Yatala Residents Alliance
A COMMUNITY VOICE
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"A Community voice surrounding topics which impact the lifestyle, health & environment of residents near commercial & industrial developments in the Yatala Enterprise Area"

Objection

to

Proposed Biomass Plant

at

126 Sandy Creek Rd, Yatala.

Prepared by
The Yatala Action Group
and Yatala Residents Alliance
Against a Biomass Plant and Extraction Chimney

BRIEF

The objective of this report is to show irrefutable evidence why a Biomass Plant should not be built in Sandy Creek Road, Yatala. The evidence has been collected with the assistance of the residents of the Yatala, Ormeau, Bannockburn, Windaroo and Norfolk Village areas.

A group of business people had been asked by the community to head up the investigation and stop any such plant being approved in the area close to residents' homes and the community.

An application by Phoenix Power Recyclers has been submitted for a MCU (Material Change of Use) to Gold Cost City Council. This application has been referred to DEHP for evaluation and assessment. DEHP from their assessment have the opportunity to either approve the application or refuse it. **We as residents strongly recommend that DEHP refuse this application on the grounds as presented.**

The grounds of rejection are outlined in the areas of:

- Health
- Environment
- Compliance
- Location
- Lifestyle and Quality of Life

We approached the issue with the mass understanding that we did not want a chimney spewing out a cocktail of chemicals which neither the Governments nor the Owners could guarantee the content or safety of.

As we started to investigate the issues before us, we all discovered a proliferation of mistakes made by the applicant, Council and Government. To be considering the application to emit such a toxic mix over residents 24 hours a day, 7 days a week should not even be considered let alone approved.

The total disregard to the residents and the health issues that have been proven overseas from these plants, along with the total disrespect for the public and the public amenities in the area such as schools, childcare centres and sporting ovals, gave us a great reason to not just stop this Biomass Plant for the local residents but for the residents of other areas who use these facilities in the area under the safe guard of our Government Environmental Protection Agencies. We have been led to believe they are there to protect residents from polluting industries.

As we investigated the MCU Application, it is evident that there were large discrepancies in the application. We wondered how an elected Council and Government Departments would allow its constituents to be disadvantaged in such a way by 'big industry'.

We noted understandings given by the Gold Coast City Council over the years that all polluting industries were strongly encouraged to be located on the eastern side of the M1. Investigations showed that other 'dirty' industries were directed by the Council to relocate on the eastern side of the M1 and responsible industries did so with no objection.

We also noted discrepancies in the DEHP approval processes and are now questioning the processes used and the investigations conducted in the assessment of this application.

- Were residents consulted?
- Were any of the objectors to the application from 2011 ever consulted?
- Was an environmental impact study taken?
- Were any assessments taken of the impact on schools, childcare centres and public amenities in the area?
- Was an assessment of the pollutants from the burning of the green waste taken and the long-term effects on the health of the public in the vicinity of the plant?
- Was an impact study done on the surrounds and waterways in the area only 100m from the site?
- Were any of the local habitats assessed regarding the fallout of the pollutants from the chimney?

We have had very limited time to make any findings in relation to the DEHP decision process, however, we are sure that the compelling evidence which we have found in just a few weeks is merely skimming the top of the overwhelming evidence available worldwide as to why these plants should never be allowed anywhere near residential populations.

Before you could even consider this application for approval, even with strict conditions, you as our elected protectors of big business and possible environmental catastrophe must investigate further in order to be 100% sure that this plant does not evoke any danger, health risk or pose a possible environmental disaster to our community, now or in the future.

Who will protect us if all the research that has been done showing health risks to our elderly, children, newborns, unborn developing foetuses and our students goes unchecked? What if the area has an unexpected increase in lung diseases such as asthma and bronchitis? What if higher incidences of disabilities in newborns become apparent or an increased incidence in male prostate cancer? These increases then become a greater burden on our government hospitals and health systems. Who wins?

Is the short-term gain by a few worth the long-term loss by the community, the environment and the Australian public at large?

We have given this matter a lot of time and effort and have come to a unanimous conclusion that this Application by Phoenix **should not be approved in any form** and we strongly recommend that DEHP give this application the rejection it deserves.

LOCAL BIOMASS PLANT HISTORY

1) ROCKY POINT

The Rocky Point biomass plant was built with the help of a $55 million government grant to power the Sugar Mill in Woongoolba QLD (directly opposite Yatala) and was opened in 2002.

At the time of construction, it was Australia's largest biomass power plant using a 30MW Alstom steam turbine and generator. The project was a joint venture between W H Heck & Sons Pty Ltd (who own the Sugar Mill) and the government owned Stanwell Corporation.

