

To:

Senator Michael Morrissey, Co-Chair

Representative Barry Finegold, Co-Chair

Members

Joint Committee on Telecommunications, Utilities and Energy

Testimony Regarding H. 4458,

An Act to Limit Carbon Dioxide Emissions from

Renewable and Alternative Energy Sources

By:

Ellen Moyer, Ph.D., P.E.

February 24, 2010

Dear Senator Morrissey, Representative Finegold, and Members of the Joint Committee:

Thank you for the opportunity to testify before the Joint Committee on Telecommunications, Utilities and Energy.

I am a registered Professional Engineer with an M.S. in Environmental Engineering, a Ph.D. in Civil Engineering, and over 25 years of professional environmental engineering experience. I strongly support H. 4458, *An Act to Limit Carbon Dioxide Emissions from Renewable and Alternative Energy Sources* and urge you to recommend its passage to the full legislature.

Climate change may be the seminal issue of our time, and we must immediately reduce our emissions of carbon dioxide and other greenhouse gases to the atmosphere. Climate change is not just a hypothetical future scenario. People are being impacted now (and those impacted are predominantly people who played no part in creating the problem). A recent report by the Kofi Annan Foundation estimates that climate change today accounts for over 300,000 deaths throughout the world each year, the equivalent of an Indian Ocean Tsunami every single year. In addition, climate change today seriously impacts on the lives of 325 million people. The report predicts that by 2030, the annual death toll from climate change will reach 500,000 people a year, and climate change will seriously impact on the lives of 660 million people, making it the biggest emerging humanitarian challenge in the world, impacting on the lives of 10% of the world's population (<http://ghfgeneva.org/Media/News/tabid/248/EntryId/42/Default.aspx>).

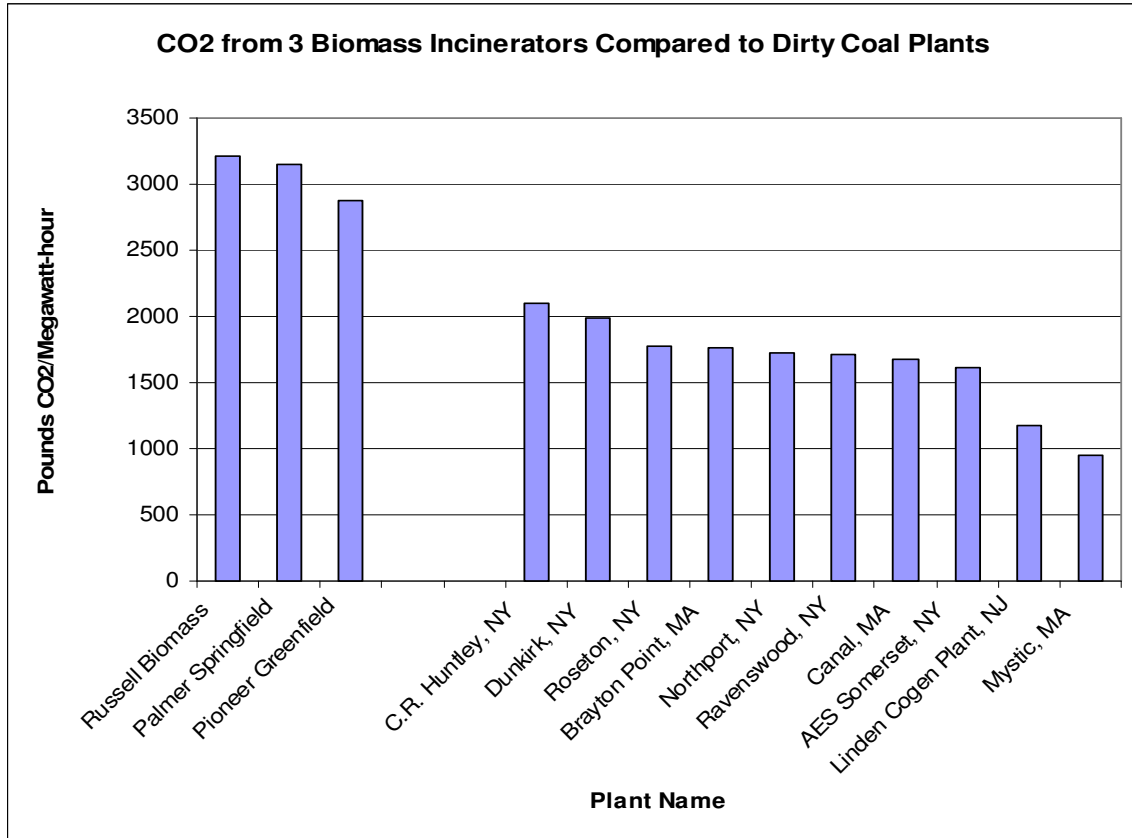
It is imperative that we not reward energy generating technologies that release excessive carbon dioxide with renewable energy credits and other public subsidies. These rewards should only go to clean and green technologies that help solve, rather than exacerbate, the climate problem.

