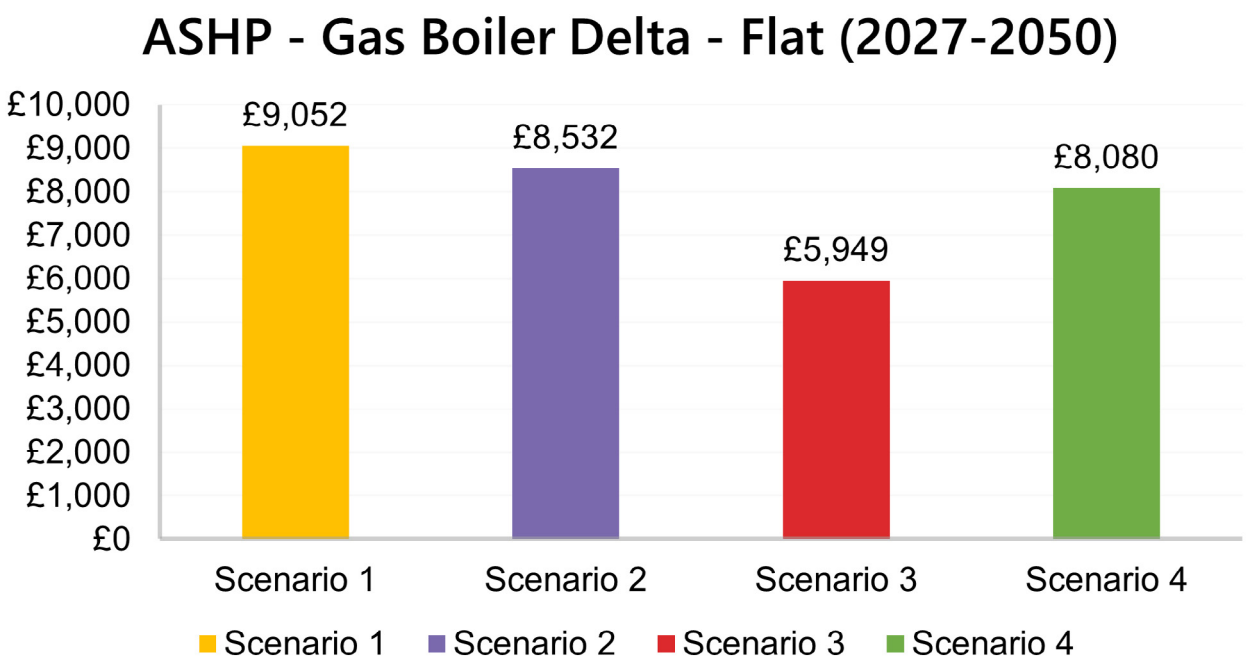

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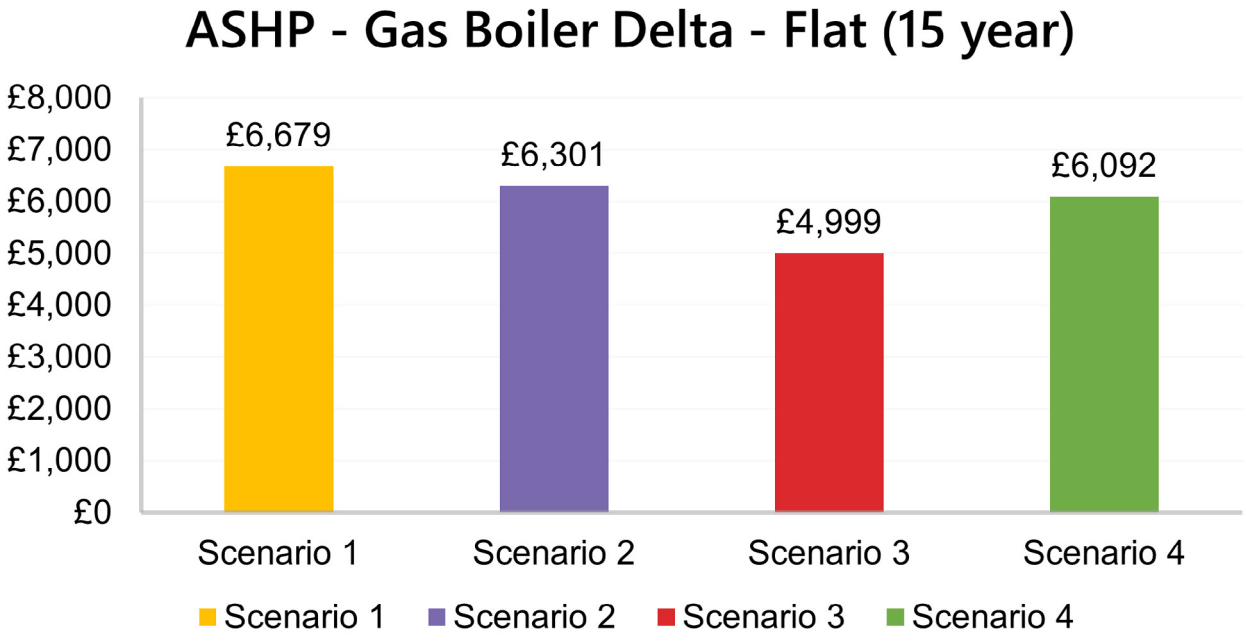

Figure: Cost difference for an ASHP replacing a gas boiler, first time heating in a flat, without a wet central heating system.

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