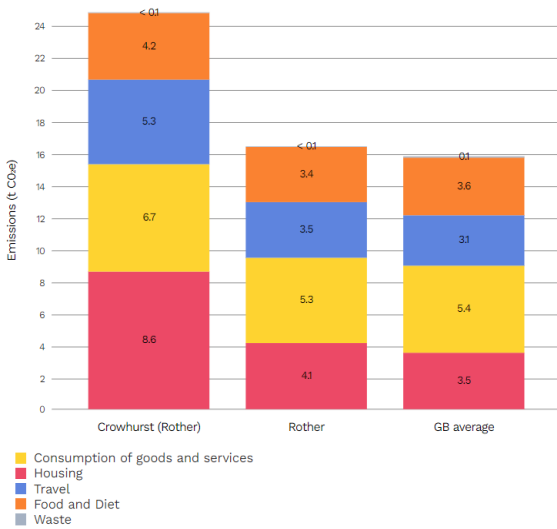


Warmer Crowhurst Project Summary

Project Background

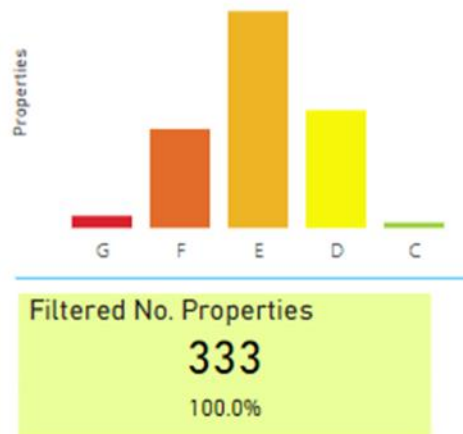
In its Climate and Ecological Emergency Resolution in 2019, Crowhurst has committed reducing carbon emissions. Spearheaded by BHESCo with the assistance of Energise Sussex Coast (two community energy groups) and the Climate and Ecological Emergency Working Group of the Crowhurst Parish Council, a successful grant application for £40,000 was secured from the Rural Community Energy Fund to conduct a feasibility study that would create a plan to provide clean, affordable heat for village residents, while reducing carbon emissions to reflect its ambition to become carbon neutral by 2030.

IMPACT | community carbon calculator



The initiative was called the Warmer Crowhurst Clean Energy Project ("Warmer Crowhurst"). The feasibility study intended to look at ways to migrate primary heating systems in homes from oil, LPG and coal to efficient, renewable sources of heat. There are hundreds of rural communities off the gas grid that are not protected by the energy regulator, OFGEM's price gap, leaving them vulnerable to massive price hikes in their heating fuel. The government is very keen to establish scalable solutions to this problem. Housing is responsible for a large share of the carbon emissions in the village, associated with burning heating oil at 1.5X the average for Great Britain, or 35% of all carbon emissions produced by the village as a whole.

The first step was to look village homes and their heating systems. So Warmer Crowhurst undertook a survey of fifty properties in the village, while asking residents to complete a questionnaire about their energy use. Using this data the Warmer Crowhurst Team has concluded its feasibility study to identify cost-effective solutions for decarbonising household heating in the village.



Project Legacy

Crowhurst has the opportunity to say no to oil, coal and LPG, in a systematic, cost effective way through community ownership. The feasibility study has recommended a plan to improve the ability of your home to retain heat from affordable, efficient systems powered by electricity. This is a chance for residents of Crowhurst to demonstrate leadership in a national effort to choose a sustainable way of life that secures the wellbeing of our planet for generations to come.

Warmer Crowhurst Project Summary

Energy efficiency

It is recommended that all potential participants in the heat network should upgrade their property's ability to retain heat, or thermal performance. A well-insulated home retains heat effectively, needing less energy to maintain a comfortable temperature, thus ensuring that your energy bills stay low after the conversion to a clean renewable heating system. BHESCo proposes offering low interest community loans to support the uptake of new measures, on terms amenable to local residents.

Based on the fifty property surveys that were completed, we recommend the measures in the table below. Installing these measures would improve the EPC of each home to 74.84, the equivalent of EPC band C, demonstrating an ability to retain heat and lower future energy bills, all indicators of higher market value.

Measure Name	Estimated cost/household	Number of households impacted
Cavity Wall insulation	£685 - £1,245	98
Additional loft insulation to 300mm thick	£500 - £861	228
Insulate solid floor	£732 - £3,869	33
A++ Double Glazing	£2,926 - £8,356	41
Secondary Glazing	£800 - £2,943	41

Low-carbon heating – Heat Pumps

Once efforts have been made to maximise the thermal efficiency of the property, renewable heating solutions can be introduced to deliver comfort and affordability. The heat network design was prepared by RINA Tech, an experienced global heat engineering consultancy. 17 heat networks were proposed, connecting 167 homes, or 50% of all homes. The remaining households that cannot be connected to a heat network would be fit with an air source heat pump, as described below.

