

Biomass Accountability Project
Center for Biological Diversity
Concerned Citizens of Russell (MA)
Energy Justice Network
Global Alliance for Incinerator Alternatives
Save America's Forests
Stop Spewing Carbon Campaign

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Contact: Margaret Sheehan,
Stop Spewing Carbon Campaign
P.O. Box 380083,
Cambridge MA 02138
800-729-1363

Executive Office of Environmental Affairs
Department of Energy Resources
100 Cambridge St.
Boston, Massachusetts

Via email to doer.biomass@state.ma.us

Re: Comments on Proposed Revisions to 225 CMR 14.00: Renewable Portfolio
Standard-Class I

Dear Commissioner Guidice:

Please accept these comments on behalf of the Stop Spewing Carbon Campaign and its allies with regard to changes to the Renewable Portfolio Standard Class I regulations, 225 CMR 14.00 (the Regulations). We appreciate the leadership of the Department of Energy Resources in attempting to align the Renewable Portfolio Standard (RPS) with current science on climate change, forest ecology, and energy efficiency. However, it is our position that burning material in an incinerator to generate electricity to meet RPS requirements is fundamentally at odds with the notion of a "clean energy future" for our state, our nation, and the planet. Accordingly, burning biomass and garbage (so-called waste-to-energy) should be excluded from the Regulations entirely. The grounds for our position are outlined below.

When they pay more for so called "renewable" electricity on their electric bills, Massachusetts ratepayers think they are getting "clean" energy without smokestack emissions. Industry websites, and even customer electric bills, portray windmills and flowing rivers, implying that is the electricity's source. In fact, Massachusetts gets about

50% of its so-called “renewable electricity” from burning wood and other forms of “biomass.”¹ We should not increase this percentage, even if it meets the proposed Regulations.

I. The RPS should exclude all biomass and ensure that garbage burning is consistent with RPS and Global Warming Solutions Act (GWSA) goals.

Burning “biomass” and garbage for electricity are fundamentally at odds with the notion of a clean energy future and should not be subsidized by ratepayers who pay more for this electricity. While DOER may lack authority to entirely exclude waste-to-energy from the RPS, we urge DOER to explore all options available to craft and implement policies to ensure that qualifying waste-to-energy under the RPS is consistent with the statute’s goals and the GWSA.²

With regard to biomass, M.G.L. c. 25A, § 11F(b)(8) defines a renewable energy generating source is one which generates electricity from “low emission advanced biomass power conversion technologies...” using fuels from defined sources. There are two definition issues the Regulations do not address in this regard. First, DOER has yet to define what constitutes “low emission” advanced biomass power conversion technologies. Current science and federal regulatory developments highlight the negative health, environmental, and climate impacts of emissions from biomass of PM 2.5, other particulates (nano, ultrafines, and aerosols), greenhouse gases and other pollutants as defined under the Clean Air Act. All of these emissions, not just CO₂ should be taken into account in qualifying biomass. DOER should exercise the full breadth of its regulatory authority to ensure that biomass is “low emission” for all pollutants as defined by the Clean Air Act, including those pollutants subject to regulation in 2011. DOER should coordinate with the Department of Environmental Protection (DEP), and at a minimum DEP’s 2007 “BACT Guidance for Biomass Projects” should be updated, including in any economic considerations of acceptable level of BACT the external medical costs of air emissions.

Second, DOER should conduct fact finding on the definition of “advanced power conversion technology” and initiate a regulatory process under the Administrative Procedure Act on this issue.

¹ DOER website, 2007 RPS Compliance by Technology, biomass 49%, landfill gas 30%, solar less than 1%, anaerobic digester 2%, wind 19%, www.mass.gov/eoea/docs/doer/rps-2007annual-rpt.pdf.

² EPA’s Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2008 has been challenged as inaccurate due to improper accounting of emissions from biomass sources. **Exhibit 1.** While we have not investigated Massachusetts’ Greenhouse Gas Inventory to see whether it is similarly inaccurate, such an investigation is warranted, and DOER should continue the REC moratorium until it is sure that similar errors in the Massachusetts inventory do not exist.

A. Biomass and Waste-to-Energy Emit Unacceptable Levels of Greenhouse Gases in the Near Term

When measured at the smokestack, it is not disputed that burning biomass and garbage emits more carbon dioxide to the atmosphere per megawatt hour than burning fossil fuels.³ Industry arguments that biomass carbon dioxide is somehow different from fossil fuel carbon dioxide is entirely lacking in credibility and at odds with basic chemistry. There is no physical, chemical, or climate forcing difference between fossil CO₂ and “biogenic” CO₂. Thus, the CO₂ emissions from biomass and waste-to-energy incineration has the same immediate impacts on climate change as does CO₂ from fossil fuels. **Exhibit 4.** Infrared radiation does not and cannot discriminate among identical molecules of CO₂ circulating in the atmosphere: CO₂ is CO₂. The remainder of this section will address the treatment of biomass under the RPS, as distinct from waste-to-energy.

In contrast to the effects of true low emission renewable energy, unless carbon dioxide emissions from biomass burning can be re-sequestered almost immediately upon release to the atmosphere, burning biomass instead of coal will make climate change worse. No renewable energy generating source using biomass has yet to prove that its emissions will be re-sequestered at all – in fact, because the atmosphere and oceans are already overloaded with CO₂, the earth’s capacity to sequester carbon is decreasing rapidly⁴.

