

Biofuelwatch

The Biomass Accountability Project, Inc.

May 13th, 2010

Michael Brune, Executive Director
Sierra Club
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Ph. 415-997-5500

Sierra Club Board of Directors
c/o Allison Chin, President, Board of Directors
Sierra Club
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San Francisco, CA 94105
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Re: Sierra Club Policy on the Use of Biomass Combustion for the
Generation of Electricity

Dear Mr. Brune, Ms. Chin and Board of Directors,

We write on behalf of a grassroots network of environmental, public health, and social justice activists **to urge Sierra Club to formally oppose all federal and state programs that qualify the use of biomass combustion as a renewable energy generating source.**¹

We request that the Club update its policy because “renewable

¹ This letter addresses the use of burning “biomass” to make electricity in commercial power plants, not the separate topic of biofuels used for transportation or combined heat and power plants.

energy” produced by burning “biomass”² is based on false assumptions that this method of power production is “clean energy” and “carbon neutral.” Our state and national energy laws and policies promoting and subsidizing biomass burning must change to accord with current data and climate science. Sierra Club’s biomass policies are having and will have long term unintended consequences for public health and climate change and we ask the Club to take a leadership role by supporting the grassroots movement against this destructive form of “renewable energy.”

We request that Sierra Club:

- **Revise Club policies to state explicit opposition to biomass burning as a form of renewable energy.**
- **Work proactively to halt the allocation of federal and state subsidies, including renewable energy credits, to biomass power plants.**
- **Oppose legislation such as Senator Wyden’s Oregon Eastside Forests Restoration, Old Growth Protection, and Jobs Act of 2009, S. 2895, that seek to open public lands for harvesting woody biomass to be used as fuel for commercial biomass power.**
- **Oppose the provisions of the Kerry-Graham-Lieberman climate bill that qualifies burning biomass, construction and demolition debris, and municipal solid waste, as “renewable energy.”**
- **Ensure that student leaders of Sierra Club campus programs do not promote biomass burning as an alternative to coal.**³

² For purposes of this letter, biomass is defined broadly to include wood, garbage, construction and demolition debris, animal wastes, etc. Federal and state laws have varying definitions.

³ See, e.g.

<http://www.sfgate.com/cgi-bin/article.cgi?f=/g/a/2010/05/03/bloomberg1376-L1WHIR1A74E9-4.DTL&type=printable> May 4, 2010 (Bloomberg) -- Student environmental activists at the University of North Carolina at Chapel Hill won a commitment from administrators to stop using coal for campus heat and power within a decade. The university will begin testing alternative fuels **such as biomass** to help switch away from coal by May 1, 2020, Chancellor Holden Thorp announced today. The campus generator

This matter is urgent, as the American Recovery and Reinvestment Act (ARRA) stimulus package gives tremendous subsidies for burning “biomass” to generate “renewable energy” and hundreds of plants are in the permitting pipeline. These permanent “baseload” plants will lock in a destructive form of power production that is dirtier than coal, will further pollute our air, cause death and disease for generations of Americans, and undermine progress toward addressing climate change.

I. The biomass “loophole” in federal and state regulatory programs results in undeserved taxpayer and ratepayer subsidies for biomass incinerators.

Biomass combustion power plants are treated under regulatory and subsidy programs as if they emit “zero” carbon dioxide. The genesis of this accounting error is described in an article in *Science* magazine in October 23, 2009 by Searchinger et al. This article details how the “carbon neutral” myth of biomass burning evolved from the International Panel on Climate Change.⁴ The IPCC determined that carbon dioxide emissions from biomass burning should be counted when they are emitted at the smokestack *or* during land use changes, but not both.⁵ Under current regulatory programs neither source of emissions - smokestack nor land use changes - are counted resulting in a “free ride” for biomass incinerators: they are not subject to cap and trade programs for their greenhouse gas emissions and are classified as “renewable” energy along with non-emission technologies such as wind and solar, that do not emit greenhouse gases in the production of renewable energy.

is among the most efficient in the country and could run for an additional 30 years to 40 years, Thorp said. (emphasis added). The North Carolina school is among 60 universities with coal-fired power plants targeted by the San Francisco-based Sierra Club, an environmental group that is campaigning to close existing plants and block new construction. Burning coal is linked to about half of U.S. greenhouse gas emissions that are blamed for global warming. **"You could almost do anything and it would be better than burning coal,"** said Stewart Boss, the 19-year-old coordinator of the Coal-Free UNC campaign who joined the effort last year. "The university is actually pretty progressive. They realized very early on they don't like burning coal very much either." (emphasis added)

⁴ Searchinger, et. al. *Science* 326:527, Oct 23, 2009 Subscription only, summary here: <http://www.sciencemag.org/cgi/content/summary/sci.326/5952/527?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=searchinger&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>

⁵ This type of “carbon accounting” further fails to consider emissions from soil disturbance, the transportation of large quantities of biomass to facilities by truck, and the long term loss of carbon sink capacity.

