

Comments submitted by Peter Sinclair PhD

Case number 24-3359-INV

Filing date 2.12.25

Investigation of the standard-offer contract between Vermont Renewable Gas and the Standard Offer Facilitator

I appreciate the opportunity to present comments on the application by VRG to build a plant that will generate electricity and make biochar in Lyndon, Vermont. The current issue focuses on questions and requests for briefs by the PUC to the company, concerning their eligibility for Standard Offer status. Testimonies and briefs have been submitted by the company and some agencies. Some of the company's responses are outside the subjects of the specific requests made by the PUC. However, there are important issues still to address in the company's responses and the safety of the proposed plant.

I have a PhD in biochemistry and chemistry and for 30 years I did basic research in biochemistry and toxicology at the VA in White River Junction. I also taught biochemistry and toxicology at Dartmouth Medical School. I became interested in the problem of biomass plants generating electricity when the Ryegate biomass plant was proposed in the 90s. The proponents of that plant promised the people of Ryegate that nothing would come out of the chimney except carbon dioxide and water. I suspected this was misleading information and we now know that the Ryegate and McNeil plants make tons of potentially toxic volatile carcinogenic polycyclic aromatic hydrocarbons, as well as carbon dioxide. In those days, carbon dioxide was not regarded as a problem. Because of this prior experience, I have come to view the claims of VRG for their proposed plant with some scepticism.

Firstly, I want to say that I fully endorse all the comments submitted already by Dr. Rachel Smolker. I will briefly summarize these, and

add my own comments.

1. Dr Smolker stated that regardless of whether the feedstock is farm-based or biomass, it is woody biomass. She raised the issue whether there would be sufficient supplies of Christmas trees or cured trimmings, etc. to satisfy the requirement that 51% requirement of the feed stock be farm-based. It is still unclear to me what the other 49% of the feedstock will be, and how it differs from what VRG calls farm-based.

In addition, the brief from the Department of Public Service says that additional information and input from participants is essential to determine whether the pyrolysis concept fits the intended scope and purpose of the farm methane category.

2. Dr Smolker questioned the feasibility of this plant. She said that attempts to create such plants have failed so far. In addition, I find that, in their submitted information, VRG does not seem to address the feasibility of such a plant at all. It is not clear how much of the technology for each part of the plant actually exists already. There is vague reference to “requisite experience in developing such projects in Europe”. If such plants do not already exist, then I question the data VRG gave in response to the question from the PUC about the composition of the gases produced from the pyrolysis. For example, they say the gas composition will be 27 % methane, 30 % carbon monoxide and 36 % hydrogen. What are the sources of these values ? Dr. Smolker said that more information about such facilities should be provided to the PUC concerning effectiveness, efficiency and safety, and I agree.

3. The question of the benefits of generating biochar. Dr. Smolker says this was not a question addressed by the PUC at the present stage of the process, but the company’s testimony includes a lot of information claiming many benefits of biochar. Dr Smolker pointed out that the use of biochar in agriculture remains controversial. Depending on the way that the biochar is prepared, in particular the

temperature of the pyrolysis procedure, carcinogenic polycyclic hydrocarbons can be produced and released into the soil when used. Also the feedstock material may contain toxic heavy metals that can also be released to the soil. VRG does not indicate whether there might be a market in Vermont or elsewhere, and how big this market might be for biochar produced in the proposed plant.

I would add that VRG has said over and over again that this will be a carbon sequestering plant. But according to documents submitted by VRG, only 15% of the carbon from the wood they will pyrolyze will end up as biochar. Most of the rest of the carbon will be going up the chimney as carbon dioxide. They also say several times they are removing carbon dioxide from the atmosphere when in fact they are adding to it (14,000 tons a year, according to their Air Permit). If only 15% of the wood carbon is going into stable biochar, then this sequestration is relatively minor.

I want to address the safety issue. Firstly, if such plants have not operated elsewhere, why was it decided to put an experimental plant into an industrial park near other businesses, a walk-in medical clinic and a daycare center. The company says they will monitor the plant at various points in the process mainly temperature and pressure. Apparently, they will not monitor the amount and types of the gases being emitted. According to their Air Permit, they are only required to report on composition of gas emissions every six months to the State. This seems to me to be a safety issue that needs attention.

It is not clearly stated what VRG considers is the major product of the proposed plant, is it electricity or biochar? I agree with the DPS and Green Mountain Power that the high cost of electricity generated by this plant could be a burden for the taxpayer.

My overall concern is that there are still important issues that need to be discussed before the PUC should approve this plant for Standard Offer designation or for a Certificate of Public Good.