In enacting M.G.L. c. 25A, § 11F as part of electric utility restructuring in 1997, the Legislature declared that, “the primary elements of a more competitive electricity market will be customer choice, preservation and augmentation of consumer protections and full and fair competition in generation, and enhanced environmental protection goals. St. 1997, c. 164, § 1(l), Indeck Maine Energy LLC et al v. Commissioner of Energy Resources et al., 454 Mass. 511, 514, 519 (2009), “The Legislature sought to achieve its **declared enhanced environmental protection goals** through the enactment of G.L. c. 25A, § 11F, establishing the renewable portfolio standard.” (emphasis supplied)

Under the 2008 Climate Protection and Green Economy Act, the Secretary of the Executive Office of Energy and Environmental Affairs is directed to take steps to achieve a statewide greenhouse gas emissions limit for 2050 that is at least 80% below the 1990 level. M.G.L. c. 21N, § 3(b). Under § 3(c), emissions levels and limits associated with the electric section are to be established by EOEEA in consultation with DEP and DOER taking into account, *inter alia*, the renewable portfolio standard. Under c. 21N, §7(a),

³ See, e.g., Manomet Center for Conservation Sciences, June 2010, “Biomass Sustainability and Carbon Policy Study” (Manomet Study), page 6, “Forest biomass generally emits more greenhouse gasses than fossil fuels per unit of energy produced.”; **Exhibit 2**, “Comparison of Most Relevant Air Emissions,” **Exhibit 3**, “Zero Waste for Zero Warming, GAIA’s Statement of Concern on Waste and Climate Change, December 2008, p. 2, citing Hogg, D., “A Changing Climate for Energy from Waste?” Eumonia Research and Consulting, 2006.

⁴ Changing Oceans; Science 328:1500-1529 (June 18, 2010).

EOEEA may consider the use of market-based compliance mechanisms to address climate change. The renewable portfolio standard is a market based system intended to encourage *inter alia*, “innovation, efficiency, and improved service from all market participants...” Indeck at 518. The RPS should be used by DOER as a market based mechanism in a manner that is consistent with the goals of enhanced environmental protection and the directives of c. 21N, § 3 on reducing climate change.

Massachusetts has led the nation in litigation to regulate greenhouse gases under the Clean Air Act, resulting in the Supreme Court ruling in Massachusetts v. EPA. Since implementation of the RPS in 1997, climate change science has confirmed that it is caused by anthropogenic sources. The most recent science, developed since the IPCC Fourth Assessment Report in 2007, shows that climate change is accelerating faster than predicted at that time, and that if we must act now, not later. Falsely labeling biomass incineration as a “low emission” renewable energy generating source is not a constructive action, but a destructive action that is and will continue to contribute to the acceleration of climate change.

Two recent reports from the European Union, addressing the renewable energy mandates in the United Kingdom, shows that biomass policies that create a carbon “debt” now will cause environmental impacts across the globe, and take centuries to pay off. These reports refer to the biomass “carbon bomb” and are instructive for Massachusetts. **Exhibits 5, 6 and see also Exhibit 7.**⁵

The risks from climate change and ocean acidification are substantially greater than assessed in the 2007 IPCC Fourth Assessment Report.⁶ An important contributing factor to the acceleration of climate change is the long atmospheric lifetime of CO₂ compared to other greenhouse gases. A significant fraction of anthropogenic CO₂, ranging from 20–60%, remains airborne for a thousand years or longer after emissions

⁵ Reports also available at http://www.birdlife.org/eu/pdfs/carbon_bomb_21_06_2010.pdf
http://www.birdlife.org/eu/pdfs/Bioenergy_Joanneum_Research.pdf

⁶ Fussel, H-M, 2009. An updated assessment of the risks from climate change based on research published since the IPCC Fourth Assessment Report. *Climatic Change* 97:469-482.

Lenton, T. M., H. Held, E. Kriegler, J. W. Hall, W. Lucht, S. Rahmstorf, and H. J. Schellnhuber. 2008. Tipping elements in the Earth's climate system. *Proceedings of the National Academy of Sciences of the United States of America* 105:1786-1793.

McMullen, C. P., and J. Jabbour. 2009. *Climate Change Science Compendium 2009*. United Nations Environment Programme, Nairobi, EarthPrint.

