

Comprehensive Energy Plan / Climate Action Plan

Buildings Technical Workshop Summary

Thursday, August 19, 2021, 9:00 am – 1:00 pm

Hosted by the Department of Public Service (PSD) in partnership with members of the Cross-Sector Mitigation (CSM) Subcommittee of the Vermont Climate Council (VCC)

This summary is not meant to be comprehensive, but rather captures key themes raised by participants. For more details, the agenda, presentation materials, and recording can be found on the VT PSD [website](#).

Attendance

Approximately 70 individuals, including state staff and invited speakers, participated in the Workshop.

Workshop Objectives

The workshop was organized to share information about the Vermont Comprehensive Energy Plan (CEP) and the Climate Action Plan (CAP) process and to solicit input from experts and interested stakeholders on:

- What state strategies, policies, and programs are needed to achieve Comprehensive Energy Plan (CEP) and Global Warming Solutions Act (GWSA) Climate Action Plan (CAP) goals in the buildings sector?
- How should the State consider and balance tradeoffs among criteria when assessing policy options (for example: equity, cost-effectiveness, co-benefits, feasibility, carbon, and energy reductions)?

I. Overview – Comprehensive Energy Plan (CEP) & Climate Action Plan (CAP) process (TJ Poor, PSD; Marian Wolz, ANR)

In explaining the CEP process, TJ Poor said the updated plan must be consistent with GWSA (90% renewable by 2050 and net zero GHG emissions by 2050) and will include a vision, actions, and strategies for implementing actions. Modelling will include analysis of mitigation pathways and scenario analysis conducted in collaboration with VCC subcommittees.

Marian Wolz said the CAP includes not only mitigation strategies but also sequestration, resilience, and adaptation strategies, with a lens toward a just transition and co-benefits. She emphasized that the CAP process is designed as a co-creation effort that allows the public/stakeholders to participate in the development of the pathways, strategies, and actions. Overlap between the two plans includes the cost-effective analysis of reduction targets; energy sector analysis (scenarios and actions); and public engagement and equity efforts.

II. State of the State for building energy use, emissions, programs (TJ Poor, PSD)

To explain the importance of the building sector, TJ Poor presented data showing thermal energy emissions (34% of all state GHG emissions); the current mix of thermal energy fuel sources (75% fossil fuels) and their costs; and described the current programs in the state designed to improve building energy efficiency (EE), weatherization, and clean fuel use. He also highlighted the existing sources of funding for these efforts. There are several innovative state programs designed to reduce GHG emissions from buildings that Mr. Poor described, including a flexible load

management pilot; GHG performance metrics; refrigerant management program; and a weatherization and health pilot.

III. Equity in Buildings Policy (Sarah Philips, co-chair of VCC Just Transition Sub-Committee (JT) and Director of Office of Economic Opportunity, Dept. for Children and Families)

Sarah Phillips introduced the Vermont Climate Council JT Equity Principles and provided a definition of equity that includes distributive, procedural, contextual, and corrective equity. She pointed out that when thinking about equity and impacts on historically marginalized and vulnerable communities, we need to consider income levels and energy burden, but also other factors such as language and location, vulnerability to climate impacts, those who experience racism and oppression, and those who have the least resources to adapt or are likely to experience a job transition. Housing type and ownership can have even more impact than income, she noted. Sarah encouraged participants to think about how to increase access to programs and benefits, ways to mitigate climate impacts, how to maximize benefits, in addition to targeted funding and financing when thinking about equity.

