



AGENDA

SELECT COMMITTEE - RENEWABLE ENERGY

Wednesday, 12th May, 2010, at 1.30 pm

Ask for: **Christine Singh/Sue
Frampton**
Telephone **(01622) 694334 or
694993**

**Bowl Room, Sessions House, County Hall
Maidstone**

Tea/Coffee will be available 15 before the start of the meeting in the meeting room

Membership

Mr K A Ferrin, MBE (Chairman), Mr C Hibberd, Mr D A Hirst, Mr R E King, Mr T Prater, Mrs P A V Stockell, Mrs E M Tweed and Mr C P Smith

UNRESTRICTED ITEMS

(During these items the meeting is likely to be open to the public)

General Briefing (Pages 1 - 44)

- 13.30 Ian Tubby - Head of Biomass Energy Centre and Matthew Woodcock - Programme Manager, South East Region, Forestry Commission (Pages 45 - 48)
- 14.30 Jonathan Scurlock - Chief Adviser, Renewable Energy and Climate Change and William White - South East Regional Director, National Farmers Union (Pages 49 - 50)
- 15.15 Dr Howard Lee - Lecturer and Sustainability Champion, Hadlow College (Pages 51 - 52)

At the end of the public session, Members of the Committee should remain in the meeting room for 15 minutes for summing up

EXEMPT ITEMS

(At the time of preparing the agenda there were no exempt items. During any such items which may arise the meeting is likely NOT to be open to the public)

Peter Sass
Head of Democratic Services and Local Leadership
(01622) 694002
Tuesday, 4 May 2010

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Renewable Energy Select Committee – Topic Sheet

Reducing carbon emissions from the KCC Estate

KCC's Climate Change Select Committee report in 2006, noted the importance of leading by example on sustainability and setting 'ambitious targets for carbon reduction and renewable energy use'.

CRC Energy Efficiency Scheme

Following on from the Climate Change Act 2008, the CRC Energy Efficiency Scheme (formerly known as the Carbon Reduction Commitment) came into effect in April 2010. This mandatory scheme is designed to bring about an 80% reduction in greenhouse gas emissions by 2050 compared to the 1990 baseline, by incentivizing organisations to implement energy efficiency and other measures.

KCC is one of around 5,000 organisations who will have to monitor their CO₂ emissions, and purchase equivalent allowances on an annual basis. Performance will be measured in 'league table' style against different organisations including, for example, supermarkets. If KCC performs well, it will earn rewards, as money raised from selling allowances is recycled back to 'the winners'; if it fails to make CO₂ reductions, substantial penalties will result and the select committee has heard estimates for penalties in the range of £300,000 to £1.4 million.

KCC will benefit from a degree of protection from penalties initially through the achievement of the Carbon Trust Standard certification award which provides 'early action credits'.

Full details can be found at:

http://www.decc.gov.uk/media/viewfile.ashx?filepath=what%20we%20do/a%20low%20carbon%20uk/crc/1_20100406154137_e_@@_21934crcpdfawv9.pdf&filetype=4

National Performance Indicators (NPIs) NI185 and NI186

Carbon reduction is monitored through NPIs 185 and 186 on which the government expects local authorities to take the lead. NI185 relates to CO₂ emissions from local authority operations and NI186 to per capita CO₂ emissions in the local area.

For KCC NI185 mainly applies to the Children, Families and Education Directorate as 86% of the KCC estate comprises schools. Data on individual schools' energy performance¹ is required and those state schools (along with other public buildings) over 1000m² are required to have Display Energy Certificates (DECs) giving energy efficiency information and carbon ratings A-G based on the amount of energy used, which must be updated every year. The original survey work to provide DEC data was carried out by KCC's Energy Management Team who

¹DCSF (January 2010) Road to Zero Carbon: Final Report of the Zero Carbon Taskforce

achieved cost savings of £70,000 by becoming accredited assessors, avoiding the need to appoint external surveyors.

Communities Directorate decided in 2009 to input KCC information on properties, to the Enterprise spreadsheet and Property Group is now aiming to record all premises' running costs. DEC data and advisory reports (which contain energy data) are input as soon as they are made available. A proportion of this data has been received so far but data collation and format across all Directorates is not standardised, which is causing delays². Whether a property has renewable energy technologies on site is not recorded and certain other data which may assist strategic energy management (such as Premises Energy Ratings) cannot be reported upon as they are recorded in documents attached to the main spreadsheet. There are currently unused energy-related spreadsheet fields. Data from schools can be directly input.

For NI186 Kent districts are part of the reporting framework, as is KCC but in addition KCC monitor and co-ordinate all the district submissions.

Revised National Statistics on Local and Regional CO₂ Emissions Estimates for 2005-2007 were published in November 2009. Total estimated per capita CO₂ emissions across the 12 Kent districts fell from 88.7t in 2005 to 82.3t in 2007, a drop of 7.22%. Emissions from KCC operations have risen by 10%.³

KCC Property Group:

- Manages KCC's land and property
- Sells surplus land and property
- Maintains existing buildings
- Makes sure KCC's buildings are accessible to the public
- Ensures construction projects are completed on time and within budget
- Offers professional advice and support⁴

Property Group provide information to schools via the kent.gov.uk website, from where the Blueprint Newsletter can be accessed, providing a range of property related information. The December 2008 edition of Blueprint provided information on Display Energy Certificates and advisory reports; the July 2008 edition provided comprehensive information on environmental options, including energy efficiency and renewable energy and is attached as Appendix 1. This information was provided before the current government incentives (Feed in Tariff and Renewable Heat Incentive) which would significantly alter pay-back times.

KCC Energy Management Team (TEMT) - Energy Efficiency work

A report produced in January 2009 by the Laser Group Energy Management Team: Towards a Low Carbon Kent - making a world of difference to energy

² Alan Nash, KCC Asset Database Development Manager

³ UK Government building regulations indicate that distributed generation will reduce CO₂ emissions by 0.568kg per kWh.

⁴ Source: www.kent.gov.uk/property

saving, outlines the measures TEMT have taken to achieve energy efficiencies within the KCC estate using funding from a range of sources, but predominantly the £1 million Energy Loan Fund (with £240,000 additional funding from the Carbon Trust through Salix Finance). The full report is attached as Appendix 2.

Energy efficiency measures achieved through this work included:

- Lighting upgrades and automatic lighting controls
- Cavity wall and loft insulation
- Draught proofing
- Valve wraps and heating pipe work insulation
- Voltage reduction equipment
- Installation of heating zoning controls
- Boiler controls and education in how to use them
- Building Energy Management Systems (BEMS)

In Ramsgate one £125,000 scheme replaced tunnel lighting with low energy lighting, saving 40% on carbon emissions and it was later identified that the Chestfield Tunnel could benefit from a similar upgrade.

Energy efficiency courses were provided to non-teaching staff (such as caretakers and office managers) although this has since ended due to the cessation of funding.

External grant funding in excess of £500,000 was obtained for schools to enable them to install renewable technologies

Carbon Reduction and the KCC Estate - Schools

There is an aspiration from the Department of Children, Schools and Families (DCSF) for all schools to become sustainable schools by 2020 and achieve carbon neutrality but there is no mechanism to deliver the changes that are required in terms of increasing energy efficiency and installing renewable technologies⁵ which have been most successful from the educational perspective and taught some valuable lessons including the importance of careful siting and installation.

Other Energy-related work within KCC

- An annual midsummer 'how low can you go' day has encouraged schools to make concerted energy saving efforts (in one case achieving 80% reduction)
- The KCC Green Guardian network's 'Switch IT off' campaign, which rewards staff with a fair trade sweet for switching off IT equipment has reduced energy wastage by this means.

⁵ Deborah Kapaj, Corporate Environmental Performance Co-ordinator, Environment, Highways & Waste Directorate

Eco Schools

Since the launch of the Sustainable Schools Framework in 2006 the *voluntary* Eco Schools programme has enabled Schools in over 43 countries to work towards gaining a Green Flag award for environmental excellence through incorporating sustainable practice and learning. The Eco Schools programme was highlighted in the Climate Change Select Committee Report in 2006 and has since shown itself to be a valuable educational tool which provides a focus on sustainability. The programme has been successful in Kent and the county is top of the Eco Schools Award league table, having achieved 18 Green Flags (the top award), 14 Silver and 20 Bronze. The first ever UK school to be awarded the Green Flag was Eastchurch Primary School, on Sheppey.

Schools taking part concentrate their efforts on sustainable measures grouped under nine different headings, one of which is energy. However, from Display Energy Certificate information Eco Schools, while achieving other measures of sustainability, may not always be the most energy efficient.

Website: <http://www.eco-schools.org.uk/about>

Schools biomass heating pilots

*“The single biggest win in terms of **cost effective carbon saving** would be to replace all oil-fired boilers with more efficient heating systems and at the same time consider fuel-switching to, for example, biomass.*

It is recognised that many schools with oil-fired boilers tend to be in rural areas and are not able to connect to the gas grid, but are more likely to have biomass supplies nearby.”⁶

A comparison of Carbon Emissions from various heating fuels⁷

Fuel	kg CO ₂ /GJ = gigajoule = 1 billion joules heat
Electricity	115
Coal	81
Oil	79
LPG & bottled gas	69
Mains gas	54
Wood	7 (allowing for transport)

There are currently 221 schools in Kent with oil-fired heating; 75 in East Kent, 60 in Mid Kent and 86 in West Kent. As an example, replacing oil heating with biomass heating would make approximately 50 points improvement in DEC Grade i.e. E to a C grade, or D to B Grade⁸.

⁶ Source: Road to Zero Carbon, final report of the DCSF Zero Carbon Taskforce, January 2010

⁷ Data Source: Standard Assessment Procedure

⁸ Source: Wood Fuel Heating in Kent Schools – report prepared by Andy Morgan, Head of Energy Management, KCC

An assessment was commissioned by KCC and LASER in 2007, and was carried out by Creative Environmental Networks (CEN), to investigate the potential for renewable energy in Kent Schools. Having examined energy data, in depth assessments were carried out on 45 schools and 22 were identified as being suitable for woodfuel heating; with the potential to reduce CO₂ emissions by 1800 tonnes each year. Other sites were found to be suitable for a range of renewable technologies.

