Anti-Biomass Incineration and Forest Protection Campaign

# Biomass Burning is Not "Carbon Neutral"

**I. To be considered "carbon neutral" in a timeframe that is meaningful to climate change, any type of electrical power generation cannot emit more than minimal amounts of carbon dioxide.** Due to outdated and erroneous federal policies, biomass combustion is mistakenly "***assumed***" to be carbon neutral.

**II. Scientific reports show the carbon neutral assumption is no longer valid.**

- "*Biomass Sustainability and Carbon Policy Study*"[1] (the Manomet Study) states, "**Forest biomass generally emits more greenhouse gases than fossil fuels per unit of energy produced**…For biomass replacement of coal-fired power plants, the net cumulative emissions in 2050 are approximately equal to what they would have been burning coal; and for replacement of natural gas cumulative total emissions are substantially higher with biomass electricity generation."

- Environmental Working Group's Clearcut Disaster: Carbon Loophole Threatens U.S. Forests[2], states,
  "Because wood and other biomass materials have a very low energy density, and because biomass power plants are significantly less efficient than gas and even coal plants, **carbon dioxide emissions from biomass per unit of energy generated are about 1.5 times higher than from coal and three to four times greater than from natural gas**."
  "EWG's analysis of government projections predicts that **over the next 15 years about 4.7 billion tons of carbon will be generated from burning biomass, most of it from whole trees…This massive pulse of uncounted carbon dioxide will effectively erase 80% of the reduction in CO2 emissions from the power sector that is at the heart of federal climate legislation.**"

- *Science*, October, 2009,[3] Searchinger et al. state,
  "However, exempting emissions from bio-energy use is improper for greenhouse gas regulations. Replacing fossil fuels with bio- energy does not by itself reduce carbon emissions, because the $CO_2$ released by tail- pipes and smokestacks is roughly the same per unit of energy regardless of the source."
  "Thus, maintaining the exemption for $CO_2$ emitted by bioenergy use under the protocol (IPCC) wrongly treats bioenergy from all biomass sources as carbon neutral. For example, the clearing of long-established forests to burn wood or to grow energy crops is counted as a 100% reduction in energy emissions despite causing large releases of carbon."
  "However, **harvesting existing forests for electricity adds net carbon to the air**. That remains true even if limited harvest rates leave the carbon stocks of regrowing forests unchanged, because those stocks would otherwise increase and contribute to the terrestrial carbon sink."

- *Nature,* 2008, Lussayert, et al.[4] state,
  "The potential consequences were downplayed in the carbon-neutrality hypothesis."

  "Old-growth forests accumulate carbon for centuries and contain large quantities of it. We expect, however, that much of this carbon, even soil carbon, will move back to the atmosphere if these forests are disturbed".

- Eric Johnson,[5] in "*Goodbye Carbon Neutral*" notes that under the current regulatory accounting schemes: "If carbon neutrality is presumed, it makes no difference to a carbon footprint if a forest is standing or if it has been chopped down for fuel wood."

- Ingerson in an extensive study[6] notes:
  "Wood fuels are often considered "carbon-neutral," but when evaluating the potential for long-term carbon storage in harvested wood, burning must be treated like any other wood loss because it definitely accelerates the release of carbon." p.14
  "Wood has a lower hydrogen content than fossil fuels, which causes it to release more carbon per unit of heat." p. 20
  "But timing still matters. If the source forest regenerated instantly, biomass would earn its "carbon-neutral" label,

[1] "Biomass Sustainability and Carbon Policy Study," Manomet Center for Conservation Sciences, June 2010
[2] "Clearcut Disaster: Carbon Loophole Threatens U.S. Forests," Environmental Working Group, June 2010
[3] Science, 325:529, October 23, 2009
[4] Nature, 455:213, 2008
[5] Environmental Impact Assessment Review, 2008
[6] "Wood Products and Carbon Storage", EDF April, 2009

but the longer it takes to regenerate forest carbon after a biomass harvest, the longer that carbon dioxide remains in the atmosphere exerting its heating effect." p.20

- Harmon notes[7]: "Timber harvest, clear cutting in particular, removes more carbon from the forest than any other disturbance (including fire). The result is that harvesting forests generally reduces carbon stores and results in a net release of carbon to the atmosphere. The majority of forest carbon released comes from what is left behind in the forest to decompose naturally, burned on site, or transported as waste from a mill where it is burned for fuel. Each of these outcomes of logging results in the release of carbon into the atmosphere."

- David Beebe on February 24, 2009 in writing about the Tongass Futures Roundtable notes the study by Janisch and Harmon[8]: "However, it has also been shown the carbon uptake accrued over a given harvest rotation would not make up for the amount of carbon stored in the originally logged old-growth. Managed stands on 80 year rotations stored only *half* the carbon of old growth forests. The point of this being, once those 'warehouses' storing carbon are destroyed, it takes centuries to rebuild the lost carbon capture and storage capacities at a time when our planet desperately needs these services. "

- EPA Endangerment Ruling[9] 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."

- Archer, referring to the long time necessary to re-sequester carbon given the current loss of buffering capacity on the oceans and other changes in the ecosphere which have occurred, states[10] "This substantial portion of a pulse will persist in the atmosphere, longer than Stonehenge, longer than time capsules, longer than nuclear waste, far longer than the age of human civilization so far."

**III. The erroneous "carbon neutral" assumption has resulted in massive unwarranted subsidies for biomass combustion power plants. The law needs to be changed to reflect current science.**

**IV. In response to changing science, on June 7, 2010, Massachusetts announced proposed changes to its Renewable Portfolio Standard to require electricity produced by burning biomass meet strict conditions.** ***These conditions can be replicated on the federal level.***

**V. Industry claims that biomass plants do not burn whole trees, but only "residues" from the forest are untrue. Industry documents saying that current and future plants will burn whole trees and are compiled at www.ewg.org, "Did they really say that? See for yourself." http://www.ewg.org/agmag/2010/06/did-they-really-say-that-see-for-yourself/**

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[7] **Harmon, Mark. 2007**. Letter to California Air Resources Board. Comment on Forest Protocols. Online at: http://www.arb.ca.gov/lispub/comm/bccomdisp.php?listname=forestghg07&comment_num=22&virt_num=22.

[8] **Janisch, J. E., and M. E. Harmon. 2002**. Successional changes in live and dead wood carbon stores: implications for net ecosystem productivity. Tree Physiology 22 (2-3): 77-89.

[9] 74 Fed. Reg. 18899 (2009).

[10] **Archer, David. 2009**. The long thaw: how humans are changing the next 100,000 years of Earth's climate. Princeton Univ. Press.