Richardson, K., W. Steffen, H. J. Schellnhuber, J. Alcamo, T. Barker, R. Leemans, D. Liverman, M. Munasinghe, B. Osman-Elasha, N. Stern, and O. Waever. 2009. *Synthesis Report from Climate Change: Global Risks, Challenges and Decisions*, Copenhagen 2009, 10-12 March, www.climatecongresss.ku.dk.

cease.⁷

The longevity of CO₂ emissions in the atmosphere is discussed by Solomon et al. (2009), who state at 1708-1709:

“It is sometimes imagined that slow processes such as climate changes pose small risks, on the basis of the assumption that a choice can always be made to quickly reduce emissions and thereby reverse any harm within a few years or decades. . . . We have shown that this assumption is incorrect for carbon dioxide emissions, because of the longevity of the atmospheric CO₂ perturbation and ocean warming. Irreversible climate changes due to carbon dioxide emissions have already taken place, and future carbon dioxide emissions would imply further irreversible effects on the planet, with attendant long legacies for choices made by contemporary society.” (emphasis supplied)

According to Archer and Brovkin (2008),⁸

“The notion is pervasive in the climate science community and in the public at large that the climate impacts of fossil fuel CO₂ release will only persist for a few centuries. This conclusion has no basis in theory or models of the atmosphere/ocean carbon cycle, which we review here. The largest fraction of the CO₂ recovery will take place on time scales of centuries, as CO₂ invades the ocean, but a significant fraction of the fossil fuel CO₂, ranging in published models in the literature from 20–60%, remains airborne for a thousand years or longer. Ultimate recovery takes place on time scales of hundreds of thousands of years, a geologic longevity typically associated in public perceptions with nuclear waste.”

Numerous scientific studies indicate that current climate warming and the warming commitment “in the pipeline” already constitute dangerous anthropogenic interference.⁹ For example, the updated IPCC Reasons for Concern (RFCs) reflect that

⁷ Solomon, S., G.-K. Plattner, R. Knutti, and P. Friedlingstein. 2009. Irreversible climate change due to carbon dioxide emissions. *Proceedings of the National Academy of Sciences of the United States of America* 106:1704-1709. On line at: <http://www.pnas.org/content/early/2009/01/28/0812721106.full.pdf+html>

⁸ Archer, D., and V. Brovkin. 2008. The millennial atmospheric lifetime of anthropogenic CO₂. *Climatic Change* 90:283-297.

⁹ Hansen, J., M. Sato, P. Kharecha, D. Beerling, V. Masson-Delmotte, M. Pagani, M. Raymo, D. L. Royer, and J. C. Zachos. 2008. Target atmospheric CO₂: Where should humanity aim? *Open Atmospheric Science Journal* 2:217-231.

Lenton, T. M., H. Held, E. Kriegler, J. W. Hall, W. Lucht, S. Rahmstorf, and H. J. Schellnhuber. 2008. Tipping elements in the Earth's climate system. *Proceedings of the National Academy of Sciences of the United States of America* 105:1786-1793.

current warming is already at a point where significant risks from extreme weather events and risks to species and ecosystems are occurring. Further, delaying climate mitigation significantly increases climate risks and/or long-term costs¹⁰.

In conclusion, providing incentives to biomass and garbage burning in the form of Renewable Energy Credits under the RPS is an action that is and will (even under the Regulations) cause and contribute to, and further delay climate mitigation, significantly increasing climate risks and long-term costs. To meet GWSA targets and to avoid further

Jones, C., J. Lowe, S. Liddicoat, and R. Betts. 2009. Committed terrestrial ecosystem changes due to climate change. *Nature Geoscience* 2:484-487.

Pimm, S. L. 2009. Climate disruption and biodiversity. *Current Biology* 19:R595-R601.

Rockstrom, J., W. Steffen, K. Noone, A. Persson, F. S. Chapin, E. F. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. J. Schellnhuber, B. Nykvist, C. A. deWit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sornlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. A. Foley. 2009. A safe operating space for humanity. *Nature* 461:472-475.

Smith, J. B., S. H. Schneider, M. Oppenheimer, G. W. Yohe, W. Hare, M. D. Mastrandrea, A. Patwardhan, I. Burton, J. Corfee-Morlot, C. H. D. Magadza, H.-M. Fussel, A. B. Pittock, A. Rahman, A. Suarez, and J.-P. van Ypersele. 2009. Assessing dangerous climate change through an update of the Intergovernmental Panel on Climate Change (IPCC) "reasons for concern". *Proceedings of the National Academy of Sciences of the United States of America* 106:4133-4137.

¹⁰ Hansen et al., supra (2008), Rockstrom et al., supra, (2009),

Ramanathan, V., and Y. Xu. 2010. The Copenhagen Accord for limiting global warming: Criteria, constraints, and available avenues. *Proceedings of the National Academy of Sciences of the United States of America* 107:8055-8062.

Vaughan, N. E., T. M. Lenton, and J. G. Shepherd. 2009. Climate change mitigation: trade-offs between delay and strength of action required. *Climatic Change* 96:29-43.

den Elzen, M. G. J., D. P. van Vuuren, and J. van Vliet. 2010. Postponing emission reductions from 2020 to 2030 increases climate risks and long-term costs. *Climatic Change* 99:313-320.

Mignone, B. K., R. H. Socolow, J. L. Sarmiento, and M. Oppenheimer. 2008. Atmospheric stabilization and the timing of carbon mitigation. *Climatic Change* 88:251-265.

Meinshausen, M., N. Meinshausen, W. Hare, S. C. B. Raper, K. Friedler, R. Knutti, D. J. Frame, and M. R. Allen. 2009. Greenhouse-gas emission targets for limiting global warming to 2°C. *Nature* 458:1158-1163.

Allen, M., D. Frame, K. Friedler, W. Hare, C. Huntingford, C. Jones, R. Knutti, J. Lowe, M. Meinshausen, N. Meinshausen, and S. Raper. 2009. The exit strategy. *Nature Reports* 3:56-58.