Following on from this report, and with the co-operation of the schools concerned, biomass boilers were installed at two of the locations identified: Valley Park Community School in Maidstone and St Augustine's Catholic Primary School, Tunbridge Wells. The outcomes of this work have now been evaluated⁹.

Key findings:

- + 90% reduction in carbon emissions
- + savings on fuel costs
- + local wood fuel supply chain development
- + local economic benefits

However, despite deep cuts in carbon emissions, the high capital costs impacted on carbon saving costs per tonne as compared with energy efficiency measures but factors which would make biomass more favourable as an option were identified as:

- Constant heat load
- Oil/gas price rises (coupled with stable wood fuel prices)
- New build scenarios particularly BSF where very low carbon emissions are stipulated
- The impact of the Renewable Heat Incentive

These are important factors to take into account in order to make this renewable technology as desirable from an economic standpoint as it is from a carbon reduction standpoint. The full report is attached as Appendix 3.

The Renewable Heat Incentive (RHI)

The RHI, which is currently being consulted upon, takes effect from April 2011 and, for biomass boilers installed after July 2009, will provide payments for systems up to 500kW, based on 'deemed' heat production at the following rates:

<45kW	9.1p per kWh
45-500 kW	6.5p per kWh

Systems over 500kW could be fitted with heat meters. In their written evidence to the select committee the Forestry Commission used the example of a 150kW

⁹ Ibid

boiler producing 159,375 kWh of heat a year which would receive a RHI payment of £10,359. If changing from an oil-fired heating system, the payback time would be approximately 7 – 8 years. The RHI payments would last for 15 years. A press briefing on the RHI compiled by the Renewable Energy Association, is attached as Appendix 4.

Further examples of biomass boilers in Kent

Biomass boilers are in use at the Kent locations noted below.

Bedgebury
Betteshanger
Godington Park
Kent Highways Service Ashford Depot (KCC)
Kenward House
Maidstone Borough Council
Shorne Country Park (KCC)
Torry Hill Farm

The Kenward Trust benefitted in 2007 from a £5000 Member Grant from Maidstone¹⁰ for its woodchip heating project.

KHS Ashford Depot has experienced difficulties obtaining the correct fuel for the boiler type installed, namely 8mm pellets as opposed to 6mm pellets. Hurried deliveries have, in addition caused excess 'dust' which has further affected boiler performance. The boiler runs smoothly on 8mm pellets.¹¹

Examples of biomass boilers elsewhere

- A survey conducted for the Forestry Commission by the Renewable Energy Association identified that there are now 1960 biomass boilers in the UK. The 'Biomass Heat Boilers in England 2009' survey was based on information from installers and related to non-domestic biomass boilers.
- National Trust plan to install over 50 biomass boilers in their properties by 2015 using their own/local woodland resources.
- Mr Brazier has reported verbally to the select committee on practice in relation to biomass boilers and the wood fuel industry in Austria and a written report will follow .

Key lessons relating to renewables and the schools estate

- Schools require general maintenance and energy efficiency measures before it is worthwhile putting in renewable energy technologies. St Peters Church of England Primary School in Aylesford has demonstrated how to effectively reduce a school's carbon footprint. In the attached article (Appendix 5)¹², head teacher Simon Temple explains how the school is aiming for carbon neutrality

¹⁰ Loic Flory, KCC Community Engagement Manager

¹¹ Further data will be available shortly on boiler performance at Ashford.

¹² www.teachingtimes.com: The Top 10 Tips for becoming a Carbon Neutral School

by reducing energy use, implementing energy efficiencies and then embarking upon installation of renewable energy technologies.

- Currently, when broken/old heating systems are replaced by KCC it is on a like for like basis. This means oil fired boilers are still being installed since the primary aim of maintenance *'is to keep schools safe, warm and operating.'*¹³
- The aims of carbon reduction are not a factor in maintenance choices; consultants who carry out work on schools on KCC's behalf are driven by cost.
- Schools are open for longer to meet their obligations under the extended services programme (currently the subject of a select committee review) and this as well as the DCSF Information Technology Strategy contributes to greater energy use in schools, impacting on DECC aims for carbon reduction.
- The Building Schools for the Future programme will, if it goes forward, inject £1.86 billion into Kent schools. The Academies programme is another potential source of funding for sustainability measures.
- If KCC provide capital for energy saving and efficiency projects in schools there is no ongoing benefit for KCC in terms of revenue benefits.
- Schools have the option of paying energy services companies (ESCOs) to carry out improvements (with the latter benefiting from available incentives such as the Feed-in Tariff), and improvements are effectively 'free' due to repayments being set below the value of savings to be made.
- The Building Energy Efficiency Programme (BEEP) is an international initiative, currently being piloted in London for 42 Police, Fire, and 'Transport for London' buildings, where it is hoped 25% energy savings will be achieved – this potential funding source is being investigated by KCC's Greener Kent Manager.

Future programmes with potential to impact on KCC's energy profile

A number of other programmes and plans will impact on energy use within KCC and more widely in Kent. Transport-related activities and those related to business and domestic energy use will be explored in subsequent topic papers.

Evidence to the select committee

A range of written evidence has been received in relation to biomass heating and the development of the wood fuel industry in Kent. On 12th May additional information on this and other topics will be sought from witnesses in an oral evidence gathering session beginning at 1.30 p.m.

¹³ Bruce Macquarrie, Capital Strategy Manager, KCC Children, Families & Education Directorate

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Funding Information

We have received several requests for information about the different funding programmes available for school buildings and how they can be accessed. As a result of this, the next issue of Blueprint will feature information and guidance about funding opportunities.

If there are any specific details with regard to funding programmes that you would like clarification of, please let us know so we can ensure these are included.

- **Bruce MacQuarrie**
Capital Strategy Manager
☎ 01622 694796
✉ bruce.macquarrie@kent.gov.uk



Environmental Options

Pull Out & Keep
– see inside

Mobiles & Temporary Buildings Important Reminder

Schools should seek advice from Kent County Council's (KCC) Planning Applications Unit before installing mobiles and other temporary buildings. A planning application must be submitted and planners will consult with neighbours and the local district council in order to determine if consent will be granted. If a mobile is placed on a site without planning consent, planners are able to take enforcement action, which may require it to be removed.

- **Daniel Rome** Area Planning & Development Officer – West Kent
☎ 01622 694783 ✉ daniel.rome@kent.gov.uk

Primary Capital Programme – update

KCC's Investment Strategy for the Primary Capital Programme has now been submitted to the Department for Children, Schools and Families (DCSF) for appraisal. We would like to thank all those who responded to the consultation.

The DCSF will let us know the outcome of the appraisal during the autumn. The rollout of primary capital programme monies from April 2009 is dependent upon a successful appraisal of the Investment Strategy.

For further information contact

- **Bruce MacQuarrie** Capital Strategy Manager ☎ **01622 694796** ✉ bruce.macquarrie@kent.gov.uk

Environmental Options

There are a range of options available to schools to help reduce energy and water consumption as well as save money and cut carbon emissions. In some cases they pay for themselves within a short timeframe from the savings they achieve.

Energy and water saving projects with a financial payback of less than five years can be funded from KCC's Energy & Water Loan Funds. These funds were set up using Government and KCC money. So far over £200k of energy saving projects have been funded in schools by the Energy Loan Fund, mostly on lighting controls, heating controls and insulation projects.



Pull Out & Keep

Energy Efficiency - Lighting

Description	Details	Recommended for...	Points to note	Estimated payback
Energy efficient light bulbs	Use up to 80% less electricity than a standard light bulb (tungsten), but produce the same amount of light	Replacing blown standard light bulbs	A range of different sizes and dimming options are available	1 - 3 years
T8 fluorescent light tubes	Replacing older inefficient T12 fluorescent light tubes with more modern, efficient T8 tubes (or where possible T5s) to save energy	Replacing T12 tubes which need changing	T8s cost less than T12s	Immediate
Lighting controls / sensors	Help maintain correct lighting levels and provide optimum light output whilst minimising energy consumption	Large rooms where lights are left on unnecessarily	Various types of control are available, e.g. occupancy sensors help ensure lights only operate when the space is occupied	4 - 5 years
Sun pipes	A reflective natural daylight portal which brings natural light into a room	Poorly lit spaces where increased natural daylight would reduce the need for electric lighting	Can be retrofitted to benefit older properties	Dependent on site and lighting requirements

Energy Efficiency - Heating

Description	Details	Recommended for...	Points to note	Estimated payback
Energy efficient boiler	Replace boiler with more energy efficient model	When boilers need replacing	Savings can be made by upgrading a boiler to a newer, more efficient model and also by changing the type of fuel used – such as changing from oil to gas, or using biomass	10+ years, dependent on size of boiler and if changing fuel used
Heating zoning	Zoning the heating system enables only the areas in use to be heated	Sites which would like to heat separate areas of a building, e.g. for after school clubs	More cost effective when a new boiler is being installed, however they can be retrofitted	4 - 5 years
Heating control improvements, e.g. thermostatic radiator valves (TRVs), weather compensation, electronic controls	Can be fitted on radiators or central boiler room controls. Enables the temperature in different areas to be effectively controlled	Wherever there are existing poorly controlled heating systems	TRVs can't be used on the older single pipe heating systems	4 - 5 years
Radiator reflective foil	Fitted behind radiators to reflect heat back into the room	Any accessible radiators	More effective when used on uninsulated external walls	6 months - 1 year
Pipework insulation / valvewrap	Uninsulated hot water pipes lose heat, therefore hot water reaches taps much faster if the pipes are properly insulated, reducing the amount of water wasted. Boiler room valves and flanges can also be insulated	Accessible uninsulated pipes	Accredited installers must be used for insulating boiler rooms where there is an asbestos risk	4 - 5 years
Variable speed drives on pumps, fans and compressors	Fans, motors and pumps rarely need to operate at full speed all of the time. The reduction in speed saves energy	Where fans, motors and pumps run unnecessarily	Only cost-effective for larger machinery	6 months - 5 years