The primary fuel is bagasse (sugar cane waste) with some wood waste and green wood firing. It generated up to 160,000MWh annually – enough to supply around 20,000 homes.

Biomass burning trials took place in the sugar mill and extensive research into the supply of some 180,000 tonnes of biomass fuel (other than bagasse) for the mill's out-of-season operation. The research eventually found that 130,000 tonnes of fuel was available to the project.

The water used on site came from the Logan City Waste Water treatment plant in Eagleby. This water was used in the Boiler, converted through a Reverse Osmosis plant into potable water for use in the amenities block and excess water was used for irrigation on the cane land around Rocky Point. It then became the Rocky Point Cogeneration Plant, with value-adds such as organic sugar production and distillation of fuel alcohol and ethanol. At its peak, the plant was burning around 300,000 tonnes of green and wood waste annually.

In 2006 private equity group Babcock and Brown paid $5.12 million for the plant and renamed it Rocky Point Green Power with National Power then taking over sole ownership of the plant in 2010.

The company struggled with operational and maintenance problems and in late 2011 its boiler failed. Repair costs were estimated to be around $3.2 million, which forced the company to close operations. The exact number of creditors and amount owed is not known, but some unsecured creditors are believed to be owed more than $1 million. Jason Preston of McGrath Nicol was then appointed the receiver in February 2012.

The Gold Coast's struggling cane industry is facing its demise, with the loss of livelihood for 56 grower families and the jobs of 300 people. Trucking cane to the Condon mill in NSW was a short-term option if the Rocky Point mill did not reopen however, costs made this unviable in the long term.

It is believed that the plant has recently been sold to a financial institution based in Sydney. If the plant were to re-open, it would be in direct competition with the proposed Phoenix operation. The obvious solution would be to invest the governments' money into refurbishing the existing infrastructure at Rocky Point. If this was to occur;

The Benefits Would Be:

* The Rocky Point plant has twice the capacity of the proposed Phoenix plant and can consume twice as much waste and generate double the amount of electricity.
* The capital costs would be far less to refurbish an existing plant rather than to build a new one. To build a new 30MW Rocky point plant would cost over $100 million.
* It would preserve the existing jobs of around 400 people, as opposed to the Phoenix operation, which will only create 10 extra jobs.
* The plant is located in an isolated area away from heavily populated communities and conveniently positioned close to the Stapylton landfill and recycling centre.
* The plant will use recycled water. In the event of another drought this would be a significant advantage. (Where will Phoenix obtain their water from?)

2) STAPLYTON – Green Waste to Energy Power Plant

The plant is located at 215 Burnside Road, Stapylton, which is midway between the Gold Coast and Brisbane in an area of established power infrastructure and heavy industrial land zoning and was built in February 2004 for a cost of $12 million for 5MW output.

The publicly listed company went into liquidation in 2006 and the operation was purchased by the BMI Group.

The plant utilises Fluidised Bed Combustion (FBC) technology to combust non-native wood waste, branches and tree trimmings at extremely high temperatures. FBC combusts waste material from a variety of sources with various moisture levels. Steam created from the combustion drives a Westinghouse turbine.

Fuel for this plant is supplied locally in accordance with a long-term Fuel Supply Agreement and is transported to the site, weighed, measured for moisture content and stored in the holding shed with a capacity of around two to four weeks of fuel reserve. A conveyor then transfers the fuel and loads it into FBC.

The plant produces 30 GWh of electricity per annum, which is sold to Energy Australia under a long-term power purchase agreement. The generator is registered as an unscheduled generator within the National Electricity Market. The plant was an accredited generator under the Mandatory Renewable Energy Target (MRET) Scheme, Green Power Scheme and NSW Retailer Greenhouse Benchmarks Scheme (pending) and is connected to the 11 kV Energex distribution grid.

The project was expected to save 30,000 tonnes per annum of greenhouse gas emissions.
The FBC process enables significantly lower emissions and by-products.
The plant is air-cooled, thus eliminating the need for large volumes of cooling water.

Future outlook:

Currently the generation plant has not been operating for around 18 months due to costly breakdowns.
The wood from the plant is being stockpiled in the hope that the Rocky Point plant will be recommissioned.

Given the financial history of the Rocky Point and Stapylton plants, it seems very unlikely that the Phoenix plant would be a viable operation in the foreseeable future.

It is also doubtful if the government would support the proposed plant financially, given that the cost would be around $70 million.

