



## CLARENCE ENVIRONMENT CENTRE INC

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Dear Senators

### What is Wrong With Wood Fired Electricity Generation

You are about to be asked to vote on Environment Minister Greg Hunt's Renewable Energy (Electricity) Amendment Bill, in which electricity generated by biomass (timber) can be considered for the Renewable Energy Target (RET)

The following notes explain why the Clarence Environment Centre is opposed to electricity produced by burning wood and urges you to vote against the use of wood to generate electricity.

Some two decades ago a wood-fired power station was proposed for the Clarence Valley. That proposal was eventually dumped for clear reasons, it was too environmentally damaging, too costly, and totally unsustainable. Some of the facts and figures quoted below came from the investigations carried out at that time.

The bottom line is that the reason for a RET is the urgent need to lower greenhouse gas emissions and wood-burning does not do that, in fact it is generally acknowledged that wood-burning creates more greenhouse gas emissions than coal. On the other side of the equation, we need to be planting more trees to create carbon sinks, not cut them down to generate electricity that could be undertaken by clean energy technologies.

#### Bad government, lobbyists and bad Science

The Proposed Renewable Energy (Electricity) Amendment Bill is, in our view, being introduced to shore up local vested interests, particularly the timber and transport industries. The term 'wood waste' is not, as is commonly believed to be, mill off-cuts, and tree crowns and stumps left over from logging operations, these products are simply too expensive to salvage and transport from the forest to the power station, it is logs from whole trees deemed unsuitable for lumber that will be used.

Renewable does not necessarily mean clean or green. It's only used to describe whether an energy source can be replenished. Wood-fired power is dirty. The CO<sub>2</sub> out of the power station stack in order to generate 1 GWh of electricity for each of the fuels is as follows:

	CO <sub>2</sub> /energy (kt CO <sub>2</sub> PJ <sup>-1</sup> )*	Conversion efficiency (%)	CO <sub>2</sub> output kt CO <sub>2</sub>
<b>Wood</b>	94	20	<b>1.69</b>
<b>Brown coal</b>	93	27	<b>1.24</b>
<b>Black coal</b>	92	36	<b>0.92</b>

The above chart signifies greenhouse gas emissions for coal and wood at the output of the power station. Despite proponents of wood power claiming that greenhouse gases are less for wood because of the uptake of carbon in a forest at the growing stage, wood is actually dirtier than coal,

All biomass combustion technologies put pollution in the air. Most waste fuels when burned liberate toxicants such as dioxins and furans. Anything that creates pollution in the course of producing electricity shouldn't be considered green or clean. Wind and solar, even though they have some environmental impacts in their construction (like the toxics used to make solar panels), don't have to keep polluting in order to make electricity. Anything that has environmentally damaging emissions that can be measured per kilowatt is not deserving of the various advantages granted to renewable energy sources.

Existing wood-fired power stations are not usually fitted with advanced pollution controls – too costly, and some are equipped only with electrostatic precipitators (ESPs), which are known to boost dioxin emissions by retaining the exhaust gases in the temperature range where dioxins are formed.

There are no safe levels for dioxins. Dioxin is a generic term for a range of hazardous compounds. Our knowledge of them is primitive. Some scientists in the U.S know claim that there may be dioxins created in non chlorine environments. The U.S EPA claims that no U.S incinerator complies on dioxin standards. In addition to dioxins, furans and toxic metals, wood-fired power stations also emit formaldehyde, phenols, benzene, naphthalene (present in creosote), and chlorine, not to mention NO<sub>x</sub>, SO<sub>x</sub>, VOCs, and particulate matter.

In the case of the proposed Clarence Valley wood-fired power station, we learned that 40,000 tonnes of toxic sludge recovered from the scrubbers, plus the bottom ash would likely end up being dumped on open ground, used as landfill, or in the cement industry every year. Wherever it ends up the fact is that toxics will be spread round the environment. These wastes contain all manner of toxics like heavy metals, and if pollution control equipment is not maintained pollution loads can sky-rocket.

