

Testimony from Rachel Smolker (Hinesburg resident and director of Biofuelwatch) to Vermont Senate Finance Committee regarding Senate bill 1 - to extend the baseload renewable power portfolio requirement.

February 11, 2021

Thank you for the opportunity to address this committee. I am codirector of an international organization, Biofuelwatch, which has worked since 2007 to raise awareness of the negative impacts of large scale bioenergy, especially focussing on wood bioenergy. We have worked through the UN conventions on climate and biodiversity, nationally in the USA and Europe and internationally with allies globally, as well as with local community groups fighting for clean air and to protect their lands. I have a Ph.D. in biology (University of Michigan), have served as a reviewer for the IPCC reports, and engaged in many many stakeholder consultations with various relevant government agencies. I offer some insights based on my experience and scientific literature I have reviewed.

We are active participants in various networks opposing large scale biomass including the campaign to Cut Carbon Not Forests - and work closely with groups such as the Dogwood Alliance -and Natural Resources Defense Council “Our Forests are Not Fuel” campaign. I invite you to visit these websites to learn more about biomass and its consequences.

1) Locking ourselves into a bad choice? Energy tech and policy is fast changing in light of climate change and technological breakthroughs. Grandfathering in Ryegate for the next decade will make it difficult for Vermont to take advantage of opportunities to improve our energy supply and use as they arise. Future policies for climate and energy in Vermont are likely to change dramatically. We have already witnessed very steep reduction in the cost of wind and solar in recent years, and in technologies for storing and regulating demand. Vermont should be prepared to embrace new technologies and new technologies as they arise. Right off the bat, currently the state’s CEP as well as the GWSA are being developed and revised. Why lock ourselves into an out-moded technology for an entire decade?

Burning biomass is increasingly recognized as a dirty, inefficient technology for power generation that worsens climate change and contributes to deforestation and biodiversity loss. (detailed below) The industry has been fighting hard for a designation that burning trees for power is “carbon neutral” and hence biomass power should be favored by climate policies and subsidies.

That battle has been ongoing for years now. The supposed clean green carbon neutrality of burning trees for power has been soundly refuted. There is literally a mountain of scientific literature on this topic and it is not in favor of the industry. The writing is on the wall and Vermonters should not get shouldered with responsibility to bolster a dying industry.

The climate impacts of biomass power are a major focus of the opposition - because it is well

understood that the subsidies granted for production of RENEWABLE energy are essential to the economic viability of these facilities. They are not economically viable without taxpayer funded subsidies and other supports, as well as an ongoing designation as “clean and green and carbon neutral”

Biomass power is expensive:

Biomass power requires constant fuel supply which is often costly to procure. Many facilities find it challenging to provide adequate supplies cost effectively.

Furthermore the biomass power industry dependent on very generous taxpayer and ratepayer subsidies - money that could be put to much better use. The biomass industry as a whole has a very bad track record - with many facilities receiving remarkably generous tax advantages and subsidies - and then failing - leaving communities burdened with the costs.

Look to our neighboring state of Maine: A 2017 report by PFPI reviewed subsidies, tax credits and grants to the industry and found that **over 250 million dollars had been provided to the industry - and yet it was still unable to compete or prevent closures and bankruptcies.** Further, neighboring states (MA and CT) that had contributed to Maine’s biomass industry withdrew those supports because of the high emissions of CO2 and decisions to invest in cleaner renewables.

<http://www.pfpi.net/maine-legislators-urged-to-reject-subsidies-for-polluting-biomass-energy>

Biomass burning is polluting:

Facilities such as Ryegate emit a wide range of pollutants, comparable to burning coal. Particulate emissions are especially problematic, and are implicated in many diseases from cancers to birth defects and neurological diseases. Vermont already has extremely high levels of wood smoke pollution due to burning wood for heat in residential and other buildings. Our asthma rates are among the highest in the country.

Ryegate (and McNeil) contribute a very large proportion of these pollutants - and do so in delivering a very small proportion of energy, in a grossly inefficient manner. The efficiency ratings for most facilities such as Ryegate are in the range of 25-30%. What this means is that 2 of every three trees burned are wasted, but the pollution from burning them is nonetheless released into our air.

Even with emission controls that may eliminate most PM, because of the very large amount of wood that is burned- that remaining portion that escapes controls is very large. Further, as I understand it, the regulations for the smallest PM particulates have been a topic of concern as we’ve learned they are more damaging to health, and more difficult to control and not adequately regulated.

Key question: There is reference to Ryegate’s production of 4000 tons of ash which they say is “beneficially recycled”. This is a very large amount of ash - and in some cases wood ash can contain heavy metals and other contaminants. How is this ash “recycled”? Is it tested in any

way?