Lowe, J. A., C. Huntingford, S. C. B. Raper, C. D. Jones, S. K. Liddicoat, and L. K. Gohar. 2009. How difficult is it to recover from dangerous levels of global warming? *Environmental Research Letters* 4:1-9.

catastrophic climate change, biomass burning should be entirely excluded and waste-to-energy burning should be conditioned upon consistency with the GWSA.

B. There is no evidence to show that carbon dioxide from biomass burning is or can be re-sequestered in a time frame meaningful to climate change mitigation.

The industry arguments that biomass should be included in the RPS are based on the claim that re-growing trees will absorb the CO₂ emitted by burning. The industry has produced no evidence to establish that such re-sequestration actually happens.

As noted, Massachusetts is already getting about 50% of its renewable energy from burning woody biomass. Yet, climate change, caused in part by carbon dioxide emissions from current biomass incineration, continues to get worse. Before additional new biomass can be qualified as a renewable energy generating source, the industry should be required to provide credible and substantial evidence that there are trees that are will actually absorb all the future CO₂ emitted by biomass. Currently qualified biomass Generating Units should be required to provide substantial and credible evidence that the CO₂ they emit is not causing or contributing to climate change, and that it is in fact being re-absorbed by terrestrial or oceanic sources.

The assumptions in the Manomet Report are excessively generous toward biomass bioenergy emissions, and resulting carbon debts may be larger than the study estimated.¹¹ Thus, to be consistent with current science and the Global Warming Solutions Act, any renewable energy generating source using biomass that in the process of power generation emits carbon dioxide that is not shown to be immediately reabsorbed by terrestrial vegetation or the oceans should be excluded from the RPS. Due to the fact that the oceans and atmosphere are already overloaded with carbon, it is highly improbable, if not impossible, for a biomass facility to establish factually or scientifically that its' CO₂ emissions will have no immediate impact on climate change. Therefore, an RPS that qualifies biomass as a renewable energy generating source is inconsistent with the GWSA, the goals of the RPS itself, and unsupported by current science.

II. Industry arguments that biomass burning should be qualified under the RPS in order to create jobs is irrelevant and unsupported by the facts.

Industry arguments that biomass burning that has emits carbon dioxide should be qualified as renewable energy because it will create jobs in the forestry and construction sectors and boost the economy are irrelevant under the RPS. The Commonwealth's recovery from the current economic crisis and the purported ability of biomass

¹¹Booth, Mary S. Review of the Biomass Sustainability and Carbon Policy Study, July 2010
http://www.catf.us/resources/whitepapers/files/201007_Review_of_the_Manomet_Biomass_Sustainability_and_Carbon_Policy_Study.pdf

incineration to create jobs was not cited by the Legislature as a reason to adopt the RPS in 1997 or for revising it in 2008. See, 1997 Acts, 164, § 5.

Even if job creation were a valid consideration under the RPS, renewable energy generated by biomass incineration creates few jobs per dollar of taxpayer money invested. There are better ways to create “green jobs.” **Exhibit 8.**

III. The RPS targets should be met with renewable energy technologies that have lower societal costs than biomass and waste-to-energy.

The societal costs associated with health and ecosystem impacts from qualifying biomass and garbage burning as renewable energy generating sources should be considered by DOER. As to waste-to-energy, DOER should be developing strong policies to require Generating Units using garbage to minimize the environmental and societal impacts of their power production. While the remainder of this section addresses biomass incineration, the comments are equally applicable to burning garbage under the RPS and serve as grounds for DOER to develop strong policies within the scope of its statutory authority.

A. Health care costs associated with smokestack emissions from biomass

The RPS was adopted in 1997 as part of utility deregulation with an overall goal of promoting the well being of citizens of the commonwealth. Acts, 1997, c. 164. The 2008 revisions adopting the definition of biomass explicitly refer to “low emissions” and were enacted in coordination with the Global Warming Solutions Act.

Smokestack emissions from biomass burning include deadly particulates (2.5, nano, ultrafines and aerosols), dioxin, NO_x, carbon dioxide, volatile organic chemicals and other hazardous air pollutants, as documented in various company permits. **Exhibit 2.**¹²

Current EPA regulations under the Clean Air Act are inadequate to protect the public health, and in any event are not currently in effect for PM 2.5, the other particulates with negative health consequences (nano, ultrafines, and aerosols), carbon dioxide, and the pollutants regulated under the so-called “Boiler Rules.” The U.S. EPA has proposed stronger air pollution limits for boilers at area source facilities and these standards will apply to biomass facilities when they take effect in 2011. EPA estimates that if the air pollution regulations are not imposed, it will cost the U.S. approximately \$70 billion dollars in health related expenditures. **Exhibit 9a and 9b.**

The biomass and garbage industry are fighting implementation of the Boiler Rule. Therefore, the RPS cannot rely on the federal Clean Air Act to ensure that the public health and the environment are protected from biomass emissions. As to the Boiler Rule, the biomass industry is quoted in the national press in August 2010 as stating

¹² As to waste-to-energy, see **Exhibit 16** “Covanta Environmental and Labor Violations.”

that it should be exempt from the this provision of the Clean Air Act and is essentially asking EPA to violate the law by providing an exemption for biomass boilers.

