



LITTLEBURY

# Littlebury CEF Feasibility Study Summary



25 September 2024

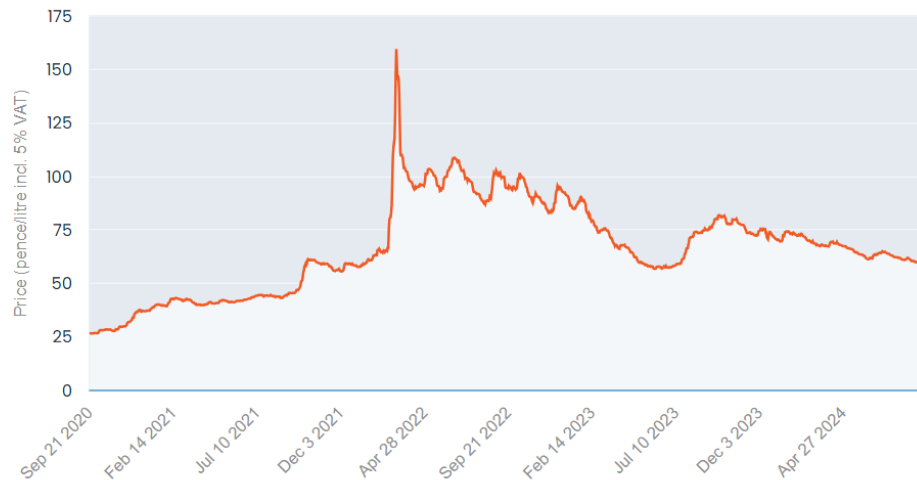


# Community Energy Feasibility Study Summary

## The Challenge



Source: Google maps



Source: Boilerjuice.com  
September 2024

### Reducing carbon emissions

The UK will become a net-zero carbon emission country by 2050, requiring every community to contribute to this goal.

Home heating in Littlebury is largely derived from oil and other fossil fuels. 23% of the UK's carbon emissions come from heating our buildings.

High energy use and high carbon emissions require an efficient renewable heating solution to deliver on net-zero ambitions.

### Historic buildings

Littlebury is a historic village with 44 buildings within the conservation area, covering most of the village.

Buildings that form part of the conservation area may be of an age and character that require a bespoke approach to retrofit.

Recent guidance from Historic England recognises the importance of improving the energy performance of heritage buildings, and the publication advises on the permissions required to retrofit these buildings.

### The cost of heating homes

Home heating reliant on fossil fuels face increasing market volatility. Global events affecting the supply chain can result in unaffordable price spikes, and the cost trend of oil and gas as a whole is upward.

The cost per litre of heating oil since 2020 has more than doubled.

Reducing the energy required to heat and power your home is one way to protect yourself from price rises. A district heating solution powered by local, renewable energy may also provide price stability.

### Complexity of delivery

District heat networks have been operated in the UK for many decades. However, in the UK, they are infrequently found in a rural setting, and therefore carry the perception of risk. The complexity of delivery certainly does carry risk, but careful management of the project can mitigate these uncertainties.

Feasibility studies, such as this one, examine a variety of solutions and test whether they are deliverable. The government's continued support for community energy projects such as this creates confidence and builds a pipeline of case studies and successes to model.

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## Options to decarbonise heating in Littlebury

### 1 Do Nothing

#### Benefits

- Continue with what is comfortable and well understood
- Avoid new technologies and any perceived risks
- Prices may come down for new technology in the future

#### Challenges

- Energy prices are volatile when reliant on fossil fuel sources
- It is possible that levies will be added to fossil fuels – oil and gas – to achieve net zero targets as a nation
- High carbon emissions persist, contributing to climate change
- Oil-fired boilers are being regulated out of existence, leaving individuals to source their own low-carbon replacement

### 2 Individual home retrofit

#### Benefits

- Efficient heating systems and fabric improvements mean cost savings
- Relatively quickly rolled out – bringing benefits immediately
- Grant funding is available to support take up for eligible residents

#### Challenges

- Installation costs vary widely – as does the carbon and cost savings. A deep retrofit will likely cost tens of thousands of pounds
- Some technologies, such as air source heat pumps require relatively good air tightness to be cost efficient
- Complexity in retrofitting traditional homes.

### 4 A blended solution

The findings from the phase 1 feasibility study indicate that blending home retrofits while developing a district heat network will achieve the highest carbon savings for the greatest number of residents.

