

**From:** Chris Matera <christoforest@gmail.com>  
**Sent:** Wednesday, February 10, 2021 10:13 PM  
**To:** Faith Brown <FBrown@leg.state.vt.us>; Ann Cummings <ACUMMINGS@leg.state.vt.us>; Mark MacDonald <MMacDonald@leg.state.vt.us>; chris@senatorpearson.com; Randy Brock <RBrock@leg.state.vt.us>; Michael Sirotkin <msirotkin@leg.state.vt.us>; sirotkin.senate@gmail.com; Christopher Bray <CBray@leg.state.vt.us>; cbray@sover.net; Ruth Hardy <RHardy@leg.state.vt.us>; Christopher Pearson <CPearson@leg.state.vt.us>; senatormark@aol.com  
**Subject:** [External] Re: S. 1 - An act relating to extending the baseload renewable power portfolio requirement - RESPONSE TO COMMENTS

[External]

**Dear Vermont Senate Committee,**

**Please accept these follow-up comments in blue regarding: *"S. 1 - An act relating to extending the baseload renewable power portfolio requirement"* in response to comments (in italics) by Dylan Zwicky, on behalf of Stored Solar, February 10, 2021, in response to my comments below to the committee on February 4, 2021**

*We have reviewed the email from Chris Matera of Massachusetts Forest Watch and respectfully submit the following responses to his claims: Mr. Matera asserts that the Ryegate plant has a carbon footprint that is 40% higher than a coal plant and 250% higher than a natural gas plant. Mr. Matera is incorrect. Accompanying this submission is a study report entitled Carbon Intensity of Harvesting Residue-Based Electricity: Case Study of Eversource Energy. The study analyzed the carbon intensity of a 50 MW powerplant that utilizes biomass residues as a fuel in comparison to the carbon intensity of a comparably sized natural gas fueled power plant. The study concluded that:*

*"that the use of harvesting residues to displace natural gas-based electricity can result in savings ranging from 115% in initial years of commencing harvesting of those residues to about 98% by year 100. Thus, the use of residues for electricity generation is carbon negative in the early years and its carbon intensity is close to zero by year 100." See pages 6-7.*

**The statements above are not accurate for the following reasons:**

**1. Ryegate burns whole tree chips, not just "residues":**

**<https://vermontstandardoffer.com/ryegate/>**

**This means that living green trees are cut and chipped for fuel. The carbon profile of cutting and burning green trees is markedly different than burning "residues". If the owners claim**

they will no longer burn chipped whole trees, it would be necessary to procure a legal and binding contract to that effect which includes verification measures because the trail of wood chips is extremely difficult, if not impossible to follow.

2. Even if only true “residues” were burned, doing so is not “carbon neutral”.

[http://www.maforests.org/Booth 2018 Environ. Res. Lett. 13 03500 1.pdf](http://www.maforests.org/Booth%202018%20Environ.%20Res.%20Lett.%2013%2003500%201.pdf)

3. There is a large and growing pile of peer-reviewed science that demonstrates that burning trees, as is done at Ryegate, is NOT even remotely “carbon neutral” and is in fact about 50% worse than burning coal. In addition to the head to head comparison I provided earlier (page 3 here: [www.maforests.org/VermontBiomassBiomess.pdf](http://www.maforests.org/VermontBiomassBiomess.pdf)) below are some citations including from the top scientists working on this issue:

**78 Scientists to EPA, Biomass Bad for Forests & Carbon:**  
[www.maforests.org/76%20Scientist%20-%20Biomass%202015.pdf](http://www.maforests.org/76%20Scientist%20-%20Biomass%202015.pdf)

**90 Scientists` Letter to Congress “Count Biomass Carbon”:**  
[www.maforests.org/90scientistsletter.pdf](http://www.maforests.org/90scientistsletter.pdf)

**Biomass Never Carbon Neutral From Trees:**  
[www.maforests.org/Biomass%20Assumptions.pdf](http://www.maforests.org/Biomass%20Assumptions.pdf)

**Dr Eric Johnson, “Biomass Carbon Neutrality” Mythbuster:**  
[www.maforests.org/Carbon.pdf](http://www.maforests.org/Carbon.pdf)

**Biogenic Carbon, Same impacts:**  
[www.maforests.org/BiogenicGeologic%20August%202011.pdf](http://www.maforests.org/BiogenicGeologic%20August%202011.pdf)

**Logging, Bio-energy and Carbon Emissions:**  
[www.maforests.org/Wood%20not%20so%20green%20a%20biofuel.pdf](http://www.maforests.org/Wood%20not%20so%20green%20a%20biofuel.pdf)