Energy Efficiency - Insulation

Description	Details	Recommended for...	Points to note	Estimated payback
Double glazing	Double glazing works by trapping air between two panes of glass, which creates an insulating barrier that reduces heat loss, noise and condensation	Single glazed windows	Double glazing cuts heat lost through windows by half. Secondary glazing is less expensive but still saves money by reducing heat loss and draughts	10+ years
Window insulation/ draught proofing	Strips of insulation tape can be used to reduce draughts around windows and doors	Single glazed windows and poorly fitting doors	Inexpensive and easy to fit	2 - 3 years
Hot water tank insulation	Fitting an insulated cylinder jacket to hot water tanks keeps the water hot for longer, therefore saving energy	If the cylinder is bare or the layer of foam is so thin that it gets hot	Take care to fit the jacket and pipe sleeves well to minimise heat loss	3 - 4 years
Cavity wall insulation	Insulation is used to fill the wall cavities of buildings to reduce heat lost through walls	Uninsulated cavity walls	Insulation types include, mineral wool, recycled paper (Warmcell) and sheeps' wool e.g. Thermafleece	3 - 4 years
Loft Insulation	Loft insulation reduces heat loss. In many cases existing levels of insulation can be increased	Uninsulated or poorly insulated loft spaces	Loft hatches should also be insulated	3 - 4 years

Other Energy Efficiency Measures

Description	Details	Recommended for...	Points to note	Estimated payback
Powerperfactor voltage reduction	Where mains voltage is towards the higher end of legal limits there is the opportunity to reduce this and therefore the kWh used	Larger sites	A professional survey is required to determine if a site is suitable	3 - 4 years
SMART metering	A device added to the electricity or gas meter so consumption can be measured in order to identify any anomalies	Larger sites	Users can view their consumption records via a website	This is an information tool to identify where savings can be made
Building energy management systems (BEMS)	A central system which controls a building's energy use, when boilers come on and go off, control of pumps, fans, etc.	Larger sites where no BEMS is in place	Older BEMS can be upgraded to achieve higher savings	3 - 6 years
Self closing devices on external doors	Enables doors to be closed automatically to reduce heat escaping from buildings	All sites where external doors may be left open	Inexpensive and easy to fit	6 months - 2 years
Time switches	Simple controls that switch services on and off in response to programmed time settings	Vending machines, photocopiers and office equipment	Most commonly used are 24 hour and seven day timers	6 months - 3 years
Industrial gas dryers	In some cases, there is the potential for savings to be made from using gas dryers instead of electric	Where industrial electric dryers are used e.g. care homes	A gas supply is required	5 years

Water Conservation

Description	Details	Recommended for...	Points to note	Estimated payback
Dual flush / slimline toilets	Dual flush toilets provide the option of a short or long flush. The average slimline toilet cistern has a 4.5 litre flush	Replacement of older toilet systems	Older systems can have up to a 9 litre flush	7 - 10 years
Save-a-flush	Fitting a Save-a-flush (a bag of harmless crystals) in the toilet cistern can save up to 1 litre per flush	Toilet cisterns with a 9 litre flush or greater	Toilet cisterns installed since 1999 should already be water efficient and therefore do not need any type of cistern device	2 - 6 months
Hippo bags	A Hippo is a small plastic bag which can be easily fitted into the toilet cistern. Water is retained in the bag, helping to save up to 3 litres of water per flush	Toilet cisterns with a 9 litre flush or greater	Toilet cisterns installed since 1999 are already designed to use less water per flush. Fitting a Hippo may reduce the flush too far so the toilet is not cleaned properly	2 - 6 months
Urinal controls	Water consumption can be significantly reduced with urinal controls, which are used to detect and control water supply to suit activity in an area	Men's / boys' toilets	Urinal controls like cistermisers, PIR sensors and occupancy sensors can be mains or battery operated. Regular checks are required to ensure they are operating correctly	1 year
Flush-per-use urinal systems	Single urinal bowls with pressure-flushing valves that use less than 1.5 litres per flush	Men's / boys' toilets - smaller sites / low usage areas	The valves need to be checked regularly to ensure they are operating correctly	5 - 7 years
Waterless urinals	Systems use no water but some models require a chemical solution to operate	Men's / boys' toilets	Regular cleaning, inspection and maintenance required	6 months - 5 years
Non concussive taps	Taps that self-close after a set period of time, which reduces water wastage and avoids the risk of taps being left on accidentally	Can be used for most sites	If taps are heavily used risk of damage to self-closing mechanism	2 - 4 years
Tap sprays / aerator	Can save up to 50% of water consumption. However the slow rate on hot water taps can mean a long wait for warmer water, resulting in lower savings	Can be used for most sites	Regular inspection and maintenance required to ensure the spray head is not blocked	18 months - 3 years
Flow restrictors	Reduces the tap's flow rate	Can be used for most sites	Regular inspection and maintenance required	1 - 2 years

There are a range of options available to help reduce energy and water consumption as well as save money and cut carbon emissions.

Renewable Energy*

Description	Details	Recommended for...	Points to note	Estimated payback
Solar photovoltaic panels (PV)	Convert sunlight into electricity	Buildings with south facing roofs, not overshadowed by buildings or trees, etc.	Scaffolding may be required to access some roofs. Displays can also be purchased which provide information to building users and visitors about the number of kWhs produced by the solar panels	50 years (with grant funding 0-10 years)
Wind turbines	Generate energy from wind	Windy, rural, hilly sites with open aspect	Planning issues may arise in some cases e.g. due to the potential noise and visual impact	10-15 years (with grant funding 0-10 years)
Solar water heating	Uses sunlight to heat water	South facing buildings which have an all summer demand for hot water. Suitable for large hot water demands such as care homes and swimming pools	Scaffolding may be required to access some roofs. Displays can also be purchased which provide information to building users and visitors about the number of kWhs produced by the solar panels	20-25 years (with grant funding 0-10 years)
Ground source heat pumps	An alternative to traditional heating systems. The pump takes hot water from underground pipes, which is then generally used for central and underfloor heating	New builds that have the space to install the appropriate pipework, although can be retrofitted in certain cases	The pump is often electrically powered however it can be powered by a photovoltaic panel	50 years (with grant funding 0-10 years)
Small-scale hydro	Hydro-power systems work by converting the energy created from water turning a turbine into electricity	Limited use for public buildings although if streams or rivers are close by there may be some potential	Environment Agency approval is required before the system can be installed to ensure there will not be a negative impact on the environment	20-25 years (with grant funding 0-10 years)
Biomass / biofuel	Biomass is the term used to describe a low carbon emitting fuel, such as wood chips or pellets. The CO ₂ released when energy is generated from biomass is balanced by that absorbed during the fuel's production	Sites which have a high demand for heating and / or a change of boiler system is being considered	Good access to the site is required for fuel delivery lorries as well as storage space for the fuel. If additional costs are incurred due to boiler room modifications these will not be covered by a grant	10-20 years (with grant funding 5-10 years)

*Grants of up to 100% for schools and 50% for local authority buildings are available for renewable energy projects

For further information and advice about funding opportunities contact:

- **Andy Morgan** Energy Management
- **Steve Baggs** Energy Management
- ☎ 01622 605309
- ☎ 01622 605307
- ✉ andy.morgan@kent.gov.uk
- ✉ steve.baggs@kent.gov.uk

Buying new furniture? inclusive design

New build and refurbishment projects usually offer schools the opportunity to update their furniture. As more children with disabilities are entering mainstream schools, as well as the two ticks recruitment scheme which encourages employment of staff with disabilities, the need to consider inclusive design when choosing new furniture is increasingly important. Following are a few tips of what to consider.

Visual contrast

The use of colour can make a space interesting, light and welcoming. For people with a visual impairment it can also mean the difference between finding their way independently or needing assistance.

Colours that are similar to each other can be very difficult for people to differentiate between, for example, a white door in a magnolia wall. This applies to furniture too; a light coloured table on a light vinyl floor could be difficult to see (photo 1), as could a dark chair on a dark carpet. When choosing furniture, it's important to check what it's going to be placed on. It may be that the same colour can be selected but in a darker or lighter shade.

Common colours that cause problems for people with colour blindness are reds and greens, therefore picking out a red/green chair on a red/green background could cause problems. With these colours it is often better to add a more neutral colour to the mix to ensure contrast.



Photo 1 – Problems with visual contrast between the table and floor

Tables & chairs

Ideally, tables should have a contrasting edge, for example, a light coloured table top with a dark coloured edge. If buying a number of tables, it is advisable to consider choosing a mixture of fixed and adjustable heights. Height adjustable tables can be used when standing or sitting, provide flexible facilities for disabled users and have become much more affordable in recent years.

It is also important to provide a good mix of chairs with and without arms (photo 2), and in school reception areas in particular, chairs with different seat heights. This gives everyone a choice and includes disabled people without making 'special provision'.



Photo 2 – Mixture of chairs with and without arms

Cupboards & lockers

When buying storage units, the door furniture, including locks, should be easy to use (with either lever action or a 'D' handle), have a good visual contrast and reachable by someone who is seated.

Care should also be taken to ensure work surfaces, power points, sinks and taps are in reach for both standing and seated users, have a good visual contrast and are easy to use.

Applying inclusive principles like these creates easier environments for everyone. Offering variety enables people to select what best suits their needs and reduces the requirement to manage facilities in order to meet the needs of disabled people.

• Inclusive Access & Design team ☎ 01622 696023 ✉ inclusiveaccess.enquiries@kent.gov.uk





The NERC Biodiversity Duty

The Natural Environment and Rural Communities (NERC) Act came into force in October 2006. The Biodiversity Duty set out in the act introduces a new obligation that requires local authorities to have regard to the conservation of biodiversity in all their activities, including schools.

“Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.”

Implementation of the Biodiversity Duty may be achieved in many ways, by including actions for actual biodiversity enhancement and by reducing adverse impacts on biodiversity. Schools may be doing this already but there are no doubt many more opportunities to do so, as well as raising awareness of the benefits of a healthy natural environment.

The reasons for conserving biodiversity are many and varied. Biodiversity:

-  Plays an important role in tackling climate change, acting as carbon sinks, flood retention areas and providing corridors for wildlife movement
-  Is an indicator of the wider health of our environment
-  Supports other vital services that sustain life on earth, such as clean water and air, defence against floods and management of waste and pollution
-  Contributes to our health and well-being
-  Provides an opportunity for education and learning
-  Is an important part of our cultural heritage and identity
-  Offers opportunities for community engagement and volunteering
-  Provides us with essential products and materials

The Natural Environment & Coasts Team is leading on the implementation of the duty and can provide training and information to schools upon request.

