

Wiltshire Council

Capital Assets Committee

18 January 2012

Subject: Oil to biomass boiler conversion programme

**Cabinet Member: Cllr Toby Sturgis
(Waste, Property, Environment and Development
Control Services)**

Key Decision: Yes

Executive Summary

That the authority invests up to £2.73 million in a programme of biomass boiler installations in the schools estate before November 2012. This project is projected to deliver a £3.3 million negative Net Present Value to the authority over the life of the scheme. This shows that it will more than pay back the initial capital investment over the 20 years including the inflation effects on money and generates an overall surplus due to the Government's Renewable Heat Incentive (RHI) over 20 years.

It will reduce the Council's carbon footprint by 1,614 tCO₂, or 14% of the corporate carbon emissions reduction target. This in turn has the potential to save a projected £1 million of carbon trading costs (CRC costs) over 20 years from the schools estate and will deliver reputational benefits from an improved position in the CRC league table.

The proposed approach is for the Council to pay for both the biomass boiler installation and fuel, and charge schools for the supply of heat.

The programme will also generate employment and improve woodland management locally by stimulating a demand for biomass fuels.

Proposals

- a) To agree a commitment to allocate capital funding for the programme of works as outlined in paragraph 12 (up to £2.73 million of funding to deliver a £3.3 million negative Net Present Value to the authority over the life of the scheme).
- b) To delegate authority to Alistair Cunningham, Service Director for Economy & Enterprise, to implement the programme, in consultation with the Service Director for Finance and the Service Director for Business Services.

Reason for Proposal

From November 2011 the Government's Renewable Heat Incentive (RHI) scheme encourages the use of biomass for the generation of heat. The availability of this incentive significantly increases the cost effectiveness of converting from oil to biomass and would generate a revenue stream for 20 years through regular subsidy payments.

The heating of buildings generates carbon emissions through the burning of fossil fuels. The Council is committed to reducing carbon emissions and one approach is to use a renewable (carbon neutral) heating fuel, such as wood (biomass).

The authority is also responsible for maintaining and replacing boiler plant in foundation and grant maintained schools, some of which fall within the scope of this proposal. As there is currently insufficient finance available to upgrade many of the older, inefficient oil boilers, the financial opportunities made available through the RHI could be used to finance these replacements.

A significant capital investment is required to maximise the financial, carbon reduction, reputational and other benefits achievable through a larger programme that would otherwise be financed piecemeal from existing budgets.

There is an expectation that the generous tariff available through the RHI scheme will be reviewed after the first year and could be revised downwards. A programme of works needs to be initiated as early as possible to reduce the risk of failing to secure the maximum level of subsidy currently on offer. In order to provide certainty to investors, the Government has committed to maintaining the advertised support levels for 20 years for all installations prior to a review.

The development of a local biomass supply chain is integral to this proposal so that local economic benefits are realised. There is the potential to bring woodlands in Wiltshire into management in order to provide the biomass fuel once a demand has been established. European funding will be explored to maximise the reach of this element of the programme.

Alistair Cunningham
Service Director, Economy & Enterprise

Wiltshire Council

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**Cabinet member: Cllr Toby Sturgis
(Waste, Property, Environment and Development
Control Services)**

Key Decision: Yes

Purpose of Report

1. This report is to outline the case for an oil to biomass boiler conversion investment programme in schools to be completed by November 2012. The proposed approach is for the Council to pay for both the biomass boiler installation and fuel, and charge schools for the supply of heat. This project is projected to deliver a £3.3 million negative Net Present Value to the authority over the life of the scheme. This shows that it will more than pay back the initial capital investment over the 20 years including the inflation effects on money and generates an overall surplus due to the Government's Renewable Heat Incentive (RHI) over 20 years. The programme will reduce the Council's carbon footprint by 1,614 tCO₂, saving a projected £1 million of carbon trading costs (CRC costs) over 20 years from the schools estate and delivering reputational benefits from an improved position in the CRC league table. The programme will also generate employment and improve woodland management locally by stimulating a demand for biomass fuels.

Background

2. The Council has a corporate objective to reduce its carbon footprint by 11,825 tCO₂ by 2013-14. Biomass fuels are carbon neutral and therefore represent a significant carbon saving over carbon-intensive fossil fuels such as oil. Further information on biomass and what other councils are doing is contained in **Appendix C**.
3. The RHI scheme is a Government initiative to stimulate the generation of renewable heat in the UK and opened to new applicants during November 2011. The scheme is similar in design to the Feed-In Tariff (FIT) which promoted the generation of renewable electricity. The FIT has recently been reviewed due to overwhelming demand and the tariffs have been reduced significantly to reflect reduction in equipment capital costs since the scheme began.

