Clean Heat Standard Equity Advisory Group
Wednesday, October 16, 12:30-3:00 PM ET
Agenda

Meeting Link: https://cbi-org.zoom.us/j/87383177532

Participant Agenda

12:30	**Welcome & Review of agenda** ● Initiate recording	Mia
12:35	**Technical Advisory Group Report and on-going collaboration** Update from TAG liaison	Emily / Matt
12:45	**Report Editing Subgroup – Comments on LI Households Notes**	Mia
1:10	**Updates from PUC**	Dominic
1:15	**Discussion on Draft Rule**	Mia
1:55	**Public Comment**	Ashira
2:00	**Discussion on Draft Rule Companion Report**	Mia
2:25	**Public Comment**	Ashira
2:30	**Review and approval of 10/1/24 meeting minutes**	Mia
2:35	**Planning for Report Completion**	Ashira
2:55	**Next Steps**	Ashira
3:00	**Close**	Mia

Low-income households

Overview

As Vermont implements the CHS to reduce carbon emissions, low-income households, which often struggle with higher energy burdens, face unique challenges in pursuing emission reductions and heating fuel transitions. It is estimated that 39.8% of Vermont households earn 80% or below the state area median income (AMI) of $74,014 and 29.3% of all households earn 60% or below the state AMI.[1] This is a significant number of households that may require financial assistance for heating costs, weatherization services, or heating system upgrades. Eligibility for low-income assistance depends on location, program guidelines, and household size. The CHS threshold for a household to be considered low income is 60% or below of the AMI. Eligibility for many programs, such as the Low-Income Home Energy Assistance Program (LIHEAP) and assistance offered through Green Mountain Power and Vermont Gas, is based on whether a household earns 185% or less of the FPL. For 2024, 185% of the FPL is $37,814.00 for a household of two.[2] Based on the 2018-2022 American Community Survey, the estimated 60% AMI for the state of Vermont was $44,408.00.[3] Though this figure is not adjusted for household size, it is higher than the 185% FPL of $37,814.00 for a household of two. This could indicate that some households that the CHS defines as low-income may not be eligible for federal assistance for heating fuels and weatherization based on FPL guidelines. This highlights the challenges related to varying income eligibility requirements.

According to the Energy Action Network's (EAN) 2023 Annual Progress Report for Vermont on emissions reductions progress, "households with lower incomes typically use less energy than those with higher incomes."[4] Though these households use less energy, the costs of their energy use are typically a much higher proportion of their income. In a report cited by EAN, it was found that high energy burdens raise the risk of falling into poverty or experiencing prolonged poverty by 150-200%.[5] An energy burden of 6% or above is considered high, however, low-income households in Vermont face much higher energy burdens on average. For households earning 30-60% of the state AMI, the energy burden is 11%. For households earning 30% or below the AMI, their energy burden is 24%.[6] Translated into FPL, the statistics are just as alarming for low-income households. For

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

[2] Vermont's Legal Help Website, 185% Federal Poverty Level (FPL), 2024

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

[4] Vermont Energy Action Network, Annual Progress Report for Vermont 2023, https://eanvt.org/annual-report/

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

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

households earning less than 100% of the FPL, they face an energy burden of 31%. Households in the 100%-150% range have an energy burden of 15%. In the 150%-200% range, the energy burden is still as high as 11%.[6] Determining eligibility for weatherization services in multi-unit buildings requires that a certain number of households in the units meet eligibility criteria. For federal funding, 66% of units need to meet FPL requirements. For state funded housing, 25% of units need to be eligible. In buildings up to four units, at least two units need to be eligible (PP). Once eligibility is approved, the contractors providing required services are limited. Local agencies weatherize buildings up to four units, and availability of service is dependent on location. For buildings with five or more units, there is one agency, 3E, that performs those upgrades (PP). Limited availability of contractors poses a barrier to weatherization.

LIHEAP

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 and kerosene - these sources are also carbon intensive and produce higher emissions than some alternatives. 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 electric.[7] Kerosene tends to be most expensive (Geoff). 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 for homeowners and renters – 20.7% of recipients own, 49.8% rent and pay for all utilities, and 27.2% rent and pay for some utilities. Households that are approved for heating assistance are also eligible for free weatherization services to improve home energy efficiency, helping to lower heating costs over time. In addition to heating assistance and weatherization, the program offers crisis support for households facing immediate heating emergencies. This program is available to households that are receiving seasonal heating fuel assistance as well as households that earn up to 200% of the FPL. The ESD receives approximately 36,000 applications per year. It is projected that approximately 18,500 households will receive a 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. This award only covers a portion of a household's home heating needs

[7] Richard Giddings, ESD Dept for Children and Families, Presentation to the EAG, 7/09/2024

and can depend on a household's primary fuel type. In the 2023-2024 heating season, on average it LIHEAP only covered 28% of household heating costs. [8]

Average Annual Fuel Costs for Households at 200% FPL or Below Sorted by Heating Fuel Type[9]	
Fuel Type	**Average Annual Energy Cost**
Utility Gas	$2250
Bottled Gas	$4226
Fuel Oil	$4097
Wood	$4037

Existing challenges / gaps in existing programs

In Vermont, many low-income households face significant challenges when it comes to heating, cooling, and maintaining their homes in a safe and dry condition. Existing assistance programs, such as the Weatherization Assistance Program (WAP), aim to provide support, but they serve only a fraction of the population in need. WAP helps low-income households pursue energy efficiency improvements and heating electrification projects. Eligibility for this program is determined by county, household size, and varying income requirements. The scope of services and income thresholds depend on how the program is funded, creating a complicated network of services (Geoff). Funding sources for programs include the Department of Energy (DOE) grant, the American Rescue Plan Act State Fiscal Recovery (ARPA-SFR) Fund, and the Home Weatherization Assistance Program (HWAP). In addition to the challenges presented by various income eligibility requirements, administration of program funds is largely dictated by federal rules, which can limit the application of those funds (BB). For example, DOE funded WAP projects are restricted from funding fuel switch projects.[10]

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.[11] People just above the income cutoff for WAP are still struggling to participate in weatherizing and system upgrades. Though there are a variety of

[8] Richard Giddings, ESD Dept for Children and Families, Presentation to the EAG, 7/09/2024
[9] U.S. Department of Energy, Low-income Energy Affordability (LEAD) tool, 2024
[10] Vermont Dept for Children and Families, Quick Guide to Weatherization Auto-Qualifiers
[11] 3E Thermal, VT Weatherization Assistance Program Income Eligibility Guidelines

programs, they are very difficult to navigate (BB). According the 2024 Vermont Housing Needs Assessment, in FY 2023, WAP assisted 1,139 households, including 176 manufactured homes and 23 shelter units. The average investment was $11,869 per household.[12] [PLACEHOLDER FOR DATA ON HOW MANY PEOPLE APPLY FOR WAP/ARE ON WAITLIST]. It is estimated that there are 105,724 households that earn 80% or less of the state AMI[13], with 77,843 below 60% or below.[14]

Weatherization programs struggle to meet the demands of households that require not only energy efficiency improvements but also critical structural repairs that enable weatherization (Geoff). Structural repairs, abatement of hazardous materials, and code compliance are often prerequisites to any weatherization efforts funded through WAP programs. Currently, comprehensive funding for these pre-weatherization repairs is lacking. "The largest barrier to low-income home weatherization continues to be the presence of vermiculite insulation, a material known for containing asbestos. There are also many other structural issues present in Vermont's older housing stock that can prohibit weatherization, such as leaky roofs, wet basements, knob and tube wiring, and other structural issues."[15] 10% of homes in Vermont contain vermiculite insulation - the cost of removing vermiculite alone can range from $10,000 to $20,000, making it an insurmountable barrier for low-income families (From Discussion notes – no citation).[16] In Vermont, 25.5% of homes were built in 1939 or earlier.[17] The additional costs associated with these barriers to weatherization can prevent many homeowners from pursuing weatherization and heating system transitions. While efforts are made to connect clients with resources for repairs, the conversion rate is low, as many cannot afford even minimal repairs (Geoff). For many households, the only feasible way to complete these necessary improvements is if they are entirely free. For example, even when weatherization services are provided at no cost, the additional costs associated with these preliminary repairs and safety measures prevent many households from benefiting. This can be especially true in case where the LIHEAP recipients are renters, as there are challenges with incentivizing landlords to pursue weatherization. This is due to a variety of factors, including their obligations to ensure that their property is fully code compliant before WAP provides

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[12] Department of Housing and Community Development (DHCD), Vermont 2025-2029 Statewide Housing Needs Assessment, page 35, https://accd.vermont.gov/housing/plans-data-rules/needs-assessment

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

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

[15] Chris Winters and Geoff Wilcox, Vermont Agency of Human Services, Performance Indicators for the Vermont Weatherization Assistance Program, January 30, 2024

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[17] American Community Survey 5-year estimates, 2018-2022 (Table B25036) housingdata.org

weatherization services. Additionally, if a landlord utilizes the WAP services, they are required to sign a rent stabilization agreement that places a limit on rent increases over a certain period (MC).

Existing programs are insufficient to address the full scope of need – as fuel prices increase so will the need for consumer assistance. The challenges go beyond the financial strain of paying for heat; they also involve the complexity of decarbonizing homes efficiently. For low-income Vermonters, there is currently no cost-effective or rapid method to decarbonize home heating systems, which will leave low-income households subject to rising fuel prices as the CHS is implemented. The investments required to transition homes to lower emitting fuel sources could not have the necessary returns to meet Vermont's reduction targets. Studies have shown that it is typically higher income households that generate more carbon emissions[18].

Existing Assistance Programs and Income Eligibility Requirements			
Funding Program	Qualifying measures	Income Requirements	Notes
WAP (DOE)	No-cost energy efficiency and electrification improvements	200% FPL	Carries a lot of activity restrictions
HWAP and ARPA-SFR WAP	no-cost, whole-home energy retrofits	Greater of the 80% AMI or the 80% SMI	ARPA funds expire 12/31/24
LIHEAP	Financial support for primary heating fuel expenses	185% FPL	Crisis assistance is 200% FPL
GMP Utility Assistance Program	25% discount on monthly utility bills	185% FPL	Funded through surcharge on bills to all customers
VGS Utility Assistance Program	20% discount on monthly utility bills	185% FPL	Funded through surcharge on bills to all customers
HOMES (IRA)	Weatherization, air-sealing, insulation, ventilation, heat pumps	COULD NOT FIND	State proposed allocating portion of HOMES funding to WAP program[19]

[18] Income-based U.S. household carbon footprints (1990–2019) offer new insights on emissions inequality and climate finance | PLOS Climate

[19] Public Service Dept Briefing on Vermont's Home Energy Rebate Programs

HEAR (IRA)	Electrification and electric appliance rebates	<80%AMI – 100% rebate <150% AMI – 50% rebate	State proposed allocating portion of HEAR funding to existing WAP program, affordable housing electrification programs, and moderate-income heat pump rebates[18]

Potential benefits of CHS for low-income households

There is potential for the CHS to infuse more funds into the WAP program. This would provide more households with weatherization and electrification services that could ultimately reduce their energy burden.

LIHEAP

The benefit to low-income Vermonters from a CHS is that the state-run Low Income Weatherization Assistance Program's sale of credits to obligated parties will increase their funding beyond the existing fuel tax. This could allow for more homes to be weatherized. This is inequitable because only 21% of LIHEAP recipients own a home that could be weatherized (MC).

Potential harms of CHS for low-income households

The CHS presents potential unintended consequences for many low-income Vermonters. The increased costs for heating fuels under this standard could disproportionately affect Vermont's most vulnerable residents. For low-income households that already struggle to afford their heating bills, the introduction of additional costs from CHS will increase their energy burden. Households served by weatherization programs might be in a somewhat better position, but even for them, it is uncertain whether they will be better off under a CHS than they are now (Geoff). The higher costs of heating will likely outpace any immediate benefits from weatherization or energy efficiency improvements. Even with more funds potentially made available to serve low-income clients under CHS measures, a critical issue remains: there are not enough contractors available to meet the demand. This shortage of qualified workers could lead to long waiting periods, with clients waiting years to receive improvements. In the meantime, these households will still be subjected to rising heating costs. (Geoff).

For those low-income households that are not served by weatherization programs, the situation becomes even more dire. Without any assistance, many will find themselves unable to pay for heating or adoption of clean heating measures. The technology needed to switch to clean heat is often not feasible in renovations, particularly in older, low-income homes. In many cases, these households will only be able to reduce, but not replace, their reliance on fossil fuels, leaving them exposed to the rising costs of these fuels. Even if the equipment, installation, and maintenance for CHS measures were provided at no cost, some homes are simply not suited for full electrification, meaning they will remain dependent on fossil fuels (Matt Cota).

In Vermont, 6.2% of households are mobile homes.[20] Mobile homes, which typically do not have basements, also rely on outdoor fuel tanks, and cannot easily transition to cleaner options like biodiesel. These homes often have exposed water pipes running underneath, and relying on electric heat pumps, which distribute warm air from above, could result in frozen pipes and significant structural damage. For these households, combustion heat will remain a necessity, and the shift to electric heat could cause substantial harm (Matt Cota). As of 2021, fuel oil represented 38% of thermal sector emissions.[21] Though electrification is the path toward lowest emissions, switching homes to less carbon intensive thermal sources such as propane, or natural gas where possible, would still be a step forward. Overall, while the primary goal of the CHS is to reduce emissions, there are many potential harms to low-income Vermonters. The increased costs, combined with a lack of viable alternatives for many homes, could exacerbate the financial struggles faced by these communities.

LIHEAP

The harm of a CHS on LIHEAP Recipients (Section from Matt Cota – highlighted line was added from discussion notes)

Anyone receiving free heating fuel in Vermont through the federal Low Income Home Energy Assistance Program (LIHEAP) also qualifies for free weatherization. Administered by the Vermont Office of Economic Opportunity through its community action agency partners, these weatherization services are paid for by a 2-cent per gallon fuel tax on oil heat, kerosene, and propane, as well as a gross receipts charge on utility gas and

[20] U.S. Census Bureau: American Community Survey 5-year estimates, 2018-2022 (Table B25032) housingdata.org
[21] Vermont Energy Action Network, Statewide GHG Emissions Dashboard, https://eanvt.org/emissions-dashboard/

electricity sold in Vermont. But these services are only available to a LIHEAP customer if the recipient of free fuel owns their own home. And only 21% of LIHEAP recipients do, according to data from Richard Giddings, Fuel Program Administrator. That means more than 10,000 Vermont families that qualify for fuel assistance may be unable to access an installed clean heat measure such as new heating equipment or weatherization. This depends on the action taken by the owner of the building, who does not have the same financial incentive to make efficient investments and is not impacted by the clean heat compliance fee. Half of the families receiving fuel assistance rent their homes and pay their heating fuel bills.

Under 30 V.S.A. § 8124 (i), 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. The law states that the Margin Over Rack (MOR) "shall reflect the default delivery agent credit cost established by the Commission." The MOR is the fixed price fuel dealers can charge a customer receiving fuel assistance funds. It changes daily and is based on the average of 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. Dozens of fuel dealers have chosen not to participate (there are only 162 certified suppliers as of 12/6/2023). This is a good thing. If the clean heat compliance fee is 70 cents per gallon, as the Secretary of the Agency of Natural Resources predicted, this vital program would be in jeopardy without this provision. However, there is no denying that it will reduce the purchasing power of the state of Vermont in providing heating fuel to low-income Vermonters. As fuel prices increase, LIHEAP dollars will not go as far for consumers, therefore increasing their out-of-pocket costs (John McCormick public comment).