QUALITY OF LIFE

The proposal calls for the construction of a 30 metre high chimney to vent waste gases/smoke into the atmosphere. The prevailing winds in the area for most of the year are from the southeast, which means the emissions from the chimney would be blown directly over the Yatala residential area with 350 residences, and also Windaroo & Beenleigh. Winter winds are from the west, which would result in the emissions falling on the major residential areas of Ormeau to the east and south east of the site. The potential receptors negatively impacted by this development include:

- Three residential properties in Sandy Creek Road itself.
- The residential development of some 340 properties less than one kilometre to the WNW of the site.
- The townships of Beenleigh and Windaroo to the north and west.
- The township of Ormeau that directly abuts the Yatala Enterprise Area to the east and south east.
- Rivermount College with some 860 pupils and a childcare centre less than 2kms to the WNW of the site.

- The childcare centre of Goodstart Early Learning at Norfolk Village less than 2.4km from site.
- The school and childcare centre in Ormeau less than 3.7kms from the proposed site.
- 3 more schools less than 4kms from the proposed site.
- 2 more schools less than 5kms from the proposed site.
- 1 childcare centre less than 5kms from the proposed site.
- 4 more schools less than 6kms from the proposed site.
- 7 more childcare centres less than 6kms from the proposed site.
- 2 more schools less than 7.5kms from the proposed site.

Total: 12 schools, 11 childcare centres, 3 sports & recreation parks and 1 aged facility all within a 8km radius.

It is fair to assume that these schools and childcare centres will be effected by the chemical fallout from the chimney due to the knowledge that the cane soot from the cane burning falls on Yatala and surrounding areas including Bannockburn, Beenleigh, Eagleby, Mt Warren Park, Windaroo and north to Tanah Merah and Loganholme.

Research indicates that the major concerns with the emissions from a biomass generation plant are its potential toxicity with links to an increase in Asthma and other respiratory diseases as well as risks to newborns and the elderly and the volume of carbon dioxide released into the atmosphere.

The report, as Attachment A, from studies conducted in the USA, shows a potential release rate of approximately 1500 kg of CO2 for every MWh of power produced. Using these figures, at a proposed maximum generation rate of 100,000 MWh per year, the proposed plant would release 150 tonnes of CO2 into the atmosphere each year. **These carbon dioxide emissions and toxic residue would be released 24 hours a day 7 days a week directly over existing residential areas and schools.** Furthermore, it is now conceded internationally that biomass burning is not carbon neutral. The sheer volume of carbon dioxide released during the burning process cannot be absorbed by the local vegetation as would be the case if the bio-matter was allowed to decay naturally.

The Assessment Report prepared by Treasure & Associate in December 2009 does not address the likely effect on these receptors. Paragraph 3.2 of this report confines the definition of surrounding land uses to the industrial estate and the archery range. This is despite the considerable number of objections to the MCU raised formally by local residents. The submissions by the three Sandy Creek local residents were not even provided to DEHP for consideration during the initial assessment of the MCU. This is a major omission and needs to be addressed as a matter of urgency. We cannot allow our children to be exposed to such hazards.

TAXPAYER BENEFIT – VALUE FOR MONEY SOLUTION

This proposal is an unnecessary duplication. A Biomass Generation Plant already exists in the area.
A plant built with Queensland tax payers' hard earned dollars;

- A plant that is capable of producing 30MW or 160000MWh per year.
- A plant that is on the same side of the Motorway as the council landfill and therefore closer to the proposed fuel source.
- A plant that cost around $55m to build of which $45m was contributed by the Government owned Stanwell Corporation
- The Rocky Point Sugar Mill is located 10kms from Yatala (in a direct line).

The Rocky Point Biomass Power Plant needs to be made operational and viable to ensure the ongoing provision of power to the sugar mill. Without the sugar industry and mill up to 400 jobs could be lost to the area. Instead we are now seeing more tax dollars wasted, this time Commonwealth, by way of a $500,000 AUS Industry grant to the Phoenix project.

COMPLIANCE

We are concerned that the necessary **CHECKS and BALANCES** are not in place to allow such a development to proceed. In essence there is no satisfactory compliance regime to ensure the safety and ongoing wellbeing of neighbouring residents and school children.

For example:

- The applicant has failed to detail the air pollution control systems associated with the 15MW power plant. PM10 particulates are deleterious to human health and the applicant has not considered how to control these emissions associated with the power generation process. The applicant has not provided any information on expected levels of PM10, any air plume analysis and whether there is a sufficient buffer between the proposed activity and the surrounding residential, education (Rivermount College) and childcare facilities.

- The applicant has failed to adequately address the existing nuisance odour associated with the current land use and has further failed to adequately address nuisance odour associated with the expansion of soil conditioning / composting processes.

