

REPORT TO THE VERMONT LEGISLATURE

SECOND CHECKBACK REPORT on the CLEAN HEAT STANDARD UNDER ACT 18 of 2023, SECTION 6(i)

Submitted by the Vermont Public Utility Commission to the Senate Committees on Finance and on Natural Resources & Energy, and the House Committees on Environment and on Energy & Digital Infrastructure

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I. Executive Summary

In July 2023 the Vermont Legislature tasked the Vermont Public Utility Commission (“Commission”) with turning a prescribed outline of a complex regulatory policy into a functional Clean Heat Standard within 18 months while simultaneously estimating the costs and benefits of the program. In this report the Commission provides the rules required by Act 18 of 2023 (“Act 18”), a summary of the technical orders implementing provisions of the Clean Heat Standard (“CHS”), an overview of the public comments that have been submitted regarding the program, and an estimate of the costs and benefits of the potential Clean Heat Standard.

At a high level, the Clean Heat Standard as set forth in Act 18 would require “obligated parties” to support the reduction of greenhouse gas emissions attributable to the Vermont thermal sector by retiring a certain amount of “clean heat credits” each year. The obligated parties are companies that import fossil heating fuels into Vermont. A “clean heat credit” is a tradeable commodity that represents a unit of greenhouse gas emissions reduction that results from a clean heat measure — a technology, fuel, or weatherization project that reduces the carbon intensity of heating. The intent of the proposed Clean Heat Standard is to help Vermont achieve its legal obligations to reduce greenhouse gas emissions as specified under the Global Warming Solutions Act of 2020 (“GWSA”).

Over the course of 18 months, the Commission conducted a public process where interested persons had the opportunity to comment on substantive issues under consideration prior to Commission determinations. Act 18 established a Technical Advisory Group (“TAG”) and an Equity Advisory Group (“EAG”), each of which conducted its work through publicly noticed meetings. A public engagement consultant organized engagement sessions to hear from Vermonters. The Commission also held technical and public meetings to hear comments on the draft rule. The Commission heard a broad range of comments; while there was a general sentiment that Vermont should reduce its greenhouse gas emissions, there was also significant concern regarding the associated costs of this approach. Opposition to the inclusion of biofuels

and concerns regarding the complexity of the Clean Heat Standard as set forth in Act 18 were also heard.

The Clean Heat Standard is comprised of a proposed rule governing the actions of obligated parties (generally fuel dealers), along with stand-alone technical determinations informed by the work of the Advisory Groups and the Commission's technical consultant. The stand-alone technical determinations are not contained in the proposed rule because Act 18 requires that the Commission take certain actions on a regular basis.

The Commission was also tasked with studying the economic costs and benefits of the potential Clean Heat Standard, while simultaneously developing the program. Under the program, fuel dealers would incur costs associated with incentivizing clean heat measures, with these costs expected to be passed along to customers. The Clean Heat Standard is expected to reduce costs for those who are able to install eligible measures such as weatherization and heat pumps. However, all Vermonters who are using fossil fuels would pay increased costs for that fuel, and consistent with many other energy programs, the costs of the Clean Heat Standard are regressive. It's also worth noting that incentives for customers with low incomes would need to be greater than the incentives for customers with higher incomes. As a result, the greater the emphasis on customers with low income, the greater the cost of the Clean Heat Standard.

Modeling a complex sector-wide program is extremely difficult and relies on a number of assumptions that could vary widely from real-world implementation. As a result, the numbers produced from the Commission's modeling work should be taken as a very rough estimate.

The total costs of the Clean Heat Standard include participant costs (e.g., the costs paid by the individual customer to install a heat pump and pay for the electricity to run that heat pump) and program costs (e.g., the costs of providing incentives and administering incentives, paid for by all customers). The program costs are what participating and non-participating customers would see in their fuel bills. For the first 10 years of the program, the program-related costs of the Clean Heat Standard as set forth in Act 18 are estimated to total \$955,923,033, or approximately \$0.08 more per gallon of fuel oil in 2026, rising to \$0.58 per gallon in 2035.

The value of the greenhouse gas emissions reduced by the proposed Clean Heat Standard over the first 10 years would be \$477,450,610.

Finally, after nearly 18 months of work on the Clean Heat Standard, the Commission concludes that, while the CHS prescribed in Act 18 is theoretically workable (with the changes discussed in Chapter X of this report), the Commission does not believe that this program is well suited to Vermont. Our state has a long history of implementing innovative and effective programs to reduce energy use; it would be more effective to support this existing work rather than introduce a complex new regulatory layer that would disrupt existing programs. In this report, the Commission recommends alternative structures for consideration by the Legislature.

II. Introduction and Statutory Basis

Public Act 18 (2023 Vt., Bien. Sess.) (“Act 18”) became effective on May 24, 2023. Act 18 established the Clean Heat Standard in 30 V.S.A. Chapter 94, and directs the Commission to “adopt rules and . . . issue orders to implement and enforce the Clean Heat Standard program.”¹ Section 6(i) of Act 18 directs the Commission to file two reports. Section 6(i) states:

On or before February 15, 2024 and January 15, 2025, the Commission shall submit a written report to and be available to provide oral testimony to the House Committee on Environment and Energy and the Senate Committees on Finance and on Natural Resources and Energy detailing the efforts undertaken to establish the Clean Heat Standard. The reports shall include, to the extent available, estimates of the impact of the Clean Heat Standard on customers, including impacts to customer rates and fuel bills for participating and nonparticipating customers, net impacts on total spending on energy for thermal sector end uses, fossil fuel reductions, greenhouse gas emission reductions, and, if possible, impacts on economic activity and employment. The modeled impacts shall estimate high-, medium-, and low-price impacts. The reports shall recommend any legislative action needed to address enforcement or other aspects of the Clean Heat Standard, including how to ensure fuel use that occurs outside the thermal sector is not impacted under the program.²

This Checkback Report provides an overview of the additional decisions that complement the proposed Rule (included as Appendix A). This report is not a study of the Clean Heat Standard but instead provides the rules and many of the necessary program elements that the Commission was directed to develop, along with an analysis of projected benefits and costs. In addition, this report identifies issues with the CHS that would hinder implementation and sets forth an alternative structure for the Legislature’s consideration.

Act 18 established an unusual process with respect to the Commission’s rulemaking authority. Typically, if the Commission is directed to develop rules by statute, the Legislature has limited subsequent involvement, only opining through the Legislative Committee on Administrative Rules as to whether the rules are consistent with the statutory intent. Here, Act 18 directed the Commission to develop a Clean Heat Standard but requires authorization from the Legislature

¹ 30 V.S.A. § 8122(d).

² Public Act No. 18, § 6(i) (2023 Vt., Bien. Sess.) (“Act 18”).

before the rules can go into effect.³ Consistent with other Commission rules, the proposed Rule submitted today details the requirements that obligated parties must fulfill and does not lay out every feature of the CHS.

Finally, there are certain provisions of Act 18 — most notably the fuel dealer registration requirements, the deadlines associated with the Default Delivery Agent, and the continuation of the Technical and Equity Advisory Groups — that would remain in effect even if the Legislature does nothing. The Commission strongly recommends that the Legislature repeal these ongoing requirements if the CHS is not enacted.

³ “The Commission shall not file the final proposed rules with the Secretary of State until specific authorization is enacted by the General Assembly to do so.” Act 18, § 7(f).

III. Overview of the Clean Heat Standard

The Clean Heat Standard, as set forth in Act 18, aims to reduce thermal sector emissions in line with the Global Warming Solutions Act by accelerating the decarbonization of heating in Vermont. The regulation applies to the entire thermal sector — including commercial and industrial heating applications — although the program is focused primarily on residential applications like building and water heating.

The Legislature set up the Clean Heat Standard as a market-based system that designates creditable activities and requires specific entities to procure and retire a certain number of credits each year. A clean heat credit is an intangible, tradeable commodity representing one metric ton of CO₂e. Credits are generated by the implementation of "clean heat measures," technologies, weatherization work, or fuels that decrease the carbon intensity of heating in Vermont. The entities who must retire clean heat credits, known as "obligated parties," are the companies that bring fossil heating fuels into Vermont. The goal is that the money paid by obligated parties to purchase clean heat credits would help pay for the delivery or installation of clean heat measures to end-use customers in Vermont.

Act 18 provides for a Default Delivery Agent ("DDA"), which is intended to act as a backstop to ensure that emission reductions are achieved. Obligated parties are expected to pay a DDA to retire credits on their behalf, although obligated parties can choose to generate or purchase credits on their own. The Department of Public Service is tasked with verifying the implementation of clean heat measures and awarding the appropriate number of credits. The Commission is responsible for ensuring that the pace of credit retirements is sufficient to meet GWSA requirements and for regulating the DDA(s).

IV. Summary of Submittal to the Legislature

This legislative report is accompanied by a package of documents that provides important context for the potential Clean Heat Standard program and represents the Commission's fulfillment of its charges under Act 18. Together, these documents provide the necessary elements of the program as set out in Act 18.⁴

1. Proposed Rule – The Commission utilized Case No. 23-2220-RULE to allow for open collaboration and feedback on the design of the potential Clean Heat Standard pursuant to Section 6(a) of Act 18. The proposed Rule included in this submittal is the product of 18 months of soliciting feedback on many different policy elements of the program. The Rule does not include every aspect of the program – for instance, other documents included in the appendix to this report represent what the Commission determined to fit more appropriately in the form of Orders. In the context of the Clean Heat Standard, and consistent with the Commission's approach to rulemaking generally, the focus of the Commission's Rule is on the responsibilities of the obligated parties that the Commission would be charged with regulating under the potential program. The proposed Rule is included in Appendix A of this package.
 - a. Pursuant to Section 6(e) of Act 18, the proposed Rule was put out for comment in draft form for the requisite 30 days. The Commission received robust feedback in the form of two live opportunities (i.e., workshop and public hearing) and via written comment. The Commission has reviewed the substantial feedback on the draft Rule. Our consideration of recommendations, including our reasoning for adopting or not adopting those recommendations, is included in Appendix B of this package.
2. Order Adopting Process on Pacing the Clean Heat Standard, issued November 1, 2024 – This order outlines the process the Commission would use to determine what pace is

⁴ There are other components of a Clean Heat Standard that the Commission will develop in the future if the Clean Heat Standard is approved. These components include the appointment and programmatic specifications of the Default Delivery Agent and creation of a credit trading platform.

required of the Clean Heat Standard to meet the thermal sector portion of the emission reductions required by the Global Warming Solutions Act if the program is enacted. The order breaks this process down by first outlining the steps to determine the necessary sector-wide emission reductions, and how those reductions would be assigned to obligated parties based on the annual reporting of fuel sales under this program. This order can be found by accessing the following link on the Commission's online document management system, ePUC: <https://epuc.vermont.gov/?q=downloadfile/738600/190907>

3. Document Determining First-Year Obligated Parties and their Obligations and Setting the Interim Clean Heat Credit Retirement Schedule (2026-2035) with Low- and Moderate-Income Credit Distribution – This document identifies the potential program's first set of obligated parties and their respective obligations based on 2023 heating fuel sales. This document was initially issued in draft form to allow for public review and input on the initial set of obligations. The document explains that the 2023 fuel dealer sales reporting data are significantly flawed, and the Commission recommends against using the data to determine first-year obligated parties or the related credit obligations. The document also establishes the initial 10-year trajectory of emission reductions and sector-wide credit retirements that would be required by the program within the specifications outlined in Act 18. This document also establishes the distribution of each obligated party's credit retirements that must be sourced from measures that served low-income and moderate-income households in year one of the potential program. This document can be found in Appendix C.
4. Order Setting Declining Carbon Intensity Values for 2025-2030, issued December 23, 2024 – This order sets the threshold carbon intensity values for liquid and gaseous clean heat measures in potential program years 2025-2030. The order adopts a “step change” approach, setting carbon intensity thresholds at <80% of No. 2 heating oil from 2025 through 2029 and <60% by 2030. This order can be found by accessing the following link on the Commission's online document management system, ePUC: <https://epuc.vermont.gov/?q=downloadfile/745493/190907>

5. Order Adopting Interim Early Action Credit Ownership Methodology, issued November 19, 2024 – This order outlines the methodology for determining ownership of early action credits under the proposed Clean Heat Standard.⁵ The order establishes ownership determination by clean heat measure type and clarifies expectations about the registration and value of early action credits. This order can be found by accessing the following link on the Commission’s online document management system, ePUC:

<https://epuc.vermont.gov/?q=downloadfile/740723/190907>

⁵ See Section 8.113 of the proposed CHS Rule.

V. Context and Background

The Clean Heat Standard is an outgrowth of the Global Warming Solutions Act (“GWSA”) of 2020. At a high level, the GWSA mandates reductions of Vermont’s greenhouse gas (“GHG”) emissions by certain amounts by 2025, 2030, and 2050. The Vermont Climate Council, created by the GWSA, prepares a Climate Action Plan that recommends legislative actions and regulatory programs designed to meet the GWSA requirements. The 2021 Climate Action Plan recommended that the Legislature adopt a Clean Heat Standard to reduce thermal sector emissions.

The thermal sector, or Residential/Commercial/Industrial Fuel Use in the terminology of the Vermont Greenhouse Gas Inventory, contributes almost a third of Vermont’s GHG emissions.⁶ In 2021, 53% of the emissions in the thermal sector came from residential fuel use, with the commercial sector at 35% and the industrial sector at 12.6%.⁷ Fuel use and associated emissions from the thermal sector can experience considerable year-to-year fluctuations, driven primarily by weather.

In order to meet the thermal sector’s greenhouse gas emission reduction requirements of Act 18, our work suggests that Vermont would need to reduce thermal sector emissions by 10% a year through 2029 and then 5% per year until 2050.⁸

It’s important to recognize that the CHS would not exist in isolation; Vermont has are numerous existing programs that reduce thermal sector emissions, including:

⁶ See AGENCY OF NAT. RES., VERMONT GREENHOUSE GAS EMISSIONS INVENTORY AND FORECAST: 1990 – 2021 (2024), available at https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/1990-2021_GHG_Inventory_Uploads/Vermont_Greenhouse_Gas_Emissions_Inventory_Update_1990-2021_Final.pdf?_gl=1*14dddtp*_ga*MTkyMzkwMTIyOS4xNzEwMDg4NDYx*_ga_V9WQH77KLW*MTczNjAwODO4Mi44OS4xLjE3MzYwMDk3NzcuMC4wLjA.

⁷ *Id.* at 12.

⁸ See Appendix C.

- Office of Economic Opportunity Low-Income Weatherization Programs. The five weatherization assistance programs are funded by the Fuel Tax, a two-cent tax on all delivered fuels.
- Renewable Energy Standard Tier 3 Programs. The 17 electric utilities are required to reduce fossil-fuel usage for their customers, with most programs focusing on electrification efforts, such as incentives for heat pumps and electric vehicles. Funding for these programs comes from electric ratepayers.
- Vermont Gas Systems, Inc. (“VGS”) energy efficiency programs, funded by an energy efficiency charge applied to all VGS customers.
- Efficiency Vermont market-rate weatherization. Funding for this program comes from revenues from the Regional Greenhouse Gas Initiative (“RGGI”) and the ISO-NE Forward Capacity Market (“FCM”).
- City of Burlington Electric Department efficiency programs, funded by RGGI and FCM revenues.

There have been a number of studies over the past 15 years as to how to reduce emissions from Vermont’s thermal sector. In 2021, the Commission issued “Act 62 – Final Report on All-Fuels Energy Efficiency,”⁹ which analyzed whether an “all fuels” energy efficiency program was necessary. The report concluded that “Vermont already has the organizational structures, regulatory oversight, and experience to implement the programs we need” and stated clearly that the primary concern was ensuring adequate funding for these programs.¹⁰ The Act 62 Report included an appendix describing numerous prior studies related to addressing thermal sector emissions.

⁹ PUB. UTIL. COMM’N, ACT 62 – FINAL REPORT ON ALL-FUELS ENERGY EFFICIENCY (2021) (“Act 62 Report”), available at <https://puc.vermont.gov/document/act-62-final-report-legislature-all-fuels-energy-efficiency>.

¹⁰ Act 62 Report at 1.

VI. Efforts Undertaken to Develop the Clean Heat Standard Rule

The Commission has worked diligently over the last 18 months to develop and design a potential Clean Heat Standard for the state of Vermont, engaging with a number of dedicated entities and individuals to translate the blueprint provided in Act 18 into a real-world regulatory program aimed at reducing emissions in Vermont’s thermal sector.

The Commission began this work on June 30, 2023, with the opening of two cases related to the design of the potential Clean Heat Standard: Case No. 23-2220-RULE, which covers most aspects of the design of the program and associated rulemaking, and Case No. 23-2221-INV, which investigates the establishment of Default Delivery Agent credit costs and quantities. Over the following 18 months, the Commission issued 29 orders seeking recommendations and information on discrete topics, issued 22 orders making interim determinations, collaborated with the Advisory Groups on their statutory duties, worked with consultants on public engagement efforts and the foundational technical documents underpinning the program, collected and processed 2023 fuel sales data, arrived at a 10-year credit retirement trajectory, determined first-year obligated parties and their respective credit obligations, and received feedback on the program’s proposed Rule, among other related efforts. The work highlighted below reflects some of the time-intensive efforts that were critical components in fulfilling our duties outlined in Act 18.

a. Advisory Groups and the Technical Consultant

The Equity Advisory Group (“EAG”) was assembled and began meeting in November 2023. The group is composed of individuals who meet the statutory requirements outlined in 30 V.S.A. § 8129(b). The group has dedicated a significant amount of time and resources to evaluating this potential program with an equity lens, working to answer the questions and tasks outlined in 30 V.S.A. § 8129(a). These efforts required the group to meet biweekly, with a series of additional subgroup meetings to ensure progress on several of the assigned tasks. A Commission staff member was dedicated to supporting the group and acted as a liaison between the Commission and the EAG. The Commission also secured a professional facilitator for the group using U.S.

Climate Alliance funding — a support role that was invaluable to the group and its substantial workload. A history of the group’s meetings — minutes and recordings — is available on the Commission’s Clean Heat Standard website. By statute, the EAG ceases to exist if the Clean Heat Standard Rule is adopted. The work and findings of the group culminated in a final report that is included as Appendix D in this package.

The Technical Advisory Group (“TAG”) was assembled and began meeting in December 2023. The group is composed of individuals who represent the technical expertise envisioned in 30 V.S.A. § 8128(b). This group has dedicated significant time and resources to assessing the technical elements of the potential program. These efforts required biweekly meetings with a series of additional subgroup meetings to further explore the subject matter. The Commission dedicated a staff member to support the group and act as a liaison between the Commission and the TAG. This group also benefited from the support of a U.S. Climate Alliance-funded professional facilitator, an individual who was indispensable to the group and its progress toward its statutory tasks. A history of the group’s meetings — minutes and recordings — is available on the Commission’s Clean Heat Standard website. The TAG was given a combination of program development and program management tasks that remain relevant if the Clean Heat Standard is enacted. To this end, not all tasks assigned to the TAG in 30 V.S.A. § 8128(b) are neatly resolved at this stage. The group has completed a year-end status report to reflect what tasks are effectively resolved, which are in a state of deliberation, and which are considered part of future iterative reviews if the Clean Heat Standard goes forward. This report is included as Appendix E in this package.

Opinion Dynamics, the Commission’s Technical Consultant, was hired in February 2024 to perform emission analyses and measure characterization work for the Clean Heat Standard. In the last 10 months, the consultant’s work has culminated in the development of a Technical Reference Manual (“TRM”) and accompanying Emissions Table to underpin obligated parties’ annual obligations and clean heat credit values in the potential program. The TRM provides the formulas and information necessary to derive credit values from the installation or delivery of clean heat measures. The Emissions Table provides the lifecycle emission rates of fuels implicated by the potential program — fuel that is being displaced by a clean heat measure, fuel

that is used in a clean heat measure, or fuel that itself is a clean heat measure (such as biofuel). Opinion Dynamics has provided a helpful overview of its work that can be found as the introduction to its deliverables in Appendix F of this package.

b. Default Delivery Agent

i. Overview

Act 18 requires the Commission to appoint at least one Default Delivery Agent (“DDA”) and work with that entity to create a budget and plan to fulfill its responsibilities under a potential Clean Heat Standard. A DDA would be responsible for obtaining credits that the DDA would retire on behalf of obligated parties who have contracted with the DDA to satisfy their credit requirements, in whole or in part.¹¹

The Commission determined that the DDA would primarily perform a program-administrative role under a performance-based regulatory structure.¹² The DDA would fulfill a crucial role in the potential Clean Heat Standard program by coordinating the flows of available funds, work, and credit creation and distribution. Functionally, a DDA would likely serve as a reliable credit purchaser to support the credit market and would provide incentives to buy down the up-front costs of clean heat measures.

ii. Commission actions

Over the last 18 months, the Commission conducted a proceeding to establish one or more Default Delivery Agents. In the first track, the Commission sought to determine the number of DDA(s) and their responsibilities, then establish the evaluation criteria, eligibility, and compensation structure for a DDA, before proceeding to a request for proposals and appointment before the original June 1, 2024, statutory deadline for appointing the first DDA. The second track focused on the evaluation of budgets and plans of the selected DDA(s).

¹¹ Public comments on the role, number, and status of Default Delivery Agents for the potential Clean Heat Standard were requested in December of 2023 and summarized in the Commission’s April 2024 order on that topic. *See Order on the Role, Number, and Status of Default Delivery Agent(s) in the Potential Clean Heat Standard Program*, Case No. 23-2221-INV, Order of 4/26/24.

¹² *See id.*

The Commission made notable progress in the first track, receiving written comments, hosting a workshop on the potential number, obligations, and responsibilities of DDA(s), and issuing a lengthy order addressing the anticipated role, number, geographic scope, and regulatory status of the DDA(s).¹³

Anticipating the passage of Act 142 of 2024, which changed the June 1, 2024, deadline for appointing a DDA, the Commission suspended the schedule and continued work on defining the evaluation criteria, eligibility, and compensation structure for a DDA. Combining feedback received on the first two steps of track one and identifying additional areas for development, the Commission issued a request for information.¹⁴ The request for information attempted to engage entities that were potentially interested in becoming a DDA to further refine and define the DDA structure. The Commission advanced the discussion by seeking details on how entities might meet previously established expectations, outlining the possible areas of work, and identifying challenges a DDA would face. The Commission received and answered one set of questions about the request for information from Vermont Energy Investment Corporation.¹⁵ The Commission received one reply to the request for information — a memo from Ken Jones discussing challenges faced by a potential DDA.

c. Annual Fuel Dealer Registration and Reporting

The Clean Heat Standard requires obligated parties to retire a number of clean heat credits in proportion to the amount of heating fuel sold. “Heating fuel” is defined as “fossil-based heating fuel, including oil, propane, natural gas, coal, and kerosene.”¹⁶ “Obligated party” means:

(A) A regulated natural gas utility serving customers in Vermont; and (B) For other heating fuels, the entity that imports heating fuel for ultimate consumption within the State, or the entity that produces, refines, manufactures, or compounds heating fuel within the State for ultimate consumption within the State. For the purpose of

¹³ See *id.*

¹⁴ See *Request for Information-Vermont Clean Heat Standard Default Delivery Agent*, Case No. 23-2221- INV, Order of 9/4/24.

¹⁵ See *Memorandum re: Responses to VEIC’s questions on the DDA RFI*, Case No. 23-2221- INV, Issued 11/1/24.

¹⁶ 30 V.S.A. § 8123(11).

this section, the entity that imports heating fuel is the entity that has ownership title to the heating fuel at the time it is brought into Vermont.¹⁷

To determine (1) which entities meet the definition of “obligated party,” and (2) the size of each obligated party’s greenhouse gas emission reduction requirement under the Clean Heat Standard, the Commission was directed to create a fuel dealer registration system.

i. Actions taken

Pursuant to 30 V.S.A. § 8124(b)(1), “Each entity that sells heating fuel into or in Vermont shall register annually with the Commission by an annual deadline established by the Commission. The first registration deadline is January 31, 2024, and the annual deadline shall be June 30 of each year after.” The Commission created a registration form to gather all data necessary to determine whether a registering entity would be an obligated party under the potential Clean Heat Standard. For those fuel dealers who are not obligated parties, this annual registration requirement is their only obligation under 30 V.S.A. § 8124(b). On October 23, 2023, the Commission issued an order seeking recommendations on necessary annual registration information. After receiving and reviewing feedback, the Commission publicized what information it would request on December 15, 2023, and opened the annual registration on January 17, 2024.

The Commission developed an online form for registration that was responsive to the registrants’ input so that questions that are not relevant to a particular business need not be answered by that registrant. Almost all registrants who filed by the January 31, 2024, deadline used this form. The Commission held an “office hours” public meeting with more than 70 attendees on January 23, 2024, to answer technical questions about the form. None of those attendees had technical questions about the mechanics of the form. Instead, attendees expressed uncertainty and concern about multiple topics, including what the statute meant by “compounded” fuel and how that differs from blended fuel, their anticipated inability to submit required information on time during the busiest part of heating season, the ambiguity about whether some types of heating

¹⁷ 30 V.S.A. § 8123(12).

fuels were ultimately consumed in the thermal sector, and concerns about confidential treatment of registration information.

The Commission was able address some of these concerns by (1) updating the frequently asked questions (FAQs) information on the Commission’s website and in a memorandum issued on January 26, 2024; (2) issuing an order establishing a one-month grace period for the first year’s registration on January 26, 2024; (3) issuing an order granting confidential treatment of some registration information on January 24, 2024; and (4) issuing an order to implement a revised protective agreement about confidential treatment of some registration information on March 26, 2024. After a comprehensive review of the dataset of registered fuel dealers (see discussion below), the Commission determined that not all fuel dealers had registered. Consequently, the Commission issued an order on September 19, 2024, describing its enforcement authority and providing one more chance for not-yet-registered fuel dealers to register without enforcement by October 31, 2024.

Act 18 distinguished between entities that must register with the Commission (fuel dealers) and entities that would be obligated parties under the Clean Heat Standard. Each entity that sells heating fuel into or in Vermont must register annually with the Commission. From this group of annual registrants, the Commission must designate obligated parties by applying the statutory definition of “obligated party” to the registration information received. Because the Commission is required to provide the first set of annual required amounts for obligated parties as part of this rulemaking package, the Commission provided a draft designation of obligated parties and their respective obligations in an order on December 6, 2024, and accepted comments on that draft designation through January 6, 2025.¹⁸

ii. Registrants and obligated parties

The annual registration deadline for 2023 fuel data was January 31, 2024.¹⁹ As of that date, the Commission received 62 registrations via the online form and three registrations by mail. As discussed above, in order to maximize compliance and available information, the Commission

¹⁸ Act 18, § 6(f)(5).

¹⁹ 30 V.S.A. § 8124(b)(1).

created two additional opportunities for fuel dealers to register without penalty with deadlines of February 29, 2024, and October 31, 2024. The following table provides a breakdown of the count of registrations in response to the statutory filing deadline and subsequent Commission grace period and non-enforcement period. The 181 total *registrations* in the table below came from 176 unique *registrant names* because some entities completed multiple registrations. Entities that chose to register different locations under a different registration legal name (e.g., Dan’s Fuel of Roxbury, Dan’s Fuel of Boston) are counted both as separate registrations and as separate registrant names in this section. By proportion, about 36% of registrations were completed by the January statutory deadline, an additional 26% were completed by the end of the February grace period, 37% were completed by the end of the October period, and the final 1% of registrations fell outside of any deadline. In the processed registration data (as of the beginning of September 2024), about 59% of registrants listed a Vermont business address and the remaining 41% listed a non-Vermont address.

2023 Fuel Dealer Registration Counts

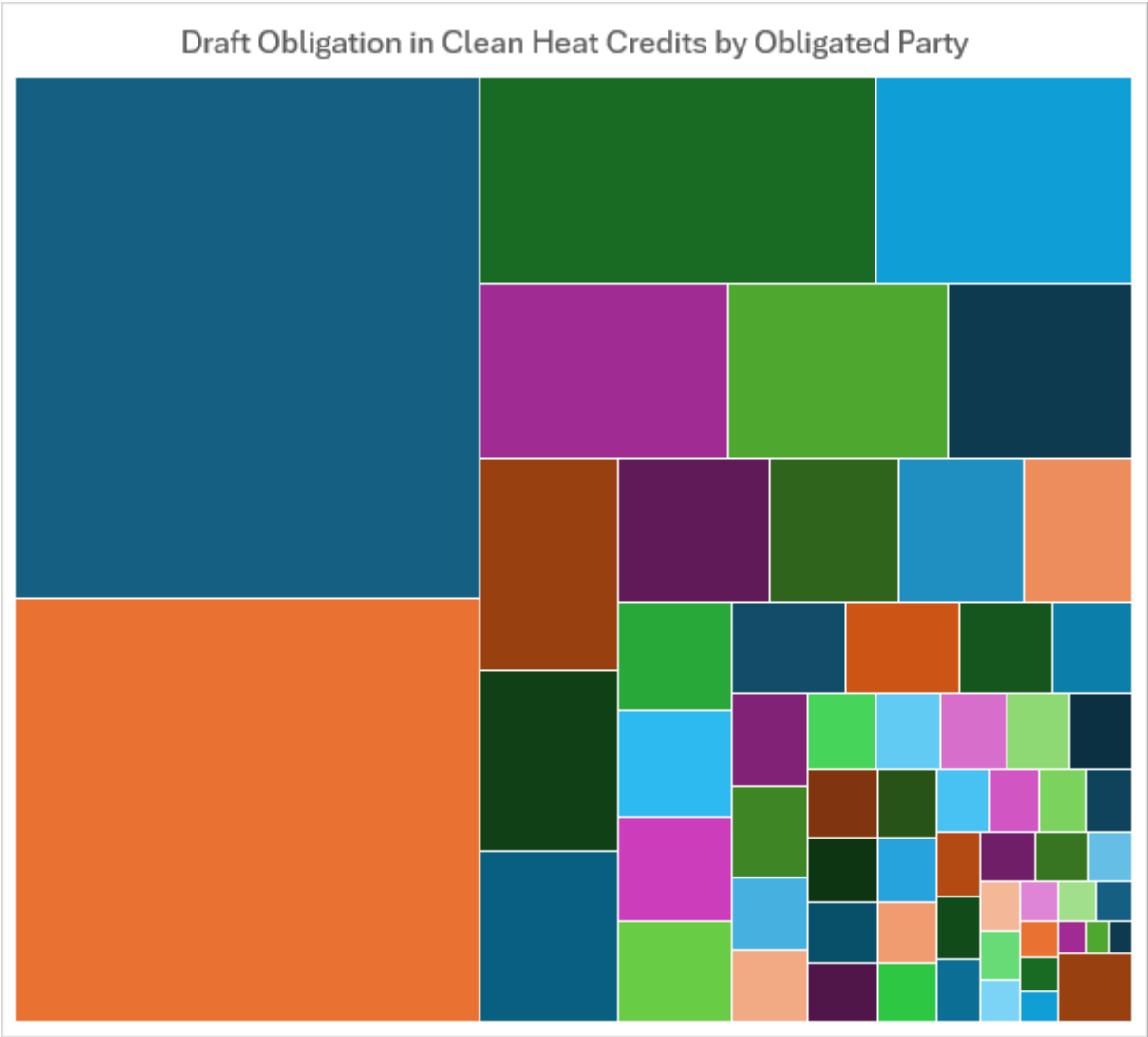
Deadline	# Registrations
January 31, 2024 statutory deadline	65
February 29, 2024 grace period	47
After February deadline	7
October 31, 2024 grace period	60
After October deadline	2
Total 2023 registrations	181

Note: This table includes total number of *registrations* , not total number of unique *registrants* . Some registrants submitted multiple registrations.

As required in 30 V.S.A. § 8124(b)(4) and explained in the Commission’s order of January 24, 2024, the Commission must publish a list of each year’s registrants. The registrant list is available on the Commission’s website at <https://puc.vermont.gov/document/2023-fuel-dealer-registration-list>. This list includes all registrants through December 31, 2024. Entities that appear on the list multiple times submitted multiple registrations. The Commission will publish next year’s list of registrants after the close of the registration period.

The Commission published a draft list of obligated party determinations and their obligation amounts in an order on December 6, 2024. Due to time and resource constraints, the Commission was not able to include 62 registrations from October and beyond in that set of determinations; this is clearly explained in the order. From the 119 registrations that were processed, the Commission preliminarily determined that there would be 86 obligated parties — about 72% of the registrations received resulted in a determination of obligation based on reported 2023 heating fuel sales.

The Commission has received questions about the size of entities in Vermont’s fossil-fuel market. The draft obligated party information based on the 2023 heating-fuel-sales registration data provides a preliminary answer to that question. Note that these data have several problems, enumerated below, and do not yet include the 62 registrations that occurred during and after the October enforcement grace period. With that in mind, we have arranged the draft obligated party data by largest to smallest obligation. The first two obligated parties have about 20% of the total obligation each, the next 14 obligated parties have about 40% of the total obligation, and the final 70 obligated parties have the final 18% of the obligation. This supports the intuition that the Vermont fossil-fuel market is comprised of a few very large players and many small players. The following treemap chart of the currently calculated obligations shows the relative obligation sizes of the draft obligated parties; the bottom right rectangle groups multiple parties with very small obligations.



The December 6, 2024, draft determination indicates a preliminary total obligation of 333,792.37 clean heat credits to be obtained in the first year. Draft individual obligated party obligations range from a high of 76,380.63 credits to a low of 1.13 credits, with an average obligation of 3,881.31 credits and a median of 908.43 credits. The table below gives a stylized example of scale by assuming that a party decides to meet its entire obligation by installing heat pump water heaters that replace heating oil. Fractional water heaters are rounded up to the nearest whole water heater.²⁰

²⁰ Obligated parties have a menu of clean heat measures from which to choose, but this example uses a single measure for simplicity.

**Number of Heat Pump Water Heaters to Meet
One Party's Year One Obligations**

Case	Credit Requirement	Number of Water Heaters
High	73,380.63	1,457
Average	3,881.31	78
Median	908.43	19
Low	1.13	1

An obligated party with the average obligation of 3,881.31 credits would need to install 78 heat pump water heaters. If every obligated party used heat pump water heaters to meet the total obligation of 333,792.37 credits, that would be 6,626 heat pump water heaters for that year. Total obligations will increase every year.

VII. Operating Budget for a Clean Heat Standard

a. Regulatory Structure

To conduct the Clean Heat Standard rulemaking and initial reporting, a total of \$1,725,000 was appropriated from the General Fund for the Commission and Department.²¹ These were one-time funds provided in Fiscal Year 2024; no additional funds were appropriated in FY25. Act 18 created five permanent FTEs and one limited-service FTE for the Commission and Department collectively.

The Commission is not proposing, through the normal budget process, any additional funds for the Clean Heat Standard for FY26. If the Legislature directs the Commission to implement a CHS or other mechanism to reduce emissions from the thermal sector, there will need to be a dedicated, long-term funding mechanism to support the Commission's and the Department's work.

As explained in the Commission's February 15, 2024, Clean Heat Standard Funding Report, we have identified three primary mechanisms to pay for the regulatory oversight costs associated with a CHS or any other new thermal regulatory program: (A) general fund; (B) surcharge on fossil-fuel sales; and (C) extending a gross receipts tax to newly regulated entities.

The regulatory functions of the Commission and the Department are both primarily funded through the Gross Receipts Tax ("GRT") on regulated utility services.²²

For the purpose of maintaining the Department of Public Service and Public Utility Commission . . . each person, partnership, association, or private or municipal corporation conducting a business subject to the supervision of the Department of Public Service and Public Utility Commission . . . shall pay into the State Treasury on or before April 15 annually, in addition to the taxes now required by law to be paid, a tax, at the rate named

The Commission recommends that any new regulatory oversight of the thermal sector be funded through an expansion of the gross receipts tax to newly regulated thermal energy companies and,

²¹ \$825,000 was appropriated for the Commission and \$900,000 appropriated for the Department.

²² 30 V.S.A. § 22.

potentially, an increase in Vermont Gas System's ("VGS") GRT. The funds and staffing necessary will depend on the complexity of the regulatory structure; in other words, the CHS would require a greater tax rate than a more simplified regulatory approach.

b. Trading Platform

Act 18 (30 V.S.A. § 8127(l)(1)) requires that the Commission "create an administrative system to register, sell, transfer, and trade credits to obligated parties."

Act 18 further requires:

The system shall require entities to submit the following information to receive the credit: the location of the clean heat measure, whether the customer or tenant has a low or moderate income, the type of property where the clean heat measure was installed or sold, the type of clean heat measure, and any other information as required by the Commission. Customer income data collected shall be kept confidential by the Commission, the Department of Public Service, the obligated parties, and any entity that delivers clean heat measures.²³

Clean heat credits shall be "time stamped" for the year in which the clean heat measure delivered emission reductions. For each subsequent year during which the measure produces emission reductions, credits shall be generated for that year. Only clean heat credits that have not been retired shall be eligible to satisfy the current year obligation.²⁴

Finally, Act 18 provides: "The Commission may hire a third-party consultant to evaluate, develop, implement, maintain, and support a database or other means for tracking clean heat credits and compliance with the annual requirements of obligated parties."²⁵ Act 18 does not, however, provide any funding source for this third-party consultant. As discussed in Chapter XI of this report, there are several different ways to ensure compliance with thermal sector obligations, from a market-based performance standard with a fully liquid market to the current system used by the energy efficiency utilities to track and claim savings. The costs of these different approaches would vary widely. To the extent that a CHS with a credit trading platform is enacted, the Commission recommends that the proposed gross receipts tax on newly regulated thermal energy companies (and potential increase of VGS's) be set at a rate sufficient to fully

²³ 30 V.S.A. § 8127(l)(2).

²⁴ 30 V.S.A. § 8127(i).

²⁵ 30 V.S.A. § 8127(l)(1).

support the costs of a credit trading platform, unless those companies directly pay for such a platform through a per-user fee.

VIII. Economic Impact Analysis

a. Statutory Requirement

Section 6(i) of Act 18 requires the Commission to prepare an economic impact analysis of the Clean Heat Standard:

The reports shall include, to the extent available, estimates of the impact of the Clean Heat Standard on customers, including impacts to customer rates and fuel bills for participating and nonparticipating customers, net impacts on total spending on energy for thermal sector end uses, fossil fuel reductions, greenhouse gas emission reductions, and, if possible, impacts on economic activity and employment. The modeled impacts shall estimate high-, medium-, and low-price impacts.

Section 6(j) of Act 18 states:

Assistance. The Agency of Commerce and Community Development, the Department of Public Service, and other State agencies and departments shall assist the Commission with economic modeling for the required reports and rulemaking process.

b. Modeling Terminology

The Commission's analysis is rooted in economic cost modeling principles and contains specific terminology, as described below.

Participant costs. These costs reflect the costs incurred by customers who implement clean heat measures. For example, if the incentive level for a heat pump does not support the full cost of installation, the customer's costs associated with installation are considered participant costs. In addition, the costs of the electricity to run the heat pump would also be included in this category.

Program costs. Implementation of the Clean Heat Standard will include the costs of providing incentives as well as the administration of the program. The program costs should also include regulatory costs (e.g., evaluation). All customers that utilize fossil fuels for heating will incur program costs, as reflected by an increase in the price of that fuel.

Total costs. Collectively, participant and program costs represent the total costs of the program.

Greenhouse gas (“GHG”) reduction benefits. There is a societal value to reducing greenhouse gas emissions that is reflected as the “social cost of carbon.” In determining the GHG reduction benefits of the Clean Heat Standard the Commission used the social cost of carbon utilized by the Vermont Climate Council.

Fossil fuel savings benefits. A customer that installs a heat pump should see a reduction in their fossil fuel heating costs.

Total societal benefits. For the purposes of this report, societal benefits means the value of the avoided greenhouse gas emissions plus the value of fossil fuel savings.

Business as usual (“BAU”). To determine the costs of the Clean Heat Standard, it is important to understand what activities are already taking place. Vermont has a number of existing programs (e.g., Weatherization Assistance Program and Energy Efficiency Utility programs). Business as usual assumes the continuation of the costs and benefits associated with these programs.

Incremental costs/benefits. Given existing programs (business as usual), the costs and benefits of the Clean Heat Standard reflect only those costs and benefits above business as usual.

c. Overview of Results

At a summary level, the results of the Commission’s economic modeling exercise show that, over the next ten years (2026-2035), the incremental program cost of a Clean Heat Standard could be \$955,923,033, result in 2.07 million metric tons of in-state incremental CO₂e emission reductions, and provide incremental societal benefits of \$1.501 billion.²⁶ Looking out further in time, the costs of the program would continue to grow, as would its benefits. These costs and benefits are in addition to “business as usual” — that is, the cost of current thermal programs; the total costs to meet the thermal sector’s portion of the GWSA requirements would include both the incremental costs of a Clean Heat Standard and existing program costs. We urge caution in considering the results of this exercise: it relies on a large set of assumptions, and changes to these assumptions — such as consumer choices — lead to material differences in outcomes. The

²⁶ The societal benefits reported here include fuel savings and the value of emission reductions.

Commission's model includes only the direct effects; it is not an examination of indirect or induced effects such as price-driven changes in demand for each fuel.

d. Process

The Commission was presented with fundamental challenges in attempting to estimate the economic impacts of a Clean Heat Standard. For one, the Commission was asked to develop an *independent* assessment of the economic impacts of a Clean Heat Standard. In November of 2023, the Agency of Natural Resources conducted an economic impact analysis of the thermal sector. Separately, the Department of Public Service completed relevant analysis through its September 1, 2024, Thermal Sector Carbon Reduction Potential Study. Yet the Commission, as an administrative agency independent of executive branch oversight, was being asked to develop a fresh analysis.

As a quasi-judicial administrative agency, the Commission's role in the preparation of such an analysis is a rare event. Historically, the Commission functions primarily in an adjudicative role and decision-maker in considering economic analyses presented to it. The Commission functions as a court in weighing the analyses of others but is seldom asked to create such an independent analysis on its own. As such, the Commission was being asked to assume a role largely inconsistent with historical practice and how the agency has been staffed. The Commission decided to leverage the existing analyses but modified some assumptions and the model structure.

Accordingly, on October 1, 2024, the Commission appointed Commissioner Allen to lead a public process to create a model that estimates the direct economic impacts of the Clean Heat Standard. The Commission process involved three publicly noticed workshops and several opportunities for written submissions. The Commission contracted with Opinion Dynamics to assist with the technical aspects of the modeling.²⁷

The Commission decided early in the process to develop a bottom-up spreadsheet-based model to maximize transparency. The starting point for this process was the 2023 *Analysis of*

²⁷ Energy Futures Group also provided consulting services.

Buildings/Thermal Energy Sector Emissions Reduction Policies for Vermont (“Thermal Energy Report” or “TER”) prepared for the State of Vermont by Energy Futures Group, Stockholm Environment Institute, and Cadmus Group. The Thermal Energy Report was a substantial effort led by the Agency of Natural Resources’ Climate Action Office. Significantly, the Thermal Energy Report includes much of the necessary background information to determine the costs and benefits of the Clean Heat Standard relative to business as usual.

The scope of Opinion Dynamics’ work for this exercise was to assist with customization of a spreadsheet model to estimate the economic impacts of the Clean Heat Standard using publicly vetted assumptions. Opinion Dynamics did not exercise independent judgment as to likely mixes of clean heat measures and resulting changes in fossil-fuel use in the thermal sector. Instead, as directed by the Commission, Opinion Dynamics relied on the Thermal Energy Report model for measures and fossil-fuel use and applied its own work from the development of the Clean Heat Standard Technical Reference Manual to estimate costs and greenhouse gas emission reductions. With these key inputs, Opinion Dynamics developed a responsive spreadsheet model for the Commission to use in fulfilment of its reporting requirements.

Through the public workshops and written feedback, the Commission and Opinion Dynamics received guidance from the participants on key inputs necessary to develop a model. The most recent version of the model, released on January 15, 2025, incorporates modifications made following guidance provided by the participants.²⁸

e. Model Structure

The Commission’s efforts focused on the development of a transparent “bottom-up” framework that allowed for the construction of a model using Vermont-specific fuel volumes and characteristics, clean heat measures, and the greenhouse gas reduction requirements contained in the Global Warming Solutions Act.

²⁸ Opinion Dynamics was able to incorporate many of the helpful suggestions provided by participants. However, due to time and resource constraints, and in some instances the constraints of the model itself, not all suggestions were adopted. Even so, they remain valid points for consideration in any future modeling efforts.

The Commission used the 2023 TER model as a base for its modeling efforts, although the structure of that model was modified and consolidated into a single workbook structure. The earlier TER modeling effort was comprised of three workbooks and a large data management accounting framework to help reconcile fuel and emission flows through the Low Emissions Analysis Platform (“LEAP”), a widely used software tool for energy and climate policy analysis developed by the Stockholm Environment Institute.²⁹

Due to the short timeframe available for the Commission to complete its work, further reliance on the LEAP model was deemed impractical. For the current modeling effort, the Commission concluded it was possible to implement a simpler, more transparent, and more user-friendly modeling platform. In essence, a massive amount of detailed accounting maintained within the LEAP structure could be managed by reducing and simplifying the amount of detail required to focus only on the essential outputs.

The CHS cost analysis model was first shared publicly on December 11, 2024, with some cautionary notes, and, as discussed above, then revised to reflect Commission analysis of comments received before, during, and following the December 18, 2024, workshop.

f. Limitations of the Model

As a result of the Commission’s decision to rely on the 2023 TER model, and due to the short amount of time available to evaluate the CHS, it was not possible to develop a fully dynamic model that produces credible results in all reporting categories. Significantly, the model’s reliance on the TER model’s specific combination of clean heat measures (“measure mix”) and fuel-use changes means that user modifications away from the initial assumed measure mix do not completely flow through to the reported changes in fuel use and, therefore, those outputs that are reliant on volumes of fuels (for example, impacts on customer rates and bills and fossil-fuel reductions). This limitation of the model constrains the user to the 2023 TER model’s measure mix when analyzing changes in fuel use.

²⁹ The LEAP model was used extensively in the modeling done for the 2021 Climate Action Plan.

While efforts were made to account for Vermont-specific attributes, the model is limited in its ability to speak to any individual Vermonter's situation. This critique would apply to almost all economic models, but there are some reasons that it is particularly important to keep in mind in this case. Vermont is not a monolith in any way, but it is especially diverse in terms of electric rates, electric distribution grid capacity, labor force availability, and home heating setups – including primary, secondary, and sometimes even tertiary methods for heating.

One limitation of the economic impact model developed by the Commission's consultant is that it represents a tool that does not fully meet the requirements of a dynamic, market-based construct like the Clean Heat Standard. The Commission's model is most aptly applied to estimating the costs of an administrative construct or an economically regulated entity. The approach used by the Commission is common and consistent with the modeling used for energy efficiency programs. However, this modeling approach, while both necessary and valuable here, is unlikely to capture some important market dynamics such as competition. A market-based structure that included robust competition would likely result in reduced clean heat credit prices over time, but this potential dynamic is not captured in the current model.

In addition, the fuel price or rate impacts are based solely on estimated program costs and forecast changes in fuel volumes. This simplification will not address secondary effects resulting from price-driven changes in demand for each fuel.

g. Significant Assumptions in the TER Model

While the TER model provides a solid base for estimating the benefits and costs of a thermal sector emission reduction program, it also contains some embedded assumptions that we would not have used and that were difficult for the Commission and its consultants to disentangle.

For example, the 2023 TER model assumes the amortization of all capital costs for multi-year clean heat measures. The benefit of utilizing amortization, or financing, in a cost model is that it better matches the timing of the costs of an investment with its benefits, which are accrued over time rather than in one lump sum at the time of purchase. As a result, amortization lowers early-

year program costs but requires the payment of interest on the cost of the clean heat measures. This will increase the overall cost of the program relative to a program without amortization.³⁰

However, Act 18 did not provide a financial mechanism to support the amortization of clean heat measures and program costs. Amortization is not currently used by the electric energy efficiency utilities or by the electric distribution utilities in implementation of the Renewable Energy Standard Tier 3 program. Developing a workable thermal sector emission reduction program that relies on amortization will take time and infusion of upfront capital.

The Commission's model allows the user to toggle amortization on/off. When on, the model spreads the cost of clean heat measures evenly over their expected useful lives. When off, the model includes the full cost of clean heat measures in the year they are assumed to be installed.

In addition, the TER model assumes a lower reliance on biofuels, especially in the early years of the program, than would a measure mix that minimizes program costs. The TER model measure mix is based on the professional judgment of experts in the field, so we do not mean to say that it is an unreasonable or unlikely assumption, but it reflects only one possible measure mix. It is our judgment that, due to the existing biofuel blending requirements in neighboring states and California that have increased the availability and affordability of this clean heat measure, a measure mix that includes higher quantities of biofuels, particularly early on, could result in a more affordable program.³¹

h. Key Inputs

As discussed above, the Commission's economic model, constructed by Opinion Dynamics, relies heavily on the TER model for key inputs like measure mix per year, fuel use per year, in-state

³⁰ There is a significant difference between analysis of program costs and analysis of customer costs. A mortgage is usually the only way people can afford homeownership, even though the financing costs associated with a mortgage are likely to be substantially higher than the outright purchase of a house. A financing structure for clean heat measures would, in theory, increase the number of households that are willing to install such measures.

³¹ We understand from conversations with the Vermont Fuel Dealers Association that a blending requirement for biodiesel or renewable diesel could be satisfied as early as July of 2026.

thermal sector emissions per year, program administrative costs, and financial incentive levels for the installation of clean heat measures.

Other key inputs to the economic model are taken from the Clean Heat Standard Technical Reference Manual, developed by Opinion Dynamics with input and guidance from the Technical Advisory Group and other participants in the Commission's rulemaking process. These inputs include clean heat measure characterizations, carbon intensity/emissions factors, and clean heat measure costs.

One of the Commission's goals in developing this spreadsheet-based economic model was to make it responsive, in which users could change certain inputs and assumptions and see how model outputs change. The following are user-adjustable inputs to the economic model that drive cost and emission reduction impacts:

- Assumed costs of clean heat measures
- The measure characterization set (toggle between Opinion Dynamics' measure characterizations and those of the TER model)
- Carbon intensities of fuels (user-adjustable in the form of a toggle between Opinion Dynamics' carbon intensities and those developed by NV5 for the Clean Heat Standard Potential Study)
- When using amortization, the assumed discount, or interest, rate
- Assumed financial incentive levels to drive customer adoption of clean heat measures
- Program administrative costs
- State administrative costs
- Assumed mix of clean heat measures
- Assumed cost of biofuels measures

As discussed above, the model has limitations that can affect the accuracy of results when changing certain assumptions. As such, the model includes cautionary disclosures about which model outputs can reasonably be relied upon, and those that cannot, as a result of making

adjustments to certain variable inputs. Of particular note, changes to the assumed measure mix will make fuel usage and fuel price outputs less reliable, with larger changes to the assumed measure mix resulting in larger decreases in reliability.

i. Assumptions Used in High-, Medium-, and Low-Price Impact Scenarios

Section 6(i) of Act 18 requires the Commission to report on estimates of high-, medium-, and low-price impacts that result from the implementation of the proposed Clean Heat Standard.

The Commission modeled three different scenarios to meet this requirement. For each scenario we adjusted the inputs above to reflect reasonably likely costs to achieve GWSA targets for the thermal sector. In other words, for each scenario, we nudged the inputs in ways that we judge to be reasonable to generate a range of potential cost outcomes.

The following assumptions are the same for each scenario:

- Opinion Dynamics measure characterizations
- Opinion Dynamics carbon intensity set
- No amortization of costs
- 5% discount rate
- Program administrative costs equal to 20.58% of resource-acquisition costs
- State administrative costs except for those related to the cost of the credit trading platform; those costs differ per scenario as noted below
- Default measure mix

The following assumptions were changed for each scenario:

- Financial incentive levels for clean heat measures
- Installed clean heat measure costs
- Cost of credit trading platform (included in State administrative costs)
- Costs of biofuels

Regarding financial incentive levels, the economic model defaults to today's incentive levels. We use these incentive levels for the medium-price-impact scenario. For the high-price impact

scenario, we increase incentive levels by 20%, and for the low-price impact scenario we decrease incentive levels by 20%.

Regarding installed clean heat measure costs, for the high-price impact scenario we increase all measure costs by 10% from the default values. The medium- and low-price impact scenarios use the model's default values.

Regarding the cost of the credit trading platform, we assume the use of the M-RETS system.³² This system charges a \$2,500-per-year general subscription per user that authorizes the holding, transferring, and retirement of attributes. For the three scenarios, we assume 50, 125, and 200 general subscriptions for the low-, medium-, and high-price impact scenarios, respectively.

Regarding the costs of biofuels, in the medium-price impact scenario, we use the economic model's default values for the prices of renewable natural gas (\$20 per MMBtu) and biodiesel (ranging from \$29.91 to \$39.17 per MMBtu during the analysis period). For the high-price impact scenario, we increase the price of renewable natural gas to \$30 per MMBtu, which matches the TER model's price. We increase the price of biodiesel by 20%. In the low-price impact scenario, we set the price of renewable natural gas at \$17 per MMBtu, which is approximately the average yearly price presented by Vermont Gas Systems in its December 23 comments, which in turn reference the biomethane prices in the NV5 analysis. We decrease the price of biodiesel by 20% from the medium-price impact scenario value.

We have saved a copy of each scenario and made them publicly available on the Commission's Clean Heat Standard website and in ePUC in Case No. 23-2220-RULE.

j. Discussion of Modeling Results

The economic model generates estimates of program costs, energy-use changes, in-state emission reductions, customer rate impacts, societal impacts, costs to participating and non-participating customers, changes in energy spending, and fossil-fuel reductions for each modeled scenario. It is important to note that the economic model's results are presented as incremental to the business-as-usual ("BAU") case. In other words, the model presents the incremental costs and

³² See <https://www.mrets.org/>.

benefits that would accrue under the Clean Heat Standard beyond those that would accrue under existing policies and programs, including the Weatherization Assistance Program, energy efficiency utility programs, and Renewable Energy Standard Tier 3 programs. The full cost of achieving the thermal sector's portion of the GWSA emission-reduction requirements, as modeled, is understood to be the sum of the incremental Clean Heat Standard costs and the business-as-usual costs.

The Commission's analysis focuses on the overall costs and benefits within the thermal sector of the proposed Clean Heat Standard relative to business as usual. The analysis does not include more generalized economy-wide impacts on economic activity or employment.

Model outputs for each of the three scenarios are shown in the graphics and tables below.

Overall, we calculated a cumulative incremental program cost of \$ \$955,923,033 over the first 10 years in the medium-price impact scenario, and rate impacts between 2% and 45% for heating oil, propane, and natural gas.

Figures 1, 2, and 3 show the incremental impact on the price of heating fuels under the CHS. Tables 1, 2, and 3 show the total price of heating fuels under the CHS.

Figure 1 Residential Heating Oil Prices (\$/gal)



Table 1 Residential Heating Oil Prices (\$/gal)

Year	Business as Usual (BAU)	CHS: Low-Price Impact Scenario	CHS: Medium-Price Impact Scenario	CHS: High-Price Impact Scenario
2026	3.32	3.40	3.40	3.41
2027	3.26	3.40	3.40	3.42
2028	3.22	3.37	3.38	3.39
2029	3.25	3.55	3.56	3.60
2030	3.30	3.64	3.66	3.70
2031	3.33	3.73	3.74	3.80
2032	3.34	3.78	3.80	3.86
2033	3.37	3.84	3.86	3.92
2034	3.38	3.89	3.91	3.97
2035	3.40	3.96	3.98	4.05

Figure 2 Residential Propane Prices (\$/gal)

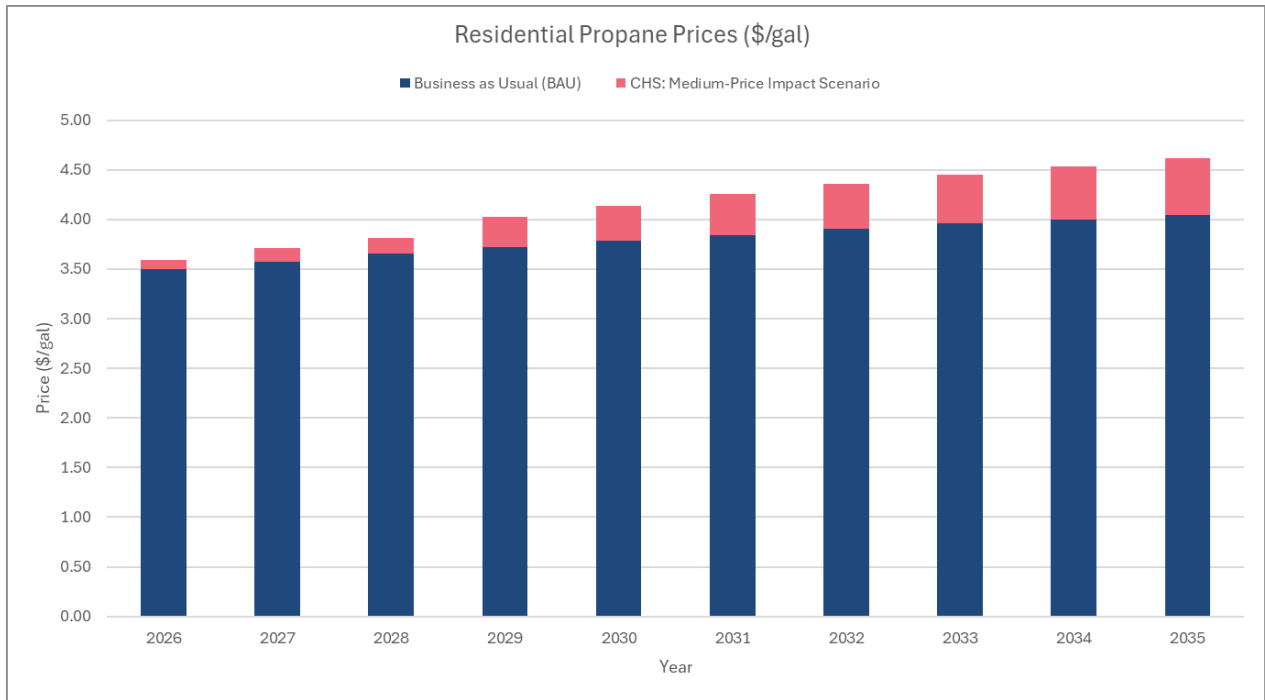


Table 2 Residential Propane Prices (\$/gal)

Year	Business as Usual (BAU)	CHS: Low-Price Impact Scenario	CHS: Medium-Price Impact Scenario	CHS: High-Price Impact Scenario
2026	3.50	3.58	3.59	3.59
2027	3.57	3.70	3.71	3.72
2028	3.66	3.81	3.81	3.83
2029	3.72	4.02	4.03	4.07
2030	3.79	4.13	4.14	4.19
2031	3.84	4.24	4.26	4.31
2032	3.91	4.35	4.36	4.42
2033	3.96	4.43	4.45	4.51
2034	4.00	4.51	4.53	4.59
2035	4.04	4.60	4.62	4.69

Figure 3 Residential Natural Gas Rates (\$/CCF)

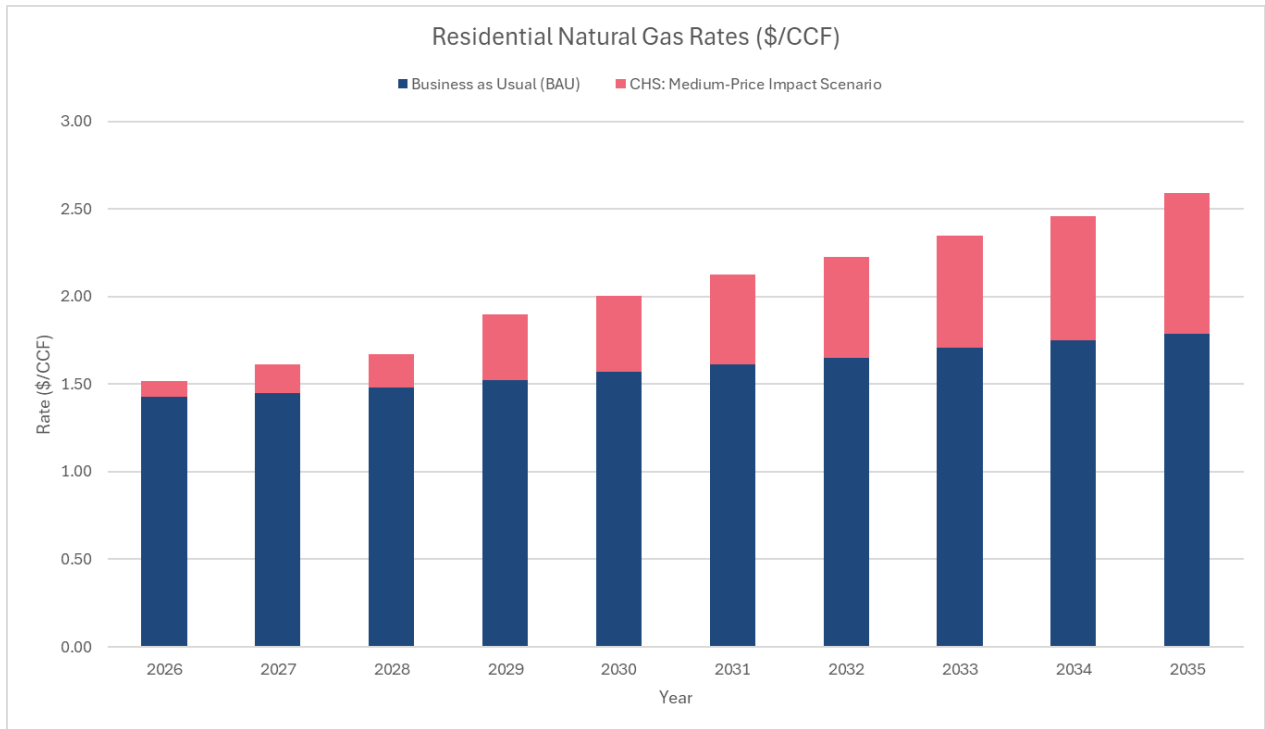


Table 3 Residential Natural Gas Rates (\$/CCF)

Year	Business as Usual (BAU)	CHS: Low-Price Impact Scenario	CHS: Medium-Price Impact Scenario	CHS: High-Price Impact Scenario
2026	1.43	1.52	1.52	1.53
2027	1.45	1.61	1.61	1.63
2028	1.48	1.67	1.67	1.69
2029	1.52	1.88	1.90	1.94
2030	1.57	1.99	2.01	2.06
2031	1.61	2.11	2.13	2.19
2032	1.65	2.21	2.23	2.29
2033	1.71	2.33	2.35	2.42
2034	1.75	2.44	2.46	2.53
2035	1.79	2.57	2.59	2.67

Tables 4 – 6 demonstrate how an illustrative customer’s total heating costs would differ in 2030 (including the amortized cost of the installation of a heat pump) if they partially switched from one of the named fuels to a heat pump. Positive numbers (in red) indicate higher costs after making the switch. Negative numbers (in green) indicate savings after making the switch.