It will also reduce the purchasing power of low-income Vermonters. It should be noted that fuel assistance funds only pay for about half the gallons needed during a typical Vermont winter (in 2023-2024, the average benefit was $963). The consumer pays the rest of the heating bill. The higher the compliance fee, the more regressive this policy is on low-income Vermonters who rent or own homes that cannot easily adopt clean heat measures. This is true in kerosene-heated homes. While kerosene (required in outdoor tanks typically found on modular homes that lack basements) represents less than 8% of the overall market, it accounts for 16% of LIHEAP homes. Compared to heating oil, kerosene cannot be blended as easily or inexpensively with renewable biofuels. An amendment was offered during the legislative process to allow homeowners who heat with kerosene to receive

credit for switching to a lower-carbon fuel, such as propane, but that provision did not make it into the final draft. Another equity concern is that many modular homes that rely on kerosene for heat and hot water lack 200 amp service and can not easily or affordably install electric heat. These modular homes often have exposed water pipes and require combustion heat.
(End: Section from Matt Cota)

Recommendations

As Vermont moves toward implementing the CHS, it is crucial to ensure that it does not disproportionately burden low-income households, while still addressing broader climate and energy goals. The PUC must consider several key factors in balancing the economic needs of residents with the emissions reduction goals of the state.

Low-Income and Fuel-type Exemptions

The PUC should consider creating a low-income exemption where low-income households would not be subjected to the fuel cost increases brought on by the CHS. This exemption could provide significant financial relief for vulnerable households, especially given the delays that weatherization and heating system upgrades face, these households would be subject to increased prices even if pursuing alternatives. Additionally, the PUC should consider a kerosene exemption from the obligated fuels list and update fuel assistance regulations to give customers crisis assistance to install a secondary heating system where primary system replacement is not feasible (MC).

Increase Weatherization and Heating Assistance Funding

Weatherization is a vital strategy to reduce energy consumption and costs for low-income households and should be a key priority (Johanna Miller-public comment). Many of these homes, especially those already receiving LIHEAP funds, would benefit from weatherization improvements (SS). Allocating compliance fees from the CHS to weatherization programs like WAP will help stretch LIHEAP dollars and reduce fuel consumption while making homes more energy-efficient (CT). Additionally, the PUC should consider allowing 15% of federal LIHEAP funding to be spent on weatherization, as this would offer long-term relief to low-income households by reducing their energy demands (MC). Increasing state supplemental LIHEAP funds would also soften the impact that the compliance fees would have on heating costs for low-income homes (Ben). There should be a strategic focus on benchmarking homes that receive LIHEAP and determine the cost and how long it would take to weatherize those homes (SS). It would also be beneficial to have data on the houses with the highest consumption to prioritize WAP projects (MW).

Addressing Mobile Homes

Mobile homes, which represent 16,588 of Vermont households[22], present unique challenges in decarbonization efforts. These homes typically have exposed water pipes and rely on combustion heating systems that are incompatible with electric heat pumps (MC). A shift to heat pumps in these homes could lead to structural damage and other issues. Therefore, the PUC should consider allowing the switch from kerosene to propane as a more practical solution to reducing emissions (MC). Currently, this option is not counted as a credit under Act 18, but allowing this change would lead to immediate cost savings and emissions reductions (MC). Additionally, the PUC should not restrict fuel assistance dollars to electric heating, as this could leave many households unable to meet their heating needs (MC).

Balance Between Decarbonization Funding and Financial Support for Heating

One of the core challenges the PUC will face is balancing the need to decarbonize home heating systems with the immediate need to provide heating support to those who cannot afford it. Low-income households often do not have the financial means to adopt cleaner technologies and, without adequate support to pay for heat, may be forced into temporary housing, creating further social and economic problems (GW). The PUC should prioritize customer economics for low-income households, ensuring that any measures taken to decarbonize do not drive-up heating costs for the most vulnerable populations. Funds that are currently directed towards heating costs should not be reallocated to system upgrades. Low-income households need funding for both (GW).

When a home can add a secondary heating system, such as an electric heat pump, state advocacy at the federal level should push for LIHEAP funding to cover both heat sources (Jen, Matt, MW). 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 (MW). Expanding LIHEAP coverage to include two primary heating sources would help ensure that households can maximize energy efficiency and reduce reliance on fossil fuels without facing additional financial hardship.

Program Alignment and Consumer Navigation

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

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

households. When temporary federal funds, such as those from the American Rescue Plan Act (ARPA), run out, the state will still have access to DOE Weatherization Assistance Program funds and other resources. However, Vermont will face a funding cliff, and the PUC will need to "braid" different funding sources together to maintain an adequate level of support for weatherization and heating assistance (BB). Additionally, the PUC should work to ensure that new programs, such as those from the Department of Public Service's HOMES and HEAR programs, are integrated with weatherization efforts to maximize their impact. Weekly coordination with DPS staff is already underway, and this collaborative approach will be essential in ensuring that Vermont residents benefit from these funds (JM, BB).

A key recommendation is to establish energy navigators who can guide Vermonters, particularly low-income residents, through the available programs and incentives. Navigators could act as both financial coaches and energy experts, helping residents take full advantage of Vermont-specific incentives, such as those available through the Inflation Reduction Act (JM, BB). These navigators could be supported by new EPA funds, and expanding this program would help more households participate in the clean energy transition. An opportunity to deliver aid to households could be to utilize the existing systems in place through utilities, such as GMP and VGS, that reduce monthly bills.

PARKING LOT

- Mia: 30% of homes can't be retrofitted – would be a useful stat to find for our report.

Mobile home specific discussion:

BB

- Given that WAP is already in the mobile home space, thinking outside the box in CHS context, thinking about braiding fed funds, CHS funds, existing funds to do full replacement

- Something like 30% of annual clients are mobile homes and can get good results. If that work lasts 30 years is a open question, but do do good work to make them more comfortable and more energy efficient

In cases where weatherization is not feasible, Efficiency Vermont administers a program that can replace eligible mobile homes with Zero Energy Modular Homes (ZEMHs), though financing and supply is limited (MW).

There was a conversation in leg about exempting kerosene mobile homes, would need to be change in leg or decision by PUC to treat ZEMHs differently. (MC)

Draft rule comments

8.103(8)(A) Definitions – Installed measures

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 and 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, have measure lives of 10 years or more, and offer savings to lower energy bills (pending approval by the Technical Advisory Group), as laid out under Section 8.101(29), this technology likely fail to meet the definition of a "Qualified capital investment" into a home[1].

Section § 8124 (d)(2) of Act 18 clearly indicates that credits derived from installed measures for customers with low and moderate incomes must be "capital investments", 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 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

[1] 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, depending on how this is defined and how they are implemented in projects.

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

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 unit sizes throughout a building. Some measures, particularly weatherization, may be difficult to attribute to individual units.

Section 8.113(b) of the Draft Rule says that "Measure attributes associated with a single clean heat measure cannot be divided; all measure attributes may only be transferred as a group to a single entity". It is unclear to the EAG how the income attributes could be handled for measures that serve an entire building, such as a heating system.

To 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 the building as a whole to be considered a low- or moderate-income customer for purposes of generating clean heat credits.

The Commission could look to the Weatherization Assistance Program (WAP) for guidance, which allows multifamily buildings to qualify for WAP services if a portion of the units are confirmed to be occupied by or offer subsidized rents for low-income households. This percentage ranges from between 25% to 66% depending on the funding source.

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 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 should consider coordinating with the Department of Children and Families to create a process for streamlining verification of income for credits.

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. 23-2220-RULE

Proceeding to design the potential Clean Heat Standard	

Order entered: 10/01/2024

ORDER ISSUING DRAFT RULE AND SETTING A DEADLINE FOR COMMENTS

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 Section 6(e) of Act 18, the Legislature required that the Commission issue draft proposed rules in the Commission's electronic case management system, ePUC, and provide for a 30-day comment period.

Today, the Commission issues a draft rule that prescribes the responsibilities of the obligated parties that the Commission would be charged with regulating under the potential Clean Heat Standard program. With the draft rule, the Commission is issuing a Companion Status Report that provides context for how the draft rule fits into the work that the Commission has engaged in since Act 18 was passed by the Legislature in 2023 and outlines the other documents the Commission has issued and will issue to accomplish the tasks set out by the Legislature.

The Equity Advisory Group, the Vermont Office of Racial Equity, and the Vermont Climate Council have all produced equity scoring rubrics to complete an equity impact assessment when putting forward a law, rule, or policy, for example. The Commission has included the rubric from the Equity Advisory Group with this order to welcome feedback on the equity impacts of the draft rule. Given that the Clean Heat Standard program is under development and subject to legislative approval, we recognize that feedback using the rubric may be imperfect.

The Commission will hold a technical workshop on the draft rule on Monday, October 7, 2024, from 10:00 a.m. to 12:00 p.m. via Go To Meeting videoconference. Participants may

[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.

access the workshop online at https://meet.goto.com/853720221, or call in by telephone using the following information: phone number: +1 (571) 317-3129 access code: 853-720-221. The purpose of this workshop is to walk through the rule and answer questions about the rule after participants have had a week to review it. The workshop will be recorded but not transcribed.

The Commission will hold a public hearing on the draft rule on Wednesday, October 30, 2024, at 6:30 p.m. via Go To Meeting videoconference. Participants and members of the public may access the public hearing online at https://meet.goto.com/773432045, or call in by telephone using the following information: phone number: +1 (571) 317-3116 access code: 773-432-045. At the public hearing, the Commission will present an overview of the rule and companion status report followed by an opportunity for verbal comments from members of the public. The public hearing will be transcribed.

Participants may wish to download the GoToMeeting software application in advance of the hearing at https://meet.goto.com/install. Guidance on how to join the meeting and system requirements may be found at https://www.gotomeeting.com/online-meeting-support.

The deadline for written comments on the rule is Friday, November 1, 2024.

SO ORDERED.

Dated at Montpelier, Vermont, this 1st day of October, 2024.

Edward McNamara	)	PUBLIC UTILITY
Margaret Cheney	)	COMMISSION
J. Riley Allen	)	OF VERMONT

OFFICE OF THE CLERK

Filed: October 1, 2024

Attest: _____
Clerk of the Commission

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)

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).

(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) "Annual compliance filing" means the documentation that an obligated party must submit to the Commission each year to verify satisfaction of the previous calendar year's clean heat credit requirement.

(2) "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.

(3) "Banking" means carrying a clean heat credit from one compliance year to the next.

(4) "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 (gCO2e/MJ).

(5) "CHS" means the Clean Heat Standard established under 30 V.S.A. § 8122.

(6) "Clean heat credit" means a tradeable, nontangible commodity representing the amount of greenhouse gas reduction attributable to a clean heat measure.

(7) "Clean Heat Credit Trading System" means a shared platform used to administer Vermont's clean heat credit system.

(8) "Clean heat measure" means fuel delivered to and technologies installed for end-use customers in Vermont that reduce greenhouse gas emissions from the thermal sector. 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.

(9) "CO2e" means carbon dioxide equivalent.

(10) "Commission" means the Public Utility Commission.

(11) "Compliance year" means the calendar year during which time an obligated party must fulfill its annual clean heat credit requirement.

(12) "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.

(13) "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 verified and eligible for banking and trading. Active credits are only eligible for retirement for measure years 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.

(14) "Customer" means a recipient of a clean heat measure. 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.

(15) "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.

(16) "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.

(17) "Default delivery agent" means an entity designated by the Commission to provide services that generate clean heat measures.

(18) "Department" means the Vermont Department of Public Service.

(19) "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).

(20) "Energy burden" means the annual spending on thermal energy as a percentage of household income.

(21) "Entity" means any individual, trustee, agency, partnership, association, corporation, company, municipality, political subdivision, or any other form of organization.

(22) "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.

(23) "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).

(24) "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.

(25) "Heating fuel" means fossil-based heating fuel, including oil, propane, natural gas, coal, and kerosene, regardless of end use.

(26) "Measure attributes" means the CO2e reduction resulting from the implementation of a clean heat measure before it is registered.

(27) "Measure group" means the qualifications 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 implemented for a customer with low income.

(D) Group D: a measure that is not a qualified capital investment implemented for a customer with moderate income.

(E) Group E: all other measures.

(28) "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 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.

(29) "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.

(30) "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.

(31) "Technical Reference Manual" means a reference manual, 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.

(32) "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.

(33) "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 report heating fuel data annually 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.

(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 has to re-register if it resumes selling heating fuel into or in Vermont.

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 the amount of its annual clean heat credit requirement for the next relevant compliance year.

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 each calendar year.

(1) Clean heat requirements transfer to entities that acquire an obligated party.

(2) Entities that cease to operate retain their clean heat requirement for their final year of operation.

(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 delivering eligible clean heat measures;

(2) by contracting for delivery of eligible clean heat measures; or

(3) through the market purchase of clean heat credits.

(c) An obligated party seeking Commission approval to meet its annual requirement using a method other than the default delivery agent must file a petition with the Commission that includes sufficient details on the obligated party's capacity and resources to achieve the emission reductions.

(d) By August 1 each year, an obligated party must file a credit fulfillment plan using the form in ePUC.

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.

(c) An obligated party, a default delivery agent, or the Department may propose potential clean heat measures to the TAG. If the TAG concludes that the measure is likely to meet the statutory definition of a clean heat measure, then the TAG will inform the Commission that the Commission's technical consultant should complete a measure characterization pursuant to 30 V.S.A. § 8128(c).

(d) A proponent of a 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.

(e) An unapproved 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.

(f) 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 renewable attributes and (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. This documentation must be filed with the measure registration.

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, 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.

(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).

PART IV: EMISSIONS ACCOUNTING

8.109 Updating the Emissions Table

(a) Every three years, the Commission will review and update the Emissions Table, pursuant to 30 V.S.A. § 8127(g). The triennial review process will include notice of any proposed changes, TAG review, and a 30-day public comment period.

(b) For changes to the Emissions Table that fall outside of the triennial review process, an obligated party must petition the Commission to recalculate a fuel's lifecycle emission rate, pursuant to 30 V.S.A. § 8127(g)(2) and (3). Such a petition must include:

(1) a request for the Commission to recalculate a particular fuel's lifecycle emission rate; and

(2) an explanation of the basis for the recalculation, particularly if a fuel pathway is significantly impacted as a result of local, State, or federal legal requirements, technological change, or new evidence on emissions and supporting documentation.

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 lifecycle CO2e emission reductions that result from the delivery of eligible clean heat measures to existing or new end-use customer locations into or 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 home, multi-family, 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.

(c) For custom clean heat measures, where greenhouse gas emission reduction assumptions have not been established through the Technical Reference Manual or Emissions Table, an obligated party must maintain its documentation of all assumptions and calculations used to establish its greenhouse gas reduction claims.

(d) Clean heat credits are awarded and time stamped using the date of verification.

(e) 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.

(f) 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 Verifying Clean Heat Credits

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. However, 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 as a group to a single entity. The new owner of the transferred clean heat measure attributes must register the measure.

(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.

(d) At the discretion of the Commission, ownership of a significant proportion of Vermont's clean heat credits may trigger limitations on trading.

8.114 Demonstrating and Verifying 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 verification. Pursuant to 30 V.S.A. § 8127(a), the Department must perform an annual verification of clean heat credit claims and submit the results of the verification 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. An obligated party's annual compliance filing must include documentation demonstrating, either:

(A) For obligated parties using the DDA to fulfill some portion or all of their annual requirement, proof of adequate payment to the DDA; or

(B) For obligated parties fulfilling some portion or all of their annual requirement independent from the DDA:

(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 response to any waiver requests.

(3) By September 15 of each year, obligated parties and other interested parties may file comments on the Department's report to the Commission.

(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 the 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 the 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 petition 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.

