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Dear Ms. Grobels,

The Partnership for Policy Integrity (PFPI) is a New England-based organization using science, policy analysis and strategic communications to promote sound renewable energy policy. Thank you for the opportunity to submit the following comments on the report by the Biomass Working Group, “Biomass Resources for Producing Renewable Power and Fuels in the State of New Jersey and Incentives to Promote Their Development.”

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Comments on the Biomass Working Group recommendations

The New Jersey Draft Energy Master Plan outlines five goals aimed at moving New Jersey's economy forward while still meeting its obligations under the Global Warming Response Act, which requires the state to reduce greenhouse gas emissions by 2020 to 1990 levels, while meeting the Renewable Portfolio Standard (RPS) that requires 22.5% of New Jersey's energy come from qualified renewable sources.

The Board of Public Utilities commissioned working groups to further research how the state could attain these goals. The Biomass Working Group (BWG) was charged with answering several questions, in particular "What can the State do to incentivize the development of biomass resources to allow biomass to 'compete' with other renewables?"

Unfortunately, however, the BWG has asked the wrong question. The question that should have been asked is, "What are the pros and cons of biomass energy, and can this technology play a role in helping New Jersey meet its climate and energy goals?"

Instead, however, the BWG's starting assumption – that biomass is a technology *worthy* of being "incentivized" – is never questioned. The considerable greenhouse gas emissions of burning or gasifying garbage and biomass for energy are never considered. The conventional pollutant emissions and threats to health are never considered. The potential alternative fates for biomass, including the municipal waste which the report presents as New Jersey's greatest resource, are never considered. The considerable economic risks are never considered. To boot, the report gets key facts wrong.

Our more specific observations are offered below. We mostly confine our comments to the BWG's evident enthusiasm for biomass energy generated by combustion or gasification of solid fuels, and not the collection and processing of landfill and other waste gases.

Burning and gasifying trash and biomass increases greenhouse gas emissions

Many states have promoted trash burning as renewable energy. But New Jersey is among a small group of states that have actually taken the threat of climate change seriously enough to pass legislation mandating reductions in greenhouse gas emissions from the power sector. The goals are ambitious – to achieve 1990 levels by 2020, and an 80% reduction below 2006 levels by 2050. However, the solution offered by the BWG report, of installing 900 MW of biomass power to be mostly fueled by garbage, will virtually guarantee that the emissions "reductions" envisioned by the Energy Plan will exist only on paper.

Burning trash is not carbon neutral

The "biomass" energy that is generated by combusting landfill or other gases derived from wastes – that is, gas that would otherwise escape, or be flared – is likely to have a favorable carbon profile. Combustion of this gas oxidizes it from methane, a powerful greenhouse gas, to carbon dioxide, which has a lower global warming potential.

However, by including garbage and biomass burning for energy as a technologies that deserve to be promoted along with or even above zero-emissions technologies like wind and solar power, the BWG report implicitly assumes that burning garbage and other biomass for energy is does

not emit greenhouse gases. This is obviously not the case. Burning¹ solid waste and other kinds of biomass emits more carbon dioxide per unit energy generated than burning fossil fuels, due to the inherent chemical qualities of biomass and trash, and also due to the low efficiency of biomass energy facilities. While decomposition of waste materials does emit greenhouse gases over time, there is no justification for assuming instantaneous carbon neutrality for these materials when burned because they would “decompose anyway”. In fact, EPA modeling² is clear that landfilled materials actually provide carbon sequestration in the medium-to-long term – that is, the period of the next couple of decades when it is most urgent to reduce greenhouse gas emissions – and that combusting such materials is a last resort. Particularly when landfill gases are collected and flared or used to generate energy, landfilling solid waste has a smaller greenhouse gas impact than combustion, and in all cases, reducing, reusing, and recycling emits the least greenhouse gases. While the carbon emissions profile of trash will vary depending on its composition, a general rule of thumb is that combusting a ton of green wood emits about a ton of CO₂. Combusting the several million tons of materials that would be needed to reach the BWG’s goal of 900 MW from biomass will increase the state’s emissions, not decrease them.