4. The RHI functions in a similar way to the FIT, with payments being made from the scheme administrator (Ofgem) to the boiler operator using a formula based on the quantity of heat produced by a qualifying project. The tariff for biomass has been set for the first year and will be reviewed in November 2012, although an earlier review is possible if prompted by unexpectedly high uptake.
5. A variety of factors will affect the uptake of RHI-qualifying projects. These include the excellent financial return, perception of a low-risk long-term revenue generation opportunity and the likelihood of capital investment intended for FIT-qualifying projects being diverted into RHI projects following the FIT review. These factors, combined with the number of qualifying projects that have already been installed by other organisations, could indicate that the RHI scheme will quickly overspend against forecasts and the review planned for November 2012 will result in similar changes to those applied to the FIT, possibly including closure of the scheme to new applicants.
6. Further detail on the RHI, along with a worked example of the income that can be generated for a site, can be found in **Appendix D**.
7. Strategic Property Services has responsibility for maintaining and replacing the boiler plant at grant-maintained schools. Where boilers reach the end-of-life the expense of replacement falls to the corporate buildings maintenance budget. This programme would reduce the existing cost liabilities in this regard.
8. The authority is permitted to charge for the sale of heat and electricity and there is a precedent for this within the corporate estate, where a leisure centre is providing heat to a school on the same site. Recharging for other services, for example, access to facilities, is commonplace.
9. The development of a local biomass supply chain is integral to this proposal so that local economic benefits are realised. There is the potential to bring woodlands in Wiltshire into management in order to provide the biomass fuel once a demand has been established. European funding will be explored to maximise the reach of this element of the programme.

Main Considerations for the Council

10. To enable the full cost benefit to be captured, the Council will need to charge the schools for the supply of metered heat. This will be through an agreed tariff that recovers the costs to the authority of operating the equipment. The Council will procure the fuel in bulk and include the cost of the fuel in the charge to schools.
11. Existing cost liabilities held by Strategic Property Services with regard to future boiler replacement and increasing maintenance costs of aging plant can be resolved cost-effectively through this programme. The policy for oil boiler replacement is currently that an oil boiler system will not be replaced like-for-like unless an alternative is not technically viable. Where a range of alternatives is available the expectation is that biomass will be preferred as a low risk and cost-effective option.

12. The likely limited window for entering the RHI scheme means that the move from oil to biomass will be achieved most cost-effectively if brought forward into a large, co-ordinated programme, rather than as individual works spread over a number of years. Once the RHI scheme has closed it will still be preferable to convert to biomass, but this will not realise the additional financial rewards currently on offer. In order to enter the RHI scheme before November 2012, works will need to be carried out in the school summer holidays and October half term, which presents a tight timescale for the programme (see **Appendix A**).
13. Table 12.1 presents the proposed investment option for this programme. Further detail on the sites included within the programme scope and the detailed business case behind the figures contained within the table can be found in **Appendix B**. Progressing with a large scale roll out of biomass can generate a number of benefits including:
- Financial efficiencies associated with the procurement of a large quantity of equipment and fuel.
 - Operational efficiencies when servicing and managing the boiler infrastructure.
 - Reputational benefits from the carbon savings realised through using this carbon neutral fuel source, improving the council's position in the CRC league table.
 - The ability to demonstrate this technology, educating others across the county.
 - The creation of a sizeable local demand for biomass which will stimulate the biomass market.
 - Benefits to schools include a reduction in CRC costs (there is no charge for emissions from biomass); a saving of staff time which is currently spent procuring oil; and an insulation from future oil price increases.

Recognising the significant investment requested for this oil to biomass conversion programme, it should be recognised that this programme is scalable. Should the Committee feel that a project valued at £2.73 million cannot proceed, it is requested that a lower capital sum be allocated to enable it to progress on a smaller scale.

Table 12.1: Summary of capital required for oil to biomass boiler conversion Programme

Estimated capital (£k)	Revenue income and savings over 20 years less additional costs (£k)	Annual carbon footprint reduction (tCO ₂)	Indicative number of sites
2,730	3,774	1,641	32

14. **Appendix E** shows that this project is projected to deliver a £3.3 million negative Net Present Value to the authority over the life of the scheme. This shows that it will more than pay back the initial capital investment over the 20 years including the inflation effects on money and generates an overall surplus due to the Government's RHI over 20 years. As future inflation rates are difficult to model, these have not been incorporated. It is likely that when inflation is considered, the net income will increase. This is because it is projected that the annual inflationary uplift applied to the RHI payment will offset the increased cost of biomass fuel year on year. However, as the cost of oil is projected to increase sharply, the avoided cost will increase as well.