For further information contact

- **Sarah Taylor** Senior Biodiversity Projects Officer
- 📞 01622 221538 📧 sarah.taylor2@kent.gov.uk

The next issue of **Blueprint** will include an article about the implications of ecology and biodiversity on new build and maintenance projects and the associated issues which schools need to be aware of.



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Energy Efficiency Achievement of the Year 2009

Towards a Low Carbon Kent - making a world of difference to energy saving!

Author: Steve Baggs, Deputy Energy Manager, the Energy Management Team, Laser

26/01/2009

Laser is A Division of KCC Commercial Services

Cover image: Solar panels at the Skinners School, Kent

Contents

Contents 3

Background 5

The big task - surveying all eligible KCC buildings to meet DEC requirements..... 5

KCC’s estate of 700 KCC buildings includes 600 schools 5

BRE Accredited Assessors - Linking the Advisory Reports with KCC Energy Loan Fund 5

£1million pound energy loan fund..... 6

Energy Efficiency Courses for schools and office staff..... 6

£500,000 external grant funding for renewable energy projects 7

Carbon Trust Standard Certification – independent verification of carbon saving! 7

Educational Work on energy in schools..... 7

Halo impact 7

Innovative Educational Projects..... 8

KCC Green Guardians Network – Fairtrade sweets for energy savers 8

Team Awards 8

Social Projects to eradicate fuel poverty 9

The Future is Low Carbon! 9

Background

The Energy Management Team (TEMT), comprising 5 people, is part of LASER, the energy buying unit within Commercial Services, Kent County Council. It provides services for Kent County Council and for LASER's 120 public body clients, including London Boroughs, other county councils and services such as Kent & Medway Fire and Rescue and Kent Police. Kent County Council's estate comprises 700 buildings, of which 600 are schools currently accounting for 80% of the carbon emissions for all of KCC's buildings. We evidence below how, in the context of this estate, we have achieved significant reductions in energy consumption, how these have been achieved, in which areas, by which drivers and what our future plans are for further reductions in energy consumption.

First steps - surveying all eligible KCC buildings to meet DEC requirements

TEMT knew it would be a difficult task when they decided to take on surveying “in-house” the new Display Energy Certificate requirements for public buildings. The Energy Performance in Buildings Directive (EPBD) requires public buildings over a 1000m² to have an A-G energy rating based on the carbon emissions of the energy use. It also requires each building to have an Advisory Report which provides the occupiers with a way to improve the energy efficiency of their building and hence the energy rating.

KCC's estate of 700 KCC buildings includes 600 schools

Kent County Council has 700 buildings that fall into this category and therefore extra resources were needed to cope with surveying such a large number. The Energy Team decided to employ two new energy surveyors to help carry out the new work. They and the Deputy Energy Manager, undertook training to become fully-accredited to the high standards required of the accreditation body, the Building Research Establishment (BRE). TEMT benchmarked the cost of undertaking this work through external consultants prior to deciding to carry it out themselves thereby achieving cost savings of £70,000.

BRE Accredited Assessors - Linking the Advisory Reports with KCC Energy Loan Fund

TEMT wanted to make sure that the service provided was of the highest quality and would produce a meaningful end result for the users of the building. The team decided it would use the Advisory Reports generated by the surveys to identify measures that could be carried out at the individual building level using the KCC/Salix Energy Loan Fund.

KCC was a pilot for the Carbon Trust LAEF scheme and spent its first tranche of match-funded money very quickly - £300,000 was spent on energy efficiency measures, mostly with schools.

£1million pound energy loan fund

KCC subsequently decided to increase the size of its own loan fund to £1 million and leveraged in a further £240,000 from Salix Finance. So far, under the Loan Fund, 53 energy efficiency projects have been completed saving 1103 tonnes of carbon dioxide and financial savings of £187,387 annually.

The technologies installed include:

- Lighting upgrades and automatic lighting controls
- Cavity wall and loft insulation
- Draught proofing
- Valve wraps and heating pipe work insulation
- Voltage reduction equipment
- Installation of heating zoning controls
- Boiler controls and education in how to use them
- Water efficiency measures like urinal controls and push taps
- Building Energy Management Systems (BEMS)

One of the largest projects was a £125,000 Road Tunnel lighting project in Ramsgate where the older inefficient lighting was changed to low energy lighting types with high frequency electronic ballast.

Subsequently, the Chestfield Tunnel had a feasibility study, which showed that it would benefit from new lighting controls and upgrade.

“Since March 2008 this has reduced carbon emissions by 40%. It has been so successful that other lighting tunnel projects have been identified as future projects.”

- **Andy Morgan**, Head of Energy Management

Energy Efficiency Courses for schools and office staff

The Team provides energy efficiency training for non-teaching staff such as building managers and financial officers. So far 150 people have attended the one-day course and the feedback has been very positive. The course includes:

- Energy Consumption, Costs in Premises & Environmental Impact
- Reading Meters, Using data to detect energy / water waste
- Energy benchmarking
- Good Housekeeping
- Electricity & fossil fuels
- Water Management & benchmarks
- Issues in KCC Premises

£500,000 external grant funding for renewable energy projects

Meanwhile the KCC energy team provided grants and assistance for 10 schools' renewable energy projects and succeeded in obtaining grants for them of over £500,000. The projects included seven solar photovoltaic panels installations, two biomass projects, one solar thermal panels installation for a school swimming pool and several other potential projects including wind energy and ground source heat pumps.

Carbon Trust Standard Certification – independent verification of carbon saving!

Kent County Council has recently been awarded the Carbon Trust Standard certification, proving it has genuinely taken action on climate change by reducing its carbon footprint. The total footprint reduction was 6% compared to the previous two years. We can now use the logo and gain early action benefits regarding the Carbon Reduction Commitment (CRC).

Educational Work on energy in schools

The Energy Management Team encourages schools to use the Systemslink energy database where schools can download information about their energy use and produce reports for staff and pupils. Systemslink holds data from energy bills as well as smart meters, and schools can enter meter readings which are then sent to suppliers.

The whole DEC process will encourage more schools to access this service and so far we have 250 schools using this database. The educational benefits of all this information cannot be underestimated and we know that schools are using it as a resource in their school curriculums.

Halo impact

Furthermore, schools with renewable energy systems are using them as educational tools to explain the issues around the environment such as climate change. Many have taken a step further - The Skinners School has developed projects with its 'Feeder primary schools' and its teachers are holding classes which explain about renewable energy and energy efficiency and how to obtain grants to install such technologies. TEMT has been instrumental in helping schools to build these links and has provided help and guidance on developing the projects and the availability of grants.

“The KCC Energy Team have provided an excellent service, they have given us some very useful advice in terms of reducing our energy bills. We have carried out an education programme to turn off electric equipment and we have installed a 10kwp solar photovoltaic array. The grant information and the project management support has been invaluable.”

Mark Moody, Science Teacher,
The Skinners School, Kent.

Innovative Educational Projects

Question: How Low Can You Go? **Answer:** 80% if you try!

TEMT and eco schools officers have developed educational projects with a number of schools within Kent. One of the most popular events is the “How Low Can you Go” Day which is held annually on the longest day, 21st June. Schools are given monitors to record their energy use and are encouraged to reduce their energy consumption by as much as possible. This year, some schools reduced their electricity use by 80%. Some rural schools even had children riding into school on horseback instead of their usual car journey. But in most cases it was acknowledged that energy is simply wasted and a lot of electrical equipment gets left on unnecessarily.

KCC Green Guardians Network – Fairtrade sweets for energy savers

With the help of the Green Guardian network, TEMT have encouraged KCC staff to turn off computers and electrical equipment through the “switch IT off” campaign. Good behaviour was rewarded with a fairtrade sweet and the results were excellent. Initially switch off rates were around 60% but after the campaign this went up to 95%, an excellent result.

The Green Guardians are volunteers who have committed to improving the environment in their respective buildings through taking positive action like recycling, composting, saving energy and encouraging staff to look at alternative transport options.

TEMT has since worked with the Green Guardian network providing energy reports for individual buildings across the KCC Estate.

Team Awards

TEMT - Andy Morgan, Steve Baggs and Rosie Crickmere received the Team Gold Award at the KCC Chief Executive's Department Quality Service Awards 2008.

The person nominating said: "they provided the Corporate Environmental Performance Group with an outstanding service. Despite very heavy workloads they are committed to improving the energy efficiency and renewable technology with a wide audience of KCC employees and schools by attending events, assisting in the organisation of training courses and proactively seeking extra external funding for projects – e.g. renewable energy in schools (biomass, PV panels) and funding for a large tunnel lighting project." The team ensures that they are up to date with forthcoming requirements and current best practice, liaising with other authorities and energy companies. They are utterly professional, reliable and can be relied upon to support new initiatives that will improve KCC's energy and water efficiency."

Social Projects to eradicate fuel poverty

Recently TEMT have been involved in the distribution of Powerdown equipment from the energy supplier 'Eon'. Many of the teams within KCC deal with those on low incomes and/or severe disabilities. In many cases they are 'fuel poor' and having such devices helps to reduce bills. Both our Adult Services and Communities Teams have been given the devices to distribute to fuel poor clients. Many schools have also used the devices and educationally it has been a real success in getting householders to do something to reduce their energy consumption at home. There are also plans to run fuel poverty seminars for staff and their clients with the Kent Energy Centre.

The Future is Low Carbon!

The plan is now to increase the number of energy saving projects through the energy loan fund and there are another 30 projects in the pipeline. There are also another 10 renewable energy projects planned for the coming year. The Carbon Reduction Commitment (CRC) where local authorities will trade carbon, and the national reporting requirements under NI185 and NI186 will mean further carbon crunching for KCC. The Building Schools for the Future Programme also provides a chance to make schools more energy efficient from the design stage. The passive school concept using the heat of the pupils and equipment with super insulation will be the next step to reduce carbon emissions. KCC is making sure that it is ready for all these new challenges.