Tables 7 – 9 demonstrate how the 2030 fuel bill would increase for an illustrative customer who did not implement a clean heat measure.

These calculations are based on a single-family home with a heating load of 82.8 MMBtu.

Table 4 Single-family participating customer, low-price scenario impact

	Boiler Partial Displacement (Two Head Air Source Heat Pump) Retrofit		
	Natural Gas	Heating Oil	Propane
Net Change in Annual Costs for Low-Income	\$243	(\$220)	(\$1,443)
Net Change in Annual Costs for Moderate-Income	\$370	(\$94)	(\$1,317)
Net Change in Annual Costs for Market Rate	\$565	\$101	(\$1,122)
Lifetime Costs (NPV) Low-Income	\$2,635	(\$2,386)	(\$15,642)
Lifetime Costs (NPV) Moderate-Income	\$4,005	(\$1,016)	(\$14,272)
Lifetime Costs (NPV) Market Rate	\$6,119	\$1,098	(\$12,159)

Table 5 Single-family participating customer, medium-price impact scenario

	Boiler Partial Displacement (Two Head Air Source Heat Pump) Retrofit		
	Natural Gas	Heating Oil	Propane
Net Change in Annual Costs for Low-Income	\$234	(\$226)	(\$1,453)
Net Change in Annual Costs for Moderate-Income	\$360	(\$100)	(\$1,326)
Net Change in Annual Costs for Market Rate	\$547	\$87	(\$1,140)
Lifetime Costs (NPV) Low-Income	\$2,532	(\$2,454)	(\$15,746)
Lifetime Costs (NPV) Moderate-Income	\$3,902	(\$1,084)	(\$14,375)
Lifetime Costs (NPV) Market Rate	\$5,927	\$942	(\$12,350)

Table 6 Single-family participating customer, high-price impact scenario

	Boiler Partial Displacement (Two Head Air Source Heat Pump) Retrofit		
	Natural Gas	Heating Oil	Propane
Net Change in Annual Costs for Low-Income	\$201	(\$248)	(\$1,485)
Net Change in Annual Costs for Moderate-Income	\$340	(\$109)	(\$1,346)
Net Change in Annual Costs for Market Rate	\$537	\$88	(\$1,150)
Lifetime Costs (NPV) Low-Income	\$2,181	(\$2,686)	(\$16,096)
Lifetime Costs (NPV) Moderate-Income	\$3,689	(\$1,179)	(\$14,589)
Lifetime Costs (NPV) Market Rate	\$5,819	\$952	(\$12,459)

Table 7 Single-family non-participating customer, low-price impact scenario

	Single Family Space Heating		
	Propane	Heating Oil	Natural Gas
Change in annual costs	\$310	\$205	\$334
Percent change in cost	9%	10%	27%

Table 8 Single-family non-participating customer, medium-price impact scenario

	Single Family Space Heating		
	Propane	Heating Oil	Natural Gas
Change in annual costs	\$322	\$213	\$346
Percent change in cost	9%	11%	28%

Table 9 Single-family non-participating customer, high-price impact scenario

	Single Family Space Heating		
	Propane	Heating Oil	Natural Gas
Change in annual costs	\$364	\$240	\$387
Percent change in cost	11%	12%	31%

Figure 4, figure 5, and table 10 show the change in heating fuel consumption in Vermont under the CHS.

Figure 4 Incremental Liquid Fuel Changes Under CHS

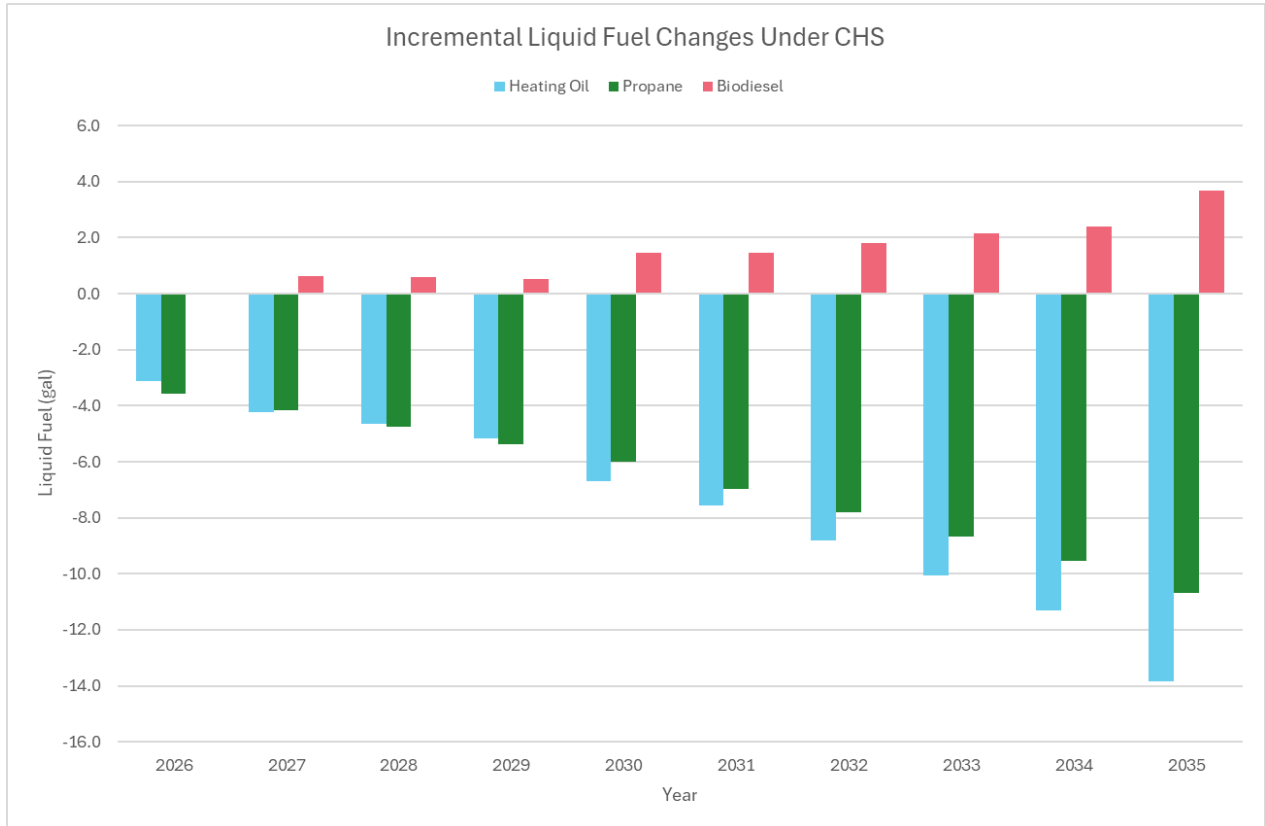


Figure 5 Incremental Gas Fuel Changes Under CHS

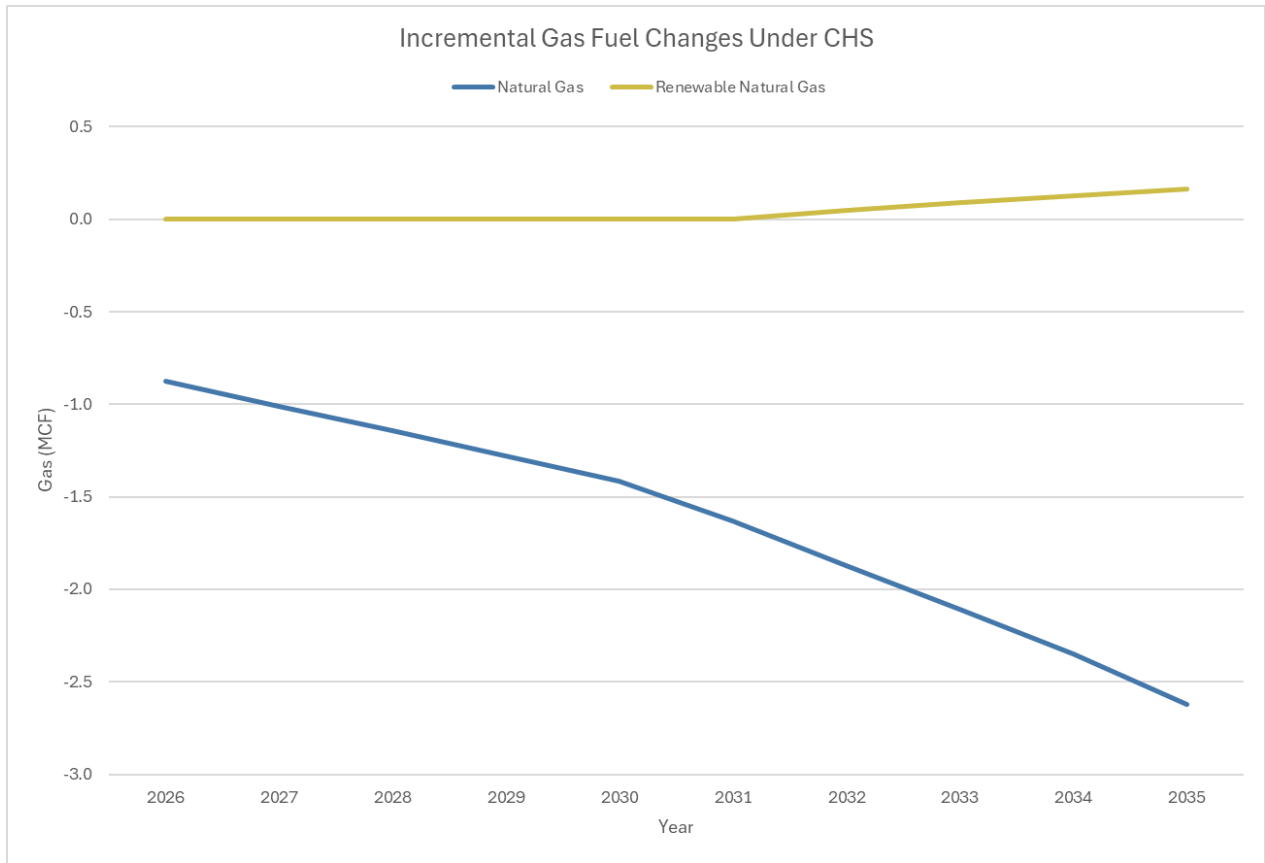


Table 10 Incremental Fuel Changes Under CHS

Year	Heating Oil (gal)	Propane (gal)	Natural Gas (MCF)	Renewable Natural Gas (MCF)	Biodiesel (gal)
2026	-3.1	-3.6	-0.9	0.0	0.0
2027	-4.2	-4.2	-1.0	0.0	0.6
2028	-4.6	-4.8	-1.1	0.0	0.6
2029	-5.2	-5.4	-1.3	0.0	0.5
2030	-6.7	-6.0	-1.4	0.0	1.5
2031	-7.6	-7.0	-1.6	0.0	1.5
2032	-8.8	-7.8	-1.9	0.0	1.8
2033	-10.1	-8.7	-2.1	0.1	2.1
2034	-11.3	-9.6	-2.4	0.1	2.4
2035	-13.8	-10.7	-2.6	0.2	3.7

Figure 6 and table 11 show the annual incremental emission reductions attributable to the CHS. These values are independent of the price-impact scenario.

Figure 6 Incremental In-State Emissions Reduction Under CHS (MTCO_{2e})

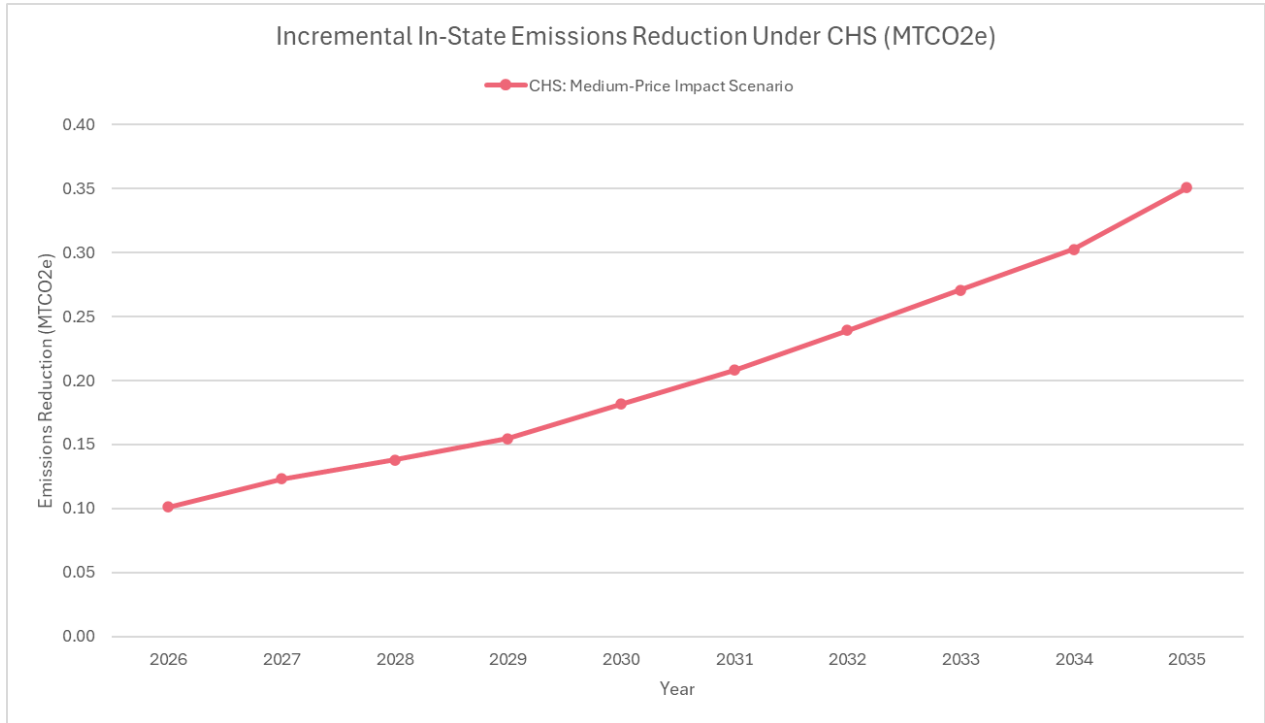


Table 11 Incremental In-State Emissions Reduction Under CHS (MTCO_{2e})

Year	CHS: Medium-Price Impact Scenario
2026	0.10
2027	0.12
2028	0.14
2029	0.15
2030	0.18
2031	0.21
2032	0.24
2033	0.27
2034	0.30
2035	0.35

Figure 7 and table 12 show the incremental program costs by year for each of the price-impact scenarios, which include both program costs and administrative costs.

Figure 7 Incremental Clean Heat Standard Program Costs by Year

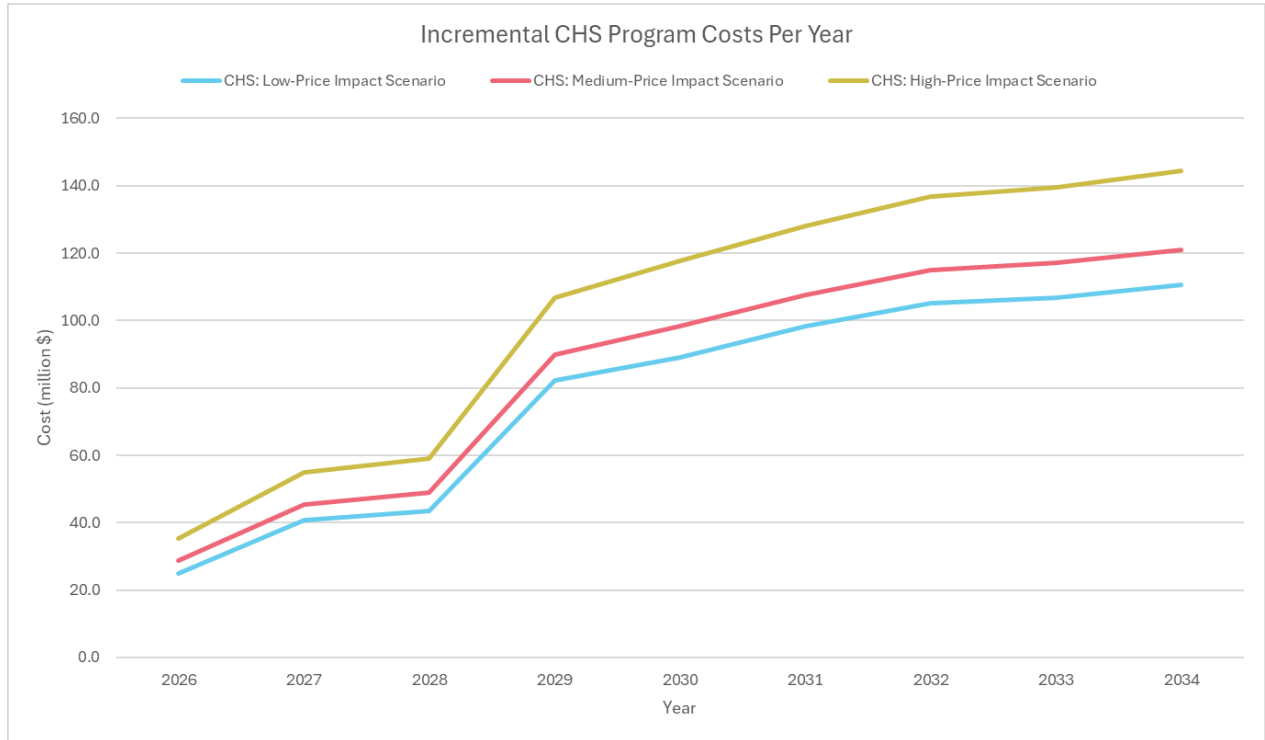


Table 12 Incremental CHS Program Costs Per Year (million \$)

Year	CHS: Low-Price Impact Scenario	CHS: Medium-Price Impact Scenario	CHS: High-Price Impact Scenario
2026	25.1	28.6	35.2
2027	40.7	45.5	55.0
2028	43.5	48.8	59.1
2029	82.3	90.0	106.9
2030	89.1	98.4	117.8
2031	98.2	107.7	128.0
2032	105.1	115.0	136.7
2033	106.9	117.1	139.5
2034	110.5	121.1	144.3
2035	117.6	129.7	155.3

These results are based on the measure mix and fuel use changes in the TER model. As we discuss above, due to the limitations of the economic model, we did not alter this measure mix for the statutorily required reporting categories. However, if biofuels were to play a more significant role in the measure mix than was assumed in the TER model, we expect that the costs of the program would be materially lower than reported above. To determine this, we have compared the emission reductions of the assumed 2030 measure mix in the TER model to those from the 2030 measure mix in the NV5 analysis, which represents a cost-optimized measure mix. We looked at the broad measure categories of heat pumps, weatherization, biofuels, and commercial/industrial activity. We found that the TER model assumes greater emission reductions from heat pumps, weatherization, and commercial/industrial activity, and significantly less emission reduction from biofuels than shown in the NV5 analysis. All other factors held equal, if we scale the heat pump, weatherization, biofuels, and commercial/industrial measure mixes to match the 2030 emissions from these categories in the NV5 analysis, we find that the cumulative incremental cost of the program over the next 10 years would be \$474,152,108 and in-state emission reductions would be 1,343,055 metric tons. We do not report estimates of rate, bill, or fuel use changes for this scenario due to the limitations of the model.

IX. Public Outreach

Act 18 §§ 6(b) and (c) require the following public engagement actions:

“(b) Facilitator. The Commission shall hire a third-party consultant with expertise in equity, justice, and diversity to design and conduct public engagement. The Commission and the facilitator shall incorporate the Guiding Principles for a Just Transition into the public engagement process. The Commission may use funds appropriated under this act on hiring the consultant. Public engagement shall be conducted by the facilitator for the purposes of:

- (1) supporting the Commission in assessing whether customers will be equitably served by clean heat measures and how to increase equity in the delivery of clean heat measures;
- (2) identifying actions needed to provide customers with low income and moderate income with better service and to mitigate the fuel price impacts calculated in 30 V.S.A. § 8128;
- (3) recommending any additional programs, incentives, or funding needed to support customers with low income and moderate income and organizations that provide social services to Vermonters in affording heating fuel and other heating expenses; and
- (4) providing information to the Commission on the challenges renters face in equitably accessing clean heat measures and recommendations to ensure that renters have equitable access to clean heat measures.

(c) Public engagement process. Before commencing rulemaking, the Commission shall use the forms of public engagement described in this subsection to inform the design and implementation of the Clean Heat Standard. Any failure by the Commission to meet the specific procedural requirements of this section shall not affect the validity of the Commission’s actions.

- (1) The Commission shall allow any person to register at any time in the Commission’s online case management system, ePUC, as a participant in the Clean Heat Standard proceeding. All members of the Equity Advisory Group shall be made automatic participants to that proceeding. All registered participants in the proceeding, including all members of the Equity Advisory Group, shall receive all notices of public meetings and all notices of opportunities to comment in that proceeding.
- (2) The Commission shall hold at least six public hearings or workshops that shall be recorded and publicly posted on the Commission’s website or on ePUC. These meetings shall be open to everyone, including all stakeholders, members of the public, and all other potentially affected parties, with translation services available to those attending.
- (3) The Commission also shall provide at least three opportunities for the submission of written comments. Any person may submit written comments to the Commission.”

The Commission appreciates the robust, thoughtful engagement and public participation that it has received in the Clean Heat Standard investigation and rulemaking. In the 23-2220-RULE case, the Commission issued eight requests for comment, convened seven substantive workshops, held one information session, held one public hearing, and issued two requests for information. In the 23-2221-INV case, the Commission issued three requests for comment, convened one substantive workshop, and issued one request for information. All workshops and public hearings have been well attended.

The Commission thanks the many participants who shared their stories, perspectives, and expertise.

a. Vermont Partnership for Fairness and Diversity

Pursuant to Act 18 § 6(b), the Commission was required to “. . . hire a third-party consultant with expertise in equity, justice, and diversity to design and conduct public engagement.” Through an RFP process, the Commission contracted with the Vermont Partnership for Fairness and Diversity (“VPFD”) to design and conduct public engagement. To connect with people and organizations that do not typically interact with the Commission, and to complement the work of the Equity Advisory Group, VPFD conducted multiple types of outreach activities. VPFD conducted three public gatherings, a group-specific listening session, and a panel discussion at the Vermont Council on Rural Development Community Leadership Summit. VPFD’s three reports are included as Appendix G.

One of the key takeaways from VPFD’s report is as follows: “The manner in which the Clean Heat Standard process unfolded exemplifies the idiom “putting the cart before the horse.” The Act 18 legislative mandates created an unrealistic timeline that forced the Public Utilit[y] Commission to compress and compromise the regular order of public engagement.”

b. Climate Action Office

The Agency of Natural Resources’ Climate Action Office (CAO) has been conducting its own public outreach on climate-related initiatives and worked with the Commission on efforts that involved the CHS. Of particular relevance was a conversation with front-line community action agency staff about the Clean Heat Standard in September 2024. The major themes and takeaways

from that conversation are included in the CAO's third-quarter 2024 Community Engagement Report.³³ In addition, the Commission worked with the CAO to include questions about home heating at the CAO's existing community engagement events. Feedback from those questions will be included in the 2024 fourth-quarter Climate Action Office Community Engagement Report.³⁴

c. Other Outreach Activities

During the summer of 2024, the Commission participated in discussions about the Clean Heat Standard with the Vermont Community Action Partnership. In addition, the Chair participated in a community discussion of the Clean Heat Standard in Dover, Vermont, hosted by Representative Laura Sibilia.

In October 2024, the Commission held a technical workshop to discuss the draft CHS rules and separately held a public hearing to receive more general feedback.

The Commission made two changes to its public-facing communications to facilitate understanding of the Clean Heat Standard project. The Commission added a Clean Heat Standard overview page to its website. This page provided links to important information and separated requests for input, Commission output, and materials for the Technical and Equity Advisory Groups into sections that allowed people to find items of interest more quickly.³⁵ The Commission also instituted topic tags that were included with every order; these tags were intended to make it easier for people to filter the orders on the Commission's online document-management system, ePUC, so that they could quickly find items pertaining to their topics of interest.³⁶

³³ VT. CLIMATE ACTION OFF., VERMONT VOICES ON CLIMATE: JULY 1 TO SEPTEMBER 30, 2024 (2024), *available at* https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/Quarterly%20Reports%20and%20associated%20materials/QuarterlyPublicOutreachSummary_2024Q3.pdf.

³⁴ VT. CLIMATE ACTION OFF., COMMUNITY ENGAGEMENT REPORT – 2024 Q4 (forthcoming 2025), *available at* <https://climatechange.vermont.gov/resources>.

³⁵ See <https://puc.vermont.gov/clean-heat-standard>.

³⁶ *Procedural Order Creating Topic Tag System for Clean Heat Standard Cases*, Case No. 23-2220-RULE, Order of 12/07/23.

d. Summary of Comments Received

The Commission received valuable feedback from the various public outreach efforts and public comments. The following paragraphs summarize the themes that emerged from those comments.

i. Cost

Vermonters at every public engagement session were consistently worried about the cost of the potential Clean Heat Standard and how those costs would affect their ability to heat their homes. One public commenter stated that those who are less able to install clean heat measures are being asked to subsidize — through increased heating fuel costs — those who are more able to install such measures.

Participants also noted that researching available technologies and incentives related to home heating equipment can be a significant obstacle. They emphasized the importance of simple options and potentially trustworthy, independent parties such as navigators (see below) to help them pursue those options.

ii. Complexity

Commenters indicated that the potential Clean Heat Standard is very complicated and that it is difficult for the average Vermonter to understand and engage. This was particularly true for the engagement sessions themselves, which were necessarily held while the Rule was under development; the Commission was unable to explain a topic that was actively being developed and attendees struggled to understand well enough to participate meaningfully.

iii. Climate Benefits

A number of commenters emphasized the importance of addressing climate change and stated support for the potential Clean Heat Standard because it is specifically designed to meet Vermont's Global Warming Solutions Act thermal requirements. Conversely, some commenters suggested that Vermont's contribution to climate change was too small to warrant the costs of a Clean Heat Standard.

iv. Education

Education was an important comment theme at the public engagement sessions. In addition to the complicated potential Clean Heat Standard, public engagement participants expressed more general confusion about clean heat technologies, how to apply those technologies in their own lives, and where to get further credible information about the available options. Participants indicated that they struggle with doing the economic math necessary to decide whether a clean heat technology is a good investment for them. Some participants questioned whether the State of Vermont is a transparent and reliable source of information.

Furthermore, commenters noted that each party that would offer rebates and incentives for clean heat measures as part of a Clean Heat Standard (e.g., Default Delivery Agent, or an obligated party such as a fuel dealer) will need to educate Vermonters about the availability and details of those incentives. One participant suggested having the equivalent of a food nutrition label for clean heat technologies to help people understand and compare. Another suggested using videos in addition to written material. Other participants agreed that incentives should be simple and clear. One commenter noted that the clarity of educational materials and of incentives is an equity issue; this information must be accessible for people from a variety of backgrounds (e.g., more and less educated, more and less English facility, different cognitive abilities) so that everyone has a fair chance to make informed decisions about their own participation in the Clean Heat Standard.

v. Navigators

The concept of navigators appeared multiple times during the Clean Heat Standard rulemaking process, including in the public engagement sessions and the VCRD Summit workshop.

Navigators are designated people who would help Vermonters search through the available incentives and technologies to find the clean energy solutions that work best for them; Vermont's community action agencies currently have something akin to this role for different topics.

Participants seemed to view this idea favorably. The potential Clean Heat Standard relies on multiple private entities to offer incentives that are theoretically more responsive than government incentives to market conditions and emerging technologies. However, commenters suggested that finding and staying up to date with offerings from multiple parties adds time and

work for those interested in participating; having a neutral, professional navigator to identify and evaluate the most relevant options for each user would facilitate user participation.

vi. Biofuels

Several commenters expressed concerns about the inclusion of biofuels as eligible clean heat measures, stating that any combustion increases greenhouse gases. Some public engagement session participants expressed concerns about indoor air quality and the non-carbon dioxide emissions of wood fuel sources. One commenter was specifically concerned that by including advanced wood heat as a listed clean heat measure, the State of Vermont is not being honest about the health implications of that fuel type. Commenters also shared concerns that trees store carbon and cutting them for fuel is counter to the carbon reduction goals of the GWSA. On the other hand, several participants indicated that they currently used wood as a primary or secondary heat source and were happy with the price of that fuel type.

vii. Renters

Public engagement session participants discussed how it could be difficult for renters to participate in the proposed Clean Heat Standard because they are not empowered to make building equipment decisions. Commenters noted the “split incentive” problem, where renters often have little control over their space heating technologies and may or may not have enough power in the renter/landlord relationship to be able to request clean heating options; landlords have an incentive to avoid making clean heat investments and to pass on the costs of any investments that they do make as higher rent. Participants at the second and third engagement sessions indicated that the renter/landlord question may be best addressed specifically in complementary legislation.

viii. Data

Town energy committee members attended several sessions. They repeatedly expressed a desire to have a town-specific fossil-fuel data source that would allow them to better target their activities. Energy committee members also identified energy committees as potentially useful partners for the Commission when educating Vermonters about the Clean Heat Standard and other energy programs.

ix. Measure viability

Public engagement session participants expressed concern that the clean heat measures envisioned by the potential CHS would not be appropriate for their individual housing situations. This took several forms, including being off-grid and in an inaccessible area without sufficient power to run a heat pump continuously, having homes that are not ideal for heat pumps because they have many rooms or poor wall materials for that technology, recently investing in new fossil-fuel equipment, and living in mobile homes.

x. Infrastructure and storage

Public engagement session participants expressed concerns that Vermont's electric infrastructure will not be able to keep pace with the speed of electrification envisioned in the potential Clean Heat Standard. Participants expressed that power already goes out frequently in many towns. Participants are also concerned that energy storage technologies and Vermont energy storage capabilities will need to improve quickly to make this change viable.

xi. New buildings

Public engagement session participants suggested that Vermont building codes do not address clean energy and that new buildings built with fossil-fuel energy systems will increase greenhouse gas emissions as Vermont works hard to reduce those same emissions.

xii. Small businesses

Public engagement session participants consistently expressed concerns about the ability of smaller, local fuel dealers to continue to exist given the anticipated costs, administrative burdens, and new requirements of the potential Clean Heat Standard. Participants are concerned that smaller dealers exiting the market will result in less consumer choice, higher consumer fuel prices, and lack of service for customers (especially rural customers) who are already difficult to serve. Larger providers may be less responsive to individual resident needs. These concerns were shared by diverse types of participants, including private individuals, advocates, and fuel dealers. Participants understand the expectation that small businesses will transition to providing clean energy alternatives but question whether this is likely to happen quickly enough, or at all, given the time and money it takes to develop the necessary expertise for those changes.

One participant asked for examples of small fuel dealers who had successfully pivoted to clean energy, but no one was able to provide such an example.

xiii. Workforce

Public engagement session participants pointed out Vermont's existing workforce constraints in this area; for example, the Weatherization Assistance Program is currently constrained by workforce availability. As mentioned in the small business discussion, transitioning existing fuel delivery workers into clean energy workers takes significant time and investment. Commenters suggested that customers will need to pay higher fuel costs under the potential Clean Heat Standard as they wait for worker availability (and affordability) to complete their specific projects.

X. Problems with Current Clean Heat Standard Legislation

a. Statutory Issues

If the Clean Heat Standard were to be moved forward, the Commission has identified the following statutory provisions that should be clarified or amended to allow for more successful, efficient implementation.

- Section 8123(11) (Definition of “Heating fuel”):

“Heating fuel” means fossil-based heating fuel, including oil, propane, natural gas, coal, and kerosene.

This is a broad definition that potentially captures unintended end-uses or sellers of these fuels. For example, under this definition, bottled propane used primarily for camping stoves would need to be accounted for, and all sellers of those propane bottles would need to register annually with the Commission. We recommend that lawmakers consider the unintended consequences of the existing definition, especially when viewed in concert with the definitions of “obligated party” and “thermal sector,”³⁷ along with those who are required to register annually with the Commission pursuant to Section 8124(b)(1).

Using the modifier “heating” also created a significant amount of confusion as it was not clear that registrants shouldn’t try to estimate what proportion of the fuel they sold was for space heating versus other end uses (e.g., water heating, for a generator, etc.). Because the ultimate end-use of the fuel is not known to the seller, there is no way for sellers of fuel to know which gallons were used for space heating or some other use. This adds another element of confusion to the definition of “heating fuel”.

³⁷ For additional context, emissions included in the “thermal sector,” otherwise known as the Residential-Commercial-Industrial sector in the state’s Greenhouse Gas Inventory (minus non-road diesel), are not just from heating fuel.

- Section 8123(12)(B) (Definition of “Obligated Party”) means:

For other heating fuels, the entity that imports heating fuel for ultimate consumption within the State, or the entity that produces, refines, manufactures, or compounds heating fuel within the State for ultimate consumption within the State. For the purpose of this section, the entity that imports heating fuel is the entity that has ownership title to the heating fuel at the time it is brought into Vermont.

This definition of “obligated party” is problematic for multiple reasons, including that it requires 100% registration compliance and accuracy. Significant administrative effort is required to process the data, and even more effort and assumptions required when there is not 100% registration compliance or accuracy. From the registration data, we understand that multiple registrants were unclear about who had “ownership title” to an imported heating fuel. We suggest that a less costly and more reliable definition would name retail fuel dealers — those who pay the fuel tax under 33 V.S.A. § 2503 — as the obligated parties and use the existing fuel tax information as the basis for determining annual required amounts. This would create clarity as to which companies are obligated parties and mean that the obligations are not dependent on the reporting of other companies. This approach of defining the obligated party based on retail sales is similar to how the Massachusetts Clean Heat Standard is being designed.³⁸

As discussed in Chapter III above, it has become clear that the identification of obligated parties through existing mechanisms and using the current statutory definitions is untenable, and further, that the determination of which fuel dealers are obligated parties is likely to change on a yearly basis. For example, Company A imports 10,000 gallons of heating oil from New Hampshire into Vermont. Company A delivers 5,000 gallons of heating oil to its Vermont customers, sells 2,000 gallons to Company B and 1,000 gallons to Company C, and stores 2,000 gallons of oil for later use. Company B delivers 1,000 gallons to customers in Vermont and 1,000 gallons to customers in Massachusetts. Company C does not register or file a report with the Commission.³⁹

³⁸ See Mass. Dep’t of Env’t Prot., Clean Heat Standard Program Development, <https://www.mass.gov/info-details/clean-heat-standard-program-development#current-program-development-materials->.

³⁹ In this instance, the Commission is aware that Company C received 1,000 gallons of heating oil from Company A but does not have any information as to whether the oil was ultimately consumed within Vermont.

In this example, the Commission would have assigned Company A with an obligation of 9,000 gallons. Based on available information, we would know that Company A imported 10,000 gallons, of which 6,000 gallons were sold in Vermont and 1,000 gallons were sold by Company B outside Vermont. We would assume that the 2,000 stored gallons would ultimately be consumed in Vermont, and absent any other information on Company C's disposition of 1,000 gallons, we would assume they are consumed in Vermont. In other words, given the lack of complete information, the Commission has opted to consider all heating oil imported into Vermont and not shown to be sold outside Vermont as a current-year obligation for Company A.

Company B is not an obligated party because it purchased all of its heating oil from Company A, which imported the heating oil into Vermont. The 1,000 gallons sold by Company B to customers in Massachusetts reduces Company A's obligations to 9,000 gallons.

We would not designate Company C as an obligated party because it did not register. In this scenario, we would have to research or contact Company C to determine whether it should have registered with the Commission. If Company C should have registered, it is unclear whether the Commission's enforcement efforts against Company C for failing to report on fuel sales would be complete within the time necessary to determine Company A's obligations. Absent sufficient information, the Commission would either need to assign the 1,000-gallon obligation to Company A or remove the 1,000-gallon obligation for that compliance year. Where this fact pattern is present in the actual fuel dealer registration data to date, we have assigned the 1,000 gallons to Company A.

This example demonstrates that Company A's obligations are reliant on the accuracy and completeness of registration data for all other companies to which it sells heating fuel.

- Section 8124(a)(2) states:

Annual requirements shall be expressed as a percent of each obligated party's contribution to the thermal sector's lifecycle CO₂e emissions in the *previous* year. The annual percentage reduction shall be the same for all obligated parties. To ensure understanding among obligated parties, the Commission shall publicly provide a description of the annual requirements in plain terms. (emphasis added)

The annual fuel dealer registration deadline is June 30 of each year. It is not possible to process the fuel dealer registration data, set each obligated party's annual requirement, and review and approve compliance plans before the beginning of the compliance year. We suggest amending this to "in the most recent year for which data is available." In addition, there is no such thing as the "thermal sector's lifecycle CO₂e emissions." Pursuant to Section 8123(13), "thermal sector" has the same meaning as the "Residential, Commercial and Industrial Fuel Use" sector as used in the Vermont Greenhouse Gas Emissions Inventory, and the Inventory does not measure emissions on a lifecycle basis. We recommend that lawmakers clarify the intent of this provision.

- Section 8124(b)(1) regarding annual fuel dealer registration states:

Each entity that sells heating fuel into or in Vermont shall register annually with the Commission by an annual deadline established by the Commission. The first registration deadline is January 31, 2024, and the annual deadline shall be June 30 of each year after. The form and information required in the registration shall be determined by the Commission and shall include all data necessary to establish annual requirements under this chapter. The Commission shall use the information provided in the registration to determine whether the entity shall be considered an obligated party and the amount of its annual requirement.

As discussed above, the definition and determination of obligated parties and their annual requirements are problematic for multiple reasons. To avoid the registration compliance and accuracy problems, as well as the significant amount of Commission staff time required to process the registration data, we suggest that (1) retail sales data that are already collected for the fuel tax be used to determine obligated parties and their annual requirements, (2) the Tax Department should provide this information to the Commission, and (3) fuel dealers should not be required to register separately with the Commission. Under Act 18, fuel dealers will still be required to register regardless of whether the Legislature implements the Clean Heat Standard. The Commission recommends that this be amended so that fuel dealer registration is not required if the Clean Heat Standard is not implemented.

- Section 8125(e)(1)(B) requires the Commission to approve the first three-year plan and associated budget for the Default Delivery Agent by no later than September 1, 2025.

We do not believe this date is feasible. Most significantly, the Commission has not designated any entity as a Default Delivery Agent because it seems improbable that any entity would expend the resources necessary to respond to a solicitation seeking a DDA, absent a clear direction from the Legislature that the Clean Heat Standard is going forward. As soon as one or more Default Delivery Agents have been appointed, time will be required to develop, review, and approve three-year plans and budgets. We suggest that, at a minimum, the deadline for approval of the first three-year plans and budgets be extended and set relative to the effective date of the Clean Heat Standard (for example, 12 months after). In addition, we highlight the potential conundrum of setting Default Delivery Agent budgets and plans on a three-year basis pursuant to Section 8125(e)(1) while obligated parties' annual requirements change, and are updated, on a yearly basis pursuant to Sections 8124(a) and (b). With these provisions, it is unclear how to establish Default Delivery Agent three-year budgets that do not require annual amendments.

- Section 8127(c) regarding clean heat credit values states:

Clean heat credits shall be based on the accurate and verifiable lifecycle CO₂e emission reductions in Vermont's thermal sector that result from the delivery of eligible clean heat measures to existing or new end-use customer locations into or in Vermont.

- Section 8127(j) states:

Clean heat credits shall be earned only in proportion to the deemed or measured thermal sector greenhouse gas emission reductions achieved by a clean heat measure delivered in Vermont. Other emissions offsets, wherever located, shall not be eligible measures.

These two provisions may be viewed as incongruous. We again highlight that emissions from Vermont's thermal sector, as statutorily defined, are not measured on a lifecycle basis. Though not insurmountable, Section 8127(c) has the potential to cause confusion when reconciling the activities of the Clean Heat Standard with the emissions accounting in the Greenhouse Gas

Emissions Inventory. We recommend that lawmakers clarify the intent of Section 8127(c) and ensure that it is consistent with Section 8127(j) and other provisions of law.

- Section 8127(c)(1) establishes that for clean heat measures that are installed, credits will be created for each year of the expected life of the installed measure.
- Section 8127(i) establishes that clean heat credits shall be “time stamped” for the year in which the clean heat measure delivered emission reductions. For each subsequent year during which the measure produces emission reductions, credits shall be generated for that year. Only clean heat credits that have not been retired shall be eligible to satisfy the current year obligation.

Taken together, we interpret these sections to dictate that installed, multi-year measures may not generate the full lifetime of clean heat credits at once upon installation. Instead, each such measure would generate a year’s worth of credits during each year of its assumed useful life. We highlight, without judgment, that this is inconsistent with how measures are credited in Vermont’s energy efficiency and Tier 3 programs. If this provision remains, we will continue to consult with the Technical Advisory Group and stakeholders to develop methods to translate eligible clean heat measures that originate in the energy efficiency and Tier 3 programs to the Clean Heat Standard. More importantly, however, these provisions have the potential to cause cash-flow barriers for Default Delivery Agents or obligated parties who presumably would need to pay for clean heat measures up front but only receive the clean heat credit benefits over the life of the measure. We recommend that lawmakers consider ways to reconcile this problem — for example, by establishing a financing mechanism that would allow the costs of multi-year clean heat measures to be spread out over time to match the costs with the benefits.

- 30 V.S.A. § 8127(l)(1) requires that the Commission “create an administrative system to register, sell, transfer, and trade credits to obligated parties.”
- Section 8127(l) further requires:

The system shall require entities to submit the following information to receive the credit: the location of the clean heat measure, whether the customer or tenant has a low or moderate income, the type of property where the clean heat measure was installed or sold, the type of clean heat measure, and any other information as

required by the Commission. Customer income data collected shall be kept confidential by the Commission, the Department of Public Service, the obligated parties, and any entity that delivers clean heat measures.⁴⁰

Clean heat credits shall be “time stamped” for the year in which the clean heat measure delivered emission reductions. For each subsequent year during which the measure produces emission reductions, credits shall be generated for that year. Only clean heat credits that have not been retired shall be eligible to satisfy the current year obligation.⁴¹

The Commission may hire a third-party consultant to evaluate, develop, implement, maintain, and support a database or other means for tracking clean heat credits and compliance with the annual requirements of obligated parties.⁴²

A credit system can serve multiple purposes. It can enable fluid trading of a common commodity, such as the NEPOOL GIS for renewable energy credits (“RECs”), used in the New England region. Under this approach, parties can trade on a near real-time basis to ensure fluidity of the market, and market rules are required to prevent manipulation. This model can either be created from the ground up at considerable cost, or the State can use an existing thermal tracking system, such as M-RETS, at a cost to each obligated party and installer of \$2,500 per year.⁴³

A credit platform can also be a purely administrative mechanism for tracking compliance. This more simplistic platform can still be a complex database that lists compliance entities, installers of clean heat measures, installed measures, and obligations. Under this simpler model, the number and timing of trades of credits would need to be limited to minimize costs associated with creating and maintaining the platform as well as State administrative costs.

For context, the existing thermal programs (such as Tier 3) utilize databases to track compliance. A key difference is that the Tier 3, Office of Economic Opportunity, and energy efficiency utility (“EEU”) programs do not utilize trading systems. Each entity has its own compliance requirements and must meet them individually.

⁴⁰ 30 V.S.A. § 8127(1)(2).

⁴¹ 30 V.S.A. § 8127(i).

⁴² 30 V.S.A. § 8127(1)(1)

⁴³ See <https://www.mrets.org/subscription-costs/>.

We believe the costs associated with developing a fluid trading platform for Vermont alone would far exceed the benefits associated with a market-based program. Instead, a simple administrative database could be constructed to allow for compliance tracking and some limited and time-bound trading of credits.

Additionally, a credit system may be helpful for tracking but is not necessary for a regulatory performance standard. For example, under the EEU model, each EEU has performance goals over a three-year period and a budget to achieve those savings. We believe a similar exercise could be sufficient in the thermal sector.

Finally, we are unsure of whether there would be credit market activity that is robust enough to yield the competitive pricing, and presumably lower costs, that would be greater than the costs to set up, maintain, and administer the market. We would see greater benefit to a market-based system that included a much larger regional market than Vermont alone.

b. Technical Issues

The Commission strongly recommends that the Legislature find an alternate way of achieving GWSA requirements in the thermal sector. However, if the Legislature chooses to continue with the current Clean Heat Standard, the Commission has learned some lessons in the past 18 months and suggests the following technical changes to address those issues.

i. Default Delivery Agent

Under the potential CHS, the Commission must appoint a DDA to achieve thermal sector GHG reductions; individual obligated parties may opt out of the DDA structure. As discussed above, the Commission's work to date advanced the understanding of how a DDA would participate in the Clean Heat Standard system. However, several foundational issues must still be addressed in relation to the DDA before a request for proposals could be issued and one or more DDAs selected.

First, there must be certainty about whether, and in what form, the Clean Heat Standard will be implemented. Absent this certainty, we do not expect there to be interest from potential bidders.

Second, we believe there are material upfront costs to standing up a DDA scope of services, including staff time and investment in the organizational infrastructure needed to execute its charge. There is no current mechanism to fund such an entity, other than payments from obligated parties to the DDA. To cover those start-up costs, the DDA would need to collect funds from obligated parties for some period before the DDA could implement programs that would achieve thermal sector emission reductions or generate clean heat credits on behalf of obligated parties. Presently, there is no funding available to cover these costs.

Third, the statutorily required sequence of DDA budgeting – specifically the interaction between initial DDA budget building, obligated party credit fulfillment plan submission, and DDA plan adjustment – poses a significant quandary that the Commission has yet to resolve. As currently conceived, the DDA must propose programs and budgets before it knows how many obligated parties it will serve. After those programs and budgets are approved by the Commission and a cost per credit is determined, obligated parties may opt out of using the DDA and obtain their credits by other means. If a substantial number of parties opt out of the DDA, the underlying budgets and costs per credit may need to be amended. Section 8125(d)(3) of Act 18 creates a chicken-and-egg question, where the DDA credit costs must be determined before an obligated party decides whether it will use the DDA’s services, yet the DDA’s credit costs very likely will depend on how many obligated parties decide to use DDA services.

Finally, we believe there is a significant problem with the matching of costs and revenues for the DDA structure. One of the DDA’s important roles would be to provide incentives to buy down the upfront cost of installing clean heat measures. Presumably, the full amount of the incentive would be paid by the DDA to the customer or implementer in advance. However, due to 30 V.S.A. § 8127(i), which spreads the clean heat measure’s credits over the life of the measure rather than granting the full lifetime of credits up front, the DDA would need to either (1) finance the cost of the incentive and pay it down over time, commensurate with the life of the measure, or (2) demand payment for the full incentive cost from obligated parties, who would then receive the resulting credits over the life of the measure. In either scenario, someone is paying for the full incentive amount up front and bearing the risk that the future value of the measure’s credits will be sufficient to cover the upfront principal and carrying costs.

The Commission believes these issues, and possibly others, prevented meaningful engagement in the Commission's request for information and would similarly deter serious responses to a request for proposals. We consider these to be significant problems that would need to be addressed before the Legislature implements a Clean Heat Standard program. As such, if the Clean Heat Standard in its current structure moves forward, we would have to work with lawmakers and stakeholders to try to develop workable solutions to these problems.

ii. Fuel dealer data

The Commission has several lessons learned from the first year of fuel dealer registration and some ideas on how to mitigate the problems discussed below. The first lesson is to set the fuel dealer registration period outside of the peak heating season and communicate registration requirements two or more months in advance. Public Act No. 142, § 8 (2024 Vt., Adj. Sess.) moved the fuel dealer registration deadline to June 30 of each year, outside of the peak heating season. The Commission now has contact information from the first annual registration period that will allow for advance communication directly with fuel dealers ahead of registration, in addition to issuing press releases. This may help mitigate some of the missing and incomplete registration problems discussed above.

The second lesson is to clarify concepts that may have caused confusion in the first round of registrations. The Commission suggests statutory clarification of those concepts above. However, in the absence of such clarification, the Commission will work with fuel dealers and their representatives to create a mutual understanding of the confusing terms in the existing statute. Ideally, the Commission will also convene a meeting with fuel dealers to confirm that any revised definitions or requirements are clear before the start of the next registration period. These actions should mitigate the ambiguity issue.

The third lesson is to refine the fuel dealer registration form to best elicit the information required to calculate annual obligations. The first registration deadline — January 31, 2024 — meant that the Commission needed to develop the registration form before it had established methods to determine obligated parties and their respective annual requirements under the Clean Heat Standard. As a result, the Commission could not tailor the registration questions precisely to

those calculations. Now that the draft Rule and accompanying orders are complete and the Commission has experience processing registration data and determining obligated party and annual requirement calculations, the Commission can adjust the questions on the registration form to better meet its needs. This increased clarity should further reduce both the incomplete/incorrect registration information and the confusion discussed above.

Finally, the Commission learned that, particularly in the initial years of a Clean Heat Standard, it will need to allocate substantial time and resources to individually follow up with registrants (and those who are required to register) to ensure complete and accurate registration information. Due to the compressed time for the Commission to complete all of its work under Act 18 by January 15, 2025, the Commission did not have time or adequate resources for comprehensive follow-up this year.

The major problems, lessons learned, and possible mitigating steps available in the future all relate to the *existing* definition of “obligated party.” As discussed above, we believe that substantial time, money, and resources can be saved, and a substantially more robust set of *existing* data could be used to determine obligated parties and their annual requirements, if the definition of “obligated party” were changed from a question of imported fuel to the retail sale of heating fuel.

Practical Problems with Fuel Data Collection

The Commission spent an enormous amount of time and resources processing the fuel dealer registration data to identify would-be obligated parties and the magnitude of their first-year requirements under the Clean Heat Standard. Through that careful processing, we identified major problems with the fuel dealer registration data and discussed those problems and their effects in our December 6, 2024, draft determination. As a result, the Commission stated that it “cannot endorse the use of these data” for the reasons outlined below.

First, there are entities that sold heating fuel into or in Vermont that did not register with the Commission. While there may be opportunities to investigate and track down these entities in future years, the Commission did not have the time or resources to pursue unregistered but likely required-to-register entities in this initial registration year. Under-registration has the effect of

distorting our understanding of the heating fuel imported and sold in Vermont and thus our calculation of the total fuel by which each individual obligated party's year-one obligation is determined. Pursuant to 30 V.S.A. § 8124(a)(2), "[a]nnual requirements shall be expressed as a percent of each obligated party's contribution to the thermal sector's lifecycle CO₂e emissions in the previous year." In practice, this means that the Commission must look at each obligated party relative to all other obligated parties, and missing or incorrect information from one registrant materially affects the obligation determinations for all other registrants. (See example in Chapter X(a) of this report.)

The Commission identified 195 potential registrants from the fuel dealer data that had not registered with the Commission for 2023 heating fuel sales as of September 2024. Some of those entities presumably constitute the 60 registrants from the October grace period, but those data have not yet been processed. Pursuant to Act 18, § 5, the Vermont Department of Taxes provided 2023 fuel gross receipts tax data to the Commission. The tax dataset included 194 entities, 57 of which were not electricity-only entities and had not registered with the Commission by September 2024. Commission staff combined these data with other sources to identify 146 unique potentially missing entities across datasets from Tax, the Vermont Fuel Dealers Association, the Vermont Secretary of State, the Vermont Department of Labor, and the Vermont Department of Children and Families that were not in the Commission data as of September 2024. Where possible, information on potentially missing entities could be used in Commission outreach for the annual fuel dealer registration to occur by June 30, 2025. It is possible that not all of the potentially missing entities meet the statutory requirements for who must register; the information here may conservatively overstate the data gap, but we do not know by how much.

Second, there are entities that registered but did so incompletely or inaccurately. A non-trivial number of entities withheld critical information (e.g., the volume of fuel bought or sold, or the identity of suppliers or customers) that made it difficult or impossible to determine the status of an entity's obligation. Other entities may have misunderstood some of the questions on the registration form, which resulted in illogical sourcing of fuel (e.g., reportedly sold fuel in the state but did not import, produce, refine, manufacture, compound, or purchase the fuel in-state —

resulting in a question mark as to how the fuel came to be in the state). Inaccurate or incomplete reporting also distorts the overall calculation of obligated fuel in the economy.

Third, for some registrants, there appears to have been ambiguity about what constitutes “heating fuel” in statute (as highlighted in the Commission’s enforcement order issued on September 17, 2024).⁴⁴ Although the Commission provided guidance in September, the initial registration asked registrants to use their best judgment when reporting heating fuel sold in or into Vermont. This ambiguity may have caused some registrants to underreport the heating fuel they sold or caused other would-be registrants to not register, mistakenly believing that the fuel they sold was outside the scope of this new registration requirement. This issue is discussed in greater detail in Chapter X(a) of this report.

All three of these problems significantly affect the validity of the first-year data and, ultimately, the obligated party designations and first-year clean heat credit requirements that were based on it.

iii. Public engagement

The important lesson learned from these engagements is that people are usually well-equipped to comment on their own residential energy use experiences, their feelings about energy programs generally, and their opinions of completed program designs and costs, but they struggle to engage meaningfully with esoteric and technical programs in the middle of designing those programs. A more ideal public engagement process would have timed engagement differently: The Legislature would have engaged directly with the public before passing Act 18 and the Commission would have conducted public engagement in addition to the 30-day public comment on the draft Rule once the rulemaking and related activities were completed. Another lesson is that education and relationship building help empower Vermonters to engage meaningfully; these are difficult to do successfully in a limited time.

⁴⁴ Case No. 23-2220-RULE, Order of 9/17/24 at 3.

XI. Alternatives to Clean Heat Standard

If enacted, the Commission would implement a Clean Heat Standard or any other program or mechanism as directed by the General Assembly. If the General Assembly declines to enact a Clean Heat Standard, the Commission recommends that the Legislature consider alternative mechanisms for achieving thermal sector savings and greenhouse gas emission reductions. We note that this recommendation is consistent with what has been expressed in other forums. For example, the Vermont Climate Action Office organized a meeting with Community Action Agency staff to discuss the CHS, and the quotes below are illustrative of the comments received.

“Everything you say the Clean Heat Standard wants to do, Community Action Agencies are doing a great job at already; we need more money to do more of it.”

“With all the data and targets out there, don’t forget it’s people we’re trying to serve. When processes become too restrictive or administratively burdensome, they no longer benefit the very people they’re trying to help.”⁴⁵

Below, the Commission describes several alternatives for consideration that would be less complex and would have lower administrative costs than the Clean Heat Standard as set forth in Act 18. These are not the only workable solutions, and they may be considered individually or in combination.

a. Fuel Tax

In the Commission’s Act 62 Report, the Commission recommended increasing the fuel tax on heating oil, propane, kerosene, and other dyed diesel fuel to support additional weatherization services through the Weatherization Assistance Program for Vermonters with low income.⁴⁶ At the time, the Commission recommended increasing the current 2-cent-per-gallon tax to 4 cents, and then in 2023 increasing the tax again to 6 cents per gallon. We recommended that all incremental revenues should be used solely by the Vermont Office of Economic Opportunity to fund the weatherization agencies for the purpose of low-income weatherization, thermal

⁴⁵ VT. CLIMATE ACTION OFF., VERMONT VOICES ON CLIMATE: JULY 1 TO SEPTEMBER 30, 2024, 6 (2024) *available at* https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/Quarterly%20Reports%20and%20associated%20materials/QuarterlyPublicOutreachSummary_2024Q3.pdf.

⁴⁶ Act 62 Report at 15.

efficiency, and fuel switching to renewable fuels, with controls to prevent the redirection of funding to other purposes. We found that the existing fuel tax collection mechanism has the benefit of being in place and successfully used for many years to fund the low-income Weatherization Trust Fund. Thus, the process of changing the fuel-tax rate would be incremental and easily understood and implementable. Though we do not recommend a specific per-gallon amount in today's report, we continue to believe that increasing this fuel tax is an efficient, practical, and well-understood mechanism for achieving a greater level of thermal sector emission reductions. In addition, this approach would be consistent with the stated intent of the Clean Heat Standard to "enhance social equity by prioritizing customers with low income and moderate income and those households with the highest energy burdens."⁴⁷

b. Thermal Efficiency Benefit Charge

In its October 1 Status Report, which was issued as an accompaniment to the Commission's draft Clean Heat Standard rule, the Commission noted that, in response to a legislative request in 2019, it had proposed a mechanism for providing additional funding for thermal GHG reductions.⁴⁸ This approach was based on the fact that Vermont has existing and effective programs in place; the issue is inadequate funding, not insufficient regulatory and programmatic structures. The October 1 Report built on the Commission's prior Act 62 Report and suggested that a Thermal Energy Benefit Charge ("TEBC"), authorized by the Legislature but set by the Commission, would be another effective funding mechanism.

The concept underlying a TEBC is not new and has essentially been used to fund the electric energy efficiency utilities ("EEUs") for the past 25 years. 30 V.S.A. § 209(d)(3) provides the following:

In addition to its existing authority, the Commission may establish by order or rule a volumetric charge to customers for the support of energy efficiency programs that meet the requirements of section 218c of this title, with due consideration to the State's energy policy under section 202a of this title and to its energy and economic policy interests under section 218e of this title to maintain and enhance the State's economic vitality. The charge shall be known as the energy efficiency charge, shall

⁴⁷ 30 V.S.A. § 8121.

⁴⁸ *Draft Clean Heat Standard Rule Companion Status Report*, Case No. 23-2220-RULE, Issued 10/1/24.

be shown separately on each customer's bill, and shall be paid to a fund administrator appointed by the Commission and deposited into the Electric Efficiency Fund.

The electric energy efficiency charge ("EEC") is collected by each of the electric distribution utilities and paid to the EEU's to fund efficiency programs. At a very high level, every three years the Commission initiates a Demand Resources Proceeding to identify potential efficiency savings and the budget needed to realize those savings. Once the budget is established, the EEC is set to achieve that budget.

A TEBC could be set in a similar manner to the electric EEC. The Commission would estimate the anticipated thermal sector GHG reductions that are expected to be achieved under the current programs (and if authorized by the Legislature, a biofuels blending requirement) and the amount of additional reductions that would be needed to achieve the GWSA requirements. The Commission would then establish a TEBC necessary to achieve those additional reductions. The fuel dealers currently pay a fuel tax pursuant to 33 V.S.A. § 2503; the TEBC could be collected at the same time from the same entities as the fuel tax. The Commission would further determine where the funding would be directed — to the low-income weatherization providers or to the EEU's to supplement their existing thermal programs.

Similar to the Energy Savings Account ("ESA") program, the Commission could allow fuel dealers that meet certain requirements to provide their own clean heat measures and therefore pay a lower TEBC.⁴⁹

A TEBC construct would utilize existing programs, have lower regulatory costs, and have increased transparency compared to this CHS.

