

## **POTENTIAL SAVINGS ASSOCIATED WITH THE APPLICATION OF RENEWABLE ENERGY SCHEMES**

The majority of schools in the UK currently utilise some form of fossil fuel as a means of meeting both the space heating and hot water demands of the school buildings. The present annual cost of this fossil fuel whether natural gas, light heating oil or liquefied petroleum gas (LPG) is disproportionately high compared to most of the other running costs of the school, added to which the near certainty of above inflation price rises for such fuels.

This means there is a strong argument to investigate an alternative to fossil fuel. The argument is at its most compelling for those schools which for whatever reason currently use light heating oil; nevertheless even where natural gas is the main fuel there is a good case for investigating the renewable alternative, particularly in light of the substantial increases in price expected over the next few years.

The application of renewable energy in whatever form is a valid alternative. The most appropriate options for consideration for the majority of schools would be biomass boilers or ground source heat pumps (GSHP), in all probability where the maximum heat demand exceeds 100kW biomass boilers will be the preferred choice, whereas up to 100kW both technologies are worthy of consideration. However the likelihood is that all schemes will require a bespoke approach and individual circumstances will in the most part determine the most favourable proposal.

There is clear evidence that utilising the renewable energy alternative will accrue significant savings in the annual budget of any school which currently relies on fossil fuel, these savings will be twofold;

- A substantial reduction in the actual cost of energy, whether that be wood for biomass boilers, or electricity to power GSHP's.
- A guaranteed income stream over 20 years from the Government's Renewable Heat Incentive (RHI) scheme, subject to meeting the required criteria.

Although as discussed, all projects are analysed on a bespoke basis, it is nevertheless feasible to assess potential savings in a broad-brush approach as follows;

**Table 1: Estimated Savings of Biomass boiler alternative, (natural gas)**

Annual Fuel Costs	£20,000	£50,000	£100,000	£150,000
Possible Yearly Savings*	£29,000 <sup>#</sup>	£52,000	£80,000	£115,000

<sup>#</sup> Typically £12k fuel cost saving, £17K RHI payment

**Table 2: Estimated Savings of Biomass boiler alternative, (light heating oil)**

Annual Fuel Costs	£20,000	£50,000	£100,000	£150,000
Possible Yearly Savings*	£20,000 <sup>#</sup>	£42,000	£82,000	£115,000
# Typically £9k fuel cost saving, £11K RHI payment				

\*assumes wood at 2.5p/kWh, natural gas at 5p/kWh, oil at 7p/kWh and maximum RHI achieved

**Table 3: Estimated Savings of GSHP alternative, (natural gas)**

Annual Fuel Costs	£5000	£10000	£15000	£20000
Possible Yearly Savings**	£7,800 <sup>#</sup>	£14000	£18000	£25500
# Typically £3.4k fuel cost saving, £4.4K RHI payment				

**Table 4: Estimated Savings of GSHP alternative, (light heating oil)**

Annual Fuel Costs	£5000	£10000	£15000	£20000
Possible Yearly Savings**	£7,600 <sup>#</sup>	£13000	£17500	£24000
# Typically £3.2k fuel cost saving, £4.2K RHI payment				

\*\*assumes electricity at 6.5p/kWh, natural gas at 5p/kWh, oil at 7p/kWh and maximum RHI achieved and GSHP efficiency at 4:1

The above are typical, presented in good faith, and might change post investigation, the cost of installation of the systems is very much dependant on the existing site.

d3associates provide independent design and consultancy advice on all aspects of building design, renewable energy and energy management, from new installations and refurbishments to trouble shooting existing systems.

We understand the complexities of managing schools and our team can offer a full service from feasibility and business planning to design and project delivery to maximise budgets.

Before converting to sustainable practices, it is worth remembering that reducing energy consumption is far more beneficial than generating renewable energy. The efficiency of the building fabric, heating installations and services should be established to provide a baseline allowing efficiencies (and potential savings) to be measured and an energy management plan to be developed.

Public finance is currently available in the UK for renewable energy generation. For electrical energy generation there are feed in tariffs (FIT) and for heat energy, there are renewable heat incentives (RHI).

Obtaining these may provide a secure income and some measure of independence from fluctuating utility costs.

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