

Vermont Climate Council
Report to the General Assembly
January 15, 2024

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Introduction

This report is required by §591 of the [Vermont Global Warming Solutions Act \(GWSA\) of 2020 \(Act 153\)](#) enacted by the Vermont Legislature on September 24, 2020. The Act requires the Vermont Climate Council (VCC) to report on its activities and progress towards meeting the greenhouse gas reduction requirements in the Act. Understanding that this is an annual report and intended to support the Legislature, we invite the Legislature to provide feedback on the report and recommendations for the Council to consider around what you'd like to see included or removed from future reports.

Background

Core elements of the GWSA include:

- Codifying Vermont's greenhouse gas (GHG) emission reductions goals as statutory requirements and providing an explicit cause of action should the State fail to adopt sufficient measures to achieve the statutory requirements. The requirements are:
 - Not less than 26% from 2005 greenhouse gas emissions by January 1, 2025;
 - Not less than 40% from 1990 greenhouse gas emissions by January 1, 2030; and,
 - Not less than 80% from 1990 greenhouse gas emissions by January 1, 2050.
- Establishing the Vermont Climate Council (VCC), responsible for the development of a comprehensive Climate Action Plan

The VCC is comprised of 23 members, including eight ex-officio members of the Executive Branch, eight members appointed by the Speaker of the House, and seven members appointed by the Senate Committee on Committees. Given the breadth and complexity of the Council's work, the VCC established a Steering Committee to guide the overall process and ensure progress of the work across Subcommittees. The Steering Committee is comprised of two individuals from among the Council's Executive Branch members and four individuals from among the VCC's members who were appointed by the legislature (two who were appointed by the House of Representatives and two who were appointed by the Senate). The members of the Council and its Steering Committee, along with Councilor's biographies, are all available on the Climate Action Office's [website](#). The website is maintained by the Agency of Natural Resources (ANR).

The GWSA charged the VCC with adopting the "Vermont Climate Action Plan by December 1, 2021, and submitting an updated plan at least every four years thereafter, and identified the following elements that must be included in the Plan:

- Strategies and programs to achieve the GHG emissions requirements established in §578 of the GWSA and adopting them in the Vermont Climate Action Plan by December 1, 2021;
- Strategies and programs that build resilience and prepare the State to adapt to the current and anticipated effects of climate change;
- Means to measure the State's progress towards meeting the greenhouse gas emissions requirements; and,
- Guidance to the Vermont General Assembly and the Secretary of the Agency of Natural

Resources on legislative and regulatory changes necessary to implement the Plan. In §591(b), the GWSA also established specific steps to be taken by VCC in developing the Plan, to include:

- Completing inventories of existing programs to reduce GHG emissions and build resilience;
- Identifying new strategies and programs that will be needed to meet GHG emission requirements and improve resilience;
- Developing financing strategies to support implementation of the work;
- Developing a monitoring strategy for tracking implementation efforts and assessing program effectiveness; and,
- Providing guidance to the Secretary of Natural Resources on rules needed to support implementation.

In addition, as identified in §592(d), the specific initiatives, strategies and programs identified in the Plan must further the following objectives:

- Prioritize the most cost-effective, technologically feasible, and equitable GHG emissions reduction pathways, adaptation and preparedness strategies;
- Provide for GHG emissions reductions that reflect the relative contribution of emissions from different sectors;
- Minimize negative impacts on marginalized and rural communities and individuals with low and moderate incomes;
- Ensure that all regions of the state benefit from GHG emissions reductions;
- Support economic sectors and regions of the state that face the greatest barriers to emissions reductions, especially rural and economically distressed regions and industries;
- Support industries, technology, and training that will allow workers and businesses in the state to benefit from GHG reduction solutions;
- Support the use of natural and working lands to reduce GHG, sequester carbon and increase resilience; and
- Maximize the state's involvement in interstate and regional initiatives and programs designed to reduce GHG emissions, and build upon state, national, and international partnerships and programs.

