Memorandum

To: Jane Lazorchak, Director of Global Warming Solutions Act

From: David Hill and Dan Mellinger, Energy Futures Group, and Liz Hanson, Cadmus

Subject: Vermont Climate Action Plan Monitoring and Evaluation Database

Date: November 2, 2021

Background

Vermont's Global Warming Solutions Act (GWSA) prescribes a series of aggressive greenhouse gas reduction requirements, in line with what science demands to stave off the worst impacts of climate change. The Vermont Climate Council (VCC) is preparing to release its first Climate Action Plan (CAP) to meet these requirements in an equitable, cost-effective, and technologically feasible way, while also sequestering carbon, protecting natural and working lands, and increasing resiliency. As part of the CAP, the VCC must set forward a framework for assessing progress towards these aims.

Specifically, the GWSA requires that the state track key components of its climate program, including:

A.   The State's greenhouse gas emissions and progress towards meeting reduction requirements;
B.   The effectiveness of the initiatives, programs, and strategies set forth in the CAP;
C.   The effects of climate change on the State's climate, wildlife, and natural resources; and
D.   Progress towards improving existing resiliency of the State's communities, infrastructure, and economy to current and anticipated effects of climate change.

Vermont is fortunate to have a solid foundation to inform this work. Vermont's Energy Action Network (EAN) has long maintained a Vermont Energy Dashboard. EAN's dashboard aggregates efficiency, heat, electricity, and transportation measures implemented at the state and local level in support of Vermont's goal to achieve 90% of its energy needs through increased efficiency and renewable sources by 2050. In addition, the Department of Public Service (DPS), in partnership with EAN, has just completed a process to map data flows in the energy sector and conduct stakeholder engagement sessions on a data infrastructure pilot to be advanced in conjunction with Vermont's Department of Digital Services. Any database developed in support of the CAP can and should be pursued in conjunction with this effort.

This memo seeks to summarize ongoing discussions on how Vermont can track progress on the actions, strategies, and pathways that are intended to drive progress on Vermont's CAP and inform next steps for database development.

Tracking Objectives

As Vermont seeks to issue its first CAP, members of the Task Force on Monitoring and Evaluation are eager to see the State develop a data infrastructure that can help inform future decision-making on the policies, programs, and initiatives needed to mitigate the impacts of climate change. With regards to the GWSA requirements listed above, they anticipate that a CAP Monitoring and Evaluation Database (database) should:

- Demonstrate progress on meeting emissions reductions requirements (per Requirement A), which should be achievable in the near-term based on the GHG inventory baseline and existing data sources.
- Demonstrate progress on increasing resiliency (per Requirement D), which will require the development of a resiliency baseline and the collection of new data by which the State can measure impacts on communities, infrastructure, and the economy.
- Provide data with which the State can conduct impact evaluations, to ensure compliance with the requirement to evaluate the effectiveness of programs (Requirement B).

The Task Force does not recommend that the database be utilized to measure the effects of climate change on the State's climate, wildlife, and natural resources (Requirement C). Instead, they recommend this remain under the jurisdiction of the Vermont Climate Assessment. Future discussion on how these two resources should be coordinated is warranted.

Based on these objectives, the Task Force has identified four primary goals for the Database, discussed in detail more below.

1. **Policy-Decision Support Tool:** Support the State and its partners in making climate policy decisions with best available information.
2. **Sustainable Data Management:** Streamline and coordinate relevant data and reporting across multiple private and public entities.
3. **Open and Accessible Data:** Provide access to key data sources to organizations and members of the public engaged in climate action that wish to utilize Vermont's data to support their work.
4. **Public Education:** Inform the public about progress on achieving GWSA commitments, including emissions reductions, sequestration, adaptation, resilience, and equity.

