

Q.VGS.INTERVENORS.1-7: Please refer to Page 10 of Dr. Grubert's Direct Testimony discussing carbon intensity scores.

- a. Admit that Vermont does not have an approved model carbon intensity scoring methodology.
- b. In the absence of an approved model carbon intensity score, what existing model would you recommend to assess this Contract?
- c. Admit that because the transportation distance from Seneca is lower and that "likely results in lower transmission pipeline-stage methane," the carbon intensity score for this RNG is likely lower than the score stated by VGS under CARB's GREET model.
- d. Admit that removing the "CNG compression" assumptions from the GREET modelling also decreases the carbon intensity of this source.
- e. Produce all calculations, analysis, workpapers, and documents supporting your statement that "distribution, metering, and end-use emissions could be higher in the Company's use context than in a California CNG context."

A.VGS.INTERVENORS.1-7:

- a. I object to this interrogatory as irrelevant, as I am commenting on the appropriateness of the estimate and not the comprehensiveness of preexisting models. The Company asserts that this contract will result in reduced GHG emissions; my testimony states that the estimate used to defend this assertion is inappropriate for the actual use case. I am not aware of whether Vermont has an approved model carbon intensity scoring methodology.
- b. I object to this interrogatory as irrelevant to the question of whether the method the Company used to assess this Contract is appropriate for evaluating actual GHG emissions in Vermont.
- c. As I stated in my testimony, methane emissions associated with transmission pipeline transportation are likely lower for this RNG than the value used for CARB's CNG scenario, although I did not receive CARB's full calculations. The life cycle emissions might or might not be lower. As described by the city-level project "The Gas Index,"⁷ transmission pipeline transportation accounts for a highly variable share of overall methane emissions associated with natural gas (in that case, fossil gas: values for production would be expected to be different for RNG, but the other life cycle stages should be the same assuming shared infrastructure) and rarely dominates post-production life cycle emissions. Notably, according to "The Gas Index," Burlington, Vermont is a relatively rare example where transmission pipeline-associated methane emissions account for the large majority of post-production methane emissions – suggesting that Vermont's transmission system might actually be relatively more emissive than is typical.
- d. As stated in my testimony, CNG compression emissions are likely not relevant for most of the Company's planned use cases, and as such the share of overall

⁷ <https://thegasindex.org/>, last accessed 9/9/2022.

GHG intensity for this RNG associated with the unit process "CNG compression" would likely be lower.

- e. I object to this interrogatory as overly burdensome because it seeks information not available to me. I do not have access to the full calculations underlying the CARB estimate the Company has adopted and thus cannot comment precisely on the likely differences. My statement was that such emissions could be (but are not necessarily) higher. The reason is that an industrial user like a CNG producer might not make extensive use of distribution systems, especially low pressure distribution systems, or gas meters on low pressure systems, whereas I assume these life cycle stages are common for the Company's customers. End use emissions are fundamentally different for different end uses.

Respondent: Dr. Emily Grubert
Title: Witness for Catherine Bock
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