

Saltdean Decarbonisation Plan



Executive Summary

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The Saltdean Decarbonisation Plan has been prepared by BHESCO in partnership with the Saltdean Climate Action Network (SCAN) to establish a robust, actionable masterplan to transition the Saltdean area to a net-zero community by 2050. Funded by a grant from the Great British Energy Community Energy Fund (GBE-CEF), this study aligns with national Local Area Energy Plan (LAEP) guidelines, proportionately adapted to Saltdean's unique coastal geography, housing stock, and socio-political landscape.

Key contextual findings that underpin the study:

- o Total territorial emissions: Saltdean's energy system currently produces 19,22 tCO₂e/year
- o Emissions profile: Heating is the largest contributor 10,229 tCO₂e/year, followed by transport 5,596 tCO₂e/year, domestic electricity 2,039 tCO₂e/year, and non-domestic energy 1,358 tCO₂e/year
- o Housing stock: There are approximately 4,525 domestic properties in Saltdean, of which more than 75% are detached/semi-detached houses or bungalows
- o Political context: Saltdean is divided politically into two wards with different local authorities

The study models three distinct future energy systems: Baseline, Moderate, and Leading. The community's primary focus is the Leading scenario, which details a highly ambitious, locally-driven pathway, Figure 1.

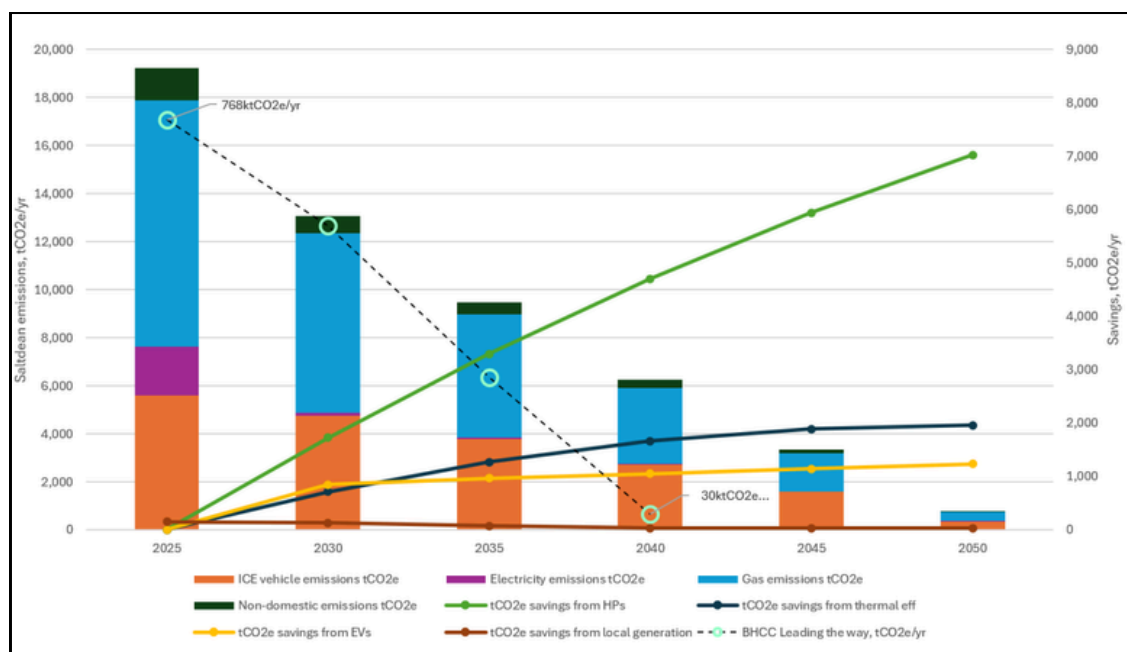


Figure 1 Saltdean emissions in the Leading scenario

Decarbonisation in the Leading scenario is driven predominantly by:

- o The electrification of heat: Heat pumps rolled out to 95% of domestic properties by 2050
- o The electrification of private transport: The rollout of EVs is well underway in Saltdean and analysis shows there should be no constraints to this continuing
- o Grid level electricity decarbonisation: This is the biggest enabler for emissions reductions
 - Saltdean is also well placed to exploit the benefits of decentralised local energy generation

An ambitious improvement in thermal efficiency of the housing stock is also modelled in the Leading scenario but the results show the impact of this is dwarfed by the impact of the electrification of heat. Considering this, and the technical and commercial challenges associated with deep retrofit, a pragmatic approach to retrofit is proscribed in combination with a fast rollout of heat pumps as the actionable next steps. Opportunities for a number of small-scale communal energy systems have also been identified along with recommendations for further work to review the feasibility of these.

The non-domestic sector is a relatively small contributor to Saltdean's overall emissions and the level of analysis in the study reflects this. Several opportunities for specific follow-up investigations have, however, been proposed.

It should be noted that even with these ambitious measures some level of offsetting is expected to be required to reach net zero. The report explores how a Community Energy Scheme could be setup to bring benefits to the local area, one of which would be revenue to fund any offsetting required. Sites are proposed which may be suitable for such energy schemes which the community can take forward for review.

A fast start will be required to meet the first milestone in 2030 but all analysis indicates that for the Leading pathway this is eminently achievable with concerted effort. See Table 1 for a summary of the key numbers associated with the Leading scenario.

	2025	2030	2035	2040	2045	2050
Number of electric vehicles	201	1,047	1,959	2,940	3,994	5,117
Number of heat pumps	97	809	1,522	2,234	2,946	3,658
Local renewable generation, MWh/year	1	7,486	11,968	15,330	17,571	21,516
Total CO2e emissions, ktCO2e/year	19	13	9	6	3	1
Investment (000s)	£1,027	£5,128	£10,254	£14,099	£16,663	£20,409

Table 1 Summary of key numbers in the Leading scenario

This report is structured as follows;

- Section 1 (Introduction); defines the study objective and overall approach.
- Section 2 (Context); Summarises the geographical and political context behind the study and establishes the starting point for the study
- Section 3 (Modelling the future energy system) summarises the three key scenarios in this study (Baseline, Moderate and Leading) and the carbon savings from different energy improvements.
- Section 4 (Interventions & Impacts); describes the energy improvements in more detail, and explores how to best apply them in Saltdean
- Section 5 (Conclusions & next steps) provides an overall summary and suggestions of what to do next.

A note on heat pumps:

When discussing heat pump systems, it is important to differentiate between the heat source and the heat delivery mechanism. Generically, a heat pump is any device which moves heat from one place to another.

To date, the domestic heat pump conversation in the UK has focused on air source hydronic systems. These are systems which take heat from external ambient air (the heat source) and deliver it to the property via a hydronic system (a heating liquid flowing through heat emitters, typically in the form of wall mounted radiators or underfloor heating pipes).

Air-to-air heat pumps also take heat from the external ambient air but deliver the heat to the property via a forced air system. The heat delivery system can take a multitude of forms from individual units in rooms to a centralised ducted air system.

In most common domestic situations, the term air-to-air heat pump is interchangeable with the term air-conditioning. Further discussion is made in later sections about the relative merit of the different heat delivery systems.

In contrast, ground source heat pumps extract heat stored in the Earth's crust. For ground source heat pumps, the heat delivery system to the property is most generally hydronic.

A note on carbon dioxide emissions:

In this report the magnitude of carbon dioxide emissions is generally expressed in the form of "tCO₂e". This unit stands for Tonnes of carbon dioxide equivalent. A standard, universal unit of measurement used in carbon accounting to represent the total warming impact of all different greenhouse gases.