Discussion:

- In addition to several clarifying questions, there was a discussion about whether the equity principles should be applied to evaluating in-state impacts or should also look to the impacts on energy sources that are coming from out of state. Sarah explained that the VCC is focused more on impacts on Vermonters, but many other New England states are also looking at this same set of questions.
- The participants also talked about the challenges and barriers to getting the data needed to understand equity implications of mitigation and adaptation strategies and actions. Several participants acknowledged that access to data at the state or local level is limited, noting that even the recent census data may be incomplete. Programs such as those managed by Efficiency Vermont need income data at the county level to ensure that resources are allocated equitably and to increase incentives for low and middle income (LMI) households that face up-front cost barriers. Many programs targeting low-income households are required to collect demographic information, and this could be incorporated into all programs.
- A participant cautioned the state to make sure you are driving toward outcomes and not just meeting metrics for equity. In rural VT households have a higher per MMBTU cost than urban areas with access to natural gas. Energy burden may not fully capture treating people equitably. Efficiency VT clarified that for determining distributional equity among counties, they use a metric that measures total benefits by county rather than simply dollars spent.
- In response to a question, Sarah and TJ confirmed that housing affordability and access are important components of energy equity in the building sector and are central to the GWSA and the just transition principles.
- The split incentive barrier for addressing GHG emissions in rental buildings continues to be a problem that needs to be solved, particularly to address equity, since a higher percentage of BIPOC Vermonters are renters. “To the meter” or “On Bill” financing is one mechanism mentioned to help renters, along with deeper discounts for renters.

IV. Potential CAP Strategies (Dave Farnsworth, RAP, Cross Sector Mitigation Subcommittee Co-Task Lead)

Dave Farnsworth described key draft pathways and strategies under consideration by the CSM subcommittee. Pathways include:

- Weatherization at scale
- Clean Heat Standard
- Rental Efficiency Ordinance
- Complementary policies such as:
 - Decarbonizing the grid
 - Demand management
 - Workforce development

V. CEP & CAP Decision Making Framework, Breakout Introduction (TJ Poor, PSD)

TJ Poor introduced the breakout sessions by asking participants to consider the following questions within their selected topic (residential buildings, commercial buildings, fuel sources and systems):

- How should the state balance criteria and trade-offs and what programs/policies should we consider?
- How should we apply cost-benefit tests? How should we value risks and other uncertainties?
- How is time value factored in? E.g., Will this impact affordability in the future?

VI. Breakout Session Questions and Summary Reports

The following is a summary of the discussion questions for each breakout session and the summary reports following the discussion.

A. Residential Buildings, Facilitator: Sarah Phillips, VT Dept. of Children and Families

Discussion Questions:

- What residential programs, policies, or goals are working, need to be changed, need to be added?
- What are the best ways to leverage and increase private investments in the quality of residential building stock in Vermont? For example, leveraging the co-benefits associated with health and weatherization, or property resilience (insurance) and weatherization.
- What should be the priority strategies for reducing low-income Vermonters' energy burden and ensuring safe/healthy homes/buildings in this transition?
- What are the most important aspects to focus on when updating the building energy codes?

Discussion Summary (Christine Donovan, VCC Cross-Sector Mitigation Subcommittee)

- What is working:
 - VT has led the nation on VT Energy Efficiency Utility model which needs to continue
 - The state is a leader in weatherization delivery programs, although requests for Weatherization Action Program are down
 - Many partnerships have been built to bring creative solutions: e.g., Home Energy Loan program, Mileage Smart, Energy First pilot program
 - VT has a well-informed construction industry, but need expansion in workforce to deliver EE services in HVAC and EE
- What can we do better?
 - Lack of Residential Building Energy Standards compliance is preventing towns from adopting stretch codes; towns don't have the capacity for enforcement
 - Amend Title 24 Chapter 117 so municipalities can require a third-party verified Home Energy Rating System (HERS) and use building codes and enforcement to improve building energy efficiency.