- The applicant has failed to address visual amenity of the 30m stack as requested in GCCC Information Request dated 6/1/11.

- The applicant has failed to meet the requirements of the Yatala Local Area Plan. Planit Consulting describes the applicant proposing to provide a 'superior environmental outcome' through the provision of a 10m buffer on the Western boundary and a 20m buffer on the northern boundary. The north boundary does not currently have a 20m buffer and it would be difficult at best to achieve any positive environmental outcome through rehabilitation and to even suggest this is just a farce. The Gold Coast City Council needs to take action to protect these important corridors and ensure the natural values are conserved.

- The applicant failed to meet the Natural Wetlands and Waterways Code through the provision of a 100m buffer from the Wetland RE area.

- The applicant's figures of the proposal do not match the staging drawings in the applicants Proposal Plan as part of the Response to GCCC info request dated 6/1/11.

- The applicant has not sufficiently addressed effluent disposal including appropriate storage capacity of the effluent, appropriate containment of effluent (110% plus additional capacity for additional flow) and wet weather storage where effluent cannot be combined with the composting process due to weather.

- The applicant has failed to appropriately treat and discharge stormwater in accordance with standard industry practice during a release. 50mg/L of TSS as release criteria is not sufficient to protect downstream environs. I also note that the applicant does not propose to monitor Nitrogen and Phosphorous even though these parameters propose the greatest risk of release as a result of the proposed operations.

- The statement is on page 9 of 9 of response to information request part 27 and under the heading of locality map last sentence is as follows. **"There are no schools, hospitals, airports or national parks within a two kilometres radius of the site".** This is incorrect as Rivermount College is 1,550m from boundary to boundary.

LOCAL TRAFFIC INCREASE

STANMORE ROAD & SANDY CREEK ROADS

The extra traffic created by this development of the Phoenix plant would be significantly higher for the following reasons.

Currently Phoenix Power Recyclers operate from 6.00 am to 4:30 pm Monday to Friday and 7am to 11am on Saturdays. They are closed Sundays.

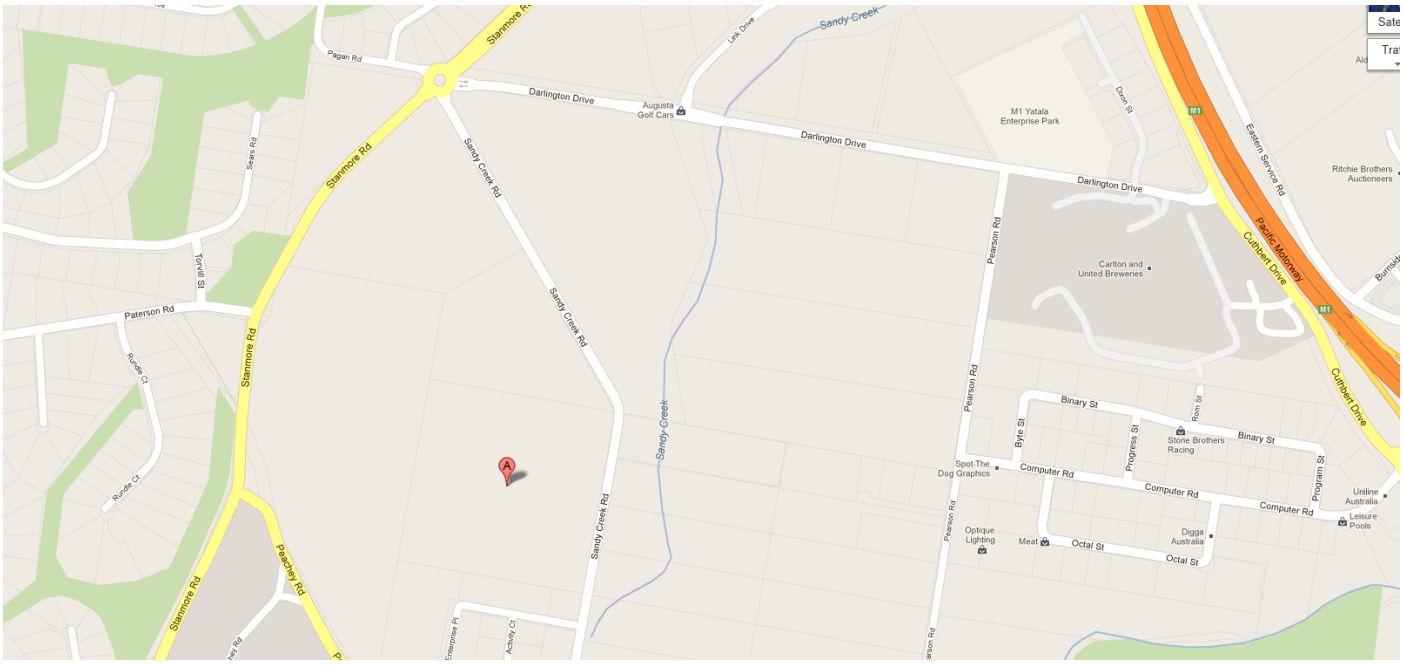
- Total current operating hours = 56.5 hours a week.
- The proposed operation will be operating 7 days a week, 24 hours a day = 168 hours a week.