The VCC adopted [Vermont's Initial Climate Action Plan](#) (CAP) on December 1, 2021. As such, the VCC's work continues to be in supporting implementation and is summarized below.

Implementation Efforts

Many of the recommendations outlined in the CAP – especially those aimed at the most impactful pollution reduction and adaptation measures – will require legislative and administrative action. Regarding the legal requirements to reduce greenhouse gas emissions established in the Global Warming Solutions Act (Act 153 (2020)), the Climate Action Plan (CAP or Plan) contains three priority recommendations that were identified as “high impact” meaning that they can reasonably be expected to get Vermont more than 10 percent of the way towards either the GWSA’s 2025 and/or 2030 emissions reduction requirements. Of those three high impact policy recommendations, to date two have advanced – the Advanced Clean Cars II and Advanced Clean Truck rules which were described in the 2023 report to the General Assembly and now the Clean Heat Standard which is a main component of the Affordable Heat Act.

Furthermore, below is a full suite of legislative initiatives with ties to the CAP and their status after the 2023 legislative session.

Bill	Summary	Status
S.5 Affordable Heat Act	An act relating to affordably meeting the mandated greenhouse gas reductions for the thermal sector through efficiency, weatherization measures, electrification, and decarbonization.	Vetoed but subsequently overridden
H.126 Conservation Bill	An act relating to community resilience and biodiversity protection.	Allowed to become law
S.100 Housing Bill	An act relating to housing opportunities made for everyone.	Signed by Governor
S.112 RES Study	An act relating to miscellaneous subjects related to the Public Utility Commission.	Signed by Governor
H.479 Transportation Bill	An act relating to the Transportation Program and miscellaneous changes to laws related to transportation.	Signed by Governor

Development of Climate Action Office

In addition to policies and rulemaking, a key recommendation of the Initial Climate Action Plan was the creation of a Vermont Office of Climate Action (CAO) in the Agency of Natural Resources (ANR); funding for the CAO was included in the FY23 state budget. The CAO provides the long-term, intergovernmental structure necessary to coordinate and manage the policies, programs, and tools needed to implement climate mitigation, adaptation, and resilience strategies statewide. CAO staff are focused on supporting the implementation of mitigation, resilience, and adaptation, and natural and working lands programs and initiatives across state government, including tracking and reporting on the collective impact of the work, as well as

continued emphasis on community engagement.

To buttress coordination across state Agencies, an Inter-Agency Advisory Board (IAAB) was stood up that meets regularly. It was a priority to stand up this advisory board early in the process with the understanding it will play a critical role in the development of the Office. The IAAB is comprised of and chaired by staff from the CAO and up to two designees from the Public Service Department, the Agency of Transportation, Vermont Emergency Management, Agency of Agriculture, Food and Markets, Buildings and General Services, Agency of Human Services (Department of Children and Families and Vermont Department of Health), Agency of Commerce & Community Development, and the State Climatologist.

The objectives of this group are as follows:

1. Provide a space for proactive coordination on climate action across state government.
2. Articulate where policy and financial implications overlap around climate action to ensure resources are maximized.
3. Support the monitoring of progress over time in meeting the state's climate goals and requirements.
4. Identify and frame up gaps where the CAO might prioritize support and/or where policy changes are needed.
5. Develop state positions on issues related to climate change.

Specific progress in the CAO was made over the last year to further build out staff capacity by hiring a Community Engagement and Communications Coordinator.

