From:	Richard Hopkins
To:	Lazorchak, Jane
Cc:	jduval; Smythe, Collin
Subject:	Comments for Steering Committee, about Biomass Task Group Report
Date:	Tuesday, May 16, 2023 2:49:34 PM
Attachments:	Rooney-Vargas presentation pdf Sept 14.pdf Sterman et al Does wood bioenergy help or harm the climate 2022.pdf image001.png

Jane, p[lease pass these comments on to the Steering Committee, alongside those from Vermont Climate Council members.

These comments reflect my experience as a member of the Council's Science and Data Subcommittee and of the Biomass Task Group, but are my own and have not been vetted with either of those groups.

I have watched the video recording of the recent full Council meeting devoted to a consideration of the Biomass Task Group's report that recommended either phasing out our two wood-burning electric power plants, or studying how to close them.

At least two Council members made similar strong arguments against closing the McNeil and Ryegate plants, that were based on a concern about the source of electrical power that would replace power from those plants. In particular, the replacement electrical power would have to be bought from the New England grid, and would thus be higher in GHG content than the existing Vermont mix and higher, it was asserted, than that produced by McNeil and Ryegate currently. Essentially, that closing those two plants would be a step backward, not forward, in our attempt to reduce GHG emissions.

The Biomass Task Group heard from many professional and academic experts. In the end for me the most convincing presentation was made by Dr. Juliette Rooney-Vargas and colleagues from UMass Lowell, referencing a related body of work led by her and Dr. John Sterman from MIT's Sloan School of Management. In essence they concluded that electricity made by burning wood had just as high a GHG impact as electricity made by burning coal. Since coal is the dirtiest of our fossil fuels, electricity made from burning wood would have even more GHG impact than electricity made from burning fuel oil or natural gas. You may not like the conclusion, but please read Dr. Sterman's very comprehensive paper (attached below) before you reject its conclusions.

Suppose for a moment that the McNeil plant burned coal, rather than wood — which is what the conclusions of Sterman's work would imply is the right frame of reference. Then the replacement electrical power from the New England grid would likely have lower GHG impact than McNeil's own current output does, and as the NE grid continues to reduce its CO2e content per megawatt-hour, that difference would only get greater.

This is a place in the Council's deliberations where the science actually makes a big difference. What is one's best assessment of the truth about burning wood for electricity generation? If you believe its impact is much lower than from burning fossil fuels, that takes you in one direction. If you believe it is as dirty as coal, that leads you in a different direction. In the end the Biomass Task Group was concerned enough about the GHG impact of burning wood for electricity generation that we recommended not building any new such plants, not

expanding existing ones, and studying either whether or how to phase out our two existing plants.

In assessing the GHG impact of district heat using waste heat from the McNeil plant, it is important to be clear on what the counterfactual is. While extending steam or hot water heat to buildings in Burlington seems to replace heating with natural gas or fuel oil, those are not the only alternatives. Could those buildings be heated for example with truly renewable electricity from solar or wind installations, perhaps using geothermal heat pumps supported by battery backup? In any case, if the McNeil plant's energy output is actually very carbon intensive, would that steam or hot water be as 'renewable' as has been hoped?

Thanks for reading this far. I am sure that Dr. Stenman or Dr. Rooney-Vargas would be glad to come talk to the Steering Committee, the full Science and Data Subcommittee, or the full Council about their findings with respect to burning wood for electricity.

Here is the link to the September 14, 2022, meeting of the Biomass Task Group where Dr. Rooney-Vargas and her group presented to us. https://www.youtube.com/watch?v=9O9Q4cPLgCo We were to have a followup presentation by Dr. Sterman, but illness required him to cancel his appearance.

I believe this issue is not settled yet. One aspect of next steps could be to assign someone the job of summarizing and synthesizing all the presentations made to the Biomass Task Group over its one year plus of work. That work should probably be done under the supervision of the Science and Data Subcommittee, or by a small group of its members, in consultation with other subcommittees as necessary..

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> On May 11, 2023, at 4:33 PM, Lazorchak, Jane <Jane.Lazorchak@vermont.gov> wrote:
>
> Hi Richard,
>
> Yes, that is correct. I have been collecting comments and feedback from Councilors in the meantime too.
>
> Thanks,
> Jane

VERMONT

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From: Richard Hopkins <hopkinsrs@comcast.net>
Sent: Thursday, May 11, 2023 4:18 PM
To: Lazorchak, Jane <Jane.Lazorchak@vermont.gov>
Subject: Re: Steering Committee of VT Climate Council

So, the proposed resolution from the Biomass Task Group will go to the new steering committee for consideration as to next steps?

Thanks, Jane.

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