It stands to reason that if the proposed operation was operating 3 times longer every week, traffic will also increase to much higher levels.

This proposed operation would involve three 8 hour shifts per day, with vehicles coming and going at all hours of the day and night along Sandy creek road within 100m of the local residences, creating even higher noise levels.

It would also involve a larger volume of heavy vehicle traffic during daylight hours, creating further traffic problems at the "roundabout" intersections towards the Eastern end of Stanmore Rd near the M1 highway.

If the operation was located on the opposite side of the M1 highway, the proposed plant would be located closer to various sources of waste fuel and far less traffic would be created.



POWER PLANT

I draw your attention to Page 4 of the Assessment Report. It refers to the use of a Hybrid Coal and Gas Turbine (HCGT) system developed by CSIRO. This system utilises a Rotary Kiln as a combustor and is unsuitable for this application requiring as much as 80% fuel to burn 20% biomass. It is noted that in the Preliminary Plans, the boiler hose design contains no Rotary Kiln. This is either a very poor initial investigation as to the most appropriate type of boiler house for the purpose or a blatant attempt to imply the proposal has CSIRO certification. CSIRO have no knowledge of this proposed application.

Question? Rocky Point is essential to the operation of the sugar mill. This power plant currently takes as much combustible waste from Phoenix as is available. It has just been sold at a fraction of its cost to build, and must be back in operation within the next few weeks to enable the sugar harvest to be crushed.

Why should grant money from the public purse (our money) go into another uneconomic power plant, particularly when the only existing power plant at Rocky Point has a need for all the combustible waste available for this proposal?

With the power plant associated with this proposal being uneconomic and unnecessary, there is no need for a Material Change of Use for the property concerned.

HEALTH ISSUES

Research has not been done in Australia, but has been done for many years in the USA, UK and Europe on the dangers of Biomass Plants close to residential communities.

Research conducted in the USA reported that what makes waste dangerous is not its volume, but its toxicity. People don't usually die from waste falling on them, but exposure to toxic constituents of wastes can cause all sorts of health and environmental problems. The research has shown that the tiny Nano particulates of toxic incinerator emissions can travel through the lungs, into the bloodstream and lodge in vital organs, including the brain. The consequence of breathing these particulates has increased incidence of heart disease, cancer and neurological disorders like autism.

Leading medical associations and public health advocates oppose biomass incineration and are demanding an end to taxpayer and ratepayer subsidies for these facilities.

Massachusetts Medical Society is quoted as saying:

Biomass power plants pose an unacceptable risk to the public's health by increasing air pollution. The burning of biomass releases small particles into the air creating particulate are pollution. Epidemiological studies have demonstrated an association between elevated particulate air pollution levels and adverse health effects and death. Particulate air pollution is associated with increase cardiopulmonary systems, asthma attacks, days lost from work due to respiratory disease, emergency room visits, hospitalisation rates, and mortality. "Biomass combustion also releases nitrogen oxides, which help create ozone, a highly reactive oxidant gas. Ozone reacts in the pulmonary airways causing symptoms of chest pain, shortness of breath, cough, wheeze, increased susceptibility to infection, declines in lung functions, increases in asthma attacks, increases in asthma medication use, increased rates of emergency room visits for respiratory disease.

Massachusetts Breast Cancer Coalition is saying:

Massachusetts has the 4th highest breast cancer rate in the country . . . Of particular concern to the breast cancer community about this (Springfield) plant is the release of toxic chemicals like dioxin and polycyclic aromatic hydrocarbons (PAH's) into the air in communities already experiencing needlessly high rates of breast cancer.

There is also evidence of increased risk of cancer, heart disease, diabetes mellitus, developmental delays in children, neurotoxicity and thyroid disease. The elderly are very vulnerable and more particularly the unborn and developing foetuses, newborns, children and those with chronic illness. There is also links with prostate cancer in men.