In sum - why would ratepayers pay a premium to pollute?

Biomass is bad for the forests:

The biomass industry has long stated that they burn “waste and residue”. But what is waste and residue? The answer is easily obtained by looking at the wood yards at these facilities which hold vast stacks of whole trees. Chips are made from whole trees. Twigs, bark and leaves do not burn well and while some facilities can handle a mix, the higher quality wood burns better and cleaner.

In these hearings we have been told that Ryegate uses “low grade wood”. That can refer to anything that might not be considered more valuable for a higher purpose. Hence with a market for not just the higher purpose timber, it becomes profitable to do more intensive extraction at logging sites. The cost of harvest, handling, transport, chipping etc are formidable. In my many years of experience, industry folks and their supporters ALWAYS refer to sustainable harvesting practices. But where ground truthing has been possible, we have found some alarming results. In N.C for example, where Enviva is producing pellets to export to Europe for the DRAX coal/biomass conversion, it was discovered that they were clearcutting precious remaining stands of native old growth forest.

Bottom line is that good quality wood burns better, as most Vermonters who have woodstoves know. The cost of providing feedstocks requires best available.

What are the impacts on Ryegates “woodshed”? We have been told that Ryegate procures its feedstocks from a 60 mile radius around the facility. It was constructed in 1992 - and has been extracting wood from that woodshed since then. Now it may continue for another decade. How can that ongoing supply of what we are informed is 250k tons per year of wood be provided without serious impacts on the forested lands in that limited area? We can assume that not the entire surface of that woodshed is forested or can be logged.

Key question that needs to be answered: Is 250k a dry weight metric? When wood is harvested it is near 50% water content so that would mean far more wood - up to 500k tons of wood are harvested and then dried to some acceptable moisture content prior to burning. Is this 250k dry or 500k wet?

Key question: How many other entities - including residential and commercial heating as well as neighboring biomass facilities and wood pellet manufacturers in VT and adjacent states are also procuring wood from the same woodshed area? In my experience there are often multiple overlapping and competing demands in the same woodshed region, but rarely acknowledged. This map shows the situation in the Southeastern USA, and it would be good to have similar mapping for the state of Vermont (and New England).

Biomass is not C neutral! It should not be considered to have zero emissions or receive

subsidies as “renewable”.

Policies and supports for biomass are based on the notion that burning wood is carbon neutral - i.e. that CO₂ emissions from combustion will be eventually offset by CO₂ sequestered in replacement tree growth. This idea has been soundly refuted by a wealth of peer reviewed literature. The carbon neutral claim is referred to as an “accounting error”, derived from a quirk of UNFCCC national guidelines for emissions accounting. Unfortunately, this accounting error has become deeply entrenched in policy and discourse and is persistently repeated by industry proponents.

There is no basis for assuming carbon neutrality. The science is very clear!

++Today's letter from 500 scientists to Biden and leaders of Japan, Korea and Netherlands: In recent years, however, there has been a misguided move to cut down whole trees or to divert large portions of stem wood for bioenergy, releasing carbon that would otherwise stay locked up in forests. The result of this additional wood harvest is a large initial increase in carbon emissions, creating a “carbon debt,” which increases over time as more trees are harvested for continuing bioenergy use. Regrowing trees and displacement of fossil fuels may eventually pay off this carbon debt, but regrowth takes time the world does not have to solve climate change. As numerous studies have shown, this burning of wood will increase warming for decades to centuries. That is true even when the wood replaces coal, oil or natural gas.

++A 2018 letter from 800 scientists concluded “Even if forests are allowed to regrow, using wood deliberately harvested for burning will increase carbon in the atmosphere and warming for decades to centuries – as many studies have shown – even when wood replaces coal, oil or natural gas. The reasons are fundamental and occur regardless of whether forest management is “sustainable.”

++When the Dartmouth College proposed to convert campus heating to biomass, alumni scientists wrote a strong condemnation: “The problems are several. First, the Intergovernmental Panel on Climate Change (IPCC) and many peer-reviewed studies show that wood generates significantly more CO₂ than the fuel oil it would replace, and even more than the natural gas used by Dartmouth’s Mary Hitchcock Hospital. The carbon content of wood is about 30% higher per unit of primary energy than fuel oil and about 80% higher than natural gas. Second, the combustion efficiency of wood is less than that of modern oil and gas systems. Third, the wood supply chain requires substantial energy for harvest, transport, processing and drying prior to use, and for ash disposal.”²

Therefore, the first impact of switching from oil to wood will be an *increase* in Dartmouth’s carbon dioxide emissions, worsening climate change. “

++The US EPA established a scientific advisory board which concluded carbon emissions from biomass were substantial.

++The European Science Advisory Council similarly concluded.