Any job creation in the biomass industry must be balanced against the increase in health costs from the diseases and illnesses caused by smokestack emissions from biomass incinerators. **Exhibits 10, 11, 12, 13.**

B. Societal Costs: dirty air, polluted water, dried up rivers, lower real estate values

Under the Regulations, the costs to natural resources and the Massachusetts economy from locating biomass incinerators here have not been taken into account. Many studies have put a price tag on the healthy forests, clean rivers, and clean air, both in terms of public health, tourist dollars, and the economy.¹³ See also, **Exhibit 14, 15.** These environmental benefits should be considered in issuing Qualification Statements for biomass, Indeck at 519, and must be weighed against any purported job benefits associated with biomass incineration.

Additional, the environmental impact of water usage by biomass combustion for electricity under the RPS should be considered in issuing Qualification Statements. These impacts are significant and have a negative impact on the environmental and the well being of Massachusetts citizens. For example, the Russell Biomass 50 megawatt facility will use 885,000 million gallons per day on average for cooling water, and evaporate 85%, discharging the rest in the form of heated chemically contaminated pollution a river which is a federally supported salmon habitat and designated Wild and Scenic Westfield River throughout almost its entirety. DOER should not be ignoring these impacts in qualifying “renewable energy generating sources.”

DOER should also consider the negative impact on the local economy and home values resulting from siting biomass incineration facilities. Studies show that siting such facilities may have a detrimental effect on real estate values in local communities.¹⁴ **Exhibit 17.** These impacts negatively effect the well being of Massachusetts citizens and should be weighed against any purported job benefits.

C. The RPS goals are thwarted by providing an unfair advantage to biomass incineration which emits more carbon dioxide per megawatt hour than coal and which will benefit from lucrative RECs.

Qualification of an energy source as “renewable” and making it eligible to sell renewable energy credits (REC) provides a substantial economic benefit to the

¹³See, e.g., “2006 National Survey of Fishing, Hunting and Wildlife Recreation, Massachusetts” by the U.S. Fish & Wildlife Service, showing about \$1.4 billion annually spent on fishing, hunting, and wildlife watching in Massachusetts.

¹⁴ See also, <http://myblueidaho.blogspot.com/2007/02/why-idaho-doesnt-need-any-wastebiomass.html>

Generating Unit. Assuming a REC price of about \$30.00 per megawatt, this amounts to about \$10,000,000 per year for a typical 50 megawatt biomass facility. Over thirty years, this is \$300,000,000 (without calculating net present value, etc.) that Massachusetts electric ratepayers will spend on getting so-called “clean” energy from the biomass burning incinerator. Biomass is able to qualify largely based on the false premise that it is “carbon neutral” and “clean and green.” This provides an unjustified economic benefit for a power source whose societal costs in the form of ongoing air, and water pollution and forest degradation that are borne by everyone on the planet (in the form of more climate change, dirty air, dirty water, etc.) – much higher, ongoing costs that are not associated with other forms of renewable energy.

Ratepayer subsidies for a polluting energy source that will emit air pollution and impair health and cause forest and water degradation 24/7/365 is inconsistent with the RPS.

The RPS is not intended as a job creation vehicle for the forestry and incineration industry. Promoting biomass burning for energy independence in Massachusetts is at odds with the fact that most of Massachusetts electric production comes from domestic coal and natural gas – not foreign oil. Further, the industry has failed to provide any credible evidence that biomass energy will replace a foreign source of fossil fuel – the biomass electricity is simply being added to the grid, and is not replacing anything. Any decision to allow biomass to qualify under the RPS in order to create domestic jobs must be balanced against the losses to the economy from dirtier air, dirty and depleted water resources, and degraded forests.

IV. If burning biomass and garbage is not excluded entirely from the RPS, the moratorium for RECs should continue until the industry provides credible evidence that its GHG emissions will not cause or contribute to climate change, and until the state initiates a MEPA review consisting of a comprehensive assessment of the public health and climate change impacts of all incineration technologies, including combined heat and power facilities, that are eligible for Renewable Energy Credits.

The Regulations constitute an inadequate piecemeal approach to tackling the issue of how to ensure that the RPS does not undermine the goals of the GWSA to reduce greenhouse gas emissions. The RPS regulations address only the narrow category of renewable energy generated from woody biomass. Other sources of “biomass fuel” that are not covered by changes to the RPS and yet have the potential to emit greenhouse gases.

Additionally, the narrow approach of the RPS ignores the societal impacts associated with the smokestack emissions of pollutants such as CO₂, NO_x, and particulates (particulate matter) from biomass and waste-to-energy incinerators, including increased health care costs, degradation of water resources, and economic cost to the Commonwealth of climate change and degradation of natural resources that have intrinsic value.

DOER should do a comprehensive assessment of the impact of both waste-to-energy, combined heat and power, and other forms of biomass incinerator on the GWSA

targets and revise the Regulations accordingly. The moratorium on RECs should continue until DOER has determined which fossil fuel plants will be replaced by the energy from future biomass plants and how this will affect the GWSA targets.