At a time when all governments are reigning in costs, can we afford to allow possible long-term illnesses brought on by these biomass plants to congest our hospitals, increasing the public cost of our health? Our hospitals are not coping with the burden at present, let alone increasing it un-necessarily by the introduction of biomass plants within 500 metres of a residential community and within 2kms of a large school and child care centre.

We are not saying biomass plants don't have a use, but we do not need these plants anywhere near residential estates.

The Council has unofficially denounced 'dirty industry' on the western side of the M1 and many good community minded businesses have heeded the call and relocated on to the eastern side of the M1 where residences are away from these plants. Our endeavour is to ensure that the council makes this stance official and known to future developers.

Think about this, in a few years when the community finds higher rates of cancer, premature deaths from the older population and the community decides to take on a class action against it, who will pay? The Council, who has approved the MCU, and who has a vested interest because they need a place to get rid of their green waste and other materials? The State Government for not investigating through DEHP the effects on the community? The Federal Government, because they approved another $500,000 grant without any due diligence as to the effects on the adjoining communities? Or, perhaps the shelf Company that has been set up with limited liability and is able to declare its lack of assets and therefore inability to pay any compensation?

There is a possible place for these plants and it is not near a residential community.

Let us ask you this, as elected representatives of our community:

Would you as an individual be happy knowing that your parents, grandparents, children and grandchildren live under the 'cloud' of a biomass plant? Knowing that there is anecdotal evidence of the harmful effects of these plants, would you be comfortable if one of these plants were to be erected within 500 metres of where you live?

Please consider us as a community (that has the same rights as any other community) and say NO to the approval of a biomass plant at 126 Sandy Creek, Yatala. You are charged with the responsibility to protect our children, our unborn children, the thousands of students in the surrounding schools, and the babies at the childcare centres, as well as the many workers in the surrounding factories.

We have found report after report from other countries of the harmful effects of the toxins from the chimneys of Biomass plants.

In the USA particularly there is a growing uprise in stopping these plants. More evidence continually comes to light on the harmful effects of the Nano particles that infiltrate the blood stream and the lungs after a period of time of constantly breathing in the toxic fumes.

WEB LINK INFORMATION

This short youtube video interview by Dr William Sammons is something we all need to watch and ask ourselves;

Is the pursuit for wealth and power more important than the pursuit of better health and quality of life?

http://www.youtube.com/watch?v=nhdYcHEinHM&feature=em-share_video_user

http://www.maforests.org/MFWCarb.pdf

Biomass is often touted as a "carbon neutral" fuel and burning biomass is sold as "green" energy. This "carbon neutrality" myth has been debunked by science, yet is still repeated by biomass proponents. In fact, wood fuelled biomass power plants are worse than fossil fuels for carbon dioxide emissions. Russell Biomass in Massachusetts is one such proposed facility. The project proponents estimate in their expanded environmental notification form that the plant will emit 1,732 tons per day of carbon dioxide to produce 380,000 MWh of power annually, an emission rate of **3,327 lbs/MWh**.

For comparison carbon dioxide emission rates are 2,117 lbs/MWh for existing coal plants, 1,314 lbs/MWh for existing gas plants and 760 lbs/MWh for new power plants. The Russell plant would emit 50% - 250% more carbon dioxide per unit of energy produced than the top ten worst carbon dioxide emitting power plants in the northeast. Overall, new wood fuelled biomass power plants emit about 50% more CO2 per MWh than existing coal plants, 150% more than existing natural gas plants and 330% more than new gas power.

Please refer to the link above for detailed information of the study.

SUMMARY

This brief report has been put together by concerned residents of the Yatala area who believe that our quality of life is being jeopardised by the few who are after personal gain at any cost, and levels of Government who have *not* taken the time to investigate the effects of these plants on its constituents.

We have put together enough evidence to show that a Biomass Plant with an incinerator 30m tall has no place within any community. Also available is evidence of the toxins that are emitted from the chimney and our concerns over the total lack of continual testing of the toxins spewing out of the chimney day and night.

Our objective is to ensure that the environmental laws are structured in such a way that developments of this nature are not allowed near residential communities in any form. The State Government, Federal Government, and the Gold Coast Council need to formalise suitable areas for these types of developments and not ask residential communities to suffer due to poor planning and inadequate research.

We as a community believe there is no place for a Biomass Plant or other offensive industry in Yatala.