- Overlap of EE, fuel services, and energy infrastructure services would benefit from one-stop shopping and a more systems approach; need to break down siloes between services and trades.
- Scale up funding and financing for residential programs to create a stable market and job opportunities
- Use the “to the meter” financing approach to deliver all energy services, that is, tie services to the building rather than the owner.
- Expand number and role of town energy committees so they can become more involved with customers
- What criteria should be applied in selecting additional programs and policies?
 - Develop a transparent rubric for evaluation of options and decision-making that is robust enough and nimble in face of change; should include just transition principles as a starting place

Discussion Questions:

- What commercial programs, policies, or goals are working, need to be changed, need to be added?
- What are the most important criteria on which to focus for the commercial building sector? Can we prioritize one priority without sacrificing another? How?
- What are the best ways to leverage and increase private investments to improve the energy efficiency and resilience of commercial building stock in Vermont? For example, leveraging the co-benefits associated with property resilience and weatherization.
- What should be the priority strategies for reducing low-income Vermonters’ energy burden and ensuring safe/healthy homes/buildings in this transition?
- What are the most important aspects to focus on when updating the commercial building energy codes?
- How can Vermont build on the existing platform of commercial energy efficiency programs and services to deepen and increase benefits associated with energy efficiency/ savings?

- Develop better metrics for meeting regulatory mandates and for meeting equity goals
- Need to internalize the cost of carbon emissions through carbon pricing
- Measures of quality-of-life improvements

B. Commercial Buildings, Facilitator: Cindy Cook, Adamant Accord

Discussion Summary (Dave Farnsworth, VCC Cross-Sector Mitigation Subcommittee)

- What programs need to be changed?
 - Restart funding to promote advanced wood heat in schools at a time when systems need to be replaced
 - Commercial building standards under Act 250 are working for large buildings; doesn’t work as well for smaller buildings. Empower municipal government with funding to staff up to enforce codes.
 - State Energy Management Program revolving loan fund covers only a limited number of things; also needs more diversified sources of funding.
 - Funding for Efficiency Vermont is dropping off; Regional Greenhouse Gas Initiative (RGGI) will not be enough to cover the gap.
 - Load management is critical and should be optimized for customers and grid.
 - Expand educational programs for building owners, e.g., Efficiency VT programs
- Commercial Building Energy Standards (CBES)
 - Empower local authorities to enforce CBES, including funding for needed staff

- Promote simplified energy controls for smaller buildings and clarification of code language around building controls.
- Promote energy recovery of wasted heat from commercial equipment and processes (including combined heat and power systems)
- Ban new fossil fuel infrastructure in commercial buildings; include exemptions with proper incentives.
- Ways to leverage private investment
 - Remove return on investment (ROI) language in legislation promoting weatherization and focus on savings of both money and carbon.
 - Stricter language on change in use of commercial buildings and energy use; close loopholes on existing building energy use.

Discussion Questions:

- What programs, policies, or goals for heating fuel supply are working, need to be changed, need to be added?
- What are the most important criteria on which to focus on for building fuel supply? Can we prioritize one priority without sacrificing another? How?
- What role should biomass (e.g., wood pellets, cordwood, cellulosic biofuels), renewable liquid biofuels (e.g., biodiesel, renewable diesel), and biogas (e.g., renewable natural gas) play in achieving state energy goals?
- How important is it that thermal fuel supply come from within Vermont's borders?
 - Promote Energy Services Companies but value more than energy savings. Recognize deeper benefits.

C. Building Heating and Fuel Systems, Facilitator: Edward Delhagen, VT PSD

Discussion Summary (Andrew Perchlik, VT Clean Energy Development Fund)

- Criteria for evaluation policies and programs:
 - Several participants suggested that the state consider accounting for embedded GHG emissions of all fuels to capture the production and transportation emissions, i.e., use life cycle or upstream accounting of fuels.
 - Life cycle analysis of heating equipment is important to capture the full cost of installing and operation over its life.
 - Social cost of carbon should be used to internalize the external impacts of GHG emissions.
 - Use concrete, objective criteria for evaluating different equipment and fuel sources. Don't want to pick winners and losers based on existing infrastructure.
 - Long term equity should be considered, not just near-term equity.
 - Include co-benefits, e.g., production of RNG from organic waste also addresses a problem with managing human and animal wastes.
- What can we do better?
 - A number of participants emphasized that it is equally important to consider heating equipment choices, which can determine your flexibility in what fuels you can use; e.g., district heating systems can be an important efficiency and business model to consider in conjunction with the use of biofuels, and some existing oil burners can be easily adapted to burn 50% biodiesel. Heating system infrastructure can also lock in inefficient choices for the life of the equipment.
 - Promote and create space for backup and supplemental heating systems, recognizing that many buildings in VT cannot rely on heat pumps alone.