++A broad selection of peer reviewed articles have been published on this topic - A compilation of resources is available at: <https://www.biofuelwatch.org.uk/2015/biomass-resources/>

Attached is an excerpt from Partnership for Policy Integrity which articulately rebuts the carbon neutrality claims - including yet more references.

Meanwhile PROFORESTATION - allowing forests to grow is well-recognized to be one of the most effective ways to remove CO2 from our atmosphere. We cannot grow forests and burn them too! Please come and learn about proforestation at an upcoming presentation on Feb 24th sponsored by a newly formed coalition "Standing Trees Vermont" which seeks to promote proforestation on our public lands. I will provide an invitation to committee members.

Do landowners really base decisions on low grade wood markets?

We are told that the market for low grade wood in Vermont is essential to keeping forests as forests. This argument is not unique to Vermont, but is a familiar one that I have heard across the board in many cases. The argument is that paying taxes on forested land is prohibitive for landowners, and they can only manage doing so if they have the income from sale of low grade wood. That income stream in turn prevents them from doing what they would otherwise do - sell their land to a developer.

Key question: How much do landowners in fact get paid for their low grade wood? What does it cost to collect, chip and transport low grade wood material? Further, if landowners are logging already, as we must assume if the material is "waste and residue", they must be eligible for "current use" tax benefits on their land?

Key question: Are there other more effective ways to encourage landowners to retain their lands? I understand there is a move afoot to adjust the tax structures to allow landowners to benefit from NOT logging. That would be useful. True it could eliminate the need for forestry management plan and would put some folks out of business - a problem that could be addressed, just as reducing jobs in logging and trucking could similarly be addressed. People need support to transition to other work. Perhaps there are other approaches that would be more beneficial to forests, climate and landowners to consider rather than supporting Ryegate as a necessary "benefit" to landowners.

Key question: Would landowners necessarily develop their land if they didn't have income from sale of low grade material? Is that what is keeping them from developing their land? Or are those landowners who sell forested land for development doing so for other reasons - and would do so irrespective of low grade wood markets?

Surveys of landowner attitudes I have seen do not support the idea that markets for low grade wood are preventing decisions to develop. Those surveys show that most forest landowners do not want to log their forests. Instead, most want to keep their forests intact "to sustain wildlife and nature, to maintain inherent beauty, and to continue the legacy of their land within their families. Landowners who are thinking about logging are more likely to log their forest if they

have been “educated” by forestry advocates or received financial “incentives.” However, those who plan to keep their forest intact are no more likely to plan to sell, subdivide, or convert their forestland than landowners who plan to log their forest. Critical *independent* evaluation of the economic impacts is needed. Similarly a just transition mechanism for workers in the industry whose livelihoods would be impacted by the closure of Ryegate is needed. Protecting jobs is not a reason to continue operating a damaging facility - it is a reason to provide support for worker transition.

Better uses for wood than Ryegate

I am not “anti-logging”. I recognize the importance of logging in our state, and as part of Vermont’s culture. I am however against blatant waste. Ryegate is a wasteful use of our wood.

With climate change becoming increasingly of concern, many Vermonters are looking for ways to reduce their carbon footprint. They want real solutions. If they were aware that the “renewable energy” that they are using is actually dumping 50 to 150% more CO2 into the atmosphere than coal (per unit of energy produced) they would not likely be happy to pay a premium for this. But many have been deceived into believing that burning wood for electricity is “clean and green”. That deception needs to end.

Vermonters also are meanwhile faced with difficult choices with regards to heating. Our cold winters require it, but the options are limited and complicated. Burning fossil fuels (gas or heating oil) is clearly not compatible with addressing climate change. Heat pumps are effective during the shoulder season but not during deep freeze conditions. Many are shifting to heat with wood. Policies and supports are being offered to do so.

Key question: how many homes could be heated with the wood that is burned at Ryegate. If we assume the 250k tons is dry weight, then Mike Snyder indicated that is 13% of the total Vermont annual wood harvest. (If there is confusion over wet v dry weight, it may be twice that- 26% of the state’s wood harvest burned at Ryegate) - in return for a small amount of power.

Baseload:

Key question: do we really even need baseload? Various approaches to addressing grid stability with renewables are under consideration with new improvements in battery storage and smart demand side controls among other approaches. I am not an expert on grid operations or all the many potential ways to control energy demands. But there are many voices arguing that in the near future the concept of “baseload” power may become moot. Let’s not lock ourselves out of that possible future!

<https://www.renewableenergyworld.com/baseload/busting-myths-around-baseload-generation-lc-oe-and-energy-storage/#gref>

IN SUM: Why should Vermont ratepayers foot the bill for 10 more years of polluting, forest and climate damaging power from an antiquated biomass facility? Better options exist, and better livelihoods are possible!