⁴⁹ Under the ESA program, participants pay a significantly reduced amount into the electric efficiency fund. The payment of some amount reflects the regulatory requirements associated with overseeing the programs.

c. Biofuels Blending Requirement

Together, the above policy alternatives have the benefit of using existing programs and having lower State administrative or regulatory costs than what we envision for the Clean Heat Standard as presently enacted. However, it is our understanding that these alternatives would still not achieve thermal sector greenhouse gas emission reductions of sufficient magnitude to meet the GWSA requirements. Instead, these policy alternatives would need to work in concert with an increasing amount of biofuel sales in the state. We are aware of multiple states, including Rhode Island, New York, and Connecticut, that have mandatory biofuel blending requirements that ramp up over time.⁵⁰ Moreover, there is a sufficient regional supply of relatively affordable liquid biofuels to support a near-term blending requirement for Vermont. A biofuels blending requirement for Vermont fuel retailers could serve as a complementary policy to the thermal efficiency programs identified above.

XII. Conclusion

Over the past 18 months, the Commission has developed the Clean Heat Standard as required by Act 18. This was a significant effort by Commission staff, the Advisory Groups, and a number of interested persons who provided input on the numerous issues considered. Given the efforts expended, the Commission does not take lightly its conclusion that the Clean Heat Standard is not well suited to Vermont. However, achieving thermal sector greenhouse gas reductions consistent with the Global Warming Solutions Act would be best achieved by building upon existing programs rather than overlaying a new and complex regulatory structure such as the proposed Clean Heat Standard.

⁵⁰ See GABRIELLE STEBBINS & CHRIS NEME, ENERGY FUTURES GRP., A COMPARISON OF CLEAN HEAT STANDARDS: CURRENT PROGRESS AND KEY ELEMENTS 21 (Feb. 2024), *available at* https://www.edf.org/sites/default/files/2024-03/Clean%20Heat%20Standards%20Report_FINAL%2002-2024.pdf.

Appendix A:
Proposed Rule

8.100 CLEAN HEAT STANDARD RULE

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PART I: GENERAL PROVISIONS**8.101 Purpose and Background**

- (a) The purpose of this rule is to implement the Clean Heat Standard (“CHS”), established under 30 V.S.A. chapter 94, which requires obligated parties to retire required amounts of clean heat credits to meet the thermal sector portion of the greenhouse gas emission reduction obligations of the Global Warming Solutions Act.

8.102 Authority

- (a) This rule is adopted pursuant to 30 V.S.A. §§ 8122, 8125-8127, and 8131 and Section 6 of Act 18 of 2023.
- (b) Pursuant to 30 V.S.A. § 8126(c), the Commission may revise this rule by order of the Commission without the revisions being subject to the rulemaking requirements of 3 V.S.A. chapter 25, provided the Commission complies with the requirements outlined in 30 V.S.A. § 8126(c)(1)-(5). Any such revisions are subject to appeal pursuant to 30 V.S.A. § 8126(d).
- (c) Pursuant to 30 V.S.A. § 8124(f)(1), the Commission has the authority to enforce the requirements of this rule, including issuing penalties and injunctive relief.

8.103 Definitions

For purposes of this rule, the following definitions shall apply:

- (1) “Alternative compliance payment” is the per-credit fee that an obligated party must remit to a default delivery agent for failing to meet its credit requirements in a given compliance year, as directed by the Commission. The amount of the alternative compliance payment is twice the amount established by the Commission for timely per-credit payments to a default delivery agent, pursuant to 30 V.S.A. § 8124(f)(2).
- (2) “Annual compliance filing” means the documentation that an obligated party must submit to the Commission each year to verify satisfaction of the previous compliance year’s clean heat credit requirement.
- (3) “Authorized agent” means a person or entity that has been assigned the ownership of the right to register an implemented clean heat measure instead of the initial owner. The authorized agent does not need to be the installer of the measure. To substantiate the authorization, the person or entity registering must submit an authorized agent form signed by the initial owner.
- (4) “Banking” means carrying a clean heat credit from one compliance year to a future compliance year.
- (5) “Carbon intensity value” means the amount of lifecycle greenhouse gas emissions per unit of energy of fuel expressed in grams of carbon dioxide equivalent per megajoule (gCO_{2e}/MJ).

- (6) “CHS” means the Clean Heat Standard established under 30 V.S.A. § 8122.
- (7) “Clean heat credit” means a tradeable, nontangible commodity that represents the amount of greenhouse gas reduction attributable to a clean heat measure.
- (8) “Clean Heat Credit Trading System” means a common platform used to administer Vermont’s clean heat credit system.
- (9) “Clean heat measure” means fuel delivered and technologies installed for end-use customers in Vermont that reduce greenhouse gas emissions from the thermal sector. The measures characterized in the Clean Heat Standard Technical Reference Manual serve as the initial list of eligible measures. Clean heat measures shall not include switching from one fossil-fuel use to another fossil-fuel use. Clean heat measures are categorized as follows:
- (A) “Installed” measures are:
- thermal energy efficiency improvements and weatherization;
 - cold-climate air, ground source, and other heat pumps, including district, network, grid, microgrid, and building geothermal systems;
 - heat pump water heaters;
 - utility-controlled electric water heaters;
 - solar hot water systems;
 - electric appliances providing thermal end uses;
 - advanced wood heating;
 - the replacement of a manufactured home with a high-efficiency manufactured home and weatherization or other efficiency or electrification measures in manufactured homes; and
 - other measures adopted by the Commission that are designated as an installed measure.
- (B) “Delivered” measures are the supply of sustainably sourced biofuels and other measures adopted by the Commission that are designated as delivered measures.
- (C) “Custom” measures are:
- noncombustion or renewable-energy-based district heating services;
 - the supply of green hydrogen;
 - line extensions that connect facilities with thermal loads to the electric grid; and
 - other measures adopted by the Commission that are designated as a custom measure.
- (10) “CO₂e” means carbon dioxide equivalent.
- (11) “Commission” means the Public Utility Commission.

- (12) “Compliance year” means the calendar year for which an obligated party must procure sufficient clean heat credits to meet its assigned clean heat credit requirement.
- (13) “Credit fulfillment plan” means the form that an obligated party files annually with the Commission, pursuant to 30 V.S.A. § 8125(d)(2), to indicate how it intends to meet its Commission-determined annual clean heat credit requirement for the next compliance year.
- (14) “Credit status” means the state of a clean heat credit. The following statuses can apply to clean heat credits.
- (A) “Potential” credits are credits expected to be generated by a clean heat measure that has been registered but has not yet been verified.
- (B) “Active” credits are credits that have been verified and are therefore eligible for banking and trading. Active credits are only eligible for retirement during or after the year where the CO₂e savings have been realized; active credits that are not yet eligible for retirement are referred to as “restricted active credits.”
- (C) “Retired” credits are credits that have been retired to fulfill compliance obligations.
- (15) “Customer” means a recipient of a clean heat measure.
- (A) When a landlord is the recipient of a clean heat measure, the tenant(s) may be considered a customer for the purpose of determining the measure group.
- (B) For the purpose of determining the measure group of a clean heat measure implemented for common benefit in a multi-family building, if at least 25% of households in the building qualify for an income designation, that designation may be applied to the entire building.
- (16) “Customer with low income” means a customer with a household income of up to 60% of the area or statewide median income, whichever is greater, as published annually by the U.S. Department of Housing and Urban Development, or a customer who qualifies for a government-sponsored, low-income energy subsidy, pursuant to 30 V.S.A. § 8123(5).
- (17) “Customer with moderate income” means a customer with a household income between 60% and 120% of the area or statewide median income, whichever is greater, as published annually by the U.S. Department of Housing and Urban Development, pursuant to 30 V.S.A. § 8123(6).
- (18) “Default delivery agent” means an entity designated by the Commission under 30 V.S.A. § 8125 to provide services that generate clean heat measures.

- (19) “Department” means the Vermont Department of Public Service.
- (20) “Early action credits” are clean heat credits resulting from clean heat measures implemented between January 1, 2023, and the effective date of a Clean Heat Standard rule.
- (21) “Early action measures” are clean heat measures implemented between January 1, 2023, and the effective date of a Clean Heat Standard rule.
- (22) “Emissions Table” means a table of lifecycle emission rates for heating fuels and any fuel that is used in a clean heat measure, including electricity, or is itself a clean heat measure, including biofuels. As required by 30 V.S.A. § 8127(g)(1), the table must be based on transparent, verifiable, and accurate emissions accounting adapting the Argonne National Laboratory GREET Model, Intergovernmental Panel on Climate Change (IPCC) modeling, or an alternative of comparable analytical rigor to fit the Vermont thermal sector context, and the requirements of 10 V.S.A. § 578(a)(2) and (3).
- (23) “Energy burden” means the annual spending on thermal energy as a percentage of household income.
- (24) “Entity” means any individual, trustee, agency, partnership, association, corporation, company, municipality, political subdivision, or any other form of organization.
- (25) “ePUC” means the Commission’s online document-management system. ePUC includes public documents and other information in all kinds of cases filed with the Commission after 2017.
- (26) “Fuel dealer” means an entity that sells heating fuel into or in Vermont that is required to register annually with the Commission, pursuant to 30 V.S.A. § 8124(b).
- (27) “Fuel pathway” means a detailed description of all stages of fuel production and use for any particular fuel, including feedstock generation or extraction, production, transportation, distribution, and combustion of the fuel by the consumer. The fuel pathway is used in the calculation of the carbon intensity value and lifecycle greenhouse gas emissions of each fuel.
- (28) “Heating fuel” means fossil-based heating fuel, including oil, propane, natural gas, coal, and kerosene, regardless of end use.
- (29) “Implementing entity” means the person, company, or organization that delivers or installs a clean heat measure for an end-use customer.
- (30) “Measure attributes” means the documentation demonstrating the CO₂e reduction resulting from the implementation of a clean heat measure before it is registered.

- (31) “Measure group” means the characteristics of a clean heat measure pursuant to 30 V.S.A. Section 8124(d)(2). There are five measure groups:
- (A) Group A: a measure that is a qualified capital investment implemented for a customer with low income.
 - (B) Group B: a measure that is a qualified capital investment implemented for a customer with moderate income.
 - (C) Group C: a measure that is not a qualified capital investment that is implemented for a customer with low income.
 - (D) Group D: a measure that is not a qualified capital investment that is implemented for a customer with moderate income.
 - (E) Group E: all other measures.
- (32) “Obligated party” means:
- (A) A regulated natural gas utility serving customers in Vermont.
 - (B) For other heating fuels, the entity that imports heating fuel for ultimate consumption within Vermont, or the entity that produces, refines, manufactures, or compounds heating fuel within Vermont for ultimate consumption within the state. For the purpose of this rule, the entity that imports heating fuel is the entity that has ownership title to the heating fuel at the time it is brought into Vermont.
- (33) “Qualified capital investment” means installed clean heat measures for customers with low or moderate income that require capital investments in homes, have measure lives of 10 years or more, and are estimated in advance by the Technical Advisory Group to lower annual energy bills, pursuant to 30 V.S.A. § 8124(d)(2). Examples include weatherization improvements and installation of heat pumps, heat pump water heaters, and advanced wood heating systems.
- (34) “Technical Advisory Group” (“TAG”) means a Commission-appointed group that assists the Commission in the ongoing management of the CHS pursuant to 30 V.S.A. § 8128.
- (35) “Technical Reference Manual” (“TRM”) means the reference manual specific to the Clean Heat Standard established and maintained by the Commission in consultation with the Technical Advisory Group that provides all necessary algorithms and default assumptions for estimating greenhouse gas emission reductions that result from the implementation of a clean heat measure.
- (36) “Thermal sector” has the same meaning as the “Residential, Commercial, and Industrial Fuel Use” sector as used in the Vermont Greenhouse Gas Emissions Inventory and

Forecast and does not include nonroad diesel or any other transportation or other fuel use categorized elsewhere in the Vermont Greenhouse Gas Emissions Inventory and Forecast.

- (37) “Vermont Greenhouse Gas Emissions Inventory and Forecast” or “GHG Inventory” means a periodic and consistent inventory of greenhouse gas emissions prepared by the Agency of Natural Resources, pursuant to 10 V.S.A. § 582.

PART II: REGISTRATION, OBLIGATED PARTIES, AND COMPLIANCE PATHWAYS

8.104 Fuel Dealer Registration and Reporting Requirements

- (a) Each fuel dealer must register with the Commission. For any fuel dealer not registered on or before January 31, 2024, the first registration form shall be due 30 days after the first sale of heating fuel to a location in Vermont.
- (b) Each fuel dealer must annually report heating fuel sales from the previous year to the Commission by June 30.
- (c) Registration and reporting forms must be submitted online through a method prescribed by the Commission unless a registrant obtains permission from the Commission to file the registration in paper, pursuant to Rule 2.110(b).
- (d) Documentation supporting the registration and reporting must be retained for seven years.
- (e) If a fuel dealer does not report for three consecutive years, that fuel dealer will be removed from the Commission’s list of registered fuel dealers on its Clean Heat Standard website. A fuel dealer must re-register if it resumes selling heating fuel into or in Vermont.
- (f) Failure to register and report to the Commission as described in this rule constitutes a violation of 30 V.S.A. § 8124, which may lead to enforcement by the Commission, including the imposition of a fine. Noncompliance may also be referred to the Vermont Attorney General under 30 V.S.A. § 8124(f) for enforcement under Vermont’s consumer protection statute, including under 9 V.S.A. § § 2453(a) and 2458(b)(1).

8.105 Determining Obligated Parties

Using the information provided in the fuel dealers’ annual reporting, the Commission will determine whether a registered fuel dealer is an obligated party and, if so, the amount of its annual clean heat credit requirement.

8.106 Clean Heat Standard Compliance and Credit Fulfillment Plans

- (a) By order, and consistent with 30 V.S.A. § 8124, the Commission will establish the number of clean heat credits that each obligated party is required to retire for the subsequent compliance year.
- (1) Treatment of obligations of obligated parties who cease operation, pursuant to 30 V.S.A. § 8124(b)(6)-(7):
- (A) Clean heat requirements transfer to entities that acquire an obligated party.
- (B) Entities that cease to operate retain their clean heat requirements in the compliance year of their final year of operation. Obligated parties that cease to operate must notify the Commission, and the Commission will instruct them on how to fulfill their final obligations according to 30 V.S.A. §8124(b)(7).
- (b) An obligated party must meet its annual requirement through a designated default delivery agent appointed by the Commission unless the Commission grants the obligated party permission to meet its annual requirement, in whole or in part, through one or more of the following ways:
- (1) by implementing eligible clean heat measures;
- (2) by contracting for implementation of eligible clean heat measures; or
- (3) through the market purchase of clean heat credits.
- (c) By August 1 of each year preceding the compliance year, an obligated party must file a credit fulfillment plan using a form provided by the Commission. The Commission will review and issue an approval or denial of each obligated party's compliance plan by October 1. Pursuant to 30 V.S.A. § 8125(d), approval will not be unreasonably withheld. An obligated party seeking Commission approval to meet its annual requirement using a method other than a default delivery agent must file a plan with the Commission that includes sufficient details on the obligated party's capacity and resources to achieve the emission reductions.

PART III: CLEAN HEAT MEASURES

8.107 Process for Approval of Clean Heat Measures

- (a) This section establishes a process for approval of additional clean heat measures that are not listed in 30 V.S.A. § 8127(d).
- (b) The Commission, in consultation with the TAG, administers the process for approval of additional clean heat measures.
- (1) An obligated party, a default delivery agent, or the Department may propose potential clean heat measures to the TAG.

- (2) The proponent of a potential new clean heat measure must provide sufficient information to support the TAG's consideration of whether the measure is likely to meet the statutory definition of a clean heat measure.
 - (3) If the TAG concludes that the measure is likely to meet the statutory definition of a clean heat measure, then the TAG will recommend to the Commission that the Commission's technical consultant should complete a measure characterization pursuant to 30 V.S.A. § 8128(c).
 - (4) If the TAG concludes that the measure is unlikely to meet the statutory definition of a clean heat measure, the proponent of that potential new clean heat measure may petition the Commission to review the TAG's determination.
- (c) A not-yet-approved measure may be implemented before obtaining Commission approval as a clean heat measure. A measure cannot be registered or verified until it is an approved clean heat measure.

8.108 Clean Heat Measure Group

- (a) A clean heat credit is designated with the associated measure group.
- (b) For Group A, B, C, or D clean heat measures, when registering the measure(s), as described in Section 8.111 of this rule:
 - (1) where the entity registering the measure has established income verification methods sufficient to identify customers with low or moderate incomes, the entity must file existing documents used to verify participant incomes(s), or
 - (2) the person or entity registering the measure must file an attestation form signed by the customer that states that the customer meets the criteria as a customer with low income or a customer with moderate income. The attestation form is available on the Commission's website.
 - (3) For measures with multi-year lives and associated credits, measure group determination shall be based on the attestation filed with the initial credit registration and will apply to all credits over the deemed measure life.
- (c) For Group A or B, the person or entity registering the measure must indicate that the measure is being registered as a qualified capital investment, pursuant to 30 V.S.A. § 8124(d)(2).
- (d) For Group E, no income documentation is required.
- (e) For renewable natural gas and other pipeline-delivered clean heat measures that do not have a discrete point of delivery, the entity registering the measure may propose a method for designating some percentage of the potential credits as Groups C and D based on the customer demographics on the implementing entity's delivery system. The Department will evaluate such a proposal and decide whether to award Groups C and D credits.

PART IV: EMISSIONS ACCOUNTING & MEASURE CHARACTERIZATION**8.109 Updating the Emissions Table and the Clean Heat Standard Technical Reference Manual**

- (a) Every three years, the Commission will review and update the Emissions Table and Clean Heat Standard Technical Reference Manual, pursuant to 30 V.S.A. § 8127. The triennial review process will include notice of any proposed changes, TAG review, and a 30-day public comment period.
- (b) An obligated party, Default Delivery Agent, or the Department may petition the Commission for changes to the Emissions Table or Clean Heat Standard Technical Reference Manual outside of the triennial review process. Such a petition must include:
 - (1) a request for the Commission to recalculate a specific emissions rate or measure characterization; and
 - (2) an explanation of the basis for the recalculation, particularly if an emissions rate or measure is significantly affected as a result of local, state, or federal legal requirements, technological change, or new evidence on emissions and supporting documentation.
- (c) Pursuant to 30 V.S.A. § 8127(g)(3), revisions made to the Emissions Table or Clean Heat Standard Technical Reference Manual will not alter credits that have already been verified.

PART V: CLEAN HEAT CREDITS**8.110 Carbon Equivalency of Clean Heat Credits**

- (a) One clean heat credit is equivalent to one metric ton of CO₂e.
- (b) Clean heat credits must be based on accurate and verifiable lifecycle CO₂e emission reductions that result from the implementation of eligible clean heat measures to existing or new end-use customer locations in Vermont.

8.111 Registering and Tracking Clean Heat Credits

- (a) Only an initial owner or the owner's authorized agent can register a clean heat measure. Measures can only be registered after the measure is implemented.
- (b) To create a potential clean heat credit, the measure must be registered and the following information must be submitted:
 - (1) the location of the clean heat measure;
 - (2) the associated measure group;
 - (3) the type of property where the clean heat measure was installed or sold (*e.g.*, single-family home, multi-family home, manufactured home, commercial, industrial);

- (4) the type of clean heat measure;
 - (5) information necessary to calculate the number of credits that the measure will generate; and
 - (6) any other information as required by the Commission or the Department.
- (c) For pipeline renewable natural gas and other renewably generated natural gas substitutes, an implementing entity must submit (1) documentation demonstrating that it purchased renewable natural gas and its associated environmental attributes, (2) a statement that it has secured a contractual pathway for the physical delivery of the gas from the point of injection into the pipeline to the obligated party's delivery system, (3) documentation demonstrating the carbon intensity of the renewable natural gas, and (4) any other information as required by the Commission or the Department. This documentation must be filed with the measure registration.
- (d) For custom clean heat measures, where greenhouse gas emission reduction assumptions have not been established through the Clean Heat Standard Technical Reference Manual or Emissions Table, an implementing entity must submit and maintain its documentation of all assumptions and calculations used to establish its greenhouse gas reduction claims.
- (e) Clean heat credits are awarded and time stamped using the date of verification.
- (f) Clean heat credits that are verified on or before December 31 are eligible for trading and retirement in the same compliance year; credits resulting from measures implemented and/or registered during a given compliance year but not verified before December 31 of that year may not be retired for that compliance year.
- (g) Pursuant to 30 V.S.A. § 8127(l), the principal mechanism for tracking and trading clean heat credits for the CHS shall be the Clean Heat Credit Trading System, or its successor.

8.112 Clean Heat Credit Verification

The Department performs the verification of clean heat measures to convert a credit from potential to active. Verification applies to all clean heat credits associated with a measure.

8.113 Measure Attributes and Credit Ownership

- (a) Initial ownership of clean heat measure attributes. Initial ownership of measure attributes is determined by the type of measure implemented.
- (1) For installed measures, the individual or entity that owns the building in which the measure is being implemented is the initial owner of the measure attributes created by the implementation of that measure. If the measure is implemented at no cost to a

participant under a program authorized by the Commission, the entity administering the program will be the initial owner of the measure attributes.

- (2) For delivered measures, the entity delivering the clean heat measure is the initial owner of the measure attributes created by the implementation of that measure. For biodiesel blends above “B20” and other biofuels that have a reasonable risk of causing heating equipment to malfunction, the entity delivering the measure must certify that the fuel customer’s equipment is able to use the fuel effectively and safely. If the entity claiming the measure attributes cannot produce a record of the equipment being certified for the delivered biofuel as a clean heat measure, the fuel customer is the initial owner of the measure attributes created by the implementation of that measure.
 - (3) For custom measures, initial ownership of measure attributes must be determined by prior written agreement among the participating parties. The ownership arrangement is subject to review by the Commission upon petition of any of the participating parties.
- (b) Transferring clean heat measure attributes. Pursuant to 30 V.S.A. § 8127(b), the owner or owners of a clean heat measure’s attributes may transfer the measure attributes to an authorized agent once before the clean heat measure is registered. Measure attributes associated with a single clean heat measure cannot be divided; all measure attributes may only be transferred to a single entity. The new owner of the transferred clean heat measure attributes must register the measure. Once a measure is verified and active or restricted active clean heat credits are awarded, they can be freely traded.
- (c) Trading clean heat credits. Only active and restricted active clean heat credits may be traded. There is no limitation to the number of times a clean heat credit can be traded. Credits resulting from measures that have multi-year lives do not need to be traded together. Fractional credits may be traded.
- (d) At the discretion of the Commission, ownership of a significant proportion of Vermont’s clean heat credits by a single entity or group of related entities may trigger restrictions or requirements imposed by the Commission.

8.114 Annual Compliance

- (a) Obligated parties must fulfill their Clean Heat Standard obligations through ownership and retirement of clean heat credits in the Clean Heat Credit Trading System.
- (b) Credit retirement is the process of permanently removing a clean heat credit from circulation in the marketplace and using it for compliance. Obligated parties may retire clean heat credits in a compliance year to meet their annual requirement. After a credit is retired, it cannot be reused or claimed by another entity.
- (c) Pursuant to 30 V.S.A. § 8127(i), clean heat credits must be “time stamped” for the year in which the clean heat measure is verified and the future years for which carbon savings are

realized for multi-year measures. A credit can only be retired in the year it is time stamped or later. Only clean heat credits that have not been retired shall be eligible to satisfy the current year obligation.

- (d) Annual compliance certification. Pursuant to 30 V.S.A. § 8127(a), the Department must perform an annual certification of clean heat credit claims and submit the results of the certification and evaluation to the Commission.
- (1) By June 30 of each year, obligated parties must submit an annual compliance filing with the Commission providing the information necessary to verify satisfaction of the previous calendar year's clean heat credit requirement or a request to waive non-compliance penalties. An obligated party's annual compliance filing must include documentation demonstrating either:
- (A) for obligated parties using the default delivery agent to fulfill some portion or all of their annual requirement, proof of adequate payment to the default delivery agent; or
 - (B) for obligated parties fulfilling some portion or all of their annual requirement independent from the default delivery agent:
 - (i) the clean heat credits that the obligated party has retired or is banking for use in future compliance periods;
 - (ii) the previously banked clean heat credits that the obligated party is using to satisfy its annual requirement for the compliance year;
 - (iii) the previously banked clean heat credits that the obligated party is retaining for use in future compliance periods;
 - (iv) for subdivisions (i) through (iii) of this subsection, the measure group, relevant credit identification numbers, and "time stamp" of the clean heat credits; and
 - (C) all other information required by the Commission, which must be included with the obligated party's annual compliance filing.
- (2) By August 15 of each year, the Department must submit a report to the Commission. The report must include (1) the verified clean heat credits retired by each obligated party in the previous compliance year; (2) the verified clean heat credits banked by each obligated party; and (3) a recommended response to any waiver requests.
- (3) Any comments on the Department's report to the Commission must be filed by September 15 of each year.
- (e) Following the submission of an obligated party's annual compliance filing and the Department's report, the Commission will determine whether each obligated party has met its annual requirement, and, in the event it has not, determine the noncompliance payment to be paid to a default delivery agent, pursuant to 30 V.S.A. § 8124(f)(2). The Commission may provide an opportunity for an obligated party to file documentation of additional clean

heat credits supporting a finding of compliance. Noncompliance payments must be paid to a default delivery agent within 30 days of a Commission order setting out the payment amount.

- (f) Pursuant to 30 V.S.A. § 8124(f)(3), the Commission may waive the noncompliance payment required by 30 V.S.A. § 8124(f)(2) for an obligated party if the Commission finds that the obligated party (i) made a good-faith effort to acquire the required amount of clean heat credits, and (ii) its failure resulted from market factors beyond its control. An obligated party seeking such a waiver must submit a request to the Commission. The Commission may require that the obligated party submit evidence demonstrating satisfaction of the Section 8124(f)(3) criteria. If the Commission finds that the Section 8124(f)(3)(A) criteria have been met, then the Commission will direct the obligated party to add the number of credits deficient to one or more future years.

8.115 Banking Clean Heat Credits

- (a) Pursuant to 30 V.S.A. § 8124(e), an obligated party may bank clean heat credits for future sale or application to the obligated party's annual requirements in future compliance periods, as determined by the Commission. An obligated party may elect to pay an alternative compliance payment in lieu of retiring clean heat credits.
- (b) Non-obligated parties that own clean heat credits may also bank credits.

8.116 Disclosures and Representations Regarding Clean Heat Credits

- (a) For clean heat measures, certain disclosures must be made to the end-use customer, homeowner, or building owner, as relevant, for the action to create clean heat credits.
- (b) The Commission will keep a list of mandatory disclosures, including sample language, on its website.

Appendix B:

Response to Comments Received on the Draft Proposed Rule

The Commission issued its draft proposed Clean Heat Standard Rule for public comment on October 1, 2024. We convened a technical workshop on the draft Rule on October 7, 2024, and held a public hearing on October 30, 2024. In addition, we received written feedback on the draft Rule from members of the public and case participants. We address those comments below.

a. Definitions

Many commenters provided feedback on definitions in the draft Rule or suggested defining terms not included in the Definitions section. The Commission appreciates the attentiveness commenters paid to defining terms and the clarity they sought. The Commission incorporated some of these suggestions, especially those that recommended defining terms used elsewhere in the Rule but that were not formally defined in the Rule or in statute. We have added definitions for terms like “alternative compliance payment” and “implementing entity” to increase clarity. Terms defined in statute but not mentioned in Section 8.103 of the draft Rule were copied into the Rule for consistency and ease of use. Other terms, such as “interested parties” and “renewable attributes” for renewable natural gas, were replaced with clearer and more accurate terms in the body of the Rule. The Commission also received numerous comments about defining terms related to the qualification of different kinds of biofuels and carbon accounting; the Commission declines to delve into these technical matters in the rule document and instead has edited the definition of “clean heat measure” to reference the CHS Technical Reference Manual, which discusses and applies the Commission’s and Technical Advisory Group’s decisions to specific measures. Readers seeking clarification of statutory terms like “lifecycle emissions” or “sustainably sourced” should read the CHS Technical Reference Manual for details of how those terms have been applied.

The Commission also directly responds to the following three suggestions.

The Clean Fuels Alliance, the Vermont Fuel Dealers Association (“VFDA”), and the Heating and Cooling Contractors of Vermont (“HCCV”) suggested listing specific fuels in order to make them eligible as clean heat measures. The Commission’s decision to incorporate the CHS

Technical Reference Manual into the definition of a clean heat measure makes explicit the eligibility of the fuels listed in the CHS Technical Reference Manual.

Ashley Adams and Nick Persampieri suggested restricting the definition of clean hydrogen. The Commission's incorporation of the Technical Reference Manual into the definition of a clean heat measure applies the criteria established by our Technical Consultant, which aligns with the commenters' suggestions. Additionally, because the supply of clean hydrogen is categorized as a "custom measure," the Department would evaluate the carbon reduction claims made.

The Department suggested defining "good faith efforts" made by an obligated party to secure sufficient clean heat credits as referenced in 30 V.S.A. § 8124(f)(3). The Commission notes that administrative rules often reference terms like "good faith" without defining them. This is a legal term of art whose meaning will develop over time through case law and fact-dependent determinations.

b. Adding Language About Other Programmatic Elements

A number of commenters — including the Department, VFDA, and HCCV — suggested including language from previously issued orders in the draft Rule. The draft Rule is just one element of a complete program. The Commission decided that the Rule would focus on the responsibilities and requirements of parties interacting with the Commission, and that other elements of the potential Clean Heat Standard program would be effectuated through orders. Complex topics such as the details of how obligated parties are determined, what constitutes sufficient details for credit fulfillment plans, and standards for early action credits have been discussed in previously issued orders and, if the program goes into effect, would be the subject of additional guidance issued by the Commission. Act 18 gave the Commission the ability to determine and implement elements of the potential program by rule or by order, and the Commission believes that these particular details should be addressed through orders.

c. Parameters for Credit Verification

Details about the Department's verification of clean heat measures and subsequent awarding of credits garnered comments from Vermont Gas Systems, VFDA, HCCV, the Vermont Energy

Investment Corporation, and others. While the Commission appreciates the ideas put forward by the commenters, we decline to impose a specific timeline or process for measure verification on the Department. Vermont law is explicit about delegating verification to the Department, which has experience evaluating claims of this nature. If the Clean Heat Standard moves forward, as part of the implementation, the Commission will publish the Department's process, including any streamlined procedures the Department deems appropriate and the Department's estimated time frame for verifying different measures.

The Commission clarifies that, as specified in previous orders, we expect the verification of individual measures to occur on a rolling basis and the credits resulting from the verification of individual measures to be promptly awarded to the registering entity, with a time stamp generated when the measure is verified. This is different from the process used for verification in the EEU program because it is necessary to enable the market-based credit trading system envisioned by Act 18.

Relatedly, Vermont Gas Systems suggests applying a retroactive time stamp to credits verified after the end of a calendar year but registered in the previous year. The Commission declines to make the change because it would impose a de facto measure verification timeline on the Department, which we decline to do at this time.

The Department suggested creating an additional caveat to the initial ownership of clean heat measure attributes for installed measures by allowing tenants to claim the attributes if they made an agreement with their landlord and paid for the measure themselves. The Commission declines to add this provision as it would create additional layers of complexity and uncertainty in determining the ownership of some measure attributes.

The Commission also declines to remove the requirement for delivered measure implementers to certify heating equipment for certain clean heat measures because the Commission is concerned about potential damage to customers' heating equipment and believes this provision can help mitigate that risk.

d. Early Action Credits

The Commission appreciates the comments received about early action credits, including from the Department. Because early action credits would be a one-time aspect of the Clean Heat Standard and would likely be treated somewhat differently than other credits, the Commission declines to address them in the Rule. Unless otherwise noted in an order, once early action credits are minted, they would be subject to the provisions of the Rule that apply to all clean heat credits, such as banking. If additional determination or guidance is needed regarding early action credits, the Commission will issue it through orders, rather than establish it by Rule.

e. Determining Eligibility for Clean Heat Measure Groups

The Equity Advisory Group and the Department suggested allowing existing income verification methods to document household income for the purposes of determining the clean heat measure group. The Commission agrees that this will help lower barriers to identifying, verifying, and serving customers with low and moderate income. We have adopted this suggestion.

Vermont Gas Systems identified issues with using the existing income verification methods for non-point delivery systems. The Commission sees the merit of this concern and added a method for determining income eligibility for measures without a discrete point of delivery.

The Equity Advisory Group suggested altering the definitions of “installed measure” and “qualified capital investment” to accommodate window-mounted portable heat pumps as a measure eligible for Group A or B designation. The Commission declines to alter either definition or create a new clean heat measure category for this emerging technology as the device is still being evaluated for its effectiveness serving customers with low or moderate income. As this promising technology matures, the Commission would use the triennial review processes to assess whether to make any changes to appropriately value credits generated by portable heat pumps.

VFDA and HCCV raised concerns that delivered fuels were not included in low- and moderate-income credit categories. The group designation procedure does not prevent delivered

measures from receiving a Group C or D designation, so the Commission did not make changes in response to this comment.

f. Edits for Clarity and Consistency

These edits improved the specificity of the language and added relevant citations, and they are intended to help entities subject to the Rule understand their responsibilities and privileges in the potential Clean Heat Standard program. These helpful suggestions came from, among others, Thomas Weiss, VFDA, HCCV, the Vermont Energy Investment Corporation, Vermont Gas Systems, the Technical Advisory Group, and the Department.

Below, we address five explicit suggestions that the Commission did not incorporate:

The Commission did not alter the documentation retention requirements because the listed timeline was established in consultation with the Vermont Secretary of State's Archives and Records Administration.

The information the Commission released related to credit requirements does not enable someone to calculate information covered by the Commission's March 26, 2024, protective agreement.

The Rule is not the appropriate place to specify whether the Emissions Table and CHS Technical Reference Manual would be updated by rule or by order. The Commission believes that both would be updated by order but retains the flexibility to update those reference documents using the most effective method at the time.

The Commission added the terms "accurate and verifiable" to Section 8.110 of the Rule but declined to specify that lifecycle emissions are "in the thermal sector" because the statutory constructions of "lifecycle" and "thermal sector" are contradictory. For measures to be eligible, they must operate in the thermal sector, so this exclusion should not create confusion as to the sector in which emission reductions must occur.

The Commission also declined to add the term "as applicable" to each documentation requirement in Section 8.111 of the Rule because entities submitting measure claims that do not require all listed elements can indicate in their filing that specific elements are not applicable.

g. Appeal of Determinations

A few commenters provided suggestions related to parties' ability to request reconsideration of a Commission decision. As with any decision made by the Commission, the Commission's rules of procedure provide avenues to request reconsideration, and parties may appeal to the Vermont Supreme Court pursuant to 30 V.S.A. § 12. The Commission addresses some of these suggestions below.

The Department suggested that fuel dealers should be able to appeal a determination that they are obligated parties. It is imperative that fuel dealers provide all the information required by the Commission so we can make an accurate determination of their status under the Clean Heat Standard. Due to the statutorily prescribed method of calculating obligations, any changes to one obligated party's requirements directly affect all other obligations — making it untenable for the Commission to revise obligations on a case-by-case basis. The Commission declines to create additional avenues for appeal for this area of the potential program.

Multiple respondents, including Pike Porter, the Conservation Law Foundation, the TAG, and the Department, discussed the triennial recalculation of emission factors. The Commission appreciates the robust discussion about this section and adjusted the Rule accordingly. The Commission added the triennial revisiting of the CHS Technical Reference Manual to coincide with the updates to the Emissions Table. The Commission chose to limit the entities able to request a recalculation outside of the triennial cycle to obligated parties, a DDA, and the Department because those entities would be the most directly involved with the regular operation of the Clean Heat Standard, and any outside party may approach any of those entities to request such a recalculation. The Commission also notes that the triennial review process would be open to the public and provide all entities the ability to weigh in on emission rates.

Commenters, including Nick Persampieri and Ashley Adams, suggested adding an additional Commission review of the credit value of clean heat measures. The Department is responsible for evaluating clean heat measures and associated credit claims. It would verify that the emission reductions claimed for credit are legitimate and award the appropriate number of

credits based on the Commission-adopted (and publicly reviewed) CHS Technical Reference Manual and Emissions Table.

The Commission did add an opportunity to appeal a determination by the Technical Advisory Group on the potential eligibility of a new measure, as suggested by VFDA and HCCV.

Because the TAG's recommendation regarding a potential new measure is not binding, it makes sense to provide a way to bring questionable measures to the Commission's attention, even in the absence of a TAG recommendation.

h. Adopting New Measures

Respondents, including the Department, the Conservation Law Foundation, and Mr. Weiss, weighed in on the process by which new measures could be deemed eligible as clean heat measures. Some advocated expanding the list of entities that could propose potential new measures to the Technical Advisory Group. Similar to the recalculation of the value of measures, the Commission believes it is advisable to limit the entities that are able to request such a change. However, entities can request a DDA or an obligated party to propose a measure to the Technical Advisory Group for consideration. Having a DDA or an obligated party's buy-in on a potential new measure increases the likelihood of its uptake.

Other commenters, including Ms. Adams and Mr. Persampieri, advocated for adding a provision explicitly giving the Commission the ability to remove a previously approved clean heat measure's eligibility. The Commission declines to add such a provision because the Commission could remove or adjust the value of clean heat measures during the triennial review process. As discussed above, recalculations of emission values can be requested and adopted outside of the triennial process. Further, the Commission does not have the authority to deem ineligible any measures that are listed in statute, but the Commission can adjust the credit value of those measures.

Mr. Weiss asked for clarification on how renewable natural gas ("RNG") attributes must be documented, and Section 8.111(c) of the draft Rule has been modified to clarify the criteria for this measure. The supply of RNG is included as an eligible measure by statute, so individual

pathways do not need to be approved as a clean heat measure. The details of each pathway will determine the number of credits generated.

Mr. Weiss also requested that the Commission specify whether it will retain a technical consultant. The Commission declines to specify in rule how we handle contracting for technical consultants.

The Conservation Law Foundation suggested specifying who can be a proponent of a potential new clean heat measure in Section 8.107(b)(2) of the Rule. The Commission believes that the previous subsection limiting which parties can propose a potential new clean heat measure is the operative element here. If additional entities are working with one of the named entities in advancing a potential new clean heat measure, the Commission sees no need to explicitly permit them to provide the information required to propose a new measure. However, one of the named entities must propose and pursue the new measure under the process established in Section 8.107(b) of the Rule.

i. Timelines

The Commission received comments from Vermont Gas Systems, Vermont Energy Investment Corporation, VFDA, HCCV, the Conservation Law Foundation, and the Department suggesting the imposition of various timelines on the Commission and other entities. Given the evolving understanding of the work that would go into completing various tasks that enable a functioning Clean Heat Standard, the Commission has selectively incorporated these suggestions into the Rule. Other timelines will be addressed by procedural order on a case-by-case basis.

The Commission explicitly added a timeline for our review of obligated parties' credit fulfillment plans, which would be from August 1 to October 1. The Commission notes that we did not incorporate VEIC's suggestion to invite comment on obligated parties' credit fulfillment plans; if the Commission needs additional input to make such a determination, it has tools and processes for soliciting such information.

The Commission declines to set a standard timeline for releasing obligated party determinations and associated annual credit requirements at this time because of the outstanding uncertainty related to the intake and processing of fuel dealer filings. If the Clean Heat Standard moves forward, the Commission will adopt a timeline by order that would enable subsequent elements of the program to proceed as intended.

Other respondents, including Thomas Weiss, VFDA, and HCCV, raised concerns about the time obligated parties would have to develop their credit fulfillment plans. The Commission emphasizes that obligated parties would know what their obligations are well before they must submit their credit fulfillment plans. Due to the time required for obligated parties to choose how to meet their credit obligations and the time it takes to process fuel dealers' annual registration data, the fuel sales data submitted on June 30 of each year would be used to calculate the obligations assigned the following year (e.g., calendar year 2030 fuel sales data would be submitted on June 30, 2031, and would be used to calculate credit requirements for which obligated parties would need to submit a credit fulfillment plan for by August 1, 2032). The Commission would then review that plan and approve or deny it by October 1, and the obligated party must execute the plan during the following year.¹

The Commission declines to add a timeline — or any other standards — for the Technical Advisory Group's consideration of potential new clean heat measures in the Rule. The Technical Advisory Group's procedures, which are approved by the Commission, would govern this process and could be amended by order as necessary to complete this task efficiently.

The Department suggested that the Commission significantly lengthen the period for reviewing obligated parties' annual compliance filings. The Commission believes there is a misunderstanding of what the Department would be certifying during this period. Unlike in the EEU program, individual clean heat measures are expected to be verified on a rolling basis.

¹ E.g., an obligated party submits its credit fulfillment plan on August 1, 2032, and the Commission approves it by October 1, 2032. That obligated party then executes that plan during calendar year 2033 and submits its annual compliance filing for 2033 by June 30, 2024.

The annual compliance certification is less intensive than its EEU counterpart because the Department would be filing a report confirming that the credits retired by obligated parties are eligible and sufficient to meet their obligation, or, if credit retirements are insufficient, whether the Department recommends the Commission waive the applicable penalty. The Commission declines to change the timeline for annual compliance certification.

j. Adding Statutory Language to the Rule

The Department suggested explicitly tying the carbon equivalency of a clean heat credit to the emissions schedule and the CHS Technical Reference Manual or custom characterization, subject to review and updates by the Commission. The Commission declines to add statutory language to the Rule in this manner. The program set up by the Rule already bases the carbon value of a clean heat credit on the referenced documents.

Pike Porter, Ashley Adams, and both Advisory Groups suggested adding statutory language from 30 V.S.A. § 8127(h) to make explicit the biennial review of harmful consequences and subsequent mitigation efforts. The Commission declines to add statutory language to the Rule in this manner. The Commission will abide by all statutory requirements, including this regular review of harmful consequences. If the CHS moves forward, the Commission will provide additional opportunities for input related to harmful consequences arising from measures and potential mitigation steps.

The Department also suggested mentioning the Commission's ability to adjust obligated parties' annual credit requirements for good cause pursuant to 30 V.S.A. § 8124(a)(4). The Commission again declines to add statutory language to the Rule in this manner. If the CHS goes into effect, the Commission will monitor the credit market and employ this ability if necessary. Additionally, as noted above, the phrase "good cause" is another legal term of art that will be defined over time.

k. Miscellaneous

The Department suggested moving the noncompliance waiver process to Section 8.106 of the Rule to create a section dedicated to an obligated party's responsibilities to file compliance plans, fulfillment documentation, and penalty waivers. The Commission declines to reorganize

the Rule as we believe it better to organize according to which step in the process obligated parties are completing.

The Equity Advisory Group suggested including a provision adding an explicit review in the triennial assessment of whether households with low or moderate income living in multifamily buildings are being equitably served. Given that the Commission must annually make such an assessment under 30 V.S.A. § 8124(d), and given the prominence of multi-family residences in the discussion of low and moderate income customers, the Commission believes this function is already part of the program as mandated by statute.

Some commenters, including Vermont Gas Systems, the Conservation Law Foundation, VFDA, and HCCV, requested that the Commission provide more details about the credit trading platform and potential limitations mentioned in Section 8.113(d) of the Rule. Because the Commission has delayed the development of a credit trading platform until later in the CHS implementation process, the Commission declines to include additional requirements or details about a trading platform at this time. If the CHS moves forward, the Commission will develop additional details related to the trading platform.

The Department suggested adding two elements to Section 8.116 of the Rule: specific disclosures that implementers would need to provide to their customers and a representation regarding actions that could be taken by the State Attorney General. The Commission does not disagree with the usefulness of such disclosures but declines to put them in the Rule, which already requires implementing entities to deliver disclosures provided by the Commission. These suggested items will be considered when the Commission selects which disclosures to include under Section 8.116.

1. 1. Suggestions Requiring Statutory Changes

Some commenters suggested changing elements of the program prescribed by statute, such as adjusting the low- and moderate-income thresholds, awarding the entire lifetime of credits associated with a multi-year measure at one time, and exempting certain fuels from the program. The Commission does not have the authority to implement these suggestions.

Appendix C:

Document Determining First-Year Obligated Parties and Their Obligations and Setting the Interim Clean Heat Credit Retirement Schedule (2026-2035) with Low- and Moderate-Income Credit Distribution

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. 23-2220-RULE

Proceeding to design the potential Clean Heat Standard	
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DOCUMENT DETERMINING FIRST-YEAR OBLIGATED PARTIES AND THEIR OBLIGATIONS AND SETTING THE INTERIM CLEAN HEAT CREDIT RETIREMENT SCHEDULE (2026-2035) WITH LOW- AND MODERATE-INCOME CREDIT DISTRIBUTION

I. INTRODUCTION

In Public Act 18 (2023 Vt., Bien. Sess.) (“Act 18”), the Vermont Legislature directed the Vermont Public Utility Commission (“Commission”) to develop a proposed Clean Heat Standard.¹ Pursuant to 30 V.S.A. § 8124, the Commission must determine which fuel dealers that register with the Commission are obligated parties.² The Commission must “establish the number of clean heat credits that each obligated party is required to retire each calendar year.”³ Act 18 requires that the Commission develop proposed rules to submit to the Legislature by January 15, 2025. The final proposed rules must “contain the first set of annual required amounts for obligated parties.”⁴ Section 8124 of Title 30 of the Vermont Statutes Annotated also requires that the Commission publish the obligated parties’ annual requirements in “plain terms.”

Section 6(f)(5) of Act 18 states: “The final proposed rules shall contain the first set of annual required amounts for obligated parties as described in 30 V.S.A. § 8124(a)(1).” On October 1, 2024, the Commission released the draft Clean Heat Standard rule. As we explained in

¹ For an overview of the work done to date and other information on the proposed Clean Heat Standard, please see the Commission’s clean heat website at <https://puc.vermont.gov/clean-heat-standard>. A substantial portion of Act 18 is codified in 30 V.S.A. ch. 94.

² 30 V.S.A. § 8124(b)(1). Obligated parties are defined as (a) a regulated natural gas utility serving customers in Vermont and (b) for other heating fuels, the entity that imports heating fuel for ultimate consumption within the State [of Vermont], or the entity that produces, refines, manufactures, or compounds heating fuel within the State for ultimate consumption within the State. 30 V.S.A. § 8123(12).

³ 30 V.S.A. § 8124(a)(1).

⁴ Act 18, § 6(f)(5).

the companion status report issued with the draft rule, “the focus of the Commission’s draft rule is on the responsibilities of the obligated parties that the Commission would be charged with regulating under the potential Clean Heat Standard program.”⁵ As currently conceived, the Commission’s draft rule, in some form, would live on if the Legislature approves the Clean Heat Standard. The draft rule mentions that the Commission will determine the obligated parties and their annual obligations. The actual execution of that process is described in this document. Appended to this determination is the list of obligated parties and their clean heat credit requirements for the first year.

In addition to establishing the obligated parties and their first-year clean heat credit obligations, the Commission must set the annual clean heat credit requirements for the next 10 years.⁶ Further, the Clean Heat Standard program must be “designed and implemented to enhance social equity by prioritizing customers with low income, moderate income, those households with the highest energy burdens, residents of manufactured homes, and renter households with tenant-paid energy bills.”⁷ To prioritize these households, the Clean Heat Standard sets a percentage of clean heat credits that must be retired through clean heat measures serving customers with low income and moderate income.⁸ The Legislature encouraged the Commission to frontload, to the extent reasonably possible, these equity-targeted credits “so that the greatest proportion of clean heat measures reach Vermonters with low income and moderate income in the earlier years” of the program.⁹

This determination fulfills these obligations under Act 18. It (1) establishes the list of year-one obligated parties, (2) sets their year-one clean heat credit requirements and explains those requirements in plain terms, (3) determines the annual clean heat credit requirements for the first 10 years of the potential Clean Heat Standard program, and (4) designates a portion of the annual credit requirements for low-income and moderate-income households. However, as we discuss in section II, below, there are substantial problems with the fuel dealer registration data that form the

⁵ Case No. 23-2220-RULE, Draft Clean Heat Standard Rule Companion Status Report, Issued 10/1/24 at 3.

⁶ 30 V.S.A. § 8124(a)(3).

⁷ 30 V.S.A. § 8124(d)(1).

⁸ 30 V.S.A. § 8124(d)(2).

⁹ 30 V.S.A. § 8124(d)(3).

basis of our determinations. Accordingly, we strongly recommend against these obligations being adopted.

The Commission issued a draft determination on this topic on December 6, 2024. Comments on year-one obligated parties and their clean heat credit obligations were due January 6, 2025. The Commission received comments from the Vermont Department of Public Service (“Department”), the Vermont Fuel Dealers Association (“VFDA”), Vermont Gas Systems, Inc. (“VGS”), and Thomas Weiss, a participant in the proceeding.

The Department and VFDA both echoed the Commission’s concerns about the quality of the registration data and agreed that the obligations should not be adopted. Filings by VGS and Thomas Weiss suggested that increased transparency in the calculation of obligations would help improve understanding, with VGS requesting that obligated parties have an opportunity to review their obligations. The Commission did not have adequate time to provide all inputs and calculations used to determine both sector-wide emission reduction requirements and individual obligated party credit obligations within the bounds of the Commission’s Order Granting Confidential Treatment of Registration Information issued January 24, 2024. If the Clean Heat Standard is ultimately enacted, the Commission will prioritize making this process more understandable and transparent.

Thomas Weiss and the Department pointed out that the decade trajectory appeared to show incremental emission reduction requirements rather than the cumulative total. Both commenters recommended that the cumulative total be reflected because it more clearly reflects the efforts required by obligated parties as the potential program progresses year-to-year.

In response, we have amended our ten-year trajectory to reflect that required emission reductions will need to compound in each subsequent year. In other words, the emission reductions from one year will need to be sustained and added to in the next year. While the Commission continues to strongly recommend against using the obligations included in this document, the determinations should now be considered final unless amended by the Commission.

II. YEAR-ONE OBLIGATED PARTIES AND CLEAN HEAT CREDIT OBLIGATIONS

Pursuant to 30 V.S.A. § 8124, the Commission must determine which fuel dealers that register with the Commission are considered obligated parties. The Commission must “establish the number of clean heat credits that each obligated party is required to retire each calendar

year.”¹⁰ This section describes the process the Commission used to determine obligated parties and their first-year obligations, in addition to highlighting the serious problems with the quality of the fuel dealer registration data on which these obligations are based. Despite these issues and to fulfill our statutory duty, the Commission lists year-one obligated parties and their clean heat credit requirements relevant to year one of this potential program in an attachment to this document.

A. Determining Obligated Parties

Act 18 distinguished between entities that must register with the Commission and entities that are obligated parties under the potential Clean Heat Standard. Pursuant to 30 V.S.A. § 8124(b)(1), each entity that sells heating fuel into or in Vermont must register annually with the Commission. From this group of annual registrants, the Commission must designate obligated parties. Obligated parties are a regulated natural gas utility serving customers in Vermont or an entity that imported, produced, refined, manufactured, or compounded heating fuel for ultimate consumption within the State of Vermont.¹¹ Under the first part of this definition Vermont Gas Systems, Inc. (“VGS”), “a regulated natural gas utility,” is one of the obligated parties.

Under the second part of the definition, the Commission determined which suppliers of other heating fuels are obligated parties using reporting criteria in the Commission’s fuel dealer registration form. In this form, the Commission required registrants to answer a series of yes/no questions and requested sourcing and customer information and volume of fuel sold directly to consumers in Vermont to determine whether an entity qualified as an obligated party and the magnitude of that entity’s obligation.

Ultimately, if a fuel dealer reported that it imported fuel into the state and either sold that fuel directly to consumers or used it in some other capacity,¹² that fuel was presumed to meet the “ultimate consumption” in Vermont standard in statute and, therefore, determined to be an obligated party. For registrants who reported a portion or all of their fuel sales to Vermont retailers (*i.e.*, for resale), that fuel was also presumed to meet the “ultimate consumption” in

¹⁰ 30 V.S.A. § 8124(a)(1).

¹¹ 30 V.S.A. § 8123(12).

¹² Dispositions of fuel that were presumed to meet the “ultimate consumption” in Vermont standard (and thus factored into obligations by the importing entity): units of fuel sold to Vermont consumers, sold to Vermont retailers for resale, consumed for heating use, consumed for non-heating use, and stored.

Vermont standard, subject to checking the disposition of that fuel downstream (*i.e.*, confirming it was not sold outside the state). Registrants who failed to report the supplier or source of the heating fuel they sold in the state — information statutorily required by Act 18¹³ — were also determined to be obligated parties. Registrants who reported sourcing all of the heating fuel they sold *within* the state were not identified as obligated parties because they were not the importer of the fuel that was ultimately consumed in the state.

B. Determining Obligated Parties' First-Year Credit Requirements

To determine obligated parties' first-year credit requirements, the Commission proceeded to implement the pacing process outlined in the order issued November 1, 2024.¹⁴ The Commission determined which units of fuel would be attributed to each obligated party by matching heating fuel importers to the units that were ultimately consumed in Vermont (see fuel disposition determinations in the section above). For mixed-source scenarios, or registrants who sourced their heating fuel both in- and out-of-state, we apportioned any fuel reported to be ultimately consumed in the state by the proportion that the registrant and any in-state supplier contributed to the overall total. In other words, of the total fuel purchased to sell within the state, if a registrant imported 25% of the total and bought 75% from an in-state supplier, we assigned the fuel that was reported to be ultimately consumed in the state (*e.g.*, directly to consumers) respectively (*i.e.*, 25% to the registrant and 75% to the in-state supplier). Procedurally, after identifying the obligated gallons (or Mcf) of each individual obligated party, we converted that volume of obligated fuel to a lifecycle-based emissions total based on applying a factor (*i.e.*, the technical consultant's fuel-specific lifecycle emission rate) to the total volume of obligated units. Based on the overall total of lifecycle emissions generated by *all* obligated units of fuel, we then calculated each obligated party's proportional contribution to this total. This proportional contribution was then applied to the lifecycle-based baseline year of emissions (*i.e.*, the lifecycle-translated 2023 baseline year of the residential-commercial-industrial ("RCI") sector of the Vermont Greenhouse Gas Inventory ("Inventory")), leading to the assignment of a proportional amount of baseline-year emissions to each obligated party. The percent decrease required to meet Global Warming Solutions Act ("GWSA") emission reduction requirements in the Inventory was then applied to each obligated party's assignment of emissions, identifying the required reduction

¹³ 30 V.S.A. § 8124(b)(2).

¹⁴ See Case No. 23-2220-RULE, Order of 11/1/24 at 13.

in lifecycle-based CO_{2e} for each entity. These units were then translated into metric tons of CO_{2e} to arrive at the obligations in terms of clean heat credits.

C. Clean Heat Obligations in Plain Terms

The Commission has provided first-year clean heat obligations in terms of clean heat credits in an attachment to this document. Each clean heat credit is valued at 1 metric ton of CO_{2e}. By utilizing the program's technical reference manual ("TRM"), obligated parties are able to reference this document to determine what measure mix could achieve the obligation assigned (if they intend to directly engage in satisfying some or all of their clean heat credit obligation). As an example, if an obligated party is assigned to obtain and retire 25 clean heat credits in year one, the TRM indicates that this amount could be earned by installing two 3.5 ton (42,000 Btu/h) single-family residential air-source ducted heat pump systems (specifically homes in which this would fully displace existing oil heat) and delivering 7,251 gallons of 20% biodiesel ("B20") sourced from soybean oil (displacing heating oil #2). For the installations, while they would generate only a portion of their carbon reductions in year one, those measures would continue to earn credits for the estimated lifetime of the measure (in this case, the next 16 years).

D. Major Problems with Fuel Dealer Registration Data

The Commission considers transparency about the flaws in the fuel dealer registration data to be as important as the obligations themselves. While it is not unusual for the initial round of an entirely new process with newly regulated entities to be imperfect, in the event the potential Clean Heat Standard is enacted, the Commission has serious concerns that Act 18 necessitates the use of flawed data to determine an element of the program that may have considerable consequence — first-year clean heat credit obligations. The Commission cannot endorse the use of these data for the reasons outlined below.

There are three known problems with the fuel dealer registration data. First, there are entities that sold heating fuel into or in Vermont that did not register with the Commission. While there may be future opportunities to investigate and track down these entities in future years, the Commission did not have the resources to pursue unregistered but likely required-to-register entities in this initial registration year. Under-registration has the effect of distorting our understanding of the heating fuel imported and sold in Vermont and thus our calculation of the total fuel by which an individual obligated party's year-one obligation is determined.

Second, there are entities that registered but did so incompletely or inaccurately. A non-trivial number of entities withheld critical information (*e.g.*, the volume of fuel bought or sold, or the identity of suppliers or customers) that made it difficult or impossible to determine the status of an entity’s obligation. Other entities may have misunderstood some of the questions on the registration form, which resulted in illogical sourcing of fuel (*e.g.*, reportedly sold fuel in the state but did not import, produce, refine, manufacture, compound, or purchase the fuel in-state – resulting in a question mark as to how the fuel came to be in the state). Inaccurate or incomplete reporting also distorts the overall calculation of obligated fuel in the economy.

Third, for some registrants, there appears to have been ambiguity about what constitutes “heating fuel” in statute (as highlighted in the Commission’s enforcement order issued on September 17, 2024):

Finally, the definition of “heating fuel” in Act 18 is broad and ambiguous. Heating fuel is defined as “fossil-based heating fuel, including oil, propane, natural gas, coal, and kerosene.”¹⁵ The stated purpose of the Clean Heat Standard is to “reduce greenhouse gas emissions attributable to the Vermont thermal sector.”¹⁶ The statute further defines “thermal sector” as “ha[ving] the same meaning as the ‘Residential, Commercial and Industrial Fuel Use’ sector as used in the Vermont Greenhouse Gas Emissions Inventory and Forecast” but excludes “nonroad diesel or any other transportation or other fuel use categorized elsewhere in the Vermont Greenhouse Gas Emissions Inventory and Forecast.”¹⁷ The Vermont Greenhouse Gas Inventory includes “. . . greenhouse gas emissions from the Residential/Commercial and Industrial Fuel Use sector . . . related to the use of fossil fuels for space heating, water heating, and cooking, in residential, commercial, and industrial buildings.”¹⁸ Based on the statutory definitions and the thermal sector definition from the Vermont Greenhouse Gas Emission Inventory and Forecast, the Legislature has defined “heating fuels” to be fossil-based heating fuels without regard to end use.¹⁹

Although the Commission provided this guidance in September, the initial registration asked registrants to use their best judgment when reporting fuel sold in or into Vermont. This ambiguity likely caused some registrants to underreport the fuel they sold and caused other would-be

¹⁵ 30 V.S.A. § 8123(11).

¹⁶ 30 V.S.A. § 8122(a).

¹⁷ 30 V.S.A. § 8123(13).

¹⁸ VT. CLIMATE ACTION OFF., VERMONT GREENHOUSE GAS EMISSIONS INVENTORY AND FORECAST: 1990-2020, 13 (Apr. 2023), *available at*

https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/_Vermont_Greenhouse_Gas_Emissions_Inventory_Update_1990-2020_Final.pdf.

¹⁹ Case No. 23-2220-RULE, Order of 9/17/24 at 3.

registrants to fail to register, mistakenly believing that the fuel they sold was outside the scope of this new registration requirement. All three of these issues affect the validity of the data and ultimately the clean heat credit obligations that were based on it.

There is also an issue of completeness with the overall number of registrations we have received to date. The Commission received 110 registrations by the end of the grace period: February 29, 2024.²⁰ Registrations received between March 1, 2024, and this fall, principally in response to the Commission's enforcement order that was issued on September 17, 2024, have *not* been processed and are not included in this initial tally of obligations.²¹ This omission of late registrations alone should invalidate these first-year obligations as reported.

The Commission is unable to resolve these issues with access to the State's fuel tax data for three primary reasons. First, the fuel tax data are also subject to noncompliance and may not capture all entities or all fuels that are subject to pay the tax. Second, the fuel tax is paid at the final sale of delivered fuel in the state (*i.e.*, units sold for resale are not subject to the tax). The Clean Heat Standard obligates entities that import/produce/manufacture/compound heating fuel, many of whom sell heating fuel for resale in the state and thus do not pay the fuel tax. The Commission is unable to trace fuel upstream to the relevant importer of the heating fuel using the fuel tax data. Third, fuel regulated by the fuel tax and fuel regulated by this program are not entirely overlapping. As outlined in the Commission's enforcement order, the intersection of the definitions of heating fuel and thermal sector in Act 18 necessitates regulation of all fossil-based heating-fuel sales of oil, propane, natural gas, coal, and kerosene, regardless of end-use.²² For these three reasons, the State's fuel tax dataset is not a resource that can resolve the issues identified above.

²⁰ The current distribution of credits also includes potential duplicate credit assignments if the registrant did not notify the Commission of one registration superseding an earlier registration.

²¹ 66 registrations have not yet been processed. This number is inclusive of any duplicative or corrective registrations that were filed between March and October of this year.