DRAFT CLEAN HEAT STANDARD RULE COMPANION STATUS REPORT

by the Vermont Public Utility Commission

October 1, 2024

VERMONT
PUBLIC UTILITY COMMISSION

I. Introduction and Summary of the Clean Heat Standard

In 2023, the Vermont General Assembly passed Act 18 of 2023,[1] which details a Clean Heat Standard program and requires the Vermont Public Utility Commission ("Commission") to provide a Clean Heat Standard rule to the Legislature by January 15, 2025. The Act states that "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 [the Global Warming Solutions Act of 2020], minimizes costs to customers, protects public health, and recognizes that affordable heating is essential for Vermonters."

The purpose of the Clean Heat Standard ("CHS") is to reduce greenhouse gas emissions from the thermal sector through the implementation of clean heat measures. The CHS does this by requiring any company that imports heating fuels for ultimate consumption in Vermont to retire a certain amount of clean heat credits each year. The CHS calls these companies "obligated parties."[2] An obligated party must obtain and then retire (*i.e.*, not sell or save) a certain number of clean heat credits every year based on its share of fossil-based heating fuels delivered into Vermont.[3] These businesses can pay a default delivery agent ("DDA") appointed by the Commission to procure the credits they are obligated to retire in any given year, deliver clean heat measures themselves, or purchase credits from other entities doing that work. Credits are created by delivering clean heat measures such as weatherization, heat pumps, advanced wood heat systems, and biofuels. A clean heat credit is a tradeable, nontangible commodity representing the amount of greenhouse gas reduction attributable to a clean heat measure. The DDA(s) will work on behalf of obligated parties to help meet the annual clean heat credit requirements.

More information on the Commission's work on the potential Clean Heat Standard, as well as updates on the Commission's processes and procedures, can be found on our Clean Heat Standard website at https://puc.vermont.gov/clean-heat-standard. The Commission's work is in ePUC; our work relating to the development of the rule and other policy decisions is in Case No. 23-2220-RULE; our work relating to DDA(s) is in Case No. 23-2221-INV.

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[1] The bill as enacted is available at https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf. The relevant sections of the law can also be found at https://legislature.vermont.gov/statutes/fullchapter/30/094.

[2] 30 V.S.A. § 8123(12). This also includes any entity that produces, refines, manufactures, or compounds heating fuel within Vermont for ultimate consumption within the state.

[3] 30 V.S.A. § 8124(a)(2).

At the highest level, Chapter 94 of Title 30 of the Vermont Statutes Annotated requires the Commission to "adopt rules and [] issue orders to implement and enforce the Clean Heat Standard program."[4] The Legislature specifically directed the Commission to draft a rule and a checkback report to submit to the General Assembly no later than January 15, 2025. After the rule is submitted, the Legislature determines whether, and in what form, the rule will be adopted. Put differently, the Legislature must still decide whether and how to implement the Clean Heat Standard.

Additionally, the Commission is charged with the following tasks to set up the Clean Heat Standard:[5]

- Devise a registration system and facilitate the registration of Vermont fuel dealers, beginning in January 2024.
- From the 2024 registrants, determine which entities are obligated parties and set each obligated party's annual clean heat credit requirement for the first compliance year and projected requirement for the next 10 years.
- Establish a system of tradeable clean heat credits earned from the delivery of clean heat measures that allows for the registration, verification, trading, banking, and retirement of those credits.
- Provide for the development and implementation of statewide clean heat programs and measures by one or more default delivery agents appointed by the Commission.

This status report serves as a companion document to the Commission's draft rule to provide context for how the draft rule fits into the work that the Commission has engaged in since Act 18 was passed by the Legislature in 2023. Over the last year and a half, the Commission has hired full-time staff to work on the design of the CHS and appointed the members of both statutorily required advisory groups: the Technical Advisory Group and the Equity Advisory Group. These advisory groups have met regularly since December 2023. The Commission has also issued orders and straw proposals for comment, hired a consultant to facilitate public engagement, hired an emissions analyst consultant, adopted and implemented a registration platform for Vermont fuel dealers and collected year one registration and reporting data, and engaged with other State agencies to carry out the work the Commission was tasked with by Act 18.

This status report is organized into sections.

- Section I provides an introduction and a summary of the Clean Heat Standard.
- Section II gives an overview of the Commission's draft rule.

[4] 30 V.S.A. §§ 8122(d), 8126(a), 8126(b) ("The requirements to adopt rules and any requirements regarding the need for legislative approval before any part of the Clean Heat Standard goes into effect do not in any way impair the Commission's authority to issue orders or take any other actions, both before and after final rules take effect, to implement and enforce the Clean Heat Standard.").

[5] There are numerous tasks the Commission is charged with if the Clean Heat Standard program is implemented after the 2025 legislative session. Some of those tasks include managing the annual reporting of Vermont fuel dealers, determining annual obligated parties, and adjusting annual clean heat credit requirements.

- Section III outlines the other components of the Clean Heat Standard.
- Section IV describes when the Commission intends to provide information on the estimated costs of the Clean Heat Standard.
- Section V briefly describes an alternative to the Clean Heat Standard.
- Section VI identifies the process for public input on the Commission's draft rule.
- Section VII concludes the status report.
- Appendix A summarizes each section of the draft rule.

II. Overview of the Draft Rule

As highlighted above, Act 18 contemplates that the Commission will develop and implement the Clean Heat Standard via multiple tools, including rules and orders. Throughout the first year, the Commission has reviewed the various tasks required by Act 18 to determine what aspects of the potential program fit into rulemaking, Commission proceedings that culminate in orders, internal procedures or informal processes, and other forms of Commission work. The rule that is due to the Legislature on January 15, 2025, will not include every aspect of the Clean Heat Standard because not all components of the potential Clean Heat Standard program fit into a rulemaking.

The Vermont Administrative Procedure Act defines a "rule" as "each agency statement of general applicability that implements, interprets, or prescribes law or policy."[6] In the context of the Clean Heat Standard, 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 CHS program. Fuel dealers — many of which are small businesses — have never before been regulated by the Commission, so there is a need to prescribe the process for when and how the obligated parties would engage with the Vermont Department of Public Service ("Department") and the Commission if this program is adopted by the Legislature.

As an appendix to this status report, we provide a guide to the draft rule to facilitate greater understanding of what each section of the draft rule does. This guide can be read in conjunction with the draft rule for context.

III. Other Components of the Clean Heat Standard

The purpose of this section of the status report is to provide an overview of the other elements of the Commission's Clean Heat Standard work. Because our draft rule is aimed at the newly regulated entities and because a rule is inflexible once it is adopted, the Commission has determined that these tasks are better accomplished using other tools, such as orders, contracting processes, reports, or consultation with State agencies and experts.

[6] 3 V.S.A. § 801(b)(9).

A. The Default Delivery Agent

The Commission is required to appoint at least one default delivery agent ("DDA").[7] The DDA will be responsible for obtaining credits that the DDA will retire on behalf of obligated parties who have contracted with the DDA to satisfy their credit requirements, in whole or in part.[8] The Commission has determined that the DDA will primarily perform a program-administrative role under a performance-based regulatory structure.[9] The DDA will serve a crucial role in the Clean Heat Standard program, if adopted by the Legislature in a form that requires one or more DDAs, by coordinating the flows of available funds, work, and credit creation and distribution.

On September 6, 2024, the Commission issued a request for information ("RFI") to further refine the scope of work for the DDA and gather information concerning the appointment of a DDA.[10] Responses to the RFI are due by December 6, 2024. If the General Assembly approves the Clean Heat Standard with a provision for appointing one or more DDAs, the Commission will appoint one or more DDAs according to the requirements of the enacted legislation. Currently, statute requires the Commission to approve the first DDA three-year plan and budget by September 1, 2025; the DDA(s) must be appointed or contracted before that date. The Commission intends to proceed with a request for proposals ("RFP") and eventually to issue an Order of Appointment to one or more organizations to serve as DDA(s) if the Legislature approves a Clean Heat Standard program that requires a DDA.

The Order-of-Appointment process is its own stand-alone component of the Commission's work on preparing for the potential Clean Heat Standard program. As recognized in Act 18, in other contexts, such as in appointing the electric efficiency utilities ("EEUs"), the Commission has used a similar process.[11] In our EEU work, we do not have a rule for the appointment, management, reporting, regulation, and budget-setting of EEUs. We are taking that approach for the DDA as well.

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[7] 30 V.S.A. § 8125(b).

[8] Public comments on the role, number, and status of default delivery agents for the potential Clean Heat Standard were requested in December 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.

[9] *See id.*

[10] Case No. 23-2221-INV, RFI issued 9/6/24. The Commission was required by Act 18 to open a proceeding "to establish the default delivery agent credit cost or costs and the quantity of credits to be generated for the subsequent three-year period." 30 V.S.A. § 8125(e)(1).

[11] *See* 30 V.S.A. § 8125(b) ("An existing order of appointment issued by the Commission under section 209 of this title may be amended to include the responsibilities of the default delivery agent.").

B. Technical Aspects of Administering the Clean Heat Standard

The Commission has determined that several technical aspects of the Clean Heat Standard do not fit within a rulemaking. The Commission will instead issue orders detailing these aspects of the potential program's implementation. The areas that will be covered in Commission orders are:

- Registration of fuel dealers – process, guidance, and enforcement;
- The pacing process for credit retirement;
- Establishing obligated parties and their annual clean heat credit requirements;
- Setting the clean heat credit retirement schedule;
- Setting declining carbon intensity values for liquid and gaseous clean heat measures;
- Determining the minimum percentage of clean heat credits being retired each year that must result from the implementation of clean heat measures for customers with low and moderate income;
- Deciding how early action credits will be awarded and valued; and
- Assessing the Clean Heat Standard's interaction with other programs (such as Tier 3 of the Renewable Energy Standard) as well as inter-eligibility requirements.

The Commission has issued or anticipates issuing orders before January 15, 2025, regarding all the bullets above. Further work on these topics will be required if the Legislature adopts the Clean Heat Standard program.

C. A Credit Platform

Other jurisdictions, such as California, Oregon, and Canada, have developed digital platforms to manage data and processes related to the implementation of low-carbon fuel standards like the Clean Heat Standard.[12] These platforms facilitate fuel pathway certification approval; fuel transactions reporting and recordkeeping; and credit generation, banking, sale, transfer, and trading. Non-regulated entities, such as brokers, may also participate in these platforms, which are therefore open to participants beyond obligated parties and fuel dealers. Although such platforms can reduce administrative complexity over time, they are costly to develop and maintain. The costs can remain high when they are not shared regionally, nationally, or even internationally. Thus, the cost is dependent on the development of a marketplace for the credits and adoption of similar low-carbon policies in other jurisdictions.

[12] Vermont has the related experience of interacting with the New England Power Pool Generation Information System (NEPOOL GIS) for purposes of regulating compliance with the Vermont Renewable Energy Standard ("RES"). NEPOOL GIS is the entity that issues and tracks the renewable energy credits (RECs") that Vermont distribution utilities use to show compliance with the RES.

Given the complexity and cost of developing a credit platform, the Commission is holding off on creating or recommending a platform until the Legislature has determined whether and, if so, in what form the Clean Heat Standard will continue to be developed. If the Legislature adopts the Clean Heat Standard program, the creation or adoption of a credit platform would not be part of the Commission's rule. A credit platform would likely be something operated independently by a third-party vendor. Such platforms typically have their own manual for engagement with the platform.[13] For these reasons, the Commission's draft rule does not include the details of a credit management platform but does reference the existence of such a platform.

D. The Checkback Report

Also due on January 15, 2025, is the Commission's second checkback report to the Legislature. The Commission is required to include the following in its report:

> estimates of the impacts 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 report[] 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.[14]

In addition to the economic study required by Act 18 for this second checkback report, the Commission intends to report on the following:

- The context for thermal sector greenhouse gas emission reductions, including the Greenhouse Gas Inventory, Global Warming Solutions Act, and existing thermal programs and funding;
- An overview of the Commission's implementation of the Clean Heat Standard to-date;
- An updated funding proposal per Act 18, Section 6(h); and
- Underlying issues with implementing the Clean Heat Standard program as envisioned by the current legislation.

The Commission's vision for the second checkback report is to inform the Legislature's decision about the Clean Heat Standard. Because the Commission has been engaged in implementing the

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[13] *See, e.g.*, California Environmental Protective Agency Air Resources Board, Low Carbon Fuel Standard User Guide (v. 1.2), available at https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lrt_cbts_userguide.pdf; Environment and Climate Change Canada, *Clean Fuel Regulations Credit and Tracking System: User Guide for Primary Suppliers, Registered Creators, and Foreign Suppliers* (v. 2.1), available at https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/clean-fuel/regulations/cats/CFR-Credit-Tracking-System-User-Guide-Primary-Suppliers-Registered-Creators-Foreign-Suppliers-v2-1.pdf.

[14] Act 18, § 6(i).

early stages of a potential program, we want to provide meaningful feedback on the obstacles to implementation and areas of concern that have come to light in the early stage of development.

Further, the Commission will provide a proposed alternative mechanism for accomplishing the same legislative aims as the Clean Heat Standard. This alternative proposal seeks to address some of the major pitfalls that the Commission has encountered in attempting to work through the Clean Heat Standard as originally conceived. These roadblocks include: the overall complexity and significant administrative costs, lack of a robust and liquid market for clean heat credits, and inconsistencies with the accounting performed in the Greenhouse Gas Inventory.

IV. Costs

The Commission recognizes that many participants in the Clean Heat Standard proceedings, the advisory groups, and members of the public have requested detailed cost projections. The Vermont Department of Public Service's potential study includes some potential costs of the Clean Heat Standard as currently conceived.[15] Using the Department's potential study as well as other cost modeling, the Commission will provide additional cost analysis in its checkback report that will be submitted to the Legislature on January 15, 2025. The Commission also understands that the Vermont Legislative Joint Fiscal Office endeavors to perform additional cost analysis.

The Commission is not providing a cost estimate at this time. However, we do point out in several places in this status report the types of administrative costs associated with the Clean Heat Standard as currently conceived.

V. An Alternative to the Clean Heat Standard

The Commission has previously been asked to study other mechanisms for reducing thermal sector emissions. Given the regulatory complexity and administrative costs of the Clean Heat Standard, the Commission reiterates its findings of its final report required by Act 62 of 2019:

> The basic policy question — how to fund energy efficiency and fuel switching in the world of unregulated fuels — has been studied for many years. A long list of studies — going back over a decade — from a variety of stakeholders all recommend that the Legislature establish a stable and sizable stream of funding for thermal and transportation efficiency and fuel switching. At current funding levels, Vermont

[15] Vermont Department of Public Service, Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont (Sept. 1, 2024), available at https://publicservice.vermont.gov/sites/dps/files/documents/NV5%20-%20VT%20Act%2018%20Clean%20Heat%20Standard%20Potential%20Study%20Report.pdf.

will fail to achieve its ambitious goals to reduce energy usage and greenhouse gas emissions.[16]

As detailed in the Commission's Act 62 preliminary report, programs currently in place span electric efficiency, thermal energy, electrification, electric load management, transportation, and cross-cutting efficiency.[17] Programs such as the Weatherization Assistance Program ("WAP"), Vermont Gas Systems, Inc.'s residential and commercial energy efficiency programs, Efficiency Vermont's and the City of Burlington Electric Department's Thermal-Energy and Process-Fuel Efficiency ("TEPF") services, and advanced wood heating initiatives provide proven and straightforward mechanisms for decarbonizing Vermont's thermal sector. The issue is simply insufficient funding to meet the requirements of the Global Warming Solutions Act.

The Clean Heat Standard as currently conceived requires substantial additional costs and regulatory complexity above the funding needed to accomplish Vermont's greenhouse gas emission reduction goals. For example, the Clean Heat Standard would require establishing a credit marketplace managed by what is likely to be a costly credit platform, the potential for fraud and market manipulation, the appointment of new or varied default delivery agents with administrative costs of their own, and the participation and regulatory engagement of hundreds of fuel dealers and other actors — *e.g.*, companies and individuals that install clean heat measures — not currently or historically regulated by the Commission.