MASSACHUSETTS FOREST WATCH

WOOD-FUELED BIOMASS POWER PLANTS AND CO2 EMISSIONS

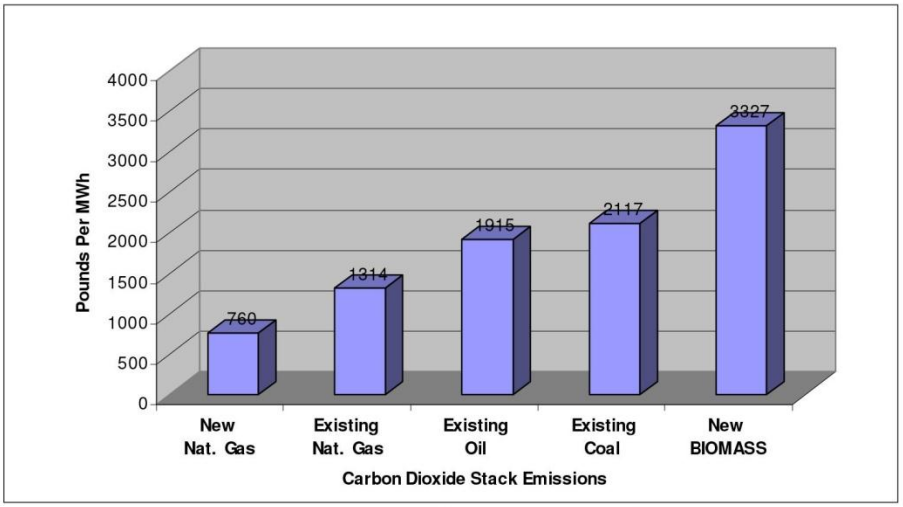
www.maforests.org/MFWCarb.pdf

Biomass is often touted as a "carbon neutral" fuel and burning biomass is sold as "green" energy. This "carbon neutrality" myth has been debunked by science, yet is still repeated by biomass proponents. In fact, wood fueled biomass power plants are worse than fossil fuels for carbon dioxide emissions.

Russell Biomass in Massachusetts is one such proposed facility. The project proponents estimate in their expanded environmental notification form that the plant will emit 1,732 tons per day of carbon dioxide to produce 380,000 MWh of power annually, an emission rate of **3,327 lbs/MWh**[1]. For comparison carbon dioxide emission rates are 2,117 lbs/MWh for existing coal plants, 1,314 lbs/MWh for existing gas plants and 760 lbs/MWh for new power plants.[2] The Russell plant would emit 50% - 250% more carbon dioxide per unit of energy produced than the top ten worst carbon dioxide emitting power plants in the northeast.[3]

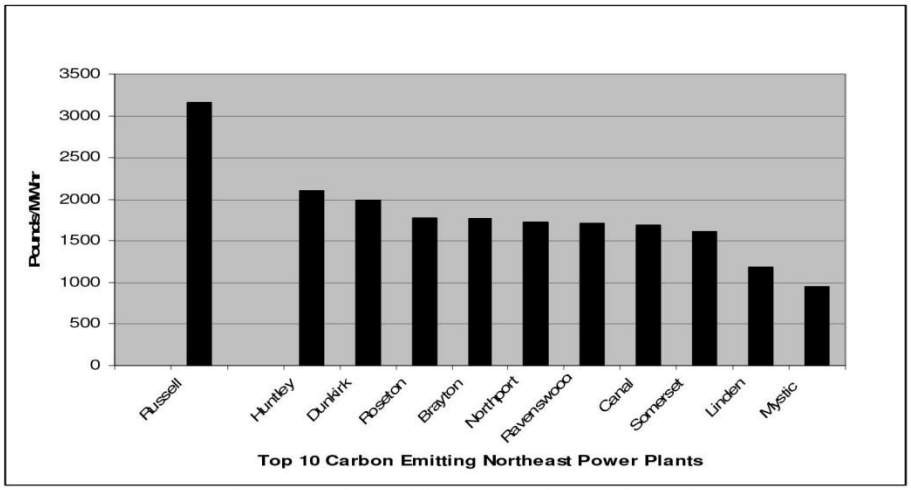
Overall, new wood fueled biomass power plants emit about 50% more CO2 per MWh than existing coal plants, 150% more than existing natural gas plants and 330% more than new gas power plants.[4]

WOOD FUELED BIOMASS vs FOSSIL FUEL POWER PLANTS



Source: Department of Energy and Footnotes 1 & 2

RUSSELL BIOMASS vs WORST NORTHEASTERN POWER PLANTS



Source: MassPIRG "More Heat than Light" and footnote 1

Even the often touted idea of converting existing fossil fuel heating systems or CHP systems to wood fueled biomass increases carbon dioxide emissions by 26% over oil and 74% over gas given similar efficiencies.[5] Since wood burners are usually less efficient, actual carbon emission increases would be even higher.