²² Case No. 23-2220-RULE, Order of 9/17/24. The only exceptions to this universe of fossil-based heating fuel are those identified in the definition of "thermal sector" in Act 18: "'Thermal sector' has the same meaning as the "Residential, Commercial and Industrial Fuel Use" sector as used in the Vermont Greenhouse Gas Emissions Inventory and Forecast *and does not include nonroad diesel or any other transportation or other fuel use categorized elsewhere in the Vermont Greenhouse Gas Emissions Inventory and Forecast.*" 30 V.S.A. § 8123(13) (emphasis added).

While this determination fulfills our duty to establish the first set of required amounts for obligated parties pursuant to Section 6(f)(5), the cited issues and lack of available resolution lead the Commission to strongly recommend against using these determinations.

III. TEN-YEAR CLEAN HEAT CREDIT OBLIGATIONS

This section explains the Commission’s methodology for determining the annual clean heat credit requirements for the first 10 years of the potential Clean Heat Standard program. In implementing the process outlined in the pacing process order issued on November 1, 2024, the Commission first established the thermal sector baseline with which to anchor the trajectory of emission reductions. In this initial trajectory, that meant using aggregate fuel tax data from 2023 and extrapolating other non-tax-data RCI inputs to arrive at a baseline representative of the RCI sector from last year.²³ This projected emissions total from 2023 was then weather-normalized by adjusting for the relative number of heating degree days (“HDD”) last year versus the average number of HDD over the last five years. This percentage change was then applied to the 2023 total.

From this adjusted baseline, we then linearly projected the next 10 years of emission reductions with the 2030 GWSA target met in 2029, and later years linearly tied to meeting 2050’s obligation in 2049.²⁴ This in-boundary trajectory was then reconciled to lifecycle-based emission totals by applying a factor (*i.e.*, the technical consultant’s fuel-specific lifecycle emission rate) to the inputs making up the baseline RCI emissions. The sum of these lifecycle-based inputs was then representative of the lifecycle-based 2023 baseline year. We then applied the same rate of decrease as required in the Inventory-based calculations to the lifecycle-based trajectory. This resulted in the lifecycle-based emissions limits (and total credit requirements) for each of the next 10 years.²⁵

Given the variability in fuel sales and any one entity’s share of emissions in the market from year to year, we are not identifying obligated party credit obligations beyond year one. Even

²³ As we have explained before, there is a significant lag in the official state Inventory — figures for each sector, including the RCI sector, are typically available after three years — meaning official 2023 emissions will likely be available in 2026.

²⁴ 2030 and 2050 goals will be based on the RCI sector’s share of emissions in reference year 2018 as directed by the Vermont Climate Council.

²⁵ See Case No. 23-2220-RULE, Order of 11/1/24 at 12.

so, and in order to “support the ability of the obligated parties to plan for the future,”²⁶ if an obligated party’s share of the overall emissions of the heating fuel industry remains relatively consistent in future years, the obligated party can estimate approximately what its annual obligation will be in years 2-10 based on the overall emission reductions required in future years presented below. For instance, if an obligated party’s share of total lifecycle emissions (in the fuel dealer registration data universe) remains roughly 10%, it would be assigned 10% of subsequent years emissions reduction requirements (*e.g.*, 10% of .3338, or .03338 MMT). The unit conversion to clean heat credits would then be multiplied by 1,000,000 to arrive at the entity’s obligation (*i.e.*, 33,380 credits in this instance). This is all to say, if an obligated party’s share of emissions in the industry remains within close range of its year-one percentage, it should be able to estimate what its annual obligation would be in future years through the process outlined above.

The table below outlines the Commission’s projections for the next 10 years of emission reductions required to be achieved by this potential program. Because the emission reductions in any one year would have to be sustained in the next year, the table includes both incremental and cumulative reductions and credits required to meet GWSA targets. The GWSA goal that must be met by January 1, 2030 (requiring achievement in 2029) explains the stark contrast of emission reductions (and thus credit retirement) needed in the initial years versus years 2030-2050. If the Clean Heat Standard is enacted, the Commission would revisit this projection every three years to extend the requirements by three years and assess whether reductions were achieved in the thermal sector (revising the pace if needed) in line with 30 V.S.A. § 8124(a)(3).²⁷

Decade Projection of Sector-wide Emission Reduction Requirements					
Year	Required incremental reductions of lifecycle-based emissions (MMT)	Required cumulative reductions of lifecycle-based emissions (MMT)	Required incremental clean heat credit retirements	Total annual required clean heat credit retirements	Incremental sector-wide percentage decrease required
2026	0.3338	0.3338	333,792.36	333,792.36	8.76%
2027	0.3338	0.6676	333,792.36	667,584.72	9.60%

²⁶ 30 V.S.A. § 8124(a)(3)

²⁷ The Commission would need to assess reductions in the *projected* thermal sector data (*i.e.*, aggregated fuel tax data) given that the Inventory runs on a three-year lag.

2028	0.3338	1.0014	333,792.36	1,001,377.08	10.62%
2029	0.3338	1.3352	333,792.36	1,335,169.44	11.88%
2030	0.0824	1.4176	82,405.87	1,417,575.31	3.33%
2031	0.0824	1.5	82,405.87	1,499,981.18	3.44%
2032	0.0824	1.5824	82,405.87	1,582,387.05	3.57%
2033	0.0824	1.6648	82,405.87	1,664,792.92	3.70%
2034	0.0824	1.7472	82,405.87	1,747,198.79	3.84%
2035	0.0824	1.8296	82,405.87	1,829,604.66	3.99%

IV. LOW- AND MODERATE-INCOME DISTRIBUTION

This section describes the Commission’s process for designating a portion of the annual credit requirements for low-income and moderate-income households (“LMI”). The Commission intends to retain the statutory minimum of each category in the first year of obligations.²⁸ This distribution requires each obligated party to retire at least 16% of its credits through clean heat measures serving customers with low income and an additional 16% through measures serving customers with moderate income. At least one-half of each of these designations must also be met by measures that are considered qualified capital investments, a group of measures not yet designated by the Technical Advisory Group.²⁹

This decision is an acknowledgment that increasing the distribution of credits serving LMI households increases the cost of the program, as the necessary incentive levels would need to be higher. Because it is not feasible for all LMI households to participate in the program’s early years – and those not able to participate would face higher heating costs as a result of front-loading LMI participation – an increased LMI requirement could potentially cause more harm than good. The Equity Advisory Group, statutorily charged with this consideration, agreed that there are costs and benefits with front-loading credits to LMI households and that there is “insufficient information to determine whether front-loading the LMI targets in the earliest years of the program is ‘reasonably possible’.”³⁰

²⁸ 30 V.S.A. § 8124(d)(2).

²⁹ 30 V.S.A. § 8124(d)(2) (“For each of these groups, at least one-half of these credits shall be from installed clean heat measures that require capital investments in homes, have measure lives of 10 years or more, and are estimated by the Technical Advisory Group to lower annual energy bills. Examples shall include weatherization improvements and installation of heat pumps, heat pump water heaters, and advanced wood heating systems. The Commission may identify additional measures that qualify as installed measures.”).

³⁰ EAG Memo on LMI CHS Credit Frontloading (8/9/24) at 4.

While the Commission will be able to adjust this distribution in future years if the program goes into effect, retaining the statutory minimum in at least the first year would allow the Commission access to real program data that may suggest a different distribution is achievable, while also allowing the credit market to mature and adjust to the priorities of the program.

V. CONCLUSION

This determination fulfills several of the Commission's obligations under Act 18 — identifying year-one obligated parties and their clean heat credit requirements, explaining those requirements in plain terms, determining the annual clean heat credit requirements for the first 10 years of the potential Clean Heat Standard program, and designating a portion of the annual credit requirements for clean heat measures provided to low- and moderate-income households. However, as identified in this document, these determinations are not without caveats. While significant efforts have been made to identify obligated parties and their year-one credit requirements, we strongly recommend against these obligations being adopted due to serious flaws in the registration data.

Notice to Readers: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Commission (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: puc.clerk@vermont.gov)

VI. ATTACHMENT: OBLIGATED PARTIES' OBLIGATIONS IN YEAR ONE

The following table outlines the obligated parties and their respective clean heat credit requirements for year one. The second column provides regulated entities with their proportional share of the total lifecycle emissions reported in the fuel registration data. As outlined in section III of this document, this percentage can be used to estimate future year obligations if an obligated party's share of emissions in the industry remains within close range of this year-one percentage.

Obligated parties	Proportional contribution to total lifecycle emissions in fuel registration data	Obligation in Clean Heat Credits
Al's Plumbing, Heating and Fuels LLC	0.000046	15.41
Apollo Industries, Inc.	0.000079	26.48
Apollo Industries, Inc.	0.000081	27.14
Barrows and Fisher Oil Company	0.003347	1,117.19
B-A-R-T Energy, LLC	0.002734	912.50
Black Rock Coal, Inc.	0.000055	18.20
Blairs Discount Fuel	0.000603	201.31
Blue Flame Gas Co. Inc.	0.004791	1,599.31
Bob's Fuel Company, LLC	0.000623	207.91
Braymer Fuels Inc	0.000124	41.39
C Bean Transport Inc	0.001142	381.23
C N Brown Company	0.000734	245.13
C V Oil Co	0.006695	2,234.85
Champlain Valley Plumbing and Heating	0.036159	12,069.72
Ciardelli Fuel Company	0.000003	1.13
Columbia Petroleum Transportation LLC	0.000323	107.92
Cota & Cota Inc.	0.020833	6,953.86
Cota Propane	0.003233	1,079.07
Country Fuels LLC	0.001369	456.82
D & D Oil, Inc.	0.004825	1,610.57
D&C Transportation Inc.	0.027994	9,344.11
Dead River Company LLC	0.030689	10,243.71
Dennis K. Burke Inc.	0.011792	3,935.93
Desjarlais Inc	0.001345	448.83
Eastern Propane Gas Inc.	0.001847	616.38
Factor Gas Liquids Inc	0.006605	2,204.72
Fitch Fuel Company	0.000611	203.80
Fox Fuel LLC	0.000004	1.32
Fyles Bros Inc	0.010933	3,649.34
George Propane Inc	0.000031	10.48

Gillespie Fuels and Propane, Inc.	0.005246	1,751.16
Global Companies LLC	0.017503	5,842.39
Global Montello Group Corp.	0.002656	886.43
Gunvor USA LLC	0.002065	689.41
Guy E Nido Inc	0.005196	1,734.49
Hannaford (Ahold Delhaize)	0.000012	4.15
HB Energy Solutions Inc	0.004254	1,419.91
HL Fuel Co Inc	0.001469	490.34
HL Fuel Co Inc	0.001831	611.19
Hometown Hardware and Supply	0.000042	13.99
Hometown Hardware and Supply	0.000018	5.85
Hop Energy LLC	0.008078	2,696.53
Irving Oil Terminals Inc.	0.050073	16,713.92
Jackman Fuels Inc.	0.004604	1,536.63
James Plumbing Heating Oil Co, Inc.	0.002451	818.26
Johnson Energy Inc.	0.003867	1,290.84
Kiros Energy Marketing ULC	0.041248	13,768.22
Lake Champlain Coal Co. Inc	0.000723	241.17
Lipton Inc.	0.000169	56.52
Local Fuel Co., Inc	0.000548	183.07
Main Brothers Oil Co, Inc	0.000196	65.27
McCuin Fuels Inc.	0.000896	299.11
Meridian Liquids Partners Inc.	0.003244	1,082.93
Mike Greene Plumbing & Heating, LLC	0.001565	522.35
Miles Lumber Company	0.004730	1,578.93
Mirabito Holdings, Inc.	0.009785	3,266.00
Morse Fuels LLC	0.000256	85.36
NG Advantage LLC	0.000053	17.83
NGL Supply Co. Ltd.	0.023783	7,938.61
NGL Supply Wholesale, LLC	0.077782	25,962.99
Oil Supply Corp	0.004528	1,511.56
Onsite Septic Solutions, LLC	0.002709	904.36
Packard Fuels LLC	0.003781	1,262.03
Preite Oil LLC	0.000149	49.71
R.E. Hinkley Co., Inc	0.001408	469.94
R.L. Vallee Inc.	0.000040	13.24
Ray Energy Corp.	0.022450	7,493.80
Robert Greene Inc	0.006948	2,319.07
Roberts Energy, LLC	0.011452	3,822.67
Roberts Energy, LLC	0.002546	849.77
Rowley Fuels Inc	0.003967	1,324.30
Rutland Gas & Oil, Inc.	0.002910	971.25
S.B. Collins, Inc	0.014739	4,919.76
Sam's Service Center & U-Save Fuels, Inc.	0.000068	22.80

Sandri Energy LLC	0.002806	936.61
Santa Energy	0.001237	412.90
Simple Energy Partners LLC	0.009877	3,296.85
Sprague Operating Resources LLC	0.002666	889.73
Stewart's Shops Corp	0.000026	8.82
Suburban Propane LP	0.011343	3,786.22
Suburban Propane LP	0.017133	5,718.99
Trono Oil and Gas Co., Inc.	0.004479	1,495.02
Valero Marketing & Supply Company	0.185808	62,021.33
Vermont Gas Systems, Inc.	0.228827	76,380.63
Walter E. Jock Oil Co., Inc.	0.000605	201.85
West Oil Company, Inc.	0.003504	1,169.55

Appendix D:
Equity Advisory Group Final Report



Final Report of the Clean Heat Standard Equity Advisory Group to the Vermont Legislature

January 7, 2025

Executive Summary

Act 18 of 2023 created the Equity Advisory Group and charged it with assisting the Public Utility Commission in developing a Clean Heat Standard to equitably serve all Vermonters. For over a year, the Equity Advisory Group heard concerns from Vermonters about the potential costs of the Clean Heat Standard. While official fuel price increase estimates were not available to the Equity Advisory Group at the time of preparing this report, the Clean Heat Standard as currently designed is likely to increase fuel costs, and therefore increase the energy burdens of low and moderate income Vermonters, at least in the short term. Over the longer term, the Clean Heat Standard may help many households reduce their dependence on expensive and price-volatile fossil fuel heating. This would provide direct economic benefits as well as substantial social benefits to all Vermonters due to reduced emissions. However, many disadvantaged communities, including Vermonters of Color, low income households, moderate income households, renters, and residents of mobile homes, face significant challenges in accessing clean heat measures in their homes. Without additional intervention from the Legislature, these households will struggle to experience the benefits available under the Clean Heat Standard while bearing a disproportionate share of the costs. Substantial investments in companion programs will be necessary to ensure an equitable implementation of the Clean Heat Standard for all Vermonters.

This report was adopted unanimously by the Clean Heat Standard Equity Advisory Group on January 7, 2025.

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Note on Recommendations

Recommendations on solutions to promote equity in the Clean Heat Standard are provided throughout the section on *Clean Heat Standard Impacts* (starting pg. 23), broken down by the demographic group that those recommendations are intended to support, and includes additional content on why the Equity Advisory Group feels those recommendations are needed. These recommendations are also listed in Appendix A.

In addition, the Section on *Recommendations for Implementing the Clean Heat Standard* (starting pg. 59) describes how the Clean Heat Standard should be implemented procedurally to ensure equity.

Clean Heat Standard Equity Advisory Group Members

Mia Watson, Chair, *Vermont Housing Finance Agency*

Chris Trombly, Vice Chair, *Vermont State Housing Authority*

Ben Bolaski, *Vermont Department of Public Service*

Matt Cota, *Meadow Hill Consulting, representing the Vermont Fuel Dealers Association*

John Mandeville, *Central Vermont Council on Aging*

Pike Porter

Emily Roscoe, *Efficiency Vermont*

Sriram Srinivasan

Geoff Wilcox, *Vermont Office of Economic Opportunity*

Jen Myers of the Champlain Valley Office of Economic Opportunity served on the Equity Advisory Group (EAG) through October 2024 and then resigned due to taking another position. The Commission declined to appoint another member to replace her in the short time remaining. She participated in drafting the report but did not vote on accepting the final document.

Acknowledgements

The EAG would like to thank Ashira Pelt of the Consensus Building Institute for facilitating the work of the group, Dominic Gatti at the Public Utility Commission for coordination between the EAG and the Public Utility Commission, and Casey Smith, Housing Fellow at the Vermont Housing Finance Agency, for assistance in drafting the final report. We would also like to thank all the members of the public who took the time to comment on our work.

Legislative Directive

Clean Heat Standard Overview

Act 18 of 2023 established a framework for the Public Utility Commission (PUC, or the “Commission”) to design a Clean Heat Standard (CHS), for review by the Vermont General Assembly in 2025.¹ The CHS seeks to reduce residential, commercial, and industrial greenhouse gas emissions that are primarily associated with the thermal energy, or heating, sector.

The CHS is a response to Vermont's legal obligations under the Global Warming Solutions Act (GWSA) of 2020, which mandates emissions reduction targets for the state by 2025, 2030, and 2050. Approximately a third of Vermont’s emissions come from fossil fuel-based heating, hot water, and cooking. The CHS seeks to transition the state away from carbon-intensive heating methods to cleaner, lower-carbon alternatives. Using clean heat credits, the CHS promotes energy-efficiency improvements, sustainably sourced biofuels, and new heating systems that use electricity or sustainably sourced biofuels through a system of clean heat credits. Obligated parties, the entities that import fossil fuels into the state, are required to meet greenhouse gas reduction targets by acquiring and retiring these credits, which are earned by implementing approved measures that reduce emissions.

Equity Considerations in Act 18

Act 18 states that “The Clean Heat Standard shall be designed and implemented to enhance social equity by prioritizing customers with low income, moderate income, those households with the highest energy burdens, residents of manufactured homes, and renter households with tenant-paid energy bills. The design shall ensure all customers have an equitable opportunity to participate in, and benefit from, clean heat measures regardless of heating fuel used, income level, geographic location, residential building type, or homeownership status.”

To help ensure equitable implementation of the CHS, Act 18 requires obligated parties to obtain and retire at least 16% of the clean heat credit requirement from low income customers and another 16% from low or moderate income customers.² Half of these credits must come from measures installed in their homes, which can include measures such as heat pumps, heat pump hot water heaters, and weatherization.

¹ 30 V.S.A. § 8122

² Under Act 18, a customer with low income is defined as “a customer with a household income of up to 60 percent of the area or statewide median income, whichever is greater, as published annually by the U.S. Department of Housing and Urban Development or a customer who qualifies for a government-sponsored, low income energy subsidy.” A customer with moderate income is defined as a “customer with a household income between 60 percent and 120 percent of the area or statewide income, whichever is greater, as published annually by the U.S. Department of Housing and Urban Development.”

Establishment of the Equity Advisory Group

The Clean Heat Standard Equity Advisory Group (EAG) was created under Act 18 to “assist the Commission in developing and implementing the CHS in a manner that ensures an equitable share of clean heat measures are delivered to Vermonters with low income and moderate income and that Vermonters with low income and moderate income who are not early participants in clean heat measures are not negatively impacted in their ability to afford heating fuel.”³

Act 18 directed the Commission to appoint up to 10 members to the EAG, including at least one representative from the Department of Public Service, the Department for Children and Families’ Office of Economic Opportunity, a community action agency with expertise in low income weatherization, a community action agency with expertise in serving residents of manufactured homes, Efficiency Vermont, the Vermont Association of Area Agencies on Aging, individuals with socioeconomically, racially, and geographically diverse backgrounds, renters, rental property owners, the Vermont Housing Finance Agency, and a member of the Vermont Fuel Dealers Association.

The statutory duties of the EAG include:

- 1) *Providing feedback to the Commission on strategies for engaging Vermonters with low income and moderate income in the public process for developing the Clean Heat Standard program;*
- 2) *Supporting the Commission in assessing whether customers are equitably served by clean heat measures and how to increase equity;*
- 3) *Identifying actions needed to provide customers with low income and moderate income with better service and to mitigate the fuel price impacts calculated in section 8128 of this title;*
- 4) *Recommending any additional programs, incentives, or funding needed to support customers with low income and moderate income and organizations that provide social services to Vermonters in affording heating fuel and other heating expenses;*
- 5) *Providing feedback to the Commission on the impact of the Clean Heat Standard on the experience of Vermonters with low income and moderate income; and*
- 6) *Providing information to the Commission on the challenges renters and residents of manufactured homes face in equitably accessing clean heat measures and recommendations to ensure that renters and residents of manufactured homes have equitable access to clean heat measures.*

The Commission appointed members of the EAG on November 16, 2023. The EAG began meeting on November 29, 2023. Since that time, the EAG has met twice monthly as a full group and has had many meetings of smaller working groups dedicated to addressing various duties of the EAG. All meetings of the EAG have been open to the public and have recordings available on the Commission’s website.⁴

³ 30 V.S.A. § 8129

⁴ [Vermont Public Utility Commission](#), “Clean Heat Standard,” retrieved November 25, 2024.

Benefits, Harms, and Limitations of the Clean Heat Standard

Potential Benefits

Meeting Legal Mandates

At its core, the Clean Heat Standard (CHS) was designed to provide a mechanism to deliver thermal sector greenhouse gas (GHG) emissions reductions at a scale and pace sufficient to meet Global Warming Solutions Act (GWSA) requirements.

The Vermont Department of Public Service's Clean Heat Standard Potential Study Report prepared by NV5 suggests that meeting the 2050 targets of the GWSA in the thermal sector is technically possible under the CHS framework if Vermont sees a significant increase in the clean energy workforce, especially weatherization workers.⁵ However, the Potential Study also highlights challenges associated with equitable implementation of the Clean Heat Standard.

Addressing an Inequitable Status Quo

The thermal sector in Vermont is not currently equitable. Vermont's higher income households tend to purchase more fuel and produce more emissions but spend a smaller percentage of their income on heating.⁶ Higher income households are more likely to have access to lower cost heating solutions like natural gas, advanced wood heating systems, and electric heat pumps.⁷ Finally, higher income households have a greater ability to access financing and benefit from tax incentives. Conversely, low and moderate income Vermont households spend a higher percentage of their income on fuel and tend to use higher-cost fuels like kerosene, fuel oil, and propane. The price of these fuels is volatile, making it hard for these households to budget for heating costs. Over the long term, without action, many of these low and moderate income households are at risk of remaining dependent on these increasingly expensive fossil fuels.

Expansion of Efficiency Programs

In theory, the creation of a market for clean heat credits could enable new sources of revenue to fund the installation and delivery of clean heat measures aimed at achieving GHG emission reduction targets in Vermont's thermal sector.

The purchase of clean heat credits by obligated parties from programs installing clean heat measures in homes could create new long-term funding streams for existing programs and potential new programs developed by the DDAs. This would allow for the expansion of existing programs to complete additional incremental projects. To avoid asymmetries and inefficiencies

⁵ [NV5](#), *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*. Prepared for the Vermont Department of Public Service. September 1, 2024

⁶ [U.S. Department of Energy](#), Low-income Energy Affordability (LEAD) tool, 2024

⁷ [Energy Action Network](#). Annual Progress Report for Vermont, 2024.

in the Clean Heat Standard market, the creation of new statewide programs by the DDA should avoid duplicating existing programs within the state.

Additional revenue would particularly benefit low income programs such as the Weatherization Assistance Program (WAP) administered by the Office of Economic Opportunity (OEO), which serve the most energy burdened low income Vermonters. Currently the WAP is funded by a two cents per gallon tax on heating fuel oil, propane, and kerosene, a 0.75% gross receipts tax on natural gas and coal, 0.5% gross receipts tax on electricity, as well as variable supplemental federal and state funding. However, as the primary fuel source for space heating in the state shifts from fossil fuels to electricity, potentially accelerated by the CHS, WAP revenue from fossil fuel sources is expected to decrease.

The CHS would add supplemental funding for the WAP because, as described in the Commission's Draft Rule, "if the measure is implemented at no cost to a participant under a program authorized by the Commission, the entity administering the program will be the initial owner of the measure attributes".⁸

While the amount of revenue that could be generated from the sale of these credits is still unknown, credits related to measures installed in low income homes are expected to be more expensive and difficult to obtain,⁹ which are expected to give them a higher value in a CHS marketplace. In practice this means that the WAP might potentially generate a sustained revenue stream of thousands of CHS credits on an annual basis, which can be reinvested in new projects serving low income Vermonters.

Direct Benefits for Households Installing Clean Heat Measures

Direct benefits for households installing clean heat measures include decreased fossil fuel use and heating costs. Weatherization would reduce the total energy required to adequately heat the home - increasing affordability - while also providing health benefits and increased comfort for occupants.¹⁰ The installation of the cold climate heat pump systems can provide homes with a more efficient and affordable source of energy, as well as cooling in the summer months.¹¹

However, increasing the pace of installed clean heat measures will be limited to workforce constraints, and will only be able to be incrementally installed based on workforce development.

In addition, in certain areas of the state, such as those served by relatively lower cost natural gas or electric utilities with higher rates, operating and maintenance costs of heat pumps will be higher than fossil alternatives. Care is necessary to ensure that costs of energy do not *increase* due to the Clean Heat Standard.

⁸ [Vermont Public Utility Commission](#), Draft Proposed Rule, 8.113(a)(1), in Case No. 23-2220-RULE, October 1, 2024.

⁹ This is suggested in the NV5 Potential Study. [NV5](#), *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*. Prepared for the Vermont Department of Public Service. September 1, 2024.

¹⁰ [Vermont Department of Health](#), "Weatherization + Health in Vermont", December 2018.

¹¹ [Energy Action Network](#). Annual Progress Report for Vermont, 2024.

Societal Benefits

Significant economic, health and environmental benefits could occur as a result of measures implemented pursuant to the Clean Heat Standard. The NV5 Potential Study suggests that despite the significant overall costs of the program, the CHS would be expected to generate at least \$1.03 billion in net societal benefits by 2049.¹² Most of the measured societal benefits accrue from the value placed on greenhouse gas emissions reductions globally, using the Societal Cost of Carbon adopted by the Vermont Climate Council.

Potential Harms

Costs

The most common concern around harms the EAG has heard from the public is related to costs. The EAG expects that obligated parties generating clean heat credits are expected to pass on most, if not all, of the costs of compliance to their fuel customers, who will ultimately experience the financial burden of the CHS. Since low and moderate income customers tend to spend a higher percentage of their incomes on heating, higher fuel prices have a disproportionate impact on the households with the least ability to absorb the costs.

At the time that this report was finalized in mid-December 2024, the EAG had not received any official estimate of the likely costs of the CHS program,¹³ nor had it seen any final prediction of how the program costs would potentially impact home fuel prices. Not having this data available has been a significant barrier in the EAG's ability to assess the impact of the CHS.

Through comments made directly to the EAG and public comments to the Commission, the EAG heard a deep concern about the CHS from many Vermonters. In the absence of trustworthy cost estimates, there has been substantial fear about the unknown impact of the program on heating affordability for low and moderate income households. The EAG heard from many commenters that any increase in fuel prices would be very difficult to shoulder. Many commenters, especially those living on fixed incomes or paycheck to paycheck, worried about their ability to remain in their homes.

The CHS will particularly impact very low income households receiving benefits from the Low-Income Home Energy Assistance Program (LIHEAP). LIHEAP assistance is based on the Margin-Over-Rack (MOR) pricing, or the fixed price participating fuel dealers can charge a customer receiving fuel assistance funds. Under Act 18, the MOR price will be subject to any potential clean heat fee.¹⁴ Absent any supplemental funding to offset the increase in MOR price, LIHEAP recipients will see their total benefit reduced, resulting in a decrease in total household thermal

¹² *NV5, Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*. Prepared for the Vermont Department of Public Service. September 1, 2024

¹³ The NV5 Potential Study suggested the overall costs of all the measures required by the CHS, but not how those costs would be mitigated by existing state and federal funding or taking into account measures already being adopted by households without additional incentives.

¹⁴ 30 V.S.A. § 8124 (i)

load that LIHEAP is able to offset for recipients. Not only may LIHEAP recipients experience higher fuel costs along with other fuel customers, but LIHEAP dollars will not go as far in supporting these households. Issues related to LIHEAP are discussed in detail in the section of the report on Low Income Households, but the urgency of supporting the LIHEAP program under the CHS deserves special attention.

Before implementing the CHS, the Legislature must obtain and assess fuel price increase estimates. The Legislature should review these estimates in relation to existing fuel prices and understand the percentage cost increase for each fuel type. The Legislature should pay particular attention to any outsized projected price increase for specific fuel types. Higher price increases in fuel oil, kerosene, and propane will more heavily impact low income households, who are more likely to use those fuel types.¹⁵

The Legislature should also investigate whether the CHS would increase or mitigate the fuel price volatility that many Vermonters already face.

Unequal Access to Clean Heat Measures

While the CHS can provide many households with better access to clean heat measures, the EAG heard public comments from many Vermonters who felt that they could not easily reduce their fossil fuel use, due to either cost of heat pumps or weatherization, or due to challenges with their homes that prevent installing these measures.

These comments align with the research conducted by the EAG for this report. Many groups, including but not limited to, households in older homes, renters, households in mobile homes, and low and moderate income households, face significant financial and structural obstacles to reducing fossil fuel use in their homes. The challenges for each individual group and recommendations for overcoming these barriers are described later in this report.

Many commenters also worried about the reliability of electricity to heat their homes during the winter months, and feared for the future reliability of Vermont's electrical grid as more electrification occurs. These concerns may prevent many households from choosing to install clean heat measures.

The benefits of the CHS also risk being unevenly distributed throughout the state, if historic patterns of clean heat technology adoption persist. The Vermont towns with the highest energy burdens, which tend to have lower average household incomes, have had significantly less adoption of cold-climate heat pumps and other efficient technologies to date than higher income towns.¹⁶

These problems will not be solved solely through more funding for existing programs potentially available under the CHS. The equity of a CHS rests on the ability to deliver the benefits of clean heat measures to disadvantaged households to outweigh the higher costs these households are

¹⁵ [Energy Action Network](#). *Annual Progress Report for Vermont, 2024*.

¹⁶ [Efficiency Vermont](#), *2023 Vermont Energy Burden Report*, August 2023.

likely to face. The State will need to make a concerted effort to meet Vermonters where they are and ensure that the current gaps in access to clean heat measures are addressed.

Limitations

The Clean Heat Standard (CHS) is a market-based approach, and market-based approaches have inherent limitations in reaching disadvantaged communities and vulnerable households. By requiring the obligated parties, which are for-profit importers of fossil fuels, to deliver clean heat measures,¹⁷ the CHS will likely encourage the adoption of the least expensive measures for obtaining greenhouse gas (GHG) reductions. While a least-cost approach could help contain costs of the program, and potentially limit fuel price increases for customers overall, it has significant challenges in its ability to provide benefits to all Vermont households.

Although Act 18 requires 8% of clean heat credits to be derived from measures installed in the homes of low income households and 8% from measures installed in the homes of low or moderate income households, any additional measures installed in these homes are economically disincentivized. Low and moderate income households generally have less capacity to take on debt for projects than higher income households. Installing clean heat measures in low and moderate income homes will require larger incentives or, in some cases, will require the project to be fully paid for by another entity. This is expected to increase the cost of producing clean heat credits associated with these households. Therefore, obligated parties are likely to pursue lower-cost credits from biofuels and renewable fuels where possible, producing no more than the minimum amount of credits required in the homes of low income households.

Lower income households are also more likely to live in older homes, which often need significant repairs or upgrades to allow weatherization work or a heat pump installation to proceed.¹⁸ The CHS, as currently laid out in Act 18, only permits credits to be generated from activities deemed to reduce thermal emissions. Therefore, no direct economic value can be derived from ancillary repairs. Consequently, few obligated parties will pay for home repairs unless there is such a shortage of low income-related credits that it becomes necessary to allow those projects to occur.

Measures most likely to be produced under the CHS also may not align well with Vermont's other policy goals. The Vermont Climate Council has made weatherization a priority in the state's Climate Action Plan.¹⁹ Weatherization has proven financial and health benefits for households, in addition to its ability to reduce fuel use and emissions.²⁰ However, while building science experts agree that it is best practice to weatherize a home before installing a heat pump, there is no requirement or economic incentive to do so under the standard.

¹⁷ Either directly themselves or through the Default Delivery Agent.

¹⁸ This issue is discussed in detail later in the report.

¹⁹ [Vermont Climate Council](#), *Initial Vermont Climate Action Plan*, December 2021.

²⁰ [Vermont Department of Health](#), "Weatherization + Health in Vermont", December 2018.

The Legislature should recognize that the CHS does not create credits for all greenhouse gas reduction activity in the thermal sector. For example, replacing inefficient fossil fuel heating equipment with high efficiency units does not generate credits.

The Legislature and state agencies must plan accordingly to ensure that its climate policy goals can be achieved while not leaving Vermont’s low income households and disadvantaged communities behind. Instead, the State must center these communities in policy and funding decisions.

Workforce

The Vermont Department of Public Service’s *Clean Heat Standard Potential Study Report* prepared by NV5 highlights the significant challenges that Vermont’s energy businesses face in attracting and retaining workers.²¹ This concern has also been echoed by EAG members with experience in the field and in conversations with Vermont’s Weatherization Agencies that implement the Weatherization Assistance Program (WAP).²²

The *Potential Study* suggests that reaching Vermont Global Warming Solutions Act (GWSA) targets under the CHS will not be possible without a significant increase in the clean energy workforce, especially weatherization workers. This rapid increase in the weatherization workforce over such a short period of time is unlikely to occur in Vermont’s already tight labor market.

Vermont policymakers are well aware of these challenges and have developed a Weatherization Workforce Plan in 2021. State efforts to grow the weatherization workforce include an in-progress project to launch a new Weatherization Training Center using a grant from the Department of Energy.²³

Ultimately, the Legislature’s adoption of the Clean Heat Standard must be contingent on its confidence that the workforce will expand quickly enough to carry out the projects required to meet GWSA goals.

Clean Heat Standard Design Process

Equity Framework

In its initial meeting, the EAG identified the need to more specifically define the term “equity” in order “to assist the Commission in developing and implementing the Clean Heat Standard in a manner that ensures an equitable share of actions are delivered to Vermonters with low income and moderate income and that Vermonters with low income and moderate income who are not

²¹ [NV5](#), *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*. Prepared for the Vermont Department of Public Service. September 1, 2024

²² [Notes from Clean Heat Standard \(CHS\) Conversation](#) with representatives from the Community Action Agencies and the Public Utility Commission on September 26th, 2024.

²³ [State of Vermont Joint Fiscal Office](#). “Memorandum on Expedited Review Request – JFO #3147”, May 1, 2023.

early participants in clean heat measures are not negatively impacted in their ability to afford heating fuel.”²⁴

The EAG also recognized that the CHS might create unintended harmful consequences, including, but not limited to, those identified in 30 V.S.A. § 8127(h), and the EAG agreed that the CHS must recognize and mitigate the environmental burdens identified in the environmental justice statute found in 3 V.S.A. § 6002(2).

EAG members individually and collectively reviewed equity and environmental justice tools, policy statements, climate action plans, and scoring rubrics from locales around the country and found the City of Austin Texas Climate Equity Tool particularly useful in identifying strengths, weaknesses, opportunities, and threats (SWOTs) related to the implementation of environmental transformation projects.²⁵ The Vermont Climate Council, Just Transitions Subcommittee published the *Guiding Principles for a Just Transition*,²⁶ which has a similar scoring rubric to the Austin scoring rubric. The EAG found that the Austin scoring questions were more specific and more useful in evaluating potential clean heat measures and decisions the Commission and Technical Advisory Group (TAG) may make when implementing the CHS. For example, while the *Guiding Principles* rubric generally assesses abstract *burdens* and *impacts*, the Austin rubric identifies *health, accessibility, cultural preservation*, and other specific areas of concern. Like the Austin rubric, the EAG scoring rubric poses specific questions decision makers should ask themselves when analyzing potential clean heat measures, actions, and policy decisions.

The EAG adopted the EAG Equity Rubric on April 16, 2024, and made slight modifications to include more specific questions about transparency on May 28, 2024.²⁷

The Commission and the TAG reviewed the Equity Rubric, and the Commission included a copy for review when it released the Order Issuing the Draft Rule,²⁸ to welcome feedback on the equity impacts of the draft rule. However, the EAG is not aware of any instance to date where the rubric has informed the decision-making processes of the Commission or the TAG.

A copy of the Equity Rubric is available in Appendix B of this report.

Review of Public Engagement Process

Statutory Requirement of Public Engagement

Section 6(c) of Act 18 required the Commission to engage in robust public engagement to inform the design and implementation of the Clean Heat Standard.²⁹

²⁴ 30 V.S.A. § 8129

²⁵ [City of Austin](#), “Austin Climate Equity Plan,” September 2021. Retrieved December 4, 2024.

²⁶ [Vermont Climate Council](#), Just Transitions Subcommittee, *Guiding Principles for a Just Transition*, August 2021.

²⁷ [Vermont Public Utility Commission](#), *Clean Heat Standard Equity Advisory Group Equity Rubric*, May 30, 2024.

²⁸ [Vermont Public Utility Commission](#), *Order Issuing Draft Rule and Setting Deadline for Comments - Notice of 10/7/24 Workshop and 10/30/24 Public Hearing*, in Case No. 23-2220-RULE, October 1, 2024.

²⁹ 30 V.S.A. § 8122

Act 18 requires that:

(1) The Commission shall allow any person to register at any time in the Commission’s online case management system, ePUC, as a participant in the Clean Heat Standard proceeding. All members of the Equity Advisory Group shall be made automatic participants to that proceeding. All registered participants in the proceeding, including all members of the Equity Advisory Group, shall receive all notices of public meetings and all notices of opportunities to comment in that proceeding.

(2) The Commission shall hold at least six public hearings or workshops that shall be recorded and publicly posted on the Commission’s website or on ePUC. These meetings shall be open to everyone, including all stakeholders, members of the public, and all other potentially affected parties, with translation services available to those attending.

(3) The Commission also shall provide at least three opportunities for the submission of written comments. Any person may submit written comments to the Commission.

Act 18 also required the hiring of a third-party consultant with expertise in equity, justice, and diversity to design and conduct public engagement. This role was tasked with facilitating public comment for the purposes of:

- (1) Supporting the Commission in assessing whether customers will be equitably served by clean heat measures and how to increase equity in the delivery of clean heat measures;*
- (2) Identifying actions needed to provide customers with low income and moderate income with better service and to mitigate the fuel price impacts calculated in 30 V.S.A. § 81;*
- (3) Recommending any additional programs, incentives, or funding needed to support customers with low income and moderate income and organizations that provide social services to Vermonters in affording heating fuel and other heating expenses; and*
- (4) Providing information to the Commission on the challenges renters face in equitably accessing clean heat measures and recommendations to ensure that renters have equitable access to clean heat measures.*

Additionally, the statute describes the process for widespread public notice of work and meetings. Act 18 requires the Commission to include a notice of language assistance services and arrange for language assistance to be provided to members of the public as requested for the public meetings.

Procedural Context of Commission-led Public Engagement Work

On September 8, 2023, the Commission released a Request for Proposals for a public engagement facilitator, in which it described the work of the public engagement facilitator as, “The primary responsibility of the public engagement facilitator will be to design and conduct public engagement related to the recently enacted Clean Heat Standard legislation, bringing expertise in equity, justice, and inclusion to this process. The Commission and the facilitator will incorporate the Guiding Principles for a Just Transition into the public engagement process.”³⁰

³⁰ [Vermont Public Utility Commission](#), *Request for Proposals for a Public Engagement Facilitator for the Vermont Public Utility Commission*, September 8, 2023.

On November 20, 2023, The Commission announced that it had launched a website to boost accessibility of clean heat proceedings.³¹ On March 22, 2024, the Commission released a Notification of Information from the Vermont Partnership for Fairness & Diversity, the public engagement consultant about the first three public engagement meetings under Act 18, to be held from April through June of 2024.³²

On October 1, 2024, the Commission released an Order Issuing Draft Rule and Setting Deadline for Comment.³³ As statutorily required, the public had over 30 days of notice to respond to the draft rule.

Public Engagement Subgroup of the EAG

In May of 2024, the Clean Heat Standard Equity Advisory Group determined that a subgroup should be formed to share with the Commission EAG member's best practices on public engagement. The subgroup first met on May 6, 2024, and continued to meet three more times until July 2024.

The group produced a memo that was for the Commission and EAG awareness, where the group shared member organization experiences and best practices in public engagement. The group also drafted potential questions for the Commission to ask the public in public outreach and engagement. This list was brought to the full EAG and further worked on there. The document was shared with the Commission on May 28th, 2024, and is included in Appendix D.

Clean Heat Standard Public Comment

Public Comment to EAG

The Clean Heat Standard EAG and the TAG hold public comment periods during their meetings. During EAG meetings, public comments have been provided on the following topics:

- A request for added opportunity for public comment
- Concerns around the inclusion of biomass in the Clean Heat Standard
- The price impact of the Clean Heat Standard and how it interacts with the LIHEAP and existing programs
- Market disruption potential related to frontloading LMI credits and the specific concerns about constraints related to serving LMI populations
- Support for the Clean Heat Standard
- Using existing programs like those offered through Vermont's Energy Efficiency Utilities (EEUs) as a model for effective energy conservation

³¹ [Vermont Public Utility Commission](#), "Clean Heat Standard", retrieved December 11, 2024.

³² Vermont Public Utility Commission, "Clean Heat-Public Engagement Consultant - public engagement meetings under Act 18", retrieved December 11, 2024.

³³ [Vermont Public Utility Commission](#), *Order Issuing Draft Rule and Setting Deadline for Comments - Notice of 10/7/24 Workshop and 10/30/24 Public Hearing*, in Case No. 23-2220-RULE, October 1, 2024.

Facilitated Commission Public Engagement Meetings

Public meetings organized by the Commission and facilitated by the public engagement contractor at Vermont Partnership for Fairness and Diversity were held on April 17, May 7, and June 6, 2024. The Commission also held a public hearing on October 30, 2024, on the general topic of the Clean Heat Standard and the draft rule that was released on October 1, 2024. The October hearing was better attended than prior sessions had been. According to the transcript, the hearing had 34 speakers identified as members of the public, with over 80 total attendees.

Some key themes identified from public participation include, but are not limited to:

- Concerns around the inclusion of biofuel and biomass as clean heat measures due to health and environmental impacts
- Concerns and questions around funding this program
- The need for more public engagement
- Concerns around what this program will cost Vermonters
- Support for a focus on weatherization and electrification measures
- Concerns around assumptions in Carbon Intensity (CI) scoring as it relates to biogenic emissions and land use changes.
- Questions around the Commission’s process for assessing the harmful consequences of the program
- Acknowledgment of workforce constraints in many of the sectors involved in the Clean Heat Standard
- Weighing of a Clean Heat Standard versus an alternative tax or fee
- Concerns around Vermonters being left behind in the Clean Heat Standard
- Concerns about not being able to afford heat, or unable to install or receive a clean heat measure due to various reasons.

Filed public comment via ePUC

The public was also able to participate in the Clean Heat Standard proceeding by filing comments to the case on any topic at any time. Extensive public comments similar to those shared in the October 30, 2024 public hearing have been submitted via ePUC.

Recommendations

The EAG supports the Commission’s efforts on public engagement with the limited time and resources available during the duration of this regulatory process.

Early in the design process, the EAG urged the Commission to provide a plain language overview of the Clean Heat Standard to make it more accessible to the public. Basic information about the complicated policy is vital to ensure that the public can offer informed comments. In May 2024, the Commission released a plain language overview of Act 18 on the Clean Heat Standard website.³⁴

³⁴ [Vermont Public Utility Commission](#), “Overview of the Clean Heat Standard,” May 17, 2024, retrieved December 4, 2024.

The EAG recommends that the Commission, and the Legislature, as appropriate, continue to provide clear, accessible descriptions of the Clean Heat Standard as it evolves and is implemented.

As mentioned above, the EAG subgroup on public engagement wrote a memo on best practices related to public engagement. Some of those best practices are described below for potential future Clean Heat Standard public engagement work.

Community engagement sites that have worked best for member organizations of the subgroup are places where people will not need to take additional time out of their day to attend. The group also noted the importance of in-person engagement. Some of the locations of public engagement mentioned include location where older Vermonters gather (i.e., senior centers, meal sites for Meals on Wheels), food banks, community centers, libraries, and manufactured home sites. These locations are already places people go to, which can minimize the resources that many need to use to access these public engagement events.

The group discussed the importance of affinity spaces, and how they can help ensure safety and accessibility to varying groups of people and communities in Vermont. In these affinity spaces, we discussed leveraging and empowering existing community leaders to share information. Other recommendations related to accessibility in public engagement include focus groups and listening sessions.

The group discussed interpretation of the Clean Heat Standard. This discussion included ensuring widespread public understanding of clean heat measures, such as heat pumps, and having skilled interpreters available to explain both the language of the Clean Heat Standard and its technical jargon. The group agreed that translation of materials to a third grade reading level is standard practice in equitable translation.

The EAG acknowledges that there are public engagement recommendations spread throughout this report, which highlights the importance of public engagement in working with the various demographics described in this report.

Summary of the Equity Advisory Group Memos to the Public Utility Commission

Memo on Credit Ownership – April 17, 2024

The EAG wrote and filed a memo to the Commission on April 17, 2024, on the topic of credit ownership.³⁵ In the memo, the EAG emphasized the importance of creating a straightforward, transparent, and equitable credit transfer process within the CHS. The EAG agrees with the Commission staff's recommendation that end-use customers should receive all clean heat credits for installed measures. However, the EAG urges clarification of the term “customer(s)” to delineate who qualifies, particularly in complex ownership situations like financing arrangements and landlord-tenant dynamics. The EAG is concerned that customers may not

³⁵ [EAG comments Staff Proposal re Initial Ownership of Clean Heat Credits](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, May 22, 2024.

have adequate knowledge of their credits' value to negotiate effectively with installers, highlighting a potential power imbalance between individual customers or small businesses and larger obligated parties. To enhance customer empowerment, the EAG proposes that the Commission require comprehensive disclosures from installers and deliverers, including estimated greenhouse gas reductions, the number of credits generated, approximate monetary value, energy cost savings, and any relevant health disclosures. Generally, the Commission should prioritize making as much data available as possible to assist customers in negotiations.

For delivered measures, the EAG advocates similar information disclosures and insists that at a minimum, important details about the CHS, alternative technologies, financial assistance options, greenhouse gas reductions, the number of credits, their potential value, and related health disclosures should be shared. The EAG views credit ownership as a crucial aspect of the Clean Heat Standard, carrying significant implications for equity and affordability.

Credit Ownership Follow-up Memo – May 17, 2024

On May 17, 2024, the EAG wrote and filed a second follow up memo on the topic of credit ownership.³⁶ The EAG cautions against alternative systems where credit ownership could reside with entities providing financing or rebates, fearing this would diminish equity and complicate ownership determinations, especially when multiple parties are involved in funding a single project. The EAG group suggests that any transfer of credit ownership should hinge on clear contract negotiations and be supported by comprehensive information to guide property owners' decision-making.

WAP Credit Ownership Addendum to 5/17 memo – May 17, 2024

While a majority of EAG members favored keeping initial credit ownership with property owners, including in cases where the installed clean heat measures are funded and installed by programs providing 100% of incentive costs such as those delivered through the Vermont Weatherization Assistance Program (WAP), three members of the EAG disagreed with this ownership structure and submitted a dissenting opinion memo on May 17, 2024.³⁷

The dissenting memo recommends that programs that provide 100% of incentive costs (such as WAP) retain initial CHS credit ownership for CHS credits generated from WAP investments. The three members who signed this memo; Benjamin Bolaski, Geoff Wilcox and Chris Trombly representing VT Department of Public Service, State of Vermont Office of Economic Opportunity, and Vermont State Housing Authority respectively, noted in their dissenting memo that this ownership structure would minimize administrative burden and mesh well with existing policies. Administrative burden is currently a challenge for existing low income weatherization programs, and therefore, any additional requirements for these programs will create a barrier to completing incremental projects as efficiently as possible. They also noted that this credit ownership structure would be a source of new revenue to programs providing

³⁶ [EAG comments Staff Proposal re Initial Ownership of Clean Heat Credits](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, May 22, 2024.

³⁷ [EAG comments Staff Proposal re Initial Ownership of Clean Heat Credits](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, May 22, 2024.

100% incentive costs and more equitably serve Vermonters as a result of expanded services reaching a greater number of program participants annually.

The Commission ultimately agreed with this recommendation in the Draft Rule,³⁸ stating that in pre-approved programs where projects are implemented at no cost to participants, the credit is initially owned by the organization paying for the project.

Memo on LMI Credit Frontloading – August 9, 2024

On August 9, 2024, the Equity Advisory Group (EAG) submitted a memo regarding frontloading the credit requirements for low and moderate income (LMI) households during the initial years of Clean Heat Standard implementation.³⁹ Act 18 states that the Commission should attempt to front-load credit obligations for LMI households to the extent reasonably possible.

The memo emphasizes the need for prioritizing LMI households, who experience the highest energy burdens in Vermont, in light of potential future heating fuel cost increases tied to CHS compliance by obligated parties. However, the memo also acknowledges potential challenges to frontloading LMI requirements. Challenges identified include limited workforce capacity for contractors installing clean heat measures and higher anticipated cost to acquire LMI credits. The EAG notes that these factors could make obligated party compliance more challenging and inadvertently raise heating costs for consumers.

The Commission's July 2024, memorandum re: "Staff Straw Proposals on Credit Fulfillment Plans and Criteria, Non-Compliance and waiver process",⁴⁰ asserted the creation of five separate CHS credit categories that a Default Delivery Agent (DDA) could deliver on behalf of an obligated party. The EAG supports the Staff proposal to have five unique credit categories, as it would allow LMI credit market activity to be more closely tracked to help inform any future increase or decrease in obligated party LMI requirements.

To inform decisions about credit frontloading, the EAG highlights the necessity for further understanding of current levels of LMI market activity and costs associated with LMI credits versus market-rate credits. Based on existing data, the EAG found insufficient grounds to assert that frontloading LMI targets is "reasonably possible." However, it encouraged ongoing evaluation and suggested that any increase in obligations should be modest at first, allowing for adjustments without destabilizing the market.

The memo recommends revisiting the topic of frontloading during the second triennial Default Delivery Agent (DDA) budget and planning process but urges the Commission to consider moderate increases if emerging data shows feasibility.

³⁸ [Vermont Public Utility Commission](#), Draft Proposed Rule, 8.113(a)(1), in Case No. 23-2220-RULE, October 1, 2024.

³⁹ [EAG Memo on LMI CHS Credit Frontloading](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, August 9, 2024.

⁴⁰ [Vermont Public Utility Commission](#), *Request for Comments on Staff Straw Proposal on Credit Fulfillment Plans and Criteria, Non-Compliance and Waiver Process*, July 10, 2024.

Memo on DDA RFP Recommendations – September 6, 2024

The EAG submitted recommendations regarding the Default Delivery Agent (DDA) for Vermont's Clean Heat Standard.⁴¹ The EAG emphasizes the DDA's role in supporting populations disproportionately affected by cost increases associated with the potential clean heat fee, which could include renters, low and moderate income households, and those living in older homes. The memo encourages the Commission to assess applicants based on their experience addressing diverse needs, including financing plans for clean heat measures and outreach to limited English proficiency communities.

Additionally, the EAG recommends that the Commission require DDA applicants to have a Diversity, Equity, and Inclusion (DEI) Plan for their organization to promote equitable service delivery, and to have a plan and capacity to effectively deliver measures statewide, especially in historically underserved rural areas of Vermont, ensuring comprehensive support for all impacted populations.

Memo on LMI Credit Characterization – September 17, 2024

The EAG proposes expanding the definition of low and moderate income (LMI) credits to convey benefits to institutions serving LMI households.⁴² Current legislation requires that credits be derived from measures benefiting LMI households; however, many essential service organizations, such as shelters and food shelves, are excluded. This exclusion places financial burdens on these institutions without providing relief from a potential increase in fuel costs. To enhance social equity under the CHS, the EAG recommends that the requirement of low and moderate CHS credits be expanded to allow for credits derived from organizations serving LMI individuals. However, to be eligible under the proposed expanded definition, the EAG recommends that the category must also be tailored narrowly to avoid the dilution of direct benefits to LMI Vermonters. To be eligible for the proposed expanded definition, the EAG suggests that the definition includes the following parameters:

- a) Measures are installed in or delivered to a property owned or rented by a nonprofit organization.
- b) The property must be used to deliver essential services to low or moderate income individuals or households.
- c) The organization has a primary purpose to serve low- or moderate-income households or individuals and currently receives state or federal funding to provide services to low or moderate income individuals or households.

The EAG notes that although adding a new definition to the facet of the CHS framework has the potential to increase complexity of the program overall, this would be another voluntary pathway for obligated parties to obtain LMI credits and does not increase their compliance burden under the CHS.

⁴¹ [EAG DDA RFP Recommendations](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, September 6, 2024.

⁴² [EAG Memo on LMI Credit Characterization](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, September 17, 2024.

The Commission did not include a pathway for LMI credits to be conveyed to LMI-serving institutions in the Draft Rule.

EAG Comments on Draft CHS Rule – October 30, 2024

On October 1, 2024, the Commission released the Draft Proposed Rule outlining the responsibilities of the Obligated Parties that the Commission would be charged with regulating under the Clean Heat Standard program.⁴³

EAG comments on the Clean Heat Standard draft rule address several topics.⁴⁴ The EAG emphasizes the necessity for the Commission to adhere to its statutory obligations, as outlined in 30 V.S.A. § 8127 (h), regarding the assessment of potential harms and consequences tied to clean heat measures. The EAG notes that it is essential that the final CHS Rule incorporates a structured process for evaluating harmful consequences, implementing standards to mitigate them, and ensuring that any clean heat measures resulting in detrimental impacts do not qualify for clean heat credits.

The EAG notes that the current definition of LMI installed clean heat measures risks excluding newer technologies, such as portable heat pump units. Specifically, portable heat pump costs and shorter expected life spans could lead to difficulties in classifying them as LMI installed measures under the current definition. Thus, reevaluating the definition of LMI installed measures is crucial to promote equitable access to clean heat technologies for rentals, manufactured homes, and households with specific electrical or layout challenges. The EAG also notes that if these portable technologies are sanctioned as eligible measures, the ownership of credits and related financial benefits should be allocated to renters if they make the investment, not the property owner.

The EAG recommends that the Commission specify how LMI credits should be awarded in multifamily buildings with units of varied income levels, which is not clear in the Draft Rule. Having clear guidelines to address multifamily buildings will help encourage adoption of clean heat measures for renters.

The EAG recommends aligning CHS rules with pre-existing Weatherization Assistance Program (WAP) policy by adopting a 25% threshold for income attestation/verification within multifamily dwellings, which would alleviate administrative burdens for Obligated Parties and help minimize the impacts of the split-incentive problem faced by low and moderate income renters. The draft CHS rule suggests income attestation is needed from every participating household to determine the measure group. This could result in convoluted administrative demands if income verification is already being verified by existing programs such as the WAP. The EAG questions the necessity of duplicating income verification through additional income attestations, advocating instead for leveraging existing verification processes to reduce administrative burdens and mesh well with existing policy. In closing, the EAG also advocates for better coordination between the Commission, the Public Service Department, the Department of

⁴³ [Vermont Public Utility Commission](#), Draft Proposed Rule, in Case No. 23-2220-RULE, October 1, 2024.

⁴⁴ [EAG Comments on CHS Draft Rule](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, October 30, 2024.

Children and Families, the Office of Economic Opportunity, and other relevant state agencies to create a process to streamline income verification.

Clean Heat Standard Impacts

Homes Unable to Implement Clean Heat Measures

Overview

Vermont has an estimated total of 335,514 homes.⁴⁵ The median Vermont home was built in 1974, older than the national median year of 1977. Over a quarter of Vermont housing units were built before 1940.⁴⁶ Vermont's rented homes tend to be older than homes occupied by homeowners, with over 34% of the rental stock built before 1940. Older homes are more likely to be occupied by lower-income households and concentrated in lower income neighborhoods.⁴⁷

Currently, nearly 41% of Vermont homes are primarily heated with fuel oil or kerosene, fossil fuels that tend to be more price volatile and expensive than other fuel sources, and that tend to be used in older homes. Over 36% of households use propane or natural gas, and 13% use wood. Only an estimated 19,855 households, or 7.4% of Vermont homes currently heat with electricity, and this category includes homes that use heat pumps as well as homes that use inefficient electric resistance heat systems with high operating costs.⁴⁸

Many of Vermont's older homes and buildings will need significant upgrades to reduce their energy consumption or fuel switch. However, challenges can arise when older buildings are structurally complex or have not been maintained properly because of the cost or time associated with maintenance and capital investments.

Assessing the energy efficiency of Vermont's housing stock and its readiness for electrification can be challenging from the limited available data. Vermont's recent Housing Needs Assessment estimates that at least 19,637 occupied Vermont homes have potentially serious quality issues.⁴⁹ This is undoubtedly the lower end of potential estimates of the homes that will struggle to adopt clean heat measures like weatherization and heat pumps.

⁴⁵ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25036) [housingdata.org](https://www.housingdata.org)

⁴⁶ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25034, B25036) [housingdata.org](https://www.housingdata.org)

⁴⁷ [Freddie Mac](#), "Concentration of Aging Homes in Lower-Income Areas Underscores Need for Mortgage Innovation," February 17, 2021.

⁴⁸ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25117) [housingdata.org](https://www.housingdata.org)

⁴⁹ [Vermont Housing Finance Agency](#), 2025 Vermont Housing Needs Assessment. Prepared for the Vermont Department of Housing and Community Development, June 2024.

Challenges

Vermont's older housing stock presents significant challenges for the adoption of measures eligible for clean heat credits particularly when considering installed⁵⁰ CHS measures. Deferred maintenance issues can prevent upgrades from being completed and increase the overall cost of building upgrades. Additional context is needed to better understand the challenges and barriers that impede the widespread adoption of clean heat measures in Vermont's old housing stock.

The Vermont Office of Economic Opportunity (OEO) Weatherization Assistance Program (WAP) serves Vermont households with incomes at or below 80% of Area Median Income (AMI). There are an estimated 65,000 households in Vermont that live in a home built before 1979 and have a household income less than 80% of AMI, which may be WAP-eligible.⁵¹

Data collected by OEO on its experience with home weatherization can illustrate how often some of these common health and safety barriers are encountered in the Vermont housing stock. Some of the health and safety barriers listed below are more difficult and costly to remedy than others.

Vermiculite insulation

Vermiculite is a naturally occurring mineral that was used for decades to insulate millions of homes across America. The insulation, often sold under the brand name Zonolite, has a pebble-like texture and often has a shiny grey - gold-silver color, very similar in appearance to the mineral perlite which can be bought in bags at garden supply stores. The product was very popular in the construction industry because it is fire resistant, lightweight and can be easily poured out of a bag into wall cavities or spread across an attic flat quickly and efficiently compared to other insulation products that were used throughout the mid-late 20th century.

Vermiculite is still used in many commercial applications today, however Zonolite vermiculite mined in Libby, Montana from the mid-1940's to 1990, which accounted for the majority of the vermiculite used in homes during that period, has been found to contain hazardous asbestos. Asbestos has serious health risks, including lung disorders and cancer.⁵² Not all vermiculite contains asbestos or originates from the Zonolite mine, but the U.S. Environmental Protection Agency (EPA) advises that one should assume that vermiculite insulation does contain asbestos. EPA recommends that vermiculite insulation be left undisturbed unless professionally remediated. Vermiculite is particularly hazardous because it is "friable" or easily distributed into the air. For this reason, vermiculite found in homes across Vermont must always be treated as hazardous and harmful to human health if disturbed or encountered without proper personal protective equipment.

⁵⁰ "Installed measures as defined in act 18- "require capital investments in homes, have measure lives of 10 years or more, and are estimated by the Technical Advisory Group to lower annual energy bills."

⁵¹ [Vermont Housing Finance Agency](#), 2025 Vermont Housing Needs Assessment. Prepared for the Vermont Department of Housing and Community Development, June 2024.

⁵² [Environmental Protection Agency](#), "Protect Your Family from Asbestos-Contaminated Vermiculite Insulation," retrieved November 18, 2024.

Buildings with vermiculite present must have vermiculite abated before weatherization work can be completed by WAP.⁵³ The process for removal is extensive, with an average of \$16,000 to \$20,000 in required costs per attic abatement project,⁵⁴ and it often causes significant delay in the completion of a weatherization project. Of the 4,386 units weatherized by the WAP in Vermont since July 1st, 2020, 6% or 272 units were found to have vermiculite present.⁵⁵

Overall, an estimated 159,500 Vermont homes were built between 1940 and 1989, 48% of the housing stock.⁵⁶ While many of these homes may never have had vermiculite insulation or have since been remediated, the 85,314 homes built before 1940 may have also had vermiculite added during renovations at some point between 1940 and 1989. While the precise number of homes at risk cannot be known without additional sampling across the wider housing stock, thousands of Vermont homes will likely need vermiculite abatement before weatherization can occur.