Our work over the past year and a half on the Clean Heat Standard demonstrates that it does not make sense for Vermont, as a lone small state, to develop a clean heat credit market and the associated clean heat credit trading system to register, sell, transfer, and trade credits. Because the Clean Heat Standard introduces these additional regulatory hurdles and costs, the Commission is considering other options to achieve Vermont's greenhouse gas emission reduction goals for the thermal sector.

One option, as advanced in the Commission's Act 62 final report, is a new thermal energy benefit charge on the sale of fuel oil, propane, and kerosene.[18] Similar to the long-standing electric efficiency charge, the Commission would set the thermal energy benefit charge based on statutory criteria, including the need to provide sufficient funding to meet the Global Warming Solutions Act requirements. The funds raised could be spent directly on fossil-fuel-reduction projects such as weatherization and electrification, avoiding the complexity and high administrative costs of a thermal credit market in which only Vermont participates. We intend to develop this alternative concept in the checkback report and will solicit feedback later this year.

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[16] Vermont Public Utility Commission, Act 62 – Final Report on All-Fuels Energy Efficiency (Jan. 15, 2021) at 1 (citations omitted), available at https://puc.vermont.gov/sites/psbnew/files/doc_library/act-62-final-report-amendment-020321.pdf.

[17] Vermont Public Utility Commission, Act 62 – Preliminary Report on All-Fuels Energy Efficiency (Jan. 15, 2020) at 20-36, available at https://puc.vermont.gov/sites/psbnew/files/doc_library/Act%2062_PreliminaryReport%201.15.20.pdf.

[18] Vermont Public Utility Commission, Act 62 – Final Report on All-Fuels Energy Efficiency (Jan. 15, 2021) at 13-15.

We recognize that current programs will need to be developed further to achieve Vermont's greenhouse gas emission reduction goals. For example, discussion regarding the Clean Heat Standard has illuminated one area where existing programs may need to be augmented — expanding the use of biofuels, which is likely to be one of the more cost-effective strategies to meet the requirements of the Global Warming Solutions Act. The Commission will be reviewing clean fuel programs currently implemented by a handful of other states and will recommend a path forward in this area in the checkback report.

VI. Process for Public Input on the Draft Rule

Act 18 requires a 30-day comment period on the Commission's draft rule. The Commission is issuing the draft rule and this companion document on October 1, 2024, and providing 30 days for public comment. During this public comment period, the Commission will be hosting a workshop and a public hearing to discuss the draft rule. On October 7, 2024, we will hold a technical workshop to talk through the details of the draft rule. On October 30, 2024, we will hold a public hearing on the draft rule. Details for each of these meetings are included in the order that issued with this status report. Notices will be issued for both the workshop and the public hearing.

After the deadline for comments on the draft rule, the Commission will compile and summarize the comments and evaluate what changes to the draft rule should be made before preparing a final proposed rule for submission to the General Assembly, pursuant to Act 18. If necessary, the Commission will seek clarification or additional comments on the changes.

In sum, the draft rule builds on 18 months of information requests, straw proposals with comment, Technical Advisory Group meetings and feedback, Equity Advisory Group meetings and feedback, public engagement sessions, State agency engagement, and informal information gathering. It is the culmination of all the work since Act 18 was passed by the Legislature in 2023.

VII. Conclusion

This status report serves as a companion document to the Commission's draft rule to provide context for how the draft rule fits into the work that the Commission has engaged in since Act 18 was passed by the Legislature in 2023. To date, the Commission's work has required flexibility and ingenuity to carry out the development-phase directives in Act 18. If the Legislature adopts the Clean Heat Standard program, the Commission will be tasked with many aspects of the Clean Heat Standard that build on, modify, or potentially even undo some of this early work. It is in that environment that the Commission has drafted a rule that establishes the core, outward-facing components of the potential program so that affected entities, particularly those who would now come under the Commission's regulation, can understand when and how they are expected to engage in the regulatory process.

Appendix A: Guide to the Draft Rule

PART I: GENERAL PROVISIONS

8.101 Purpose and Background

Explains the purpose of the draft rule, what prompted the Commission to write it, and the general goals of the Clean Heat Standard.

8.102 Authority

Provides the statutory authority for the Commission to create, modify, and enforce the draft rule and other aspects of the potential Clean Heat Standard program.

8.103 Definitions

Provides a list of relevant terms used in the draft rule and their intended meanings. All terms defined in Act 18 have been included.

PART II: REGISTRATION, OBLIGATED PARTIES, AND COMPLIANCE PATHWAYS

8.104 Fuel Dealer Registration and Reporting Requirements

Explains when and how fuel dealers must register with and report to the Commission and retain relevant documentation.

8.105 Determining Obligated Parties

States what data the Commission will use to determine whether a fuel dealer is an obligated party and that the Commission will calculate how many clean heat credits obligated parties owe for each compliance year.

8.106 Clean Heat Standard Compliance, Waiver Process, and Credit Fulfillment Plans

Explains that the Commission will establish the number of clean heat credits that each obligated party must retire each calendar year, and how those obligations will be treated if an obligated party is acquired or goes out of business. Provides two pathways for obligated parties to meet their obligation based on whether an obligated party uses a default delivery agent. Establishes a deadline for obligated parties to report a plan for credit fulfillment for the next compliance year.

PART III: CLEAN HEAT MEASURES

8.107 Process for Approval of Clean Heat Measures

Explains who may propose new clean heat measures, how they should do so, the process for approval, and the status of unapproved measures. Describes how renewable natural gas and similar measures are to be reported to the Commission to qualify as a clean heat measure.

8.108 Clean Heat Measure Group

Details how the credits generated by each registered clean heat measure will be assigned to a clean heat measure group as required by Act 18.

PART IV: EMISSIONS ACCOUNTING

8.109 Updating the Emissions Table

Explains when the emissions table of lifecycle emission rates for heating fuels and any fuel that is used in a clean heat measure will be updated and how it can be updated outside of the regular review schedule.

PART V: CLEAN HEAT CREDITS

8.110 Carbon Equivalency of Clean Heat Credits

States the CO2e value of a clean heat credit.

8.111 Registering and Tracking Clean Heat Credits

Explains who can register clean heat measures, what information is necessary to create a potential clean heat credit when a measure is registered, how clean heat credits will be time stamped, when a clean heat credit can be traded or retired, and how credits will be tracked.

8.112 Verifying Clean Heat Credits

States who verifies a clean heat measure and that the act of doing so changes the status of the credit.

8.113 Measure Attributes and Credit Ownership

Sets out how initial credit ownership is determined for different types of clean heat measures. Restricts how the initial measure owner can transfer their measure attributes. Explains how clean heat credits can be traded.

8.114 Demonstrating and Verifying Annual Compliance

Determines where obligated parties will retire their credits to fulfill their annual obligation, what it means to retire credits, and the conditions under which credits are eligible for retirement. Explains how annual compliance will be verified, the schedule on which obligated parties must demonstrate compliance, and the Department of Public Service's role in verifying compliance. Outlines the process the Commission will use to determine whether an obligated party is in compliance and to assess non-compliance penalties or directives. Provides a method for obligated parties to pursue a waiver for noncompliance.

8.115 Banking Clean Heat Credits

Provides the ability for entities to bank clean heat credits.

8.116 Disclosures and Representations Regarding Clean Heat Credits

States the requirement of providing disclosures with clean heat measures and where to find sample disclosures.

Clean Heat Standard (CHS) Conversation

Thursday, September 26th, 9:30-11:00 am

Introduction

Background

- Public Utility Commission (PUC) – Independent body that fully regulates electric and natural gas utilities and has some regulatory authority over telecommunications and cable providers.
- Global Warming Solutions Act (GWSA) – Vermont law passed in 2020 that requires reductions in Vermont's greenhouse gas (GHG) emissions.
- Act 18 – law passed in 2023 that requires the PUC to propose rules that would implement a Clean Heat Standard (CHS) by January 15, 2025. The legislature will then vote on whether to implement the CHS. The law provides the broad structure of a Clean Heat Standard and requires the PUC to fill in the details.

High-Level Overview

- The purpose the CHS is to achieve greenhouse gas emissions reductions as required by the GWSA. It specifically addresses the thermal sector.
    - Thermal sector covers non-transportation fuels; these are mainly heating fuels but also include propane used for cooking and fossil fuels used for commercial applications such as kiln drying or sugaring.
- Anyone who sells heating fuels into or within Vermont is required to register with the PUC. A subset of that group (those who first imported thermal fossil fuels into Vermont) will be required to take action to reduce GHG emissions.
- Act 18 requires the PUC to construct the program to ensure that customers with low and moderate income receive a significant portion of program benefits. Ben Bolaski speak to this part and the role of the Equity Advisory Group

How the Clean Heat Standard works

- The PUC identifies Clean Heat Measures, which are activities that reduce thermal sector GHG emissions—examples include heat pumps, weatherization, and fuel-switching. It calculates, on a lifecycle basis, how much each measure reduces GHG emissions.
    - A certain number of combined measures will equal a Clean Heat Credit, which is how the parties who are required by law to reduce GHG emissions will show they are complying with the CHS.

- Every three years the PUC calculates how many Clean Heat Credits are needed to reduce Vermont's thermal emissions from current levels to what is needed to meet the GWSA requirements.
- Every year we look at how much fossil fuel each regulated fuel dealer or wholesale importer sold the prior year and convert that into GHG emissions. Then, based on the reductions we must achieve, we tell each regulated fuel dealer or importer how many clean heat credits they have to retire.
- From there, the regulated entity has two options:
    - 1) Pay a Default Delivery Agent a certain dollar amount per Clean Heat Credit and the Default Delivery Agent performs clean heat measures to get the necessary Clean Heat Credits.
    - 2) Demonstrate that they can achieve the requirements on their own by implementing Clean Heat Measures themselves, or by buying Clean Heat Credits from other entities that are implementing Clean Heat Measures.

Discussion

- Clean Heat Standard doesn't address the 'Split incentive problem', making it difficult for clean heat measures to reach renters. It would be challenging to address this through CHS; therefore, the Equity Advisory Group's Report will recommend parallel programs to create a more equitable ecosystem.
- Consider low-income Vermonters as having no upfront money to do this. Often (not always) they also have low credit scores.
- I have found that in implementing grants for clean heat, not only do weatherization clients not have disposable cash, they are extremely debt-averse and do not want to take out loans at all.
- Most of our clients are on fuel assistance. This allows for only one fuel type. They cannot afford to pay any more [which would happen if they lost fuel assistance], that's why weatherization is there in the first place. It's about anti-poverty, more money in their pockets.
- There would be downsides if weatherization increases costs, this could damage working relationship with clients. If the Clean Heat Standard can increasingly be tied to fuel dealer level so that they fund a portion of weatherization rather than the consumer, that could help. Curious to hear more details about the credits themselves.
- Echo what others say: our clients don't want another bill, period (debt averse). Upfront capital is definitely a problem. Current incentives do not apply because they're through taxes, and low-income Vermonters don't pay enough taxes to get the incentive.
- Client of NEKCA who had flood damage from this summer sent in a video with his story. He has an oil furnace, is a senior citizen on a fixed income and tight budget, and receives fuel assistance. He is doing the right things already: he's weatherized his home through NETO and has a heat pump already (couldn't remember how it was installed, whether incentives/NETO was involved). He knows how to survive on a low income, with fuel assistance he can do that. But if he uses only the heat pump, he's concerned it will cost

more than running the furnace, because he would no longer get fuel assistance [because of switching to electricity]. He would like to run only his heat pump, but it would be too expensive. He understands and agrees with the goals of switching to clean energy, but the impact of doing so would 'burn my wallet'.

- A major concern with the idea of fuel suppliers doing weatherization services themselves: where would they get the contractors? We can barely find them, and we definitely could not compete with big companies with lots of money. Unless you're going to build the subcontractor base as part of this, that's a big red flag. And, if the fuel suppliers are also going to focus on low-income households, they'll do all the easy-to-weatherize homes and leave Community Action Agencies to deal with the difficult homes (those that need roofs, floors, pest control, vermiculite remediation, etc. before any weatherization can even start—money would have to go towards these).
- Goal of the program is 16% of services to low income & 16% of services to mid-low income. Federal funding only supports lowest income level 'poorest of the poor'. There's not enough money to do the next 16% (mid-low income). State funding is reducing drastically, and that's how we help the mid-low income. It's how we replace roofs and replace knob-and-tube and remove vermiculite. There's a funding cliff coming up in the next 5 years. Pay attention to what the limitations of fed funds are, so we need to keep that in mind. We're not funded past 2029 right now. The way that the funding shifts, when ARPA money dries up for multi-family, that will add demand to the WAP program and further reduce money available for that. Look at the equity of the funding sources. Even though you might see the same amount of funding [for services going to different income tiers], the composition of where that funding actually comes from [Federal vs. State] matters a lot and makes a difference in who you can serve.
- As a middle-class Vermonter, single parent of two kids, $1.70 increase in my fuel would not leave me with any money to fuel switch or weatherize etc. Middle class is not considered in the Clean Heat Standard and will be left out, won't be able to make clean heat improvements.
- 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.
    - [Context provided from Clean Heat Standard team member]: I wouldn't expect many obligated parties to get into weatherization on their own. Short term would be more of what's already happening—likely they would obtain clean heat credits generated by the Weatherization Assistance program (obtaining credits through this) to meet their obligations.
- Important to consider the things CHS wouldn't cover such as roof repair etc.
- There's a lot of work & data & targets out there. Remember it's people we're trying to serve. A lot of time, programs and legislation have a different effect than what's intended. We can say there's structure and guidelines (to prevent fraud, malfeasance) but then things become so restrictive that the very people we're trying to help don't benefit. We really need to do case studies as we develop procedures, legislation, and programs. Look at people within a certain profile and ask how it will affect them, then design program to help them. Sometimes the focus on the target prevents people from focusing on who is going to help you meet the target. Let's not get ahead of ourselves setting lofty goals before we find out how it will impact people we serve.

- Our clients are very on top of their finances. The fans we put into homes are $10-15 per year. A big complaint is that $10-15 per year is a huge factor for them. This shows not only how in touch with their budget they are, it also shows how even minor expenses like this are a concern.
- If we're trying to incentivize a behavior change for people living with economic difficulty, there needs to be the opportunity to shoulder the burden with assistance and not have to choose between or sacrifice other things (such as medical support, phone bill).
- I want us to ask who owns houses—not the lowest income people, they're probably renting. Would love to see statistics on that by town (income vs. homeownership). [Clean Heat Standard team member provided homeownership by income data.] We work from LIHEAP lists (everyone who receives fuel assistance) to reach out to people who haven't been served yet. A lot of them have already been served.
- I am working on Rutland Planning Commission's survey of housing stock. The town has an aging population; they tend to own their own homes. They're getting pinched with the cost of operating them. Some are turning towards short-term room rentals to supplement income. We cannot talk about energy transition without also talking about housing issues.
- There are services Community Action Agencies don't yet provide to low income Vermonters. For instance, 30% of the homeowners we serve at CVOEO own mobile homes (not sure how this compares to statewide proportion). Most of them have less than 100 amp service, all of which would need to be upgraded to 200 amp for any of the clean heat measures to function. Because of the water system design in a mobile home, a ductless heat pump or mini-split wouldn't work. They would need to be ducted heat pumps in order to make sure water doesn't freeze because drinking water and wastewater are designed to run in same cavity as ducts, which are designed to lose heat into that space to prevent freezing.
- I see folks in the Northeast Kingdom aging in place who own their homes (which are also aging), they are struggling to keep these homes together. I often speak with people who don't qualify for my program, middle class, interested in making the clean heat transition.
- Over the last 4 years, demand for basically every kind of contractor has increased. There are **no** extra contractors, so the price we're paying has doubled! Costs are through the roof to get any of these services done. Contractors are only doing the jobs they want to do (and those aren't the low-income households). Legislature needs to understand there is no workforce.
- Interest from multiple participants in talking with legislators or having legislators come out to see what their program does.