DOER should describe how it is going to limit the amount of GHG emissions from combined heat and power facilities. Although one such facility might qualify under the RPS, several small plants can add up and undermine GWSA targets. Despite each facility meeting the energy efficiency requirements, the total emissions from burning the same tonnage of wood will not change. These facilities should not receive RECs; to the extent they do, DOER should establish a method such as a cap on the number of facilities, or allowing them only if it is shown they replace coal plants. We have to reduce GHG from the power sector, and to the extent RPS facilities, emit GHG, but are exempt from “cap and trade” or RGGI and/or EPA’s greenhouse gas Tailoring Rule, their GHG continue to be uncounted.

V. If the RPS regulations do not entirely exclude all forms of biomass combustion from qualification, then the Regulations should be revised.

The following revisions should be implemented to begin to address the myriad issues raised by biomass combustion as a renewable energy generating source.

A. Definitions, 14.02

“Biomass Input Heat Content” (page 2) The Regulations provide that the value will be determined using a methodology provided by the Department in Guidelines. The process for developing the guidelines should be transparent and open to the public.

“Eligible Biomass Fuel” (page 3) should not include “by-products or waste from animals or agricultural crops.” Burning these materials contribute to climate change and emit more CO₂ per megawatt than coal. The emissions from a typical “biomass” poultry waste incinerator are demonstrated by the permitting records for Fibrothetford, a 38.5 MW incinerator that generates electricity. Records show that in 2003 its CO₂ emissions totaled 391 kilotons (391,000 tons).¹⁵ The North Carolina Academy of Family

¹⁵ <http://pagecountycitizens.wordpress.com/2010/03/17/fibrowatt-quietly-they-came-into-page-countyquietly-we-would-like-you-to-leave>; See <http://www.energyjustice.net/fibrowatch/>, <http://www.stopfibrowatt.com>, and <http://pagecountycitizens.wordpress.com/2010/03/07/video-gem-fibrowatt-environmental-benefits-weresolar> <http://www.energyjustice.net/sites/default/files/fibrowatch/UKemissions.xls>; Data from newer years available in the links in the second worksheet of that Excel file. FibroThetford data available at http://maps.environmentagency.gov.uk/wiyby/wiybyController?topic=pollution&x=585120.0&y=286824.0&scale=4&layerGroups=1&location=IP24%20LX&textonly=off&ep=query&lang=_e&page=2 (the newest years are listed as “EPR Thetford Ltd”)

Physicians opposes the combustion of poultry litter for biomass, and has outlined its concerns in a letter. **Exhibit 18.** The use of “food or vegetative matter” as an Eligible Biomass Fuel should be limited to power production via anaerobic digestion and incineration should be excluded.

The use of neat “Eligible Liquid Biofuel” (page 4) should be excluded from the definition of “Eligible Biomass Fuel.”

The definition of “Eligible Biomass Fuel” should exclude wood harvested from public lands, both state and federal.

“Manufactured Biomass Fuel” is defined to include wood pellets, bio-dust [undefined], and bio-oil [undefined]. Burning these items should not be allowed under the RPS. Even though a Generation Unit using “Manufactured Biomass Fuel” is required to provide a “Biomass Fuel Certificate” under 225 CMR 14.05(8), it is difficult to imagine how DOER will be able to ensure compliance with this provision by the manufacturer of the fuel. While it is difficult to see how DOER will be able to adequately ensure compliance with 14.05(8) for non-manufactured biomass, the fact that manufactured biomass is further removed in the forest harvesting and supply chain makes enforcement and reporting extremely problematic.

Pellet manufacturing using trees and woody biomass is heavily subsidized by Massachusetts and the federal government. See, e.g., Sandri Corporation grant, 2010 to make and/or distribute pellets. There are no regulatory controls relating to “carbon footprints” or forestry impacts from harvesting wood for pellet, bio-dust, or bio-oil. DOER simply does not have the resources to oversee compliance with the requirements of a “Biomass Fuel Certificate” in the face of a nationwide rush to produce “manufactured biomass fuel.”

“Non-Forest Derived Residues” categories 2 and 3. This category should exclude “growing stock and other timber sources cut or otherwise destroyed in the process of converting forest land to non-forest and non-agricultural uses, principally residential and commercial development.” Allowing this undermines the fundamental notion that wood biomass is “renewable.” In this instance, it is not growing back, once the land has been converted to non-forest and non-agricultural use. Forest conversion should not be eligible – we would never tolerate incentives for cutting down trees in the rainforest for development and burning, why should we promote it in temperate forests?

“Merchantable Bio-Products” (page 6) should not be allowed as Eligible Biomass Fuel. As mentioned above, it is virtually impossible for DOER to enforce the Biomass Certificate in an industry once removed from electricity generation. Moreover, biofuels and bio-char have massive environmental impacts beyond the impacts of forest health. Bio-char is also risky and unproven. See, comments of Biofuelwatch, incorporated by reference herein.

“Useful Thermal Energy” The Regulations should require that the energy is actually used, not just has the potential to be used. There should be a requirement that

the Generating Unit annually certify to DOER that the heat energy was actually used in a societally beneficial manner.

B. 225 CMR 14.05(8)(a)(1)(c): Provision limiting total weight of forest products harvested for biomass to 15% (page 20)

The clause stipulating a 15% maximum of harvest as eligible biomass fuel should include in the calculation any wood extracted, including “thinnings”, “improvements”, and so forth. This would ensure any wood extraction would be accounted for, not just commercial timber sales, or forest product sales.