The accounting error is compounded by claims that biomass is a “carbon neutral” form of making electricity. However, burning biomass releases carbon dioxide in a sudden pulse. In fact, industry permits show that wood burning biomass releases 1.5 times as much CO₂ per megawatt as coal.⁶ These emissions occur *hour after hour, day after day – for the life of the plant*. Carbon neutrality claims are premised on the assertion that “trees burned for electricity will re-grow” and absorb any CO₂ emitted. This incomplete analysis fails to account for the fact that while it takes only a few minutes to burn a tree, it may take tens or even hundreds of years to re-grow a similar tree. In the meantime, our atmosphere is already overloaded with CO₂, and according to EPA’s endangerment finding on CO₂, all of the CO₂ released today will be resequenced for hundreds to thousands of years – and that includes CO₂ from biomass incinerators. The tens or hundreds of years time delay for reabsorbing carbon works is not a meaningful timeframe with respect to the pace of global warming.⁷

The climate accounting error resulting in subsidies for biomass is paving a pathway to failure in addressing the climate crisis. These incinerators are adding to the atmosphere more CO₂ than would be emitted under a “business as usual” scenario. That is, in the name of addressing climate change and transitioning from coal, we are actually doing something worse. The long term impact of adding new biomass burning capacity to our energy supply is tremendous. Biomass is considered “base load power” and power purchase agreements with utilities require hourly production for the life of the contract. Plants have a life expectancy of thirty years: the typical 50 megawatt plant emits 650,000 tons of CO₂ per year, hence over the course of thirty years will spew 19.5 million tons of CO₂. Yet, these power plants are subsidized at the same level as “clean energy” technologies that do not have smokestack emissions.⁸

⁶ http://nobiomassburning.org/docs/Plant_Data_Chart_2.pdf

⁷ U.S. EPA Endangerment Ruling says: “Indeed, for a given amount of CO₂ released today, about half will be taken up by the oceans and terrestrial vegetation over the next 30 years, a further 30 percent will be removed over a few centuries, and the remaining 20 percent will only slowly decay over time such that it will take many thousands of years to remove from the atmosphere.” Federal Register, Vol 74 (April, 2009), P 18899

⁸ According to the Department of Energy/Energy Information Administration emission data, under a renewable electricity standard of 20%, CO₂ emissions from biomass burning would amount to over 700,000,000 tons per year and would, by 2020, account for an amount equal to 11 percent of US total greenhouse gas emissions. This 11% is ignored in the regulatory system because of the “carbon accounting

Already, 50% the “renewable” energy in the U.S. comes from biomass incinerators.⁹ Of the approximately 25 states that have Renewable Portfolio Standards, Massachusetts and Pennsylvania are two that report the sources of their “renewable energy” - in Pennsylvania 82% of its “clean energy” comes from burning something. In Massachusetts, 49% comes from biomass burning. The use of biomass burning to meet renewable portfolio “clean energy” mandates is a fraud. Consumers pay more for renewable electricity thinking they are contributing to support for clean and truly renewable wind and solar energy. Instead, millions of taxpayers dollars are being poured into incinerators. Meanwhile, everyone knows that clean energy does not come out of a smokestack. There are tremendous financial rewards for industry in burning biomass.¹⁰

II. Biomass Burning Is Dirty Energy and these Power Plants Harm Public Health

Biomass power plants emit toxic air pollution that causes asthma, heart disease, respiratory failure, and create other medical complications, even for perfectly healthy individuals. For the smokestack emissions that matter most to climate change and public health – carbon dioxide, NOx and particulates, per unit of power produced, biomass burning is worse than coal. These plants also emit the most toxic chemicals known to science – dioxin and mercury. There is increasingly strong opposition to biomass plants from the medical community. Particulate emissions are of grave concern as they are worse than those from coal plants per megawatt of electricity produced.¹¹

error.” As a result, biomass emissions will “reduce the reduction” of proposed climate legislation (such as the American Clean Energy and Security Act) from 17% below 2005 levels to 9-11% below 2005 levels by 2020.

⁹ In Massachusetts, 49% of its “clean energy” comes from biomass incinerators. Five new biomass incinerators are planned in Massachusetts. These plants will contribute only slightly more than 1% increase in generating capacity for the state – but add 11% more in CO2 from the power sector.

¹⁰ In the Russell Biomass LLC administrative appeal, Mass. DEP Docket No. 2008-116, unrebutted testimony showed one billion in profits over thirty years.

