



Clean Energy for Planet not for profit

Decarbonising Heat
Proposal for:
**Kingston Pavilion
St Pancras Green
Recreational Ground
Kingston, BN7 3LN**



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Customer benefits from this proposal	
Proposal outline	16kW ASHP Heat Pump – such as Mastertherm or Ecoforest
Heat supply agreement term	15 years

Here is our proposal outlining the benefits of replacing the gas boiler with a heat pump at the Kingston Pavilion for the Kingston Parish Council and for the benefit of the local community. Thank you for your agreement to work exclusively with BHESCO to develop your energy savings project. We are delighted this opportunity to submit our proposal to you.

Yours faithfully,

Kayla Ente
Founder

Introduction

This report details how BHESCO can assist Kingston Parish Council with their goal to start their journey to achieving Net Zero as a parish by replacing the gas boiler at the Pavilion recreational centre with a low carbon emission heating system. We recommend installing an air source heat pump which will use a relatively small amount of electricity to generate a much larger heat output, i.e., 3,794kWh of electricity to generate 14,417kWh of heat.

Site description

The pavilion is a modern building constructed in 2010 and includes two meeting rooms, kitchen and changing facilities with a total internal floor area of 189m². Building regulations at the time will have ensured relatively low heat loss through walls, floor, roof and windows. The main source of heat loss is due to ventilation which is via trickle vents in the meeting rooms and extractors in the changing rooms. The building has underfloor heating which is ideal for heating from a heat pump. Hot water consumption is expected to be relatively low as there is only one shower in the building for referees.

Customer requirements

Kingston Parish Council would like to understand the costs of installing and operating a low carbon heat pump rather than simply replacing the gas boiler which is understood to require imminent replacement.

BHESCO recommends

Heating

We have estimated the building heat load using the plans provided and building regulations in place at the time of construction. We recommend an air source heat pump of around 16kW such as the Ecoforest ecoAIR EVI 4-20. Heat pumps operate by extracting heat from the air, even when it is cold, and converting this to water at temperatures of up to 65 degrees to provide heating and hot water in buildings. Air source heat pumps work best with low temperature water, such as that required for underfloor heating (typically 30-40°C). Under these conditions an air source heat pump will deliver at least 3kWh heat output for every kWh of electricity consumed.

The heat pump must be installed outside the building, ideally close to the existing gas boiler position, but it could also be at the north end of the building to move as far as possible from surrounding houses.



Hot water

A new hot water cylinder will almost certainly be required as heat pumps require a higher heat exchanger surface area compared to those for gas boilers. Since there is only one shower in the building this will not need to be a particularly large cylinder and could be as small as 125 litres.



Ecoforest ecoAIR 4-20kW Air Source Heat Pump:

- High quality air to water heat pump system
- Inverter drive gives wide operating range to ensure good efficiency under all conditions
- High gain hot water cylinder 125 litre 1030mm tall, 540mm diameter

Funding

We propose to enter into a heat supply agreement with Kingston Parish Council to supply renewable heat to the Kingston Pavilion. This means, for no upfront cost, BHESCO will install the heat pump for the Pavilion, maintain and own the system for the proposed 15 years of the expected life of the heat pump.

The estimated cost of the project is £14,700, including our project management fee to oversee the successful installation of a suitable heat pump to deliver the required heat to the building. If you decide to proceed with our proposed way forward, we will obtain quotes from qualified, certified installers to finalise our offer. Because this is a new way of funding renewable energy, it is important that you understand how the agreement will work.

The systems installed will be owned by BHESCO for the term of the heat supply agreement. By working with BHESCO on your energy provision, you are supporting social enterprise to bring more care into our communities

The system will be owned by shareholders from our community who will earn 3% interest on their investment in the project until your agreement period ends. Kingston Parish Council and residents of Kingston are welcome to invest in the project, earning a 3% return on the shares purchased up to a total allowable investment of £100,000.