“Overall the decision to take responsibility to provide Display Energy Certificates in-house was a difficult one, but one that has raised awareness of the real energy reductions possible across the KCC estate. It has also helped to increase the number of energy efficiency and low carbon technologies being installed in KCC schools and buildings. But the additional educational, environmental and economic benefits have been well worth the extra effort”

David Taylor, General Manager Laser



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Wood Fuel Heating in Kent Schools

Key lessons learnt from Wood Chip installations at:

Valley Park Community School, Maidstone

&

St Augustine's Catholic Primary School, Tunbridge Wells

Prepared by Andy Morgan
Head of Energy Management
February 2010



Energy Buying Group



Executive Summary and Conclusion:

This paper aims to record the planning and installation of woodchip heating in two Kent Schools and to record the lessons learned from the projects.

In particular the procurement process, costs and funding, savings and benefits are analysed, and Key Lessons/Recommendations are recorded to help inform any future plans around biomass in the KCC estate.

These projects have provided two working examples of wood fuel heating in Kent schools. They provide a financial saving to the schools and reduce CO₂ emissions from heating by around 90%. The projects have also helped develop the local wood fuel supply chain and put money into the local economy which would otherwise be spent with large multinational energy companies.

The capital costs were high and the capital costs per tonne of CO₂ saved does not compare favorably with traditional energy saving projects such as automatic lighting controls or lighting replacements, heating control improvements or insulation. Wood heating does however produce a much deeper cut in CO₂ emissions than most energy saving improvements.

It is clear from the analysis of costs and savings that financial arguments alone do not provide a case for wide scale roll out of retrofit woodchip heating across Kent Schools. However it should be borne in mind that in certain circumstances the economics are much improved - such as the following scenarios:-

- In buildings with higher and more constant heat load such as care homes
- If oil/gas prices rise significantly above current levels and wood chip price is stable
- In 'new builds' where the capital costs should be lower
- In completely new BSF schools where Govt. requires very low carbon emissions
- The Renewable Heat Incentive (RHI) may introduce a significant improvement to the economic case in future installations.

Ultimately, as with many renewable energy options, Biomass needs to be considered on a site by site basis taking consideration of the rapidly changing economic scenario and the practical issues at the site.

The Key Lessons Learned/Recommendations should be taken on board while planning future Biomass boilers.

Background – Why Biomass?

The South East is the most wooded region of England. Kent is no exception and in particular has many thousands of acres of sweet chestnut coppice. Although the resource is great, traditional industry demands (such as from pulp mills) have waned in recent years and the south east has one of the lowest presences of processing industry in the UK. These factors combined have led to a situation whereby much of the woodland resource has not been managed for many years. Wood fuel heating presents a viable solution to two significant problems – reducing carbon emissions and strengthening the rural economy through demand for wood fuel.

Modern woodfuel boilers are highly efficient, clean and smokeless. Automated woodfuel systems provide value to a low value product, keep the 'energy pound' in the local economy, create jobs, promote improved woodland management, reduce reliance on fluctuating fossil fuel prices, are carbon neutral and can have cheaper running costs than mains gas.

With growing concerns about future energy costs, security of supply and the contribution of traditional fuels to Climate Change, wood fuel or biomass was identified as an alternative worth exploring.

With the above in mind KCC set the Towards 2010 Target 42 which included the requirement *"Trialing the use of bio fuels and other new technologies"*

Site Selection:

In 2006 KCC commissioned Creative Environmental Networks (CEN) to carry out a Biomass and renewable energy feasibility study on around 50 Kent schools known to have boilers approaching the end of their life.

CEN examined practical issues such as access for fuel delivery vehicles, space for woodchip storage and space in boiler rooms for larger biomass boilers.

The study identified 22 which were viewed as feasible and these were rated between 1 and 5 (easy to hard). During the surveys Valley Park Community School in Maidstone and St Augustine's Catholic Primary in Tunbridge Wells expressed high levels of interest and were both keen to be pilot schools. Since both had rated highly in the feasibility study these two sites were selected as pilots.

Overview of Projects:

The two projects differ in terms of fuel delivery technology, size, procurement process and project management, allowing useful comparisons to be drawn. Following is a brief overview of each project.

Valley Park Community School - Maidstone

Design at Valley Park was carried out by Econergy and influenced by the initial feasibility survey produced by CEN. This resulted in the two 500kW oil boilers being replaced with a 500kW gas and a 500kW Froling Turbomat Woodchip boiler manufactured in Austria. Fuel delivery is by hook lift bin – chosen because there was no space within existing boiler room for woodchip storage. The old oil tank rooms were situated away from the boiler house and so were not useable for woodchip storage.

Sufficient space was available for an extension to be built for wood chip storage but the hooklift bin outside the boiler room was judged a better overall solution. The hooklift bin links by auger to a silo which holds around 3 days of woodchip, allowing time for the hooklift bin to be taken away and refilled.

The boiler is fed by auger from the silo.

Fuel is supplied from John Leigh-Pemberton's estate (Torry Hill Farm) via South East Wood fuels at a price of approximately 2.7p/kWh. The woodchip travels approximately 12 miles.

St Augustine's Catholic Primary School – Tunbridge Wells

Design work was commissioned by the school and carried out by MCA. Unlike Valley Park, St Augustine's are limited for wood chip delivery space. A chip store was constructed inside the old Oil tank room but due to ground levels there is no easy access for woodchip to be tipped into the store and no space for a Hooklift Bin. The solution taken was to tip woodchip from a tipping tractor-trailer into a metal trough. An auger at the bottom of the trough draws the chip into a blower, which blows the chip through a duct into the chip store (the old oil tank room). Wood chip is drawn from the store into the boiler by a further auger.

A 150kW chip boiler and 200kW gas boiler were installed to replace two existing boilers of unknown capacity.

Fuel is supplied by the Neville Estate in Eridge, approximately 3.5 miles away via a contract direct with the school at an initial price of £21.93 per cubic meter of G50 hardwood – which is equivalent to around 2.49 p/kWh. The school has now shifted to G50 softwood at £16.36 per cubic meter from the same source. The softwood option is cheaper but will have a lower calorific value i.e. less energy per cubic meter. Therefore the softwood price is equivalent to around 2 p/kWh.

Procurement:

Valley Park Community School

Valley Park is a Community school meaning that boiler replacements would normally be funded and managed by KCC – it was therefore natural for KCC to oversee the entire procurement and installation under a similar management process to a standard boiler replacement.

After speaking to a number of biomass specialists, other customers, and attending various biomass seminars, the KCC Energy team judged that the marketplace was very light on genuine expertise and experience and it was therefore very important to work with a recognized specialist for the pilot projects. Econergy were identified as one of the leading specialists in the field with greatest experience of installations of the type being considered. Econergy was commissioned in March 07 to produce a full design and costing to enable KCC to seek funding sources and set budgets, this was supplied in April 07.

The decision was taken by the School and CFE to go ahead with the project using various funding sources (discussed later). Mouchel as the KCC consultant covering Maidstone were instructed in September 2007 to manage the project.

It was hoped that since the project was a pilot of specialist nature which no contractor on the KCC approved list has significant experience of, econergy could be selected as the main contractor. However, the decision was taken that this would not meet procurement rules and the project must be tendered, and so Mouchel were asked to prepare tender documents and run a tender for a main contractor based on the design provided by econergy.

The tender process was completed in April 08 and one of the tenderers provided a low price based on using a Hertz boiler rather than the Froling boiler specified by Econergy. The decision was then taken to retender the project giving all tenderers the opportunity to quote on their own specification of boiler rather than that specified by econergy.

It was then realised/clarified that one of the main funding sources (the Low Carbon Building Programme) required that installations be carried out by an approved biomass specialist from the 'Greenbooklive' list.

At this time (May 08) KCC were faced with the choice of either accepting the best price based on main contractor using econergy for the biomass elements or postpone the project to the following year and require a new procurement process, and risk losing grants. Long boiler lead times limited the time available for further consideration and the decision was taken to proceed with the lowest combined price of GM Mechanical as main contractor and econergy as biomass specialist sub-contractor.

The project was completed in December 2008.

St Augustine's Catholic Primary School

St Augustine's is a Voluntary Aided school and as such decisions around boiler replacements and finance fall on the Archdiocese of Southwark. The school and Archdiocese were happy to progress with the biomass project, managed by a school Governor (David Glynn) with extensive project management experience.

Terry Whitlock and Terry Hurley of KCC visited David Glynn at the start of the project to be satisfied that proper plans and procedures were being taken to ensure KCC's interest was protected.

The procurement process was managed by David Glynn including preparation of Tender Documents. MCA were appointed as consultants/project managers for all works within the boiler house, Tugwell Heating as main Mechanical Contractor and Rural Energy as Biomass specialist sub-contractor.

Installation took place during 2008 and wood fuel was used from October 08.

The procurement exercise was more straightforward at St Augustine's partly because they were not relying on a Low Carbon Building Programme Grant and hence were less restricted on contractor choice. It may also be that the school felt less constrained by Procurement rules than KCC were with the Valley Park project.

Costs and Funding:

Valley Park Community School

GM mechanical / econergy	-£388,000
Mouchel fees	-£27,000
Total cost (including 10% provisional sum)	-£415,000
CFE - judged as costs of standard replacement	£125,000
Govt. Low Carbon Building Programme Grant	£93,000
KCC biomass pot	£167,000
edf grant	£30,000
Funds allocated	£415,000

St Augustine's Catholic Primary School

Total cost (148k from Pinnacle for standard gas, plus 70k for biomass from Wood Energy)	-£218,000
From LCVAP and School (judged as standard boiler replacement cost)	£148,000
Grant from KCC Biomass pot	£70,000
Funds allocated	£218,000

Valley Park has proved to be a much more expensive Capital Project than St Augustine's for the following reasons:

1. Larger heat demand and so larger boilers required
2. More expensive delivery system (hook lift bin arrangement)
3. More expensive project management route (Mouchel)
4. At Valley Park we may have an underestimate of what a standard like for like Oil boiler replacement may have cost – which makes the Biomass capital cost appear artificially high.