Inadequate electrical infrastructure

Full decarbonization of the thermal sector will require shifting from heating with liquid and gaseous fuels to thermal end use equipment powered by electricity. This will require the electrical infrastructure in homes and businesses around the state to be safe, reliable and adequately sized to enable this transition.

Many residential buildings in Vermont do not have the existing electrical infrastructure in place to facilitate the adoption of fuel switching clean heat measures such as heat pumps. This includes homes that have knob and tube wiring which does not meet modern electrical safety codes.⁵⁷ While this style of electrical wiring was phased out in the 1940's in favor of safer and more reliable forms of wiring, knob and tube wiring may still exist in many of the over 85,000 Vermont homes built before 1939.⁵⁸ Knob and tube cannot handle heavier electrical loads required by modern appliances such as heat pumps. Live knob and tube wires must be completely removed before weatherization can occur, as they pose a fire hazard around insulation. Full replacement of knob and tube wiring can commonly cost \$13,000 to \$15,000 for each project.⁵⁹

In homes built after knob and tube wiring was phased out in the 1940's, the adequacy in size of electrical service plays an outsized role in enabling the electrification of heat loads. Homes with

⁵³ [Vermont Office of Economic Opportunity](#), *VT TEC Manual Appendix G: Vermiculite Policies*, Retrieved December 5, 2024.

⁵⁴ G. Wilcox, Personal Communication, November 21, 2024. Based on reports from Weatherization Assistance Program Directors of encountered in recent projects.

⁵⁵ T. Broome-Smith Personal Communication, July 3, 2024.

⁵⁶ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25034, B25036) housingdata.org

⁵⁷ [Center for Energy and Environment](#), "Dealing With Knob-And-Tube Wiring," March 17, 2023.

⁵⁸ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25036) housingdata.org

⁵⁹ G. Wilcox, Personal Communication, November 21, 2024. Based on reports from Weatherization Assistance Program (WAP) Directors of costs encountered in recent projects.

less than 200A electrical service may have difficulty electrifying heat and hot water loads without a service and electric panel upgrade.

Data collected by Efficiency Vermont in 2022-2023 and shared with the Department of Public Service indicates that the average cost of electric panel and service upgrades to enable fuel switching measures such as heat pumps and heat pump water heaters to be installed was \$2,046.⁶⁰ It is very likely that low income households in Vermont would have difficulty paying this additional upfront cost without support from a program such as the WAP.

Other home repair needs

In the context of eligible clean heat measures, vermiculite and knob and tube wiring are typically among the most challenging and costly barriers to overcome in home retrofits. However, with Vermont's housing stock among the oldest in the nation, a host of other common barriers such as lead paint, roof leaks, septic system issues, improper ventilation, mold, combustion failures on gas, oil and propane appliances, and other structural deficiencies in homes across Vermont regularly present challenges to the successful installation and delivery of clean heat measures.

To overcome these common barriers, upfront capital expenditure is needed to ensure completion of successful projects. The level of need for remediation of common barriers across Vermont's housing is potentially extensive. Of the more than 4,000 households weatherized by the WAP in Vermont between July 1st, 2020, and June 30th, 2024, 28% required an additional home repair related investment to complete the project.⁶¹

WAP also regularly encounters complex client challenges in the homes they visit, including mental health challenges, hoarding, pest issues, and other unsanitary home conditions. In Vermont's most vulnerable households, significant social services support that goes beyond what is typically thought of for weatherization work is necessary to prepare the home and the household to successfully reduce their fossil fuel use.

Lack of sustained funding for enabling home repairs

As previously noted in this report, under the CHS framework established in Act 18, the value of clean heat credits is directly tied to the emissions reductions that the measures create. No direct economic value can be derived from enabling repairs, and this likely means that few Obligated Parties seeking to obtain credits will pay for costs related to home repairs unless there is such a shortage of low income-related credits that it becomes necessary to allow those projects to occur.

Therefore, households whose homes need enabling repairs or updates will be dependent on other state funding sources, which have historically been limited. Currently, WAP has access to home repair funding under the American Rescue Plan Act (ARPA), and Efficiency Vermont has a

⁶⁰ A. Breen, personal communication, September 23, 2024

⁶¹ Considering that the WAP offers statewide weatherization services to eligible low income clients living in all types of homes including traditional single-family homes, manufactured homes and multi-family buildings it is not unreasonable to use WAP statistics as a proxy for the overall statewide housing stock.

new program for up to \$15,000 for home repairs for low and moderate income households.⁶² Both programs are temporarily funded.

Besides these resources, home repair funding has historically been limited in scope and offered through a patchwork network of housing agencies and social service agencies, but never at the scale needed to address the needs of Vermont’s housing stock.

High costs of full decarbonization

Even without home repairs, the costs of comprehensive weatherization and cold climate heat pumps can be considerable.

Efficiency Vermont reports that the average recent weatherization project that included air sealing and attic and basement weatherization cost \$12,599.⁶³ A single-zone ductless cold climate heat pump (CCHPs) can cost between \$5,550 and \$7,500 installed, while multi-zones CCHPs typically cost at least \$16,000 and increase depending on the number of units.⁶⁴ Even a multizone system may not be adequate to heat an entire home, depending on its size and configuration.

The table below represents the costs that could be reasonably encountered in a full home electrification project in an older single-family home:

Measure	Estimated Expected Cost
Vermiculite remediation	\$18,000
Electrical panel upgrade	\$2,046
Comprehensive weatherization	\$12,599
Multi-zone CCHP	\$16,000
<i>Total</i>	<i>\$48,645</i>

Source: Weatherization Assistance Program reports, Efficiency Vermont

Limitations in using heat pumps as a primary heating source

The Energy Action Network reports that as of 2022, 47,959 homes had adopted cold climate heat pumps (CCHPs),⁶⁵ which significantly exceeds the 19,855 households that report that they primarily use electricity to heat their homes through that period, according to Census data.⁶⁶

⁶² [Efficiency Vermont](#), “Home Repair,” retrieved December 4, 2024.

⁶³ E. Roscoe, Personal Communication, December 21, 2024. Based on reports from Efficiency Vermont program managers on costs encountered in recent projects.

⁶⁴ G. Wilcox, Personal Communication, November 21, 2024. Based on reports from Weatherization Assistance Program (WAP) Directors of costs encountered in recent projects.

⁶⁵ [Energy Action Network](#), *Vermont Energy Dashboard*, retrieved November 13, 2024.

⁶⁶ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25117) [housingdata.org](#). Includes homes that report using solar energy.

Some of the disparity could result from CCHPs installed in commercial spaces or vacation homes, not reflected in the Census data. However, the large difference in the data suggests that even when cold climate heat pumps are being installed in homes, many households are still not using them as a primary heating source.

It is unclear why adoption of CCHPs has not displaced fossil fuel use in more Vermont homes. Anecdotal reports cite challenging home configurations that limit access to some parts of the home, cost savings not realized from electricity compared to some fuels, and consumer uncertainty about cold weather performance. The Department of Public Service is currently studying this issue through 2025.⁶⁷

Recommendations

For the many reasons described above, home repair issues will prevent many Vermonters from reducing their reliance on fossil fuels, especially for low-income households. Funding for home repairs is unlikely to come from the Clean Heat Standard model and must be provided through other programs funded by the State.

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Provide increased and sustained funding for home repair programs that serve all of Vermont’s housing stock.</p>

These repair programs should be provided through existing program delivery models as much as possible to reduce administrative complexity and must be tailored to meet the unique needs of all housing types, particularly the rental stock and manufactured homes. Home repair needs for those sectors are discussed in greater detail in those sections of this report.

Vermonters of Color, Indigenous Vermonters, and New Americans

Overview

Vermonters of Color, Indigenous Vermonters, and Vermont’s New American, immigrant, and first-generation population is an amorphous collection of Vermonters who come from many different backgrounds, language groups, and socioeconomic circumstances. It is also a comparatively small, although growing, group of Vermont residents. Non-white Vermonters account for 9% of the state’s population, and foreign-born residents make up 3% of the population.⁶⁸

It is essential that discussions on the topic of climate change consider these communities. Extensive national research demonstrates that communities and individuals of color face

⁶⁷ [Vermont Department of Public Service](#), “2024-2025 Heat Pump Study”, retrieved November 19, 2024.

⁶⁸ [Vermont Housing Finance Agency](#), *2025 Vermont Housing Needs Assessment*. Prepared for the Vermont Department of Housing and Community Development, June 2024. The percentages of non-white and foreign-born Vermonters include overlapping groups.

increased health risks related to environmental hazards such as air and water pollution.⁶⁹ These communities are vulnerable to climate-related impacts due to historic disinvestment in minority neighborhoods. Americans of Color have also faced decades of racist policies including lending discrimination, which have led to a significant racial wealth gap.⁷⁰ A lack of generational household wealth may add financial challenges and barriers for Vermonters of Color to invest in home projects that reduce greenhouse gases.

Challenges

The impacts of the Clean Heat Standard on Vermonters of Color require the understanding of other current challenges of this demographic.

Income Barriers

Vermonters of Color are more likely to have lower incomes than white Vermonters. The median household income for white Vermont households is \$74,499, compared to \$52,736 for Black households and \$48,725 for American Indian and Alaska Native Vermonters.⁷¹ In addition, 22% of Black and 21% of American Indian and Alaska Native Vermonters experience poverty, twice the state's average rate.⁷² Any issues that impact low income and moderate income Vermont households under the Clean Heat Standard, as discussed in the sections on low and moderate-income households in this report, will be disproportionately felt by households of color.

Housing

Vermonters of Color are also more likely to rent than own their home. Seventy-two percent of Black Vermont households rent their homes, compared to just 26% of white households.⁷³ Vermont's American Indian and Alaska Native, Asian, multiracial, and Hispanic populations also have lower rates of homeownership compared to white households. Any issues that impact renters, discussed in the Renters and Landlords section of the report, will also disproportionately impact Vermont's non-white households.

Black, Hispanic, and Native American Vermont households face higher housing insecurity, demonstrated by a higher incidence of homelessness among these groups. Black Vermonters comprised nearly 8% of the people experiencing homelessness in Vermont in 2023, despite representing 1.2% of the state population.⁷⁴ If costs related to housing rise significantly under the Clean Heat Standard, many members of these groups may face increased challenges to remain housed.

⁶⁹ [Berberian, Gonzalez, and Cushing](#), "Racial Disparities in Climate Change-Related Health Effects in the United States." *Curr Environ Health Rep*. September 2022.

⁷⁰ [The Center for American Progress](#), *Systematic Inequality: How America's Structural Racism Helped Create the Black-White Wealth Gap*. February 21, 2018.

⁷¹ U.S. Census Bureau, American Community Survey, 5-Year Estimates 2018-2022 (Table S1903).

⁷² [Public Assets Institute](#), *State of Working Vermont 2023*, February 2024.

⁷³ U.S. Census Bureau 2022 5-Year Estimates (Tables B25003A-G) via [HousingData.org](#).

⁷⁴ [Vermont Housing Finance Agency](#), *2025 Vermont Housing Needs Assessment*. Prepared for the Vermont Department of Housing and Community Development, June 2024.

Language Barriers and Cultural Exclusion

New Americans include recent arrivals to Vermont from other countries, as well as their children and family members. New Americans come from a variety of countries and regions, but slightly over half of Vermont’s foreign-born population is non-white. Overall, 45% of Vermont’s Black population and 65% of Vermont’s Asian population is foreign-born.⁷⁵

New Americans may face additional challenges under the Clean Heat Standard due to barriers of language or cultural exclusion. Cultural exclusion can limit opportunities to share experiences, ask questions, and access needed services. Residents without legal citizenship may be ineligible for or reluctant to engage with programs that offer clean heat services but will still experience any fuel cost increases under the CHS. Vermonters with Limited English Proficiency (LEP) may not be able to receive information or education about the Clean Heat Standard if information or education is not presented in a language accessible to them. It may also be particularly difficult for LEP Vermonters to work with Vermont’s contractor workforce to make emissions-reducing home improvements.

Recommendations

It will be important to address the language and cultural exclusion barriers for LEP Vermonters. There are translation and interpretation services through both the US Committee on Refugees and Immigrants (USCRI) and the Office of Racial Equity and Community Inclusion at Champlain Valley Office of Economic Opportunity (CVOEO). These services can be obtained as a fee for service arrangement.

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Make translation services and plain language descriptions readily available throughout public outreach processes during CHS implementation</p>
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Efficiency Vermont, the statewide Energy Efficiency Utility in Vermont, uses an online video language services technology for in field translation, and an over the phone translation service in their call center to communicate with Vermonters with various language backgrounds. Efficiency Vermont has found that these services are critical to reach all Vermonters fairly. To address these barriers, it will be necessary to budget adequate funding to provide ample translation and interpretation services at all stages of the implementation of the Clean Heat Standard.

<p style="text-align: center;">Recommendation</p> <p>Select Default Delivery Agents(s) with experience and capacity for reaching New American and LEP households.</p>
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Creating and supporting existing safe spaces for cultural inclusion is important in outreach to all Vermonters. There should be multiple avenues for Vermonters to share their experiences and concerns, several of which should be in affinity spaces that are comfortable and easily accessible for the participants. For these reasons, affinity spaces

⁷⁵ U.S. Census American Community Survey, 5-Year Estimates 2018-2022 (Table DP05).

allow for increased inclusion in program development and outreach. And for all Vermonters, it is important to provide information in a plain language format with well-explained concepts and clear vocabulary. Existing and additional programs under the Clean Heat Standard should continue to, and begin to, support affinity spaces to better reach Vermonters in program outreach.

The Default Delivery Agent (DDA) will be an important resource for serving many of the populations that are expected to be disproportionately impacted by increased costs related to the Clean Heat Standard. In comments submitted on September 6, 2024,⁷⁶ the EAG asked the Commission to require that proposals for potential DDAs include a description of the entity's experience with, and plan for serving, disadvantaged groups, including households with Limited English Proficiency (LEP).

Services offered by the DDA(s) to households under the Clean Heat Standard should be accompanied by targeted outreach to Vermont's New American communities, with translated resources available or translation services available at all stages of the program, from initial advertising to application.

To support these groups, the EAG also encouraged the Commission to require organizations seeking to become a DDA to have a diversity, equity, and inclusion (DEI) plan or equivalent organizational framework. Such a plan should include clearly defined goals and actions that increase diversity, equity, and inclusion in all areas of the organization and its work.

Low-Income Households

Overview

As Vermont assesses the feasibility of implementing a Clean Heat Standard to reduce thermal sector GHG emissions, the Legislature must consider the low-income households that often struggle with higher energy burdens and the ability to afford basic needs. These households face unique challenges in the pursuit of emission reductions and decarbonization.

Low-income households often do not have the financial means to weatherize or transition to efficient electric options for space and water heating. Reducing emissions is also rarely a priority as they face the many challenges of living as a low-income person in Vermont. Without adequate support to transition low-income households away from fossil fuel dependency and without direct financial assistance to help pay for existing thermal energy costs through the transition, many low-income households may experience housing instability, creating further social and economic problems.

One of the core challenges Vermont will face if the Clean Heat Standard is implemented is balancing the need to decarbonize home heating systems with the immediate need to provide heating support to those who cannot afford it.

⁷⁶ [EAG DDA RFP Recommendations](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, September 6, 2024.

It is estimated that there are 77,843 Vermont households earning at or below 60% of the Area Median Income (AMI), nearly one-third of all Vermonters.⁷⁷ At the state level, 60% of area median income is \$49,200 for a two-person household.⁷⁸ Due to its high homeownership rate, Vermont has a larger number of low-income homeowner households than low-income renter households, but renter households are more likely to have low incomes than homeowners. Low-income households are also more likely to have older members, to be non-white, and to live in manufactured homes than households with higher incomes.⁷⁹

Challenges

High Energy Burdens

Many of Vermont’s low-income households face very high energy burdens, defined as the percentage of a household's income spent on energy costs, including electricity, heating, and transportation. An energy burden of 6% or above is considered high by the U.S. Department of Energy, however, Vermont households earning 30-60% of the state AMI have an average energy burden of 11%. For households earning 30% or below the AMI, the average energy burden is 24%.⁸⁰ Vermont households with lower incomes tend to use higher cost heating sources, including fuel oil and inefficient electrical resistance heat.⁸¹

Having a high energy burden makes it very difficult for households to afford other essential expenses. Energy burdens for households experiencing poverty in Vermont are particularly high, with households earning less than 100% of the Federal Poverty Line (FPL), facing an energy burden of 31%.⁸² An estimated 60,413 Vermonters, or nearly 10% of the state’s population, live in poverty.⁸³ It is estimated that high energy burdens can increase a household’s risk of falling into poverty or experiencing

Average annual fuel costs for households at 200% of the Federal Poverty Line (FPL) by Heating Fuel Type	
Fuel Type	Average Annual Energy Cost
Utility Gas	\$2,250
Propane	\$4,226
Fuel Oil	\$4,097
Wood	\$4,037
Source: U.S. Department of Energy, Low-income Energy Affordability (LEAD) tool, 2024	

⁷⁷ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25118, B25119) housingdata.org

⁷⁸ [Vermont Housing Finance Agency](#), Maximum rent and purchase price affordability thresholds by income and household size, April 2024

⁷⁹ [Vermont Housing Finance Agency](#), 2025 Vermont Housing Needs Assessment. Prepared for the Vermont Department of Housing and Community Development, June 2024.

⁸⁰ [U.S. Department of Energy](#), Low-income Energy Affordability (LEAD) tool, 2024

⁸¹ [Energy Action Network](#), Annual Progress Report for Vermont, 2023.

⁸² [U.S. Department of Energy](#), Low-income Energy Affordability (LEAD) tool, 2024

⁸³ U.S. Census Bureau: American Community Survey 1-year estimates, 2023 (Table S1701)

prolonged poverty by 150-200%.⁸⁴ A substantial body of research links lack of access to affordable heating to eviction, food insecurity, health risks, and poorer educational and career outcomes.⁸⁵

In addition to the data, the Equity Advisory Group has heard public comments from many Vermonters struggling to afford basic living expenses, including heat. While any higher heating costs under the Clean Heat Standard will be experienced by all Vermonters heating with fossil fuels, the impact will be felt the most by the state's low income households.

Financial

Low income households tend to have less access to credit to finance home improvements and tend to be unable or very reluctant to take on any additional household debt.⁸⁶ These households will require deep financial assistance for heating costs, weatherization services, or heating system upgrades. In most cases, the cost for this will have to come from somewhere other than their own finances.

LIHEAP

The Low Income Home Energy Assistance Program (LIHEAP) is a federally funded program designed to support low income households with heating costs. This program is administered by the Economic Services Division (ESD) of Vermont's Department for Children and Families. The financial assistance provided by this program helps lower the energy burden for eligible households by reducing the cost of their primary heating source. This assistance is especially critical for households that use expensive sources of heat including oil, propane, and kerosene.⁸⁷

Of all LIHEAP recipients, 53% heat with oil and kerosene, 19% with propane, 11% with natural gas, 12% with wood and pellet stoves, and 5% with electricity.⁸⁸ Eligibility for LIHEAP is based on household income (185% of the FPL) and size, with priority given to those with the lowest incomes and highest energy burdens.

The program is available to both homeowners and renters. About 21% of recipients own their homes, 50% rent and pay for all utilities, and 27% rent and pay for some utilities.

Households that are approved for LIHEAP are also eligible for free weatherization services through the Weatherization Assistance Program (WAP) administered by the Office of Economic Opportunity (OEO). In addition to heating assistance and weatherization, OEO offers crisis support for households facing immediate heating emergencies. This program is available to

⁸⁴ Jeremiah Bohr and Anna C McCreery, "Do Energy Burdens Contribute to Economic Poverty in the United States? A Panel Analysis." *Social Forces*, 2019.

⁸⁵ Jeremiah Bohr and Anna C McCreery, "Do Energy Burdens Contribute to Economic Poverty in the United States? A Panel Analysis." *Social Forces*, 2019.

⁸⁶ [Federal Reserve Bank of New York](#), *The State of Low-Income America: Credit Access & Housing*, January 2024.

⁸⁷ These sources are also carbon intensive and produce higher emissions than some alternatives. Propane is less carbon intensive than oil and kerosene but more expensive per unit of heat or BTU.

⁸⁸ Richard Giddings, Vermont Department for Children and Families, Presentation to the EAG, July 9, 2024.

households that are receiving seasonal heating fuel assistance as well as households that earn up to 200% of the FPL. The program receives approximately 36,000 applications per year.

It is projected that approximately 18,500 households will receive a LIHEAP benefit in FFY2024. The full season benefit for each household for FFY2024 is projected to be around \$897, a reduction from the prior year of about \$600 from the prior year. This award only covers a portion of a household's heat load, and the exact dollar amount awarded depends on the household's primary fuel type. In the 2023-2024 heating season, on average LIHEAP only covered 28% of household heating costs.

LIHEAP funding is based on the Margin-Over-Rack (MOR) pricing, or the fixed price that participating fuel dealers can charge a customer receiving fuel assistance funds. It changes daily and is based on the average rack price in four different terminal locations (Albany, Burlington, Portsmouth and Springfield, MA). Oil heat, kerosene, and propane dealers can choose whether to participate in the fuel program under the terms and conditions established by the State of Vermont. Many fuel dealers choose not to participate.

Under Act 18, the clean heat fee will be added to the price per gallon paid for by the state of Vermont when administering the Fuel Assistance Program.⁸⁹ The law states that the Margin Over Rack [price] (MOR) "shall reflect the Default Delivery Agent credit cost established by the Commission." Absent any supplemental funding to offset the increase in MOR price, LIHEAP recipients will see their total benefit reduced, resulting in a decrease in total household thermal load that LIHEAP is able to offset for recipients.

Not only may LIHEAP recipients experience higher fuel costs along with other fuel customers, but LIHEAP dollars will not go as far in supporting these households. The higher the compliance fee, the more regressive this policy will be for the LIHEAP program.

Weatherization Assistance Program

In Vermont, many low income households face significant challenges when it comes to heating, cooling, and maintaining their homes in a safe, dry, and durable condition. Existing assistance programs, such as Weatherization Assistance Program (WAP), aim to provide support, but they serve only a fraction of the population in need. It is estimated that there are 105,724 Vermont households that earn 80% or less of the state AMI, with 77,843 below 60% or below.⁹⁰

Eligibility for the WAP is determined by county, household size, and varying income requirements. Different income guidelines between state and federal weatherization funds can cause complexity when qualifying applicants, but those receiving fuel assistance are automatically qualified for all funding sources and are given priority for WAP.

⁸⁹ 30 V.S.A. § 8124 (i)

⁹⁰ Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25118, B25119) [housingdata.org](https://www.housingdata.org)

Current funding sources for the WAP Program include a Department of Energy (DOE) grant, the ARPA-SFR Fund, and the Home Weatherization Assistance Program (HWAP) fund. DOE funded project income eligibility is 200% of the FPL or below. For HWAP and ARPA-SFR WAP projects, income eligibility is the greater of the 80% AMI or the 80% State Median Income (SMI). Though households that earn between 61% and 80% of the AMI as determined by the Department of Housing and Urban Development are eligible, priority is given to those at 60% or below.⁹¹

In FY 2023, WAP assisted 1,139 households, including 176 manufactured homes and 23 shelter units.⁹² The average investment was \$11,869 per household. Currently the wait list varies by Community Action Agencies offering WAP, between two months to one year. However, households with children, elderly, and other vulnerability criteria that are served more quickly.

The WAP must meet the demands of households that not only need energy efficiency improvements and weatherization services, but that also require home repair services must be remediated before any weatherization work can move forward. The scope of services for the core WAP program has remained constant through the years. However, with the addition of federal one-time American Rescue Plan Act State Fiscal Recovery (ARPA-SFR) funding for home repairs, vermiculite remediation, installation of cold climate heat pumps, heat pump water heaters, and of EPA certified wood and pellet stoves has created a more complex but holistic program for WAP clients in recent years. Currently, the program does have more home repair and vermiculite funding than ever before, however these one-time funds (through ARPA-SFR) will end in the next year.

For many households, the only feasible way to complete these necessary health and safety improvements is if they are entirely funded by the WAP. Even when weatherization services are provided at no cost, the additional costs associated with these preliminary home repairs and safety measures would prevent many low income households from accessing weatherization services.

Eligibility Gaps

Eligibility for energy-related assistance targeted at low income households depends on location, program guidelines, and household size. The CHS definition of a low income household for the purpose of low income credit requirements is 60% or below of the AMI, which is \$49,200 for a family of two.⁹³

Eligibility for other programs, including LIHEAP and ratepayer assistance offered through Green Mountain Power and Vermont Gas, is limited to households earning 185% or less of the Federal Poverty Line (FPL). For 2024, 185% of the FPL is \$37,814.00 for a household of two.⁹⁴ The

⁹¹ [3E Thermal](#), "VT Weatherization Assistance Program Income Eligibility Guidelines" retrieved December 4, 2024.

⁹² [Vermont Housing Finance Agency](#), 2025 Vermont Housing Needs Assessment. Prepared for the Vermont Department of Housing and Community Development, June 2024.

⁹³ [Vermont Housing Finance Agency](#), Maximum rent and purchase price affordability thresholds by income and household size, April 2024.

⁹⁴ [Vermont Legal Aid](#), 185% Federal Poverty Level (FPL), 2024.

Weatherization Assistance Program (WAP), limits assistance to households at or below 80% AMI, with additional priority targeting for lower income households.⁹⁵

Program	Low Income Eligibility Threshold	Annual 2024 income limit (for two-person household)
Clean Heat Standard	60% AMI	\$49,200
Low Income Home Energy Assistance Program (LIHEAP)	185% of FPL	\$37,814
Energy Assistance Program (EAP) – GMP and VGS	185% of FPL	\$37,814
Weatherization Assistance Program (WAP)	80% of AMI	\$65,500

These differences highlight the challenges related to varying income eligibility requirements. Vermont households typically categorized as low income for the purposes of state programs may not be eligible for fuel assistance, while other households between 60-80% AMI that are eligible for WAP would not be eligible for low income credit generation under the CHS.

Recommendations

If Vermont moves forward with implementing the Clean Heat Standard as its primary strategy to achieve the thermal sector greenhouse gas emissions reductions necessary to meet the legal obligations of the GWSA and 10 V.S.A. § 578, it is crucial to ensure that the CHS does not disproportionately burden low income households. To ensure the welfare of low income Vermonters, affordability must be considered as paramount in the pursuit of thermal sector GHG emissions reductions.

To address long-term funding challenges, Vermont needs to consider a comprehensive approach to merging and coordinating state and federal programs that serve low income households. When temporary federal funds, such as the ARPA-SFR grant, run out, the state will still have access to HWAP and DOE WAP program funds. However, Vermont will face a

Recommendation

Continue to improve program and funding alignment

⁹⁵ [Vermont Weatherization Assistance Program](#), Income Eligibility Guidelines, July 01, 2024 – June 30, 2025.

funding cliff, and it will be necessary to "braid" different funding sources together to maintain an adequate level of support for weatherization and heating assistance.

Any new funds available under the CHS will also need to be integrated into existing programs with the least possible duplication of services, oversight, and burden on participants.

It makes the most sense to utilize existing programs that have sound practices, procedures, and quality assurance systems integrated, before starting new programs from scratch. The WAP program has been able to ramp up by 35% the amount of funds spent, homes weatherized, and number of crew workers employed in the past two years. This was largely due to a minimum prevailing wage that the State WAP office required of the Weatherization Agencies. The current minimum wage for a new crew worker is \$22.98 an hour plus a minimum 42.5% fringe benefit rate.

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Continue to increase WAP worker salaries</p>
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Further increasing these wages could help with workforce, however, should be carefully modeled to fully evaluate effects and ramifications on the existing workforce and Vermont's labor force as a whole.

Workers must be properly trained to perform good quality work that results in actual energy savings. WAP equipment needs to be purchased, such as the large crew trucks which currently can take over six months for a dealer to find or make to provide to a buyer. New funding should be provided in a manner that takes this into account, including a long-term sustainability plan. Ramping up and down WAP funding has negative impacts on workforce retention as well as program results.

When a low income household can add a secondary heating system, such as a cold-climate heat pump, LIHEAP funding should be available to cover two heat sources. Providing assistance for two fuel sources currently not permitted under federal LIHEAP rules but could be advocated for by State leaders. Currently, households receiving assistance for fossil fuel heating systems may be discouraged from using electric heat pumps to avoid higher out-of-pocket costs, as LIHEAP benefits are generally lower for electric heat systems. Expanding LIHEAP coverage to include two primary heating sources will help encourage reduced use of fossil fuels for households that are not prepared to fully transition, without facing additional financial hardship.

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Increase fuel flexibility for LIHEAP recipients</p>

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Expand EAP assistance to other utilities</p>
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The Energy Assistance Program (EAP) offers a 20-25% discount on monthly bills for low income households who enroll. The program is supported by a charge on all ratepayer bills, and coordinated through the Department for Children and Families(DCF). Currently, the EAP is only offered through offered through Green Mountain Power (GMP) and Vermont Gas Systems (VGS). The State could explore the feasibility

of this program being offered at other utilities, which could help encourage adoption of heat pumps in low income households as well as reducing overall energy burdens overall.

A sustainable source of funding and an increase in the number of energy efficiency coaches who can guide Vermonters, particularly those with low incomes, is essential to guide customers through the available programs and incentives. This work is currently being done at the Community Action

Agencies. This hands-on support is vital to guide low income households through the complicated process of home weatherization and other projects. An expansion of the role that energy efficiency coaches act as both financial coaches and energy experts would help residents take full advantage of incentives such as those available through the Inflation Reduction Act. The need for energy efficiency coaches also speaks to the importance of reducing overlap for programs that offer energy and efficiency assistance. Streamlining of programs could reduce confusion and increase participation in existing programs.

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Sustained support for consumer navigation services</p>
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Moderate Income Households

Overview

Act 18 describes a customer with moderate income as “...a customer with a household income between 60 percent and 120 percent of the area or statewide median income, whichever is greater, as published annually by the U.S. Department of Housing and Urban Development”.⁹⁶ There are an estimated 75,500 households between 60-120% AMI, representing 28% of all Vermont households.⁹⁷

On September 20, 2023, the Commission released an order requesting information “...regarding existing programs, incentives, and funding that currently support customers with low income and moderate income to afford heating expenses, transition to beneficial electrification for heating, reduce fossil fuel consumption for heating, and install weatherization measures”.⁹⁸

In response to the information request, existing low and moderate income programs in Vermont were integrated into one document that can be found in Appendix E of the report.

⁹⁶ §8123(6)

⁹⁷ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25118, B25119) housingdata.org.

⁹⁸ [Vermont Public Utility Commission](#), *Order Requesting Information About Existing Heating and Weatherization Programs*, in Case No. 23-2220-RULE, October 1, 2024.

Challenges

Financial challenges

As with other demographics covered in this report, moderate income Vermonters overlap with other demographics, including renters. Renters are often locked out of clean heat benefits, as they do not hold the decision of installing a clean heat measure where they reside. If an owner of a rental unit does install a clean heat measure, the renter may be financially impacted by a rent increase to help the owner pay for a clean heat measure.

Vermont additionally has a severe housing shortage that affects moderate income customers. When a moderate-income Vermonter does become a homeowner, they are often unable to provide matching funds of any amount, even if they have the appreciating asset of a home.

Efficiency programs typically require moderate income households to hold some financial burden of an energy transition when receiving an incentive due to their financial status and ability to do so. This assumption is a gap in existing programs as some moderate-income households are not financially able to bridge that gap of investment to receive an incentive for their clean heat measure or energy transition. Many moderate income households live paycheck to paycheck and do not have capacity to take on significant additional expenses, even if those investments may help save money over time.⁹⁹

Eligibility gaps

Low income is in the CHS as less than 60% AMI, while moderate income is defined by statute as 60 to 120% AMI. However, 60 to 80% AMI is eligible for the State's low income Weatherization Assistance Program ("WAP"). The remaining 80-120% AMI of moderate income households will not be eligible for WAP and will have to resort to other methods of financing their clean heat measure, even though existing programs in the state tend to require some sort of matching funds for this group, as explained above.

A moderate-income customer may fall below the moderate income threshold multiple times in a few years, which makes income brackets complex and can add barriers to what resources that lower AMI group in the moderate-income sector has access to. This also creates customer confusion. Market rate customers will likely transition faster and might not face the cost barriers that the lower percentages of AMI in that moderate income bracket will.

Limits to moderate-income adoption of weatherization

The State has attempted to encourage more financing opportunities for moderate income households. Vermont has an existing Home Energy Loan program that offers 0% interest financing for low and moderate income Vermonters.¹⁰⁰

⁹⁹ [Urban Institute](#), "Financial Distress among American Families: Evidence from the Well-Being and Basic Needs Survey," February 2019.

¹⁰⁰ [Efficiency Vermont](#), "Home Energy Loan," retrieved December 5, 2024.

A State pilot initiative that was created in 2022 to address the financing gap for moderate income Vermonters is the Weatherization Repayment Assistance Program (WRAP).¹⁰¹ WRAP is an on-bill program targeted at households below 120% AMI. The program combines financing with utility rebates to reduce or eliminate the upfront cost of weatherization projects. Participants repay the costs over time on their natural gas or electric bill.

Vermont Housing and Finance Authority (VHFA) works with Efficiency Vermont, other EEU's, and distribution utilities to manage the financing program. This program has been extended through 2025 but has had a slow uptake from customers to date. The program has experienced challenges related to lack of clean payment history used for underwriting, lack of funds for enabling home repairs, complex projects, and a persistent contractor shortage.

When working with moderate income customers, program administrators have found it difficult to get commitment to weatherization even when long term savings are clear. All the other challenges in the weatherization space exist for these customers, and the barriers are not dissimilar to the barriers that low income Vermonters' experience in their energy transition.

Customer confusion

One potential challenge of the Clean Heat Standard for moderate income Vermonters is increased frustration with navigating complex programs. This is already a significant challenge in efficiency programs currently offered. If there are too many programs and competing opportunities that are not strategically aligned and communicated to the public, there is increased potential for negative experiences in navigating these opportunities and programs.

Recommendations

There are significant barriers for moderate income Vermonters in their transition to energy efficiency, fuel switching, or electrification, which contradicts the common assumption that all moderate-income Vermonters have the resources to provide matching funds for services.

An increase of funding that could be directed toward incentives for installed clean heat measures such as weatherization and heat pumps could support moderate income Vermonters transition to clean heat measures. Increased incentives will reduce the upfront purchasing cost of a clean heat measure, making them more accessible.

The EAG recommends supporting existing programs where possible and increasing efforts to ensure that customers have support in navigating the Clean Heat Standard. Support can include assistance in choosing which clean heat measure to implement, ensuring a customer is not missing an important efficiency upgrade, and support in choosing trusted contractors and equipment with safety and quality control. has concerns related to moderate income Vermonters, and all customers, having support in choosing which clean heat measure to implement, how to avoid missing important efficiency upgrades, and choosing contractors and

Recommendation

Support and align existing programs

¹⁰¹ [Vermont Housing Finance Agency](#), "On-bill financing," retrieved December 5, 2024.

equipment with quality and safety control. Market transformation activities funded through the Clean Heat Standard would provide support for low and moderate income Vermonters to ensure quality, safety, and prevent customer confusion in the market. These types of activities are important to provide a statewide consistent experience of low and moderate income Vermonters navigating clean heat projects that will reduce customer confusion.

<p style="text-align: center;">Recommendation</p> <p>Improve customer communication and reduce consumer confusion</p>
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Communication around different programs, territories served, varying incentive rates for low income versus moderate income households, is critical to lowering customer confusion and increasing customer participation. Strategically aligning programs to ensure consistent statewide long-term experience is important

to customer participation of all programs. To support customer navigation of existing programs, Efficiency Vermont has an incentive calculator that you can use to determine which incentives you qualify for, as an example of the type of work that is needed to prevent customer confusion.¹⁰²

Workforce development is a barrier in reaching more households with installed clean heat measures. Workforce development funding and support in the Clean Heat Standard could support moderate income Vermonters that work in workforce development by creating a stable working environment versus an instable burst of funding for these clean heat projects will allow programs to reach more households and customers.

<p style="text-align: center;">Recommendation</p> <p>Increase workforce development to serve moderate income customers</p>

Renters and Landlords

Overview

Approximately 27% (or 72,636) of households in Vermont are renters.¹⁰³ Vermont renters live in a variety of housing types, not limited to multifamily structures. An estimated 17,029 renter households or 23% of renters live in single family homes, and 3,215 (4%) live in manufactured homes.¹⁰⁴

Vermont renters tend to have disproportionately lower incomes, with 51% of them (approximately 36,711 households) earning at or below 60% of the Area Median Income (AMI), and 80% earning below 120% of AMI.¹⁰⁵

¹⁰² [Efficiency Vermont](#), “How much money can you actually get in clean energy incentives?,” retrieved December 5, 2024.

¹⁰³ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25032) [housingdata.org](#)

¹⁰⁴ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25024) [housingdata.org](#)

¹⁰⁵ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25118, B25119) [housingdata.org](#)

A significant majority of renter households, 77%, rely on fossil fuels for heating.¹⁰⁶ Data on which Vermont renters pay for which utilities is limited, but Census data indicates that only about 23% of renters (16,447 households) have all utilities included in their rent.¹⁰⁷ The remaining three quarters of renters may have any combination of water, heat, and electricity included or not included in their rent.

Challenges

High Energy Burdens

According to the Department of Energy's Low-Income Energy Affordability Data (LEAD) tool, Vermont renters at 30% or below the AMI face an energy cost burden of up to 15%.¹⁰⁸ For those earning between 30% and 60% of AMI, the energy burden can reach up to 7%. An energy burden of 6% or above is considered high.

Seventy-seven percent of the households receiving fuel assistance from the Low-Income Home Energy Assistance Program (LIHEAP) are renters.¹⁰⁹ LIHEAP has been discussed in detail previously in the section of this report on Low Income households, but any impacts to the program under the CHS will have a disproportionate impact on renters. In the 2023-2024 heating season, 50% of all LIHEAP households rented and paid for all utilities, and 27% were renters with another utility arrangement.

Technical Challenges

An earlier section of this report discusses the technical challenges of weatherizing and electrifying Vermont's existing housing stock, and many of these challenges are also found in rental homes. Over 33% of the rental housing stock in Vermont was built in 1939 or earlier.¹¹⁰

There is a wide range of technical expertise among property owners. Moreover, some rental property companies own hundreds of units, and some landlords only own a single unit. Implementing clean heating systems in rental housing is challenging in large part due to the diversity and complexity of the rental housing stock. Different housing types require different programs and approaches to implementing new technologies. For example, many of Vermont's renters live in older single-family homes that have been converted to multi-family structures with floor plans that can make it difficult to install mini-split heat pumps.¹¹¹

¹⁰⁶ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25040) housingdata.org

¹⁰⁷ U.S. Census Bureau: American Community Survey 1-year estimates, 2022 (Table B25069). It is likely that a significant portion of these households with utilities included in rent reside in subsidized housing, particularly senior housing, where this practice is more common.

¹⁰⁸ [U.S. Department of Energy, Low-income Energy Affordability \(LEAD\) Tool, 2024](#)

¹⁰⁹ Presentation from Richard Giddings, Director of Heating and Utility Assistance Programs, DCF-Economic Services to the Equity Advisory Group, July 9, 2024.

¹¹⁰ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25036) housingdata.org

¹¹¹ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25032). Determining the physical character of buildings from survey data is difficult, however there are 25,627 renter households or 35% of all renters that live in smaller multifamily buildings with between two and four apartments.

To minimize greenhouse gas emissions, new construction can and should be designed around electrified systems. However, these systems are more complex and can require greater long-term costs due to skilled maintenance needs. These increased developer's project costs reduce the incentive to install clean heating systems.

Financial Challenges

Rental property owners and tenants face similar challenges to homeowners when it comes to adopting clean heat measures. These include large upfront costs, the complexity of retrofitting, and the need for specialized systems. However, landlords and renters face additional impediments that homeowners do not. The split-incentive problem, which recognizes that landlords may not see the societal or economic benefits of upgrading heating systems when the tenant pays the heating bills, is one such impediment. Another is that some efficiency programs are not available for rental properties.¹¹² Unless crafted correctly, low and moderate income renters may not realize any benefits of the CHS, though they may still be burdened with higher fuel costs.

Just as there is a wide range of technical expertise among landlords, so too is there a wide range of financial capacity. Those with only a few rental units may not have the borrowing capacity or cash on hand to finance expensive heating system upgrades or replacements that rental property owners with dozens or hundreds of units might have. Some landlords have made significant efficiency investments in their properties, while others are financially unable or unwilling to make these investments.

Renters responsible for paying their heating expenses separately from rent often face challenges in reducing their fossil fuel use due to what is commonly called the *split incentive*: the benefits of energy efficiency upgrades like reduced utility costs and greater comfort are enjoyed by tenants, but the costs of making these investments are incurred by landlords, who do not directly benefit from savings.¹¹³ This misalignment of financial costs and benefits can discourage landlords and tenants from investing in efficiency improvements that would reduce overall carbon emissions and utility costs in rental properties.

Special Considerations for Subsidized Affordable Housing

Approximately 14,670 renter households, or 18% of all Vermont renters, live in multifamily subsidized affordable housing.¹¹⁴ Subsidized housing serves Vermont's lowest income households, with half of residents earning less than \$17,000.¹¹⁵

¹¹² For example, [Efficiency Vermont's Heat Pump Water Heaters rebate program](#). Retrieved December 5, 2024.

¹¹³ Hynek, Levy and Smith, "[Follow the Money](#)": [Overcoming the Split Incentive for Effective Energy Efficiency Program Design in Multi-family Buildings](#). American Council for and Energy-Efficient Economy, 2012.

¹¹⁴ [Vermont Directory of Affordable Rental Housing](#), September 2024 via housingdata.org. These include buildings developed with public funding subsidies, such as Public Housing, HUD's HOME Program, HUD Community Development Block Grants, USDA Rural Development, the Low-Income Housing Tax Credit (LIHTC), and other programs with rental affordability long-term or permanent affordable rent restrictions attached to the apartment unit.

¹¹⁵ [Vermont Housing Finance Agency analysis](#) of HUD Low Income Housing Tax Credit (LIHTC) data, 2021.

While these subsidized rentals and their associated utilities cannot exceed established federal limits designed to keep housing affordable, many of the households living in subsidized housing still face significant financial burdens. Affordable housing property owners face their own split incentive challenges: they cannot raise limits on rent beyond modest annual approved increases, and they rely heavily on scarce housing funding subsidies to make energy investments for which they may not see a full return on.

The energy-related investments needed to construct new apartments in line with Efficiency Vermont's High-Performance track (required for projects funded by Vermont Housing Finance Agency and Vermont Housing & Conservation Board) is estimated to cost over \$62,000 per multifamily unit.¹¹⁶ However, Efficiency Vermont is restricted to offering rebates based on savings achieved beyond code, meaning that with each code update, it becomes more difficult to demonstrate the savings and recover costs. Affordable housing developers receive only up to \$3,700 per unit from Efficiency Vermont to cover additional costs beyond basic code, leading to an estimated gap of \$1.8 million in upfront costs for an average affordable housing project.

Minimal Rental Code Enforcement

Vermont's Residential Rental Housing Health & Safety Code has some basic requirements for landlords to provide properly functioning heating systems and make the building 'weathertight'.¹¹⁷ When a code violation is suspected, tenants must appeal to their landlords to make repairs, and if they do not, the tenant must report a violation to the Division of Fire Safety. This can be a challenging process for tenants in a tight rental market, who may fear retaliation or non-renewal of the lease. Even when landlords properly follow the Health & Safety Code, there is no obligation to help limit the fuel consumption or fuel costs of their tenants.

In Burlington, the recently passed Minimum Housing Code Weatherization Ordinance "is designed to ensure that rental properties are also properly weatherized to keep tenants warm in the winter, cool in summer, and reduce costs, while helping the city achieve its net zero energy goals."¹¹⁸ It should be noted that Burlington's net zero energy goals are to reduce and eventually eliminate fossil fuel use in the thermal and ground transportation sectors, not to reduce greenhouse gasses. This municipal ordinance applies to high energy use rental buildings and is enforced by the Department of Permitting & Inspections (DPI) to ensure compliance.

Currently, no statewide ordinance or enforcement mechanism exists to ensure adequate weatherization in rental properties. Though Burlington has a strong policy and enforcement process in place, ordinance implementation has proved difficult due to workforce constraints and has reached only a handful of the several hundred rental units identified.¹¹⁹ The Burlington weatherization ordinance website notes that, "[t]he city recognizes that long waiting lists currently exist for both qualified weatherization contractors and utility incentive programs.

¹¹⁶ Vermont Housing Finance Agency, [Assessing energy rebates in Vermont affordable housing](#), September 2024.

¹¹⁷ [Vermont Department of Public Safety](#), Vermont Residential Rental Housing Health & Safety Code, 2022.

¹¹⁸ [Burlington Electric Department](#), "Burlington Minimum Housing Code Weatherization Ordinance," retrieved December 5, 2024.

¹¹⁹ [Lamdin](#), "Workforce Shortage Imperils Burlington Weatherization Goals," Seven Days, November 13, 2024.

Temporary waivers can be granted if the owner can document that they are formally on a waiting list with a BPI contractor or a utility program.”

Other Policy and Funding Programs and Gaps

The most effective program for assisting renters and overcoming the split incentive in Vermont is the Weatherization Assistance Program (WAP).¹²⁰ It is estimated that 30% to 40% of homes weatherized each year by WAP are renter occupied.¹²¹ There are an estimated 50,833 total renter households under 80% AMI, equal to about 70% of all renters.¹²²

Currently, buildings with low income tenants are eligible for WAP to fully cover cost-effective weatherization measures and heat pumps after any required health and safety upgrades and repairs are paid for by the landlord, which can be prohibitively expensive.¹²³

However, WAP only serves renters or properties with tenants at or below 80% AMI. An estimated 21,803 Vermonters or 30% of renters are above this threshold and would not qualify for WAP services. Moreover, households that otherwise are income eligible may live in buildings that primarily include higher income households, which excludes these buildings from multi-family WAP eligibility.¹²⁴

Existing weatherization incentives outside of WAP are inadequate to cover the costs of additional upgrades to buildings necessary to allow implementation of weatherization and electrification projects.

Vermont Housing Finance Agency (VHFA) offers a state-funded pilot on-bill financing program called the Weatherization Repayment Assistance Program (WRAP), which renters can participate in with landlord consent.¹²⁵ The program is targeted to households between 80-120% AMI. The renter experiences the benefits of lower heating costs and pays the program charge on the utility bill until they move. When the tenant moves out, the next tenant takes over the charges on the utility bill. There has been a slow program uptake overall, especially among renters. It may be difficult to make the case for renters to invest in a property they do not own, even if they can save on costs.

¹²⁰ [Weatherization Assistance Program \(WAP\)](#) – Program that provides funding for home energy efficiency upgrades to low-income households, helping to reduce energy costs, improve comfort, and lower carbon emissions.

¹²¹ [2024 Report on Performance Indicators for the Vermont Weatherization Assistance Program](#)

¹²² U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25118, B25119) [housingdata.org](https://www.housingdata.org)

¹²³ This is a temporary program offered using federal ARPA funds.

¹²⁴ Eligibility for WAP assistance varies by program source, but generally, two-thirds of units must be occupied by households earning 80% AMI or lower.

¹²⁵ Additionally, WRAP is only available in properties with four or fewer units. [Vermont Housing Finance Agency](#), “WRAP: Frequently Asked Questions,” Retrieved October 24, 2024.

Recommendations

In addition to investing in the state’s Weatherization Assistance Program (WAP), as discussed previously, the State should explore investments in weatherization and home repair programs that can benefit renters that are not income-eligible for WAP.

The Vermont Housing Improvement Program (VHIP) offers grants or forgivable loans to rehabilitate existing vacant units, bring existing units into code compliance, or create small new multifamily units.¹²⁶ Rehabilitation projects can include weatherization improvements, but it is not the primary purpose of the program.

The State could explore expanding VHIP or creating a similar program to include projects that primarily include weatherization or incorporate other clean heat technologies like heat pumps. In any program, combining assistance for home repairs and weatherization may help encourage landlords to address the comprehensive needs of a unit.

Recommendation

Expand weatherization programs targeted to moderate income renters, using existing programs where possible

Recommendation

Pair substantial state investments in rental properties with tenant protections to limit displacement

Any State-funded weatherization program that pays for most or all of a landlord’s project costs should also include restrictions to prevent tenant displacement as a result of the improved property. Receiving a 10-year forgivable VHIP loan requires the landlord to rent the unit at or below HUD Fair Market Rent for the area for at least 10 years. Similar investments in

weatherization outside of WAP could be tied to a similar compliance agreement.

Beyond grants, overcoming the upfront costs of extensive building upgrades may require additional financing options, incentives, and financial support for home repairs, code compliance requirements, and electric service upgrades. These options could include requirements to ensure that only landlords who demonstrate financial need or lower income or moderate-income tenants receive favorable rates, though such restrictions will limit adoption. Low- and zero-interest loans could ease the financial burden of repairs ancillary to weatherization such as removing vermiculite and electric wire and panel upgrades, and these incentivized rate programs could require that landlords rent to tenants meeting low and moderate income definitions.

¹²⁶ [Vermont Agency of Commerce and Community Development](#). *Vermont Housing Improvement Program 2.0*. Retrieved October 23, 2024.

New window-based heat pump units are just beginning to become available to consumers. The units can be self-installed in a standard single or double-hung window and standard outlet, include cold-climate heating capacity, and currently retail for \$3,800.¹²⁷ These products are currently being tested in pilot projects by the New York City Housing Authority,¹²⁸ and Efficiency Vermont.¹²⁹

Recommendation

Incentivize adoption of window unit heat pumps and create companion regulations to allow renters to access technology

Portable heat pump technology has the potential to be transformative in their ability to reach households that cannot easily install traditional heat pumps, especially renters. A renter could use a window unit heat pump to reduce their fossil fuel use and save money while living in a rented home and then take the equipment with them when they move. State incentives for portable heat pumps could help overcome the split incentive and encourage more equitable adoption of clean heat measures.

In its feedback to the Commission on Clean Heat Standard Draft Rule, the EAG recommended that the CHS framework accommodate window heat pumps as an eligible installed measure for low and moderate income households.¹³⁰ The EAG also recommended that credit ownership rules be revisited if window heat pumps are considered eligible clean heat measures. Section 8.113(a)(1) of the Draft Rule states that for installed measures “the individual or entity that owns the building in which the measure is being implemented is the initial owner of the measure attributes created by the implementation of that measure.”

The EAG recommends that if a renter purchases a portable window heat pump, the ownership of the credit and any potential related financial benefit from transferring it to an obligated entity, should belong to the renter, not the property owner.

Currently, portable heat pump technology is still largely untested, and the energy savings and long-term reliability of the equipment must be verified for use in state incentive programs. However, if it proves to deliver long-term benefits to customers, the EAG recommends that the Legislature incentivize this technology, and especially for rental households.

If window heat pumps are effective and become common, the Legislature may need to take additional action to ensure renters have access to window unit heat pumps. Landlords often prohibit renters from using window unit air conditioners in lease agreements. Banning window units often result from landlords’ valid concerns about property damage and safety. However, these restrictions could be a serious roadblock to widespread adoption of heat pumps in Vermont’s existing, varied housing stock. Requiring landlords to allow heat-pumps, while also

¹²⁷ [Gradient All-Weather 120V™ Window Heat Pump](#). Retrieved October 21, 2024.

¹²⁸ [Grist](#), “How NYC’s public housing authority plans to transform the market for clean heat,” January 24, 2022.

¹²⁹ [Efficiency Vermont](#), “Take control over your heating and cooling—for free: Enroll in a pilot program to test an exciting new technology for renters”. Retrieved October 24, 2024.

¹³⁰ [EAG Comments on CHS Draft Rule](#). Published to the Vermont Public Utility Commission Case: 23-2220-RULE - Proceeding to design the potential Clean Heat Standard, October 30, 2024.

requiring professional installation and limiting landlord liability could resolve this potential complication.

Finally, as extreme heat events become more common, access to cool spaces is essential to reducing heat-related illness and death.¹³¹ Vermont’s Residential Rental Housing Health & Safety Code requires habitable temperatures but does not have detailed rules about permitting or providing air conditioning.¹³² Access to cooling equipment, from either a traditional air conditioner or a heat pump, is increasingly necessary for equitable climate adaptation.

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Add basic weatherization requirements to Vermont Residential Rental Housing Health & Safety Code</p>
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If the State wishes to reduce greenhouse gasses from rental properties and overcome the split incentive problem, it may need to go beyond its current practice of offering financial incentives to landlords and consider creating clear requirements. At a minimum, the State could explore ways to update building codes for heating, cooling, and weatherization systems to better align with our greenhouse gas reduction goals.

This may well be difficult to enforce within the State’s current complaint-based system and lack of rental registry, which leaves most rental homes in the state uninspected and the current code often unenforced. The City of Burlington’s weatherization ordinance has faced significant challenges, and workforce shortages are felt statewide. The State could consider phasing in weatherization requirements over time to give landlords ample opportunity to secure contractors.

However, despite these significant challenges, the status quo is all but guaranteed to leave renters behind as Vermont transitions away from fossil fuels. A significant realignment of State policy will be necessary to ensure that renters can receive the benefits of a Clean Heat Standard.

Mobile Home Residents

Overview

There are an estimated 20,041 mobile or manufactured homes (MHs) statewide, which represents 6% of all the state’s housing stock.¹³³ The terms “mobile home” and “manufactured home” are often used interchangeably for homes built in factories before being transported to their final site. Of Vermont homes occupied year-round, 8% are MHs.¹³⁴ An estimated 13,373

¹³¹ [World Health Organization](#), *Heatwaves*. Retrieved October 23, 2024.

¹³² [Vermont Legal Aid](#), Summer Heat, Air Conditioning and Rental Units. May 22, 2024. Retrieved October 23, 2024.

¹³³ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25024) housingdata.org

¹³⁴ U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25032) housingdata.org

Vermont MHs are owner-occupied (67%), 3,215 are renter-occupied (16%), and 3,453 are vacant or seasonal (17%).¹³⁵

Approximately one third of MHs are located in manufactured home communities (MHCs) or parks across the state, and of those homes, roughly 90% of them are owned by the residents.¹³⁶ The remaining homes are on land outside parks that is either owned or leased by the residents.

Challenges

Reliance on kerosene

Vermonters who live in MHs disproportionately use kerosene for heating. Kerosene is one of the most expensive, price volatile, and carbon-intensive heating fuels.¹³⁷ However, MHs often have fuel tanks located outside, and kerosene can withstand much colder temperatures than fuel oil.¹³⁸ Due to the reliance on outside storage and to structural limitations in MHs, described below, these residents have limited alternative fuel choices if faced with higher heating costs under the CHS.

Technical challenges

Modern manufactured homes built to the U.S. DOE Zero Energy Ready Home Manufactured Homes National Program standards are highly energy efficient and can accommodate heat pumps and water heaters for fossil-free heating and cooling. However, old MH are often leaky, inefficient, and present significant challenges for decarbonization.

Minimum health and safety requirements for all new manufactured homes were first established in 1974. Homes built before that point were unregulated and may not have been constructed properly or to a high efficiency standard or may have become structurally unsound in the intervening years. There are an estimated 4,000 to 5,000 MHs in Vermont built prior to 1979, or up to a quarter of the state's MH stock. Of these 3,300 MHs are estimated to be owner occupied and 1,300 are renter occupied.¹³⁹ A 2019 survey of Vermont's affordable mobile home parks found that approximately 25% of the homes were estimated to be in substandard condition due to age or other quality concerns.¹⁴⁰

Many mobile homes face structural and technical limitations that make clean heat technologies, such as heat pumps, challenging or impractical to install. Common issues include outdated electrical systems, and specific heating needs to prevent frozen pipes. MHs typically lack

¹³⁵ [Vermont Housing Finance Agency](#), *2025 Vermont Housing Needs Assessment*. Prepared for the Vermont Department of Housing and Community Development, June 2024

¹³⁶ Vermont Department of Housing and Community Development, [2022 Vermont Mobile Home Parks Report](#)

¹³⁷ [Vermont Energy Action Network](#), Annual Progress Report 2024

¹³⁸ The gel point of petroleum products is the temperature at which the liquids thicken to the point that they no longer be can be pumped through fuel lines.

¹³⁹ [Vermont Housing Finance Agency](#), *2025 Vermont Housing Needs Assessment*. Prepared for the Vermont Department of Housing and Community Development, June 2024.

¹⁴⁰ [Development Cycles](#), *Sustainability Assessment of Affordable Mobile Home Parks in Vermont*. Prepared for the Vermont Housing & Conservation Board, January 2019.

basements and often have exposed water pipes running underneath. This configuration requires heat from below, whereas ductless electric heat pumps distribute warm air from above, potentially leading to frozen pipes and severe structural damage. For these existing homes, ducted heat pumps may be a feasible heating source, but supplemental combustion-based heating may remain essential, as a shift to electric heat alone could pose substantial risks. Older MHs that are poorly designed, have inadequate ductwork and therefore have larger heat loads that may be particularly difficult to maintain with a cold climate heat pump (CCHP) alone.

Where fuel switching is feasible, it is crucial to pair it with weatherization efforts to safeguard against freezing pipes. Technical guidelines for upgrading heating in mobile homes are distinct from those for traditional homes, and existing systems are often incompatible with a switch to new fuels. While dual-fuel heating systems offer a potential solution, their installation costs, including necessary electrical upgrades, can reach \$15,000, a price out of reach for many residents.¹⁴¹ Beyond financial and technical constraints, space limitations can further hinder the installation of heat pump systems.

There are three possible pathways to decarbonize mobile homes. The first pathway is weatherization, where the MH thermal envelope is air sealed and insulated to reduce heat loss and overall heat load required to maintain adequate temperature in winter. Another pathway is heating system conversion paired with weatherization. If technically feasible, an existing MH fossil fuel heating system can be replaced with an eligible clean heat measure such as a ducted heat pump or dual fuel heating system, in addition to weatherization efforts. A more comprehensive pathway is the complete replacement of the MH. This option is best when weatherization and/or heating system replacement are not technically feasible or where the cost to do so would warrant replacement as an alternative.

Existing homes that cannot support new investments

A 2019 report from the Vermont Housing & Conservation Board used Tax Department data to estimate that 23% percent of the homes surveyed in MHCs have an assessed value of less than \$10,000.¹⁴² From this, it can be estimated that there are at least 4,600 mobile homes statewide where the value of those units is likely less than the cost of most comprehensive weatherization and electrification measures.¹⁴³ This is a strong signal that there are at least that many mobile homes that cannot support new investments. That figure is conservative, as there are certainly homes in relatively better condition that will still face serious technical issues in rehabilitation. For these 4,600 households, there may be no practical way to pursue significant reduction in fossil fuel use.

¹⁴¹ <https://www.trane.com/residential/en/resources/glossary/dual-fuel-heat-pump/>

¹⁴² [Development Cycles](#), *Sustainability Assessment of Affordable Mobile Home Parks in Vermont*. Prepared for the Vermont Housing & Conservation Board, January 2019. Homes in MHCs do not have land owned associated with them, so this accounts for just the value of the physical unit. MHs on owned land outside of MHCs would be difficult to separate from the value of that land.

¹⁴³ Out of the 20,041 estimated MH statewide according to 2022 ACS. U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25024) [housingdata.org](https://www.housingdata.org)

In addition to high energy burdens and barriers to transitioning to clean heat systems, many MHCs are in flood prone areas, leaving these residents vulnerable to home destruction and displacement. Currently, there are 809 lots situated within a flood hazard zone, making up 11% of all homes in parks.¹⁴⁴ Investing in energy efficiency in homes at very high risk of flood damage does not make financial sense, however, moving existing homes can be costly. In addition to costs of transporting the home itself, site preparation to place the MH home frequently costs more than \$20,000 per lot.¹⁴⁵

Financial challenges

The upfront costs associated with weatherization or upgrading to a clean heat system can be cost-prohibitive to MH residents. There is limited available data on the incomes of mobile home residents. Residents of MH and MHCs tend to have lower incomes than other Vermont households. An income survey across 15 MHCs found that 60% of the residents earned at or below 50% of Area Median Income (AMI) and 84% earned at or below 80% of AMI.¹⁴⁶

Homes in MHCs face additional challenges. MHCs are predominantly privately owned. The 2024 Mobile Home Task Force Report to the Legislature found that aging park infrastructure is the greatest risk to long term mobile home park sustainability.¹⁴⁷ To upgrade individual units, the park itself may often require community level investments, including electrical service. This can lead to a split incentive, where the park owner may not invest in upgrades that would primarily benefit individual lot renters. In cases where MHCs pursue park-wide upgrades, costs are substantial, often reaching approximately \$1 million, making coordination with multiple stakeholders, including utility companies, park owners, and individual residents, is complex. It can also be difficult to access the funding required for these projects.