### 3 Community-wide solution

#### Benefits

- Highly flexible: easier to decarbonise heat to 200 properties if they are on an inter-connected set of heating pipes than if heated individually
- Economies of scale: potential to select and install technologies such as heat pumps which are most effective at larger thermal outputs
- Adaptable: can replace heat sources with more efficient systems in the future – still using network

#### Challenges

- Large installation cost: three key areas, the heat network pipes (to be trenched underground), the central Energy Centre, and the interface between primary network and individual properties
- Can be positively impacted by connected renewable electricity generation

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## Individual retrofit solutions

While a heat network is being explored to provide low carbon and affordable heating for all residents within Littlebury, it may not be feasible for some dwellings to connect to a heat network. To ensure that every dwelling within Littlebury has the opportunity to benefit from lower carbon heating and reduced energy use, several retrofit options have been identified. This feasibility study explored retrofit options available to residents within Littlebury, given the historic nature of some buildings in the village, the benefits of retrofits, and the barriers to retrofit. All retrofit options examined in this study include the installation of an air source heat pump to decarbonise heating systems.

We studied two scales of retrofit:

- Light measures, which can be usually installed by homeowners and will require no additional work, and
- Deeper retrofit options that will require professional installation – and in some cases permissions from the local authority.

Noting the character or appearance of a conservation area is protected, retrofit works that would alter the external appearance of buildings within it may limit retrofit options. The full report contains lists of retrofit measures that may be allowable for Listed Buildings and Conservation Areas – citing specific guidance from Historic England.

The most impactful decarbonisation strategy for Littlebury will combine home retrofitting with a district heat network.

| Conservation                        | Listed                              | Measure  |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Draft excluder strips, for windows and doors     |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Internal loft hatch / loft insulation            |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Secondary glazing / Double glazing where allowed |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Air Source Heat Pump                             |
| <input checked="" type="checkbox"/> |                                     | Mechanical Ventilation with Heat recovery(MVHR)  |
| <input checked="" type="checkbox"/> |                                     | Cavity / internal / floor insulation.            |

**“With 20% of total UK carbon emissions coming from our 29 million existing households there is an urgent need to reduce carbon emissions in all housing stock including Conservation Areas.”**

*Architects Climate Action Network, Conservation Area Toolkit*





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## Key benefits of the project

- **Lower heating costs for residents:** The project has the potential to reduce heating costs by introducing retrofit measures and a shared, efficient system that could lower individual energy bills.
- **Reliable and efficient heating:** The proposed district system offers a reliable and modern alternative to older, less efficient heating methods. With a centralised management approach, the risk of breakdowns or inefficiencies is minimised, ensuring a more consistent and dependable heating source. If a home cannot connect to the district system, installation of an individual air source heat pump (ASHP) can still yield these benefits. ASHPs have a long track record of high performance and durability when installed and operated correctly.
- **Significant reduction in carbon emissions:** One of the primary goals of the project is to drastically reduce Littlebury's carbon footprint. Preliminary estimates suggest that the switch to a low/zero-carbon heating system could reduce the village's carbon emissions by approximately 75%, contributing to both national and global efforts to combat climate change. This would also align with the UK's climate targets for reducing greenhouse gas emissions.
- **Energy savings and efficiency gains:** A new community heat network is expected to improve heating system efficiency from circa 90% (for a typical modern oil boiler) to over 250%, helping households consume less energy. This improvement in energy efficiency will translate to both environmental and economic savings for residents, as less energy is used. Individual air source heat pumps fulfil the same energy efficiency and decarbonisation aims.
- **Increased energy independence:** By transitioning to a centralised, locally managed heating system, Littlebury will reduce its reliance on external energy sources, including reducing the reliance on polluting fossil fuels. A more resilient system ensures stable service, particularly during extreme weather conditions, when heating is most critical.
- **Long-term benefits for future generations:** The feasibility study lays the groundwork for a sustainable heating solution that will benefit not only current residents but future generations. By investing in a low/zero carbon heating system, Littlebury is ensuring the long-term environmental and economic well-being of the village.

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## Next steps

<https://lep.swce.co.uk>  
contact@lep.org.uk or 01799 252501

### Support the project

- Sign up for project updates
- Share your support with neighbours
- Submit questions to the project team
- Join the LEP working group

### Grant funding

Support SWCE in applying for future rounds of the Community Energy Fund to support Phase 2

### Discover retrofit solutions

#### Community Energy South:

<https://www.youtube.com/watch?v=3jjq0nYNA1Q>

#### Historic England Advice:

<https://historicengland.org.uk/images-books/publications/adapting-historic-buildings-energy-carbon-efficiency-advice-note-18/>

#### Architects Climate Action Network:

<https://www.architectscan.org/conservation-area-toolkit-retrofit-homes>