Capital Cost Comparison per installed kW

	Valley Park School	St Augustines School
Capital cost per installed kW Biomass elements only	£580/kW	£466/kW
Capital cost per installed kW Whole project	£415/kW	£623/kW

Benefits and Savings Summary:

Valley Park Community School

Total Capital Cost	£415,130
Additional Capital Cost for Biomass elements	£280,068
Additional Capital cost less external grants	£157,068 i.e. additional cost to KCC
Fuel cost savings per annum (oil to biomass)	£10,200
Payback (additional capital / fuel cost saving)	15 Years (inc grants)
Total Carbon saving (over 17.5 year persistence)	1977 Tonnes CO ₂
Extra Capital Cost per tonne of carbon saved (use 17.5 years persistence)	£142 per Tonne CO ₂ saved

St Augustine's Catholic Primary School

Total Capital Cost	£192,364 NB: No management fees
Additional Capital Cost for Biomass elements	£81,397
Additional Capital cost less external grants	£81,397
Fuel cost savings per annum (oil to biomass)	£5,591
Payback (additional capital / fuel cost saving)	15 Years (no external grants)
Total Carbon saving (over 17.5 year persistence)	761 Tonnes CO ₂
Extra Capital Cost per tonne of carbon saved (use 17.5 years persistence)	£107 per Tonne CO ₂ saved

Note: Oil and Wood chip fuel prices used are the current prices. If Oil increases more quickly than Biomass in future then the savings will increase and payback will decrease e.g. if oil prices double then paybacks will be halved.

The 'Persistence' is a figure from the Carbon Trust and is an estimate of the number of years over which the saving will be made.

Valley Park is paying a higher price for their fuel due to the greater distance from fuel source, and more expensive delivery vehicle. St Augustine's fuel is delivered direct by the woodland owner by tractor and trailer whereas Valley Park's is delivered through a third party using a hook lift vehicle. This improves St Augustine's payback figure and demonstrates the importance of local fuel supply.

The Cost, Savings and Payback figures in the tables are fairly self explanatory. The cost / tonne of CO₂ is a measure used to compare cost effectiveness of energy saving or renewable energy projects. The KCC/Salix Energy Loan Fund which is aimed at short payback (low hanging fruit) projects must have a cost per Tonne CO₂ saved of less than £100/Tonne. So both biomass projects are a more expensive way of saving CO₂ than Energy Saving projects covered by the Energy Loan Fund.

From April 2011 Govt. plan to introduce a Renewable Heat Incentive (RHI) which will provide financial payment for renewably generated heat. These projects are unlikely to benefit from the RHI, but projects installed from April 2011 forward will do.

Display Energy Certificate Ratings and the Carbon Reduction Commitment

Since biomass has very low Carbon emissions compared to oil or gas it makes a significant improvement to the DEC rating. It is estimated that heating using biomass rather than oil will lead to approximately a 50 point improvement i.e. taking an E grade to a C grade, or a D grade to a B Grade.

From April 2010, KCC along with other large public and private organizations will be mandated to take part in the Carbon Reduction Commitment (CRC). The CRC will provide KCC with financial bonus or penalties according to whether it manages to reduce its overall Carbon emissions. The two biomass projects discussed here are not large enough to have significant impact on KCC's overall CRC position but wider use of biomass in the KCC estate certainly could help improve KCC's CRC position.

Key Lessons Learned / Recommendations:

Procurement process

Difficulties were encountered throughout the Valley Park project which were partly caused by the rushed procurement process. The procurement process should be identified and agreed with all interested parties well before commencement. Biomass specialists should be identified and placed on a select list to ensure that competitive choice can be made between contractors with relevant experience and expertise.

Fully understand conditions imposed by grant giving bodies (particularly relating to approved contractors and products).

Specialist contractors

Biomass installations are significantly different from standard oil or gas heating installations. Therefore specialists or contractors with considerable biomass experience should be used.

It's preferable to use a biomass specialist as the main contractor or have the main contractor select and employ the biomass specialist rather than the client (KCC) select the Biomass Specialist and Main Contractor separately. The set up at Valley Park led to responsibility for a number of technical issues falling between the Main Contractor and Specialist.

Project management

The level of management required for both projects was significantly higher than that of a standard gas or oil installation. At Valley Park the project was managed by Mouchel while St Augustine's was effectively managed at no cost by the school Governor (David Glynn). It's important to note that the lower cost management route used at St Augustine's is unlikely to be repeatable as very few schools will be able to draw upon a Governor with the relevant skills and time commitment.

When planning project management of a Biomass project its important to take account of the additional time/resource requirement and the need for experience with Biomass.

Costs, Savings and Payback

Biomass projects require higher capital input. The costs at Valley Park rose considerably higher than the initial indication provided by Creative Environmental Networks (CEN) back in 2007. The 'additional cost of biomass' indicated by CEN for Valley Park was £150k whereas the actual additional cost before grants was £280k and £157k after grants.

Because of the higher capital costs it becomes even more important to correctly size the Biomass boiler. At Valley Park the system is oversized to allow for future growth in the school and expansion of the heat network from the biomass boiler so that the extra capacity will be used.

The Simple Payback (additional capital cost/savings) at both sites is estimated at around 15 years which is considerably higher than the 6 to 11 years indicated by CEN in 2007.

Although both sites have very similar apparent payback their costs and savings are quite different i.e. Valley Park had higher capital cost and higher woodchip fuel price but grants were attracted which offset the higher capital cost. The ideal would be an amalgamation of both projects i.e. correctly sized boiler, very local low cost woodchip supply, and maximum capital support from external grants.

The projected cost of Oil and Gas has a major impact on the savings and hence payback calculation. If Oil and Gas prices rise significantly in future then the savings increase and payback decreases. I.e. the case for woodchip improves.

Woodchip Supply

Valley Park is paying around 35% more for Wood Chip than St Augustine's. This is because St Augustine's are taking wood direct from a local woodland owner delivered by tractor and trailer whereas Valley Park's woodchip is delivered from approximately 12 miles away via a third party.

These price differences highlight the importance of very local fuel sources. It is imperative to consider the fuel source and cost when assessing Biomass project feasibility.

Boiler Sizing and 'Back up'

Both projects use a mixture of one Wood Chip and one Gas boiler. It is not true to say that the Gas boiler is a 'back up' to the Biomass boiler since the total installed heating capacity has not been increased.

It is however judged as a sensible approach to install this mix of Gas and Biomass to provide greater fuel security and a more robust heating system. If one or other fuel was not available it is expected that the schools would still be adequately heated using the other fuel on all but the coldest winter days.

Grants and Funding

Grants from Government, utility companies or charitable trusts make a significant difference to the economics of a Biomass project and should be sought wherever possible. However different grant sources run on different timetables and few are guaranteed so it will usually be necessary to make the decision to progress with a biomass project before it is known how much grant funding will be attained. It is therefore imperative that a budget is available with a contingency allowing for the possibility that no grant funding is achieved.

Looking forward it is likely that Government grants for biomass boilers will reduce or disappear and be replaced by a Renewable Heat Incentive (RHI). The RHI will provide a significant financial payment for each unit of heat produced by biomass. This is likely to mean that capital borrowing of some sort will be required to fund new projects and should support the provision of biomass projects through Energy Services Companies (ESCO). ESCOs can fund and manage the installation of biomass boilers and recover the costs by selling heat to the client and claiming income from the RHI.

System Maintenance

Maintenance costs for Biomass Systems are higher than for Gas or Oil, for example the annual servicing cost at Valley Park is expected to be around £5k per annum rather than around £2k per annum for the Oil boilers. Biomass heating systems are more expensive to maintain because they generally include larger numbers of moving parts and equipment such as motors to transfer fuel from the store into the boiler.

There are also issues around availability of spares for boilers produced outside the UK, and a lack of suitably qualified local maintenance contractors. These are issues which are more likely to be overcome as the number of installations increase and can also be eased by favouring the use of common boilers and similar designs to other local installations.

As well as the higher cost annual servicing there is also a greater requirement for maintenance/management of the biomass plant by on site personnel e.g. occasional emptying of the Ash Bin, checking for blockages in feed systems, monitoring fuel levels. Many primary schools have low levels of engineering expertise amongst caretaking staff, this isn't conducive to operating a biomass heating system.

These higher servicing costs and greater requirement for onsite management must be considered at Biomass feasibility stage.

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Renewable Heat Incentive (RHI)

Media Briefing

01 February 2010

Consultation proposals were launched today. The scheme will start in April 2011.

How will the RHI work?

The RHI will pay a fixed amount per year to those who install renewable heat equipment, such as solar water heating panels, heat pumps or woodfuel boilers. Payments will be made either on the exact amount of heat produced, or on the amount it is anticipated the installation will provide. The former requires the heat production to be metered (this can easily be done, just as electricity and gas are metered). The latter pays according to an estimated or “deemed” output.

The payment will be fixed and will last between 10 – 23 years, depending on the technology. See the table below.

Unlike the FIT, for which the maximum size of installation is 5 megawatts, the RHI will apply to heat installations of any size. There is no upper limit.

Tariff Levels for Renewable Heat Incentive			
Technology	Scale	Tariffs (pence/kWh)	Tariff lifetime (years)
Small Installations			
Solid biomass	Up to 45kW	9	15
Biodiesel	Up to 45kW	6.5	15
Biogas on-site combustion	Up to 45kW	5.5	10
Ground source heat pumps	Up to 45kW	7	23
Air source heat pumps	Up to 45kW	7.5	18
Solar thermal	Up to 20kW	18	20
Medium Installations			
Solid biomass	45kW-500kW	6.5	15
Biogas on-site combustion	45kW-200kW	5.5	10
Ground source heat pumps	45kW-350kW	5.5	20
Air source heat pumps	45kW-350kW	2	20
Solar thermal	20kW-100kW	17	20
Large installations			
Solid biomass	500kW and above	1.6 -2.5	15
Ground source heat pumps	350kW and above	1.5	20
Biomethane injection	All scales	4	15

What Payment Rates are Proposed and what technologies qualify?

The payments under the RHI should result in a 12% rate of return. This is higher than for feed in tariffs for the following reasons:-

- The UK needs high growth rates for renewable heat technologies
- There can be a “hassle factor” involved in fitting some technologies (e.g. digging up a trench in the garden for the heat exchanger for a ground source heat pump) – the payment covers these costs and compensates users for overcoming any of these “non-financial barriers”.