[Responses from Clean Heat Standard team members]

It's not clear to me that people who came up with the CHS ever talked to people with low-income clients -- the legislature needs to hear from you. CHS is a market-based system that is modeled on the regulated electric sector. The PUC can impose rules and requirements about where credits need to come from, but at the end of the day CHS assumes market will respond. In a large state like California, that can drive down cost through competition. But a small state like Vermont is different.

Regarding tying the Clean Heat Standard to fuel dealer level—that is the case, but they'll impose/pass on costs to customers.

Regarding getting more money to Community Action Agencies—that money has to come from somewhere. The CHS and PUC proposals are designed to keep the funding source for clean heat activities within the same sector (thermal). They're designed to try to get the industry itself to fund these kinds of programs. What I'm hearing is if legislature wants to use general funds or progressive taxation, that's different than CHS and the legislature would need to hear that.

This has been valuable. The Equity Advisory Group has talked about similar concerns. Straight tax on fuel is more direct and potentially limits costs of the program. However, the Equity Advisory Group notes that tax on fuel is directly regressive on low-income households. There's also the option to do nothing, but that doesn't address inequities of status quo. Equity Advisory Group's final report will reflect many of your concerns, interested in how we thread that needle.

VERMONT STATEWIDE WEATHERIZATION RESEARCH

JANUARY - FEBRUARY 2021

Prepared for:
Efficiency Vermont and Vermont Gas

Prepared by:
The Center for Research & Public Policy, Inc.

802-875-5003 | info@crpp.com | crpp.com

STATEMENT OF CONFIDENTIALITY AND OWNERSHIP

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Moreover, no information regarding these findings will be released without the written consent of an authorized representative of Efficiency Vermont or Vermont Gas.

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1 INTRODUCTION

The Center for Research & Public Policy is pleased to present the results to a Vermont statewide survey on weatherization for Efficiency Vermont and Vermont Gas. The survey was designed to collect input from Vermont residents on their experience with and perceptions of weatherization.

The research study included **682** completed survey responses.

The survey was conducted January 25th – February 8, 2021.

The survey included the following areas for investigation:

- **Views on comfort in personal home;**
- **Awareness of weatherization;**
- **Weatherization experience;**
- **Motivations and barriers to participation in home weatherization;**
- **Prioritizing weatherization;**
- **Funding preferences; and,**
- **Demographics.**

Section 2 of this report discusses the Methodology used in the study while Section 3 includes Highlights derived from an analysis of the quantitative research. Section 4 is a Summary of Findings from the survey.

Section 5 is an Appendix to the report containing the composite aggregate data, cross tabulations and the survey instrument employed.

2 METHODOLOGY

Using a quantitative research design, an online survey was completed among 682 adult Vermont residents.

Survey design input was provided during a project initiation meeting and subsequent sessions with CRPP which included Efficiency Vermont and Vermont Gas survey team members.

Survey design is a careful, deliberative process to ensure fair, objective and balanced surveys. Staff members, with years of survey design experience, edit out any bias. Further, all scales used by CRPP (either numeric, such as one through ten, or wording such as strongly agree, somewhat agree, somewhat disagree, or strongly disagree) are balanced evenly. Additionally, placement of questions is carefully accomplished so that order has minimal impact.

Readers of this report should note that any survey is analogous to a snapshot in time and results are only reflective of the time period in which the survey was undertaken. Should concerted public relations or information campaigns be undertaken during or shortly after the fielding of the survey, the results contained herein may be expected to change and should be, therefore, carefully interpreted and extrapolated.

Furthermore, it is important to note that all surveys contain some component of "sampling error". Error that is attributable to systematic bias has been significantly reduced by utilizing strict random probability procedures. This sample was strictly random in that selection of each potential respondent was an independent event based on known probabilities.

Each qualified online panel member within Vermont had an equal chance for participating in the study. Statistical random error, however, can never be eliminated but may be significantly reduced by increasing sample size.

CRPP programmed the online survey instrument. This was followed by a pre-test and soft launch prior to full and random broadcast of the survey to qualified panel members.

Statistically, a sample of 682 completed surveys has an associated margin for error of +/- 3.75% at a 95% confidence level.

Results throughout this report are presented for composite data – all 682 cases.

ON VALUED HOME ATTRIBUTES AND COMFORT

When asked to rate how comfortable respondents felt when home on an average day in the winter, almost three-quarters of respondents, 73.8%, felt comfortable.

Alternatively, on an average day when home in the summer, just over two-thirds of respondents, 68.3%, felt comfortable.

ON AWARENESS OF WEATHERIZATION

Just over two-thirds of respondents, 68.5%, indicated they were very aware about the process of weatherizing a home and all the areas of a home that may benefit.

Respondents looking for information about weatherization indicated they were most likely to look to their energy efficiency utility (Efficiency Vermont, Vermont Gas or Burlington Electric Department) (47.7%), their family / friends / neighbors (37.4%), or via an internet search (36.5%).

Two-fifths of respondents, 20.2%, felt weatherizing windows (without replacement) would have the most impact when weatherizing an average home. Just under two-fifths, 18.8%, felt insulating / adding more insulation to their attic would have the most impact. Importantly, 13.6% did not know or were unsure about what would make the most impact.

ON WEATHERIZATION EXPERIENCE

Just over one-half of respondents, 55.9%, felt that their house was close to being fully weatherized.

Top weatherization projects respondents felt needed to be completed at their own home for it to be well weatherized were:

- **Weatherize windows (without replacement) – 35.6%**
- **Weatherize exterior doors (without replacement) – 30.1%**
- **Insulate / add more insulation to attic – 27.4%**

The most frequently cited weatherization projects completed or are currently being completed at the respondents' house included:

- **Weatherize windows (without replacement) – 24.2%**
- **Insulate / add more insulation to attic – 19.4%**
- **Weatherize exterior doors (without replacement) – 28.9%**

Of respondents that had weatherization-related work completed, or were currently completing, at their home, over one-third (37.2%) indicted they completed the project themselves / with others in the household.

Of respondents that completed projects themselves, with friends/family, or with a contractor, the following were the top motivations to complete the projects at their home:

- **Heating costs too high / saving energy – 32.2%**
- **Increasing comfort at home (warmer in the winter / cooler in the summer) – 31.0%**
- **Unable to control temperature adequately within the household or in isolated parts of the house – 25.7%**
- **Renovating a previously un-weatherized part of my home – 20.6%**

Top reasons respondents might hire a contractor over completing a weatherization project themselves are:

- **A contractor would do higher-quality work than a DIY project – 45.6%**
- **I don't always have all the tools I need – 39.7%**
- **I don't have the time to complete projects myself – 23.9%**

After providing respondents with a description of Building Performance Institute (BPI) Certification, respondents indicated the top reasons they might move towards a BPI-certified contractor over a non-certified contractor as:

- **A certified contractor is likely more experienced at this specialized weatherization work – 44.3%**
- **Certification adds to the confidence in the work quality – 43.3%**
- **A certified contractor may be aware of / help navigate weatherization programs available – 35.0%**

Alternatively, top reasons respondents might move towards a non-certified contractor over a BPI-certified contractor were:

- **Familiarity, if they knew the contractor or had used them before – 50.6%**
- **Familiarity, if friends or family have used them – 39.9%**
- **May be less expensive than a certified contractor – 37.8%**

On Motivations

Three-fifths of respondents, 60.1%, indicated they would be likely to complete a weatherization project in the future.

When asked for reasons the respondents might be motivated to complete a project sooner rather than later, top reasons included:

- **Unable to control temperature adequately within the household or in isolated parts of the house – 29.8%**
- **Having to make necessary replacement of existing home equipment or heating/ cooling system – 27.3%**
- **Heating costs are too high / saving energy – 25.4%**

Interestingly, reasons that would least motivate respondents to complete a project sooner were:

- **No or low-interest loans available – 7.0%**
- **Able to pay for the project on electric / fuel bill – 5.4%**
- **Noise / sound control – 4.4%**

On Barriers

Top reasons respondents felt they might not complete a weatherization project included:

- **More important things to pay for – 33.9%**
- **Too expensive – 29.2%**
- **It's not my decision / don't own my home – 22.3%**
- **Cannot pay for costs upfront and not interested in financing – 21.7%**

On Weatherization as a Priority

Compared to other home improvement projects, almost three-fifths of respondents, 57.9%, felt weatherization was a high priority.

On Funding Preferences

When asked how strongly respondents would consider different ways to fund any upcoming weatherization projects, strongest consideration was for paid in full by themselves / members of the household (72.4%), pay for project monthly (if there was no interest / no impact to the overall cost) (67.7%), and pay for project monthly on electricity/fuel bill (52.2%). Less consideration was provided for a loan from the bank (33.4%) or a loan from family/friends (27.8%).

Respondents, on average, felt the decrease of monthly electricity and fuel bills, if their home was fully weatherized, would be $351.52.

Respondents, on average, felt the cost to totally and comprehensively weatherize their home tomorrow would be $6,445.49.

Throughout this section readers should note that composite data refers to all 682 respondents. Further, all narrative throughout the report refers to this full set of composite data.

In most tables, another column has been added to portray results from respondents who self-identify as living in a rural area of Vermont or 323 "Rural" respondents.

A final column in most tables was also added to display these 323 respondents minus those who noted they also lived in the "city proper / city limits" of Barre, Bennington, Brattleboro, Burlington, Essex Junction, Middlebury, Montpelier, Rutland, South Burlington, and Winooski. This final column, referred to herein as "Remote" has a total of 223 respondents.

For the purposes of the survey, wherever "your home" or "your house" were mentioned, respondents were asked to think about the place they currently live in whether they rent or own.

VALUED HOME ATTRIBUTES AND COMFORT

In an open-ended format question, respondents were asked to describe ways in which their home is important to them. Verbatim responses to open ended questions are provided in the Appendix section of this report.

All respondents were asked if at **average** outdoor temperature during the day when they are home in the **winter** or **summer** on a scale of 1 to 10, where 1 is very uncomfortable and 10 is very comfortable, how comfortable are they while inside their home.

Just under three-quarters, 73.8%, of respondents indicated they were comfortable in the winter with a rating of 7-10, while just over two-thirds, 68.3%, or respondents indicated they were comfortable in the summer with the same rating.

COMFORTABLE IN HOME?	COMPOSITE PERCENT (7-10 RATING)	RURAL PERCENT (7-10 RATING)	REMOTE PERCENT (7-10 RATING)
Comfortable in home in the winter	73.8	74.0	77.1
Comfortable in home in the summer	68.3	67.8	69.1

Respondents were asked to describe why they chose the rating they did for both winter and summer in an open-ended format. Verbatim responses are provided in the Appendix section of this report.

AWARENESS OF WEATHERIZATION

In an open-ended format, respondents were asked to define "weatherization" in their own words. Verbatim responses are provided in the Appendix section of this report.

All respondents were asked, on a scale of 1 to 10, where 1 is not at all aware and 10 is very aware, how aware they were about the process of 'weatherizing' a home and all the areas of a home that may benefit. Just over two-thirds, 68.5%, of respondents indicated they were aware of the process of weatherization with a rating of 7-10.

AWARENESS OF WEATHERIZATION	COMPOSITE PERCENT (7-10 RATING)	RURAL PERCENT (7-10 RATING)	REMOTE PERCENT (7-10 RATING)
Awareness of weatherization?	68.5	68.1	69.1

All respondents were asked to indicate the source(s) they would use or go to first in seeking information about weatherization or weatherization services. Top sources reported included their energy efficiency utility (47.7%), their family/friend/neighbor (37.4%), an internet search/browsing related websites (36.5%), and weatherization program representatives (36.2%).

Multiple responses were accepted. The following table holds the cumulative totals in declining order based on composite data.

SOURCES WHEN SEEKING INFORMATION	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
My energy efficiency utility (Efficiency Vermont, Vermont Gas, or Burlington Electric Department)	47.7	52.3	56.5
Family / friend / neighbor	37.4	36.2	35.9
Internet search / browsing related websites	36.5	45.2	50.2
Weatherization program representatives	36.2	39.0	39.9
My electric utility or fuel dealer	22.9	25.7	26.0
My fuel provider	17.6	20.1	19.7
Employer / co-worker / at work	15.5	12.1	10.8
Town department / local government	12.0	12.4	10.8
Social Media	11.9	10.2	9.0
Bloggers / trusted influencers	11.7	8.0	8.1
A retailer / building supplier/hardware store	11.6	13.6	15.2
News stations / newspapers /articles	11.1	10.8	7.2
State or local social agency	11.1	10.5	11.7
Front Porch Forum or other community forums	8.7	7.4	8.5
A BPI-Certified Contractors	7.9	8.0	7.6
Church or place of worship	4.0	2.5	2.2
Non-certified Contractors	3.4	2.8	1.8
Don't know / unsure [Exclusive]	2.8	2.5	1.8
No one [Exclusive]	2.1	1.9	1.3
Other	1.9	2.5	3.6

Other responses included: asking relatives, Champlain Valley weatherization services, husband, landlord, school, state and Federal programs, and SEVCA.

All respondents were asked what weatherization project they believed would create the **most impact** on an average home. Respondents felt weatherizing windows (without replacement) (20.2%) and insulating / adding more insulation to their attic (18.8%) would create the most impact. Just over thirteen percent (13.6%) indicted they didn't know.

The following table depicts results the totals in declining order by composite data.

MOST IMPACT	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Weatherize windows (without replacement)	20.2	19.8	20.6
Insulate / add more insulation to your attic	18.8	24.5	26.9
Don't know/ unsure	13.6	14.6	14.8
Air-seal leaks in your foundation wall (common problem area with stone foundations)	6.6	6.5	5.4
Build or buy an air-tight, well-insulated attic hatch	6.5	3.4	3.6
Air-seal and insulate the box sill and rim joists in your basement	6.2	3.7	3.1
Replace / install a new window	6.0	8.0	9.0
Build an air-tight, well-insulated bulkhead door in your basement	4.7	3.1	1.8
Weatherize exterior doors (without replacement)	4.7	3.7	3.1
Spot air-seal your attic	3.8	2.8	1.3
Insulate heat / hot water pipe	3.7	5.3	5.8
Replace / install a new exterior door	2.9	2.5	3.1
Air-seal HVAC ducts	1.3	1.2	0.9
Add Low-E or WindowDressers storm window	0.6	0.3	0.4
Other	0.4	0.6	0.0

Other responses included: additional wall insulation or heat pump.

WEATHERIZATION EXPERIENCE

All respondents were asked, on a scale of 1-10, with 1 being "a long way to go" and 10 being "fully weatherized", how weatherized would they say their current home is. Over one-half of respondents, 55.9%, felt their home was mostly to fully weatherized offering a rating of 7-10.

WEATHERIZATION COMPLETE?	COMPOSITE PERCENT (7-10 RATING)	RURAL PERCENT (7-10 RATING)	REMOTE PERCENT (7-10 RATING)
Weatherization complete?	55.9	52.9	56.1

All respondents were asked which project(s) they feel needed to be completed at their home for it to be "well weatherized". Respondents indicated leading projects to be weatherizing windows (without replacement) (35.6%), weatherizing exterior doors (without replacement) (30.1%), and insulate / add more insulation to the attic (27.4%).

Multiple responses were accepted. The following table holds the cumulative totals in declining order by composite data.