A heat pump would be installed in each home to deliver affordable low-carbon heat on shared pipework between the boreholes that collect the warmer brine running through the network to your home. Further work would be required to finalise important issues like land rights to install the pipework and other infrastructure that is expected to last for 100 years. The long term nature of the investment ensures clean, affordable heating for generations.

BHESCo recommends establishing a legal entity to develop the project. This organisation would raise the funding to finance the construction of the heat network. The project is expected to attract a £2 million subsidy from government. Residents could invest in their own systems, while earning a 3% return. This means for no upfront cost, an appointed developer would install, own and operate the system on behalf of residents. Customers would enter into a long term heat supply agreement that would charge a fixed price for the heat consumed by each household connected to the network.

Warmer Crowhurst Project Summary

Heat prices – Heat Network

The community ownership model means that village residents can have access to clean, affordable heat over a long period of time, or 25 years. Prices would only increase by 3% each year, regardless of increases in energy prices, providing you with reliable heating at a predictable price. There is no standing charge, you pay for the heat that you use by direct debit, measured in kWh. The system is monitored remotely, so the service provider receives an alarm if there is a problem, allowing for proactive servicing.

The feasibility study has produced some indicative prices for heat for heat network customers. These are subject to change, based on firm quotations from qualified contractors who would build the system. The prices are intended to be the equivalent of the cost of oil heating fixed at 67p/litre. The cost of the increase in your electricity bill to power the heat pumps has been included in our calculation.

Existing Fuel Source	Heat price, excluding VAT (p/kWh)	Heat price, including VAT (p/kWh)
Electricity	14	16.8
Oil	4	4.8
LPG	4	4.8
Solid Fuel	4	4.8

On average, a high quality ground source heat pump as proposed for this project, produces 3.7 units of heat for each unit of electricity used. For example, for a home that requires 1,800 litres of heating oil each year to create a consistent heating temperature of 21°C, the cost of heating associated with the heat supply agreement would be £735. The increase in the electricity bill at a price of 19p/kWh would be £944 per year. Therefore, total heating and hot water costs for that household will be £1,649. This includes the annual servicing and any costs associated with maintenance that may be required.

Heat Prices – Air Source Heat Pumps

The feasibility study addressed the alternative of installing air source heat pumps in everyone's home over a staged programme that would be rolled out over a 10 year period. The contractual period would be slightly less than for the heat network or 20 years. This means that the price for the air source heat pump community ownership model is slightly higher. This is because air source heat pumps are slightly less efficient than ground source, producing on average 2.8 units of heat for each unit of electricity used.

Existing Fuel Source	Heat price, excluding VAT (p/kWh)	Heat price, including VAT (p/kWh)
Electricity	15.4	18.48
Oil	4.4	5.28
LPG	4.4	5.28
Solid Fuel	4.4	5.28

Warmer Crowhurst Project Summary

Heat prices – Air Source Heat Pumps (continued)

For example, for a home that requires 1,800 litres of heating oil each year to create a consistent heating temperature of 21°C, the cost of heating associated with the heat supply agreement would be £809. The increase in the electricity bill at a price of 19p/kWh would be £1,247 per year. Therefore, total heating and hot water costs for that household will be £2,056. This includes the annual servicing and any costs associated with maintenance that may be required.

Issues like the impact of flooding for some houses would still need to be investigated and resolved.

Should the homeowner want to purchase the assets at any time to end the agreement, the purchase price would be determined by the Net Present Value (NPV) of the agreement for the remaining period, to repay BHESCo's upfront investment. This makes the air source heat pump solution more attractive, in that the agreement can be terminated at any time. It is also less complicated because the issue of land rights is avoided because the systems are independent.

Conclusions and Summary

Once we agree a way forward, we can look at how the development phase of the project will be funded. This will involve obtaining a source of funding for the development, issuing an invitation to tender for a contractor to start the energy efficiency programme roll out, designing a retrofit programme with an architect, agreeing a heat pump connection programme with UK Power Networks (the Distribution Services Operator) and achieving firm commitments in the form of a letter of intent from residents once we can secure a firm heat price for the heat supply agreements.

It has been a privilege to work alongside Crowhurst Parish Council, Energise Sussex Coast and RINA Tech on this visionary feasibility study. We know that the decarbonisation of heat is absolutely fundamental to securing a liveable planet for future generations, and we believe that Crowhurst is demonstrating inspirational leadership on behalf of rural communities around the country.

We hope that this feasibility study will become the first step in a journey towards low-carbon living for Crowhurst residents, and we look forward to building upon this valuable partnership and supporting the village in achieving its carbon reduction goals.