RENEWABLE ENERGY ASSOCIATION

The voice of the Renewables Industry

It does not support domestic woodburning stoves or open fires. While there is no limit on the size of installations for renewable heat, heat needs to be locally generated as it cannot be cost-effectively transported long distances.

The UK's huge organic waste resource (over 100 million tonnes) can be transformed into valuable revenue, and turn landfill disposal costs (currently £50 per tonne) into income for local councils.



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Renewable gas

An alternative way of delivering renewable heat to users, is to convert biomass such as food wastes, other wastes or energy crops, into "biomethane" and put it into the gas mains. This will mean that the UK's gas supply can be increasingly decarbonised.

Biomethane is chemically identical to fossil fuel gas (such as North Sea Gas or imported natural gas from Russia, for example).

This biomethane can be produced from biomass materials, either through anaerobic digestion which produces biogas, which can then be cleaned up to produce biomethane; or by cleaning up "syngas" from gasification units running on biomass.

Biomethane producers will be paid 4p for every kilowatt hour that is injected into the gas mains, for 15 years. The payment level for larger schemes is not yet determined.

How much renewable heat will the RHI deliver and who pays?

The UK's renewable heat industry currently makes up just 0.6% of the UK's heat market. Under our European renewable energy target of 15% renewable energy by 2020, the RHI proposals launched today anticipate delivering 12% of the UK's heat from renewables by 2020. Electricity is expected to contribute around 30% and transport biofuels 10%.

The UK faces the most challenging renewable energy target in Europe and cannot afford delays.

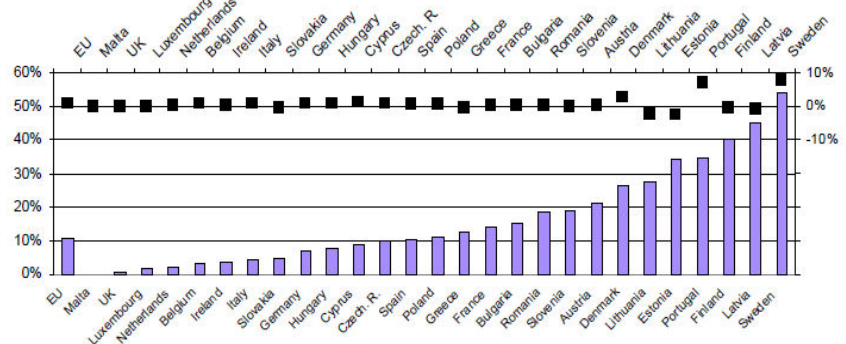
It is proposed that the scheme will be paid for either through general taxation or by raising a levy from sales of gas and other fuels used for heating. This will be consulted upon.

Fuel poverty is concentrated in rural off-grid areas, meaning that these homes stand to benefit most from a far greater choice in affordable heating sources.

What is the purpose of the RHI?

For the first time, the RHI will offer a comprehensive framework of support for renewable heat in the UK. This is urgently needed as heat is the biggest use of energy in the UK, supplied predominantly by fossil gas. Heat accounts for 47% of the UK's CO2 emissions. Across Europe the UK has the lowest contribution of renewable heat of all EU countries except Malta (on zero). By comparison over half of Sweden's heat energy is supplied by renewables. The EU average is over 10%. (Eurostat).

The share of renewable energy in the heating sector in 2006 (columns and left hand axis) and the (stagnant) growth between 2004 and 2006 for all but three Member States (points, right hand axis).



Source: Eurostat

See the European Commission

Renewable Energy Progress Report, 24/04/2009 - follow this link.

The UK may have made little progress on renewable heat so far, but the RHI proposals are an exciting world first. Such tariff payments are not developed in other countries, and are strongly supported by the UK renewable industry and heat users. The policy should for the first time give a long-term stable framework, giving the industry confidence to expand so that renewable heat becomes a mainstream option for all types of heating requirement.

Many UK benefits of a strong RHI

Renewable heat means greater energy security for the UK at a time when a business-as-usual scenario will leave the UK dependent on imports for 80% of its natural gas requirement by 2020. The UK's entire Renewable Energy Strategy, covering heat, electricity and transport is estimated to reduce fossil gas imports by 20-30% by 2020. Renewable heat will play a major role in this reduction. The technologies involved are proven and available, and in most cases have been used for many years. The great diversity of renewable heat technologies means that renewable heat can work in almost any situation, making it an attractive option for the 2 million homes off the gas grid, where heating options are more limited and more expensive.

Renewable heat avoids emissions associated with the generation of heat energy from fossil fuels. Organic waste streams offer the greatest environmental benefit of all renewables by transforming problematic wastes that can give off methane if left untreated, into energy¹, including heat.

The increasing demand for sustainable woodfuel will also provide an incentive for active investment and management of UK woodlands, allowing for greater biodiversity.

Ambient technologies like solar thermal are already popular and make up the great majority of micro renewable installations in the UK today. The RHI will make these technologies more affordable, bringing down costs over time.



RENEWABLE ENERGY ASSOCIATION

The voice of the Renewables Industry

The following members of REA staff will be available for comment:

Leonie Greene	Head of External Affairs	07932 720091
Gaynor Hartnell	Director of Policy	07870 629 575
Jemma Robinson	Communications Manager	07786 522663

¹ Methane is a greenhouse gas 23 times more powerful than CO₂. The UK produces over 100million tonnes of organic materials every year that can be used to produce biogas. Sources include agricultural slurry (90 million tonnes), food wastes and sewage.

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The top 1 tips

Aylesford, Kent

for becoming a carbon-neutral school

Headmaster **Simon Temple** has set his primary school a challenge – to become the first carbon-neutral school in Britain. He challenges other schools to do the same - with his top ten tips.

St Peter's C of E is a small village primary school - with big ideas. We believe we should take responsibility for our impact on the environment locally and globally, educating our children to embrace their individual ecological responsibility throughout their futures. Attempting to achieve carbon-neutral status with a Victorian-built school [circa 1836] is ambitious - and our ethos of corporate self-efficacy has been demonstrated and practised through this project. Our school management team wants all the building's technologies to work simply and in harmony - even down to labelled pipes and cables.

How did it happen?
St Peter's has always been in need of green space, so the opportunity to lease some adjacent gardens was just what we needed. As with all major projects, the school council represented the children's views in the decision process. A 'House Challenge' was started - to get the children to draw their own garden designs. The challenge was so successful that we widened it into an 'eco-schools' project. Through discussions with children, staff and governors, the school management published the four pillars of our new carbon-neutral ethos:

- REDUCE what we use with 'equipment husbandry', 'power rangers' and insulation
- REUSE everything possible and use companies with the 2012 certificate
- RECYCLE all we can in school - with 'eco-warriors' sorting waste for collection
- RENEWABLE power generation systems should heat, light and power the building

To involve the children in the audit, year six students conducted a scientific investigation to find the best insulation material. A selection of products was tested by encasing a ribena bottle filled with hot water with five different insulation products. Temperatures were taken at intervals and a cooling curve was plotted for each material. The clear winner was Super 10 made by Actis, which uses foil technology so it can be fitted into awkward spaces.

Funds are currently being sought and eco-build companies consulted. I hope that, once our goal becomes reality, our school will become a best practice model for other head teachers anxious to make a change.

The top ten tips for becoming a carbon-neutral school

1. Involve the whole school from the top down

This should be easy if everyone realises they can have an impact on the environment. For the more sceptical, I focused on cost-based arguments - telling everyone that the investment in my school should see savings through energy reduction within ten years.

2. Start with achieving the Eco-schools Green Flag

The Eco-Schools Green Flag award is a government initiative to promote school's collective responsibility for the environment. There are three levels - Bronze Flag, Silver Flag and Green Flag. These can be achieved by introducing recycling systems, reducing consumption and planting vegetable gardens. This certification is a good milestone to keep everyone motivated.

3. Start an effective Travel Plan to increase walking and cycling to school

The department for transport recommends all schools and businesses have a 'Travel Plan' - which is a measure of environmental damage caused by people getting to the building and a set of plans to decrease it.

A good travel plan has three advantages: it improves health through exercise, it reduces traffic and it cuts carbon emissions. Most of our staff members have a long commute, which necessitates driving. But most of our students are very local and choose to walk. When we calculate our carbon emissions, these figures are included.

4. Get a carbon emissions survey done so you know what you are using

It's really easy to find a company to survey the

building cheaply. It's useful to get the first one done before beginning your carbon cutting process - to establish a benchmark. We are waiting for our first survey to be published.

5. Keep records of meter readings and ambient temperatures

Fortunately, our caretaker kept weekly records of water, electricity and gas meter readings over many years. We are using a problem solving lesson in the upper juniors to relate these readings to the local ambient temperature data to establish a correlation and investigate the impact of the energy saving initiatives. This is another reason for installing equipment and implementing strategies sequentially - so the impact of each can be more accurately attributed.

6. Fit thermometers in all main rooms to monitor temperature

Thermometers are situated in all main rooms even where the heating systems are thermostatically controlled. This gives an easily monitored check that rooms are neither too cold nor too hot. All staff members appreciate the importance of maintaining a comfortable working temperature of about 18°C.

7. Train 'power rangers' to close doors and windows and switch off lights and equipment

'Power rangers' are children chosen each term to take responsibility for saving energy in their classroom. All our students love being assigned 'special jobs'. If any of the power rangers are found not taking their position seriously, they are replaced.

Hard work at St Peter's primary school



8. Insulate the areas using the most energy

Reducing heat loss is the most cost-effective way of reducing a building's carbon-footprint. The power rangers help a lot by keeping doors shut. We have had a programme of window replacement over the last seven years, so most of our windows are now double glazed with K-glass.

We have also ensured that our main doors are draft-proofed. We have recently insulated the ceilings of one of our two buildings - some challenge as they are vaulted rooms ascending to over ten metres at their apex. In the end, we suspended Super 10 on wires. We have also insulated some of the main walls. The effect? We can put the heating on for one hour in the morning, and that's it – warm all day!