**Carbon Realities, Dr Harmon, Dr Searchinger, Dr Moomaw:**  
[www.maforests.org/CarbHMS.pdf](http://www.maforests.org/CarbHMS.pdf)

**Science Journal “Biomass Accounting Error”:**  
[www.maforests.org/SCIENCE.pdf](http://www.maforests.org/SCIENCE.pdf)

**EU Scientists Against Burning Wood:**  
<https://forestdefenders.eu/eus-own-scientists-warn-against-burning-wood-for-renewable-energy/>

**Dr. Schlesinger, Bad for Forests, Bad For Climate:**  
[www.maforests.org/Schlesinger.pdf](http://www.maforests.org/Schlesinger.pdf)

**Schulze Et Al: “Biomass not carbon neutral”**  
[www.maforests.org/Biomass%20energy%20-%20not%20sustainable%20or%20carbon%20neutral.pdf](http://www.maforests.org/Biomass%20energy%20-%20not%20sustainable%20or%20carbon%20neutral.pdf)

**Yale, Why Counted as “Green” Energy?**  
[www.maforests.org/Why%20Is%20Wood%20Burning%20Counted%20as%20Green%20Energy.pdf](http://www.maforests.org/Why%20Is%20Wood%20Burning%20Counted%20as%20Green%20Energy.pdf)

**Dirty Deception:**  
[www.maforests.org/Dirty%20Deception.pdf](http://www.maforests.org/Dirty%20Deception.pdf)

**NRDC: Don’t use Forests for Fuel:**  
<https://www.nrdc.org/resources/our-forests-arent-fuel>

**Biomass: Environmental Lunacy:**  
[www.maforests.org/The%20fuel%20of%20the%20future%20-%20Wood.pdf](http://www.maforests.org/The%20fuel%20of%20the%20future%20-%20Wood.pdf)

*Mr. Matera also makes several incorrect assertions about particulate levels at biomass facilities. The Department of Environmental Conservation’s Air Quality Division administers the federal Clean Air Act. The Environmental Protection Agency (EPA) allows states to issue permits for a facility so long as the conditions in the permit meet or are at least as stringent as the federal requirements. In the case of particulate measurement, the federal limit is .007 GR/DSCF of air. Vermont’s limit is .0007, significantly below the federal limit.*

*In 2017, DEC issued a new Title V Permit to Operate for the Ryegate plant. The Title V permit requires particulate matter testing every other year. Additionally, Ryegate must test annually in order to qualify for the sale of Renewable Energy Credits (RECs) to New Hampshire. Ryegate has consistently tested for and demonstrated compliance with Vermont air quality standards and is in compliance with its Title V permit.*

*Mr. Matera’s testimony suggests that the particulate matter emissions for wood are .100 lb/MMBtu. A June 23, 2020 test of particulate emissions from Ryegate found that the plant’s levels were at .0009, significantly less than Mr. Matera’s numbers for wood (.100), oil (.014), natural gas (.007) and propane (.004). His numbers for Carbon Monoxide (CO) and Nitrogen Oxides (N<sub>2</sub>O) are also inaccurate. The Title V permit limits Ryegate to .3 lb/MMBtu of CO, not the .73 lb/MMBtu listed in Mr. Matera’s testimony, and limits N<sub>2</sub>O to .075 lb/MMBtu, below every other fuel type he references, including wood, which he claims is .165 lb/MMBtu. All of these are tested for on a regular basis. Lastly, with respect to Sulphur Dioxide(SO<sub>2</sub>), emissions are so low that neither Vermont, nor*

*the EPA require emissions testing though Ryegate does sample wood for SO<sub>2</sub> monthly under the Title V permit, which limits SO<sub>2</sub> to .05% by weight of fuel.*

**The statements above are a red herring. Permits to pollute are issued every day and even the dirtiest power plants have permits to operate despite the negative impacts on human health and the environment.**

**Mr Zwicky is 100% wrong about the comparison claims. He is comparing small wood boilers to large electric biomass plants which is equivalent to comparing apples to oranges, and not what I did. Smaller units pollute more per unit of energy produced due to having lesser controls, but due to the comparatively massive amount of wood burned in large electric facilities like Ryegate, the actual tonnage of pollutants for such a facility is drastically more than a small unit.**