Rulemaking

~~Earlier this year, the CAO engaged a contractor to reassess and update the projections of Vermont's progress in reducing climate pollution consistent with the requirements of the GWSA (report is linked and referenced in detail under the Technical Analyses section of this report). The updated modeling incorporates an improved understanding of the state and federal funding and initiatives under the American Recovery Act, the Bipartisan Infrastructure Bill, the Inflation Reduction Act, and the adoption of the clean car rules and the impact these efforts will have on reducing emissions. The final report found the cumulative impact of recent state and federal funding and rulemaking initiatives "...narrows the gap between emissions reductions projected under current conditions and those required by the GWSA..." relative to both the 2025 and 2030 climate pollution reduction requirements.~~

~~Based on the updated modeling, ANR's Climate Action Office estimates that Vermont is on track to meet the 2025 climate pollution reduction requirement mandated by the GWSA. For this reason, the Agency does not need to promulgate any additional rules before the July 1, 2024 deadline articulated in the GWSA. Actual compliance will be determined when the state produces the 2025 Vermont Greenhouse Gas Emissions Inventory and Forecast.~~

Climate Toolkit Development

The GWSA requires the Vermont Climate Council to recommend tools for municipalities to use to assess their climate preparedness, assess financial capacity to address infrastructure resilience, and prioritize investments in that infrastructure. In 2022, staff in the CAO convened a task group to design a Municipal Climate Toolkit that would help Vermont municipalities act on climate change. The task group includes representation from municipal governments, regional planning commissions, State technical assistance providers, and non-profit partners.

The intent of the Municipal Climate Toolkit is to provide a hub for existing tools, resources, and information relevant for designing and implementing climate action measures or strategies at a municipal level. Moving into 2024, work will begin with IT partners to design the Toolkit, which will ultimately be housed on the climatechange.vermont.gov website. The goal is to have the Toolkit finalized by spring of 2024.

Technical Analyses

ANR managed multiple requests for proposals and contracts this year to meet the requirements of the GWSA and support the work of the VCC. These contracts included professional facilitation services to support the VCC and Subcommittee meetings, outreach and engagement support, and specific technical analyses to inform future iterations of the Climate Action Plan and meet the remaining requirements of the GWSA. The specific technical analyses that have been completed or are underway are as follows:

1. Municipal Vulnerability Index

The development of the Municipal Vulnerability Index (MVI) is a requirement of the GWSA, and will be a user guided, geospatial mapping tool intended to help municipalities understand their vulnerabilities to climate change across a range of social, economic, and biophysical factors. The MVI will help Vermont communities identify where climate change is placing pressure on various sectors and will help inform municipal planning priorities such as hazard mitigation plans, local energy plans, and emergency management plans. The MVI will include geospatial data on climate hazards, where available, and will align the hazards displayed in the tool with the hazards identified in the State Hazard Mitigation Plan. The MVI will use climate hazard data from local datasets and those with climate projections whenever possible and will incorporate regional or national data as required. The MVI will not produce a single vulnerability score for each municipality but will include a range of indicators to help identify the presence and scale of vulnerability for particular factors.

In early 2023, ANR executed a contract with Eastern Research Group to develop the MVI. This tool will be key to support the implementation of the Climate Action Plan and will be completed in the Spring of 2024.

2. Life-Cycle Analysis of Vermont's Energy Use

As required by the GWSA, ANR has engaged a Contractor to develop a methodology for, and to complete the performance of, a life cycle analysis of greenhouse gas emissions from the use of energy in Vermont, including but not limited to electricity from fossil fuels, renewable sources (solar, wind, hydroelectric) and nuclear generation, liquid fuels including fossil and biofuels,

gaseous fuels including fossil and renewable fuels, and solid fuels including wood and other biomass. The life cycle analysis is in the process of being completed and will provide emission factors, largely from the GREET model, associated with all the upstream stages of the life cycle of each energy source, from raw material extraction and processing, through manufacture, distribution, and use, to the recycling or final disposal. Those life cycle emission factors are being applied to activity data from the Vermont Greenhouse Gas Emissions Inventory and Forecast (1990 – 2020) report (Inventory) to come up with an inventory of upstream life cycle emissions that corresponds to the categories in the Inventory to provide a more holistic view greenhouse gas emissions for the energy related components of the Inventory.