In particular, biomass burning is not a solution but is a severe problem in and of itself, and in fact, is the worst thing we could do from a climate change perspective. Subsidies for biomass burning should be denied because they make climate change worse in at least six significant ways. I will focus on wood burning electrical generating facilities, as it is this type of project that unfortunately is currently in the pipeline in our state.

1. Wood burning biomass facilities emit more carbon dioxide per unit of electricity generated than any other energy source, largely because it is the least efficient electrical generating technology in existence, converting on 15 to 25 percent of the energy in wood to electricity (versus 45 percent for coal and 60 percent for natural gas).

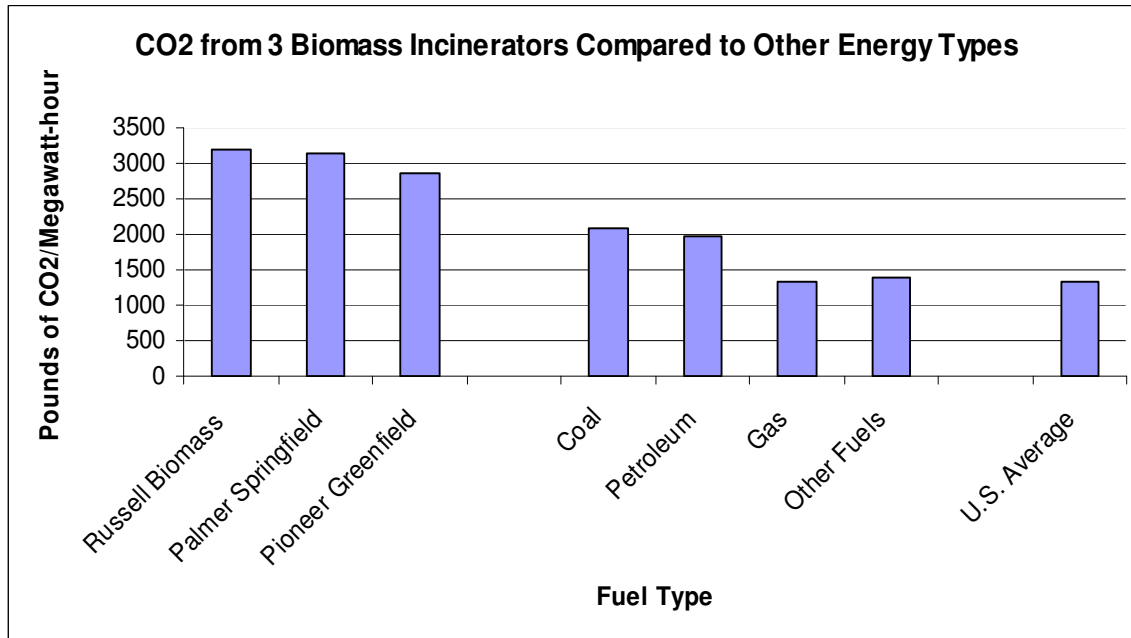
The first graph below compares carbon dioxide emissions from three typical proposed biomass incinerators in Massachusetts (Russell Biomass, Palmer-Springfield, and Pioneer-Greenfield; estimates are from the project developers themselves) to those of the ten highest carbon dioxide-emitting power plants in the Northeast region. A capacity factor of 0.90 is assumed (i.e., biomass incinerators are up and running 90 percent of the time). The Russell and Greenfield incinerator developers say they plan to burn mostly forest biomass, and the Springfield incinerator proposes to burn mostly construction and demolition (C&D) wood, but their carbon dioxide emissions would be similar to one another.