For individual MH owners on rented land, it can be challenging to access financing for upgrades or MH replacement. Many financial institutions require land ownership for mortgage or refinancing eligibility. Interest rates available for financing new mobile homes are high, and without property ownership, residents face challenges accessing affordable financing options. Lending guidelines often assume that MHs on rented land depreciate while mobile homes on owned land would allow residents to build equity for at least the land itself. Many of the older homes in MHCs examined by the Mobile Home Task Force were valued at around \$15,000 to \$20,000, and these low values would discourage large financial investments in the home.

Replacing MHs with newer, more efficient models is not viable for most low income Vermonters. Absent deep financial assistance, the cost of these new efficient mobile homes is not affordable for most. Many people live in mobile homes because they are significantly less expensive to purchase or rent than other types of buildings. These households cannot afford additional monthly bills for a new or higher mortgage or do not have access to credit.

¹⁴⁴ [Vermont Housing Finance Agency](#), *2025 Vermont Housing Needs Assessment*. Prepared for the Vermont Department of Housing and Community Development, June 2024.

¹⁴⁵ [Report of the Mobile Home Task Force](#) to the Vermont Legislature, February 1, 2024

¹⁴⁶ [Report of the Mobile Home Task Force](#) to the Vermont Legislature, February 1, 2024

¹⁴⁷ [Report of the Mobile Home Task Force](#) to the Vermont Legislature, February 1, 2024

Under Act 18, obligated parties can generate clean heat credits by replacing an older MH with a new, highly efficient model. However, a new manufactured double wide home currently costs about \$173,000,¹⁴⁸ making it doubtful that many Obligated Parties will choose manufactured home replacement as a credit-generating activity, beyond what is already funded by other sources.

Additionally, even if improvements or replacements are low-cost or free, any increases in the value of the MH could lead to increased tax burden for residents.

Limitations to existing assistance programs

The Weatherization Assistance Program (WAP) served 221 mobile homes in 2024 to date, about 27% of the single-family homes supported by the program,¹⁴⁹ and a small fraction of Vermont's MH stock that is estimated to require weatherization.

In cases where residents do receive WAP services, funding is a limiting factor. Currently, the WAP can complete comprehensive weatherization services for residents of MHs, however with additional sustainable sources of funding, more could be done to reduce dependence on fossil fuel and overall energy burden for MH residents, including upgrading ductwork and electrical to enable the installation of ducted heat pumps or dual fuel furnace systems.

Inadequate funding specifically for home repair is also a limiting factor, especially for MH. Many private weatherization contractors do not serve the MH community. This is largely because most MH residents qualify for WAP services and lack the resources to pursue weatherization on their own. Consequentially, the MH community is almost exclusively dependent on the WAP for home repair and weatherization needs.

WAP staff regularly encounter problems related to deferred MH maintenance. Without home repair funds to remedy deferred maintenance issues, comprehensive weatherization in some cases cannot occur. If the WAP is unable to serve a client due to a home repair issue that current funding is unable to address, that client is "deferred" by the program until the client can address the issue. Many clients are unable to afford home repairs themselves, therefore a WAP deferral means the issue either goes unaddressed completely further exacerbating harmful outcomes for the residents, or the client turns to another organization such as a local housing trust who may or may not be able to provide them with limited home repair funding potentially available.¹⁵⁰ If the client can resolve the issue that caused them to be deferred by WAP on their own, then they will be eligible for WAP services once again. This process can take a long time because home repair services outside of WAP are usually implemented by volunteers or a small number of paid staff.

¹⁴⁸ [Vermont Housing Finance Agency](#), *2025 Vermont Housing Needs Assessment*. Prepared for the Vermont Department of Housing and Community Development, June 2024.

¹⁴⁹ G. Wilcox, Personal Communication, November 25, 2024.

¹⁵⁰ [Windham & Windsor Housing Trust](#), "Repair Your Home", retrieved December 5, 2024.

In recent years OEO has adopted a “zero deferral” policy in recognition that addressing non-energy related issues that otherwise prevent weatherization is a critical equity policy.¹⁵¹ This zero deferral policy could be in jeopardy without a long-term sustainable source of funding dedicated to addressing home repair needs and other non-energy related issues.

Recommendations

Recommendation

Adopt recommendations of the Mobile Home Task Force

The EAG spoke with Gayle Pezzo and Mary Houghton, residents of MHCs and members of the Mobile Home Task Force.¹⁵² In addition to speaking personally to the many challenges encountered by many MH residents in reducing fuel use, they spoke to the work of the Task Force. They encouraged policy makers to adopt the

recommendations already made by the report and continue the work underway to support MHCs and MH residents in general, beyond their energy needs.

To ensure equitable outcomes for MH residents, the CHS must take a comprehensive approach that integrates social, economic, and environmental priorities. All Vermonters, regardless of housing type, should have the opportunity to participate in the CHS. This requires addressing common barriers for the MH stock, including high upfront costs, limited technical knowledge, and gaps in information about available resources. The CHS should be designed to prevent undue burdens on low and moderate-income residents, with careful monitoring to identify and address potential unintended consequences, such as increased fuel costs or displacement risks tied to energy retrofits. Transparency and accountability are essential, with mechanisms in place for tracking and reporting equity outcomes, allowing for continuous assessment to keep equity goals on course.

Effective outreach is key to raising awareness of clean heat benefits, especially among MH residents who may face unique challenges in understanding or accessing these programs. Though some residents in a park referenced by Gayle Pezzo of the Mobile Home Task Force have utilized WAP, Mary Houghton indicated that

some residents assume that they are not eligible. This emphasizes the need for more targeted outreach, education around program offerings and assistance navigating the programs. Tailored educational initiatives that clearly communicate the cost savings and environmental benefits of clean heat technologies can empower residents to make informed choices. Additionally, MHCs can enhance residents' readiness to apply for project funding through WAP or other programs.

Recommendation

Ensure fair access, participation, and support for mobile home residents

¹⁵¹ Office of Economic Opportunity, *Performance Indicators for the Vermont Weatherization Assistance Program*, January 28, 2022.

¹⁵² [Report of the Mobile Home Task Force](#) to the Vermont Legislature, February 1, 2024

Recommendation

Providing technical assistance and building community partnerships

Many mobile home residents may need expert guidance to navigate the complexities of clean heat measure installations. Providing dedicated technical assistance and support services will help these communities overcome technical challenges and ensure successful adoption of clean heat solutions. By

partnering with local organizations and community groups, outreach and assistance efforts can be made culturally relevant, linguistically accessible, and more effective in reaching mobile home residents. Leveraging existing community networks can maximize engagement and make the CHS transition smoother and more inclusive.

The Legislature should also engage MHCs to conduct a thorough assessment of electrical infrastructure in MHCs to identify and address any deficiencies that may hinder the adoption of clean heat technologies. Upgrading infrastructure will ensure that mobile home communities can support the increased demand for electricity associated with clean heating systems.

Recommendation

Leverage existing programs supporting mobile home residents

Where possible, the Legislature should build upon existing statewide programs and resources to support the implementation of the CHS for mobile home communities. This includes leveraging the infrastructure and expertise of organizations involved in energy efficiency, weatherization, and affordable housing initiatives.

The Legislature should also allocate dedicated or supplemental funding to bolster the Weatherization Assistance Program (WAP), specifically targeting resources to support MH residents in accessing and implementing clean heat measures. This funding will facilitate the retrofitting and upgrading of mobile homes to improve energy efficiency and reduce heating costs.

Wherever possible, communities and individuals should have ownership and control over clean heat projects and the associated clean heat credits. This can empower local communities, promote self-sufficiency, and ensure that the benefits of the clean heat credits are reinvested locally.

Recommendation

Expand funding for manufactured home replacement

The State of Vermont has housing funding resources available for manufactured home replacement through Vermont Housing & Conservation Board and Vermont Housing Finance Agency.¹⁵³ Though there are incentives available for households below 80% AMI, and possible support for downpayment assistance, through state

housing nonprofits, applicants will generally need to secure mortgages through the USDA’s Rural Development program or other lenders for the replacement home. Depending on a resident’s

¹⁵³ Vermont Agency of Commerce and Community Development, “Resources for Homeowners (Incl. Mobile Homes)”, retrieved November 26, 2024.

financial capacity, securing funds could be difficult. Substantial subsidization of these purchases will be necessary to serve households in MH that cannot access weatherization or fuel switching.

Commercial, Industrial, and Other Nonresidential Customers

The Clean Heat Standard will have impacts on Vermonters outside of households, including businesses, nonprofit organizations, municipalities, and schools. The non-household thermal sector makes up an estimated 48% of GHG emissions, with the commercial segment representing roughly 35%, and the industrial segment representing roughly 13% of total thermal emissions. For both segments, the primary fossil fuels used are fuel oil, fossil (natural) gas, propane, and wood.¹⁵⁴

Commercial and Small Business Segment

The commercial thermal sector accounts for 0.9 MMT of CO₂e/yr emissions representing an estimated 35% of total emissions.¹⁵⁵ Within the commercial segment, fossil gas, fuel oil, propane as sources of emissions make up the major type of fossil fuels used with 43%, 26%, and 25%, respectively.

Vermont small businesses with fewer than 500 employees account for 60% of the state's total employment.¹⁵⁶ The small business segment is represented by about 79,000 businesses, with roughly 80% of these businesses owned and operated by a sole proprietor. Many sole proprietor-operated businesses are likely to have a home office, rented offices, or shared facilities. The remaining 20% of the small businesses employ up to 500 employees. As small businesses make up close to 98% of the commercial segment with a wide variety of industry sectors, it may also present unique challenges in implementing any universal CHS installed and delivered measures due to the complexity and shared infrastructure of commercial buildings. Additionally, because the RCI sector emissions are reported without the granular data needed to assess specific segments within commercial and industrial sectors, it would be difficult to determine what emissions reduction potential exists in these specific segments.

Small businesses are included in various industry sectors, including professional services, retail, construction, healthcare services, public administration, manufacturing, and distribution. In implementing the CHS, a focused effort on opportunities for electrification of large facilities, including retail, office space, and services, has potential to reduce a significant amount of GHG emissions in the thermal sector. Cold climate heat pumps (CCHP) installed to date for commercial applications represent only about 10% of total installations in VT over the last 6 years. For many commercial and industrial businesses with core infrastructure for buildings for

¹⁵⁴ [Energy Action Network](#), "Statewide GHG Emissions Dashboard", VT Thermal emissions 1990-2021, retrieved December 2, 2024.

¹⁵⁵ [Energy Action Network](#), "Statewide GHG Emissions Dashboard", VT Thermal emissions 1990-2021, retrieved December 2, 2024.

¹⁵⁶ [U.S. Small Business Administration](#), "2022 Small Business Profile – Vermont", 2022.

processing and warehouse operations, typical solutions such as air source heat pumps are not effective in replacing traditional space heating systems powered by fossil fuels. In these cases, innovative and customized solutions will be required to reduce GHG emissions.

Efficiency Vermont offers rebate programs to small businesses to replace fossil fuel-based heating systems with pellet-based boilers that are cost effective and sustainable. The Inflation Reduction Act offers specific incentives for the adoption of renewable power generation to industries that currently use fossil fuels for power generation as well as for processing applications. In tandem with custom solutions for electrification, increased use of renewable natural gas and other clean fuels such as renewable diesel in the commercial and industrial sectors also represents an option for emissions reduction potential in these sectors as identified in NV5’s greenhouse gas emission reduction potential study commissioned by the Vermont Department of Public Service.¹⁵⁷

Several new commercial buildings in Vermont have benefited from solar panel installations that enable renewable energy use and reduce overall electricity-related GHG emissions. Through the Green Business certification program, 110 buildings in VT have achieved LEED certification through a combination of building standards, energy efficiency, and renewable energy measures.¹⁵⁸ However, this type of GHG reduction is accessible only to businesses that are willing to do significant renovation of existing buildings and/or commit to new building infrastructure.

Industrial Segment

The industrial/manufacturing sector employs 10% of Vermont’s workforce, represents an estimated 9% of Vermont’s GDP, and produces 0.3 MMT of CO₂e/yr of emissions.¹⁵⁹ Chittenden County has Vermont’s largest concentration of manufacturing jobs, with 40% of jobs. Vermont’s manufacturing segment includes various industries, including specialized manufacturers such as GlobalFoundries, Onlogic, GE Aviation, and traditional forestry, mining, and agriculture products-based manufacturers.

Recommendations

To facilitate effective implementation of the CHS in the commercial and industrial sectors, leaders in these sectors should be given the opportunity to consult with the Legislature. The State should increase awareness in the commercial and industrial sector of the many energy financing opportunities available,

<p style="text-align: center;">Recommendation</p> <p style="text-align: center;">Facilitate commercial and industrial participation in CHS implementation</p>
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¹⁵⁷ [NV5](#), *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*. Prepared for the Vermont Department of Public Service. September 1, 2024

¹⁵⁸ [US Green Business Council](#), *LEED Directory*, retrieved December 2, 2024.

¹⁵⁹ [Energy Action Network](#), “Statewide GHG Emissions Dashboard”, VT Thermal emissions 1990-2021, retrieved December 2, 2024.

and support businesses in applying for funding. A comprehensive approach to incorporating all available opportunities can reduce costs and improve adoption of clean heat measures.

Recommendation

Leverage energy funding opportunities targeted to commercial and industrial sectors.

Programs such as green business certification (LEED certification and other energy certification programs) with loan support from banks, can be leveraged in partnership with commercial real estate companies to address GHG emission reduction initiatives.

Vermont can also leverage the current U.S Treasury’s State Small Business Credit Initiative (SSBCI) to drive innovation in GHG emission reduction in small businesses in the renewable energy, agriculture, manufacturing, and healthcare sectors.¹⁶⁰ The Vermont Economic Development Authority (VEDA) has submitted three different applications to the federal program with the intent to get capital funding for around \$50 million.

Vermont should also integrate CHS implementation with available funding from the Inflation Reduction Act (IRA) available through 2033 for energy efficiency programs in commercial buildings and alternative energy generation for industrial processes.

Obligated Parties

Overview

Under Act 18, the Obligated Parties are entities that import heating fuel for ultimate consumption within Vermont or are entities that produce, refine, manufacture, or compound heating fuel within the state for ultimate consumption within the state. This includes Vermont Gas Systems (VGS) and fuel importers and dealers of various sizes throughout Vermont. fuel importers and dealers of various sizes throughout Vermont.

Challenges

Ensuring Equity Among Obligated Parties

The Equity Advisory Group reviewed concerns raised by the Public Utility Commission about obligated parties in the Draft Clean Heat Standard Rule Companion Status Report issued on October 1, 2024.¹⁶¹ The regulatory framework proposed under the CHS introduces significant challenges, particularly for the hundreds of small, locally owned businesses that may become obligated parties under a potential CHS. Unlike larger energy providers or public utilities, these businesses lack familiarity with the Commission’s complex regulatory processes. This could create inequities amongst energy providers by placing smaller entities at a competitive disadvantage. The CHS could disproportionately impact small businesses, many of which are family-owned operations with limited resources. These businesses, which primarily serve rural

¹⁶⁰ [U.S. Department of the Treasury](#), “State Small Business Credit Initiative”, retrieved December 2, 2024.

¹⁶¹ [Vermont Public Utility Commission](#), Draft Clean Heat Standard Rule Companion Status Report, October 1, 2024.

communities, face significant challenges associated with compliance. A CHS could favor larger energy corporations over smaller suppliers, potentially destabilizing Vermont's competitive fuel market.

Operational Challenges and Timelines

As of December 2024, the cost of compliance credits is still undetermined, posing challenges for obligated parties preparing for potential enactment. The Proposed Rule assumes many obligated parties will rely on the Default Delivery Agent (DDA) to meet obligations. If this is accurate, the DDA fee needs to be established at least nine months before implementation. This advance notice is critical for businesses offering fixed-price programs, which Vermonters of all income levels depend on for winter fuel price stability. Uncertainty in credit costs could undermine the effectiveness of such programs. Obligated parties require clear guidance and adequate lead time to account for compliance costs. Without this, small businesses may face unanticipated penalties or expenses they cannot absorb, potentially leading to market exits. Such disruptions could reduce consumer choice, drive consolidation by larger corporations, or jeopardize access to essential heating services, particularly in rural areas.

The CHS Draft Rule requires fuel dealers to report sales and develop compliance plans within tight timeframes.¹⁶² All fuel suppliers, not just obligated parties, are required by Act 18 to report sales data by June 30th every year. Under a potential CHS, the Commission will determine credit obligations and require compliance plans 31 days later, on August 1. This compressed timeline creates administrative challenges for both the Commission and the regulated entities. Smaller businesses may need help aligning their operations with these requirements, which undermines their ability to participate effectively in the clean heat marketplace envisioned by Act 18.

Accountability and Market Loopholes

The CHS's reliance on prior-year sales data to calculate credit obligations creates a significant enforcement gap. Fuel wholesalers and retailers with no fixed assets in Vermont can enter the marketplace in October and avoid compliance fees by exiting in April. This undermines the CHS's intent and disadvantages long-standing local businesses, which bear the entire burden of compliance. Enhanced enforcement mechanisms are necessary to close this loophole and ensure a level playing field.

¹⁶² [Vermont Public Utility Commission](#), Draft Proposed Rule, 8.113(a)(1), in Case No. 23-2220-RULE, October 1, 2024.

Recommendations

Under Act 18, "heating fuel" includes all fuel sales in the Residential, Commercial, and Industrial (RCI) sectors. This broad definition unnecessarily extends CHS obligations to hardware, garden supply, and convenience stores that sell small quantities of propane and kerosene. These canisters of fuel are most often used for cooking fuel or emergency heat. Excluding these sales from CHS requirements would significantly reduce the number of regulated entities, alleviating some administrative burdens for the Commission. It will also remove an unnecessary regulatory burden from these community stores and ensure greater access to these essential commodities for Vermonters.

Recommendation

Adjust the regulatory scope of included fuel sales

Recommendation

Improve clarity, engagement, and enforcement among obligated parties

The CHS framework, as proposed, risks destabilizing Vermont's heating fuel market by creating uncertainty around compliance costs, imposing disproportionate burdens on small businesses, and lacking effective enforcement measures. These challenges could lead to market exits, reduced competition, and higher costs for consumers. To

address these risks, the Commission should prioritize regulatory clarity, equitable enforcement, and mechanisms to support small businesses in adapting to a potential CHS. A predictable and transparent regulatory structure is essential to maintaining a competitive market that serves low and moderate income Vermonters, particularly those living in rural areas of the state.

Recommendations for Implementing the Clean Heat Standard

The section below describes how the Clean Heat Standard should be implemented procedurally to ensure equity. Recommendations on complementary programs or other policy suggestions to promote equitable implementation for specific groups are provided throughout the section on *Clean Heat Standard Impacts* (starting pg. 24). These recommendations are also listed in Appendix A.

Ongoing Equity Review

Act 18 calls for the EAG to dissolve when the initial clean heat standard rules are adopted.¹⁶³ It assigns the responsibility to assess equitable outcomes to the Commission through the process described in 30 V.S.A. § 8124(h)(3):

"On or before January 15 of each year following the year in which the rules are first adopted under this chapter, the Commission shall submit to the standing committees a

¹⁶³ 30 VSA § 8129(c)

written report detailing the implementation and operation of the Clean Heat Standard. This report shall include an assessment on the equitable adoption of clean heat measures required by subsection (d) of this section, along with recommendations to increase participation for the households with the highest energy burdens...”

The EAG believes that the Clean Heat Standard framework does not yet adequately address the equitable adoption of clean heat measures.

To ensure that the Commission’s annual written report is robust, comprehensive, and meaningful the EAG recommends that the Commission formally collaborate with the Climate Council’s Just Transitions Subcommittee and the Environmental Justice Advisory Council. The Commission’s annual review and reporting process should use the equity rubric created by the EAG, and it should evaluate the CHS in light of harmful consequences, including but not limited to those identified in 30 V.S.A §8127(h), as well as the environmental burdens identified in 3 V.S.A §6002(2).

Ensuring equitable outcomes is essential to the success of Act 18, and therefore the EAG recommends that equity work and assessments of the Clean Heat Standard be funded, implemented, and continued throughout the existence of the program.

However, any equity assessment and work that is completed must *proactively* center equity in the body of work rather than simply *reactively* measure it. This approach is recognized by the Vermont Climate Council Just Transitions Subcommittee.¹⁶⁴

The Commission must be clear and transparent in its equity assessment after implementation and allow for a process of accountability by, for example, using a set of pre-existing metrics by which progress toward equitable outcomes could be measured, and actions could be taken to improve disparities as they arise. The EAG recommends using the Equity Rubric it developed to review future decisions made to implement the CHS.¹⁶⁵

Ongoing and Iterative Public Engagement

Given the compressed schedule and short amount of time that Act 18 provided to the Commission for conducting a public engagement strategy to hear from citizens and stakeholders across the state on a very complex but comprehensive thermal sector emissions reduction strategy, the EAG recommends that ongoing public engagement continues over time if the CHS is implemented.

Such a comprehensive and all-encompassing market-based strategy to reduce thermal sector emissions has the potential to dramatically shift the way Vermonters heat their homes. This shift will not come without some disruption, and it is important that the public have opportunities to engage with State regulators to have questions answered and aid in the resolution of any potential marketplace equity issues or concerns that may arise over time.

¹⁶⁴ [Vermont Climate Council](#), Just Transitions Subcommittee, Guiding Principles for a Just Transition, August 2021.

¹⁶⁵ [Vermont Public Utility Commission](#), *Clean Heat Standard Equity Advisory Group Equity Rubric*, May 30, 2024. See Appendix C.

The Commission must provide local communities and stakeholders – including obligated parties - the opportunity to collaborate on an ongoing basis with the Commission and provide input to ensure the policies that directly affect them have equitable solutions that meet specific community needs. Policies must be made not just for impacted communities, but *with* impacted communities.

The EAG recommends that regular public engagement by the Commission be funded and continued, particularly in the initial years of program implementation, in order to educate the public about how the CHS credit marketplace is intended to function and the role of market actors and participants. Most importantly, the Commission should gather feedback on aspects of the policy that are working or not working so that the Commission can make changes or recommend changes to the Legislature.

Ensure Consumer Protection

Since clean heat credits will hold monetary value, the EAG recommends that strong consumer protections be included in the CHS rules including language relating to the validity of CHS credit claims and consequences that may result from false claims. The Commission must closely assess whether customers receive adequate information about the value of clean heat credits associated with projects in their homes. It must ensure that the credit marketplace is operated transparently and fairly for all participants. The Department of Public Service, in their function as the ratepayer advocate, might be the neutral party in the clean heat standard, to support the public with concerns or confusion regarding the clean heat standard market. The EAG acknowledges the importance of this role, and that there needs to be clarity and streamlined information that is distributed to the consumer around how the registration process works to claim a clean heat credit, and who to contact to resolve issues.

Conclusion

The Equity Advisory Group reiterates its concerns that, absent significant policy changes, the potential benefits of the Clean Heat Standard will not be experienced by many of the most vulnerable Vermonters.

In its companion report to the Draft Rule released in October 2024, the Public Utility Commission suggested that establishing a clean heat credit marketplace may not be feasible in a single small state like Vermont and expressed concerns about available funding to enact the program.¹⁶⁶ The Commission reported that it intends to provide alternative proposals to meet Vermont’s greenhouse gas emission reduction goals for the thermal sector, which may include a new thermal energy benefit charge and clean fuel programs. The details of potential alternative proposals were not available to the EAG at the time this report was drafted in December 2024, and reviewing such details and exceeds the scope of its duties under Act 18.

¹⁶⁶ [Vermont Public Utility Commission](#), *Draft Clean Heat Standard Rule Companion Status Report*, October 1, 2024.

For any programs that it might enact to promote thermal emissions reductions, the Legislature must obtain and closely consider the total estimated impacts on fuel prices and ensure that these costs can reasonably be borne by low and moderate income Vermont households.

The Legislature must also reevaluate how it has historically approached investments in emissions reductions, ensuring that our inequitable past does not continue into the future. This includes dismantling the many barriers to clean heat measure adoption discussed throughout this report and ensuring that deep and sustained investments are made in programs that can effectively reach disadvantaged communities.

Appendix A: List of Recommendations

Recommendations on solutions to promote equity in the Clean Heat Standard are provided throughout the section on Clean Heat Standard Impacts, broken down by the demographic group that those recommendations are intended to support, and include additional content on why the Equity Advisory Group feels those recommendations are needed. These recommendations are also listed below.

- Homes Unable to Implement Clean Heat Measures
 - a. Provide increased and sustained funding for home repair programs that serve all of Vermont’s housing stock.
- Vermonters of Color, Indigenous Vermonters, and New Americans
 - a. Make translation services and plain language descriptions readily available throughout public outreach processes during CHS implementation.
 - b. Select Default Delivery Agents(s) with experience and capacity for reaching New American and with Limited English Proficiency (LEP) households.
- Low Income Households
 - a. Continue to improve program and funding alignment.
 - b. Continue to increase Weatherization Assistance Program worker salaries.
 - c. Increase fuel flexibility for LIHEAP recipients.
 - d. Expand EAP assistance to other utilities.
 - e. Sustained support for consumer navigation services
- Moderate Income Households
 - a. Support and align existing programs.
 - b. Improve customer communication and reduce consumer confusion.
 - c. Increase workforce development to serve moderate income customers.
- Renters and Landlords
 - a. Expand weatherization programs targeted to moderate income renters, using existing programs where possible.
 - b. Pair substantial state investments in rental properties with tenant protections to limit displacement.
 - c. Incentivize adoption of window unit heat pumps and create companion regulations to allow renters to access technology.
 - d. Add basic weatherization requirements to Vermont Residential Rental Housing Health & Safety Code.
- Mobile Home Residents

- a. Adopt recommendations of the Mobile Home Task Force.
 - b. Ensure fair access, participation, and support for mobile home residents.
 - c. Providing technical assistance and building community partnerships.
 - d. Leverage existing programs supporting mobile home residents.
 - e. Expand funding for manufactured home replacement.
- Commercial, Industrial, and Other Nonresidential Customers
 - a. Facilitate commercial and industrial participation in CHS implementation.
 - b. Leverage energy funding opportunities targeted to commercial and industrial sectors.
- Obligated Parties
 - a. Adjust the regulatory scope of included fuel sales.
 - b. Improve clarity, engagement, and enforcement among Obligated Parties.

Appendix B: Additional Comments from Individual Equity Advisory Group Members

These additional comments are solely the opinions of individual Equity Advisory Group Members and do not represent the Equity Advisory Group as a whole.

Vermont has the third oldest population of any state, with Maine being first and New Hampshire second. This translates into approximately 185,000 Vermonters who are 60 or older, about 30% of the state's population. This demographic is growing and will continue to do so for the next several years before finally leveling off.

I have attached an analysis of details for this demographic which many may find useful.

Approximately 2/3rds of Vermonters 60 and older are retired or otherwise out of the labor force. 60% of retired Vermonters receive 50% of their income from social security and 25% rely on social security only. This means that a very large number of our older citizens are entirely or substantially reliant on fixed sources of income. 82% of Vermonters 60 and up own their own homes. According to the attached document, even with no mortgage costs, these owners are paying 30% or more of their income on monthly ownership costs. About 40% of LIHEAP benefits go to households with at least one resident 60 or older.

It seems clear that any substantive increase in heating costs for this demographic is simply not affordable. The estimated increase in heating fuel costs is not supportable for this group. For those depending on LIHEAP this is an even bigger issue as, by definition, they are low-income households to begin with, and it is highly unlikely that the LIHEAP benefit would be increased enough to offset the fuel cost increase.

The other side of the initiative, changing an existing heating system to one not using fossil fuels, is an even bigger issue. I can provide an anecdotal example to illustrate this.

I am 75 years old and continue to work a full-time job by choice. This means that, although I am by no means low income eligible, I am a long way from being wealthy.

My wife and I live in a 1,900 sq. ft., Queen Anne Victorian built in 1890. We have taken steps to upgrade the insulation the last several years and the house is relatively well insulated with double-pane windows throughout and 18" of cellulosic fiber blown into the attic. For 15 years we had been heating with a Harman wood pellet fired forced air furnace. For various reasons, chief among them the increased difficulty at my age to be lugging 40 lb. bags of pellets around (retrofitting to a silo/auger system was not feasible), and the chore of ongoing weekly maintenance and even more in-depth maintenance after every ton of pellets had been through it during the heating season, caused us to want to change to a different heating system. Our first choice was a ducted heat pump system. I had estimated that this was going to cost us about \$12,000. I received three estimates from three reputable HVAC contractors, all of which came in at around \$21,000. This was higher than I had originally thought, as we were including a back-up heating coil as part of the system, and they were going to have to add additional ductwork to get the system to work efficiently. At first, we were going to bite the bullet and do it, but then came the kicker. We discovered that we were going to have to upgrade the house's electric service from 100 amps to 200 amps which was going to cost an additional \$11,000 for the electrician and an additional sum to pay our electric utility to upgrade the line to the house. This would drive the total cost up to over \$32,000. This was simply considerably more than we could afford, especially as there was no

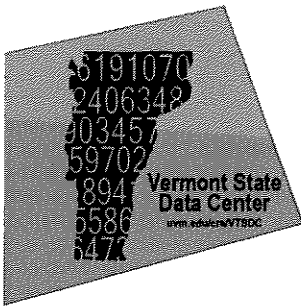
guarantee that our heating costs would be reduced over what we had been paying for wood pellets. We chose instead to install a new, ultra-high efficiency propane furnace at a cost of \$11,000, which in this last heating season, cost us considerably less than what we had been paying for wood pellets.

I include this to demonstrate that it is simply not going to be feasible and affordable for many, if not most, older Vermonters to change their heating systems from one burning fossil fuels to heat pump systems even with rebates or other subsidies. At the moment, the rebate from Efficiency Vermont is \$600 and the Federal tax credit is 30% of the cost with a maximum credit of \$2,000. I know, because I just had a heat pump domestic hot water system installed, and net of rebates and tax credit, it still cost me \$4,400.

And then there are renters. About 18% of Vermonters 60 and older rent. 48% are spending 30% or more of their income on rent. If their landlords end up paying the increased cost per gallon for heating fuel or, alternatively, change to heat pump systems, that cost is going to be passed on to their renters, creating an insupportable rent hike. Yes, part of these costs may be offset by subsidies, but I am dubious about the subsidies being enough to make a real difference.

Respectfully submitted,

John T. Mandeville
Executive Director
Central Vermont Council on Aging



65+ Elders in Vermont

From the Vermont State Data Center

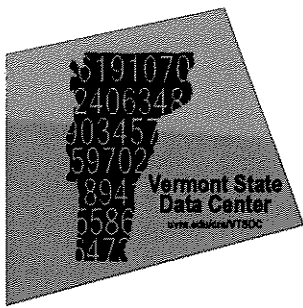
Source: 2011 & 2021 American Community Survey

- In 2021 about 133,173 Vermonters were 65 years or older, or about **20.6%** of all Vermonters.
 - In 2011 about **14.9%** of Vermonters were 65 years old or older.
- In 2021 **22.0%** of 65+ Vermonters were in the labor force.
- The average income/earnings for the 65+ population in Vermont in 2021 was about **\$59,180**.
- **9.1%** of Vermonters 65 years or older were at or below the poverty level in 2021.
 - In 2011 about **7.0%** of 65+ Vermonters were at or below the poverty level.

65+ Renters in Vermont	2011	2021
Percent renting	19.5%	18.7%
Median gross rent	\$667	\$889
Gross rent 30% or more of household income	50.3%	51.4%

65+ Homeowners in Vermont	2011	2021
Percent owning	80.5%	81.3%
Median monthly owner costs (no mortgage)	\$608	\$714
Monthly owner costs 30% or more of household income	37.3%	29.3%

- **18.7%** of Vermonters 65 or older rent their home, with a median gross rent of **\$889** in 2021.
 - For **51.4%** of renters, rent consumed 30% or more of their household income.
- **81.3%** of 65+ VT'ers own their home, with median monthly costs of about \$714 (those without a mortgage).
 - For **29.3%** of these owners, monthly housing costs were 30% or more of their household income.
- The median home value for homes owned by 65+ Vermonters in 2021 was **\$268,200**.
- In 2021, about **11,169** 65+ males and **23,635** 65+ females lived alone in Vermont.
 - In total, **34,804** 65+ Vermonters lived alone in 2021, about **26.1%** of the 65+ population.
- **2.3%** of 65+ VT'ers lived with grandchildren under 18 years of age and **0.3%** were responsible for their grandchildren in 2021.
- **58.9%** of 65+ Vermonters were married, **18.2%** were widowed and **15.9%** were divorced.
- In 2021 about **5,083** 65+ Vermonters lived in group quarters such as, but not limited to, care facilities.
- **29.2%** of Vermonters over 65 years of age have a disability



60+ Elders in Vermont

From the Vermont State Data Center

Source: 2011 & 2021 American Community Survey

- About 183,157 Vermonters were 60 years or older in 2021. About **28.4%** of all VT'ers.
 - In 2011 about **21.8%** of Vermonters were 60 years old or older.
- **33.5%** of Vermonters 60 years or older were in the labor force in 2021.
- The average income/earnings for the 60+ population in 2021 was about **\$71,769**.
- **9.0%** of Vermonters 60 years or older were at or below the poverty level in 2021.
 - In 2011 about **6.7%** of 60+ Vermonters were below the poverty level.

60+ Renters in Vermont	2011	2021
Percent renting	18.7%	17.7%
Median gross rent	\$671	\$874
Gross rent 30% or more of household income	51.0%	48.3%

60+ Homeowners in Vermont	2011	2021
Percent owning	81.3%	82.3%
Median monthly owner costs (no mortgage)	\$611	\$724
Monthly owner costs 30% or more of household income	34.5%	27.5%

- In 2021 **17.7%** of 60+ Vermonters rented their home. Their median gross rent was **\$874**.
 - For **48.3%** of 60+ renters, rent consumed 30% or more of their household income.
- **82.3%** of 60+ VT'ers owned their home in 2021, with median monthly owner costs of \$724 (those without a mortgage).
 - For **27.5%** of owners, monthly housing costs were 30% or more of their household income in 2021.
- The median home value for homes owned by Vermont's 60+ homeowners was \$266,600 in 2021.
- In 2021 about 71,431 60+ Vermonters lived alone. This was about 39% of the 60+ population.
- **61.2%** of 60+ Vermonters are currently married, **14.1%** are widowed and **16.7%** are divorced.
- **2.4%** of 60+ VT'ers lived with grandchildren under 18 years of age and **0.4%** were responsible for their grandchildren in 2021.
- **25.3%** of Vermonters over 60 years have a disability.

The **Vermont State Data Center**, funded through the Agency of Commerce and Community Development:

- Coordinates with the U.S. Census Bureau on local data collection and feedback processes to ensure efficient and accurate VT data production;
- Represents Vermont data producers and users at the Federal level;
- Provides technical assistance to VT data users in accessing and using Census data, and;
- Conducts outreach and education that facilitates data-driven research, administration, planning and decision-making.

January 7, 2025

Legislators and Public Utilities Commissioners,

These comments are my own and do not necessarily represent others on the EAG.

The Clean Heat Standard (CHS) is remarkable in a few unique ways: it includes a legislative check-back clause, it encourages robust public input and allows any interested individual to register as a participant in the CHS proceedings, and it recognizes that there very well may be harmful consequences resulting from its adoption. No other statute that I am aware of includes these public considerations. Thank you for including them. I ask that whatever final version of the CHS you adopt include similar language to encourage public participation and acknowledge potential harms.

I'd like to recognize several members of the public who not only provided thoughtful, well reasoned concerns about the costs, health and environmental harms that the CHS would create, but also often provided alternative solutions to meet the goals of reducing greenhouse gasses in the thermal sector. Before taking any position on this or any future legislation related to thermal sector greenhouse gas reductions, please read the comments submitted by Laura Haight, Thomas Weiss, John McCormick, Ray Albrecht, and Nicholas Persampieri. Please also review the report the PUC provided to the Legislature over four years ago in response to *Act 62 of 2019*.¹

The CHS, I believe, is an experiment the legislature was correct to start, but an experiment which the legislature must now end. Many of you who have followed the proceedings, who have witnessed colleagues lose their legislative seats for supporting the CHS, recognize, and perhaps always knew, that the CHS is both too complicated and too expensive for already energy-burdened Vermonters. An early draft of S.5, inaptly named the "Affordable Heat Act," included this revision:

It shall ~~minimize adverse impacts to~~ enhance social equity by prioritizing customers with low income and moderate income and those households with the highest energy burdens.

Deleting the reference acknowledging the adverse economic impacts, and instead suggesting the CHS promotes social equity—this one example edit might be the most concise impetus for constituent anger over the CHS.

The original EAN white paper suggests that a "market-based program" can both reduce greenhouse gasses and lower the costs of clean heat measures such as heat pumps.² This belief that a market-based CHS will lower costs was reiterated by one its most vocal proponents at a recent PUC workshop.³ In the 1990's, a principle author of the EAN white paper argued, incorrectly, that deregulating the utility industry would lower costs for consumers.⁴ Too many low- and moderate-income Vermonters cannot currently afford to house their families or heat their homes, and the legislature should not assume that invisible hands and market-forces are going to correct this imbalance. The contractor adage "good, cheap, quick, pick two" holds true for the CHS as well, and if the Paris Agreement and the Vermont GWSA are to have any effect we must choose "quick." Reducing our greenhouse gasses is going to be expensive, and the legislature must find a more direct method than this CHS to ensure that the cost is borne by those who can afford it. Not by chance, the wealthier among us also have the largest carbon

1 https://puc.vermont.gov/sites/psbnew/files/doc_library/act-62-final-report-amendment-020321.pdf

2 <https://eanvt.org/wp-content/uploads/2021/12/CHS-Final-December-16-2021-copy.pdf>

3 <https://youtu.be/pZoF3ZVxmUg?si=i1mchxXd0JjVcC5I&t=3152>

4 <https://vtdigger.org/2023/02/22/annette-smith-true-believers-are-driving-vermonts-climate-plans/>

footprint, so redirecting money from the wealthy to reduce Vermont's thermal sector greenhouse gases will both enhance social equity and minimize adverse economic impacts on low- and moderate-income Vermonters

In addition to expressing concerns about costs, members of the public and organizations like the Northeast States for Coordinated Air Use Management (NESCAUM), and the Conservation Law Foundation (CLF) expressed concerns about the health and environmental harms that the CHS would create.

The most recent draft of CHS Technical Advisory Group (TAG) *Health Impacts and Considerations for the Clean Heat Standard* lists these bullet points:

Based on a 2022 VDH analysis using the EPA Co-Benefits Risk Assessment (COBRA) tool:

- 97% of the monetizable health impact from residential heating emissions in Vermont is attributable to wood fuel combustion.
- The monetizable health impact of residential wood heating in Vermont is \$105M-\$238M (about 30x greater than for all other residential fuels combined).
- Pollution from wood heating is associated with 10-22 early deaths (about 20x greater than for all other residential fuels combined).
- Cancer risk from wood heating pollution is 2.5 per million (about 20x greater than for all other residential fuels combined).
- Replacing fossil fueled heating with wood heating, especially cordwood, would likely have a harmful impact on human health due to increased emissions of multiple air pollutants. The magnitude depends on what type of wood heating equipment and fuel is used and what is being replaced.

The final TAG *Health Impacts* was not available before the EAG report submission deadline; however, because the TAG memo is based on the Vermont Department of Health 2022 analysis,⁵ the health costs related to wood combustion are unlikely to change between the draft version, cited here, and the yet-to-be-published final version available later this year.

Like the TAG *Health Impacts* memo, final version of the TAG's *Technical Resource Manual (TRM)*, was not available in time for this report. TAG members have been very thoughtful and considered thus far and I have hope that it will draft a TRM that leads to actual reductions in thermal sector greenhouse gasses without shifting and increasing greenhouse gasses onto and in the agricultural and forestry sector. However, in my opinion, the TAG is too heavily represented by the biofuel industry and under represented by climate scientists, so I want to warn the legislature that depending on the final version of the TRM, which the TAG is basing in part on the California Air Resource Board (CARB) Low Carbon Fuel Standard (LCFS), the final CHS TRM could result in calculated paper reductions in greenhouse gases without any actual corresponding reductions in greenhouse gasses. Environmental organizations have recently sued California over the LCFS,⁶ and Vermont will see similar suits if the TRM does not accurately recognize the emission factors of wood and biofuels.

I leave you with several additional recommendation to help lower consumer costs, reduce carbon emissions, promote carbon storage, and reduce health harms:

5 VDH_WoodHealth_June29_2022.pdf

6 <https://earthjustice.org/press/2024/environmental-justice-group-sues-california-agency-over-flawed-low-carbon-fuel-standard-changes>

- Update the Use Value Appraisal program to allow land owners enrolled in the UVA to opt out of required periodic logging if they choose.
- Quickly enact legislation that will stop the Worcester Range and Telephone Gap logging projects, which will log over ten-thousand acres, including over 800 acres of old-growth forests and emit hundreds of thousands tons of CO₂.
- Acknowledge the enormous health harms and the \$105M-\$238M annual health costs associated with wood-combustion in the thermal sector, and repeal legislation and funding that incentivizes wood-combustion and “advanced wood heating” systems.
- Require that the Department of Public Service to acknowledge and include the negative health impacts, the monetized health costs, and estimated number of premature deaths that its plans for increased wood-combustion would create in its next *Vermont Comprehensive Energy Plan*.
- Electricity from wood-combustion is both more polluting and more expensive than readily available alternatives. McNeil, the single largest source of Vermont greenhouse gases, for example, lost over \$4,700,000 for electric rate payers in 2023 and over \$8,000,000 in 2024.⁷ If you are serious about reducing costs for Vermonters, repeal legislation that subsidizes and incentivizes energy from Ryegate and McNeil, and pass legislation that prohibits all new biomass electric plants.
- Increase legislative transparency by requiring all introduced bills identify the individual author or authors of the bill. Who actually authored the CHS? Legislators in house and senate subcommittees stated that the Affordable Heat Act was drafted by the Vermont Climate Council while climate councilors at council meetings advised that the legislature drafted the AHA. The answer would help shed light on the loopholes found in the CHS that so angered your constituents.
- Increase taxes on fossil fuels, including natural gas, and redirect that money to LIHEAP and weatherization programs for low and moderate income households.

Pike Porter
EAG member

⁷ <https://www.burlingtonelectric.com/wp-content/uploads/Joint-Owner-Meeting-Packet-120224.pdf>

Appendix C: Clean Heat Standard Equity Advisory Group Equity Rubric

Clean Heat Standard Equity Advisory Group

Equity Rubric

Adopted April 16, 2024

Revised May 28, 2024

Preamble:

Whereas the Climate Council Just Transitions Subcommittee drafted the [Guiding Principles for a Just Transition \(Guiding Principles\)](#) in August 2021; and

Whereas the *Guiding Principles* advises that “[s]tudies continue to show that low-income communities, indigenous peoples, and black and other communities of color are among those who are particularly vulnerable to the impacts of climate change”; and

Whereas low- and moderate-income and historically marginalized, disadvantaged and under-served communities include Indigenous communities; people of color; new Americans; mobile home communities; renters, including subsidized housing renters; communities near electric plants, fuel-manufacturing plants, and fracking sites; and rural and floodplain communities; and

Whereas Vermonters have also been historically marginalized or may be marginalized due to language barriers, gender inequality, LGBTQ status, socioeconomic status, education level, employment status, disability, immigration status, religious beliefs, culture, or incarceration history; and

Whereas the *Guiding Principles* were drafted to help guide the Climate Council and its subcommittees ensure that strategies to reduce greenhouse gas emissions...benefit and support all residents of the State of Vermont fairly and equitably”; and

Whereas the *Guiding Principles* defined equity to include distributive equity which “*starts by recognizing disparities in the allocation of resources, health outcomes, the inequities in living conditions and lack of political power place frontline / impacted communities at greater risk. Distributive equity strategies target resources to adaption and mitigation affecting the communities and populations most impacted*”; and

Whereas the *Guiding Principles* defined equity to include Procedural equity; which is “*often referred to as equitable planning and implementation. Equitable planning and implementation require that communities have a meaningful opportunity to participate. Policymakers must collaborate with communities to learn about their perspectives so that solutions meet community needs. Equitable planning focuses on the local level and ensures that local communities have the opportunity to provide input on policies that directly affect them;*” and

Whereas the *Guiding Principles* defined equity to include Contextual equity which “*ensures that mitigation and adaption strategies take into account that low-income communities, black communities, indigenous communities and people of color, and people with disabilities, amongst others, are often more vulnerable to climate change. Contextual equity ensures that the development of mitigation and adaption strategies at statewide and local levels take these disparities into account;*” and

Whereas the *Guiding Principles* defined equity to include Corrective Equity which “*ensures that mitigation and adaption strategies provide communities with clear processes to hold the state accountable to its commitments to pursue equity;*” and

Whereas the Clean Heat Standard was enacted in May, 2023; in order to help “meet the greenhouse gas emission reductions required by the GSWA”; and

Whereas the Clean Heat Standard established the Equity Advisory Group to assist the Public Utility Commission “in developing and implementing the Clean Heat Standard in a manner that ensures an equitable share of actions are delivered to Vermonters with low income and moderate income”; and

Whereas the Clean Heat Standard directs the Commission to “biennially assess harmful consequences that may arise in Vermont and elsewhere from the implementation of specific types of actions and shall set standards or limits

to prevent those consequences”; and

Whereas these harmful consequences include but are not limited to “environmental burdens as defined in 3 V.S.A. § 6002, public health, deforestation or forest degradation, conversion of grasslands, increased emissions of criteria pollutants, damage to watersheds, or the creation of new methane to meet fuel demand”; and

Whereas these consequences have a disproportionate harmful consequence on low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters; and

Whereas among the duties of the Equity Advisory Group is “supporting the Commission in assessing whether customers are equitably served by actions and how to increase equity”; and

Whereas the *Guiding Principles* is meant to ensure that disenfranchised populations are not unduly impacted by emissions transformation projects including proposed actions under the Clean Heat Standard; and

Whereas the *Guiding Principles* was not drafted specifically to evaluate potential eligible actions, but the *Guiding Principles* does provide a rubric that the Equity Advisory Group can build upon; and

Whereas the EAG dissolves upon the implementation of the Clean Heat Standard, though equitable actions are needed after the dissolution of the Equity Advisory Group;

Therefore, the Equity Advisory Group offers this rubric to:

1. to assist the Commission in developing and implementing the Clean Heat Standard in a manner that ensures an equitable share of actions are delivered to Vermonters with low and moderate incomes;
2. to assist the Commission in assessing whether proposed actions will equitably serve all Vermonters;
3. for adoption by the Technical Advisory Group to assist the Technical Advisory Group to evaluate proposed actions through an equity lens.

Instructions:

Step	Action
1	Prepare Draft Policy <ul style="list-style-type: none">• Develop the draft policy that needs to be assessed.
2	Complete the Equity Rubric <ul style="list-style-type: none">• Multiple individuals with diverse perspectives should fill out the rubric independently to ensure a comprehensive evaluation.• For each section of the rubric, check the appropriate box (Harm, Neutral, Benefit) for each question.• If the box for "Harm" is checked, provide detailed justification, and suggest possible revisions to mitigate the harm.
3	Identify and Address Harmful Impacts <ul style="list-style-type: none">• Based on the completed rubrics, identify any potential harmful impacts of the proposed policy, and discuss as a group.• Modify the draft policy to eliminate or mitigate identified harms.• Ensure transparency about the potential impacts and consider steps to mitigate them if the policy is implemented.
4	Finalize Policy Recommendations with Equity Considerations <ul style="list-style-type: none">• Incorporate the equity considerations into the final policy document.• Clearly document how the equity assessment influenced the policy revisions.• Include specific measures to monitor and ensure equitable outcomes during implementation.

Clean Heat Standard - Equity Rubric

1. Health <i>The proposed action should improve health (physical and mental) outcomes for low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters. The strategy upholds the fundamental human right to safe, clean, healthy and adequate air, water, land, and housing.</i>	Harm	Neutral	Benefit
1. Does the proposed action reduce air pollution (CO2 and other greenhouse gasses, PM 2.5, Ozone, VOC, NOx, etc.) and reduce asthma and other respiratory-related hospital visits?			
2. Does the proposed action extend the expected longevity and/or quality of life for populations experiencing health disparities?			
3. Does the proposed action reduce stress, anxiety, and depression, and improve mental health?			
4. Does the proposed action help restore or protect ecosystem health (air, land, water, soil)?			

Overall response to these questions with justification:

Clean Heat Standard - Equity Rubric

2. Affordability <i>The proposed action should lower and stabilize costs related to home heating as well as basic living needs (housing, food, utilities, healthcare, transportation, etc.) for low- and moderate- income and historically marginalized, disadvantaged and under-served Vermonters.</i>	Harm	Neutral	Benefit
1. Does the proposed action prioritize low- and moderate-income Vermonters?			
2. Is the proposed action affordable to residents, and/or does the proposed measure offer inclusive financing strategies that prioritize the most income-burdened populations? (be specific about whether you're financing through an organization or the city, etc)			
3. Does the proposed action reduce energy cost burdens and the number of families that are cost-burdened by housing including utilities?			
4. Does the proposed action generate burdens (including financial, and health costs), either directly or indirectly, onto others including communities of color or low-income populations? If yes, are there opportunities to mitigate these impacts?			
5. Are grants available for low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters to access the proposed action and/or does it offer these Vermonters inclusive financing at favorable rates?			
6. Will low- and moderate-income and historically marginalized, disadvantaged and under- served Vermonters lose fuel subsidies as a result of the proposed action?			

Overall response to these questions with justification:

Clean Heat Standard - Equity Rubric

3. Accessibility <i>The proposed action should remove barriers and promote access for low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters.</i>	Harm	Neutral	Benefit
1. Does the proposed action expand access to actions for low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters?			
2. Does the proposed action remove barriers that might prevent individuals in low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters from benefiting fully if the action were implemented as communicated?			
3. Does the proposed action increase access to eligible actions for households living in manufactured homes and/or manufactured home communities?			
4. Does the proposed action increase access to eligible actions for renter households?			
5. Is the proposal action expressed in clear language accessible to all Vermonters?			

Overall response to these questions with justification:

Clean Heat Standard - Equity Rubric

4. Just Transition <i>The proposed action should ensure economic justice so that low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters are prioritized in the benefits of the action and are protected from any potential negative consequences.</i>	Harm	Neutral	Benefit
1. Does the action support low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters through workforce development, and contracting opportunities?			
7. Does the proposed action prioritize low- and moderate-income Vermonters?			
2. Does the proposed action create local opportunities for livable wage jobs for low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters			
3. Does the proposed action place responsibility on institutions and businesses to address historical disparities in contributing to climate change?			

Overall response to these questions with justification:

Clean Heat Standard - Equity Rubric

5. Community <i>The proposed action should elevate the voices of low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters by developing and strengthening the skills, abilities, and resources that a community needs to survive, adapt, and thrive.</i>	Harm	Neutral	Benefit
1. Does the proposed action engage and continue to empower low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters in a meaningful, authentic, and culturally appropriate manner? Does it respect community- based knowledge and is it based on community identified needs and input/feedback?			
2. Does the proposed action help build community capacity through funding, educational opportunities, and/or other resources?			
3. Does the proposed action include a plan to respond comprehensively to protect impacted workers?			
4. Does the proposed action support low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters through workforce development, contracting opportunities?			
5. Does the proposed action create local opportunities for livable wage jobs for low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters?			
6. Does the proposed action help foster the building of effective, long-term relationships and trust between diverse communities and businesses and institutions?			

Overall response to these questions with justification:

Clean Heat Standard - Equity Rubric

6. Accountability <i>The proposed action should ensure that all Vermonters, including low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters can hold governments and institutions accountable for equitable implementation.</i>	Harm	Neutral	Benefit
1. Is the proposed action based on verifiable science unbiased by politics, lobbying, corporate sponsorship, or precedential decisions?			
2. Does the proposed action meet the intended thermal requirements of the building it serves?			
3. Does the proposed action have provisions to ensure ongoing collection of data (that can be disaggregated by race/ethnicity/income) and public reporting of data? Can this data be validated qualitatively by community members?			
4. Does the proposed action have clear markers of short-term and long-term success as well as timelines for meeting markers of success? If so, what are the mechanisms we will utilize to ensure that goals are met (successful implementation and enforcement)?			
5. Does the proposed action address consequences if goals are not met? Is there a process for those impacted by the action to express grievances or satisfaction and to ensure that concerns are met?			
6. Is the proposed action adequately funded to achieve its designed goals?			
7. Is the decision-making process for the proposed action clear, honest and transparent?			
8. Are potential harms of the proposed action clearly identified and disclosed?			
9. Are those that will benefit from the proposed action clearly identified and disclosed?			

Overall response to these questions with justification:

Clean Heat Standard - Equity Rubric

7. Cultural Preservation <i>The proposed action should deliberately and respectfully honor cultural relevance and history to maintain cultural heritage from the past and present for the benefit of all generations.</i>	Harm	Neutral	Benefit
1. Does the proposed action acknowledge/respect/honor the culture, historic assets, and traditions of low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters?			
2. Does the proposed action improve social cohesion (engagement and connection within/to the community) among low- and moderate-income and historically marginalized, disadvantaged and under-served Vermonters?			
3. Does the proposed action’s decision-making processes go beyond dollars and cents to address shared values and cultural differences in order to support implementation?			

Overall response to these questions with justification:

Appendix D: Equity Advisory Group Memos to the Public Utility Commission

May 22, 2024

Ms. Holly Anderson, Clerk
Vermont Public Utility Commission
112 State Street
Post Office Drawer 20
Montpelier, Vermont 05620-2701

Re: **23-2220-RULE**– EAG comments on Staff Proposal: Initial Ownership of Clean Heat Credits

Dear Clerk Anderson,

Attached are three memos encompassing the Equity Advisory Group's response to the straw proposal created by the Vermont Public Utility Commission ("Commission") Staff on credit ownership issues ("Staff Proposal: Initial Ownership of Clean Heat Credits"). These memos were previously submitted individually to Commission Staff over a series of several weeks but are combined here to be submitted to the Commission docket to be available to the public.

Sincerely,

A handwritten signature in cursive script that reads "Mia Watson".

Mia Watson, Chair
On behalf of the Clean Heat Standard Equity Advisory Group

April 17, 2024

Ms. Holly Anderson, Clerk
Vermont Public Utility Commission
112 State Street
Post Office Drawer 20
Montpelier, Vermont 05620-2701

Re: **Case No. 23** – EAG comments on Staff Proposal: Initial Ownership of Clean Heat Credits

Dear Clerk Anderson,

The Equity Advisory Group (EAG) for the Clean Heat Standard (CHS) proceeding (Case No.23) has reviewed the straw proposal created by the Vermont Public Utility Commission (“Commission”) Staff on credit ownership issues (“Staff Proposal: Initial Ownership of Clean Heat Credits”) and wishes to provide feedback on matters to consider as the Commission continues its rulemaking. EAG members urge the Commission to make the process for credit transfers as simple, transparent, and fair as possible for parties involved in clean heat credit generating activities.

EAG members agree with Commission staff that for installed measures, end-use customers should be awarded all clean heat credits. However, the term “customers” should be clarified. In this context, it appears to mean “individual(s) or businesses who *own the building or property* in which the equipment is being installed”. However, the Commission Staff should confirm that this definition matches their intent in the proposal, and this definition should be made as clear as possible in final rules. This will help to avoid ambiguity in circumstances, for example, in which a third party or parties are financing the purchase, a third party is purchasing equipment for a project, or situations with a landlord-tenant relationship in which the tenant is the fuel customer, but the landlord is purchasing or owns installed equipment.

The Commission Staff proposal asserts that “customer credit ownership will give customers negotiating power in their contractual agreements with their installer or deliverer, which could result in an exchange of incentives for the credit, likely reducing the cost of the clean heat measure to the customer.”

However, this statement assumes that customers will have sufficient knowledge of the value of their credits to inform their negotiations. This cannot be presumed based on the information Staff are currently proposing to be provided to credit owners. Individuals and

small business owners will have a significant knowledge imbalance compared to obligated parties seeking to obtain and maximize the value of credits.

In addition to the proposal from Commission Staff that the Commission could require “installers or deliverers to provide Commission-approved information about the Clean Heat Standard program, alternative technologies and fuels, and information about what programs are available to help pay for measures”, EAG members suggest that the Commission consider providing the following information:

- Estimated greenhouse gas emissions reductions generated from installation of measures.
- The number of clean heat credits generated from the measures.
- Information on the monetary value of the credits generated from the measures.
- Estimated energy cost savings generated from installation of the measures.
- Health disclosures related to the installed measures (if any).

In developing these recommendations, EAG members debated the feasibility of additional disclosures, and acknowledge that the Commission will need to assess whether this additional information above is readily available at the time of a measure installation or credit transfer. In particular, the value of credits is expected to fluctuate, and may be unclear at the time of installation. However, if the Commission is serious about empowering customers, it should strive to provide as much information as practically possible to aid customers in their negotiations.

To that end, the Commission should consider what information the Commission itself could make available to consumers and the public as it designs a marketplace. EAG members have also suggested that the Commission explore establishing a permanent ombudsperson position to help customers navigate credit transactions.

EAG members continue to discuss issues of credit ownership for delivered measures. However, the EAG recommend that at a minimum, delivered fuels generating clean heat credits also be accompanied by information disclosures, to the extent practical, including:

- Commission-approved information about the CHS Program.
- Alternative technologies and fuels
- Information about programs available to help pay for measures.
- Estimated greenhouse gas emissions reductions generated from delivered fuels
- The number of clean heat credits generated from the measures.
- Information on the monetary value of the credits generated from the measures.
- Health disclosures related to the delivered fuels (if any).

The EAG sees issues of credit ownership as one of the most important elements of the Clean Heat Standard, with significant equity and affordability implications, and expects to continue to provide feedback to the Commission as the CHS framework is developed.

Sincerely,

A handwritten signature in black ink that reads "Mia Watson". The signature is written in a cursive, flowing style.

Mia Watson, Chair

On behalf of the Clean Heat Standard Equity Advisory Group

May 14, 2024

Ms. Holly Anderson, Clerk
Vermont Public Utility Commission
112 State Street
Post Office Drawer 20
Montpelier, Vermont 05620-2701

Re: **Case No. 23** – EAG comments on Staff Proposal: Initial Ownership of Clean Heat Credits

Dear Clerk Anderson,

The Equity Advisory Group (EAG) for the Clean Heat Standard (CHS) proceeding (Case No.23) has continued to review the straw proposal created by the Vermont Public Utility Commission (“Commission”) Staff on credit ownership issues (“Staff Proposal: Initial Ownership of Clean Heat Credits”) and wishes to provide additional feedback on matters to consider as the Commission continues its rulemaking.

The EAG reiterates its position that credit ownership for installed measures should originate with the owner of the property in which the measure is being installed. This should be the framework even though in many cases, the credit may be immediately thereafter traded to an entity offering financing or incentives.

A system that has credits belonging to the property owner can provide an additional incentive for pursuing greenhouse gas-reducing improvements to their property. Another type of ownership system, for example, one in which the entity providing financing or rebates or otherwise induces the project to occur, will be less equitable and more complicated. This approach would reduce or eliminate negotiating power for low- and moderate-income households to potentially obtain better pricing for these improvements. In addition, since projects may have multiple parties offering financing or incentives, determining who “induces” the project could potentially be complex and create disputes about ownership. In the view of the EAG, transfer of credit ownership should be a matter of contract negotiation, one that is well-supported by information provided to the property owner to aid their decision-making.

The EAG discussed a general waiver of this principle in the final rules if another entity entirely pays for a project, particularly for the Weatherization Assistance Program (WAP). However, other members feel that it may be simpler to have all ownership for installed measures originate with property owners and have WAP recipients sign an agreement transferring their credits to the WAP agency or the Vermont Office of

Economic Opportunity (OEO). In recognition of continued differences of opinion, some members of the group plan to submit additional comments on this issue, which will be added to this memo when distributed to PUC Staff.

EAG members feel that the ownership structure for installed measures proposed above, with property owners initially owning credits, should be the same during the early action period and the full CHS implementation. EAG members acknowledge that retroactively seeking consent to obtain credits from property owners may represent a significant logistical challenge. Nevertheless, it would be inequitable to treat property owners differently during different phases of the CHS implementation.

The EAG felt it was important to provide as much feedback on credit ownership as possible by the May 17th deadline requested by the Commission Staff. However, EAG members still have unresolved questions about issues related to credit ownership, particularly for delivered measures. The EAG anticipates continuing to discuss these issues and providing feedback to the Commission as the CHS framework is finalized.

Sincerely,

A handwritten signature in black ink that reads "Mia Watson". The signature is written in a cursive, flowing style.

Mia Watson, Chair

On behalf of the Clean Heat Standard Equity Advisory Group

Re: Case No. 23-2220-RULE

Dissenting opinion: Recommending that Vermont Home Weatherization Assistance Program (WAP) retain initial Clean Heat Standard (CHS) credit ownership

On March 25, 2024, the Public Utility Commission (“Commission”) shared a straw proposal on Clean Heat Credit Ownership. The Commission requested feedback from the Clean Heat Standard Equity Advisory Group (“EAG”) on the proposal by May 17, 2024.