The technical work on this contract was paused for several months as outreach was performed to experts in Traditional Ecological Knowledge (TEK) with the hope that they would provide input on the analysis and the process; however, no experts contacted were available or able to provide input. Due to this pause in the technical analysis ANR is currently in the process of extending the contract through February 9, 2024.

3. Building/Thermal Decarbonization

ANR engaged a Contractor to perform an assessment of policy options to reduce greenhouse gas (GHG) emissions in the buildings/thermal energy sector in Vermont necessary to meet the emission reduction requirements of the Global Warming Solutions Act (GWSA). The assessment included an initial qualitative evaluation of a suite of potential policy options followed by a detailed quantitative evaluation of four policy options: expansion of existing programs, a performance standard/clean heat standard, cap and invest, and a package of regulatory measures. Also analyzed were the differences in cost between achievement of the economy-wide reductions in 2030 versus the cost of achieving those same reductions in 2035.

The scope of work also included an update to the baseline estimate of economy-wide emissions on a sector by sector basis. The update incorporates potential emissions reductions in the buildings/thermal energy sector and the transportation sector based on investments funded by the federal Inflation Reduction Act and the state's adoption of the Advanced Clean Cars II / Advanced Clean Trucks regulations. Incorporation of these updates results in additional emission reductions beyond those modeled in the 2021 Vermont Pathways 2.0 report.

The [report](#) was delivered in November 2023. Among its key conclusions:

- Achieving ~~the required emissions~~ reductions is made easier due to recent federal and state funding;
- However, additional programs beyond those assumed in the baseline are necessary to achieve ~~those~~ required reductions;
- ~~— The estimated net societal costs of achieving the required reductions range from 0.9% to 2.36% of total energy spending over the 30-year (2020-2050) study period;~~
- For many consumers, adopting clean heat measures will result in savings, but incentives, particularly for low- and moderate-income households, are necessary for those households to adopt such measures and realize the resulting savings.

4. Agricultural Sector Emissions and Sequestration Review

ANR has engaged a Contractor to develop a methodology and provide a recommendation for the best tool (or tools) and datasets for quantifying greenhouse gases emitted and sequestered from agricultural operations in Vermont. Identifying the most appropriate tool(s) and datasets that are as specific to Vermont as possible is crucial to accurately quantifying emissions in this sector, informing decision-making related to policies and investments that promote agricultural activities, and to evaluating conservation practices that maximize the mitigation of GHGs from agricultural operations and management strategies in Vermont.

The tools being analyzed range in their capabilities and specifics as to what data can be incorporated or greenhouse gases quantified. A matrix is being compiled to compare the tools being analyzed and weighted to reflect the priorities of Agency of Agriculture Food and Markets (AAFM) and Agency of Natural Resources (ANR) staff that will inform the recommendation of the contractor. Work is ongoing to finalize the tool comparison matrix, review data sources, and produce a documented recommendation.

This work will also provide a summary of how the Environmental Protection Agency's State Inventory Tool (SIT) modules align, or do not align, with IPCC standards for AFOLU, which will offer insights into opportunities and potential challenges in using IPCC guideline methods for Vermont in how we approach accounting for net and gross emissions from the agriculture sector. This work is ongoing, but has suffered several setbacks for the timeline, and so ANR is in the process of extending the contract end date through March 29, 2024.

5. Facilitation and Public Engagement Services

The budget for the Climate Action Office in ANR includes funding to support the ongoing facilitation and public engagement services. ANR contracted with the Consensus Building Institute for this work over a four-year period. In addition to facilitation services for the VCC, this contract will support both public and community engagement. Specifically, the Contractor will support public meetings to engage Vermonters in the implementation of the 2021 CAP. The State is considering additional broad-based events this year based on federal funding opportunities. The focus of these "listening sessions" will be on the substantive areas of ongoing work to inform the Plan, anticipated legislative priorities, implementation of Plan priorities, and other topics identified through public and focused partner engagement.