¹¹ Even with maximum pollution controls, biomass power plant smokestack emissions are 39% dirtier per megawatt than coal for CO2, 31% dirtier for NOx, and 186% dirtier for PM, per megawatt hour. This data is based on comparing the new Russell and Pioneer Renewable biomass plants to the new PVEC gas plant – the Russell Biomass for example, is 304% dirtier than natural gas for CO2, 1596% dirtier for NOx and 1309% dirtier for PM.¹¹ Biomass does have lower SOx emissions than coal, but a permit recently issued for the Biomass Gas & Electric Plant in Port St. Joe, Florida shows 142 tons per year of carbon monoxide, 24 tons per year of volatile organic compounds and 5 tons per year of other hazardous air pollutants.

The American Lung Association has stated “Burning biomass could lead to significant increases in emissions of nitrogen oxides, particulate matter and sulfur dioxide and have severe impacts on the health of children, older adults, and people with lung disease.” The Association urged Congress to exclude biomass burning from the federal climate legislation.

The Massachusetts Medical Society (representing 22,000 doctors and publisher of the New England Journal of Medicine) in February 2010 testified to the state legislature that biomass burning presents an “unacceptable risk to the public’s health by increasing air pollution.” The Hampden County Medical Society has expanded its opposition to the construction and operation of wood burning power plants in Western Massachusetts, citing unacceptable health risks. The Massachusetts Breast Cancer Coalition, Physicians for Social Responsibility chapters and others around the nation take the same position.

Biomass power plants are not adequately regulated under the Clean Air Act for several reasons. First, many new plants are sized to have a generating capacity under 40 megawatts in order to avoid requirements for Best Available Control Technology and the application of PSD standards under the Clean Air Act. Current threshold levels for particulates are inadequate or no threshold has been set.¹² In addition to particulate matter,

¹² See, e.g. Air Permit No. 0450012-001-AC (draft) for Biomass Gas & Electric, LLP 47 MW. “Because the potential emissions are below the major source thresholds, a review of the Prevention of Significant Deterioration (PSD) and best available control technology (BACT) determination were not required.” Public Notice of Intent to Issue Air Permit. In any event, current medical data and published statements by multiple professional groups clearly show that the National Ambient Air Quality Standards (NAAQS) do not “protect the health of even the most sensitive individuals” as required by the standards. •The Clean Air Scientific Advisory Committee, which is mandated by the Clean Air Act to provide scientific advice [to the EPA] on setting air quality standards, argued that the annual primary PM_{2.5} standard should be 13-14 µg/m³ to ensure that it was protective of health with an adequate margin of safety as required by the Act, and because “*there is clear and convincing scientific evidence that significant adverse human-health effects occur in response to short-term and chronic particulate matter exposures at and below 15 µg/m³, the level of the current annual PM_{2.5} standard*” (CASAC 2006). <http://www.epa.gov/sab/pdf/casac-ltr-06-003.pdf>

•The latest draft of the US EPA Air Quality Criteria for Particulate Matter has confirmed the presence of an apparent linear dose-response relationship between PM and adverse events. <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=58003>

Data from all North American studies demonstrate that this curve is without a discernible threshold below which PM concentrations pose no health risk to the general population. <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=58003>, <http://circ.ahajournals.org/cgi/content/full/109/21/2655>

burning wood releases NO_x, SO_x, VOCs and, where mixed with other materials, as is often required in order to provide the vast quantities of materials needed and to keep them burning hot enough, numerous other toxins including potentially dioxins and furans. Second, even though these plants obtain substantial federal funding, environmental review under the National Environmental Policy Act (NEPA) is not required, and counterpart state laws (where they exist) do not require full environmental impact reports.¹³ Third, the climate change impacts of carbon dioxide emissions from these plants ignored by regulatory programs and not covered by regional greenhouse gas compacts (“cap and trade” programs).

III. Urgency of Our Request

There are over two hundred proposed plants and coal plants are being retrofitted to either burn all biomass or co-fire with biomass.¹⁴ We are contacted by community groups opposing these facilities almost on a daily basis, and are struggling to provide them with the support they request. The construction of new biomass incinerators and the conversion of coal plants to co-firing depends upon a dizzying array of tax credits, loan guarantees and other taxpayer-funded incentives intended for clean renewable energy. Moreover, existing biomass plants are already competing for fuel feedstocks with the pulp industry, home heating with firewood, biofuels, and traditional uses of wood products (furniture, paper, etc.), among others. There has been little cross – communication between these different interests and as a result increasing competition for access to feedstocks.

•Moreover, because a number of studies have demonstrated associations between particulate air pollution and adverse cardiovascular effects even when levels of ambient PM_{2.5} were within current standards,^{5,11} even more stringent standards for PM_{2.5} should be strongly considered by the EPA.