- Avoid missed opportunities, e.g., use policy and program levers to ensure that existing equipment is replaced at end of its life with the most efficient and cleanest option.
- Incentivize accelerated equipment change-outs when possible.
- Institute a renewable fuels standard, complemented with investments in equipment replacement incentives (tier 3).
- Encourage support for a broad portfolio of clean fuels, such as renewable natural gas and green hydrogen.
- Support existing/new fuel dealers to expand their business models to include upgrading and replacing heating equipment as well as selling both weatherization and biofuels. This is currently part of Clean Heat Standard proposal.
- Provide new, equitable sources of funding for programs that provide incentives for equipment change outs, e.g., the thermal energy and process fuels fund.
- In-state Vs out-of-state fuel supplies:
 - Several participants raised the economic and jobs benefits of developing in-state fuel supplies.
 - Another participant said a more regional approach to fuel supply might make sense for biofuels, noting that several New England states have or are considering policies that move toward increased use of biodiesel over time.
- Don't take any options off the table. A participant said that while the tradeoff conversation is important, there is an urgency that calls for an "all in" approach. Don't create a false framework to pick specific technologies.

VII. Cross-Cutting Issues

Some of the points raised (verbally and in chat) during the final plenary discussion on cross-cutting issues were:

- Priorities by which we "rank" potential policies should include:
 - Cost of GHG emissions reduction at point of emission
 - Cost of GHG emissions reduction, life-cycle basis
 - Resilience to climate change (extreme weather events)
 - Protecting vulnerable people (affordability of benefits that energy provides like mobility, heat, and lighting)
 - Jobs for Vermonters
- Equipment choices can embed GHG consequences for 15-20 years; to avoid locked-in assets that have GHG and cost implications, we need to set dates certain when equipment that doesn't meet efficiency and GHG standards cannot be sold.
- Carbon pollution standards for equipment need to be paired with carbon pollution standards for the fuels that can be used in that equipment. With the right pairing of those two things (and sufficient incentives to ensure an equitable transition), we can get on the right track.
- A distinction was made between fossil fuel equipment and fossil-fuel *dependent* equipment. Some boilers and furnaces that are thought of as fossil fuel equipment can run on B-100 biodiesel. Others raised the point that although the equipment "can" use biodiesel, there is not a mandate that it "must" use low-carbon fuels.
- All energy sources and equipment should also be assessed under objective criteria such as a meaningful social cost of carbon and life cycle GHG emissions analysis so that their costs and impacts are assessed accurately.

- A participant suggested that there are more energy savings available in low-income homes, even though it may cost us more to achieve those savings. Others agreed that it makes sense to spend most of our dollars on low-income customers and avoid, as energy costs go up overall, raising the energy burden on these households.

VIII. Next Steps

TJ Poor encouraged participants to continue the discussion by submitting comments through other channels, including these state email addresses and websites:

- Email (to submit comments on the CEP): PSD.ComprehensiveEnergyPlan@vermont.gov or visit the CEP website: <https://publicservice.vermont.gov/content/2022-plan>
- VCC Public Comment Portal:
<https://anrweb.vt.gov/ANR/ClimateCouncil/PublicInputForm.aspx?PKID=3209> or website
<https://aoa.vermont.gov/concent/vermont-climate-council> or information on upcoming events and other avenues for providing input