PROJECTS NEEDED TO BE COMPLETED AT HOME	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Weatherize windows (without replacement)	35.6	39.6	40.8
Weatherize exterior doors (without replacement)	30.1	34.4	34.1
Insulate / add more insulation to your attic	27.4	29.4	33.6
Air-seal leaks in your foundation wall (common problem area with stone foundations)	26.5	29.1	28.7
Replace / install a new window	24.6	30.3	31.4
Air-seal and insulate the box sill and rim joists in your basement	20.4	20.1	19.7
Replace / install a new exterior door	19.8	23.2	24.2
Build an air-tight, well-insulated bulkhead door in your basement	16.6	17.0	16.1
Insulate heat / hot water pipe	16.0	20.7	22.9
Spot air-seal your attic	14.4	16.1	13.5
Build or buy an air-tight, well-insulated attic hatch	12.2	9.6	9.9
Air-seal HVAC ducts	10.3	9.6	9.9
Add Low-E or WindowDressers storm window	10.0	10.5	9.0
Don't know / unsure [Exclusive]	8.9	8.0	6.7
None (it is already well weatherized) [Exclusive]	6.7	6.8	6.7
Other	1.5	2.2	2.2

Other responses included: add solar panels, better weather stripping, insulate floors, fix blue board around basement, demolition and rebuilding of old farmhouse, replace exterior wall insulation, undertake comprehensive audit, add insulation to inside walls because of brick walls, and replace metal framed windows.

All respondents were asked which weatherization project(s) had been completed or are currently being completed at their home. Just under one-quarter of respondents, 24.2%, indicated they have weatherized their windows (without replacement), while one-fifth of respondents, 20.8%, have done none of the presented projects.

Multiple responses were accepted. The following table holds the cumulative totals in declining order by composite data.

PROJECTS COMPLETED OR CURRENTLY COMPLETING	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Weatherize windows (without replacement)	24.2	22.9	24.7
None of the above [Exclusive]	20.8	27.9	28.3
Insulate / add more insulation to your attic	19.4	19.2	19.7
Weatherize exterior doors (without replacement)	18.9	16.1	17.0
Air-seal leaks in your foundation wall (common problem area with stone foundations)	17.9	15.2	16.1
Replace / install a new window	16.7	19.8	21.5
Air-seal and insulate the box sill and rim joists in your basement	16.1	13.9	13.5
Build an air-tight, well-insulated bulkhead door in your basement	15.4	13.0	11.2
Insulate heat/hot water pipe	14.5	15.2	16.1
Don't know / unsure [Exclusive]	13.3	13.3	15.2
Spot air-seal your attic	12.9	8.4	8.1
Replace / install a new exterior door	12.0	13.3	13.9
Build or buy an air-tight, well-insulated attic hatch	11.7	7.4	7.2
Add Low-E or WindowDressers storm window	8.5	7.4	4.9
Air-seal HVAC ducts	8.4	5.0	4.0
Other	0.7	1.2	1.8

Other responses included: caulk outlet boxes, windows and baseboards of exterior facing walls, insulation in garage, repairs to compromised siding butting foundation, new heating system, repaired and seals some areas of sill/foundation, and weather stripped around exterior door.

Respondents that had completed or were currently completing a weatherization-related project at their home were asked who completed/was completing the most recent weatherization project to their home. Just over one-third of respondents, 37.2%, indicated they completed the project themselves or others in the household completed the project.

Results are displayed in the table below in declining order by composite data.

WHO COMPLETED/IS COMPLETING PROJECT	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Completed project myself / others in household completed	37.2	38.4	40.5
Contractor of my own or my landlord's choosing	15.1	20.5	23.0
Friends / family that don't live with me	12.7	12.6	11.9
Landlord	12.0	10.0	8.7
Contractor of a weatherization program's choosing	10.5	8.4	10.3
Association Manager	7.6	4.7	3.2
Don't know / unsure	4.5	4.2	2.4
Other	0.4	1.1	0.0

Other responses included: local business and Weatherization of Vermont.

Respondents that completed the projects themselves or with the help of friends/family or a contractor were asked what motivated them to begin or complete the most recent project at their current home. The top motivations for completing the project included heating costs were too high / saving energy (32.2%), increasing comfort in their home (31.0%), and unable to control temperature within the household or in isolated parts of the house (25.7%),

Multiple responses were accepted. The following table holds the cumulative totals in declining order by composite data.

MOTIVATIONS TO COMPLETE PAST PROJECT	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Heating costs are too high /saving energy	32.2	40.1	46.3
Increasing your comfort at home (warmer in the winter / cooler in the summer)	31.0	47.4	56.5
Unable to control temperature adequately within the household, or in isolated parts of the house	25.7	28.3	26.9
Renovating a previously un-weatherized part of my home	21.8	25.7	22.2
Having to make a necessary replacement of existing home equipment or heating/cooling system	20.6	16.4	13.9
Purchasing an older home	20.4	24.3	25.0
Existence of mold	14.2	8.6	8.3
Pest intrusion	13.0	11.2	9.3
Building a new home	12.4	7.2	8.3
A contractor recommends weatherization improvements while performing other work on your home	10.9	7.2	7.4
Increasing home's value	10.3	13.8	13.9
Guaranteed energy cost savings	10.3	13.2	16.7
Concern for the environment	9.4	13.2	13.0
Improving the air quality in your home	8.6	9.9	10.2
The overall cost of upgrading a system at home is reduced	8.0	5.9	8.3
Too much humidity in the home	7.7	9.2	11.1
Paying off mortgage on a home	7.1	3.9	1.9
More monetary rebates / special offers available	6.8	7.2	9.3
Low or no interest loans are available	4.4	5.3	3.7
Noise / sound control	3.2	3.9	3.7
Someone other than me (e.g., landlord) chose this project	2.9	2.6	1.9
Financing paid as part of your utility bill	1.8	1.3	0.9
Other	1.8	2.0	0.9
Don't know / unsure [Exclusive]	1.5	2.0	0.9

Other responses included: it was free, just wanted to, bedroom ceiling collapsed, voluntarily assist landlord in maintenance of home, and window was broken and needed replacement.

All respondents were asked to report reason(s) they might hire a contractor rather than complete a project by themselves. Just under one-half of respondents, 45.6%, indicated that a contractor would do higher-quality work than a DIY project. Other top reasons selected were: "I don't always have all the tools I need" (39.7%) and "I don't have the time to complete projects myself" (23.9%).

Multiple responses were accepted. The following table holds the cumulative totals in declining order.

REASONS TO HIRE A CONTRACTOR OVER DIY	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
A contractor would do higher-quality work than a DIY project	45.6	51.1	54.3
I don't always have all the tools I need	39.7	43.7	43.5
I don't have the time to complete projects myself	23.9	27.6	28.3
Costs are often more than anticipated in a DIY project	22.7	18.6	16.1
I don't always have the safety gear I should have	22.4	22.6	23.8
Hiring a contractor is a requirement to receive a rebate or financing	15.7	15.8	17.9
I am often interrupted and/or lose focus on DIY projects	15.4	12.1	12.6
Don't know / unsure [Exclusive]	13.3	14.2	13.5
Other	5.4	7.7	7.6

Other responses included: disabled, can't physically do the work, getting too old, not handy, don't have all of the knowledge or skills, I don't own a home, I rent, landlord is responsible and would not hire a contractor.

All respondents were provided with the following statement:

> **Some weatherization contractors have a Building Performance Institute (BPI) certification. This indicates they have received specialized training and have demonstrated proficiencies up to certain standards.**

All respondents were asked to name reason(s) they might move towards using a BPI-certified contractor over a non-certified contractor if they were to do a weatherization project in their current or future home. Over two-fifths of respondents indicated: a certified contractor is likely more experienced at this specialized weatherization work (44.3%) and certification adds to my confidence in the work quality (43.3%).

Multiple responses were accepted. The following table holds the cumulative totals in declining order.

REASONS TO USE BPI-CERTIFIED CONTRACTOR OVER NON-CERTIFIED CONTRACTOR	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
A certified contractor is likely more experienced at this specialized weatherization work	44.3	53.3	54.7
Certification adds to my confidence in the work quality	43.3	42.7	44.4
A certified contractor may be aware of / help me navigate weatherization programs that are available to me	35.0	41.2	45.7
Some weatherization rebates require use of a certified contractor	31.1	39.9	42.2
Peace of mind that a certified contractor will handle my projects from start to finish	28.7	31.3	32.3
Certification adds to my trust in the financial aspects of the work	28.6	29.7	29.1
A certified contractor will look at the health and safety components of a weatherization project (ie: moisture, combustion issues)	25.8	29.1	30.5
A certified contractor is likely to get the supplies needed less expensively	20.2	20.4	21.5
I may be able to see more testimonials for a certified contractor	19.9	16.7	14.3
None of the above [Exclusive]	10.0	8.7	8.1
Other	0.1	0.3	0.4

Other responses included: it would be up to the landlord.

Alternatively, all respondents were asked to name reason(s) they might move towards using a non-certified contractor over a BPI-certified contractor if they were to do a weatherization project in their current or future home. One-half of respondents, 50.6%, indicated a top reason would be: familiarity, if I knew the contractor or had used them previously.

Multiple responses were accepted. The following table holds the cumulative totals in declining order.

REASONS TO USE NON-CERTIFIED CONTRACTOR OVER BPI-CERTIFIED CONTRACTOR	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Familiarity, if I knew the contractor or had used them previously	50.6	55.4	61.4
Familiarity, if friends / family have used them	39.9	41.8	42.2
May be less expensive than a certified contractor	37.8	42.7	47.1
May be community member or local small business	31.2	32.2	32.7
Will use local resources for supplies I need for my weatherization project	19.2	22.6	23.8
None of the above [Exclusive]	14.1	12.7	10.3
Other	0.4	0.9	1.3

Other responses included: if the landlord directed.

MOTIVATIONS

All respondents were asked when thinking ahead, on a scale of 1 to 10, where 1 is not at all likely and 10 is very likely, how likely are they to complete a weatherization project in the future. Three-fifths of respondents, 60.1%, indicated they would be likely to complete a weatherization project in the future with a 7-10 rating.

LIKELINESS TO COMPLETE PROJECT IN FUTURE	COMPOSITE PERCENT (7-10 RATING)	RURAL PERCENT (7-10 RATING)	REMOTE PERCENT (7-10 RATING)
Likeliness to complete project in future	60.1	60.4	60.5

All respondents were asked what might motivate them to complete a weatherization project sooner rather than later. Top motivations included: unable to control temperature adequately within the household, or in isolated parts of the house (29.8%), having to make a necessary replacement of existing home equipment or heating /cooling system (27.3%), and heating costs are too high / saving energy (25.4%).

Up to five responses were accepted. The following table holds the cumulative totals in declining order.

MOTIVATIONS TO COMPLETE PROJECT SOONER	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Unable to control temperature adequately within the household, or in isolated parts of the house	29.8	30.0	29.6
Having to make a necessary replacement of existing home equipment or heating / cooling system	27.3	27.6	30.5
Heating costs are too high / saving energy	25.4	30.7	34.1
Increasing your comfort at home (warmer in the winter/cooler in the summer)	23.0	28.5	30.9
Renovating a previously un-weatherized part of my home	20.4	19.5	16.6
Existence of mold	20.1	19.5	21.5
Pest intrusion	17.2	15.8	17.0
Purchasing an older home	14.1	11.8	10.8
A contractor recommends weatherization improvements while performing other work on your home	13.9	14.9	12.6
Monetary rebates / special offers available	13.8	19.8	24.2
Guaranteed energy savings	13.0	18.0	18.8
Building a new home	12.8	9.6	9.9
Increases home's value	12.6	16.1	16.6
Too much humidity in the home	11.3	11.5	8.5
The overall cost of upgrading a system at home is reduced	11.3	12.1	12.1
Improving the air quality in your home	10.7	7.7	8.1
Concern for the environment / reducing my carbon footprint	9.4	7.7	8.5
Don't know / unsure [Exclusive]	7.8	6.5	4.5
Paying off mortgage on a home	7.6	6.5	4.9
No or low-interest loans are available	7.0	8.0	9.0
Able to pay for my project on my electric/fuel bill	5.4	8.0	9.4
Noise / sound control	4.4	3.4	3.6
Other	1.2	1.5	2.2

Other responses included: to help landlord so he can sell house, time to complete it, weatherization program does it for free, when Covid-19 is over and it is up to the landlord.

BARRIERS

All respondents were asked for reasons they might not complete a weatherization project. Top reasons included more important things to pay for (33.9%), too expensive (29.2%) and it's not my decision/don't own home (22.3%).

Up to five responses were accepted. The following table holds the cumulative totals in declining order.

REASONS MIGHT NOT COMPLETE PROJECT SOONER	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
More important things to pay for	33.9	40.2	43.5
Too expensive	29.2	37.8	44.4
It's not my decision / don't own my home	22.3	18.3	17.9
Cannot pay for costs up front and not interested in financing	21.7	25.4	29.6
More important house projects to do	21.1	22.9	22.0
Projects are too complicated / confusing	20.4	19.5	17.9
Projects are too inconvenient / take too long	17.4	16.1	15.2
Unaware of weatherization programs / state rebates or incentives	17.2	20.4	22.4
Don't know how to start	15.7	14.9	14.3
Benefits are not worth the cost	13.8	14.9	13.9
Energy costs / bills are not a concern	13.2	11.1	10.3
Energy savings aren't guaranteed	10.9	10.8	10.3
Don't see any monetary savings	10.3	9.3	8.5
Limited contractor availability / took too long to schedule	8.2	6.5	6.3
Lack expertise / time to do research	7.9	5.0	4.9
Need to receive/pay for an energy audit	6.5	6.5	7.2
My home is already fully weatherized / I don't think my home needs it	6.3	6.2	7.2
Don't Know / unsure [Exclusive]	6.2	7.1	6.3
Do not trust contractors / unhappy with available contractors	4.4	5.3	3.1
Poor result in the past	3.4	2.5	0.4
Other	1.9	2.2	2.7

Other responses included: current pandemic would need to be resolved, currently rent, husband said no, not sure how long before selling house, City of Burlington makes it complicated to get any work done on home, time and funds, waiting to gain equity with current mortgage.

WEATHERIZATION AS A PRIORITY

All respondents were asked when compared to other home improvement projects, on a scale of 1 to 10 where 1 is not at all a priority and 10 is very high priority, how much of a priority was it to them to weatherize their home. Over one-half of respondents, 57.9%, indicated weatherization was a priority with a rating of 7-10.

PRIORITY	COMPOSITE PERCENT (7-10 RATING)	RURAL PERCENT (7-10 RATING)	REMOTE PERCENT (7-10 RATING)
Weatherization a priority	57.9	58.5	56.1

In an open-ended format question, respondents that provided a low priority rating or 1-3 were asked why weatherizing their home is not a high priority while respondents that provided a high priority rating of 8-10 were asked why weatherizing their home is a high priority. Verbatim responses are provided in the Appendix section of this report.

FUNDING PREFERENCES

All respondents were asked how strongly would they consider different ways to fund any upcoming weatherization projects if they were responsible for the cost. Almost three-quarters of respondents, 72.4%, would strongly or somewhat consider paying in full by themselves/members of their household.

The following table holds the cumulative totals, in declining order, for those indicating they would **strongly or somewhat consider** the funding plan. **Unsure respondents were removed from the data**.

FUNDING STATEMENTS	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Paid in full by myself / members of my household	72.4	72.4	72.9
Pay for my project monthly (if there is no interest / no impact to my overall cost)	67.7	72.8	78.6
Pay for my project monthly on an electricity / fuel bill	52.2	52.9	51.9
Loan from bank	33.4	26.2	22.9
Loan from family / friends	27.8	22.9	17.5

All respondents were asked, using their best guess, how much their monthly **electricity and fuel bills** would decrease if their home was fully weatherized. On average, respondents felt their monthly electricity bill would decrease $351.52. If respondents didn't know, they left the response blank.

ESTIMATED DECREASE OF MONTHLY BILLS	COMPOSITE AVERAGE	RURAL AVERAGE	REMOTE AVERAGE
Decrease of monthly bills	$351.52	$384.81	$454.44

**In review of the data, there were 20 average monthly estimates that appear to be unusually high outliers which were removed to portray a different assessment of the mean and are displayed below. As well, the averages were cross tabulated by primary heat sources.