**Regarding particulate pollution, I clearly referred to a head to head comparison of a brand new electric biomass plant (with the best pollution controls) to a 50 year old electric coal plant, an apples to apples comparison. The point is that running a biomass electric plant emits much more particulate matter than a 50 year old coal plant per unit of electricity produced. Please again see page 3 here for the head to head pollution comparison of brand new biomass to an old coal plant. The source data can be found below the charts and is based on the biomass developers own air permit applications. (Again, not defending coal, just pointing out how dirty biomass is).**

**<http://www.maforests.org/VermontBiomassBiomeass.pdf>**

*With respect to Mr. Matera's claims about asthma rates in Vermont, the report he links to suggests that "the single most common environmental trigger among adults was having an indoor pet," affecting 73 percent of the adults with asthma and 80 percent of children.<sup>1</sup> Furthermore, the report does not mention biomass power once, though it does find that 30 percent of people with asthma use wood stoves for heating purposes.<sup>2</sup> Incidentally, on a lb/MMBtu basis, wood stoves release significantly more particulate matter than Ryegate as a result of the oversized electrostatic precipitator required to meet Vermont's more stringent limits on particulate matter. The EPA Standard of Performance for New Residential Wood Heaters includes a .15 lb/MMBtu limit on particulate emissions for cord wood stoves, while Ryegate is subject to a .0007 lb/MMBtu standard.*

**Asthma is definitively linked to particulate matter pollution and as mentioned above, Ryegate will emit particulate matter at a rate higher than a 50 year old coal plant.**

**<https://www.sciencedirect.com/science/article/pii/S095461115001870>**

**American Lung of VT Opposed to biomass:  
[www.maforests.org/ALA%20Vermont%20Biomass%20Testimony.pdf](http://www.maforests.org/ALA%20Vermont%20Biomass%20Testimony.pdf)**

**American Lung of MA Opposed to Biomass  
[www.maforests.org/ALA%20Support%20of%20Greenfield%20Biomass%20Moratorium%20Bylaw.pdf](http://www.maforests.org/ALA%20Support%20of%20Greenfield%20Biomass%20Moratorium%20Bylaw.pdf)**

**Doctors Against Biomass:  
[www.maforests.org/health-organizations-letter-biomass.pdf](http://www.maforests.org/health-organizations-letter-biomass.pdf)**

**Biomass Health Impacts, Hampshire District Medical Society:  
[www.maforests.org/HDMS.pdf](http://www.maforests.org/HDMS.pdf)**

**Biomass Health Impacts, Physicians For Social Responsibility:  
[www.maforests.org/PSR.pdf](http://www.maforests.org/PSR.pdf)**

**Biomass Health Impacts, Grave Concerns:  
[www.maforests.org/GrRec420.pdf](http://www.maforests.org/GrRec420.pdf)**

*All of the logging activity associated with supplying the plant with wood chips are done under the supervision of a forester on staff at the plant and the Vermont Department of Fish and Wildlife. The Ryegate forester reviewed Mr. Matera's comments and andnoted that he would not condone the harvests Mr. Matera shows in his pictures.*

**It is good to hear that the forester would not condone such clearcutting, but the real question is whether he would even know the chips were coming from such jobs and if so would reject them? Very unlikely on both counts.**

*Mr. Matera speaks of a "hurricane of logging" in the Green Mountain National Forest (GMNF). As shown by the accompanying Decision Notice and Finding of No Signifcant Impact(October 2016) logging operations in the GMNF are scientifically based and subject to public comment prior to proceeding. As can be seen, there is a significant amount of time and work that goes into each of the harvests to ensure that the planned work takes into account the multiple uses the forest offers, protects and improves wildlife habitat, and maintains water quality. In short, Mr. Mater's statements are misleading.*

**Yes, a hurricane of logging is indeed coming to our cherished Green Mountain National Forest. About 40,000 acres of cutting are currently planned and about 75% of that is clearcutting in all but name. Of course the Forest Service self-certifies that what they themselves are doing has “no significant impact”. The fox is guarding the henhouse. For a view of the type of logging coming to Green Mountain National Forest, see the exact same clearcutting occurring in White Mountain National Forest, all claimed to have “no significant impact” by the Forest Service themselves.**

<http://www.maforests.org/WMNF.pdf>

**Here again is the planned logging in GMNF:**

<http://www.maforests.org/VERMONTCLEARCUTTING.pdf>

*In terms of the value delivered to Vermont’s economy, Ryegate supports 21 full time jobs at the facility with more than \$1.8 million in annual salary and benefits. Additionally, approximately 250 individuals are directly employed in the production of wood chips supplied to the plant. More than 40 different logging companies supply Ryegate with wood. The plant purchases 250,000 tons of wood per year at a cost of \$7 million. That money not only helps support Vermont’s hard hit forest products industry but also benefits owners of tracts of forest land and thus provides those owners with an incentive to keep their forest land tracts intact. In sum, the economic benefit of continued operation of the Ryegate plant is significant.*