Benefits to the rural economy

15. The Rural Development Programme for England (RDPE) has already made several investments into the wood fuel supply chain in the Wiltshire and surrounding counties. There have been a number of woodland harvesting investments and a new business has been set up to exploit small pockets of woodland in the Savernake and also Cranborne Chase areas of the county. Forestry skills initiative will provide dedicated funds to support training for woodland managers and foresting. There is also a sustainable hedgerows scheme being developed by Cranborne Chase AONB and this could combine with the schemes promoted by the Silvanus Trust to help farmers exploit small pockets of unmanaged woodland – helping both the farmers income stream and the biodiversity credentials of the woodland. A scheme that supports the woodfuel supply chain would benefit this energy initiative and could be developed under the new rural economy grants scheme by bringing farmers together to provide fuel, but importantly to help control the quality, standard and quantity of wood chip, which the fledgling industry has struggled with in its early years. Further, if successful, Wiltshire could support development of a woodfuel hub for logistics, efficient and productive storage, knowledge sharing and supply chain economies which would be supported by the forthcoming rural growth programme.

Environmental and climate change considerations

16. The replacement of oil plant in favour of biomass will improve local air quality and reduce carbon emissions. There is a further reduction in the risk of localised environmental pollution relating to oil spillage and the general handling of oil products following their replacement with biomass. The long-term sustainability of a biomass fuel source allows the strategic aim of reducing environmental damage to be achieved, along with improvements in local sourcing of fuel and the corresponding distribution carbon footprint.
17. A large roll out of biomass boilers, as indicated in paragraph 12, has the potential to support a local supply chain for the fuel. This could accept wood from the Council's county farm sites, tree surgeons and grounds maintenance contractors working on the Council's behalf, local farmers and potentially household waste recycling centres.

18. If a local supply chain is established, a number of key environmental benefits will be realised:

- A lower carbon footprint associated with the transportation of the fuel.
- Increased biodiversity within managed woodlands.

Equalities Impact of the Proposal

19. The establishment of a local supply chain solution for wood fuel would benefit farmers and rural businesses by generating jobs, investment and a long-term market.

Risk Assessment

20. Although Central Government is encouraging the take-up of biomass, the biomass sector is currently in its infancy which is why the RHI incentive has been made available. As a result a number of risks have been identified.

Table 18.1: Summary of risks and how they could be mitigated.

Risk	Consequence	Mitigation
Review of the RHI prior to programme completion.	Any boilers not installed and certified by the review date will receive a different RHI tariff.	Install boilers in advance of the scheduled November 2012 review date.
Downgrading of the RHI tariff paid for completed installations.	The duration of the payback increases.	Minimal risk as Treasury has guaranteed income for 20 years to all those entering the scheme before review date. More likely to apply to new installations from a certain date.
Inability to install biomass boilers at certain sites.	Technical, planning or other issues may prevent the installation of a boiler or result in additional costs being incurred that affects payback rates.	Effective communication channels should be opened to resolve barriers and if this fails an alternative site could be investigated.
Climate change adaptation.	Reduced demand for heating due to a warmer climate.	Even under UKCLIP projections, heating will still be required onsite and by the time changes are observed (20-30 years) the 20 year RHI term should be coming to an end.
Closure of the school – temporarily or permanently.	Lower RHI revenue received due to less heat demand.	Loss of RHI income will be offset by lower energy bills.
Loss of the asset.	Could result in a permanent loss of RHI income.	Consider insurance compensation in light of an issue occurring.
Significant long term increase in biomass fuel price.	The payback of the programme would be increased.	Development of a local supply chain supported by EU funding.
School status changes.	Loss of income to council if school moves to academy status.	Ensure a contractual agreement is in place that would stand in the event of any future changes in status – see paragraph 30.

Risk	Consequence	Mitigation
Site alterations requiring changes to biomass system.	Replacement or movement of the boiler could result in the RHI incentive being permanently lost.	Contract provisions and consideration of how to retain boiler when developing plans.
Inability to procure biomass of a suitable quality.	Reduces efficiency of boiler plant, increasing fuel consumption.	Developing a local supply chain with agreed fuel standards.
Changes to heat loading of site.	Further energy efficiency projects could reduce the need for heating onsite.	Conservative figures have been used to estimate payback options so future energy efficiency programmes should not adversely affect payback.
Failure of new technology boilers leading to school closure.	School forced to close as heating lost in cold weather.	Retain back up boilers where necessary.