ADJUSTED ESTIMATE DECREASE OF MONTHLY BILLS	COMPOSITE AVERAGE	RURAL AVERAGE	REMOTE AVERAGE
Decrease of monthly bills	$154.98	$134.13	$123.70

ADJUSTED ESTIMATED DECREASE OF MONTHLY BILLS BY PRIMARY HEAT SOURCE	AVERAGE
Natural Gas	$169.72
Electric baseboards	$175.28
Heat pump	$253.20
Propane	$112.03
Oil	$123.58
Cord Wood	$116.15
Wood Pellets	$175.33
Coal	$750.00

All respondents were asked if they were to fully and comprehensively weatherize their home tomorrow, how much they would estimate it would cost. On average, respondents felt the cost to weatherize their home would be $6445.49.

COST TO WEATHERIZE	COMPOSITE AVERAGE	RURAL AVERAGE	REMOTE AVERAGE
Cost to weatherize	$6,445.49	$7,023.42	$7,415.32

DEMOGRAPHICS

GENDER	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Man	39.3	34.7	32.3
Woman	58.5	64.1	66.4
Transgender man	0.7	0.6	0.4
Transgender woman	0.1	0.0	0.0
Non-binary	0.6	0.6	0.9
Prefer not to answer	0.7	0.0	0.0

AGE	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
18-25	11.1	10.8	9.4
26-35	23.6	18.6	17.9
36-45	27.0	22.9	17.9
46-55	12.2	13.3	14.3
56-65	13.2	17.3	19.3
66 or older	12.6	17.0	21.1
Prefer not to answer	0.3	0.0	0.0

HOUSEHOLD INCOME BEFORE TAXES	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Average Income	$72,992.65	$69,548.90	$73,188.76

NUMBER OF PEOPLE LIVING IN HOUSE	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
1	15.8	15.8	13.0
2	30.2	36.8	42.2
3	21.3	16.7	17.0
4	21.1	21.7	19.3
5	9.1	7.4	6.7
6	1.3	0.6	0.9
7	0.6	0.3	0.0
8	0.3	0.6	0.9
9	0.1	0.0	0.0
Prefer not to answer	0.1	0.0	0.0
AVERAGE	2.89	2.74	2.72

PRIMARY HEATING SOURCE	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Natural Gas	29.8	17.6	14.8
Electric baseboards	12.6	8.0	5.8
Heat pump	6.7	3.1	2.2
Propane	11.6	14.9	15.7
Oil	23.5	36.5	39.5
Cord Wood	4.4	8.0	10.8
Wood Pellets	4.1	6.8	6.3
Coal	0.3	0.0	0.0
Don't know / unsure	5.0	1.9	1.3
Other	2.1	3.1	3.6

SECONDARY HEATING SOURCE, IF ANY	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Natural Gas	11.0	7.1	6.9
Electric baseboards	15.7	13.3	12.4
Heat pump	8.2	2.8	2.8
Propane	14.1	18.0	19.3
Oil	13.3	13.3	14.5
Cord Wood	14.3	24.2	22.1
Wood Pellets	6.8	8.1	10.3
Coal	3.0	1.4	0.7
Don't know / unsure	8.7	6.2	4.8
Other	4.9	5.7	6.2

TERTIARY HEATING SOURCE, IF ANY	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Natural Gas	13.5	6.5	6.5
Electric baseboards	10.3	8.9	7.8
Heat pump	7.5	10.5	7.8
Propane	11.3	11.3	6.5
Oil	12.2	10.5	10.4
Cord Wood	8.8	12.9	13.0
Wood Pellets	7.8	8.1	9.1
Coal	3.8	2.4	1.3
Don't know / unsure	20.1	20.2	24.7
Other	4.7	8.9	13.0

Other responses included: fuel, hot water baseboards, kerosene, oil burner with radiators, space heaters, split wood, electric fireplace / heater, propane gas stove and turning oven on.

NOTE: Those that did not have a secondary or tertiary heating source were removed from the data.

ESTIMATED ANNUAL COST OF ELECTRICITY	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Less than $500	7.6	6.8	4.9
$500 to less than $1,000	19.5	22.0	17.9
$1,000 to less than $2,500	40.8	45.5	49.3
$2,500 to less than $5,000	15.4	13.6	14.3
$5,000 to less than $10,000	4.5	1.5	2.2
$10,000 or more	1.8	1.9	1.3
Don't know, included in my rent	3.1	2.2	2.2
Prefer not to answer	0.7	0.0	7.6
Don't know / unsure	6.6	6.5	4.9

ESTIMATED ANNUAL COST OF HEATING FUEL	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Less than $500	6.7	6.5	4.9
$500 to less than $1,000	18.5	17.6	14.8
$1,000 to less than $2,500	32.7	35.3	39.0
$2,500 to less than $5,000	17.2	19.8	21.5
$5,000 to less than $10,000	4.0	2.5	1.8
$10,000 or more	1.5	1.5	1.8
Don't know, included in my rent	6.0	4.3	3.6
Not applicable (I heat with electricity)	3.4	2.8	2.7
Prefer not to answer	1.2	.3	0.4
Don't know / unsure	8.9	9.3	9.4

OWN / RENT	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Own my home	64.5	70.6	72.6
Rent my home	29.6	22.6	20.2
Neither	4.7	5.6	6.3
Don't Know / unsure	1.2	1.2	0.9

HOW LONG OWNED HOME	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Less than 2 years	9.3	12.3	9.3
2 to less than 5 years	16.6	13.6	9.3
5 to less than 10 years	32.3	25.0	27.2
10 to less than 15 years	12.0	9.2	10.5
15 years or more	29.8	39.9	43.8

LANDLORD?	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Yes	13.8	12.4	8.1
No	86.2	87.6	91.9

DESCRIBE WHERE CURRENTLY LIVE	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Rural	47.4	100.0	100.00
Suburban	29.0	0.0	0.0
Urban	19.4	0.0	0.0
Unsure	4.3	0.0	0.0

COUNTY	COMPOSITE PERCENT	RURAL PERCENT	REMOTE PERCENT
Addison	4.1	5.0	2.7
Bennington	6.6	5.9	1.8
Caledonia	7.5	7.1	9.4
Chittenden	28.4	13.6	9.9
Essex	3.8	2.8	3.6
Franklin	6.7	9.6	13.0
Grand Isle	1.8	2.8	4.0
Lamoille	2.2	2.8	3.6
Orange	2.8	5.3	5.4
Orleans	2.8	5.3	7.2
Rutland	10.1	7.7	4.5
Washington	8.4	11.8	9.4
Windham	4.1	5.6	5.4
Windsor	9.1	13.6	18.8
Unsure	1.6	1.2	1.3

INTERPRETATION OF AGGREGATE RESULTS

The computer processed data for this survey are presented in the following frequency distributions. It is important to note that the wordings of the variable labels and value labels in the computer-processed data are largely abbreviated descriptions of the Questionnaire items and available response categories.

The frequency distributions include the category or response for the question items. Responses deemed not appropriate for classification have been grouped together under the "Other" code.

Each frequency distribution includes the absolute observed occurrence of each response (i.e. the total number of cases in each category). Immediately adjacent to the right of the column of absolute frequencies is the column of relative frequencies. These are the percentages of cases falling in each category response, including those cases designated as missing data. To the right of the relative frequency column is the adjusted frequency distribution column that contains the relative frequencies based on the legitimate (i.e. non-missing) cases. That is, the total base for the adjusted frequency distribution excludes the missing data. For many Questionnaire items, the relative frequencies and the adjusted frequencies will be nearly the same. However, some items that elicit a sizable number of missing data will produce quite substantial percentage differences between the two columns of frequencies. The careful analyst will cautiously consider both distributions.

The last column of data within the frequency distribution is the cumulative frequency distribution (Cum Freq.). This column is simply an adjusted frequency distribution of the sum of all previous categories of response and the current category of response. Its primary usefulness is to gauge some ordered or ranked meaning.

Clean Heat Standard Equity Advisory Group

Ben Edgerly Walsh, VPIRG

October 1, 2024

VPIRG
VERMONT'S VOICE

Affordable Heat Act Goals

- § 8121. Intent:
  - Hit Vermont's climate pollution requirements
  - Minimize cost to customers (affordable heat being essential)
  - Protects public health
  - Prioritize customers with low and moderate incomes
  - Maximize federal funds

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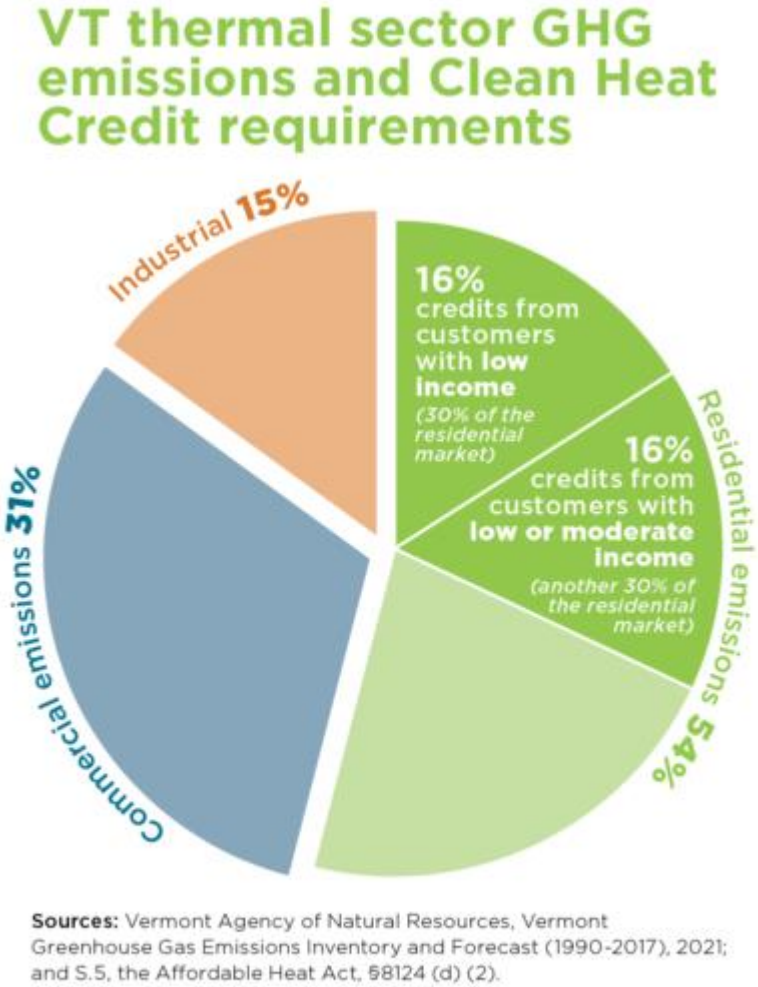
VERMONT'S VOICE

Source: Act 18 as passed, p2-3 - https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf

Low- and moderate-income requirements

~60% of residential measures to low & moderate income households

Minimum requirement for installed measures to drive affordability



Source: EAN 2023 Progress Report: https://eanvt.org/wp-content/uploads/2024/04/EAN-APR-2023_Apr112024.pdf

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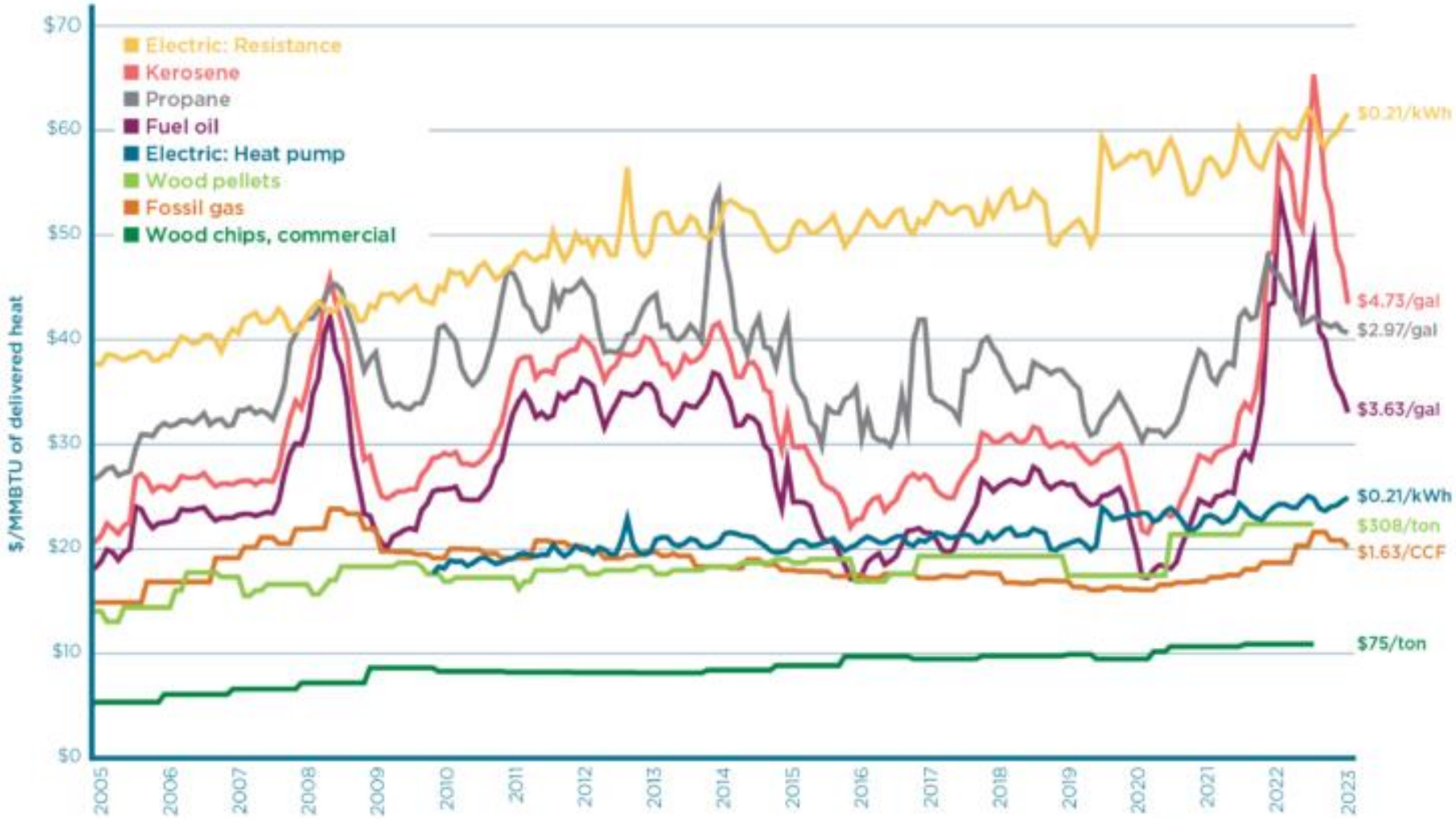
Cost comparison of different heating fuel options over time



Sources: Fuel Oil, Propane, Kerosene: VT Department of Public Service, Fuel Price Report 2023. Fossil gas: VGS, 2023. Electricity: EIA, 2023. Wood Chips, Wood Pellets: Biomass Energy Research Center, 2023. **Notes:** Electricity prices presented here are a statewide average. Electricity prices vary by utility territory. The reason propane is more expensive per MMBTU than fuel oil but less expensive on a per gallon basis is because propane has a lower energy content per gallon. Propane's energy content is only 66% that of fuel oil, by gallon (EIA). Prices reflect data availability at time of publication: through November 2022 for wood fuels and through May 2023 for all others.