**This is the real reason for the proposed Ryegate extension, a public subsidy for the timber industry despite the fact that cutting and burning forests for electric is the biggest possible waste of resources considering that these plants burn at 23% efficiency. This means for every 4 trees cut and burned, only 1 makes energy.**

**We as a society need to make a decision whether to spend our money subsidizing the most carbon polluting source of energy or if we should instead use our money for genuinely green action and walk the talk of our claimed concern for the climate.**

**The inflated job numbers Mr Zwicky cites are only partially tied to Ryegate. The \$5 million in subsidies to Ryegate could be much better spent supporting 100 clean energy jobs like they are meant to do, rather than 21 jobs directly to Ryegate continuing to pump 250,000 tons of carbon into the atmosphere each year.**

*Finally, it is stressed that the Ryegate plant is a baseload renewable energy plant. The other sources of renewable energy in Vermont—wind and solar—are intermittent in nature. While wind and solar power are beneficial and are an important part of the state’s power portfolio, there will always be a need for base load power. The alternative sources of baseload power are nuclear, fossil*

*fuel or large scale Canadian hydro power. All of those sources of baseload power are located outside of Vermont and have significant, negative impacts. In contrast, the Ryegate plant is in Vermont and utilizes a renewable fuel that is grown in Vermont.*

**Ryegate provides 2% of the generation capacity in Vermont and 0.06% of the New England grid generation capacity. The electric produced from the grid is many times cleaner than Ryegate, so replacing the Ryegate power with grid power, or better yet, solar with storage, or improved efficiency and conservation, would improve the NE grid carbon footprint, which after all is the supposed intention of a genuinely “green” energy policy.**

Sincerely,

**Chris Matera PE**  
**Massachusetts Forest Watch**  
[www.maforests.org](http://www.maforests.org)  
**413-341-3878**

On Thu, Feb 4, 2021 at 11:02 AM Chris Matera <[christoforest@gmail.com](mailto:christoforest@gmail.com)> wrote:  
Dear Vermont Senate Committee,

Please accept these comments regarding: ***"S. 1 - An act relating to extending the baseload renewable power portfolio requirement"***

1. The carbon footprint of Ryegate (and biomass power plants in general) is 50% higher than a coal plant and 250% higher than a gas plant per unit of energy produced. See page 3 here for the comparison of an old coal plant (now closed) to brand new biomass with the best pollution controls:

<http://www.maforests.org/VermontBiomassBiomess.pdf>

2. Ryegate (and biomass power plants in general) pollute even worse than coal plants for many conventional pollutants such as particulates. The same document compares pollutants between the same old coal plant with new biomass plants with the most modern pollution controls. See page 3:

<http://www.maforests.org/VermontBiomassBiomess.pdf>

Vermont already has among the highest asthma rates in the country.

<https://learn.uvm.edu/blog/blog-health/asthma-rates-in-vermont>

3. The 250,000 tons of wood demand from Ryegate is a significant source of pressure on area forests, and now Vermont is also planning on doubling wood burning by 2030. The greater the wood demand, the greater the forest ecological impacts. Logging does not "help" forests, it degrades them:

[http://www.maforests.org/Timberspeak-Timber\\_Industry\\_Propaganda.pdf](http://www.maforests.org/Timberspeak-Timber_Industry_Propaganda.pdf)

For a look a sampling of the clearcutting currently occurring across Vermont, and the proposed hurricane of logging coming to Green Mountain National Forest, please see this link:

<http://www.maforests.org/VERMONTCLEARCUTTING.pdf>

None of my statements above are meant to defend fossil fuels, but are used to show just how dirty biomass energy really is, and to demonstrate how hypocritical it is for Vermont to pretend it cares about the climate as it subsidizes what is essentially one of the most carbon polluting sources of energy that exists, just because it is "local".

Keep in mind, coal is "local" to West Virginians.

Why not instead use the \$5 million in annual subsidies to Ryegate to employ people restoring nature instead of degrading it and installing genuinely clean energy solutions such as solar, geothermal, micro-hydro, efficiency, etc, and thus walk the climate talk?

\$5 million would support 100 jobs at \$50,000 salary, instead of the 20 jobs currently at Ryegate.

Sincerely,

Chris Matera, PE  
Massachusetts Forest Watch  
[www.maforests.org](http://www.maforests.org)  
413-341-3878