The Contractor will also support targeted outreach with partner organizations and directly with community members. The focus will be to build relationships that will allow more Vermonters to get involved on climate related issues. The approaches, which will vary depending on the community and potential partner organization, will aim to meet people where they are, improve awareness around relevant climate actions, and identify and understand priority issues for those communities related to climate action. The goal is not to immediately "get feedback" on the Plan, but rather create conversations that can be sustainable over time around climate action issues – how we heat and cool our homes, how we get to work and move around the state, how we use the land around us, how our families prepare for, and react to, threats such as flooding and heat waves. This work is being coordinated closely between staff in the CAO and Civil Rights

and Environmental Justice Unit.

6. Development of the Measuring and Assessing Progress Tool

The GWSA develops an ambitious timeframe and scope of work to reduce emissions of greenhouse gases and address climate action in Vermont. The first objective was the development of the Initial Plan, which identifies specific initiatives, programs and strategies necessary to achieve the State's greenhouse gas (GHG) emission reduction requirements, enhance carbon storage and sequestration, achieve net zero emissions by 2050, and build resilience and adaptation in our natural systems and built environment.

The CAO is now advancing the development of a tool to measure and assess indicators of progress related to reducing GHG emissions and increasing resilience and adaptation to a changing climate in Vermont, as well as the implementation of actions in the CAP. The RFP, which closed in November 2023, covers the first phase of this project related to determining which metrics and indicators to track, the formation of a data governance team, determining data sources and availability and how to fill any data gaps for the chosen metrics. Phase 2 of this project, which will be a separate and subsequent RFP, will encompass the actual creation of the Tool itself to incorporate all the data and information on metrics and indicators identified in phase 1.

The development of the Measuring and Assessing Progress (MAP) tool is a cornerstone of the work of the CAO and will be a core function of the Office. The MAP will support communications with Vermonters and the development of reports, such as the legislative report, over time.

Public Engagement

The objectives of our ongoing climate action outreach are:

- **Enhance awareness** around climate action efforts in the state, with a particular focus on communities experiencing climate impacts and communities particularly impacted by climate policy
- **Lift up the voices and viewpoints of communities** into the implementation of climate-related initiatives and the ongoing work of the Climate Action Office, and other key entities, including the Vermont Climate Council, so that a diverse group of Vermonters can influence this work
- **Build relationships and communication channels** that will help Vermonters work collaboratively on future climate action with the state

Activities began in August and focused on one aspect of the outreach work: meeting Vermonters where they are. The outreach team attended 8 events and set up an information table at 3 of those events.

The team selected events that would attract Vermonters who aren't typically involved in climate policy conversations yet feel the impacts of a changing climate and of climate policy. The team focused primarily on Burlington and surrounding areas for the first few months to test approaches and methodology, with plans to reach other areas of the state in the coming months. About three dozen Vermonters provided their contact information and expressed interest in getting involved in the state's climate action planning.

Targeted public input was also gathered to inform the State of Vermont's application to the Climate Pollution Reduction Grant (CPRG). Two public presentations with discussion sessions were held for the general public. One presentation and discussion was held for the Vermont Climate Council. Substantive, meaningful, informed comments were received during the discussions and by email. These will be considered by the Climate Action Office and suggestions adjustments to the CPRG application will be presented to the Inter-Agency Advisory Board to the CAO who will approve the final list of measures to include in the application. Recordings of the sessions are available on the Agency of Natural Resources YouTube channel.

Climate Action Plan Updates

The Initial Climate Action Plan was the result of more than a year of work, but due to the aggressive timeline for drafting, fell short in several areas. From the adoption, the Council was clear that there were two areas of substance that needed further work – transportation and biomass. It is also important to note that, currently, the current plan and suite of actions does not add up to achieving the requirements of the GWSA. To further this work, task groups were formed to develop possible addenda to the CAP for the Council to consider.