9. Set up 'eco-warriors' recycling systems

Eco warriors, like the power rangers, are children awarded responsibility for separating the school's waste. Our year five students also sort and prepare drinks cans for the scrap-yard. It doesn't just mean an important resource is being recycled – it makes us money, too.

10. Watch out for the write-up on implementing St Peter's plans for renewable energy

We are writing up a plan for other schools with Aylesford's PTS Renewables. Once it is fully implemented, we will have a carbon-neutral - if not carbon-negative - footprint. The plan includes photo-electric panels, solar-thermal panels, kinetic energy transfer heating systems, grey water recycling and rain water recovery.

Bringing all these technologies together in one location is a new challenge for the companies we are working with. Our aim is to iron out the project management and technical interface issues faced during installation so that a tried and tested package can be offered to other schools and organisations.



Simon Temple is the head teacher at St Peter's primary school, Aylesford, Kent. When asked what inspired his eco-battle, he said: "It may sound corny, but I really do take my responsibilities as a community leader very seriously. I believe I have a duty to lead my students to fulfil their duty to save the planet, especially as it is clearly a realistic aspiration!" We don't think it's corny at all, Simon – keep up the good work!

Forestry Commission

Matthew Woodcock - Programme Manager, SE Region

Having gained a degree in forestry from Aberdeen University, Matthew came to the south east in 1985 to manage East Sussex County Council's Dutch Elm Disease control programme. He joined the Forestry Commission in autumn 1985, based at Bedgebury in the Weald Forest District and having worked for two years gaining an understanding of the unique qualities of the south east's woodland, the Great Storm of 1987 changed everything! From then until 1994 he was one of three Woodland Officers covering Kent and East Sussex.

Matthew worked for six months at FC headquarters where he helped develop the Woodland Grant Scheme and then joined Lothian and Borders Conservancy where he gained experience of upland and community forestry. He then returned to England, working in Midlands Conservancy, where he learned about coal tip restoration and began his interest in woodfuel.

In 2000, Matthew returned to the south east as Operations Manager for the region, managing the team which delivers grant aid and administers forestry regulations. During that time he worked on promoting wood as a sustainable fuel source and finding market based solutions to bring woods back into active management.

From autumn 2007 to 2009, he gained further experience as Acting Regional Director for South West England, returning to the south east in June 2009 as Programmes Manager. He is responsible for establishing links between Government objectives and practical delivery tools, including grants, regulations, market development, advice and advocacy; as well as exploring how this can be achieved by closer working with the public forest estate.

He retains a major interest in the evolving market for wood both as a fuel and a building material and is currently managing the Woodheat Solutions Project which is transferring knowledge to South East England from Finland and Austria, where the use of woodfuel is well established, and establishing partnerships to pilot focused support to help build the woodfuel industry in the South Downs National Park and the North Kent Downs AONB.

Ian Tubby, Head of the Biomass Energy Centre and Programme Group Manager, Centre for Forest Resources and Management

Ian joined Forest Research in 1997. Since then he has been involved in numerous research projects investigating the potential for forestry and energy crops to produce sustainable, low carbon heat and power. His main focus has been on the interaction between different varieties of short rotation coppice and site conditions and how this influences yield. He has also been involved in projects evaluating the biomass resource at both the National level and regional levels.

Since April 2006 he has led the development of the [Biomass Energy Centre](#), launched as part of Government's response to recommendations made by the Biomass Task Force. It provides advice and guidance to organisations and individuals producing or using fuels derived from all kinds of biomass. This advice ranges from technical and practical information on fuel processing equipment or likely fuel requirements for a given application through to more general information on how sustainably sourced biomass can help reduce greenhouse gas emissions by displacing fossil fuels. Much of the information it conveys is emerging from research conducted by Forest Research and the research consortiums it is affiliated with. The BEC has also developed a wide network of contacts in both the public and private sectors which helps to ensure the information provided is current and well balanced. The BEC supports the network of Forestry Commission Woodfuel Officers in Scotland, England and Wales. Ian is also a Programme Group Manager for the Bio-energy Development programme in the [Centre for Forest Resources and Management](#).

Suggested Themes & Questions

1. Could you tell us something about the role of forestry in mitigating climate change, with regard to carbon capture/sequestration:
 - Could forestry contribute to carbon mitigation in Kent and are there accepted or standardised ways of measuring the contribution of particular species or sizes of planting area?
 - Is growing trees for energy, and thus reducing fossil fuel use, more effective in sequestration terms than tree planting alone?
 - Would it be beneficial for public sector organisations such as KCC to identify land assets which could be utilised for woodland planting?
2. Could you explain briefly the main regulatory issues applying to the planting and management of woodlands and outline the available grants?
3. Are you aware of any issues, or have you received feedback from the sites you list in your written evidence (including two KCC sites) where medium scale woodchip fuelled heating systems are in use in Kent?
4. In your written evidence you estimate that Kent could produce 90,000 cubic metres of wood fuel (half the sustainable yield) which equates to 90MW heating capacity. This represents a substantial scaling up of forestry operations – what conditions would be required to make this a viable proposition?
5. What could be done to ensure the local resource is firstly, maximised and secondly, used locally in the most energy efficient way?
6. What do you see as the main opportunities for KCC in working with you to stimulate the establishment of a 'robust woodfuel industry in Kent'?

7. Could you please elaborate on your plans in relation to the North Kent Downs AONB.
8. Could you outline what is meant by a fuel co-operative and whether/how this might be applicable to Kent? Would such an arrangement be helpful to owners of small woodlands in obtaining sustainability certification or a practical alternative. Is best practice sufficiently encouraged through procurement protocols in Kent?
9. One of the challenges in switching to biomass fuel for heating is the relatively high level of maintenance required (compared to, say, gas boilers). Are there other models of operation which would take the responsibility for fuel (including quality assurance issues) and/or equipment maintenance out of the hands of the end user without compromising the cost effectiveness of the biomass option?

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National Farmers Union

The National Farmers Union is a democratic organisation with no political affiliations. It champions and provides professional representation and services for farmers and growers in Britain.

William White - Regional Director of the NFU South East region

William has been in his current post since 2005. He was trained at Seale Hayne Agricultural College, Devon, and has served the NFU for the past 23 years. William serves on the Immigration Minister's Home Office Illegal Working Stakeholder group. He also chairs the North East Hants Agricultural Association, which runs the Alton Show.

Dr. Jonathan Scurlock - Chief Adviser to the NFU on Renewable Energy and Climate Change

As a senior adviser at the NFU headquarters office in Warwickshire, Jonathan leads a small team on this topical subject area. He has 25 years' experience from the university and government research sectors, including energy and climate change policy, plant physiology, biomass energy and other renewables. Jonathan worked previously on renewable energy with regional and local government in North East England, as well as the US Department of Energy in Tennessee. He was educated at Oxford and London Universities, and is a Visiting Research Fellow at the Open University.

Suggested themes and questions

1. Is there currently any significant renewable energy generation on Kent farms? What is the potential and what factors (particularly those that could be influenced by the public sector) are key to increasing the use of a range of renewable technologies?
2. What will it take to make a reality the NFU's aspiration that every farmer should have the opportunity to diversify by exporting low carbon energy services – what are the barriers to progress?
3. Could you expand on your comment in written evidence regarding planting grants in relation to perennial wood crops and on the potential benefits of the Feed-in Tariff (FIT) and Renewable Heat Incentive (RHI).
4. The Gallagher Review concluded that:

“there is a future for a sustainable biofuels industry but that feedstock production must avoid agricultural land that would otherwise be used for food production.”

Could you tell us about the current status of the energy crop vs food debate with regard to the UK. What are the NFU's aspirations with regard to biofuels and in your view, are home-grown biofuels a viable proposition?

Is it possible to verify that non-UK (and UK) biofuels are sustainably sourced? In your view, to what extent is biofuel production an option for Kent?

5. What is the capacity for the generation of biogas from on farm anaerobic digestion in Kent and does this have the potential for wider than on farm use? In Lille, for example a fleet of buses is run on a mixture of natural gas and biogas recovered from organic waste and sludge – in Stockholm, waste collection vehicles run on biogas - what's stopping something like this from happening here in Kent? Do the environmental credentials of biogas as a road transport fuel stand up to scrutiny?
6. Could the residual products from AD on farms contribute to reduced use of fossil-based fertilisers and if so are there any regulatory aspects affecting this?
7. Are you aware of the proportion of Kent farms which are off-grid? Do you see this as a major barrier to the development of renewable energy by the county's farmers and what are the issues?

Suggested Themes and Questions

Hadlow College

Hadlow College in Tonbridge is a further education college for careers in land-based industries. It has sites in Mottingham, London and Canterbury as well as working in partnership with Monkshill Farm in Swale.

Dr Howard Lee, Lecturer and Sustainability Manager

1. In its recently published RE-thinking 2050 Report the European Renewable Energy Council plot a pathway towards 100% renewable energy for Europe by 2050. In order to move towards this position, what do you see as the relative importance of the available technologies for Kent. What in your opinion is the best route forward – should there be a focus on a particular technology or technologies **in the short term**, or do there need to be advances on a broader front, with all the technologies in the mix, given the financial, technical and other constraints?
2. Could you say a little more about your recommendation that a renewable energy survey of Kent is undertaken – how do you envisage the end product being used, and by whom?
3. Could you outline some of the key issues with regard to the planning system as they relate to renewable energy at the medium and micro scales?
4. Regarding anaerobic digestion and its potential for Kent, we have heard evidence that environmental permitting for on farm waste operations can be a barrier – how in your view can these difficulties be overcome. What in your view is the best and most sustainable use of biogas?
5. The RE-thinking report sees both biogas and biofuels as essential if we are to ‘end oil dependence in the transport sector’ – where do you think efforts should be concentrated?
6. Energy and food production/security are necessarily entwined – what are the key issues for Kent.
7. Individuals and organisations are facing huge financial and other challenges. Coupled with this there is ‘Climate-Change Fatigue’ and the peak oil debate has had a relatively low profile – what do you believe is the role of the local authority in bringing maximum opportunity and benefit to residents and businesses in Kent with regard to renewable energy?
8. What could be done to ensure that ‘green training’; skilling up for jobs in the various aspects of energy efficiency and renewable energy, bring benefits to areas of high unemployment and fuel poverty?

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