By a vote of 4-3-3 with 1 abstaining and 2 absent, the EAG has taken the position that credit ownership for installed measures should originate with the owner of the property where clean heat measures are being installed. The motion as voted on included the option for individual members to file addendums. This opinion from the full EAG is discussed in further detail in the memo sent from the full EAG in response to the document titled: “Staff Proposal: Initial Ownership of Clean Heat Credits.” This memo should be considered an addendum to the memo authored by the full EAG.

For the reasons articulated below, the signed members of this dissent advocate that programs that provide 100% of the incentive cost – with zero financial contribution from the customer – should retain initial ownership of the Clean Heat Credit. This treatment of programs will better promote equity in design of the Clean Heat Standard (“CHS”). The only known program in the State that would currently qualify for such treatment is the Vermont Home Weatherization Assistance Program, administered by the State of Vermont Office of Economic Opportunity (“OEO”). This treatment of programs will better promote equity in design of the Clean Heat Standard (“CHS”). For the purposes of this memo, we use WAP as the specific example, but issues raised below could also theoretically apply to any program(s) that provide 100% incentive costs to customers.

Background

To provide a framework for this document, it is helpful to refer to § 8121 of Act 18 which says:

...it is the intent of the General Assembly that the Clean Heat Standard be designed and implemented in a manner that achieves Vermont’s thermal sector greenhouse gas emissions reductions necessary to meet the requirements of 10 V.S.A. § 578(a)(2) and (3), minimizes costs to customers, protects public health, and recognizes that affordable heating is essential for Vermonters. It shall enhance social equity by prioritizing customers with low income and moderate income and those households with the highest energy burdens.¹

The Intent of Act 18 in many ways summarizes why programs that provide 100% of the incentive cost to participants should retain initial ownership of the Clean Heat Credits. Such programs minimize cost for participants. In the case of the WAP, health and safety regulations

¹ Vt. Stat. Ann. tit. 30, § 8121.

are built into the program, energy savings average 29.7% per household² and program participants are prioritized on a level of need basis, with those most in need prioritized for service first.

Energy Burden and Accessibility to other programs

Currently, WAP is the only existing program to exclusively serve low-income households and cover program costs at 100% with zero contribution required on behalf program participants³ ~~and~~ and as a result, many low-income Vermonters do not have the financial means necessary to access other energy efficiency programs that require applicants to make a financial contribution. For many low-income Vermonters, the only way to benefit from installed clean heat measures may be through a program such as WAP that covers 100% of the cost of services. Customers of the WAP make no monetary contribution to the cost of their Project and have no expectation of a value created by the CHS. Moreover, even if they received credit, they would derive little value from the credit itself, as they are unlikely to participate in a clean heat credit marketplace where they could monetize the credit. The credit would most likely go unused.

New revenue stream to spur program growth

The Equity Advisory Group was established in part “...to assist the Commission in developing and implementing the Clean Heat Standard in a manner that ensures an equitable share of clean heat measures are delivered to Vermonters with low income...”⁵ The WAP receiving initial credit ownership for all CHS measures installed as part of WAP activities would ensure that an equitable share of installed clean heat measures go to low-income Vermonters, because it would create a new revenue source for the WAP which could then be reinvested to expand their services, serving more of the most vulnerable Vermonters. for the WAP from the sale of WAP generated CHS credits to obligated parties, would ensure funding for the WAP into the future. This will increase equitable access to CHS measures for low-income Vermonters for years to come.

Compatibility with existing program administration

If the owner of a property where clean heat measures were installed as part of WAP activities were to receive initial credit ownership, WAP would receive no CHS credits from the investments that the program made in those properties without administering the transfer of credits from these property owners to WAP. This would represent a heavy administrative burden for WAP staff. The WAP completed weatherization services at 1,139 homes in state

² <https://legislature.vermont.gov/assets/Legislative-Reports/Annual-Weatherization-Leg-Report-Jan-2024.pdf>.

³ Review of a recently compiled spreadsheet of all the existing heating and weatherization programs that exist today in Vermont supports this. <https://puc.vermont.gov/document/eag-meeting-materials/04302024>.

⁴ (“Vermont Energy Burden Report” (EVT), 2019).

⁵ tit. 30, § 8129(a).

fiscal year 2023.⁶ With such a large number of clients receiving WAP services annually, the resources that would be needed to facilitate the transfer of CHS credit ownership from thousands of individual Vermont property owners to WAP could be significant.

Granting the WAP initial credit ownership for CHS credits generated from WAP investments would eliminate the need for thousands of credit ownership transactions between WAP and its clients annually, and the newly created CHS credit market could be integrated into this long standing and important program while minimizing new administrative burdens and costs.

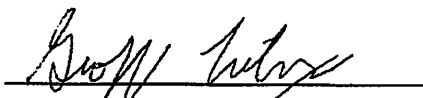
Conclusion

Giving initial CHS credit ownership to programs that provide 100% of incentive costs (such as the WAP) aligns with the stated intent of Act 18. This ownership structure would mesh well with existing policies and procedures, by minimizing administrative burden and costs. This simplifying of initial credit ownership also would provide new revenue to programs that provide 100% of incentive costs and more equitably serve Vermonters as a result of expanded services reaching a greater number of program participants annually.

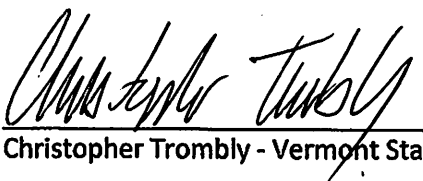
Thank you for your consideration.

By: /s/ Benjamin Bolaski

Benjamin Bolaski, Thermal Energy Program Specialist
Vermont Department of Public Service
112 State Street
Montpelier, VT 05620
(802) 261-7036



Geoff Wilcox - State of Vermont Office of Economic Opportunity



Christopher Trombly - Vermont State Housing Authority

⁶ <https://legislature.vermont.gov/assets/Legislative-Reports/Annual-Weatherization-Leg-Report-Jan-2024.pdf>.

May 28, 2024

The Equity Advisory Group (EAG), pursuant to their statutory direction to “[provide] feedback to the Commission on strategies for engaging Vermonters with low income and moderate income in the public process for developing the Clean Heat Standard program” (30 V.S.A. § 8129(a)(1)), respectfully submit the following memo for consideration by the Commission’s Public Engagement Facilitator.

Questions for the public

The purpose of this memo is to provide the Commission and its consultant with information on experiences and best practices in public engagement from the Clean Heat Standard EAG subgroup on public engagement. Most directly, the EAG submits a few questions for the Public Engagement Facilitator to consider using in upcoming public engagement sessions.

The highest priority questions the EAG believes the public engagement facilitator should ask are:

- What has been your experience heating and cooling your home?
- Have you made any changes or wish to make any changes to your home to reduce your heating costs and to reduce your use of fossil fuels?
 - If so, what barriers have you faced?
 - If not, what would you need to help you implement clean heat measures (such as home efficiency improvements/weatherization, electrification of heating appliances, and/or using lower carbon-intensity liquid/gas heating fuels)?
- Are you worried about an increase in your heating costs in the future? If so, why?

The EAG also identifies the following questions as worthwhile prompts in understanding the reality people face in heating and cooling their homes. The EAG believes these questions would be better suited to private conversations – rather than in public meetings – that inform the Public Engagement Facilitator’s work and the Commission’s understanding:

- What percentage of your income do you estimate you spend on home energy costs? What are you now using to heat your home?
- Many people do not actually know how they heat their homes - especially renters.
 - Do you rent?
 - What is it costing you annually to heat your home?
 - Do you receive any kind of subsidy to heat/cool your home?
- What is your biggest concern about your home?
 - What is your biggest monthly cost?
 - Have you ever gone without heat?
 - In the summer, have you ever faced concerns about heat?
 - What issues might you face if the CHS goes into effect?

May 28, 2024

The subgroup that focused on this issue also discussed two topics – community engagement sites and accessibility – that they wanted to share their thoughts on. These blurbs are meant to convey some of the considerations the EAG feels are important. The group acknowledges that the Commission does not have unlimited time and resources that may allow for some of these best practices to be utilized but felt it was still useful to share this memo of best practices for the Commission and the Facilitator’s awareness.

Community engagement sites

Community engagement sites that have worked best for member organizations of this subgroup are places where people will not need to take additional time out of their day to attend. The group also noted the importance of in-person engagement. Some of the locations of public engagement mentioned include locations of aging communities (i.e., senior centers, meal sites for Meals on Wheels), food banks, community centers, libraries, and manufactured home sites. These locations are already places people go to, which can minimize the resources that may need to be used to access these public engagement events.

Accessibility

The group discussed the importance of affinity spaces and how they can help ensure safety and accessibility to varying groups of people and communities in Vermont. In these affinity spaces, we discussed leveraging and empowering existing community leaders to share information. Other recommendations related to accessibility in public engagement include focus groups and listening sessions. The group discussed the interpretation of the Clean Heat Standard. This discussion included the best practice of taking steps back to ensure widespread public understanding of clean heat measures, such as heat pumps, and having skilled interpreters not only in the language of the Clean Heat Standard but in technical jargon. The group agreed that translating materials to a third-grade reading level is standard practice in equitable translation. CVOEO noted that they have proficient interpreters.

August 9, 2024

Via ePUC

Ms. Holly Anderson, Clerk
Vermont Public Utilities Commission
112 State Street
Montpelier, Vermont 05620-2701

Re: **23-2220-RULE**, Proceeding to Design the Potential Clean Heat Standard, EAG Memo on LMI Credit Frontloading

Dear Clerk Anderson,

The Equity Advisory Group (EAG) for the Clean Heat Standard (CHS) submits the following memo on the topic of Low-and Moderate Income CHS credit frontloading. While Commission Staff did not specifically request comments on the topic of LMI Equitable Distribution in the recent Staff Straw Proposal on Pacing – Part I, the EAG wishes to provide feedback on the matter to consider as the Commission continues its rulemaking.

Topic:

Frontloading of credit obligations under the Clean Heat Standard (CHS) credits to ensure low and moderate income (LMI) households in Vermont are prioritized to the greatest extent possible during initial years of CHS implementation.

Background:

LMI households in Vermont are the most energy burdened in the state¹. As a result of this, the LMI population in Vermont is expected to be disproportionately affected by any increases in heating fuel costs associated with adoption and implementation of the CHS.

Section 8124(d)(2) of Act 18 establishes that:

“of their annual requirement, each obligated party shall retire at least 16 percent from customers with low income and an additional 16 percent from customers with low or moderate income. For each of these groups, at least one-half of these credits shall be from installed clean heat measures that require capital investments in homes, have measure lives of 10 years or more, and are estimated by the Technical Advisory Group to lower annual energy bills.”

Furthermore, section 8124 (d)(3) of Act 18 also specifies that:

“The Commission shall, to the extent reasonably possible, frontload the credit requirements for customers with low income and moderate income so that the greatest proportion of clean heat measures reach Vermonters with low income and moderate income in the earlier years.”

¹ <https://www.encyclopedia.com/energy-and-environment/energy-and-environmental-engineering/energy-and-environmental-engineering/white-papers/2019%20Vermont%20Energy%20Burden%20Report.pdf>

Discussion:

Frontloading the LMI credit requirement in the early years of the CHS could prove to be difficult. Limited workforce capacity and higher anticipated cost to acquire LMI credits could cause an increase in overall program compliance costs and slow overall progress towards GWSA targets. An increase in costs for obligated entities has the potential to accelerate increases in heating fuel costs, as those costs may be passed on to end consumers.

However, frontloading of CHS LMI credits would have the desired effect of serving a greater portion of the LMI population in the early years of CHS implementation, helping to mitigate potential economic harm caused by increases in heating fuel costs and promoting equitable implementation of the CHS. Policies that increase costs of heating fuel are inherently regressive because the percentage of income that lower income households spend on energy would increase more than higher income households ².

There remain many unknowns about the available clean heat workforce and overall costs associated with the CHS program. Implementing the frontloading of LMI credits may be challenging in the initial outset of the program. Therefore, a framework to allow for the Commission and the DDA(s) to specifically target programs and incentives at the LMI community are needed to more readily facilitate future increases to obligated party yearly LMI credit retirement targets. Creating distinct LMI credit categories is one such approach that helps facilitate a more equitable CHS credit marketplace from the outset.

Five Unique Credit Categories:

The Commission's July 10, 2024, memorandum re: "Staff Straw Proposals on Credit Fulfillment Plans and Criteria, Non-Compliance and waiver process", assert the creation of five separate CHS credit categories that a DDA could deliver on behalf of an obligated party. The five credit categories differentiate credits derived from low income, moderate income and non-LMI/market - rate participants. Within both the low-income and moderate-income credit categories, there is further delineated between generic measures and low-installed measures³.

The EAG supports the Staff proposal of having five unique credit categories, as it would allow LMI credit market activity to be more closely tracked to help inform any future increase or decrease in obligated party LMI requirements.

The EAG acknowledges that the five-credit framework will add a layer of complexity to the CHS framework. Any increased complexity increases the burden on obligated parties, the Commission and the Default Delivery Agent (DDA), which should be avoided as much as possible in the design of the framework.

However, given the fact that credits generated from installed measures, particularly from low-income households, are required under Act 18 and expected to cost significantly more to produce

² <https://www.mass.gov/doc/memo-on-obligated-entities/download>

³ Installed measures defined as "capital investments in homes, 10-year measure lives, lower annual energy bills"

than the credits from generic sources, having distinct categories of credits appears necessary to set credit values that reflect the variance in costs.

Obligated party compliance with current LMI credit annual retirement requirements could also be more clearly tracked because market activity would be taking place within a unique and separate marketplace from the market -rate credits, eliminating confusion as to what type of credits are being transferred in any given transaction.

Specific CHS program incentives or bonuses offered to obligated parties could be better designed and implemented because specific conditions of the LMI credit market would be identified through the tracking of each of the four LMI credit marketplaces. Additionally, the five separate credit categories would allow the Commission, through the triennial DDA budget and planning process, to toggle up or down credit category pricing to incentivize or disincentivize certain outcomes. As an example, the DDA could propose a decrease in the low-income installed measure credit price to incentivize increased obligated party investment in that specific credit category, while leaving all other credit category prices unchanged. In effect it would allow for the DDA to have greater control over CHS market activities and would allow for more prescriptive actions to be taken to ensure LMI Vermont households receive an equitable share of CHS market activity annually.

Unknown information:

Assuming that the above framework with five distinct credits will be part of the final CHS framework, the following information will be important to inform a decision on frontloading obligations:

- The percentage of low and moderate installed measures currently being produced relative to all clean heat measures
- The percentage of low and moderate delivered measures currently being produced relative to all clean heat measures
- The expected cost of low and moderate installed credits
- The expected cost of generic credits

Understanding how many LMI credits are being produced under current conditions is essential to understanding whether frontloading is reasonably possible. If the number of credits that would be available under current conditions is substantially lower than the obligated 32%, increasing that requirement further is more likely to be unfeasible. Similarly, understanding the cost to deliver low income installed credits relative to generic credits will be essential to predicting the impact on the market and on fuel prices.

Recommendations:

There are several key variables that are still unknown that will be needed to make an informed decision on increasing annual LMI credit obligations.

At this point in time, the EAG believes that there is insufficient information to determine whether frontloading the LMI targets in the earliest years of the program is “reasonably possible”.

However, both the language “shall” under Act 18 and the overall need to promote greater equity in implementation makes it imperative that the Commission continue to review this issue and seek ways to increase LMI targets once more is known.

The PUC should consider the following when timing is appropriate to reassess the issue:

- The percentage increase in frontloaded LMI credits could be approached moderately, for example, increasing from 16% to 18%, rather than doubling or otherwise dramatically increasing obligations. A small increase in obligations may be possible without destabilizing the market and would still produce additional benefits for LMI households.

The EAG recommends that the Commission revisit the question of frontloading no earlier than the second triennial DDA budget and planning process. However, the Commission should not be discouraged from pursuing moderate frontloading of LMI obligations in the initial framework and first triennial DDA budget should data emerge to support its feasibility.

Thank you for your consideration.

Sincerely,

Ben Bolaski

On behalf of the Clean Heat Standard Equity Advisory Group

September 6, 2024

Via ePUC

Ms. Holly Anderson, Clerk
Vermont Public Utilities Commission
112 State Street
Montpelier, Vermont 05620-2701

Re: **23-2221-INV**, Investigation into the Clean Heat Standard Default Delivery Agent Costs and Quantities, EAG Memo on DDA RFP Recommendations

Dear Clerk Anderson,

The Equity Advisory Group (EAG) for the Clean Heat Standard (CHS) submits the following memo on the topic of DDA RFP Recommendations.

The Default Delivery Agent (DDA) will be an important resource for serving many of the populations that are expected to be disproportionately impacted by increased costs related to the Clean Heat Standard. The EAG encourages the Commission to ask that proposals for the DDA include a description of the entity's experience with, and plan for serving, the following groups:

- Renters
- Low-income households
- Moderate-income households
 - Does the organization plan to offer financing or connect households to financing opportunities to encourage increased installation of clean heat measures?
- Manufactured homes
- Households living in older homes
 - Does the organization have experience working with contractors on installed measures?
 - Does the organization have a plan for serving homes in need of significant repair, and connecting those households with available resources supporting enabling upgrades?
- Households with Limited English Proficiency (LEP)
 - Does the organization have a Language Access Plan (LAP) or other plan to provide translated materials and/or translated materials to serve individuals with LEP?
 - Does the organization have experience in community outreach, particularly among First Generation or immigrant communities?
- Vermonters of color
- Small businesses and industrial and commercial entities

Since the Commission is permitted under Act 18 to select more than one DDA, it may be possible that the DDAs will be sector-specific and not all applicants would have a plan to serve

all these demographic groups. However, in this case, the Commission should carefully review applicants to ensure that the selected DDAs jointly have the capacity and experience to serve all the impacted populations described above.

To support these groups and an equitable implementation of the CHS overall, EAG encourages the Commission to require that DDA(s) have a DEI Plan or equivalent organizational framework. Such a plan should include clearly defined goals and actions that increase diversity, equity, and inclusion in all areas of the organization and its work.

Finally, although Act 18 requires that the DDA offer statewide services, the Commission should review applicants to ensure that the entity has sufficient experience and capacity to effectively serve the entire state of Vermont, including rural areas that have historically experienced underinvestment.

Thank you for your consideration.

Sincerely,

/s/ Benjamin Bolaski

On behalf of the Clean Heat Standard Equity Advisory Group

September 17, 2024

Ms. Holly Anderson, Clerk
Vermont Public Utility Commission
112 State Street
Post Office Drawer 20
Montpelier, Vermont 05620-2701

Re: **23-2220-RULE**, Proceeding to Design the Potential Clean Heat Standard, EAG Memo on LMI Credit Characterization

Dear Clerk Anderson,

The Equity Advisory Group (EAG) for the Clean Heat Standard (CHS) submits the following memo on the topic of defining Low-and Moderate Income CHS credits to convey benefits to institutions serving low and moderate income (LMI) households. While Public Utility Commission Staff did not formally request comments on this topic, the EAG wishes to provide feedback on the matter to consider as the Commission continues its rulemaking.

Background:

Act 18 of 2023 requires that “Of their annual requirement, each obligated party shall retire at least 16 percent from customers with low income and an additional 16 percent from customers with low or moderate income. For each of these groups, at least one-half of these credits shall be from installed clean heat measures that require capital investments in homes, have measure lives of 10 years or more, and are estimated by the Technical Advisory Group to lower annual energy bills.”

However, there are many households that do not purchase their own fuel but nevertheless could ultimately feel the impacts of higher fuel costs expected under the Clean Heat Standard. One primary example of this is shelters for individuals or families experiencing homelessness. There are also institutions that directly serve but do not house low-income households, such as community food shelves.

These institutions provide essential services to low- and moderate-income households, but, in the interpretation of the EAG, would not be eligible for generating LMI-specific CHS credits under the current language of Act 18. This would require these organizations to shoulder the financial burdens from expected fuel cost increases under the CHS, reducing their ability to provide services, without a clear pathway to receive additional benefits beyond what any business could potentially expect to experience from the transfer of their credits to obligated entities under the CHS.

The recently released Thermal Sector Carbon Reduction Potential Study prepared by NV5 has raised significant concerns that the percent total cumulative annual lifecycle emissions reduction potential from low-income households falls short of the statutory target of 16 percent. Expanding the pool of potential credit-producing projects while maintaining a clear link to activities that serve the essential needs of these households may offer greater flexibility to achieve the equity goals of Act 18.

Recommendation:

The EAG feels that in order to enhance social equity under the CHS, the definition of low and moderate CHS credits should be expanded to allow credits derived from the types of organizations described above. However, this category must also be tailored narrowly. Allowing too wide a definition of an LMI-serving institution could ultimately divert resources from benefiting LMI households.

The EAG proposes the following components of a definition of these eligible institutions:

LMI credits may be derived from:

- a) *Measures installed in, or delivered to, property owned or rented by a nonprofit organization.*
- b) *The property must be used to deliver essential services to low- or moderate-income individuals or households.*
- c) *The organization has a primary purpose to serve low- or moderate-income households or individuals and currently receives state or federal funding to provide services to low or moderate-income individuals or households.*

The EAG acknowledges that part b) of the above framework may be difficult to define or verify. Part c) allows for confirmation that the entity is legitimately offering services and is not merely self-proclaimed to serve LMI households. However, removing part b) could conceivably expand the definition of LMI-serving institutions to include schools and hospitals. While those institutions do often receive targeted funds to provide services to low- and moderate-income individuals, this is not the primary purpose for these institutions, and expanding the definition to such a large extent would likely dilute the intended benefits to low and moderate-income households.

The Public Utility Commission, or the Legislature, as appropriate, should review this language and adjust as necessary to preserve the intent. The Legislature may choose to provide a list of acceptable state or federal funding sources to help narrow down a list of appropriate services.

Although adding a new facet of the CHS framework has the potential to increase complexity of the program overall, this is a voluntary pathway for obligated parties to obtain LMI credits and should not increase their compliance burden under the CHS.

October 30, 2024

Via ePUC

Ms. Holly Anderson, Clerk
Vermont Public Utilities Commission
112 State Street
Montpelier, Vermont 05620-2701

Re: **23-2220-RULE**, Proceeding to Design the Potential Clean Heat Standard, EAG Comments on Clean Heat Standard Draft Rule

Dear Clerk Anderson,

The Equity Advisory Group (EAG) for the Clean Heat Standard (CHS) submits the following Comments on the Clean Heat Standard Draft Rule.

Consequences and Harms of Clean Heat Standard

The rule fails to acknowledge the Commission’s statutory requirements to assess the harmful consequences and potential harms of clean heat measures identified in 30 V.S.A. § 8127 (h).

(h) Review of consequences. The Commission shall biennially assess harmful consequences that may arise in Vermont or elsewhere from the implementation of specific types of clean heat measures and shall set standards or limits to prevent those consequences. Such consequences shall include environmental burdens as defined in 3 V.S.A. § 6002, public health, deforestation or forest degradation, conversion of grasslands, increased emissions of criteria pollutants, damage to watersheds, or the creation of new methane to meet fuel demand.

The final CHS Rule must include a process for assessing the harmful consequences of proposed and implemented clean heat measures, for remediating such harms, and for ensuring that clean heat measures that do create harmful consequences do not continue to be eligible for clean heat credits. This is especially important given that the equity advisory group will no longer exist upon adoption of the CHS.

8.103(8)(A) Definitions – Installed measures

Section § 8124 (d)(2) of Act 18 defines low and moderate income installed measures as follows:

“... installed clean heat measures require capital investments in homes, have measure lives of 10 years or more, and are estimated by the Technical Advisory Group to lower annual energy bills.”¹

¹ <https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf>

In prior discussions on clean heat measures and credit ownership, the EAG had implicitly assumed that installed measures would be generally equivalent to capital investments in homes. However, the EAG has been discussing how new window-based heat pump units, as seen in [pilot projects from the New York City Housing Authority](#) and [Efficiency Vermont](#), may challenge that assumption.

Portable or window heat pumps are small-sized heat pumps utilizing the same technology as traditional non-portable heat pumps and would therefore appear to be included as a type of clean heat measure under Draft Rule Section 8.103(8). However, while these units would be ‘installed’ in a window, and offer savings to lower energy bills (pending approval by the Technical Advisory Group), as laid out under Section 8.101(29), this technology could fail to meet the definition of a “Qualified capital investment” and the definition of “have measure lives of 10 years or more” given the relatively low cost and short duration warranty for the unit².

However, this section also speaks to the intent to ensure “Equitable distribution of clean heat measures”. Portable heat pump technology has the potential to promote equity by reaching households that cannot easily install traditional heat pumps, including renters, customers living in manufactured homes, or those living in homes with layout or electrical system challenges. Using a definition of “installed measure” reliant on capital investment and having a measure life of 10 years or more, may inadvertently reduce access to low- and moderate-income households.

Revisiting the definition of installed measures may also impact Section 8.113(a)(1) of the Draft Rule, which states that for installed measures “the individual or entity that owns the building in which the measure is being implemented is the initial owner of the measure attributes created by the implementation of that measure.”

While the EAG supported that credit ownership definition in initial feedback on credit ownership to the Commission, it may need to be revisited if portable technology is permitted as an eligible installed measure. If a renter purchases a portable window heat pump, the ownership of the credit and any potential related financial benefit from transferring it to an obligated entity, should belong to the renter, not the property owner.

Currently, portable heat pump technology is still largely untested. However, if it can be proven to deliver long-term benefits to customers, the EAG recommends that the Commission – or the Legislature, as applicable – consider revising the definition of installed measures, or creating an avenue where the definition may be revised in the future.

8.103(14) Definitions – Customer

² Advanced thermostats and faucet aerators are also discussed in the [Public Service Department Thermal Sector Carbon Reduction Potential Study](#) as potential measures but not explicitly itemized in Act 18 or the Draft Rule Section 8.103(8). These measures may also fail to qualify as qualified capital investments with measure lives of 10 years or more, depending on how this is defined and how they are implemented in projects.

Section 8.103(8)(A) of the Draft Rule states that “When a landlord is the recipient of a clean heat measure, the tenant(s) may be considered a customer for the purpose of determining the measure group.”

The EAG requests clarification on how the customer will be determined for measure group A and B (Section 8.103(27) (A-B)) in multifamily properties. In most buildings, households of different income levels will live in different units throughout a building. Some measures, such as weatherization, may be difficult to attribute to individual units. The EAG is unclear how credits generated from installed measures that benefit entire multi-family properties will be divided into the various measure groups.

To provide clarity, reduce complexity and encourage implementation of clean heat measures in multifamily properties, the EAG suggests that the Commission revisit the definition of “Customer with low income” and “Customer with moderate income”. to allow entire buildings to be considered a low- or moderate-income dwelling. Attribution of clean heat credits to each individual unit within a multifamily property, would require income verification forms to be collected from each individual unit within the building for the purpose of measure group determination. This would be overly administratively burdensome.

The Weatherization Assistance Program (WAP) has existing policy which sets a threshold for when an entire multifamily building can be counted as eligible for WAP services. This threshold requires that a minimum percentage of units within the building are verified as income eligible through the program. The minimum percentage ranges from between 25% to 66% depending on the funding source. The EAG recommends that the CHS rules align with existing WAP policy for multifamily income eligibility requirements at the 25% threshold level. In practice, an obligated party would only need to acquire low-income attestation forms from 25% of the households within a multifamily building for the entire building to count as low-income. This would reduce complexity, administrative burden and mesh well with existing policy.

The EAG supports the adoption of the proposed minimum LMI threshold for multifamily buildings as stated above. However, the EAG also notes that it could have the unintended consequence of classifying market rate households in multifamily buildings that meet the minimum percentage threshold as low- or moderate-income households. Therefore, the EAG recommends that the Commission at the end of the triennial update should ensure low-income residents of multifamily residences are being equitably served by the Clean Heat Standard and that if adopted, any distortionary effects of the proposed minimum LMI percentage threshold are minimized.

8.108 – Clean Heat Measure Group

Section 8.103(b) of the Draft Rule states “For Group A, B, C, or D clean heat measures, the person or entity registering the measure, as described in Section 8.111 of this rule, must file an attestation form signed by the customer that states that the customer meets the criteria as a

customer with low income or a customer with moderate income. The attestation form is available on the Commission's website.”

The EAG questions whether obtaining customer attestation of income is necessary if rigorous verification of income is already being performed for the purposes of compliance with other programs.

This will be most important for the Weatherization Assistance Program (WAP), which the EAG assumes would be the initial owner of clean heat credits produced under that program, based on Section 8.113(a)(2) of the Draft Rule related to measures implemented at no cost to the participant. Adding an attestation form on top of extensive verification adds complexity and costs with no evident benefits to participants.

The option to provide verification instead of attestation may also be relevant for the construction of new subsidized affordable housing. The owners of buildings developed with subsidies from the U.S. Department of Housing and Urban Development (HUD) or the Low-Income Housing Tax Credit (LIHTC) are required to reserve units at rents affordable for low-income households and verify compliance for extended periods of time, however the unit may not yet be occupied by the eligible household at the time that the measure is installed and verified.

In addition, for group D and E measures (Section 8.103(27)), entities that plan to meet their obligations through delivered renewable fuels may plan to source low- and moderate-income customers through existing programs such as the Low-Income Home Energy Assistance Program (LIHEAP) or the Energy Assistance Program (EAP) for Vermont Gas Systems customers.

Under the Draft Rule Section 8.113(a)(3), these credits are already owned by the fuel deliverer, and therefore, an attestation in this case would not be used to release credits, only confirm the income level, which would be already known. Allowing these obligated entities to leverage existing sources of verification could reduce administrative burden. It may also encourage more fuel deliverers to enroll in LIHEAP, providing a benefit to low-income households.

If this suggestion is adopted, the Commission and the Department of Public Service should consider coordinating with the Department of Children and Families Office of Economic Opportunity and other relevant state agencies to create a process for streamlining verification of income for credits.

Thank you for your consideration.

Sincerely,

/s/ Benjamin Bolaski

On behalf of the Clean Heat Standard Equity Advisory Group

Appendix E: Combined Information on Existing Heating and Weatherization Programs

Program 30	As-to-Water Heat Pump Rebate	Efficiency Vermont administrators program. Co-funded with ODP for installations within ODP territory.	Rebate	As-to-Water Heat Pump	\$1,000 per ton up to \$2,000 rebate per ton funded by ODP.	NA		Customer	Customer	Open	The 3 incentive	ODPREV	10-20	This rebate is not qualified on income eligibility, but low income and moderate income customers can participate.	
Program 31	Central Source Heat Pump Rebate	Efficiency Vermont administrators program. Co-funded with ODP for installations within ODP territory.	Rebate	Central Source Heat Pump systems	\$3,100 per ton up to \$5,100 per ton funded by ODP.	NA		Customer	Customer	Open	The 3 incentive	ODPREV	10-20	This rebate is not qualified on income eligibility, but low income and moderate income customers can participate.	
Program 32	Heat Pump Water Heater Rebate	Efficiency Vermont administrators program. Co-funded with ODP for installations within ODP territory.	Rebate - issued either as a point-of-sale discount when provided by a participating manufacturer, or as a check when applied for post-purchase	Heat Pump Water Heaters	\$300-\$500 depending on model. -\$50 as a point-of-sale discount on certain models when rebate is offered as a post-purchase sale discount	NA		Contractor/Customer	Contractor/Customer	Open	The 3 incentive	ODPREV	400-600	This rebate is not qualified on income eligibility, but low income and moderate income customers can participate.	
Program 33	Induction Cooktop Rebate	ODP	Rebate	Induction cooktops and ranges	\$200	NA	ODP territory	Must be replacing fuel/oil powered cooktop/range	Customer	Open	The 3 incentive	ODP	200	This rebate is not qualified on income eligibility, but low income and moderate income customers can participate.	
Program 34	Joint Heat Pump Rebate Program	Efficiency Vermont and Snow Electric	Rebate	Heat pumps	\$250	Yes, low income customers can qualify for a \$200 rebate.	Point of Sale	The low income program is a pilot program and closed annually.	Contractor	Contractor	Annually	Efficiency Vermont and Snow Electric	Yes	1	
Program 35	Joint Wood and Pellet Stove Rebate Program	Efficiency Vermont and Snow Electric	Rebate	wood and pellet stoves	400	Yes an additional \$250 rebate	Point of Sale		Contractor	Contractor	Annually	Efficiency Vermont and Snow Electric	Yes	0-2	
Program 36	Storm Window/Insert Rebate	Snow Electric	Rebate	window inserts	\$100	No	Rebate		Customer	Customer	Annually	Snow Electric	Yes	0-15	
Program 37	Residential Equipment Replacement	Vermont Gas Systems, Inc.	Utility	High Efficient Furnaces, Boilers, and Water Heaters, Smart Thermostats	\$100-\$400, with rebate amount varying based on technology	All	Vermont Gas customers	Must achieve or exceed minimum efficiency thresholds	Midstream (install rebate at participating distributor)	Midstream (install rebate at participating distributor)	Ongoing	Ratepayer through Energy Efficiency Charge	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	2000	
Program 38	Residential Equipment Replacement	Vermont Gas Systems, Inc.	Interest rate buydown	High Efficient Furnaces, Boilers, and Water Heaters, Smart Thermostats	0% financing up to 3 years through Green Mountain Credit Union	Low & moderate income households, market rate at 5.50%	Vermont Gas customers	Must achieve or exceed minimum efficiency thresholds	Homeowner	Homeowner	Ongoing	Ratepayer through Energy Efficiency Charge	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	500	
Program 39	Low Income Assistance Program	Vermont Gas Systems, Inc. Distribution Utility	Discount	Utility Bill Credit	The Low Income Assistance Program provides a 20 percent discount on natural gas bills for qualified residential customers.	Qualifying income must be less than 35 percent of the Federal poverty level.	Eligibility is determined by the Vermont Department for Children and Families (DCF)	Owner/tenant on utility bill	For an application or additional information about eligibility, call the DCF Energy Assistance Office at 800-775-5555 https://old.vermont.gov/benefits/lap	Ongoing	Ratepayer through LIAP	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	1800		
Program 40	Switch and Seal	Vermont Gas Systems, Inc. Distribution Utility	Purchase and installation of heat pump water heaters	Heat Pump Water Heaters	Pending income requirements, maximum to \$5,000	Customers with annual household income less than 120 percent of Vermont's low median income will be eligible for the Switch & Seal program. Households earning less than 80 percent of area median income will receive 100% of the equipment and installation costs up to a program cap of \$2,000 per household. Households earning less than 120 percent of area median income will receive 50% of the equipment and installation costs up to \$4,000 including electrical work.	Vermont Gas customers or household member's utility	Existing electric resistance or combination water heater	Homeowner	Homeowner	Ongoing, limited to funding	Grant from VT Department of Public Service	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	100	In development; co-administered with EDC, BTD and VEC, with area partners.
Program 41	VFA Manufactured Home Replacement Program with Vermont Affordable Housing Tax Credits	Vermont Housing Finance Agency (VHFA)	Tax credits	Manufactured homes	Provides a 5% second mortgage to help buyers meet down payment requirements and reduce monthly payment costs. Loans are \$27,500 for single family models and \$35,000 for Zero Energy Modular Homes. Buyers need to contribute \$2,500 in down payments.	Households earning up to 120% of area median income (AMI) for a home purchase.	Statewide	Available through individual applicants through Champlain Housing Trust statewide, or to nonprofit owners of manufactured home communities	Homebuyer, developer	Homebuyer, developer	None	State	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	Program maxes out VFA assets Vermont Affordable Housing Tax Credits to fund the replacement of existing about 30 households per year. Demand exceeds capacity. Champlain Housing Trust receives roughly 200 applications per year for its program.	
Program 42	Vermont Housing Development Program	Vermont Housing Finance Agency (VHFA)	Tax credits, loans	Weatherization, heating and cooling systems	Varies	Household earning between 0%-120% of AMI (most at or below 80% AMI)	Statewide	Housing developments with long-term affordability restrictions	Developer	Developer	None	Federal, state	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	Varies	VHFA offers state and federal tax credits and bond-funded loans to support the development and rehabilitation of affordable rental and homeownership housing. These projects are built to ENERGY STAR high performance building energy standards. Although VHFA does not directly administer energy rebates to these projects, it has a role in coordinating these funds for projects. In addition, the ENERGY STAR rebates do not fully subsidize all costs for weatherization or other efficiency investments. Therefore, there may be currently unaccounted for costs that could be eligible to generate clean heat credits.
Program 43	Tax II	WEC	bonus incentive for income eligible replaced EV and new PHEV	EV, PHEV	\$700 in addition to \$500 self-allocation base for new EV		WEC service territory #1 towns		member or car dealer	member or car dealer	RES 2012	WEC	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program		
Program 44	ACRE with WEC	WEC and WEC separately	provides monthly discount on electric bill to income eligible member households for 5 years of \$45/month	electricity discount	approximately \$2,700 per DCF eligible household over 60 months		WEC service territory #1 per DCF towns		member	member	depends on funding source (5 years)	Federal	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	not on WEC website yet	140
Program 45	Pathway 2.0	WEC with VUTE funding	full replacement of electric service entrance and related safety improvements in an income qualifying WEC household	200 amp service entrance and related safety improvements	varies \$4k - \$6k range by date	FPL	WEC service territory #1 towns	income eligibility determined by Capstone	contractor hired by Capstone	contractor hired by Capstone	13/15/2025	VUTE grant award	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	10	
Program 46	Vermont Low Income Homeownership Assistance Program at OVED	Champlain Valley Homeownership Services/ Assistance Program at OVED	Direct service	comprehensive "white board" energy assessment, state-of-the-art building diagnostics, and full service energy efficient retrofits.	\$15,300 is the average job cost average	80% Area Median Income or 200% of Federal Poverty level	Champlain, Franklin, Addison, and Grand Isle counties	Waiting list is weighted for certain criteria	homeowner	homeowner	n/a	Federal and state	https://www.oved.org/	200-200 on waiting list	
Program 47	Vermont Fuel Assistance Program	Families	Direct service	Oil heat, propane, kerosene, wood, wood pellets, coal, and natural gas	varies by year	less than 180% of the federal poverty level based on household size	Vermont	N/A	customer	customer	ongoing	Federal	https://www.vermont.gov/business/energy/energy-efficiency/energy-efficiency-program	2,500,000	
Program 48	weather program	and	direct service		\$60.00	n/a	Vermont	n/a	neighbor/tenant	neighbor/tenant	ongoing	donations OED, LIAP	kickstart. org	5-6	
Program 49	weather program	and	direct service		\$60.00	n/a	Vermont	n/a	neighbor/tenant	neighbor/tenant	ongoing or phase	donations OED, LIAP	kickstart. org	5-6	

Appendix E:

Technical Advisory Group Year-End Status Report

To: The Vermont Public Utility Commission
From: Frederick Weston, Chair, CHS Technical Advisory Group
Date: 10 January 2025

Re: 2024 End-of-Year Report on TAG Activities

This memo summarizes the first-year activities of Clean Heat Standard's Technical Advisory Group (TAG) and the status of its current efforts. Act 18 identifies a set of tasks for TAG, to advise and assist the PUC in the design, implementation, and ongoing management of the clean heat standard. This report is organized according to those tasks,¹ which were prioritized largely by deadlines set in statute or by the PUC in the rulemaking that it is conducting pursuant to the statute.²

The TAG began its work at the end of 2023. The full TAG met first on 11 December 2023. Since then, it has met 25 more times (through 12 December 2024). In addition, it has held a similar number of ad hoc sub- (or breakout-) group meetings, convened to dig into particular issues, report on their work to the full TAG, and, where appropriate, to make recommendations for specific TAG actions.

1. 30 VSA §8124(d)(2): Clean Heat Measures Expected to Lower Annual Energy Bills

Obligated parties under Act 18 will have annual emissions reductions requirements (i.e., obligations to create specified amounts of clean heat credits). They are required to acquire 16% of their annual credit requirements from low-income customers and another 16% from low- or moderate-income customers. Half of these credits must be generated by “installed clean heat measures that require capital investments in homes, have measure lives of 10 years or more, and are estimated by the Technical Advisory Group to lower annual energy bills.”

The TAG has only recently begun to address this issue. The TAG does not have internal capability to perform the kinds of analyses that can determine which installed measures are likely to reduce energy bills. To begin our discussions, *Efficiency Vermont* provided a cost-benefit analysis of a limited number of installed measures (ductless and ducted heat pumps, heat pump water heaters, air sealing and insulation), but it was illustrative and not intended to be the basis of specific findings. Certainly, obligated parties will need to know what installed measures will satisfy the criteria, so there will come a time when the requisite analytical work will need to be done. The PUC will need to determine who should complete this work and also allocate resources for it.

2. 30 VSA §8127(b): Credit Ownership

This section directs the PUC, in consultation with the TAG, to “establish a standard methodology for determining what party or parties shall be the owner of a clean heat credit upon its creation.” A straw proposal on the question was developed by PUC staff and comments in response to it were solicited from interested parties and the public. On 16 May, the TAG approved by a vote of 11 in favor and none opposed, with one abstention, a response to the straw proposal. On 16 July 2024, the PUC issued its decision on credit ownership.

3. 30 VSA §8128: The Technical Advisory Group

This section identifies ten tasks for the TAG. A number of the tasks require data collection and technical analysis. §8128(c) provides the PUC with authority to hire a third-party consultant to

¹ 30 VSA §8124(d)(2), §8127(b), and §8128(a) & (c).

² 30 VSA §§8122, 8126, and 8131.

perform such work. The TAG's tasks, then, have consisted primarily of identifying key matters to be addressed, responding to the consultant's inquiries, providing feedback on the consultant's work product, and, where possible, reaching its own conclusions on particular matters.

In the spring, the PUC contracted with Opinion Dynamics (OD) to develop a draft technical resource manual (TRM) for the CHS. The TRM, which ultimately is subject to PUC review, modification, and approval, contains, among other things, emissions rate schedules (for fossil fuels, delivered measures, installed measures, and Vermont's electricity portfolio), detailed measure characterizations, and the data sources and mathematics that underpin them. At key points in the development of the TRM, OD consulted with the TAG. Much of our input and feedback was given orally during these sessions and, for the most part, it consisted of individual members' reactions, questions, and recommendations. Some input was communicated in writing, by means of memos from the chair on behalf of the TAG to PUC staff.

On the whole, the process worked well, but the compressed timelines presented challenges. OD did its best to incorporate the TAG's input and recommendations, where it was deemed appropriate, which couldn't have been easy at those times when the TAG did not speak unanimously or with a strong majority opinion.

a. §8128(a)(1): Emissions Accounting Methodology

This subsection requires that the PUC establish a "lifecycle carbon dioxide equivalent (CO₂e) emissions accounting methodology to be used to determine each obligated party's annual requirement". This is perhaps the central challenge to designing a practical thermal sector emissions program. Relatively straightforward in concept (the legislation sets out the broad parameters and mathematics), it becomes complex measure by measure (particularly for delivered measures, i.e., fuel), each with its own set of nuanced and contentious upstream and downstream effects. The TAG did not reach a strong majority (which we defined as a majority of ten or more) on the life-cycle emissions profiles of all delivered measures, but our diverse views and the bases for them were explored in great depth in our internal conversations and with OD. (See also subsection c., below.)

In the spring, the PUC staff issued and sought comment on its straw proposal on "pacing."³ The document addressed a number of process issues that related not only to the determination of an emissions accounting methodology and emissions rates, but also to, among other things, declining carbon intensity values, the thermal sector's emissions reduction requirements, and the obligated parties' annual requirements. On 27 June 2024, the TAG submitted a statement in response to the straw proposal. It was adopted by a vote of ten in favor and none opposed, with one abstention.

b. §8128(a)(2): Credit values for Clean Heat Measures

All eligible clean heat measures must have credit values associated with them. The PUC determined that each credit would be equal to one ton of emissions reductions. Mathematically, annual credit values for each measure can be straightforwardly calculated from the emissions rate schedules, and the TAG examined a number of examples for doing so. The translation of emissions rates into credit values illuminated some intriguing differences in the performance of various measures, which were raised with OD in our 12 December conversation with them.

³ Straw Proposal of the Staff of the Vermont Public Utility Commission (PUC) on the topic of Pacing – Part I for the Clean Heat Standard (Act 18), 30 VSA, elements within §§8124 and §§8127, 29 May 2024.

c. §8128(a)(3): Periodic Reporting

The TAG is required to periodically assess and report to the PUC “on the sustainability of the production of clean heat measures” by considering a variety of factors, among them greenhouse gas emissions, carbon sequestration, human health impacts, land-use changes, ecological impacts, pollution, and food costs. The statute doesn’t say when the TAG should first take up these questions—there was debate about whether this called for making findings before the clean heat program is up and running or whether it’s a *post hoc* exercise requiring data on the actual performance of the CHS—but, as a number of the potential impacts relate directly or indirectly to the calculation of life-cycle emissions, they naturally informed our discussions.

Of those discussed, the TAG reached a strong majority position on none. (It’s probably more accurate to say that our discussions never progressed to the point where we felt a strong majority might emerge.) The most divisive (I use the term without judgment) had to do with potential upstream benefits and impacts of biofuels production, chief among them being avoided methane emissions and deleterious land-use impacts. Among the TAG there are genuine and defensible differences of opinion on these questions, especially as they relate to the incremental effects of Vermont’s actions on the broader national and international markets. OD was made fully aware of these debates.

Although we did not achieve develop strong majority positions on these issues, we nonetheless submitted memos to the PUC that described our discussions (and differences of opinion) around consideration of (1) upstream avoided emissions of biofuels, (2) land use change, (3) the characterization of advanced wood heat, and (4) the treatment of wood fuel emissions schedules.

d. §8128(a)(4): Expected Lives of Clean Heat Measures

The total number of credits that a clean heat measure can earn is a function of its expected lifetime. Delivered measures produce credits (emissions reduction) only in the year that they are used (combusted). Installed measures, in contrast, generate savings across multiple years. The draft TRM gives expected lifetimes of installed measures. The TAG reviewed them and discussed them with OD. Consistency with current regulatory practice in Vermont (e.g., the Tier 3 and *Efficiency Vermont* TRMs) was an important theme. The TAG noted that, in some cases, such as the assumptions about the hours of operation of ducted heat pumps, there is not in fact consistency and urged that this be addressed through the review process.

e. §8128(a)(5): Credit Values over Expected Lives; Adjusting for Interactions Among Measures

See sub-paragraph b., above. As noted, the calculation of credit values is straightforward. That said, accounting for interactions among measures over time (whether *ex ante* or *ex post*) introduces complexities to the math. The emissions reductions from weatherization and improved insulation depend, for example, on whether they are calculated before or after (analytically or in chronological fact) a heat pump is installed. Success of the program depends on the integrity of the accounting.

The TAG looked at this question while reviewing the study of clean heat potential performed by NV5, a consultant to the Department of Public Service. Determining the contribution of particular measures, more than one of which might be installed in the same building, is altogether affected by the sequence of installation. This is analogous to a “loading order” for electric supply resources in the long run. The TAG did not feel that, at this point, the potential problem of double- or over-counting is a significant risk. It will be greatly mitigated by measure characterizations that recognize the circumstances at the time of installation. It should be easy

enough to differentiate the savings of, by way of example, a heat pump installed in a well-insulated home from those of a heat pump installed in a less well-insulated one.

f. §8128(a)(6): Coordination with Other Energy Programs

§8127(k)(1) states, among other things, that all clean heat measures delivered in Vermont, including those “resulting from the State’s energy efficiency programs, the low-income weatherization program, and the Renewable Energy Tier 3 program.” §8128(a)(6) instructs the TAG and PUC to develop appropriate rules around the coordination of the CHS with such programs.

The TAG first addressed the topic in its statement on credit ownership (16 May). It came up in subsequent discussions, especially those having to do with the cost of credits and the clean heat program overall (see the following sub-paragraph). Other than the TAG’s credit ownership statement submitted to the PUC, the TAG has not spoken further on this issue.

g. 8128(a)(7): Cost of Credits and Savings

This subsection of the statute requires the PUC to calculate the impact on heating-fuel prices of the costs of credits and savings generated by delivered clean heat measures (i.e., eligible fuels). The PUC is currently conducting a study to estimate those effects. Members of the TAG have participated in the public meetings on this study, but the TAG itself has taken no formal action on this question. We await the results of the study.

h. 8128(a)(8): Public Health Benefits

Act 18 directs the PUC to calculate “the savings associated with public health benefits due to clean heat measures.” TAG members do not think that this statutory wording constrains their consideration to benefits only, since there are such things as “negative benefits,” but especially so when reading this subsection in conjunction with §8128(a)(3), which speaks of “human health impacts” (see sub-paragraph c., above).

The TAG recently turned its attention to this question. The TAG’s initial effort consisted of a literature review, to begin to develop an understanding of the range of the potential public health impacts the various clean heat measures. On 9 January 2025, the TAG adopted, by a vote of ten in favor and three opposed with no abstentions, a statement on health considerations with respect clean heat measures.

The TAG’s periodic review (pursuant to §8128(a)(3)) should align with the PUC’s biennial review of consequences of the CHS. Calculating the public health benefits and impacts likely requires dedicated funding and expertise. Such analysis, conducted by an independent consultant or a state agency and provided with resources sufficient to do so, should dovetail with the PUC’s first review of consequences. The TAG can advise on methodology and review results, in the same way that it has done with the PUC’s and Department’s technical consultants.

i. §8128(a)(9): Coordination with the Agency of Natural Resources

The subsection of Act 18 directs the PUC to work with Agency of Natural Resources “to ensure that the greenhouse gas emissions reductions achieved in another sector through the implementation of the Clean Heat Standard are not double-counted in the Vermont Greenhouse Gas Emissions Inventory and Forecast.”

The Agency of Natural Resources (ANR) is represented on the TAG. So is the Department of Public Service (DPS), the state’s energy office and ratepayer advocate in matters before the PUC. The TAG discussed this question of potential double-counting and decided that no action is

needed at this time. This expressed confidence that, since ANR is the state entity charged with monitoring the state's greenhouse gas emissions inventory and the DPS has an intimate understanding of how Vermont consumers use energy, the risk of double-counting is very low.

j. §8128(a)(10): Periodic Assessment and Revision

§8124(a)(3) directs the PUC to, among other things, institute a triennial process of assessing the achievements of the clean heat standard and, if necessary, revise the schedule ("pace") for achieving the requirements of the GWSA. §8128(a)(10) tasks the TAG with assisting the PUC in that effort. We look forward to the opportunity.

4. Coda

In closing, I would like to commend the TAG's members for their dedication to the work. They have allocated a significant amount of personal and professional time to the effort, in what is clearly for each of them a sincere desire to see that a workable clean heat program, capable of meeting the Global Warming Solutions Act's goals as efficiently and fairly as possible, is put in place. We've not made perhaps as much progress by this time as we'd hoped, but I believe that we've done much to articulate, clarify, and at least begin to craft solutions to the CHS's thornier design and implementation challenges. Nothing in this memo should be construed to suggest that the cause has not been worth the effort. Rather, the contrary: the difficulty of the undertaking is a measure of its importance. I hope that the TAG's work of the last year will inform the continuing efforts of the legislature and administration to create a robust program to reduce greenhouse gas emissions from Vermont's thermal sector.

I want also to thank the facilitator from the Consensus Building Institute and the PUC staff who've more than assisted the TAG this past year. Without their constant effort, good humor, and attention to detail, the TAG would not have been nearly so productive.

Appendix F:

Technical Consultant Summary of Deliverables



Memorandum

To: Deirdre Morris and Tom Knauer, Vermont Public Utility Commission
From: Zach Ross, Joe Plummer, and Kevin Ketchman, Opinion Dynamics
Date: January 15, 2025
Re: Summary of Work Performed for Vermont Public Utility Commission

The below text is shared as a summary of the work performed for the Vermont Public Utility Commission by Opinion Dynamics in support of the development of the proposed Vermont Clean Heat Standard (CHS).

Summary of Work

Opinion Dynamics was hired as a technical consultant to the Vermont Public Utility Commission to support the development of the proposed Vermont CHS. Specifically, as outlined in the Commission's request for proposals (RFP) for the technical consultant position, Opinion Dynamics understood that the Commission sought a third-party independent technical consultant to develop clean heat measure characterizations and support the Commission and Technical Advisory Group (TAG) in the development of a Vermont CHS.

Opinion Dynamics' work with the Commission began in February 2024 and ran through January 2025. Key project phases are summarized below.

- **Project Initiation.** In February and March 2024, Opinion Dynamics completed a number of project initiation activities, including project kickoffs with the Commission and the TAG as well as a coordination meeting with the Vermont Department of Public Service (PSD), and the PSD's potential study contractor, NV5.
- **Measure Characterization and Technical Reference Manual (TRM) Development.** From April through September 2024, Opinion Dynamics conducted a range of measure characterization and CHS TRM development activities in accordance with the scope of work. In particular, these activities fell into two broad categories:
 - **Development of lifecycle emissions rate schedule.** In accordance with Act 18, Opinion Dynamics developed a lifecycle emissions rate schedule that characterized each fuel of interest for the CHS on a lifecycle emissions basis (with emissions expressed as carbon intensities in units of grams of CO_{2e} per megajoule (gCO_{2e}/MJ). Opinion Dynamics characterized both combustion and upstream emissions for 23 separate fuels.
 - **Development of measure characterizations.** Opinion Dynamics also developed characterizations of 42 clean heat measures (including 37 installed measures, such as heat pumps and advanced wood heating, as well as 5 fuel measures, such as biomethane and biodiesel). The measure characterizations, used in conjunction with the carbon intensities included in the lifecycle emissions rate schedule, allow the user of the CHS TRM to analyze the installation or delivery of clean heat measures to determine the clean heat credits associated with each measure.

Throughout the development of the draft materials outlined above, materials were shared with the Commission and the TAG for comment and feedback. When comments were received, Opinion Dynamics sought to address

them wherever possible. From September through December 2024, Opinion Dynamics shared additional drafts of the lifecycle emissions rate schedule and measure characterizations and received further feedback and questions from the TAG. The completed lifecycle emissions rate schedule and measure characterizations, along with context and background, were compiled into a comprehensive final CHS TRM delivered to the Commission in January 2025.

- **Engagement with the TAG.** Throughout 2024, Opinion Dynamics joined a number of TAG meetings at the request of the Commission and TAG to discuss the approach taken in the development of the above materials and to field questions from the TAG. When written questions were shared in advance, Opinion Dynamics provided written responses to TAG questions in addition to verbal feedback.

Deliverables

In support of the Commission’s work to develop the Vermont CHS, Opinion Dynamics produced a CHS Technical Reference Manual (TRM), a technical reference document that outlines consistent methods that a user (such as an obligated party, default delivery agent, or entity conducting measurement, verification, or other oversight) can use to determine clean heat credits associated with the delivery of a specific clean heat measure. The CHS TRM includes two key components that work in concert to allow the user to determine clean heat credits: a lifecycle emissions rate schedule and measure characterizations.

- **Lifecycle emissions rate schedule.** The CHS TRM includes a lifecycle emissions rate schedule, as outlined in Act 18, that characterizes each fuel of interest for the CHS on a lifecycle emissions basis (with emissions expressed as carbon intensities in units of grams of CO₂e per megajoule (gCO₂e/MJ)). Opinion Dynamics characterized both combustion and upstream emissions for 23 separate fuels, including electricity, fossil fuels (such as natural gas, fuel oil #2, propane, kerosene, and coal), biofuels (such as biomethane, biodiesel, and renewable diesel from multiple fuel pathways), hydrogen (both “grey” or conventional hydrogen as well as “green” hydrogen as outlined in Act 18), and wood fuels. Combustion emissions were developed using the U.S. Environmental Protection Agency’s 2024 GHG Emissions Factors Hub,¹ while upstream emissions were assessed via Opinion Dynamics analysis using Argonne National Laboratory’s Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model.²
- **Measure characterizations.** Opinion Dynamics developed characterizations of 42 clean heat measures (including 37 installed measures, such as heat pumps and advanced wood heating, as well as 5 fuel measures, such as biomethane and biodiesel). Measure characterizations define the clean heat measure and provide any necessary caveats (e.g., for heat pumps, certain criteria a heat pump must meet in order to use the measure characterization). Measure characterizations also include detailed formulas and calculations that, used in conjunction with the carbon intensities included in the lifecycle emissions rate schedule, allow the user of the CHS TRM to analyze the installation or delivery of clean heat measures to determine the clean heat credits associated with each measure. Measure characterizations were developed leveraging (where possible) existing Vermont resources such as the Efficiency Vermont TRM and the Vermont Renewable Energy Standard Tier III TRM.

Development of the CHS TRM was conducted under the guidance of the Commission and the TAG. Opinion Dynamics shared drafts of each component of the TRM with the Commission and the TAG for comment and feedback beginning in August 2024. When comments were received, Opinion Dynamics sought to address them wherever possible and shared additional drafts of the lifecycle emissions rate schedule and measure characterizations for further feedback from the

¹ U.S. Environmental Protection Agency (2024). 2024 GHG Emissions Factors Hub. Accessed at: <https://www.epa.gov/climateleadership/ghg-emission-factors-hub>

² Argonne National Laboratory. (2024). The Greenhouse gases, Regulated Emissions, and Energy use in Technologies Model (2023 rev1). Accessed at: <https://greet.anl.gov/>

TAG and PUC. The completed lifecycle emissions rate schedule and measure characterizations, along with context and background, were compiled into a comprehensive final CHS TRM delivered to the Commission in January 2025.

Appendix G:
Public Engagement Consultant Reports



Vermont Partnership

FOR FAIRNESS AND DIVERSITY

**Vermont Public Utility Commission
Clean Heat Standard Team
Public Engagement Facilitator
Activity Report • 01 February thru 30 April 2024**

This document reviews activities undertaken by Vermont Partnership for Fairness & Diversity (Consultant) for the period 01 February thru 30 April 2024 under the auspices of Contract N°47606 with the State of Vermont. The Consultant has primary responsibility to design and conduct public engagement related to the Clean Heat Standard (S.5 Act 18) enacted by the legislature in May 2023.

General Observations

S.5 (Act 18) embodies a multifaceted legislative strategy aimed at combatting greenhouse gas emissions in Vermont's thermal sector. By instituting a comprehensive Clean Heat Standard program and implementing incentives to promote the adoption of clean heating and cooling technologies, the bill endeavors to propel the state towards a more sustainable energy future. However, the success of this ambitious program hinges not only on its environmental efficacy but also on its ability to prioritize affordability and accessibility, particularly for under-served and sacrificed communities.

At its core, Act 18 targets the thermal sector of Vermont's economy, recognizing heating and cooling as significant contributors to greenhouse gas emissions. By focusing on measures specifically tailored to mitigate emissions associated with these activities, the bill demonstrates a proactive stance towards addressing climate change at the local level. Nevertheless, the bill's emphasis on promoting clean heat adoption raises important considerations regarding equity and social justice.

One key concern pertains to the affordability and accessibility of clean heat measures and credits, particularly for low-income households. While the bill aims to incentivize the adoption of cleaner technologies, there is a risk that associated costs may pose a barrier to entry for economically disadvantaged individuals and families. Moreover, the requirement for Obligated Parties to submit detailed information for credit eligibility could potentially exacerbate disparities in access, as undercapitalized entities may face challenges in meeting stringent documentation requirements.

Another conundrum of the legislation pertains to energy credit eligibility. As of this report only Obligated Parties are eligible for energy credits. These parties cited in Act 18 include regulated natural gas utilities, entities that import heating fuel for ultimate consumption in Vermont, or entities that produce, refine, manufacture, or compound heating fuel within Vermont for ultimate consumption therein.

Whereas the general population, including low- to moderate-income households and small businesses, can participate in the overall reduction of greenhouse gases (e.g. walk/bicycle versus drive, lower thermostats, utilize clotheslines, convert to renewable energy sources), they can neither accrue nor monetize clean heat energy credits as of this report.

Again, Act 18's emphasis on promoting clean heat adoption raises important considerations regarding equity and social justice. According to the 2020 United States Census, of Vermont's 265,858 households the Vermont Housing Finance Agency reports that renters account for 81,849 or 31% of households. Landlords who require tenants to pay heating and electricity costs have no financial incentives for making capital investment towards clean heat energy as the tenant bears the burden for increased heating costs. Landlords who do make clean energy capital investments, regardless of the level of subsidy, simply pass the costs onto tenants with higher rents.

Act 18 specifically requires 16% of energy credits be retired in connection with low- and moderate-income households. If the proposed Standard mandates higher credit values for low- and moderate-income households it runs the risk of exacerbating affordability for these households as they are statistically more likely to be renters. If higher credit values attach to rental installations of clean heat technologies, Obligated Parties and Default Delivery Agents will be incentivized to target landlords as the primary source for such enhanced credit values. Capital investments by landlords will be recouped in the form of increased rents

Homeowners and low- to moderate-income households already have access to weatherization (Efficiency Vermont) and fuel assistance programs (Department for Children and Families). Given that fuel provider and energy representatives weighed in with testimony during the crafting of Act 18, the Consultant questions the timing of broad-based community engagement for the purposes of designing a clean heat standard. The Consultant believes those who possess clean heat technical knowledge are best positioned to assist design the standard. This includes the directly impacted actors of Act 18, the Obligated Parties of fossil fuel providers and Default Delivery agents.