Transportation

In the December 2021 adopted Climate Action Plan, the VCC voted to recommend participation in the Transportation & Climate Initiative Program (TCI-P) – a regional cap-and-invest program – as a lead policy and regulatory approach to reduce emissions from the transportation sector. A couple weeks prior to the deadline for the Plan adoption, TCI-P became unviable, and the VCC agreed to include a notice in the Climate Action Plan that the VCC would continue work on an alternative recommended policy or set of policies to make up for the lack of sufficient transportation emissions reduction policy recommendations – as well as pursue TCI-P if it again became viable.

In 2022, the Council adopted a [transportation addendum](#), to the CAP which further signaled policy outcomes but largely deferred to the Carbon Reduction Strategy (CRS) underway at the time by the Agency of Transportation (Vtrans). On November 17, 2023, Vtrans delivered the final CRS to the Federal Highway Administration. The CRS analysis models that Vermont may meet its 2025 reduction requirement in the transportation sector. However, even with additional investments for programmatic, policy, and regulatory options, the modeling shows a gap between projected “business as usual” emissions in the transportation sector vs. the portion of GWSA emission reduction requirements for 2030 and 2050 that are attributable to the transportation sector. The CRS reaffirms that, without adoption of additional polices, this

portion of the required emissions reductions in the GWSA will not be met. While the CRS provides considerations for actions towards those additional policy options, it does not recommend which approach Vermont should take. Thus, there is a need for further, more detailed analysis of these policy options for VCC consideration of a final proposed policy recommendation(s).

The VCC considered [additional recommendations](#) at their January meeting. **UPDATE AFTER MEETING.**

Biomass

The recommendations developed around the application of biomass for electricity generation and home heating for the Initial CAP were tabled. The Council acknowledged that there was not enough time for the Agriculture & Ecosystems and Cross Sector Mitigation subcommittees to come together discuss the issue of biomass, and as such, prioritized work in 2022 with an aim to provide resolved language in the fall of 2022. A task group comprised of Subcommittee members from four Subcommittees (Just Transitions, Science and Data, Agriculture and Ecosystems, and Cross-Sector Mitigation) met for the better part of the last year to determine a [scope of work](#) and to [draft recommendations](#) for the Council to consider.

In 2023, the Council reviewed the recommendations from the Task Group at a meeting in May and did not reach consensus. To advance the finalization of the recommendation, the Steering Committee reviewed several options for addressing the Biomass Recommendations. Committee members agreed to form a group of Council members with one from each of the relevant sub-committees. Committee members also suggested having one or two steering committee members be a part of this group while also being able to represent a relevant subcommittee.

This group of Councilors was referred to as the Councilor Writing Group. Their revised recommendations were brought forward to the Council in September 2023, where they were reviewed and discussed. It was agreed that the Writing Group would reconvene to accommodate feedback from the meeting and the Council would reconsider in December. After robust discussion and public input, the Council further refined the draft and adopted a [suite of final recommendations as an addendum](#) to the Initial Climate Action Plan.

Next Steps

The work of the VCC is ongoing, and in service to future iterations of the Climate Action Plan. While the Legislature, the Agency of Natural Resources and other agencies of state government will work to implement climate action, the VCC will continue its efforts in several key areas, including but not limited to:

- Planning for the next iteration of the Climate Action Plan, which is statutorily required to be updated on or before July 1, 2025.
- Coordination of planning processes with required deliverables from federal funding obligations.
- Guiding on-going public engagement, including around recommended addenda to the

CAP.

- Furthering the implementation of the Guiding Principles and the Scoring Rubric in the program design of priority actions.
- Onboarding new Councilors appointed by the Senate in 2023.
- Onboarding of new Subcommittee members in 2024 as an effort to have adequate capacity for the development of next Plan.
- Finalizing ongoing technical analyses, and identifying additional work required to inform and support the next iteration of the CAP.
- Identifying the means to accurately measure the impact of implementation of the Plan.

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