

## Case study summary

# Suffolk County Council, UK

2010 Ashden Award

Suffolk County Council's 2010 Ashden Award recognised its outstanding work in supporting the local wood-fuel supply chain and installing wood-fired boilers in schools.

Suffolk, like many counties in the UK, has significant woodland resources that could be managed sustainably to produce wood-fuel. It also has a significant number of public and private buildings that are currently heated by oil-fired boilers. Suffolk County Council has been replacing oil-fired boilers in schools with wood-fired boilers, and working with the private sector to build capacity in wood-fuel supply.

- 20 wood-fired boilers installed in schools and offices between 2006 and 2009, with a total heat output of 3.2 MW.
- Boilers installed by the end of 2009 save around 410 tonnes of CO<sub>2</sub> per year.
- Cost savings for schools switching from heating oil to wood-fuel.
- Funding and other support given to a local wood-fuel producer co-operative, allowing them to purchase and operate a large chipper.
- Local wood-fuel producers given long-term contracts, allowing them to invest confidently in their businesses.
- Woodland brought under management and native trees being replanted.
- Local employment supported in forestry, wood-fuel supply and boiler installation.

Suffolk County Council was established in 1974. With headquarters in Ipswich, it employs 25,000 people across the county out of a total population of 715,500. The council is funded by the UK central government and local taxes.

### UK statistics

(IMF 2009, UNFCCC 2006)

GDP: £20,500/year per person

CO<sub>2</sub> emission: 9.2 tonnes/year per person

### Location



**"Woodfuel isn't going to run out like oil and gas are, so we're investing now to save in the future, both in cost and carbon emissions."**

Jane Storey

Deputy Leader of Suffolk County Council



Seasoned logs being chipped by Anglia Woodfuels to produce wood-fuel

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# Case study

## Suffolk County Council, UK

### Background

Suffolk County Council is responsible for much of the public infrastructure across the county, including most school buildings. It also has a duty to protect the countryside and promote biodiversity through effective land management, and to cut carbon emissions in order to meet national targets.

The rural nature of Suffolk means that many schools were historically heated using oil or coal, resulting in high carbon emissions. Over the past four years, Suffolk County Council has progressively replaced old boilers in schools with wood-fired boilers burning wood chips or pellets. The wood-fuel is produced within the county, with the council helping to build capacity in the supply chain by providing finance, expert advice and contracts for the supply of fuel to schools.

### The organisation

Suffolk County Council was established in 1974, delivering services to 322,000 households or 715,500 people. It currently employs 25,000 people and has an income of £1,000m a year, £0.7m of which is spent on developing the local wood-fuel supply chain.

The installation of wood-fired boilers helps the council reduce its CO<sub>2</sub> emissions but also saves money compared with boilers using heating oil. There is strong cross-party support within the council for environmental work in general, and for the wood-fuel work in particular. The elected members and executive are convinced not only of the environmental benefits of wood-fuel, but also of its financial benefits.

### The technology

Wood fuel is sourced from local woodland, with different areas harvested each year to allow time for each area to regenerate or be replanted. The logs are stored on a concrete area at a disused airfield for up to a year to allow them to dry out or 'season', when they are then fed into a large chipper and the chips stored on site in old aircraft hangars for further drying. The wood must be allowed to dry to a point where the moisture content is below 30%, as this gives better performance when it is burned in a boiler.

The wood chips are then delivered in a tanker to local schools, and blown through a hose into the fuel store. The boiler burns the chips in a controlled supply of air, which is continuously adjusted to respond to variable heating demand and to minimise pollution. Some of the boilers burn wood pellets rather than chips so that smaller fuel stores can be used. The pellets are now manufactured within Suffolk or in Norfolk (about 60 miles away) and delivered in bulk to a central hub, from where they are distributed.

### How much does it cost and how do users pay?

US\$1 = £0.81 (Great Britain Pounds) [May 2010]

The council has been able to make use of UK government grants such as the Bioenergy Capital Grants scheme and the Low Carbon Buildings Programme to part-fund the boiler installations. Some schools have added their own funds to those from the council to make sure the installation can go ahead. Schools in Suffolk pay for their own energy use, but the energy is bought in bulk by the council.

A Renewable Heat Incentive is currently being proposed for the UK, which will allow recent and new installations to earn money in proportion to the amount of heat generated; this will make wood-fuel boilers even more attractive, and competitive with mains gas.

### Wood fuel in more detail

When wood and other biomass is harvested sustainably, there is sufficient re-growth each year to replace what was taken for use as fuel. Because the carbon released when the wood-fuel is burned was originally taken from the atmosphere, the use of wood-fuel is carbon-neutral overall. This means that the use of wood-fuel can contribute to meeting national targets for the reduction of greenhouse gas emissions.