In the U.S wood fired power stations are monitored for the following: CO<sub>2</sub>, No<sub>x</sub>, CO, CO<sub>2</sub>, PM, ammonia, Acrolein, Formaldehyde, Acetaldehyde, Benzene, Benzene(a)pyrene, Napthalene,2,3,7,8 –Tetrachlorodibenzo -p – dioxin, 4 Nitrophenol, Polychlorinateddibenzo-p-furans. Therefore, while the effects of CO<sub>2</sub> on climate is a concern, the other 'nasties' in wood are far worse than coal.

Because wood will be sourced from far and wide, it is envisaged that transport costs will be enormous (compared to coal-fired facilities that usually stand adjacent to the coal mine), which would lead to the building of numerous small generating facilities spread across the country nearer to the source of fuel.

With no handy conveyor belt from the forest to the furnace, it has to be road-freighted, sometimes hundreds of kilometres. On the figures presented for the proposed wood-fired power station in the Clarence Valley, it would require 280,000 tonnes of fuel per year at a delivery rate of 800 tons per day. But this will only provide enough fuel to generate 12MW. To generate 30MW the fuel requirements are about 470,000 tonnes per year at 1300 tonnes per day.

Because a wood-fired power station is a capital intensive investment, a constant fuel supply is critical, and we must consider what happens if there is an extended period of wet weather and forests can't be logged. This will lead to the need for on-site storage of huge volumes of timber with all the associated problems with leaching and fugitive emissions. Even a modest wood-fired power station will generate 40,000 tonnes of ash per year, which will also require trucking - a lot of trucks.

Councils around Australia will struggle to maintain roads damaged by logging trucks, not to mention associated issues like road safety, noise and more atmospheric emissions and pollution.

This brings us to yet another issue into focus, thermal pollution of waterways, which is likely to occur because there is little likelihood that expensive lake construction for small local power wood-fired stations, such as those generally associated with the large coal-fired stations of the Hunter.

There is little knowledge of the impact of thermal pollution on rivers. However, if wood-fired power stations are anything like the Broadwater Bagasse proposal for the Clarence River, then there could be as much as 150 ML of super heated water entering local waterways daily from each power station. An additional 250,000 litres of boiler feed water contaminated with chlorine and a biocide will also be pumped into the river on a daily basis. (It'll be great for people who love boiled fish).

This discharged water will effect dissolved oxygen levels which are already marginal. Because a wood-fired power station sucks up huge quantities of water, large fish are killed on the grates on the inlet pipe. Small fish are sucked in and boiled. Most of Australia's rivers are already rated as being under "High Environmental Stress", wood fired power generators will exacerbate that situation.

In seeking to create a renewable energy market for as many forms of biomass as possible, the government is likely to encourage industry and the community to view "incineration-for-energy" as the solution to waste problems.

The US experience showed that even if wood-fired power stations start off burning relatively clean wood, they often end up seeking to burn more hazardous types of fuel, a convenient way to dispose of otherwise costly waste. In some cases, wood waste facilities have sought to burn wood tar waste. In other cases, state agencies have allowed wood-fired power stations to dispose of their oily water by spraying it on their wood fuel. It has been argued by some companies that they need to co-fire rubbish in order to become "leaner and meaner" in the deregulated electric market.

Many industrial wood-fired power stations in the US are already permitted to burn tyres, treated wood waste, black liquor solids and/or paper sludges. In timber mills, the waste is mostly sawdust and wood scraps. Fiberboard plants use formaldehyde (a hazardous air pollutant) and other toxic glues such as isocyanate. The toxic constituents of these glued and otherwise treated wood products make them unsafe to burn, but we fear the temptation will be to follow that course in Australia.

In conclusion, and in consideration of all of the above, we ask that you to reject the use of biomass being included in the RET.

Yours sincerely



John Edwards  
Honorary Secretary