BIOMASS IS NOT "CLEAN" OR

FACT: ***Burning biomass for energy is "dirtier" than burning coal. Burning biomass emits large amounts of air pollution, and endangers human health.***

- **Biomass burning is dirtier than burning coal.** Per unit of power generated, burning wood emits 1.25-3.0 times as much carbon CO_2 (the most important greenhouse gas) as coal.[1]
- **Biomass burning emits more PM [particulate matter] as coal,** a pollutant associated with asthma, heart disease, and cancer.[2]
- **Wood or trash burning biomass incinerators typically increase ground level ozone.** Burning biomass produces hundreds of tons of nitrogen oxides (NOx) and volatile organic compounds (VOCs), two ingredients of the ground-level ozone that causes asthma in children and exacerbates other pulmonary and cardiac disease problems.[3]
- **Biomass energy is woefully inefficient**, averaging only 26% efficiency. Thus, 76% of the energy in the wood burned is wasted. However, 100% of the wood burned generates pollution.[4]

FACT: ***Burning biomass to generate electricity is not carbon neutral. Under current or proposed laws biomass burning will dramatically increase greenhouse gases because the emissions are higher than coal per unit of power produced, and, because of the "biomass loophole", the CO_2 emissions from these plants are reported by EPA on e-grid as zero.***

- **CO_2 is CO_2.** Every molecule has the same negative effect regardless of the source, whether it is from a tailpipe or a smokestack
- **So called "biogenic" carbon in the atmosphere causes just as much harm as every other type of CO_2.** The amount of carbon in the biosphere is fixed. It is the percentage in the atmosphere in the next 20-30 years that will determine what happens to the world climate. Human burning of biomass is not part of the "normal" carbon cycle.
- **We can't grow the trees fast enough.** The assumption used to be that the trees could grow back fast enough that burning would not cause a significant rise in atmospheric CO_2 levels. That is not true. In April, 2009 the EPA reversed itself and invalidated that concept by stating that:
  "…for a given amount of CO_2 released today, … 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, p 18899, 4/24/2009.
- **"Maintaining the exemption for CO_2 under the protocol [Kyoto] wrongly treats all biomass sources as carbon neutral, even if the source involves clearing forests for electricity.** For example, the clearing of long-established forests to burn wood or to grow energy crops is counted as a 100% reduction in emissions despite causing large carbon emissions. Replacing fossil fuels with bioenergy does not by itself reduce carbon emissions." Searchinger, et.al., Science 326: 527, 2009.

FACT: ***Greenhouse gas emissions from biomass incinerators are significant and will undermine initial efforts to cut US greenhouse gas emissions.***

- **If the renewable energy targets for 2020 are met then the burning of wood and trash will cause**

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[1] Emissions data from environmental reports for proposed Russell, Palmer, and Pioneer Renewable Energy plants (Massachusetts) Boardman coal fired plant in Portland, OR and the PVEC gas fired plant in Holyoke, MA.

[2] Information on the hazards of particle pollution is available from EPA at http://www.epa.gov/particles/ and American Lung Association at www.lungusa.org

[3] Emissions data from environmental reports for proposed Russell, Palmer, and Pioneer Renewable Energy plants (Massachusetts) Boardman coal fired plant in Portland, OR and the PVEC gas fired plant in Holyoke, MA.

[4]

the emissions of 700,000,000 tons of CO_2 each year.[5]

- **This CO_2 won't be "counted"** because biomass is considered a "renewable energy source" by all the Congressional climate bills. This means the CO_2 is ignored by the law and is not regulated.
- **This "loophole" effectively reduces the CO_2 emissions reductions in 2020 from 17% to less than 5%.** This is a serious setback in efforts to control climate change before irreversible thresholds or biological tipping points are breached.[6]

FACT: *Biomass harvesting over-exploits forests and degrades their vital ability to remove carbon from the atmosphere*

- **A single 50-megawatt biomass plant burns about 650,000 tons of trees a year**, over a ton of wood a minute.[7]
- Biomass plants don't just burn forestry "waste" (tops and branches) – **they burn whole trees which are then chipped.**
- **Mature trees sequester more carbon than newly planted trees**, even though young trees appear to grow faster.[8]
- **Cutting and burning a tree is a "double whammy" for the environment**. The tree is no longer taking CO2 out of the atmosphere *and* burning the wood produces an acute spike in CO_2 levels.

FACT: *Biomass energy wastes water and pollutes rivers*

- **A large-scale biomass plant requires close to a million gallons a day of water for cooling**.
- Hundreds of thousands of gallons of this water are vaporized in the cooling process.
- Plant cooling needs and water takings are greatest in summer when high temperatures already reduce river flows and stress native fish.[9]
- Impacts of water takings will worsen as climate warming and droughts further stress rivers.[10]
- Logging impacts water quality. Equipment tears up soils, leading to erosion and siltation in streams.[11]
- Heavily contaminated boiler "blow down" (rinse water) is pumped back into rivers at unnaturally high temperatures, making waters too warm and polluted for native coldwater fish.

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[5] EIA

[6] David Hawkins of NRDC before Senate Committee on the Environment July 7, 2009.

[7] Data from environmental reports for proposed Russell, Palmer, and Pioneer Renewable Energy plants (Massachusetts). The "biomass availability report" prepared for the Massachusetts Department of Energy Resources (DOER) by Innovative Natural Resource Solutions (2007) states that 13,000 tons of biomass are required per MW of generation annually.

[8] Data from a Hubbard Brook Long Term Ecological Research (LTER) site study show that recovery from logging takes decades

[9] Environmental impact reports of all plants and equipment specifications show a linear increase in cooling water needs with increase in ambient air temperature.

[10] Climate Change Impacts, White House Report 2009, Executive Summary, www.globalchange.gov/usimpacts and Climate Change 2007: IPCC 4th Assessment report

[11] Data from a Harvard Forest Brook LTER site cutting study quantified CO2 emissions from soils and forest residues after logging.