Burning woody biomass is not carbon neutral

The BWG report similarly makes the assumption that burning forest wood for energy is carbon neutral. Regrettably, despite having been released in late 2011, the report’s authors seem unaware of actions taken by the State of Massachusetts in 2010 and 2011 to dramatically restrict the kinds of biomass burning technologies that qualify for renewable energy credits. Deciding to let science guide its decisions on the role of biomass energy in the state, Massachusetts commissioned the Manomet Study to characterize greenhouse gas emissions from biomass energy. The Manomet Study concluded that net carbon emissions from utility-scale biomass power facilities exceed those from coal facilities under a “business as usual” scenario for more than 40 years, and exceed those from natural gas facilities for more than 90 years. Because providing incentives to a technology that emits more CO₂ than fossil fuels will not help reduce power sector emissions, Massachusetts is in the process of reconsidering the eligibility of biomass power for renewable energy credits in the state.

Trash and biomass combustion increases air pollution

In addition to emitting higher levels of CO₂, biomass facilities also emit sulfur dioxide, nitrous oxide, carbon monoxide, volatile organic compounds, hydrochloric acid, lead, and other hazardous air pollutants including heavy metals and dioxins. This should be a concern for New Jersey since it has 21 nonattainment counties for Ozone (8-hour), 13 nonattainment counties for P.M 2.5, and 1 nonattainment county for sulfur dioxide. Why would the State of New Jersey embrace a “renewable energy” plan that dramatically increased the amount of pollution coming out of smokestacks in the state?

¹ For the purposes of calculating carbon dioxide emissions, “burning” refers to both traditional combustion and gasification, which involves combustion of solid materials under low-oxygen conditions, followed by collection of “syngas” for subsequent use. Gasification does nothing to reduce carbon emissions.

² EPA. Solid Waste Management and Greenhouse Gases Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM): Landfilling. 2010. Washington DC. <http://www.epa.gov/climatechange/wycd/waste/SWMGHGreport.html>

The goal of generating 900 MW of energy from biomass is unrealistic

A primary goal in the Energy Plan is the generation of 900 MW of biofuels and biomass as part of the New Jersey's 2020 RPS, "not involving incineration". This plan is probably highly unrealistic, based as it is on the Rutgers biomass availability report. The Rutgers report outlines a number of complex technologies, many of them not being used commercially in the US, for converting solid fuels to energy. To present these numbers as if they are "real" – without acknowledging the considerable technological gap that exists – is irresponsible and decreases the ability of policy-makers to make decisions based in what is achievable.

The plan, and the Biomass Working Group's report, apparently places some stock in the waste incineration industry's distinction between "incineration" technologies and other technologies like gasification. In fact, gasification technologies still produce an equivalent amount of greenhouse gasses and a large proportion of the conventional pollutants emitted by conventional mass-burn technologies.

Forest biomass availability is overstated

The report appears to overstate the amount of different types of biomass material that are actually available in New Jersey. The report does not appear to understand that "forest residues" are operationally defined as the tops, limbs, and incidental non-merchantable trees that are cut or knocked down during sawtimber harvesting; net amounts depend on the amount of timber harvested in the state.³ Because residues are assumed to "decompose anyway" if left onsite, using this material as fuel emits no more carbon to the atmosphere than what would otherwise occur (aside from the fact that decomposition takes years to decades, while burning is instantaneous).

In the report, however, the amount of forest residues considered available is not based on actual timber harvesting in the state, but is calculated assuming that there is "0.5 dry tons per acre per year on 25% of the State's forested land,"⁴ with residues accounting for 469,050 tons and 49% of the non-garbage biomass resources in the state. This is not correct. A quick check of US Forest Service data⁵ reveals that the actual amount of forest residues in New Jersey is less than one-twentieth this amount, at 22,000 green tons per year, or about enough wood to power 1.5 MW for a year. The more than 400,000 tons of "forest residues" that the BWG report claims is available is closer to the amount that Vermont generates.

Energy crop production is unlikely to occur at a meaningful scale in New Jersey

While it is true that energy crops or agricultural residues as biomass feedstock can have lower net carbon emissions than forest-derived biomass, it is important to recognize that because the state is not growing energy crops for the use of biomass fuel, it is not realistic for New Jersey to present energy crops as a viable alternative. Similarly, the report seems unaware of the significant investments in equipment and processing facilities that are necessary to make crop residues a viable fuel source. In any case, energy crops and residue collection are likely to prove to have a

³ Smith, W.B., et al. 2007. Forest Resources of the United States, 2007. United States Forest Service, Gen.Tech Report WO-78. December, 2008.

⁴ Table 1 of the report.