<http://circ.ahajournals.org/cgi/content/full/109/21/2655>

•A reasonable argument can now be made that the "real" effects are likely to be even stronger than previously estimated. <http://circ.ahajournals.org/cgi/content/full/109/21/2655>

¹³ E.g. Pioneer Renewable Energy, EEA No. 14388, Massachusetts (no EIR required).

¹⁴ <http://www.nobiomassburning.org/research.php> In Europe, where obligations to reduce emissions are in place, biomass burning plants are promoted. In the UK there are over 12000 MW in operation and an additional 12000 MW proposed. Very large facilities, like the 350 MW plant at Port Talbot are being constructed. This plant will burn tons of woodchips per year. Citizens in Wales are battling a 150 MW plant that stated intent to burn woodchips sourced from Alaska. The U.S. is both rushing to fill market demands for biomass from Europe and also following Europe’s lead in developing biomass burning capacity. This trend has spurred a new and very rapidly expanding national and international trade in woodchips and pellets that now poses a tremendous threat to forests.

A paper published in *Science* a few months ago by Wise et al. presented results of a modeling study in which the authors projected how demands for bioenergy (transport electricity etc.) will expand under a regime where fossil fuel emissions are taxed, while bio –emissions are ignored (as they are with the “carbon neutral myth”). The authors demonstrate that by 2060, virtually all remaining forests, grasslands and other natural ecosystems could be replaced by energy crop monocultures. In order to avoid this result, biomass incinerators that burn a ton a wood per minute to keep operating will put tremendous pressure on our natural resources.¹⁵

IV. Biomass is dirty energy and should not be promoted as a “bridge” to a clean energy future

Sierra Club has stated that biomass burning is needed as a “bridge” to a “clean energy” future. As noted above, a typical wood burning biomass plant, even with “gold plated” pollution controls, is 39% dirtier than coal for CO₂, 31% dirtier for NO_x, and 186% dirtier for particulate matter, per megawatt hour.¹⁶ Biomass cannot be considered a clean alternative, nor even a “bridge” to cleaner forms of renewable energy given the emissions as well as the long term harm to human health and ecosystems.

V. Environmental justice concerns

Biomass plants are disproportionately sited or proposed for environmental justice communities throughout the U.S. In 2008, citizens filed a notice of intent to sue the Florida Department of Environmental Protection for failing to follow the Civil Rights Act in siting a plant there. Duke Energy/Adage proposed a plant in the environmental justice community of Gretna, Florida, which was rejected.¹⁷

VI. Byproducts

¹⁵ Where wood is harvested for biomass (as opposed to burning animal waste and other materials), forest carbon sequestration is compromised and this loss of carbon sink capacity, along with soil degradation, possible future requirements for fertilizer use, impacts of harvest that result in drying and escalate fire risk, impacts on watersheds and hydrology all contribute further to climate impacts. Where garbage is burned, the lost opportunity for materials recycling and reuse must be considered.

¹⁶ http://nobiomassburning.org/docs/Plant_Data_Chart_2.pdf

¹⁷ <http://floridiansagainstinincineratorsindisguise.com/2010/02/14/dr-edward-holifield-black-infant-mortality-in-gadsden-county/>

Biomass burning generates large quantities of ash. Even “clean wood” ash is not so benign as we might like to think – in parts of Europe the practice of spreading it back on harvested forest soils has been restricted because of the high levels of heavy metals and also radioactivity. Whatever toxins are in the feedstocks burned will be concentrated in the ash and must be “disposed of”, as with coal ash. Daily truck trips are required to haul ash off site, adding yet more particulates to the air.

VII. Rivers and Waterways

Biomass power plants are just like other power plants: they require and evaporate huge amounts of cooling water. They also discharge pollutants into waterways. A typical 50 megawatt plant requires an average of 885,000 gallons per day. Massachusetts has permitted the Russell biomass plant to withdraw this amount from a river that is already on the CWA 303(d) list of degraded water bodies and suffers from extreme low flows and associated high pollutant concentrations.

It is sadly ironic that at a time when our scientists are telling us our rivers will be early victims of warming temperatures, and we are to face water shortages, states are handing out water allocation permits to biomass incinerators! In Indiana and Massachusetts rivers that will suffer from water withdrawals and cooling water discharges are designated National Wild and Scenic. Life long river activists who fought for the Clean Water Act and wise water allocation issues are simply appalled that in the name of “clean energy” we are allocating taxpayer funds to build incinerators that dry up and pollute our rivers.

Thank you for your attention to this issue. We would be pleased to meet with Board or Committee members to further explain our position and data on this issue.

Respectfully,

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