As the graph shows, the biomass incinerators would each emit 1.4 to 3.4 times as much carbon dioxide per unit of electricity generated as any of the ten highest carbon dioxide-emitting power plants in the Northeast. Comparisons with cleaner burning coal plants would be even more dramatic.



Sources: <http://www.massenvironmentalenergy.org/plantdata.html> and MassPIRG 2005 *More Heat than Light*. A capacity factor of 0.90 is assumed (i.e., biomass incinerators are running 90% of the time).

The next graph compares carbon dioxide emissions from the three biomass incinerators to average values for various combustible fuel types. It shows that carbon dioxide emissions from biomass would be at least 1.4 times those of coal, at least 2.2 times those of natural gas, and at least 2.1 times the national average.



Sources: <http://www.massenvironmentalenergy.org/plantdata.html> and U.S. Department of Energy and U.S. Environmental Protection Agency, 2000, Carbon Dioxide Emissions from the Generation of Electric Power in the U.S.

2. Wood burning biomass facilities damage or destroy forests and their capacity to remove carbon dioxide from the atmosphere. Thus valuable carbon dioxide sequestration services are sacrificed.

A ground-breaking article debunking the carbon neutrality myth of biomass burning was recently published in one of the most prestigious, peer-reviewed journals in the world, *Science* (<http://www.sciencemag.org/cgi/content/short/326/5952/527>).

Authors included researchers from Princeton University, Environmental Defense Fund, Woods Hole Marine Biological Laboratory, Duke University, University of California at Berkeley, Michigan State University, and University of Minnesota. The article, “Fixing a Critical Climate Accounting Error,” clearly states “harvesting existing forests for electricity adds net carbon to the air.” An accounting error that does not count carbon dioxide emissions from biomass burning was made in the Kyoto protocol and then was carried forward into other government policies, including the European Union’s cap-and-trade law and the climate bill passed by the U.S. House of Representatives earlier this year. This error also was incorporated into state laws, including those of Massachusetts. The error can be corrected. Massachusetts can lead the way.

3. Wood burning biomass facilities, largely due to their supreme inefficiency, require significant petroleum inputs (and concomitant carbon dioxide releases) to cut down the trees, chip them into tiny fragments, haul them long distances in trucks that get less than 10 miles to the gallon, to incinerators that cost several hundred million dollars to build. Constructing these facilities requires a significant amount of petroleum (and thus releases significant carbon dioxide). Additional petroleum is used to haul away the ash and to start up the incinerators.

4. When other countries see us slashing and burning our own forests, they are less inclined to preserve their own forests. Trees provide valuable carbon sequestration capacity that the world so desperately needs. We cannot ask others to avoid behavior we engage in. This was pointed out in Copenhagen. In a National Public Radio report I happened to hear, a man from a third world country asked something to the effect of “Why should we preserve our forests in our country when the largest carbon dioxide emitter to date is cutting down their own forests?”

5. When we subsidize biomass incinerators, we stack the deck against green energy technologies and make it harder for them to compete. Subsidies should be reserved for clean and green energy technologies, not incinerators.

6. Typically, the energy in the wood that is not converted to electricity (75 to 85 percent of the total energy in the wood) is wasted as waste heat. This directly warms the atmosphere, another unwanted effect.

For these reasons, it would be the height of folly and irresponsibility to subsidize biomass incinerators, even if they could significantly reduce their carbon dioxide emissions. In my opinion, biomass incinerators should not be subsidized, period. H. 4458 provides a compromise between outright denial of subsidies and the other extreme of subsidizing them unconditionally. Subsidies with no limits on carbon dioxide emissions do not serve the public interests and actually significantly harm the public interests.

Massachusetts has often led the way, and I urge you to do so again by recommending passage of this sensible and necessary bill. We need to align our subsidies with actions that benefit rather than harm the public.

Thank you for your time and consideration. Please feel free to contact me if you have any questions or would like additional information.

Very truly yours,



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