While this 15% rule theoretically makes sense, it will require intense government resources to implement, is open to abuse, and difficult to enforce on the ground. If this clause is included in the RPS, funds and agency resources should be identified and available before the any “Biomass Fuel Certificates” are issued. These resources must be available statewide, and the budget must be adequate to cover enforcement for the next thirty years, or as long as Biomass Fuel Certificates are issued in Massachusetts.

C. 225 CMR 14.05(8)(b) (page 21): Forest Impact Assessment

The time period for the “Forest Impact Assessment” of 5 years is much too long. At a minimum there should be an *annual assessment* done by an independent body.

D. 225 CMR 14.05(1)(a)(7)(f)(iii) (page 12): Lifecycle Analysis

The lifecycle approach to demonstrating “carbon neutrality” does not insure that the process of biomass extraction and combustion will be “**climate neutral**”. Any form of renewable energy, to merit financial supports, must be **climate neutral**, meaning it achieves carbon neutrality almost instantly. As cited above, biomass combustion (in contrast to other fuel sources) in the next few decades will actually accelerate the level of carbon accumulation in the atmosphere, not reduce it. The lifecycle analysis approach requiring each Generation Unit to demonstrate to the Department’s satisfaction that its greenhouse gas emissions over 20 years will be 50% less than a new combined cycle natural gas electric facility is problematic. First, the 20 year lifecycle is far too long, given that, as shown in Section II, above, new science shows that climate change is accelerating faster than predicted. When it comes to a lifecycle analysis comparison, biomass for RPS purposes should be benchmarked against the lifecycle emissions of other qualified renewable energy generating sources, i.e. wind, solar, geothermal, etc. – that is, sources that do not emit smokestack pollution 24/7/365.

The lifecycle analysis does not require biomass to be carbon neutral over twenty years, and alleged “carbon neutrality” is why the biomass industry claims it should be qualified as a renewable energy generating source under the RPS. Unless the biomass combustion process can be made **climate neutral** by being **carbon neutral** over a very short period of time, then it should not qualify as a renewable generating source under the RPS.

The lifecycle analysis approach opens the door to allow the industry to start to

grow switch grass, willow trees, poplar trees, genetically engineered trees, etc. (all of which will actually result in large carbon emissions from land use changes). These crops can be harvested within a much shorter time frame, and the industry can easily claim that the 20 year life-cycle emissions is less than 50% of that of 'natural' gas. To carefully account for these changes in land use and carbon emissions would require a significant increase in the resources available to DOER.

The Regulation should clarify when the clock for the 20 year life cycle analysis starts to tick. Is it from 20 years ago, or from the time when an application is received for a area of biomass to be considered, or the time when the biomass is harvested? The calculation cannot begin from 20 years ago, as this allows the industry to say that the biomass in trees currently in the forest to have already done the 'sequestration', which now it can harvest, completing a 20 year cycle upon harvesting, so that new growth simply counts towards the next harvesting, and they can immediately start to qualify for incentives. This means there will be no “additionality,” hence no net carbon sequestration.

The public must be provided with the opportunity to have input on DOER guidelines on how the Lifecycle Greenhouse Gas Emissions under 14.05(1)(a)(7)(f) will be calculated. DOER should immediately identify the timeframe for developing and issuing the guidelines through a public process which results in a timetable published by January 1, 2011.

E. 225 CMR 14.05(1)(a)(7)(f): 40% efficiency is too low (page 12)

There is no scientific or legal basis for setting an “Overall Efficiency” standard of 40% for biomass CHP facilities. This is arbitrary and contrary to the Secretary of Energy and Environmental Affairs in his directive to DOER in the July 7, 2010 letter. An efficiency standard of 60% is even too low, and the standard is more appropriately 90%, which is technically and economically achievable.

A 60% efficiency standard with a goal of reaching 80% would benchmark the RPS to the Green Communities Act for combined heat and power, and be more aligned with the state’s overall energy efficiency goals. DOER should set a 60% minimum efficiency, and require all CHP facilities to attain 90% efficiency by 2020.

F. Definition of “Advanced power conversion”

The RPS statute requires biomass to use an “advanced power conversion” technology. However, the Regulations fail to define what is “advanced power conversion.”

G. 225 CMR 14.05(8)(b) Formula for determining Overall Efficiency of Generation Unit (page 22)

Inclusion of “Merchantable Bio-Products” in the formula for calculating “Overall Efficiency of the Generation Unit” is problematic. If inclusion of Merchantable Bio-

Products means that the Unit can count the value of Merchantable Bio-Products produced in the electricity process in its Efficiency calculation, then Merchantable Bio-Products should be excluded from the formula. The Unit should not be able to use the combustion process to generate a product that it then sells, and count the value of the Bio-Product toward the Unit's efficiency.