We will enter into a Heat Supply agreement to finance the heating and hot water equipment. A description of the agreement is outlined as follows:

Heat Supply Agreement

We estimate, based on our analysis of the building plans, heat loads and the energy bill information that you have communicated to us, that the monthly payments to us for the heat to be supplied to the building will be £151.78 in the first year. These payments will increase each year by 3% which is our estimate of annual RPI. Your payments will be fixed to provide you with certainty in your cash flows, regardless of how energy prices change.

The total impact of the Heat Supply Agreement is detailed below for your reference:

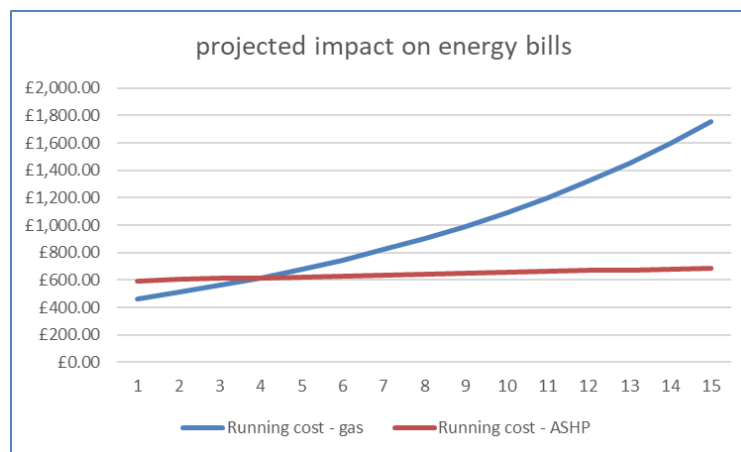
Year	Annual payment to BHESCO	Electricity bill increase	Gas bill	cost in excess of gas heating	Carbon emissions savings (kg)	Monthly Payment to BHESCO
2021	£1,821	£593	£463	£1,952	2,484	£151.78
2022	£1,876	£605	£509	£1,972	2,562	£156.34
2023	£1,932	£611	£560	£1,983	2,633	£161.03
2024	£1,990	£617	£616	£1,991	2,697	£165.86
2025	£2,050	£623	£678	£1,996	2,755	£170.83
2026	£2,111	£629	£745	£1,996	2,807	£175.96
2027	£2,175	£636	£820	£1,991	2,853	£181.24
2028	£2,240	£642	£902	£1,980	2,895	£186.67
2029	£2,307	£648	£992	£1,964	2,933	£192.27
2030	£2,376	£655	£1,091	£1,940	2,967	£198.04
2031	£2,448	£662	£1,200	£1,909	2,998	£203.98
2032	£2,521	£668	£1,320	£1,869	3,025	£210.10
2033	£2,597	£675	£1,452	£1,819	3,050	£216.40
2034	£2,675	£682	£1,598	£1,759	3,072	£222.90
2035	£2,755	£688	£1,757	£1,686	3,092	£229.58
Total	£33,876	£9,634	£14,241	£28,806	42,823	

(Numbers used here are notional, they are used only to demonstrate how the model works. We cannot guarantee that these are the actual savings).

The carbon emissions saved from this project each year is the equivalent of planting 41 trees, or driving 6,243 miles. The 42 tonnes saved is the equivalent of removing 9 passenger cars off the road over the 15 years.

The Non Domestic Renewable Heat Incentive subsidy was available to offset these costs however this has been withdrawn by government. At present, there is no subsidy available by government to support the installation of heat pumps on non-domestic properties.

We expect that gas prices will increase over the coming years as efforts are made to equalise the discrepancies in environmental and social levies on electricity prices. This will have the impact of significantly increasing the cost of heating the Pavilion with gas over the life of this contract. Our projection is included here in the following graph:



Once the heat supply agreement has been paid in full over the 15 years the ownership of the heat pump, hot water cylinder and all associated equipment gets transferred to Kingston Parish Council. BHESCO will maintain the systems we install for the period of our agreement free of charge.

Next steps

Heat supply agreement

Should you agree to work with BHESCO, we will need a signed letter of intent that you are happy with the terms as set forth in this document, that you intend to proceed with signing the heat supply agreement. We will send you a draft of the heat supply agreement for your consideration.

Installation date

We are aiming for a start date as soon as possible once the heat supply agreement is signed.