

31 March 2011



To: House of Representatives Standing Committee on Agriculture, Resources, Fisheries and Forestry

Growing Australian Forestry (Inquiry)

Via Email: arff.reps@aph.gov.au

RE: NEW INQUIRY – AUSTRALIAN FOREST INDUSTRY

Dear Sir

Delta Electricity is a large NSW State Owned electricity generator with predominantly coal and gas fired power station assets in the NSW Central Coast and the Lithgow Region.

Delta is seeking ways to reduce its carbon footprint, and has embarked on two major initiatives with this aim in mind:

1. Post Combustion Carbon Capture – this initiative has included a pilot plant program at Munmorah power station, undertaken in partnership with the CSIRO. The pilot program is now complete and Delta is seeking approval to conduct a demonstration sized project at Vales Point power station in the near future; and
2. Biomass Co-firing – this initiative has been conducted at pilot scale (<2%) at both Wallerawang and Vales Point power stations from 2001 to 2009. Delta is now developing a much larger scale project to co-fire the Vales Point power station at up to 20% which would significantly reduce its CO2 emissions.

This submission relates to the Biomass Co-firing project, and the ability of Delta to source sufficient suitable biomass. It will address our views in two of the seven areas suggested:

- Potential energy production from the forestry sector – Biomass; and
- Land use competition between the forestry and agricultural sectors – opportunities for farm forestry.

Coal fired electricity generation is widespread across Australia, and dominates the National Electricity Market with over 80% of all electricity consumed being generated from coal. As a significant generator in the market, Delta has reviewed all its options for reducing its carbon footprint, but is seeking a future where it can continue to operate and earn an appropriate financial return without devaluing the highly valued assets employed.

The issue of reducing carbon emissions in a coal fired power station is particularly difficult to resolve in Australia, where people have become accustomed to some of the lowest



electricity pricing in the world and coal is readily available. Biomass co-firing appears to be an easy transition that coal fired generators can make. It has been carried out successfully in a number of countries overseas but has not grown in Australia because the financial drivers are not yet in place. This situation could change in the near future if a carbon tax or ETS is enacted, and therefore Delta may need to move to co-firing to reduce its carbon liability. However, it is essential that affordable biomass fuel supplies are secure for the future to justify the capital expenditure necessary to make the change.

1. Potential energy production from the forestry sector – Biomass

Delta has investigated sourcing forestry residues from state owned forests in the Lithgow region of NSW. It appears that these forests produce about 150 Kt annually in raw 'slash', which is mostly left on the forest floor to act as a mat for harvesting plant to drive on, and to allow the return of the leaf matter nutrients to return to the soil.

Whilst this slash would appear to be an ideal source of biomass fuel for electricity generation, it is not presented for collection in a suitable state, as it has been driven into the ground and is mixed with clay and rocks – in fact it is arguable that it is not feasible to recover in that state. A trial was carried out using different harvesting techniques, where the trees were hauled up to a local collection point, then processed and stacked such that the majority of the slash was within about 100m. This material appeared to have much less clay and rocks entrained, although at a yield reduction of perhaps 25%. This arrangement would appear to be a solution that may allow recovery of the slash, but the harvesting costs will be higher.

In any case, the raw forest residue material is not suitable for co-firing at a high percentage, as power stations require biomass to be pre-treated so that it can be ground and presented to the boiler as a dry powder. The dried and ground biomass has low density, and is normally pelleted for efficiency of handling, transport and storage. This pre-treatment needs to be carried out in a separate plant, and these plants have relatively high capital and operating costs. For Radiata pine forests in particular, the bark is a difficult material to dry and pelletise, although it can be done if separation is not an option. A forestry industry initiative to provide financial support for those prepared to adjust harvesting practices to suit collection and separation of bark (for Radiata particularly) would be worth considering for the short term.

The result of our review was that we could perhaps source 110 Ktpa of raw biomass from the local forests for our Wallerawang power station. This material, when pre-treated for co-firing, could produce around 60 Ktpa of suitable pellet – around 10% of the quantity of pellet required for co-firing Wallerawang with 20% biomass as a percentage of total fuel. Because of the cost of collection, pre-treatment and transport it was considered that any price paid for the raw material gathered from this source would need to be low, or the resource would not be competitive.

- Suggestion: The forestry industry is currently focussed on higher value products such as saw log, or even wood chip. The residues would be a low value addition, and then only if foresters are prepared to vary harvesting practice to suit collection of the residue. However, if this initiative was coupled with support of a



local industry to pre-treat the biomass so that it was suitable for combustion in power stations (ie material was dried, ground and pelleted), then the forestry industry could be seen to be value adding to their waste products plus providing additional regional employment. This concept could also be used to gain some residual value from fire damaged, or otherwise stranded, sections of forest.

2. Land use competition between the forestry and agricultural sectors – opportunities for farm forestry

Due to the shortage of available biomass resources for power station co-firing, Delta has been studying the feasibility of growing trees on marginal farming land as an energy crop. The forestry industry refers to this practice as farm forestry – although the agricultural sector views it more as energy cropping. In any case, in NSW at least, it is likely that the plantings would need to be registered as forestry plantings for the future security of the business venture.

Delta has supported a trial planting of 200,000 Mallee eucalypts across 10 farming properties around Forbes, in the Central Western Slopes & Plains region of NSW. The purpose of the trial was to study:

- Planting arrangements – to study the level of interference with traditional farming practices;
- Species selection – to study the survival and growth rates of the 2 species selected against forecast data, soil types and topography; and
- Competition – to study species survival against the various elements (floods, rainfall, pests, weeds, livestock).

It is clear that farmers in the region – particularly those on more marginal land – have a real interest in growing an energy crop such as Mallee for woody biomass for electricity generation. It has the potential to offer a separate revenue stream that is not dependant on volatile crop pricing. Provided that only smaller areas are planted (say <10% available land) then the wind break benefits in crop yields largely offset the land use involved. Also, because the trees are deep rooted, they do not compete with crops for surface water and hence have very little negative effect on the adjacent crops.

The process of energy crop production in this fashion is very much a farming venture, because it allows for farmers to grow and harvest the woody crop, and to get an annual return from the area harvested. The trees are harvested every few years and the species needs to regrow after harvest so that the coppice regrowth can then be harvested in future as well. This sort of venture is very different to a traditional forestry plantation which exists for perhaps 25 years before logging.

- Suggestion: The energy cropping concept that Delta has been investigating has involved plantings on farms in marginal areas. Another alternative is for the forestry industry to consider developing large scale Mallee plantations on even more marginal land that can no longer support farming, or perhaps on the land resumed in the Murray Darling water buy back scheme. Trees in these areas



would grow more slowly of course, but perhaps they could be harvested every 6 or 8 years from 'block' plantings instead of every 3 or 4 years on existing farms. Again the venture could include support for a value adding industry to pre-treat the biomass for power generation.

Thank you for the opportunity to make this submission. Delta has an on-going interest in biomass co-firing, and hence an interest in encouraging farming and forestry initiatives to increase the availability of biomass to meet our future needs. If we can be of any further assistance, please contact Mr Chris Horner, Delta Biomass Co-firing Program Director (P 02 4390 1600 or E chris.horner@de.com.au).

Yours faithfully



Greg Everett

Chief Executive