H. 225 CMR 14.05(8)(b)(3): partial credits should not be allowed (page 22)

There is no legal or scientific basis for providing less than a whole credit (the Regulation awards one credit for 60% or above efficiency, one-half credit for 40% efficiency, and one-quarter credit for 20 to 40% efficiency.) Since there is a financial benefit for each REC, this system provides an incentive for production of less than clean energy. As an example, a 50 MW plant generates about 438,000 MW. In the open market each REC is thought to be worth a potential of \$20-40.00 per REC. If the level stabilizes at \$30, then this represents about \$12,000,000 dollars a year as an incentive to produce energy at the 60% efficiency level.

The goal of the RPS is to provide incentives for "clean and green" renewable energy. Either the energy is renewable or its not: Given that we need to make a dramatic reduction in carbon emissions from the power sector now, allowing any emissions at all from biomass is unscientifically supportable and inconsistent with the GWSA. Any emissions that are allowed should be from only the most highly efficient (i.e. 80% or above units). Setting up a program that allows inefficient greenhouse gas emitting Units to continue to qualify is fundamentally at odds with the RPS.

I. Oversight and Enforcement

The fuel certification, tracking and verification mechanism set up by the Regulations is highly problematic. It is an unfunded mandate and DOER has not explained how it will make the budget allocations necessary to implement and oversee the system.

Without extremely detailed plans and rigorous and scrupulous implementation of harvesting controls, the sort that have never been practiced before, the aspects of the Regulations purporting to ensure sustainability is unbalanced and highly suspect. Moreover, since the carbon density of the wood increases with the age of the tree, simply equating volume of wood taken out with volume of re-growth will not produce carbon balance.¹⁶ The sorts of controls that would be necessary are the complete ownership of the dedicated forest lands that are permanently protected by irrevocable conservation

¹⁶ Lussayert, et. al.: Nature 45:213, 2008, and ¹⁶ 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, and 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.

restrictions, with truly independent third party verification of forest re-growth rates and carbon sequestration dynamics.

The notion of burning wood for electricity is based on cut-and-run forestry, as has been proven by the complete lack of monitoring that the Department of Conservation and Recreation has done on its own biomass cuttings in Wendell State Forest and the Quabbin watershed. While the Manomet Report contains many details, the actual on-the-ground implementation of harvesting forests for biomass combustion power plants shows that this science is out of touch with reality. Moreover, biomass power plants are permitted and approved, and given RPS qualification without documenting where the wood will be coming from for the next 30 years, because it is all "out there" somewhere and will be harvested with little or no controls (except for the very weak state logging regulations). Maine is an example, where the average tree size is 4 inches DBH (diameter at breast height) but the state purports to practice careful, state-of-the-art forestry.

J. 225 CMR 14.05: Failure to ensure that trees will be regrown

The notion behind "renewable" biomass for energy is that the trees will regrow. However, no where in the regulatory process associated with the RPS is there a requirement that the harvester, the utility, the landowner or anyone actually replace the trees and ensure that they will permanently be growing to reabsorb the carbon released in burning.

The only way to ensure that the lands harvested will "re-sequester" the carbon burned by biomass incineration under the RPS is to place an equivalent area of trees cut under permanent conservation restriction.

Thank you for the opportunity to provide comments.

Very truly yours,

/s/

Margaret E. Sheehan, Esq.

/s/

William Sammons, M.D.

On behalf of:

Center for Biological Diversity
Energy Justice Network
Save America's Forests
Stop Spewing Carbon Campaign
Biomass Accountability Project
Global Alliance for Incinerator Alternatives
Concerned Citizens of Russell (MA)

Exhibit List: Comments on RPS Regulations

10-21-2010

1	Request for Correction of Information Disseminated by the Environmental Protection Agency Regarding Emissions from Biomass Combustion in the Inventory of U.S. Greenhouse Gas Emissions and Sinks, from Center for Biological Diversity, July 28, 2010
2	Comparison of Most Relevant Air Emissions: Fossil uels to wood burning biomass and “construction and demolition” debris
3	Zero Waste for Zero Warming, GAIA’s Statement of Concern on Waste and Climate Change, December 2008
4	Letter from Center for Biological Diversity, 9/13/2010 to U.S. EPA (exhibits to letter available on request)
5	Bioenergy: a carbon accounting bomb
6	The upfront carbon debt of bioenergy
7	Biomass Burning is Not Carbon Neutral, from Energy Justice Network
8	Jobs Fact Sheet
9a and 9b	2 U.S. EPA Fact Sheets on Air Toxics Standards for Boilers at Area and Major Source Facilities
10	Health Impacts Fact Sheet
11	Medical Societies Oppose Biomass
12	American Lung Association Letter
13	Massachusetts Medical Society Testimony on Bill to Limit CO2 Emissions from Biomass and Waste to Energy
14	Forest Impacts Fact Sheet
15	Save America’s Forests Fact Sheet
16	Utility Workers Union of America: Fact Sheet: Covanta Environmental and Labor Violations
17	Kiel, K. and McLain, K., “Effect of an Incinerator Siting on Housing Appreciation Rates” (1994)
18	North Carolina Academy of Family Physicians, April 19, 2010 to North Carolina Dept. of Environment and Natural Resources
19	Solomon et al. Irreversible climate change due to carbon dioxide emissions
20	Asner et al. High resolution forest carbon stocks and emissions in the Amazon
21	NRDC letter to USDA on BCAP program
22	Johnson, Goodbye Carbon Neutral