In order to make best use of wood-fuelled heating, careful attention must be paid to the design of each system. Building occupancy and demand profile are both important, since the more the wood-fuelled boiler is used, the faster the payback period. Designing facilities for easy delivery of the wood-fuel is also critical and must take account of the delivery vehicles used by local suppliers. Size of storage facilities is important; although bigger stores cost more to build, larger fuel deliveries are more cost effective, and a buffer of fuel is useful if there are ever supply difficulties. For any wood-fuel user it is important to locate a nearby supplier, since the relatively low energy density of wood-fuel means that it is not economic to transport it over long distances.



Thinning a softwood plantation to produce logs for wood-fuel

### How is it manufactured, promoted and maintained?

The wood-fired boilers installed by Suffolk County Council are manufactured mostly by Gilles, an Austrian firm, and installed by a local company. After installation, the school site manager is trained to carry out routine maintenance and the installer returns once a year to carry out a full service.

On the demand side, council staff frequently work with local businesses interested in using wood-fuel, providing advice on grants and installation. On the supply side, the council's Woodland Advisor works with local land owners, encouraging them to link up with wood-fuel supply companies in the area and the wood-fuel producer co-operative, Anglia Woodfuels.

### Benefits

Since the work started in 2006, 20 wood-fired boilers have been installed in schools, with a total heat output of 3.2 MW. During that period over 1,200 tonnes of wood-fuel have been delivered by the local supply chain, representing 4.9 GWh of energy.

### Environmental benefits

Production and transportation of the wood-fuel used in the school boilers results in the emission of 0.025 kg CO<sub>2</sub> for every kWh produced, compared to 0.252 kg CO<sub>2</sub> per kWh for heating oil. As a result, the boilers installed by Suffolk County Council saved 410 tonnes of CO<sub>2</sub> emissions in 2009.

By creating a secure long-term demand for wood-fuel in the region and by building capacity in the supply chain, the council has encouraged woodland owners to manage their land for fuel production. Proper management of woodland can also bring biodiversity benefits, due to the extra light reaching the ground for several years after harvesting. In some parts of Suffolk, ancient woodland is being restored by replanting with native broadleaf trees after conifer plantations have been harvested.

### Social benefits

Installing wood-fired boilers in schools provides an opportunity to make use of them in the curriculum; every year, the council's Woodland Advisor organises for a group of pupils from each school to see the fuel being produced and learn about the environmental benefits of wood as a fuel.

### Economic and employment benefits

Schools that have had an old oil-fired boiler replaced with a wood-fired one have seen their fuel bills fall by up to 25%.

The council's work to build up supply and demand for wood-fuel has created and supported local jobs in forestry, wood-fuel production and boiler installation. The council contributed £10,000 in 2006 to help set up a local wood-fuel producer co-operative, Anglian Woodfuels, with additional funds coming from Norfolk County Council and DEFRA. Suffolk County Council has continued to help the co-operative by providing expert advice free of charge, and has also provided advice to specific members of the co-operative, such as Eastern Woodfuel, its wood chip supplier. By offering three year supply contracts with the option to extend for a further two years, the council has generated sufficient business confidence to allow the start up of wood-fuel supply businesses.



Logs arrive from a forest to be stacked for seasoning.



Testing the moisture content of seasoned wood.

**"The council had to do something to generate alternative energy, and we've got the forests here."**

Kevin Ross, chipper operator for Anglian Woodfuels



Freshly produced woodchip being delivered to a store for further drying at Eastern Woodfuel.

### Potential for growth and replication

In addition to the 3.2 MW of wood-fired boilers installed by Suffolk County Council, another 3 to 5 MW have been installed by other organisations in the region, with sufficient sustainable wood-fuel supply in the county to supply over 35 MW of boilers. The council is continuing its programme of installing wood-fired boilers in schools and other council-owned buildings, focusing on those that currently have oil-fired boilers. Once the proposed UK Renewable Heat Incentive starts, the installation of wood-fired boilers is expected to accelerate, as the economic case will become even more compelling.

Providing there are sufficient woodland resources and the necessary work is done to support private sector businesses in establishing a wood-fuel supply chain, many county councils or groups of district councils in the UK could replicate Suffolk County Council's award-winning work.



Woodchip tanker delivering wood-fuel at a school.

**“Initially I was apprehensive about running the boiler, as I’d not used one before, but there have been no problems over the three years I’ve been here, and it’s very efficient.”**

Peter Coy, caretaker at Rendlesham Primary School

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One of Suffolk County Councils innovations – a device to make it easier to blow woodchip into the store through a hose.

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