While beyond the scope of this briefing, additional carbon impacts from wood fueled biomass power plants must be added since the forest's ability to sequester carbon has been reduced through logging. A full accounting of carbon dioxide impacts from wood fueled biomass power plants would also include carbon emissions from the decay of forest root systems, oxidation of soil organic material as well as the use petroleum for logging of forests, chipping the wood, and hauling a large quantity of relatively small fuel loads at distances up to 100 miles or more in trucks that get about 5 miles per gallon.

It is impossible for a biomass power plant that burns existing forests to be carbon neutral since any increase in forest cutting negatively affects the *current baseline condition* of forest growth versus cutting and mortality. Furthermore, it is the overall carbon emission input rate into the atmosphere from an energy source that matters, because overall carbon sequestration rates can not be expected to increase to make up for increased carbon inputs. With biomass burning of existing trees, the overall sequestration rate may even decrease because of the impacts on the forest, creating a double whammy.

Footnotes

1 Tighe & Bond. 2005. Expanded Environmental Notification Form, Russell Biomass Project, September 2005. p. 3, 12
1732 tons CO2 per day x 365 = 632,180 CO2 tons per year, 380,000 MWh per year,
632,000 x 2000 lbs/ton /380,000 = **3,327 lbs of CO2 per MWh**

Back check: 380,000/365 days / 24 hours / 50 MW x 100% = 86.7% uptime
1 MW Requires 13,000 green tons at 45% moisture content and 90% up time, see page 11:
http://www.mass.gov/Eoeea/docs/doer/renewables/biomass/bio-08-02-28-wmass-assess.pdf
50 MW x 13,000 green tons (at 90% up time) x 86.7 % / 90% x 1.01 tons carbon per green ton = 632,000 tons CO2 **OK**
(Note: see calculation below for carbon weight calculation of 1.01 tons.)

Triple Check – Theoretical Calc for 1 MW
online % = 90% → kWh operation = 7,884,000 → typical plant efficiency = 0.24, 1 kWh = 3413 Btu → Btu = 112,117,050,000 → moisture content 0.45 → btu/lb = 4,575 → Wood per year → 12,253 green tons/year
→ 1 green ton @45% moisture = 0.55 dry tons → 50% of weight is carbon = 0.275 tons of carbon per green ton
→ CO2 = 12 + 32 = 44/12 = 3.67 → 1.01 tons of carbon dioxide per green ton @ 45 % moisture
→ Carbon dioxide released 12,367 tons / year → CO2 Release Rate = 3,137 lbs CO2 per MWh **OK +- 5%**

2 Department of Energy, Table-1 www.eia.doe.gov/cneaf/electricity/page/co2_report/co2emiss.pdf
Coal = 2,117 lbs CO2 per MWhr Petroleum = 1,915 lbs CO2 per MWhr Gas = 1, 314 lbs CO2 per MWhr
New power plants average 760 lbs CO2 per MWh , see page 2: www.colonialpowergroup.com/documents/MarlboroughDisclosureLabel.pdf
Biomass = 3,327 lbs per MWhr (see footnote 1)

3 Massachusetts Public Interest Research Group. 2005. "More Heat than Light." p 1
www.environmentmassachusetts.org/uploads/90/c0/90c011ba2b26309987e273cd9c34d2b8/moreheatthanlight.pdf

4 Biomass/Coal = (3,327-2,117)/2,117 = 57% Biomass/Gas = (3,327-1,314)/1,314 = 153%
Biomass/New Power Plants = (3,327-760)/760 = 338%

5 Carbon per unit of energy (tonnes/TJ): Wood= 25, Oil= 19.9, Gas= 14.4, http://bioenergy.ornl.gov/papers/misc/energy_conv.html
Note: Convert energy of dry wood → 20 GJ/tonnes = .05 tonnes/GJ → 50% carbon → .025 tonnes/GJ = 25 tonnes C /TJ

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ADDITIONAL INFORMATION

To access links just highlight address, right click and hit hyperlink. You must be connected to the internet at the time.

http://gretnaflorida.biomess.us/2010/07/07/an-end-to-commercial-biomass-electric-power-plants-in-massachusetts/#comment-81

http://gretnaflorida.biomess.us/2010/07/03/biomass-incinerators-separating-fact-from-fiction/

http://ajrccm.atsjournals.org/content/174/8/851.full

http://climate-connections.org/2010/07/30/anti-biomass-incineration-%E2%80%93-forest-protection-campaign/

http://www.duboiscountyfreepress.com/a-letter-from-dr-william-sammons-regarding-the-biomass-power-plant/

http://www.energyjustice.net/biomass/

http://winchesterinformer.blogspot.com.au/2010_08_01_archive.html