Policy-Decision Support Tool

The accelerated pace at which Vermont will need to implement the strategies and actions in the CAP is imperative for meeting the reduction requirements in the GWSA. While the State's GHG Inventory provides essential insights into Vermont's GHG emissions over time, the data sources upon which it relies inherently means that there will always be a lag in its production. To support policy-decision makers in implementation of the CAPs, which must be updated every four years, the Task Force anticipates it is essential that a database provide more close-to real-time data on key implementation metrics than is currently feasible through the Vermont Greenhouse Gas Inventory. This will mean, for example, the database will be structured to accept regular real-time updates on activities from implementing organizations and published with minimal lag. It will be important to have the Database and Inventory remain aligned over time, where applicable and feasible. Where not, it will be essential that the VCC and that State articulate the methodological differences that cause any varying results and what insights, if any, policy makers and the public should draw from those variation.

To support the development of policy, the Task Force recommends that a logic model be used to help clearly articulate the ways in which the data being collected and reported relates to the goals of the CAP. This will require mapping backwards from the outcomes intended from the policies and strategies delineated in the CAP to the key metrics that must be achieved; to the data with which the State can evaluate progress; and finally, to the data which are available (now or in the future) from implementing organizations and state agencies. For example, to track and report on a Clean Heat Standard, it would be

necessary to keep track of the levels of activity across multiple strategies, such as heat pump installations, weatherization and increased consumption of biofuels blends. This would also be supported by select impact evaluations, for example to better understand the energy and emissions impacts and costs from each measure as they are installed and used by customers.

Sustainable Data Management

The responsibility for implementing the CAP strategies and actions is likely to span Vermont's agencies and include numerous outside parties. It is therefore essential to create an infrastructure for sustained coordination on data sources. This will not only allow for ease of reporting by responsible parties, it will also support data managers across Vermont state government to share resources that can and should inform key decisions.

Open and Accessible Data

The Task Force recognizes that while the database cannot be all things to all people, actors across Vermont are going to wish to use the data to inform their own decision making. The Task Force recommends that while the database be constructed in a manner that primarily supports State policy design, that it also be structured in a manner that ensures the data is open, accessible, and exportable whenever legally permissible. This is intended to ensure that users can utilize this important data set to conduct their own analysis to suit their needs.

Public Education

A final goal of the database is to create a narrative for the public from the numbers. To this end, the Task Force recommends that the database be built with the long-term goal of data visualization in mind. In particular, it will be important for the database to support the development of key findings and graphics for the first update of the CAP in 2025.

Recommended Development Steps

The Task Force anticipates a series of steps will be necessary to develop the database:

- **Logic model and metric creation**: once the pathways, strategies, and actions in the CAP are adopted by the VCC, the Task Force recommends that database development begin with mapping the logic models for how Vermont anticipates achieving greenhouse gas reductions, as well as increases in sequestration, resiliency, and equity. As part of these models, the key metrics through which Vermont anticipates driving changes should be clearly identified.
- **Data mapping**: With these logic models and metrics in place, it will be possible to map the data sources and flows that currently exist, as well as identify gaps in data that will need to be filled. This process should include reviewing work done to date by DPS and EAN to determine the best way to align their efforts with database development efforts.
- **Infrastructure recommendation and development**: A database infrastructure will be selected and developed based on the objectives and goals listed above, with both near-term and long-term priorities in mind. To the extent possible, this should create sustainable long-term engagement across state agencies managing data to efficiently aggregate data that already exists, rather than developing new reporting or input requirements for staff or reporting entities and be built with readily available tools, so that it is accessible to a wide variety of users.

- **Testing and iteration**: Once developed, the Task Force anticipates it will be important to continue iterating on the database to ensure stakeholder feedback improves its usability over time.

Conclusion

Ensuring that Vermont is making swift and steady progress towards action on the GWSA will require that decision-makers across Vermont state government and its CAP partners have access to up-to-date information on the key metrics anticipated to drive change in the CAP. The Task Force recommends prioritizing this key use case in the near-term, while also ensuring the data is open and accessible to anyone that wants to utilize it and, ultimately, presented in an easily digestible format for the public.