Procurement implications

21. The current intention is to explore procurement of the works and equipment via the existing term contractor framework agreement. This will help in managing the works programme, minimise the risk of failing to capture the full financial benefit and use contractors who are already familiar to both the authority and the site operators.
22. The intention is to tender for an initial short-term supply contract for biomass fuels, and develop a biomass supply chain infrastructure in the medium to longer term. The short-term contract will be tendered through the appropriate route as defined by the authority's Part 11 New Contract Regulations, in compliance with the Public Contracts Regulations 2006 (see **Appendix A** for timeline).
23. In parallel with the compliant procurement process for a short-term supply solution for biomass, work needs to be undertaken to develop the biomass supply chain, including the potential development of local producers, processors and distributors, through a dedicated staff resource. Engagement in this business area would be in line with existing corporate objectives such as to:
 - Reduce exposure of the Council to market price fluctuation
 - Provide a revenue stream
 - Increase engagement with local producers, distributors and consumers
 - Create jobs
 - Improve the competitiveness of Wiltshire businesses
 - Utilise existing council assets and capabilities for improved resource efficiency

Financial Implications

24. Planned capital spend of £2.73 million would deliver 32 schemes. **Appendix E** shows this scheme has a negative Net Present Value (i.e. a return on investment) of £3.3 million over the 20 year life. The major factor in producing such a good return on the initial investment is that the scheme assumes that over 20 years approximately £5.6 million is captured from the RHI. There are risks to the delivery of the RHI income which are contained within the report; however, at present the scheme is approved by central government and funding from the Treasury is in place to deliver this, with income for 20 years guaranteed to all those entering the scheme before the review date. If the situation changes further reports would have to be returned to members at a later date.
25. These figures are the minimum projected savings assuming that oil prices remain static. In reality with the rising cost of fuel the savings potential is greater from the cost avoidance on oil price increases. The Council will procure biomass on behalf of schools and recover all fuel, maintenance and project management costs by charging the schools for heat supplied. Charges will be set at a level equivalent to what schools are currently paying for the supply of oil.
26. In addition, the schools estate will benefit from a reduced CRC payment as shown in **Appendix E**. Showing the total negative Net present value to the Council as a whole including schools of £3.866 million (£3.3 million for Wiltshire Council and £0.6 million for School estate). The CRC savings from this programme are projected to total £1 million over 20 years (assuming that the cost of carbon increases by £2 per tonne per year).
27. Additional costs factored into the business case have been suggested for an additional post within Strategic Property Services to administer the scheme and to manage the boiler network. A further three year FTE post based in Economy & Enterprise is suggested to develop a local supply chain for the fuel and obtain European funding. Further work would be required in this area but these additional costs have been incorporated into the Business case and can be covered by the RHI payment and associated savings.

Legal Implications

28. This programme will rely on the sale of metered heat to site schools, including Academies. The Council has the power to sell electricity and heat generated from CHP plants and renewable sources by the Local Government (Miscellaneous Provisions) Act 1976 and the Sale of Electricity by Local Authorities Regulations 2010. The establishment and setting of a charge will be done in line with existing guidance documentation, to ensure all costs are recovered but no profit is made.
29. Service level agreements (SLAs) will be required with all schools participating in the programme. The content of these agreements will be confirmed by discussion with all necessary service areas, site operators and related organisations. These agreements will as a minimum detail the liabilities in relation to the use of the plant, the terms of payment, the unit rate pricing structure for the sale of heat and the retention of legal ownership of the biomass boilers by the Council.