Government protects public safety through various regulatory bodies because the citizenry or end-user lacks the highly specialized knowledge for risk analysis. A proposed Clean Heat Standard and marketplace for energy credits and monetization inherently represents a highly complex and technical field. The Consultant draws parallels with the practice of medicine in Vermont where licensing and accepted medical practice criteria are determined by medical specialists and not the general public. The general public involves itself with public health policy such as access and affordability.

The Consultant found members of the Technical Advisory and Equity Advisory groups hard pressed to imagine what types of information from the general public would impact the technical requirements of Act 18 to reduce greenhouse gases, to create the clean heat standard, or change the marketplace where energy credits are monetized. Whereas state government has at the macro level prioritized the reduction of greenhouse gases and the increased adoption of clean heat measures; at the micro level, consumers concern themselves with how much they pay for heating costs—and all indicators predict these costs will increase under Act 18.

Major Activities

The Consultant owes a considerable debt to the CHS Liaison who assisted the Consultant in winnowing down the steep learning curve of clean energy and clean heat. The Liaison guided the Consultant to documents, websites, and human resources as well as provided insights into Vermont's energy organizational landscape within and outside state government.

The Consultant reviewed documents related to Vermont's clean energy efforts and history of the clean heat energy standard legislation (S.5 Act 18) including interviews with Secretary of Transportation Joe Flynn and Secretary of Agriculture, Food & Markets Anson Tebbetts, as well as reviewed video minutes from the Equity Advisory Group and Technical Advisory Group.

The Consultant met with the CHS Liaison and team to discuss community engagement strategy including final workplan, review of email blast language to targeted audiences, debriefing first CHS Zoom Gathering, and adjusting approach as needed. Consultant met weekly with Erin Hicks-Tibbles, the CHS Liaison. Consultant submitted final workplan to the CHS Liaison on 02 March 2024.

The Consultant engaged Jameson Davis, Esq. of Writing Wrongs, LLC, an environmental law firm, to prepare a simple/plain English version of Act 18 legislative text downloadable [here](#); released a downloadable one-page document for its email campaign [What you need to know about Act 18](#); and updated BIPOC (Black, Indigenous, and People of Color)-owned businesses/civic organizations/ thought leaders, veterans groups and selected disability community groups. The CHS Liaison informed the Consultant that the PUC would release an overview of the clean heat standard in time for use with the second CHS Gathering.

In a review of recent clean energy outreach by state funded agencies or contractors, the Consultant found few instances of intentional targeting of BIPOC residents, notably tabling at the 5th Annual Vermont First African Landing celebration and the Abenaki Land Link Festival as well as an online focus group of ten BIPOC residents under the auspices of the Vermont Climate Action Plan. As a result, the Consultant adopted a strategy to prioritize engagement with marginalized communities during the reporting period before widening the aperture to the general population in subsequent months.

During the reporting period, the Consultant sent three targeted emails to organizations governed and managed by BIPOC residents and thought leaders from BIPOC communities. The purpose of the emails was to inform recipients of the Clean Heat Standard legislation and to invite them to one of three CHS Gatherings. The PUC reposted the emails to their usual networks of professional, technical, and community/environmental groups following the clean energy discussions in Vermont. Click below to download each email blast and corresponding data report.

- [Email Blast #1](#)
- [Email Blast #1 Report](#)
- [Email Blast #2](#)
- [Email Blast #2 Report](#)
- [Email Blast #3](#)
- [Email Blast #3 Report](#)

European Americans accounted for twenty-four (24) or about 5% of the recipients for each email blast presented in Table 1. Over half the BIPOC recipients opened, and presumably read, information on clean heat energy and Act 18.

Table I
CHS Email Blasts to BIPOC Recipients

Recently sent

Campaign	Recipients	Opened ⓘ	Clicked ⓘ	Sent
CHS Gatherings #3	510	51.2%	9.5%	4 Apr 2024
Clean Heat #2	512	51.6%	5.8%	27 Mar 2024
CHS Gatherings	464	55.2%	7.8%	21 Mar 2024

Twenty-three (23) individuals registered for the first CHS Gathering held on 17 April 2024 via Zoom. Of this group, ten (10), seven (7) of which identified with state agencies, actually participated in the session. For reasons unknown, the “no-shows” represented energy industry actors (fuel dealers, HVAC installers), community organizations, or BIPOC businesses. The Consultant will investigate what kept the “no-shows” away. Current registrations for the 07 May and 06 June CHS Gatherings appear in the Addendum.

During the first CHS Gathering, the Consultant experienced a series of technical glitches related the PowerPoint to Zoom interface and ultimately abandoned the [PowerPoint presentation](#) in favor of participant dialogue. Similarly, we opted to not use a detailed chart of the CHS process encompassing over 120 data points for the 17 April session because of the size of the document. Ben Bolaski, PUC Thermal Energy Program Specialist, prepared the chart which can be downloaded [here](#).

Agency personnel attended in hopes of hearing directly from energy industry actors (fuel dealers, installers), community organizations, and BIPOC business owners. During the Gathering agency attendees drew attention to the presence of weatherization and fuel assistance programs for low- and moderate-income households. Click here for the video of the first CHS Gathering.

**Table II
Registrants and Attendees for 17 April 2024 CHS Gathering**

•	Deirdre Morris	Chittenden	RT	VT Public Utilities Commission
•	Carol Flint	Orange	HO	VT Department of Public Service
•	Annette Smith	Rutland	HO	Vermonters for a Clean Environment
•	Scott Pinkham	Rutland	HO	
•	Dan Fingas	Washington	HO	VT Natural Resources Council
•	Erin Hicks-Tibbles	Washington	HO	VT Public Utilities Commission

•	Geoff Wilcox	Washington	HO	VT Office of Economic Opportunity
•	Henry Mauck	Washington	HO	VT Department of Public Service
•	Daniel Jones	Windsor	HO	
•	Tracy Myers		HO	VT Public Utilities Commission
	Matt Cota	Chittenden	HO	Meadow Hill
	Frederick Parks	Franklin	HO	
	Roy V.	Franklin	BO	FNRE (Fairfax Neighbors for Racial Equity)
	Joe Uglietto	MA	BO	Diversified Energy Specialists
	Catherine Kidder	Orange	HO	Third Act
	Stuart Blood	Orange	HO	
	Justin Turco	Rutland	HO	Cross Road Sugar Co.
	Bob Atchinson	Washington	BO	The Page House
	Dianna Liberty-James	Windham	BO	James Plumbing Heating Oil Co Inc
	Julian Perkins	Windham	HO	Jamaican Jewelz LLC
	Robert Kaplan	Windham	BO	Kaplan HVAC Solutions, LLC
	Laura Simon	Windsor	HO	
Notes: • = Attended HO = Home Owner BO = Business Owner RT = Renter/Tenant				

In spite of the less than expected turnout two concerns emerged from the general public, including a member of the Consultant team:

1. The fear that higher propane costs will cause the consolidation of dealers. The consolidation will leave consumers with fewer, if any, competitive options for propane.
2. The perception that Act 18 will not mitigate the financial burden of increased fuel costs on low-income or households that rent, particularly rentals where landlords require tenants to pay fuel costs. Nor will it mitigate the cost of rent increases whether or not the landlord adopts clean heat measures.

By the close of the reporting period thirty-three individuals had registered for the second CHS Gathering on 07 May (see Addendum).

Findings

- Government officials and clean energy advocates are building the Clean Heat Standard plane as it flies.

- The general public finds it difficult to understand the technical aspects of clean heat energy, energy credits and monetization, and greenhouse gas reduction targets.
- The highly specialized, complex technical knowledge on clean energy and clean heat is concentrated with a small select group of government officials and clean energy advocates.
- Some government officials view portions of Act 18 as malleable or negotiable; notably with regards to who can earn and monetize clean heat energy credits or the percentage of energy credits Obligated Parties shall retire from low- to moderate income households.
- A Clean Heat Standard that proposes to change who may accrue and redeem energy credits or change the percentage of energy credits for social equity purposes may require legislative action.
- Government and clean energy proponents' outreach to BIPOC communities and other marginalized groups has been weak.
- Consumers will pay more to heat their homes and businesses under Act 18.

Recommendations

The Consultant recommends

- Continued outreach to marginalized communities for the next two CHS Gatherings before widening the aperture to the general population.
- The CHS Team transition from public engagement to a public information or education posture on clean heat. Given the general public lacks the highly technical and specialized knowledge to design the Standard, technical experts must ensure clean heat options are universally accessible at the lowest possible price points.
- Amending the Consultant contract by \$22,000 to accommodate public engagement and public information activities through January 2025; the effective end date of the contract is 31 May 2025.

Financial report

The Consultant proposed \$30,920 to be expended over a seven month period from February to August 2024. This report covers activities over a three month period or 43% of the timeline. During the reporting period the Consultant invoiced the PUC/CHS a total of \$9,064.00 which represents 29.3% of the contract amount of \$30,920. Another

invoice for \$3,696 has been submitted with this report bringing expended totals to \$12,760 or 41% of the contracted amount over the course of three months.

The PUC/CHS may have anticipated the CHS design process and community engagement would extend beyond August 2024 and set the effective end date for the contract at 31 May 2025. This period would cover the final CHS design and requisite approval by the legislature. The Consultant proposes extending the contract amount by \$22,000 to cover activities from September through January 2025 in time for the next legislative session.

Addendum

**Table A:
Registrants to date for the 07 May 2024 CHS Gathering**

Jean Terwilliger	Addison	HO	Climate Action Center of Addison County
John McCormick	Addison	HO	Louise Diamond Committee to Protect Next Generations
Sally Burrell	Addison	RT	Bristol Energy Commission
Steve Maier	Addison	BO	Climate Economy Action Center of Addison County
Joanne O'Connor	Bennington	HO	Earth Matters
Kathleen Wilkinson	Bennington	BO	Bennington Cooling & Heating
Ashley Adams	Chittenden	BO	PG Adams, Inc.
Brian Forrest	Chittenden	HO	350VT.org
Debbie New	Chittenden	HO	VT Community Thermal Networks
Ethan Goldman	Chittenden	HO	South Burlington Energy Committee
Matthew Lawrence LeFleur	Grand Isle	RT	VTRC
Erik Schultz	international	HO	NEKCA/GreenSavingSmart
Kevin Grant	NH	BO	Sprague Energy
Geoffrey Gardner	Orange	HO	
Travis Locke	Orleans	HO	Fred's Energy
Jeremy Gildrien	Rutland	HO	Rutland Regional Planning Commission
Stephen Dotson	Vermont	RT	Town of Brattleboro, VT
Gretchen Elias	Washington	HO	
Johanna Miller	Washington	HO	VNRC/VECAN
Melissa Ramsey	Washington	RT	Absolute Spill Repsonse
Norm Etkind	Washington	HO	
Laura Sibilia	Windham	HO	VT General Assembly
Stephen Dotson	Windham	RT	Town of Brattleboro, VT
D Gene Kraus	Windsor	HO	350VT.org
Anderson Leslie		BO	Propane Gas Association of New England
Christine L Peterson		RT	VT Department of Public Service
Jean Hamilton		HO	Vermont Housing & Conservation Board
Kimberly Hornung-Marcy		HO	United Methodist Church
Linda Gray		HO	Norwich Energy Committee
Luce R. Hillman		HO	UVM
Matthew Bakerpoole		HO	VT Department of Public Service
Phet Keomanyvanh		HO	City of Burlington, VT
Notes: HO = Home Owner BO = Business Owner RT = Renter/Tenant			

**Table B:
Registrants to date for 06 June 2024 CHS Gathering**

Mike Roy	Addison	HO	Town of Middlebury
Richard Hopkins	Addison	HO	Climate Economy Action Center of Addison County
Andrea Bacchi	Bennington	BO	Think Dynamic Digital, LLC
Kim Fried	Caledonia	BO	
Beverly Little Thunder	Chittenden	HO	Kunsi Keya Tamakoce
Jennifer Delony	Franklin	HO	
Matthew Lawrence LeFleur	Grand Isle	RT	VT Climate Council
A. Conrad Bellavance	Orleans	HO	Fred's Propane, Inc.
Elizabeth Steel	Orleans	HO	Campwell Connexions
Bill Christian	Vermont	HO	Comfort International
Rick Hackett	Vermont	HO	
Julie Raboin	Washington	HO	VT Department of Public Service
Lauren Hierl	Washington	HO	VT Conservation Voters
Cheri Ann Brodhurst	Windham	HO	
Laura Sibia	Windham	HO	Vermont House of Representatives
Michael Longo	Windham	HO	Michael Longo Tree Care
Notes: HO = Home Owner BO = Business Owner RT = Renter/Tenant			



Vermont Partnership

FOR FAIRNESS AND DIVERSITY

**Vermont Public Utility Commission
Clean Heat Standard Team
Public Engagement Facilitator
Activity Report N° 2 • 01 May thru 30 June 2024**

This document reviews activities undertaken by Vermont Partnership for Fairness & Diversity (Consultant) for the period 01 May thru 30 June 2024 under the auspices of Contract N°47606 with the State of Vermont. The Consultant has primary responsibility to design and conduct public engagement related to the Clean Heat Standard (S.5 Act 18) enacted by the legislature in May 2023.

Major Activities

Inasmuch as there exists a lot of interest in clean heat energy, an equal amount of confusion, if not more, exists among stakeholders. The transition to clean heat energy in Vermont finds itself at an inflection point evidenced by the creative tension amongst stakeholders.

Environmental groups hold tight to a near non-negotiable position to reduce greenhouse gases whatever the costs. The economic math suggesting an increase of fuel oil costs by \$0.70/gal crushes the budgets and pocketbooks of low- to middle-income households. Landlords have no financial incentives to convert old, inefficient oil furnaces to heat pumps and/or renewable energy while tenants bear the costs of heating/cooling their rental units.

Some stakeholders find Act 18 overly complicated with unintended consequences. Why are energy credits restricted to Obligated Parties and not the end-user consumers? Do small family-owned fuel dealers have the time and capacity to complete the process to acquire and redeem clean energy credits? How does the state incentivize landlords to do right by their tenants and the environment? Other individuals predict when the legislature passes the Clean Heat Standard rules litigation will follow and tie up CHS implementation for years thereafter. There is no

During the reporting period, the Consultant conducted CHS Gatherings on 07 May and 06 June 2024 for 90-minutes each. Four groups attended these Gatherings: businesses or industry groups that deliver or install clean heat measures to consumers, clean energy advocates, consumers of heat/cooling energy, and members from state government working on energy policy. This later group attended to listen to the thoughts of installers, advocates, and consumers.

We queried participants on three points:

1. If a consumer, what is your experience heating and cooling your home or business?
2. If an HVAC installer, how will the clean heat energy credit system impact the way you do business?
3. If an advocate, to what extent do you believe implementation of Act 18 will reduce greenhouse gases?

Table I below indicates thirty-three (33) individuals registered for the second CHS Gathering held on 07 May 2024 via Zoom. Of this group, eighteen (18) or 55% participated in the session. Eight (8) participants represented advocacy groups; three (3) represented HVAC installers or industry associations; three (3) represented state agencies; and two (2) identified as representatives of town government.

**Table I
Registrants and Attendees for 07 May 2024 CHS Gathering**

•	Annette Smith	Rutland	HO	Vermonters for a Clean Environment
•	Christine L Peterson		RT	VT Department of Public Service
•	Gretchen Elias	Washington	HO	
•	Jean Terwilliger	Addison	HO	Climate Action Center of Addison County
•	Jeremy Gildrien	Rutland	HO	Rutland Regional Planning Commission
•	Joanne O'Connor	Bennington	HO	Earth Matters
•	Johanna Miller	Washington	HO	VNRC/VECAN
•	Linda Gray		HO	Norwich Energy Committee
•	Luce R. Hillman		HO	UVM
•	Matthew Bakerpoole		HO	VT Department of Public Service
•	Matthew Lawrence LeFleur	Grand Isle	RT	VTRC
•	Melissa Ramsey	Washington	RT	Absolute Spill Repsonse
•	Norm Etkind	Washington	HO	
•	Stephen Dotson	Vermont	RT	Town of Brattleboro, VT
•	Steve Maier	Addison	BO	Climate Economy Action Center of Addison County
•	Travis Locke	Orleans	HO	Fred's Energy
•	Anderson Leslie		BO	Propane Gas Association of New England
•	Ashley Adams	Chittenden	BO	PG Adams, Inc.
	Brian Forrest	Chittenden	HO	350VT.org
	D Gene Kraus	Windsor	HO	350VT.org
	Debbie New	Chittenden	HO	VT Community Thermal Networks
	Erik Schultz	international	HO	NEKCA/GreenSavingSmart
	Ethan Goldman	Chittenden	HO	South Burlington Energy Committee
	Geoffrey Gardner	Orange	HO	
	Jean Hamilton		HO	Vermont Housing & Conservation Board
	John McCormick	Addison	HO	Louise Diamond Committee to Protect Next Generations
	Kathleen Wilkinson	Bennington	BO	Bennington Cooling & Heating
	Kevin Grant	NH	BO	Sprague Energy
	Kimberly Hornung-Marcy		HO	United Methodist Church
	Laura Sibilia	Windham	HO	VT General Assembly
	Phet Keomanyvanh		HO	City of Burlington, VT
	Sally Burrell	Addison	RT	Bristol Energy Commission
	Zack Porter	Washington	HO	Standing Trees
Notes: • = Attended HO = Home Owner BO = Business Owner RT = Renter/Tenant				

Findings

A recording of the 07 May CHS Gathering can be seen [here](#); and a record of the Zoom chat meeting box appears in the Addendum. Robust discussions focused on level of public understanding of the CHS from cursory to expert; the utility of heat pumps as a viable clean heat measure for all homes; and the classification of what constitutes fossil fuel (propane?) or fuels (wood?) that reduce greenhouse gases. Both state government and advocacy representatives on the call provided links to relevant documents and research in the chat. Salient findings from the 07 May CHS Gathering include:

- An advocate on the Autism spectrum stressed the need for plain language materials; a link to a recently released PUC plain-language overview of CHS was posted in the chat.
- An expressed desire to create an energy navigator program to assist homeowners, tenants, and business owners.
- Town planners would like to have household energy consumption data for energy planning purposes.
- An expressed need for more weatherization installers paid at a higher hourly rate; if unskilled fast food workers are paid \$20/hr, skilled weatherization installers should be paid \$30/hr.
- High density population areas whether urban or village centers should create thermal energy networks.
- Energy storage should be eligible for rebates.
- The public knows of but lacks understanding of clean energy policy.
- Some advocates questioned the State of Vermont as a reliable source of accurate information.
- An expressed desire that state government not alienate the public.

Table II below indicates forty-three (43) individuals registered for the third CHS Gathering held on 06 June 2024 via Zoom. Of this group, seventeen (17) or 40% participated in the session. Five (5) participants represented energy advocacy groups; five (5) represented state agencies; three (3) identified as representatives of town government; and two (2) represented HVAC installers or industry associations. A journalist from Vermont Public who covers the energy sector was also present.

Table II
Registrants and Attendees for 06 June 2024 CHS Gathering

•	Abagael Giles	Chittenden	RT	Vermont Public
•	Anderson Leslie		BO	Propane Gas Association of New England
•	Annette Smith	Rutland	HO	Vermonters for a Clean Environment
•	Ben Bolaski	Windsor	HO	Public Service Department
•	Dominic Gatti			VT Public Utility Commission
•	Elizabeth Steel	Orleans	HO	Campwell Connexions
•	Erin Hicks-Tibbles			VT Public Utility Commission
•	Harry Falconer	Windsor	RT	Two Rivers-Ottawquechee Regional Commission

•	John McCormick	Vermont	HO	Louise Diamond Comm. to Protect Next Generations
•	Julie Raboin	Washington	HO	VT Department of Public Service
•	Kathy Beyer	Vermont	HO	Evernorth
•	Katie Spring	US	RT	Vermont Law and Graduate School
•	Kimberly Hornung-Marcy		HO	United Methodist Church
•	Laura Sibilia	Windham	HO	VT General Assembly
•	Marty Feltus	Caledonia	HO	
•	Mike Roy	Addison	HO	Town of Middlebury
•	Thomas Fort	Vermont	HO	Wallingford Energy Committee
	A. Conrad Bellavance	Orleans	HO	Fred's Propane, Inc.
	Alan Robertson	Caledonia	HO	Town of Sheffield
	Allie Webster	Caledonia	HO	NVDA
	Amy Demetrowitz	Vermont	HO	Champlain Housing Trust
	Andrea Bacchi	Bennington	BO	Think Dynamic Digital, LLC
	Ashley Adams	Chittenden	BO	PG Adams, Inc.
	Beverly Little Thunder	Chittenden	HO	Kunsi Keya Tamakoce
	Bill Christian	Vermont	HO	Comfort International
	Cheri Ann Brodhurst	Windham	HO	
	Daniel Jones	United States	HO	
	Donna Dzugas	Orleans	HO	Barely Affording Vermont
	Eileen Boland	Caledonia	HO	Wheelock Community Initiative
	Jennifer Delony	Franklin	HO	
	Kim Fried	Caledonia	BO	
	Laura Sibilia	Windham	HO	Vermont House of Representatives
	Lauren Hierl	Washington	HO	VT Conservation Voters
	Liz Curry	Chittenden	HO	CommonLand Solutions
	Martine Victor	Bennington	HO	Planning Commission
	Matthew Lawrence LeFleur	Grand Isle	RT	VT Climate Council
	Michael Longo	Windham	HO	Michael Longo Tree Care
	Niki Thran	Washington	HO	
	Richard Hopkins	Addison	HO	Climate Economy Action Center of Addison County
	Rick Hackett	Vermont	HO	
	Sarah Phillips	Washington	HO	Vermont Community Loan Fund
	Srinam Srinivasan	Chittenden	HO	
	Sten Seeman	Vermont	BO	All Efficient, Sierra Energy and Water Conservation
Notes: • = Attended HO = Home Owner BO = Business Owner RT = Renter/Tenant				

Findings

A recording of the 06 June CHS Gathering can be seen [here](#); and a record of the Zoom chat meeting box appears in the Addendum. Major concerns expressed by some participants included the CHS rulemaking process and implementation rollout; equity as related to the split incentive between renters and landlords; and the classification of fuels. Salient findings from the 06 June CHS Gathering include:

- The legislature should be commended for tackling the difficult issue of reducing greenhouse gases by promoting the adoption of clean heat measures.

- Frustration with the unpredictability of fuel oil prices.
- Small family-owned fuel dealers were already diversifying their products and services to include clean heat measures prior to Act 18.
- Industry advocates feel propane should not be classified as a fossil fuel because it is a byproduct of natural gas production.
- Landlords who require tenants to pay heating and electricity costs have no financial incentives for making capital investment towards clean heat energy as the tenant bears the burden for increased heating costs. Landlords who do make clean energy capital investments, regardless of the level of subsidy, simply pass the costs onto tenants with higher rents.
- Data on the number of renter households that pay their own heating/cooling costs would inform equitable policy development.
- Create a statewide clean energy navigator program.
- Data on individual household heating/cooling energy consumption would aid town energy planners.
- Households that burn wood with an oil backup will burn more wood when the price of fuel oil increases.
- Suggested projected increase of fuel oil by \$0.70/gal by the Agency of Natural Resources is “cruel”.
- Suggested increase of fuel fee tax from \$0.02/gal to \$0.04/gal or \$0.06/gal to fund weatherization programs and increase installer hourly wage to \$30/hour.
- Prioritize installation of heat pumps where possible and weatherization programs.

The Contractor appreciated comments from several participants on the facilitation of the CHS Gatherings. These participants felt heard during the session. Some participants were openly skeptical of state government’s ability to be transparent and provide reliable clean energy information. The Contractor presented itself as an “honest broker” without “a dog in the fight”. The Contractor explicitly announced that selected questions during discussions were posed as a “devil’s advocate” and called on those who had not spoken to share their thoughts.

Important to the process, the Contractor encouraged individuals with opposing viewpoints to listen and engage with each other. Information flowed in a multilateral crosspollinated fashion amongst participants rather than bilateral between the Contractor and an individual participant.

Outreach

During the reporting period the Contractor completed the following Outreach activities:

1. Secured a workshop session at the Vermont Council on Rural Development’s Vermont Leadership Summit on 06 August 2024 in Randolph, VT. The short list for potential panelists include Edward McNamara, PUC Commissioner; Jared Duval, Energy Action Network; Kathy Beyer, Evernorth; John McCormick, Louise Diamond Committee to Protect Next Generations.

2. Secured a CHS Gathering session with members of the Vermont League of Cities and Towns scheduled over Zoom for 18 July 2024. The session will be co-hosted with the Vermont Natural Resource Council.
3. Established contact with the Vermont Chamber of Commerce for a virtual CHS Gathering for its members before the end of summer.
4. Scheduled meetings with the ReLeaf Collective and Vermont Professionals of Color to discuss conducting virtual CHS Gatherings for their respective members.
5. Determined that tabling at county fairs would be cost prohibited given remaining funds in the project budget.

In an effort to determine why registrants of all CHS Gatherings were “no-shows” the Consultant requested the “no-shows” respond to the following email message sent the week of 17 June 2024:

We missed you at the Clean Heat Standard Gathering on May 7th or June 6th 2024 for which you had registered. As we search for more efficient and effective ways to engage public input on this issue, would you let us know what kept you from the meeting by returning this email with one or multiple reasons checked:

___ simply forgot ___ double booked another meeting ___ work emergency

___ family emergency ___ no longer interested in the topic

Thank you for taking a minute to complete and return this email to help us improve public engagement.

Financial Report

The Contractor proposed and the PUC/CHS Team approved \$30,920 to be expended over a seven month period from February to August 2024. This report marks the end of five months or 71% of the contract period. The PUC/CHS has paid the Consultant a total of \$12,760 which represents 41% of the contract amount of \$30,920. Another invoice for \$9,856 has been submitted with this report bringing expended totals to \$22,616 or 73% of the contracted amount over the course of five months.

The PUC/CHS denied the Contractor proposal to extend the contract amount by \$22,000 to cover activities from September through January 2025 in time for the next legislative session.

ADDENDUM

Chat file 07 May 2024 CHS Gathering

14:03:47 From Stephen Dotson to Everyone:

Stephen Dotson - Town of Brattleboro - Sustainability Coordinator

14:05:58 From VTPFD.org Gemma Seymour to Curtiss Reed Jr(Direct Message):

There are about 45 people who registered or were invited.

14:06:32 From VTPFD.org Gemma Seymour to Curtiss Reed Jr(Direct Message):

Don't forget to start recording.

14:37:11 From Matthew LeFluer VTRC (He/Him) to Everyone:

Sorry Eveyone I Have Autism I Learn Things And Do Things Diffenterly So plain language Woul Defently Help

14:37:48 From ashley adams, mom, concerned citizen, business owner to Everyone:

Replying to "Sorry Eveyone I ..."

No apology necessary!

14:37:59 From VTPFD.org Gemma Seymour to Everyone:

Reacted to "Sorry Eveyone I ..." with 👍

14:41:34 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

Here's an FAQ about the policy, intended to help the public understand what it is — and isn't. Which, I agree — and said — that the public should be deeply engaged, and they should be able to understand the policy and have their lawmakers describe what it is. My point was that I do not think people need to be experts in a clean heat credit design system. They need to be experts in their own experience, and feed their hopes and goals for any policy — including this one — into conversations like this, legislative hearings and far beyond. Just wanted to clarify, so the intent of my comment is clear. Thanks!

<https://eanvt.org/affordable-heat-faq/>

14:41:55 From Matthew LeFluer VTRC (He/Him) to Everyone:

Reacted to Here's an FAQ about ... with "👍"

14:42:37 From Matthew LeFluer VTRC (He/Him) to Everyone:

Replying to "Here's an FAQ about ..."

Thanks For Sharein...

14:43:15 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

Reacted to "Thanks For Sharein..." with 👍

14:47:09 From Stephen Dotson - Town of Brattleboro to Everyone:

Who can I contact to find answers to my questions about the Clean Heat Standard?

14:49:52 From Christine.Peterson Dept of Public Service VT state agency to Everyone:

That may have been for the Comprehensive Energy Plan. The feedback sessions

14:51:55 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

Here is list of eligible clean heat measures, which includes Thermal Energy Networks (but not storage — which could be a recommendation and was discussed as something that could be paired with a clean heat measure, per Stephen's question but is not in the mix yet)...

14:52:14 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

(d) List of eligible measures. Eligible clean heat measures delivered to or installed in residential, commercial, and industrial buildings in Vermont shall include: (1) thermal energy efficiency improvements and weatherization; (2) cold-climate air, ground source, and other heat pumps, including district, network, grid, microgrid, and building geothermal systems; (3) heat pump water heaters; (4) utility-controlled electric water heaters; (5) solar hot water systems; (6) electric appliances providing thermal end uses; (7) advanced wood heating; (8) noncombustion or renewable energy-based district heating services; (9) the supply of sustainably sourced biofuels; (10) the supply of green hydrogen;

14:52:31 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

(11) the replacement of a manufactured home with a high efficiency manufactured home and weatherization or other efficiency or electrification measures in manufactured homes; and (12) line extensions that connect facilities with thermal loads to the grid. (e) Renewable natural gas. For pipeline renewable natural gas and other renewably generated natural gas substitutes to be eligible, an obligated party shall purchase renewable natural gas and its associated renewable attributes and demonstrate that it has secured a contractual pathway for the physical delivery of the gas from the point of injection into the pipeline to the obligated party's delivery system.

14:53:02 From Matthew Bakerpoole, VT PSD (he/him) to Everyone:

If you have questions about the clean heat standard that the Department of Public Service can answer as a participant in the Rule Making process you can email psd.cleanheat@vermont.gov.

14:54:46 From ashley adams, mom, concerned citizen, business owner to Everyone:

I agree with Matthew. Unfortunately, the State of Vermont is not a reliable source of accurate information. We need to stop combustion to reduce greenhouse gas pollution. It's not just fossil fuels that we need to be concerned about. Our neighboring states know this.

14:54:48 From Dominic Gatti (he/him) CEIF Fellow with PUC to Everyone:

The PUC recently released a plain-language overview of CHS; it is available here: <https://puc.vermont.gov/document/CHS-Overview>

14:55:26 From Dominic Gatti (he/him) CEIF Fellow with PUC to Everyone:

You can also find out more about the CHS design process here: <https://puc.vermont.gov/clean-heat-standard>

14:56:50 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

Rewiring America: <https://homes.rewiringamerica.org/calculator>

15:01:35 From Jean Terwilliger (she/her), Cornwall to Everyone:

I agree with Johanna Miller, it is currently much easier to replace a heating system with a similar fossil fuel system, We need to incentivize replacing with heat pump systems now, in almost all cases, not just more efficient fossil fuel systems.

15:03:24 From Matthew LeFluer VTRC (He/Him) to Everyone:

Reacted to I agree with Johanna... with "👍"

15:03:36 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

Reacted to "I agree with Johanna..." with 👍

15:05:27 From Christine.Peterson Dept of Public Service VT state agency to Everyone:
Thanks Matthew!!!

15:06:49 From Annette Smith, VCE to Everyone:
Renewable Propane, as it is called, is being used for forklifts in warehouses. It is apparently very expensive, and unrealistic to think it will ever be available to Vermonters. There is no alternative to propane now or any time in the foreseeable future. Please do not offer magical alternatives. We need to be realistic.

15:09:26 From Jean Terwilliger (she/her), Cornwall to Everyone:
The Climate Economy Action Center is starting an Energy Navigator program for Addison County as we have heard the same thing from many people as from Gretchen Elias-

15:09:37 From Gretchen Elias she/her (community member/advocate) to Everyone:
Reacted to "The Climate Economy ..." with 👍

15:11:00 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:
Reacted to "The Climate Economy ..." with 👍

15:11:29 From ashley adams, mom, concerned citizen, business owner to Everyone:
Thank you Tom.

15:13:10 From ashley adams, mom, concerned citizen, business owner to Everyone:
Vermont has the highest or 2nd highest per capita pollution from wood heating. It's a major public health concern (as well as environmental hazard). I'll drop a few links into the chat for those who are interested. Vermont needs to stop promoting polluting heating sources. Yes, I grew up with it too- it was what we could afford.

15:13:48 From ashley adams, mom, concerned citizen, business owner to Everyone:
<https://www.env-health.org/new-infographic-on-the-health-and-climate-threat-from-wood-burning/>

15:14:02 From ashley adams, mom, concerned citizen, business owner to Everyone:
<https://www.dsawsp.org/>

15:14:17 From ashley adams, mom, concerned citizen, business owner to Everyone:
<https://www.theguardian.com/environment/2024/jan/26/domestic-wood-burners-having-a-deadly-impact-in-outside-areas>

15:14:30 From ashley adams, mom, concerned citizen, business owner to Everyone:
https://www.hsph.harvard.edu/c-change/news/gas-biomass/?active_tab=1&articles_page=5&research_page=2

15:14:52 From Matthew LeFluer VTRC (He/Him) to Everyone:
I Hear You There on That Doing Everything Yourself Its Hard Work

15:17:33 From ashley adams, mom, concerned citizen, business owner to Everyone:
And a short article: <https://insideclimatenews.org/news/26112019/wood-burning-climate-health-consequences-vermont-forest-energy-plan/>

15:17:42 From VTPFD.org Gemma Seymour to Everyone:
Reacted to "And a short article:..." with 👍

15:17:49 From VTPFD.org Gemma Seymour to Everyone:
Reacted to "Vermont has the high..." with 👍

15:17:58 From Gretchen Elias she/her (community member/advocate) to Everyone:

What about at the community level? We live on the shady side of a small side street. We dream about being able to put in solar panels and batteries just for our street - sharing the cost, but having the panels go on the sunny side.

15:18:56 From Gretchen Elias she/her (community member/advocate) to Everyone:

My kids just got home so I have to drop off now. Thank you all much for doing this.

15:22:29 From ashley adams, mom, concerned citizen, business owner to Everyone:

More information about VT and other states AG's suit against the EPA over wood stove standards not protecting public health: [https://www.pbs.org/newshour/nation/epa-faces-lawsuit-from-10-states-over-emissions-standards-for-residential-wood-burning-stoves#:~:text=JUNEAU%2C%20Alaska%20\(AP\)%20%E2%80%94,appliances%20that%20could%20worsen%20pollution.](https://www.pbs.org/newshour/nation/epa-faces-lawsuit-from-10-states-over-emissions-standards-for-residential-wood-burning-stoves#:~:text=JUNEAU%2C%20Alaska%20(AP)%20%E2%80%94,appliances%20that%20could%20worsen%20pollution.)

15:23:05 From VTPFD.org Gemma Seymour to Everyone:

Reacted to "More information abo..." with 👍

15:25:11 From ashley adams, mom, concerned citizen, business owner to Everyone:

Not trying to dominate chat. One last thought- weatherization immediately reduces GHG emissions whatever the heat source. It also makes your home more comfortable. Glad it's considered a clean heat measure. Could have happened at a much greater scale without this convoluted policy.

15:25:22 From VTPFD.org Gemma Seymour to Everyone:

Reacted to "Not trying to domina..." with 👍

15:25:27 From Matthew LeFluer VTRC (He/Him) to Everyone:

Reacted to Not trying to domina... with "👍"

15:26:14 From Matthew LeFluer VTRC (He/Him) to Everyone:

Replying to "Not trying to domina..."

No Worries We All...

15:26:41 From Jean Terwilliger (she/her), Cornwall to Everyone:

Reacted to "Not trying to domina..." with 👍

15:28:38 From Luce Hillman, TAG to Everyone:

Replying to "Not trying to domina..."

Need to hop off. Thank you for all the comments.

15:31:40 From Matthew LeFluer VTRC (He/Him) to Everyone:

Sorry My Other Statewide Work is With VLCT And VCCT As A Public Statewide Member

15:33:11 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

Clarification: The policy is of course not intended to raise the cost of fossil fuels. That may be an outcome. It is intended to reduce reliance on dirty, imported fossil fuels and cut TOTAL energy costs by moving people to more efficient, clean heating (and efficiency) solutions.

15:33:32 From Matthew LeFluer VTRC (He/Him) to Everyone:

Reacted to Clarification: The p... with "👍"

15:33:41 From Johanna Miller, VNRC/VECAN (she/her) to Everyone:

Huge thanks Curtiss and Gemma!

15:33:43 From Annette Smith, VCE to Everyone:

This is what the document says "The costs of the CHS requirements are expected to increase the cost of heating fuels."

Chat file
06 June 2024 CHS Gathering

17:59:18 From Gemma Seymour to Everyone:
Overview of the Clean Heat Standard:

<https://vermontpartnership.org/wp-content/uploads/2024/06/Overview-of-CHS-5.3.24.pdf>

18:08:27 From Mike Roy (he/him) to Everyone:
Can you drop them in again as I joined late?

18:08:44 From Laura Sibilila to Everyone:
I am also not seeing the questions

18:09:07 From Gemma Seymour to Everyone:
Overview of the Clean Heat Standard:

<https://vermontpartnership.org/wp-content/uploads/2024/06/Overview-of-CHS-5.3.24.pdf>

18:09:57 From Gemma Seymour to Everyone:
We would like to know...

If you are a consumer, what is your experience heating and cooling your home or business?

If you are an installer, how will the clean heat energy credit system impact the way you do business?

If

you are an advocate, to what extent do you believe implementation of Act 18 will reduce greenhouse gases?

18:10:31 From Gemma Seymour to Everyone:
Sorry about the misnumbering, that happened from cutting and pasting from

Outlook.

18:15:49 From Annette Smith to Everyone:
There is one more person on the phone.

18:22:13 From Laura Sibilila to Curtiss Reed Jr(Direct Message):

Would be great to know How have folks been experiencing the oil price spikes of the last 3 years?

18:25:40 From Mike Roy (he/him) to Everyone:

I think we need to also be thinking about battery storage and a much expanded notion of the boundaries of our grid.

18:26:11 From Gemma Seymour VTPFD to Everyone:
Overview of the Clean Heat Standard:

<https://vermontpartnership.org/wp-content/uploads/2024/06/Overview-of-CHS-5.3.24.pdf>

18:26:37 From Gemma Seymour VTPFD to Everyone:
We would like to know...

If you are a consumer, what is your experience heating and cooling your home or business?

If you are an installer, how will the clean heat energy credit system impact the way you do business?

If you are an advocate, to what extent do you believe implementation of Act 18 will reduce greenhouse gases?

18:28:38 From Mike Roy (he/him) to Everyone:

Propane is a fossil fuel.

18:33:40 From Mike Roy (he/him) to Everyone:

I am hoping that all of this testimony gets fact checked.

18:33:49 From Gemma Seymour VTPFD to Everyone:

I would like to remind participants that the Vermont Clean Heat Standard is law, not a proposed bill. This is not the best forum to litigate the law. We are here to try to understand what the consequences of the law as written as going to be for Vermonters, and how best to implement the CHS. Like it or not, the CHS is a passed law, and must by law be implemented.

18:34:53 From Kim Hornung-Marcy she/her to Everyone:

It only becomes law if Legislature passes it with the PUC input so yes there is hope we move ahead but this is a unique "Law".

18:36:45 From Gemma Seymour VTPFD to Everyone:

My point is that Act 18 was passed by the Legislature and signed by the Governor. While the specifics of the CHS are still subject to construction, we are not here to debate whether or not it should have become law.

18:38:59 From Gemma Seymour VTPFD to Everyone:

All dealers who import fossil fuels into Vermont are subject to the CHS, whether or not they are located in Vermont.

18:46:50 From Mike Roy (he/him) to Everyone:

Is there a moment in tonight's program where we can discuss how the legislation defines "clean" energy?

18:48:57 From Annette Smith to Everyone:

I just reviewed the propane bills again, I misread it, the price was 3.090, not 3.90. So it was considerably less than Harry was paying.

18:50:20 From Erin.Hicks-Tibbles (PUC) to Everyone:

Act 18 requires the PUC to do a rulemaking -- develop the proposed legislation -- and return it to the Legislature in January 2025

18:55:12 From Gemma Seymour VTPFD to Everyone:

The definition of "clean heat measure" can be found in 30 VSA 8127.

<https://legislature.vermont.gov/statutes/fullchapter/30/094>

18:56:48 From Gemma Seymour VTPFD to Everyone:

30 VSA 8127 (d), specifically.

19:03:33 From Mike Roy (he/him) to Everyone:

We can't make decisions based on anecdote. I would want to read the study that backs up the claim that heat pumps won't work in 80% of VT homes.

19:05:00 From Annette Smith to Everyone:

Mike, it's in these notes

<http://vtce.org/Clean%20Heat%20Standard%20Meeting%20Notes%20with%20TOC.pdf>

19:05:39 From Laura Sibilia to Everyone:

Empirical analysis of the cost of reducing thermal emissions in the building sector conducted by Sec. Moore's Climate Office post her "back of the napkin" guess on cost of Clean Heat.

https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/VT%20Thermal%20Analysis%20Final%20Report%202011_28%20revisions.pdf

19:06:46 From Annette Smith to Everyone:

See pages 62 and 85 for the 25% and 30% numbers referring to forced hot air homes.

Limitation: only 30% of VT homes are forced air

- Need solution for hydronically-heated homes
- Converting to forced air - but added cost
- Air-to-water HPs not really commercially available
- Extremely limited, specialized order

19:07:59 From Mike Roy (he/him) to Everyone:

It is simply not true that homes that don't have forced hot air can't have heat pump. Yes, they are challenging for some homes, but we need to stick to actual fact.

19:09:07 From Annette Smith to Everyone:

The statement I quoted above is by Chris Nene, one of the primary authors of the Clean Heat Standard, who works for Energy Futures Group. He notes that it's a specialized order and not really commercially available.

19:09:28 From Leslie Anderson to Everyone:

We have 45 propane company members in Vermont.

19:09:48 From Mike Roy (he/him) to Everyone:

I have plenty of friends who have installed heat pumps in their homes. They simply replaced their old system with a new system.

19:10:57 From Annette Smith to Everyone:

That sounds anecdotal. What is the cost? What are the homeowners' income levels?

19:15:13 From Mike Roy (he/him) to Everyone:

Fossil Fuels Are Bad. Full Stop.

19:16:42 From Kim Hornung-Marcy she/her to Everyone:

Thank you for this forum. Thank you to those working on implementing the methods that truly reduce green house gasses. I need to go to another commitment

19:16:45 From Leslie Anderson to Everyone:

https://pgane.org/wp-content/uploads/sites/12/2020/01/PGANE_Flyer_CleanAir2a_8-27_FINAL_HRz.pdf

19:18:02 From Gemma Seymour VTPFD to Everyone:

While there may be differences between different types of fuels, the fact is that Act 18, the Affordable Heat Act (AHA) defines very specifically what does and does not qualify as a "clean heat measure", and this is a passed law. The specifics of the CHS which are to be determined by the VT PUC cannot affect those portions of the law which are otherwise already defined.

19:21:22 From Annette Smith to Everyone:

Fuel dealers are already doing everything that is required by this legislation. They testified to that effect.

19:23:16 From Gemma Seymour VTPFD to Everyone:

The AHA specifically disallows switching from one form of fossil fuels to another form of fossil fuels from being classified as a clean heat measure

19:24:41 From Curtiss Reed Jr to Everyone:

1. If you are a consumer, what is your experience heating and cooling your home or business?

2. If you are an HVAC installer, how will the clean heat energy credit system impact the way you do business?

3. If you are an advocate, to what extent do you believe implementation of Act 18 will reduce greenhouse gases?

19:24:53 From Gemma Seymour VTPFD to Everyone:

see 30 VSA 8123 (3)

19:25:38 From Curtiss Reed Jr to Everyone:

You can follow and file comments on the Public Utility Commission's rulemaking through the online case management system ("ePUC"). The website for the Clean Heat Standard rulemaking has links to the related cases, 23-2220-RULE and 23-2221-INV:

<https://puc.vermont.gov/clean-heat-standard>. You can contact your Legislator directly: <https://legislature.vermont.gov/people/search/2024>.

19:28:23 From Annette Smith to Everyone:

Thank you Curtiss. This was the best of the three meetings. I appreciate the questions and the conversation.

19:28:46 From Mike Roy (he/him) to Everyone:

Thank you. This was fascinating!



Vermont Partnership

FOR FAIRNESS AND DIVERSITY

**Vermont Public Utility Commission
Clean Heat Standard Team
Public Engagement Facilitator
Activity Report N° 3 • 01 July thru 30 September 2024**

This document reviews activities undertaken by Vermont Partnership for Fairness & Diversity (Consultant) for the period 01 July thru 30 September 2024 under the auspices of Contract N°47606 with the State of Vermont. This document also constitutes the final report under Contract N° 47606. The Consultant has primary responsibility to design and conduct public engagement related to the Clean Heat Standard (Act 18) enacted by the legislature in May 2023.

Overview

The manner in which the Clean Heat Standard process unfolded exemplifies the idiom “putting the cart before the horse.” The Act 18 legislative mandates created an unrealistic timeline that forced the Public Utilities Commission to compress and compromise the regular order of public engagement.

When the Vermont State Legislature passed Act 18 (the Affordable Heat Act) in May 2023 it instructed the Public Utilities Commission (PUC) to deliver a set of draft Clean Heat Standard rules to the legislature nineteen (19) months later in January 2025. The legislation also mandated the PUC to engage a Public Engagement Facilitator and incorporate the Guiding Principles for a Just Transition promulgated by the Vermont Climate Council.

The PUC issued a Request for Proposals on 08 September 2023 and finalized a contract with the Public Engagement Facilitator (Consultant) on 24 January 2024. Shortly thereafter, pursuant to 30 V.S.A. §§ 8128(b) and 8129(b), the Commission was directed to appoint up to fifteen (15) members to a Technical Advisory Group and up to ten (10) members to an Equity Advisory Group to assist in the management, design, and implementation of the Clean Heat Standard. The Vermont Public Utility Commission issued solicitations for membership on the two Advisory Groups on 19 September 2023. The PUC established the Technical Advisory and Equity Advisory Groups on 19 November 2023.

According to its approved workplan, the Consultant was to complete its work over a seven month period or the end of August 2024. The Consultant wrongly assumed that the PUC had already issued a proposed CHS rule by the time work began in February 2024. As a consequence public engagement focused on the CHS rulemaking process rather than a proposed CHS rule itself.

Many participants attending the CHS Gatherings organized by the Consultant expressed frustration as they wanted to comment on an actual proposed CHS rules. Some stakeholders found Act 18 overly complicated and projected unintended consequences whatever the eventual CHS Rule.

Some gave the PUC a vote of no confidence to provide Vermonters with timely and relevant information. The Consultant believes these negative viewpoints should have been directed at the Vermont State Legislature and not the PUC because it was the legislature which mandated an unrealistic timeline. Ideally, the legislature should have given the PUC 12 months to develop a CHS Rule followed by eight months of public engagement for stakeholders to critique the proposed Rule. The PUC would then take three months to integrate stakeholder input before a finalized draft is sent to the legislature.

As it stands, the PUC hopes to release its draft CHS Rule in October 2024. Stakeholders want to be part of a process with partners that values their time. The Consultant has advised participants to contact their statehouse representatives with their critiques of an eventual CHS Rule.

General Observations

Act 18 embodies a multifaceted legislative strategy aimed at combatting greenhouse gas emissions in Vermont's thermal sector. By instituting a comprehensive Clean Heat Standard program and implementing incentives to promote the adoption of clean heating and cooling technologies, the bill endeavors to propel the state towards a more sustainable energy future. However, the success of this ambitious program hinges not only on its environmental efficacy but also on its ability to prioritize affordability and accessibility, particularly for under-served and sacrificed communities.

The Consultant conducted five on-line and one in-person Clean Heat Standard Gatherings with a total of 132 registrants. The off-line observations indicated frustration with being limited to commenting on the *process* of rulemaking and not on the rules themselves. The Public Utilities Commission had not yet issued the CHS rules. This frustration might have been markedly reduced or eliminated if the PUC had waited until after the CHS rules were drafted and published before engaging a public engagement process. The Consultant believes there would have been far more substantive public comments based on actually proposed rules. In the absence of proposed CHS rules, equity, accessibility, and the mitigation of fuel price impacts became mere abstractions.

At its core, Act 18 targets the thermal sector of Vermont's economy, recognizing heating and cooling as significant contributors to greenhouse gas emissions. By focusing on measures specifically tailored to mitigate emissions associated with these activities, the bill demonstrates a proactive stance towards addressing climate change at the local level. Nevertheless, the bill's emphasis on promoting clean heat adoption raises important considerations regarding equity and social justice.

The Consultant completed its proposed workplan at the end of September 2024. There was a one month delay in the completion due to prospective participant end of summer August vacations. Leadership at Vermont Professionals of Color, The ReLeaf Collective, and the Vermont League of Cities and Towns suggested postponing August dates until September. The PUC indicates it will release the CHS rules sometime in October 2024. The PUC would ideally include robust public comment as part of its presentation of the CHS rules to the next legislative session that begins in January 2025.

One key concern pertains to the affordability and accessibility of clean heat measures and credits, particularly for low-income households. While the bill aims to incentivize the adoption of cleaner technologies, there is a risk that associated costs may pose a barrier to entry for economically disadvantaged individuals and families. Moreover, the requirement for Obligated Parties to submit detailed information for credit eligibility could potentially exacerbate disparities in access, as undercapitalized entities may face challenges in meeting stringent documentation requirements.

Another conundrum of the legislation pertains to energy credit eligibility. As of this report only Obligated Parties are eligible for energy credits. These parties cited in Act 18 include regulated natural gas utilities, entities that import heating fuel for ultimate consumption in Vermont, or entities that produce, refine, manufacture, or compound heating fuel within Vermont for ultimate consumption therein.

Stakeholders are interested and eager to comment on how the PUC/CHS rules address these key concerns and conundrums. The Consultant framed the challenges in previous reports as follows:

Whereas the general population, including low- to moderate-income households and small businesses, can participate in the overall reduction of greenhouse gases (e.g. walk/bicycle versus drive, lower thermostats, utilize clotheslines, convert to renewable energy sources), they can neither accrue nor monetize clean heat energy credits as of this report.

Again, Act 18's emphasis on promoting clean heat adoption raises important considerations regarding equity and social justice. According to the 2020 United States Census, of Vermont's 265,858 households the Vermont Housing Finance Agency reports that renters account for 81,849 or 31% of households. Landlords who require tenants to pay heating and electricity costs have no financial incentives for making capital investment towards clean heat energy as the tenant bears the burden for increased heating costs. Landlords who do make clean energy capital investments, regardless of the level of subsidy, simply pass the costs onto tenants with higher rents.

Act 18 specifically requires 16% of energy credits be retired in connection with low- and moderate-income households. If the proposed Standard mandates higher credit values for

low- and moderate-income households it runs the risk of exacerbating affordability for these households as they are statistically more likely to be renters. If higher credit values attach to rental installations of clean heat technologies, Obligated Parties and Default Delivery Agents will be incentivized to target landlords as the primary source for such enhanced credit values. Capital investments by landlords will be recouped in the form of increased rents

Homeowners and low- to moderate-income households already have access to weatherization (Efficiency Vermont) and fuel assistance programs (Department for Children and Families). Given that fuel provider and energy representatives weighed in with testimony during the crafting of Act 18, the Consultant questions the timing of broad-based community engagement for the purposes of designing a clean heat standard. The Consultant believes those who possess clean heat technical knowledge are best positioned to assist design the standard. This includes the directly impacted actors of Act 18, the Obligated Parties of fossil fuel providers and Default Delivery agents.

Government protects public safety through various regulatory bodies because the citizenry or end-user lacks the highly specialized knowledge for risk analysis. A proposed Clean Heat Standard and marketplace for energy credits and monetization inherently represents a highly complex and technical field. The Consultant draws parallels with the practice of medicine in Vermont where licensing and accepted medical practice criteria are determined by medical specialists and not the general public. The general public involves itself with public health policy such as access and affordability.

Environmental groups hold tight to a near non-negotiable position to reduce greenhouse gases whatever the costs. The economic math suggesting an increase of fuel oil costs by \$0.70/gal crushes the budgets and pocketbooks of low- to middle-income households. Landlords have no financial incentives to convert old, inefficient oil furnaces to heat pumps and/or renewable energy while tenants bear the costs of heating/cooling their rental units.

Some stakeholders find Act 18 overly complicated with unintended consequences. Why are energy credits restricted to Obligated Parties and not the end-user consumers? Do small family-owned fuel dealers have the time and capacity to complete the process to acquire and redeem clean energy credits? How does the state incentivize landlords to do right by their tenants and the environment? Other individuals predict when the legislature passes the Clean Heat Standard rules litigation will follow and tie up CHS implementation for years thereafter.

During the reporting period, on 06 August 2024, the Consultant moderated a CHS Gathering at the 5th Vermont Council on Rural Development Community Leadership Summit held at the Vermont State University Randolph. The in-person workshop was entitled *Clean Heat Standard: What is it Intended To Do and What Does It Mean for Vermont*.

Panellists for the workshop included: Edward McNamara, Public Utilities Commissioner; Jared Duval, Vermont Climate Council; Mia Watson, Vermont Housing Finance Agency; and John McCormick, Louise Diamond Committee to Protect Next Generations.

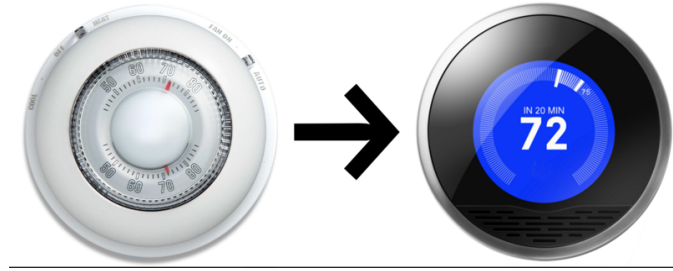
Click [here](#) to view a recording of the session. The workshop description and list of the thirty-three (33) registrants appear in the Addendum. Participants expressed considerable appreciation for the detailed information on: the CHS process; mitigating fuel price volatility; the regulatory environment relative to electricity; the Inflation Reduction Act vis-à-vis affordable housing and weatherization; and the science of energy/fuel efficiency. Salient findings that resonated with prior gatherings included:

- An expressed desire to create an energy navigator program to assist homeowners, tenants, and business owners.
- Town planners would like to have household energy consumption data for energy planning purposes; legislative
- An expressed need for more weatherization installers paid at a higher hourly rate; if unskilled fast food workers are paid \$20/hr, skilled weatherization installers should be paid \$30/hr.
- An expressed desire to create a landlord rental registry as one means to enforce energy efficiency of rental properties
- In spite of their efforts to reduce fossil fuels by living “off grid”, these property owners feel they are being penalized for using propane and would like price offsets

During the reporting period the Consultant also organized two online CHS Gatherings on 18 and 26 September 2024 for 90 minutes each. The first gathering on 18 September was organized for BIPOC environmentalists from ReLeaf and end-use consumers from Vermont Professionals of Color (VTPoC). Unfortunately none of the eight registrants attended. Respondents to our follow-up email indicated a medical/dental emergency, double booked with another meeting, and loss of interest in the topic kept registrants away. At the request of the VTPoC, the Consultant designed a graphic image to promote the event to BIPOC communities.

**Table I
Registrants for 18 September 2024 CHS Gathering**

n	Li Ling Young	Chittenden	HO	VT Energy Investment Corporation
n	Jean Hamilton	Washington	HO	VT Housing & Conservation Board
n	Cori Hirai	Windsor	HO	
n	Beverly Little Thunder	VT	HO	Kunsi Keya Tamakoce
n	Nader Hashim	Windham	HO	VT Legislature
n	Offie Cherry Wortham	Lamoille	RT	
n	Roy V. Hill	Franklin	BO	FNRE
Notes: • = Attended n = No Show HO = Home Owner BO = Business Owner RT = Renter/Tenant				



Members of the Vermont League of Cities and Towns participated in the second gathering on 26 September 2024. Participants in this group wasted no time in calling the CHS a costly waste of time destined to increase fuel costs. A recap of key findings appears below. Click [here](#) to view a recording of the session.

**Table II
Registrants for 26 September 2024 CHS Gathering**

• Ted Brady	Washington	HO	VT League of Cities and Towns	Executive Director
• Cheryl Letourneau	Franklin	BO	Town of Georgia, VT	Town Administrator
• Christina Adams	Orleans	HO	Town of Lowell, VT and Fred's Energy	Health Officer
• Mary Brewster	Windham	HO	Town of Halifax, VT	Lister
• Gig Zboray	Windham	HO	Town of Whitingham, VT	Selectboard, Administrator
• Jacqueline Lumbra	Washington	HO	Town of Cabot, VT	Lister
• Caroline Klosowski	Lamoille	HO	Stowe Electric Department	Business and Communications Manager
Notes: • = Attended n = No Show HO = Home Owner BO = Business Owner RT = Renter/Tenant				

- An expressed concern for seniors living on fixed incomes or social security to cover increased fuel prices.
- Questioned the utility of Act 18 given Vermont's leadership on climate change.
- Off grid residents feel they are being penalized due to propane gas price volatility.
- Fearful of propane dealer monopolies in some parts of the state.
- Act 18 should only apply to high density population centers such as the City of Burlington metroplex.
- Concern over the certainty that landlords who make property upgrades will pass along the investment costs to low- to moderate-income tenants.
- Fear that rising fuel costs will drive low- to moderate-income residents out of the state.
- Some will register complaints regarding the CHS with their legislators.

Financial Report

The Contractor proposed and the PUC/CHS Team approved \$30,920 to be expended over a seven month period from February to August 2024. The consultancy timeline was extended through the end of September to accommodate the schedules of three organizations. This final report marks the end of eight months or 100% of the contract period. The PUC/CHS has paid the Consultant a total of \$22,616 which represents 73% of the contract amount of \$30,920. A final invoice for \$8,304 has been submitted with this report bringing expended totals to the \$30,920 contracted amount.

Addendum

Clean Heat Standard: What Is It Intended to Do and What Does It Mean for Vermonters (PANEL) – Green 216

Act 18 creates a Clean Heat Standard (CHS) program with financial incentives that promote the adoption of clean heating and cooling technologies. The bill brings the state closer to a more sustainable energy future. However, the success of this program hinges not only on its environmental effectiveness, but also on its prioritization of affordability and accessibility. Hear how you can be a part of shaping the Clean Heat Standard.

Jared Duval Member Vermont Climate Council | jduval@eanvt.org

Jared Duval is a member of the Vermont Climate Council, appointed to provide expertise in energy and data analysis. Jared co-chairs the Climate Council's Science & Data subcommittee and also serves as a member of the Cross-Sector Mitigation subcommittee. He is a co-author of Vermont's Climate Action Plan, of which the Clean Heat Standard was the single largest pollution reduction recommendation. Jared is a 9th generation Vermonter who originally grew up in the Upper Connecticut River Valley (Fairlee). He now lives with his wife and son in Montpelier.

John McCormick Director Louise Diamond Committee to Protect Next Generations | jmccormick@imtd.org

John's environmental career began lobbying Congress on coal strip mining regulations, acid rain control, toxic waste and pesticide control for the Environmental Policy Center during the 70s and 80s. Using a German Marshall Fund grant, he organized a tour for 6 U.S. timber industry representatives to witness German forest dieback, from polluting Yugoslav coal-burning power plants. The companies agreed to strongly support acid rain control. Retired, he is actively following Vermont's efforts to decarbonize, and respond/adapt to earth's warming climate.

Edward McNamara Chair Vermont Public Utility Commission | ed.mcnamara@vermont.gov
Ed McNamara was appointed Chair of the Public Utility Commission (PUC) in January 2024. From 2022 to 2024, McNamara served as general counsel for the Agency of Natural Resources. Prior to his work at ANR, McNamara worked on energy issues for 20 years, including at the Public Service Department where he performed numerous roles, including as planning director, assisting with emergency response activities, and representing Vermont's interests before the Federal Energy Regulatory Commission. McNamara started his legal career as a hearing officer and staff attorney for the PUC.

Mia Watson Special Programs Manager Vermont Housing Finance Agency | mwatson@vhfa.org

Mia Watson (she/her) oversees VHFA's pilot on-bill Weatherization Repayment Assistance Program (WRAP) and other energy finance initiatives, as well as supports new capital formation for the Agency's Vermont Housing Investment Fund. She is the Chair of the Equity

Advisory Group advising the Vermont Public Utility Commission on the design of the Clean Heat Standard. Watson was previously a researcher at VHFA and has been an author on many agency publications, including the 2020 Vermont Housing Needs Assessment. She has a Master's degree in Public Administration from the University of Vermont.

VCRD Leadership Summit Registrants • Clean Heat Standard: What Is It Intended to Do and What Does It Mean for Vermonters (PANEL)

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