

BISHOP'S CASTLE BIOMASS POWER PROJECT

Sustainable fuel sources

Fuel contracts

Bishop's Castle Biomass Power Project (BCBPP) plans to source 20,000 tonnes/year of wood chip and energy crop fuel.

This fourth brochure provides information on four different types of fuel. It also highlights the short and long term fuel sourcing within the context of sustainable, local, economically viable and bankable energy sources. These underpin the project's embedded generation and environmental objectives. (See three previous brochures.)

Forestry by-product

The project will use 60 (dry) tonnes of fuel/day, deliverable by HGV's in 25-30 tonne loads. The target forestry fuel source is up to 10,000 tonnes/year of unrecovered brash, lop, top and thinnings from commercial forestry. At present 30% of this wood is not economically recoverable. Delivery of the policies set out by the Forestry Commission

(www.forestry.gov.uk/england) (as for private woodland owners) will require new practices for recovery of these by-products. 2,000 hectares of forestry, recovering 5 tonnes/ha/year would provide the target fuel of 10,000 tonnes/yr. The area of commercial forest in Shropshire, Herefordshire and Powys is 24,000, 36,000 and 75,000 ha respectively. BCBPP sources are under 2% of the forest resources.

One further value of recovering this brash is preventing decomposition which emits methane which is 22 times more potent than carbon dioxide as a greenhouse gas (GH).

These changes in forestry contracts, investment in equipment, and implementation of the BCBPP contracts within the felling programmes will take 2 to 3 years. Long term contracts (10 years) from BCBPP will be essential triggers for these changes.



Brash



Wood chipper

Whole tree chipper



Figure 1. Changes for forestry contracts, practice and total wood recovered.

Wood Chip

Wood chip from sawmill and wood industry sources will be the dominant, initial fuel source. The wood sources, supply chain and infrastructure are in place. BCBPP will not operate with a waste licence. All wood chip will be under regulation and audited by the load as clean and untreated with potential pollutants.

A model for at least 10,000 tonnes/year is realistic. The wood chip will be delivered with two walking floor HGVs per day. The more local the source, the greater the advantage in transport costs to local sawmills and wood industry. New networks of outward wood product deliveries and return loads of

chip are emerging. BCBPPs interests are contributing to structural changes in the wood fuel supply chains. Vehicles will operate on bio-diesel, for which BCBPP will pro-actively make provision. Some sources offer sawdust - which BCBPP will use directly as fuel and for pellets.

BCBPP anticipates that these contracts will increase wood sourcing and use of marginal wood by-products by providing added value. Internationally timber prices have been increasing and the local sawmills and wood-industry network will see improved market conditions and activity. BCBPP will be using their marginal products.



Sawmill



Wood working



Wood chip



Shredded wood

Figure 2. Wood chip from sawmill and wood industry sources

Energy crops

Energy crops will increase as a proportion of BCBPP's fuel over the first 2 to 5 years. Farming products, practice, markets and economics are changing. Higher added value food, non-food crops, energy crops, biofuels and short rotation (small scale) forestry will diversify farmers' businesses over the next 2 to 5 years. For capital investments into energy crops a contract is a necessary condition for grants. It may well be a necessary condition for the bank. BCBPP will support change in the local, rural economy.

Miscanthus and short rotation coppice willow are expected to be a small proportion of the fuel. The May 2007 Energy Review

proposes further support. Of the non-food crops, flax exemplifies new practices yielding linseed oil, fibre (linen) and straw (shiv) - the latter being fuel. Biofuels are exemplified by oil-seed rape where the rape straw is fuel - with some use of the cake as fuel in the summer. Short rotation forestry for poplar provides fuel as well as biodiversity value with its carpet of spring flowers.

A reasonable fuel model for these energy crops allows for growth from 1,000 to over 5,000 tonnes/year over the first five years - displacing the forestry and wood chip options referred to previously. 1% of the land (which may be set-aside) within 20 Kms can provide 6,000 t/year.



Miscanthus baling



Headland biodiversity



Short rotation coppice willow harvesting

Headlands for biodiversity



Figure 3. Energy crops and fuel sourcing

Conservation and woodland management

Wood fuel derived from conservation and biodiversity projects is not economic. The payment for wood chip from the coppice, thinnings, arboriculture and conservation woodland, however, helps with the cost of conservation. River bank protection zones can yield alder which has craft and charcoal values. There are large tonnages of arboriculture wood with no value or use at pre-

sent. Much goes to landfill in urban areas. Burning in orchards is to be banned. They can, however, be used as fuel by BCBPP.

As with energy crops - just 1% of a 20 Km radius could yield 5,000 tonnes/year. The small cash contribution for the fuel value can be a significant contribution to conservation project viability.



Figure 4. Conservation and woodland management partners

Carbon-neutral power

BCBPP will generate 2.5MW of power and 2.5 MW of heat for local use, using local fuels and supporting the local economy, as audited by OFGEM (the electricity and ROC regulator) and SSDC (the planning and environmental authority).

7,000 tonnes/year of CO₂ will be saved relative to coal-fired power - as the carbon credits off-set the highest polluters. BCBPP will not compromise the local environment and an Environmental Report will support the Planning Application.

Summary

The Planning Application will be submitted in late May 2007 for a determination over the following few months. Subject to determination, construction will start in 2007 for completion in 2008.

The project will generate power using renewable fuels. It will support local farming and forestry industries in the production of energy crops and wood chip with long term contracts, including multifunctional uses for biofuels. The project will contribute to the objectives of embedded, local power generation and to a carbon neutral community.

The project will begin with local building construction and fuel supply contracts.

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