30. Where schools convert to Academy status after signing an SLA with the Council, the Council would seek to enter into a new Council-Academy SLA as soon as the Academy comes into existence. The following are significant risks:
- (i) The new Academy may refuse to continue to purchase heat from the Council, notwithstanding any agreement entered into by the governing body of the predecessor maintained school. The Academy will be a new legal entity created on conversion and it is not possible to bind the Academy prior to its creation but only with its express agreement following conversion.
 - (ii) The new Academy will be subject to EU Procurement Rules in the same way as these rules apply to the Council's procurements. Purchasing heat from the Council directly and without competition may put the Academy in breach of the EU Procurement Rules. While adherence to the Procurement Rules in its procurements is an issue for the Academy itself nonetheless a challenge to the Academy could result in unexpected costs for the Council and (in the worst case) result in the SLA with the Academy being declared ineffective, so putting into question the Academy's ability to purchase heat from the Council.
 - (iii) It is impossible to predict how many of the maintained schools identified in **Appendix B** as potential candidates for this project will eventually convert to Academy status.
31. To mitigate the risks detailed in paragraph 30 above, the Council could take the following steps:
- (i) The Council should ensure that all SLAs include retention of legal ownership in the biomass boiler by the Council;
 - (ii) With legal ownership in the biomass boilers retained, the council would be able to exclude the boiler from the transfer of assets to the new Academy which occurs upon conversion. The Council would then be able to remove the relevant boiler from an Academy which refuses or is prohibited (by EU Procurement Rules) from purchasing heat from the Council. However, re-siting a biomass boiler would be of limited value to the Council due to inevitable loss of the RHI and cost implications;
 - (iii) The Council could seek to ensure that (in the case of a community school) the 125 year lease entered into by the Council as landlord and the new Academy or (in the case of a voluntary or foundation school) a separate side agreement to be negotiated with the new Academy, contains clawback provisions for RHI related costs from the Academy. However, there is no guarantee that this would be successfully negotiated;
 - (iv) Woodford Valley CE Primary School is one of the potential schools identified in **Appendix B**. This school is due to convert to Academy status in Spring 2012. Any plans for this school should therefore be delayed so that no investment is made before an SLA is signed with the new Academy.

32. The following points should be noted:
- (i) The Department for Education is unlikely to assist the Council in enforcement of any agreement with an Academy relating to RHI costs already agreed with the predecessor maintained school.
 - (ii) The Department for Education upholds the principle that an Academy should be financially no better or worse off than its predecessor maintained school as a result of conversion. It may be that any attempt to remove a biomass boiler from an Academy site would be prevented by this principle, due to the cost involved in replacing it by the school.
 - (iii) For some time the Council has successfully negotiated clawback of CRC related costs and penalties with new Academies since this issue was identified in the summer. In these cases, there is no direct financial benefit to the Council in reduction of CRC related costs, although overall carbon reduction and reputational benefits would of course continue.
 - (iv) The Council's proposal under which it would charge individual schools (including Academies) for their CRC costs is mentioned elsewhere in this report. In conjunction note DECC's discussion paper titled "Review of Academies' Participation in the CRC Energy Efficiency Scheme". Ultimately, it is possible that government may remove the Council's responsibility for Academies' emission costs.

Options Considered

33. For schools that currently use oil, an evaluation of alternative heating options has been undertaken. The findings are summarised in Table 28.1. After undertaking this exercise it was determined that the most financially and environmentally sustainable fuel source to replace oil boilers is biomass.

Table 28.1: Comparison of alternative fuel sources with heating oil

Alternative	Benefits	Detractions	Carbon impact ¹	Financial impact	Assessment of viability
Natural gas	Low cost, low carbon, no storage, reliable	Relatively costly to install, very occasional service disruption	37.3% less CO ₂ emitted per kWh	Oil used in areas off gas grid. Connection to network would be prohibitively expensive.	Not viable.
LPG / petroleum fuels	Lower cost, lower carbon	Special storage requirements can be limiting, few suppliers	15% less CO ₂ emitted per kWh	Due to lack of competition amongst suppliers not as financial advantageous as biomass.	Currently viable, but biomass fuel supply is cheaper and could be procured locally.
Electric heat pumps	Lower cost, lower carbon, avoidance of stored fuels, potential to make heating zero carbon	Total reliance on electricity, reliability issues, requires major changes to heating system	91% more CO ₂ emitted per kWh	Significant costs required in relation to change the heating system infrastructure at each site.	Not viable.

Alternative	Benefits	Detractions	Carbon impact¹	Financial impact	Assessment of viability
Conventional electric heating	Avoidance of stored fuels	Higher cost, higher carbon, Total reliance on electricity	91% more CO ₂ emitted per kWh	High cost per unit of electricity used compared with oil	Not viable
Biomass	Lower cost, carbon neutral, variety of suppliers, 20-year RHI subsidy	Relatively expensive to install, fuel store must be located adjacent to boiler	Carbon neutral	Expensive to install but incentivised through the RHI. Biomass fuel cheaper than all other options.	Viable

¹ Figures obtained using 2011 DEFRA GHG conversion factors

34. If this programme does not go ahead, the Council will retain a significant liability for the replacement of oil fired boilers in schools that have reached the end of their life (each boiler costs upwards of £10,000 to replace).

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The following unpublished documents have been relied on in the preparation of this Report:

None

Appendices:

- Appendix A - Procurement and installation timelines
- Appendix B - List of sites and detailed business case
- Appendix C - Briefing note on biomass
- Appendix D - Briefing note on the Renewable Heat Incentive
- Appendix E - Financial model – business case for biomass boiler programme