

From: Science & Data Subcommittee

To: Vermont Climate Council

Subject: Recommendations Regarding Greenhouse Gas Inventory and Supplemental Accounting

Dear Councilors,

The Science and Data subcommittee has reviewed the paper titled, “Greenhouse Gas Inventory Review: Vermont’s Current Methods, Comparison with Accepted Practices, and Recommendations” submitted by technical consultant Energy Futures Group (EFG).

We are pleased to forward this thorough, careful report for your review, agree with its recommendations, and recommend its adoption.

Specifically, we agree that, at least for purposes of this first iteration of the Climate Action Plan, the Vermont Climate Council and State of Vermont should:

- 1) Maintain and continue to update and improve the current sector-based (or in-boundary) Greenhouse Gas (GHG) Inventory methodology, for consistency and alignment with the Intergovernmental Panel on Climate Change (IPCC), Environmental Protection Agency (EPA), and peer states, as appropriate.
- 2) Continue to report on gross emissions (i.e., sources of emissions, for compliance with the Global Warming Solutions Act, or GWSA), while also working to improve how we track and report net emissions, including emissions sinks. Note that recommendations about the carbon budget and net emissions tracking (inclusive of how to better estimate carbon sinks) will be forthcoming at a later date, as part of the “Task 2” carbon budget effort.
- 3) Include supplemental information and sensitivity analyses as part of the next published GHG in-boundary inventory. Specifically, this should include (but not be limited to):
 - a. Biogenic greenhouse gases
 - b. Additional analysis of global warming potential of greenhouse gases, including but not limited to GWP20 in addition to GWP100.
 - c. Latest IPCC Assessment Report values (i.e., AR5 and eventually AR6, not just AR4).
- 4) Maintain Renewable Energy Credit (REC) accounting as the basis for calculating electricity sector emissions (i.e., emissions from our purchase and consumption of electricity and associated RECs, as tracked through the New England Power Pool Generation Information System (NEPOOL GIS) and not exclusively from electricity generated within our borders) for VT’s GHG emissions inventory. We concur with the EFG recommendation to use the most accurate REC values available for the region, perhaps using the REC settlement information compiled by the Massachusetts Department of Environmental Conservation.
- 5) Adopt key category analysis for future inventories.

Additionally, we recommend the following next steps:

- 1) Develop and issue one or more Request(s) for Information (RFI) regarding questions related to

- a. Conducting upstream and/or lifecycle accounting of emissions related to the use of energy in Vermont, including those emissions that occur outside the boundaries of the state, as called for in section 578(a) of the GWSA. Note: this should include emissions related to *all* energy use (including but not limited to fuels used for transportation and heating), not just electricity.

This should include a discussion and recommendation of the appropriate bounding/boundaries for such an upstream and/or lifecycle analysis and an assessment of the resources that may be necessary to conduct the analysis.

- b. **Methodological gaps of emission inventory tools currently used by the State of Vermont to quantify greenhouse gas emissions for evaluating changes in the agriculture and related land use sectors and the tools' alignment with the Intergovernmental Panel on Climate Change (IPCC), Environmental Protection Agency (EPA), and peer state methodologies and approaches.**
- 2) Once RFI responses have been received and reviewed, the Science & Data subcommittee along with Agency of Natural Resources (ANR) leadership will identify next steps for designing and conducting an upstream and/or lifecycle accounting of emissions related to the use of energy in Vermont.

It will be important that the resulting work product(s) capture assumptions and methods transparently and be built in an accessible, flexible, and updatable manner, such that the Agency of Natural Resources is then able to steward and update the accounting going forward, with regular publication alongside the annual in-boundary Inventory.

This upstream and/or lifecycle accounting is envisioned to generate supplemental analysis that would stand alongside—but not replace—our current in-boundary GHG inventory. This new and supplemental accounting would function as a decision aid, helping to ensure that Vermont achieves a fuller understanding of the emissions that we can fairly be understood to be responsible for and options for reducing such emissions (even if they occur out of state), while also helping to avoid unintended consequences (for instance, the possibility of pathways, strategies, or actions that could reduce in-boundary emissions but increase out of state emissions).

We recognize that implementing these recommendations, particularly those related to upstream and/or lifecycle accounting, will require additional resources. In the near term, this would include funding for contractor support; in the medium and longer term, sufficient ANR staffing and resources would be necessary to enable ongoing and expanded work regarding Vermont's Inventory and supplemental GHG accounting methods.

Given that any new upstream and/or lifecycle accounting will not be completed by the due date for the initial Climate Action Plan (CAP), we recommend assessing mitigation pathways and strategies for the CAP, as possible, via available sensitivity analysis with reference not just to our existing in-boundary inventory but also with reference to information that is presently available regarding upstream or lifecycle emissions assessments for various fuels.

We look forward to better understanding the role that supplemental accounting for upstream and/or lifecycle emissions related to energy usage may play in future updates to the CAP, informing and refining our assessment and prioritization of mitigation pathways, strategies, and actions. To ensure

that we achieve our State goals, it is vitally important that our tracking methods are transparent, accurate, and comprehensive. We believe that our recommendations build on good work to date. Additionally, we believe that the design of the most effective mitigation pathways, strategies, and actions should account for the full array of GHG emissions for which Vermont can be fairly understood to be responsible.

Thank you,

Science & Data Subcommittee Members

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