⁵ Smith et al, 2007.

much higher cost-benefit ratio when displacing the kinds of high-value crops that are currently grown on New Jersey's shrinking agricultural land base.

The Biomass Power and Fuels Initiative depends on favorable treatment by the state

The major recommendation of the BWG is to "Target State Resources to Facilitate Public-Private Partnerships to Build and Operate Biomass-to-Power & Fuels Plants in Two to Three Years" via a "Biomass Power & Fuels Initiative". The program would naturally include the usual greasing of the skids for favored industries; as the report puts it, "The State's commitment to monitor and enforce a "fast track" schedule would be necessary to ensure the timely construction of facilities proposed by project developers."

In fact, permitting for garbage incineration takes time for a reason – it's a highly polluting industry and water consumptive industry with massive infrastructure, that relies on continuous deliveries of waste from fleets of 80,000 ton trucks. Garbage combustion also has a storied financial history, as residents of Harrisburg PA can tell. That city has attempted to declare bankruptcy due to the financial burdens of its "energy generating" garbage incinerator.

Creating new incentives for biomass will dismantle the state's REC system

Currently, New Jersey's RPS includes in its Class 1 renewable energy credits "certain other forms of sustainable biomass." Waste to energy receives a Class 2 renewable energy credit.

However, the BWG report never discusses why the current system treats waste burning as a Class II REC. instead, it complains

The State's current approach to incentivizing biomass-to-energy industries, which involves the use of tradable Renewable Energy Certificates (RECs) to increase the revenues of renewable energy producers, is not working for the biomass industry. The value of RECs that apply to this industry is close to zero.

The report recommends bypassing the state's REC system altogether, and creating new, presumably taxpayer- and ratepayer funded incentives for garbage-burning. Policy-makers and legislators should consider how such incentives could further devalue RECs for truly clean and renewable technologies.

Recommendations

"Reduce, Reuse, Recycle" to reduce greenhouse gas emissions

According to the BWG report, NJ residents generate 6.7 lb trash per day, almost 50% higher than national average. Instead of promoting this waste as a source of "clean, renewable, carbon-free" fuel, the State should recognize EPA's finding that reducing waste and reusing and recycling materials are the practices that reduce greenhouse gas emissions most effectively.

Properly account for greenhouse gas emissions from combustion

It is an undisputed fact that burning biomass and garbage for energy produces an immediate surge in greenhouse gases that exceeds emissions from fossil fuels on a per-MWh basis. Any plans to burn biomass or garbage for energy should acknowledge this fact up front.

Energy crops must not displace forests

New Jersey must proceed with caution when evaluating land for harvesting grass and weeds and planting energy crops. In the report, the BWG states that a “significant” amount of state land is “lightly managed” and has potential for agricultural use. Currently the report includes in this category wetlands and “open and underutilized” lands. Lands used for bioenergy crop production must not include tracts of property where forest growth still occurs. The conversion of forested land to agriculture results in a loss of a carbon sink and an increase in carbon emissions.

Reduce air pollution

The taxpayers and ratepayers that subsidize renewable energy are already skeptical about its benefits. The 900 MW of capacity proposed under the plan would represent about 5% of New Jersey’s existing electricity-generating capacity, but would significantly increase emissions of particulate matter, smog precursors, and hazardous air pollutants including mercury, arsenic, and dioxin. The public deserves an honest and transparent discussion about the real emissions from burning biomass and garbage, and how these emissions will affect New Jersey’s air quality and the health of its citizens.

Support the REC program, don’t dismantle it

The BWG report’s recommendation that the existing system of incentives for renewable energy should be bypassed in favor of creating special incentives for trash-burning could significantly impair adoption of truly clean, emissions-free energy technologies. This proposal should be abandoned.

Conclusion

Unfortunately, the BWG report and the Energy Plan’s emphasis on biomass as a “renewable” energy technology would lock the state into expensive and highly polluting infrastructure, while locking out opportunities for developing truly clean, emissions-free renewable energy. New Jersey is already one of the most polluted states in the Nation. Why would its energy plan therefore support construction of even more infrastructure that would increase greenhouse gas emissions and air pollution? We hope that state lawmakers and other policy-makers will see this report for what it is, and immediately refocus on the many good recommendations in the Energy Master Plan for energy efficiency and development of truly clean renewable energy, while setting aside forever plans to liquidate New Jersey’s enormous trash “resource” into the atmosphere.

Thank you for the opportunity to comment,
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Partnership for Policy Integrity