ENERGY ACTION NETWORK

Source: EAN 2023 Progress Report: https://eanvt.org/wp-content/uploads/2024/04/EAN-APR-2023_Apr112024.pdf

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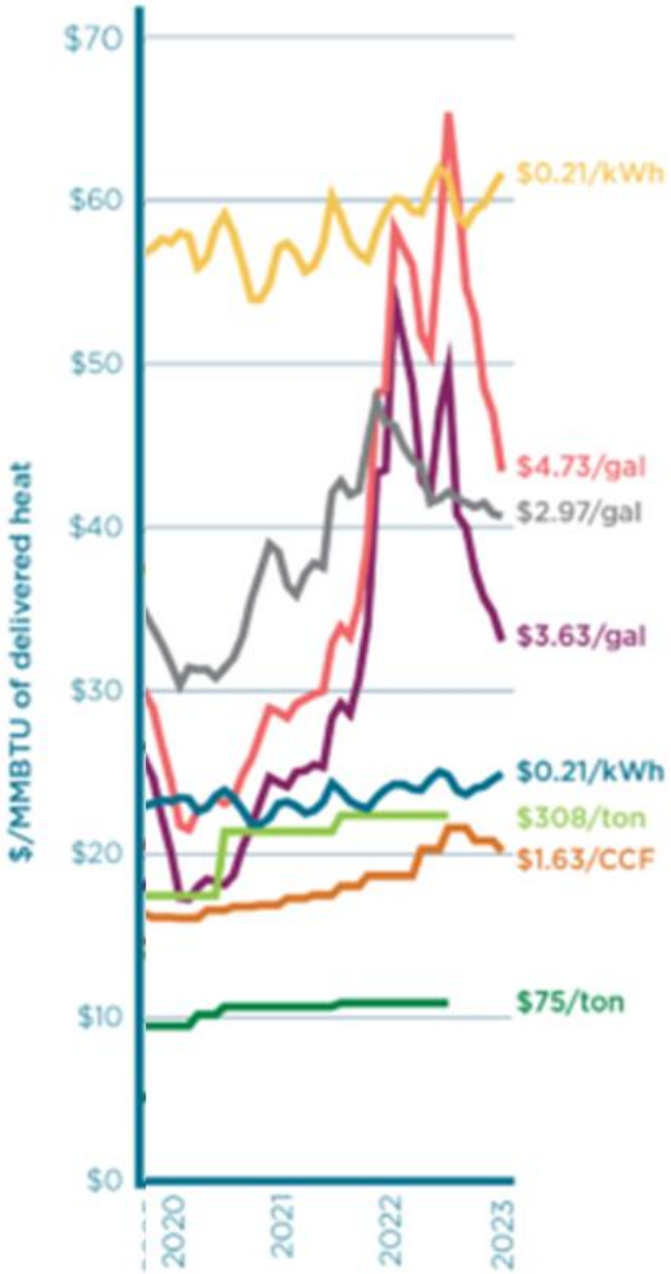


Greater than $2.50/gallon increase in the price of oil – over $2000 increase in heating for many households year over year.

Source: EAN 2023 Progress Report: https://eanvt.org/wp-content/uploads/2024/04/EAN-APR-2023_Apr112024.pdf

Energy Transition Trends:
Vermont Heat Pump Adoption

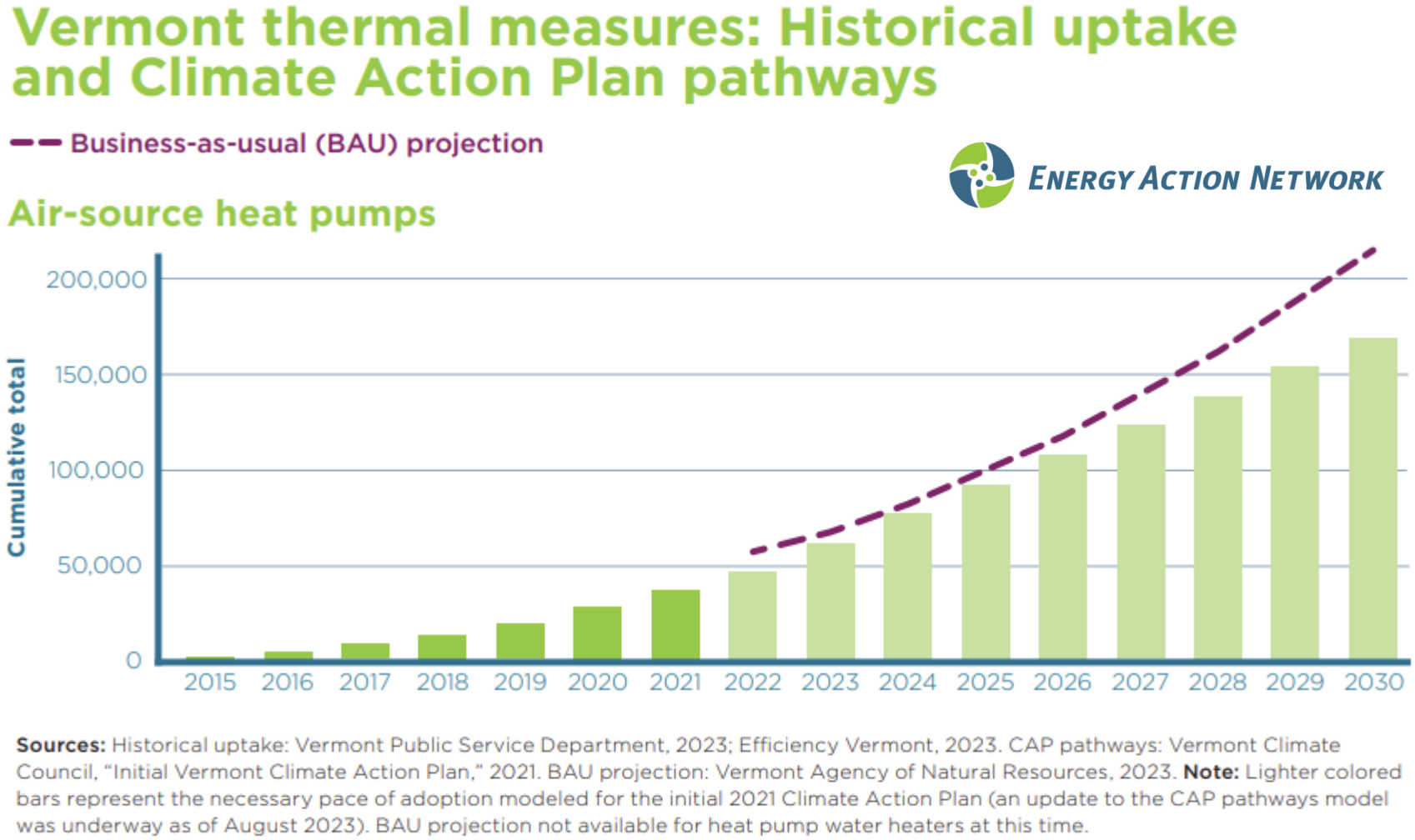
Efficiency Vermont

With more than 63,000 heat pumps installed, Vermont leads the northeast in zero-emissions heating systems

VPIRG
VERMONT'S VOICE

Source: Efficiency Vermont - https://www.efficiencyvermont.com/news-blog/news/with-more-than-63-000-heat-pumps-installed-vermont-leads-the-northeast-in-zero-emissions-heating-systems

Energy Transition Trends:
Vermont Heat Pump Adoption



Sources: Historical uptake: Vermont Public Service Department, 2023; Efficiency Vermont, 2023. CAP pathways: Vermont Climate Council, "Initial Vermont Climate Action Plan," 2021. BAU projection: Vermont Agency of Natural Resources, 2023. **Note:** Lighter colored bars represent the necessary pace of adoption modeled for the initial 2021 Climate Action Plan (an update to the CAP pathways model was underway as of August 2023). BAU projection not available for heat pump water heaters at this time.

Source: EAN 2023 Progress Report: https://eanvt.org/wp-content/uploads/2024/04/EAN-APR-2023_Apr112024.pdf

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Energy Transition Trends:
Inflation Reduction Act early indications

Expanded federal incentives – huge funding opportunity, huge savings opportunity

"the US Treasury just released the first year of data on residential tax credits…households have already claimed $8.4 billion from two related tax credits, nearly four times more than originally estimated."

- Rocky Mountain Institute analysis of IRS data

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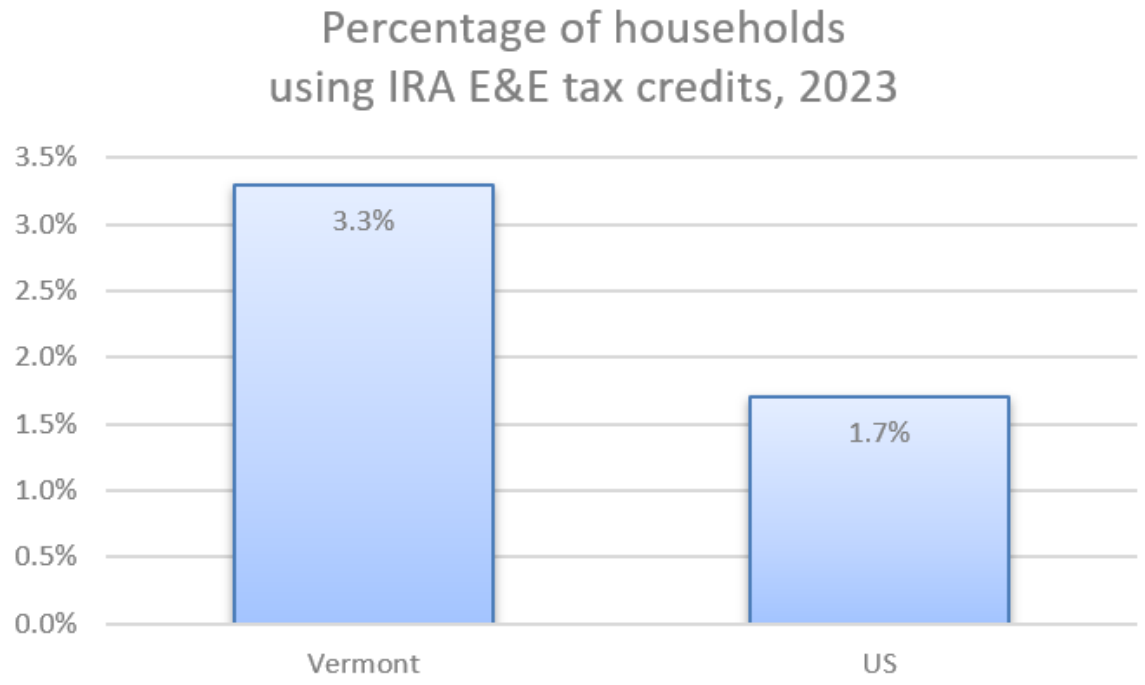
VERMONT'S VOICE

Source: https://rmi.org/on-the-climate-bills-second-birthday-surging-successes-but-a-split-reality/

Energy Transition Trends:
Inflation Reduction Act early indications

Vermonters are adopting efficiency and electrification technologies at nearly twice the national pace.



Source: VPIRG analysis of IRS data - https://www.irs.gov/statistics/soi-tax-stats-clean-energy-tax-credit-statistics

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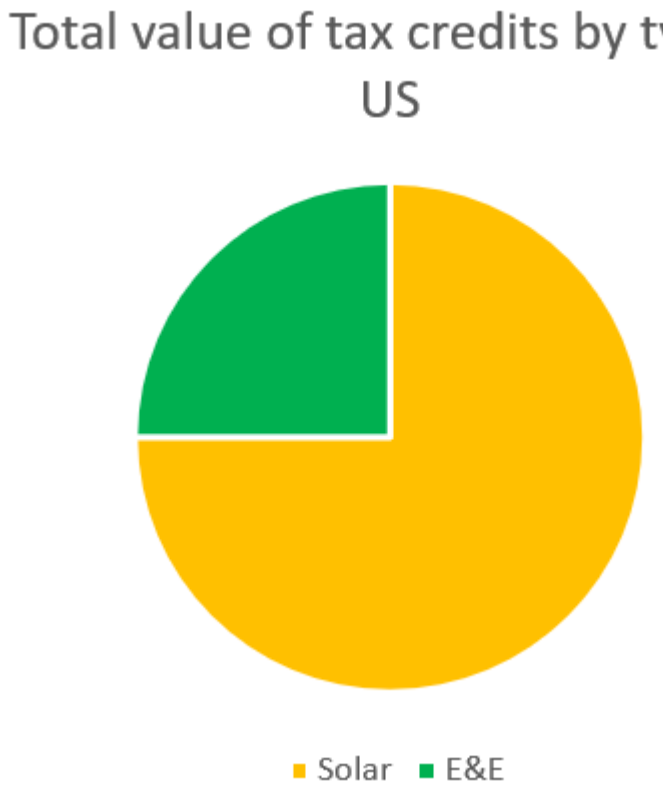
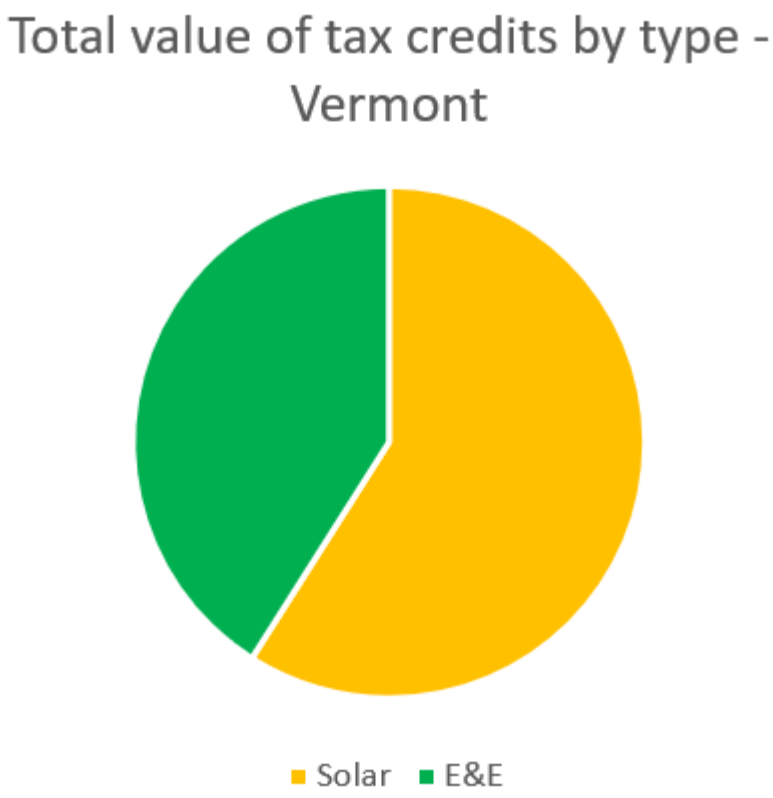
Energy Transition Trends:
Inflation Reduction Act early indications

Vermonters are focusing far more on efficiency and electrification than the nation as a whole.





Source: VPIRG analysis of IRS data - https://www.irs.gov/statistics/soi-tax-stats-clean-energy-tax-credit-statistics

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Emerging solutions for renters

WIRED

The Next Heat Pump Frontier? NYC Apartment Windows

Efficiency Vermont: “Pilot projects include window-based heat pump units for renters. These are about the same size as a window air conditioning unit, and can both heat and cool rental units.”

Source: https://www.wired.com/story/the-next-heat-pump-frontier-nyc-apartment-windows/ , Efficiency Vermont – https://www.efficiencyvermont.com/news-blog/news/with-more-than-63-000-heat-pumps-installed-vermont-leads-the-northeast-in-zero-emissions-heating-systems

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What does all this tell us?

- Vermonters are rapidly adopting newer heating technologies
- Low- and moderate-income Vermonters will largely be left behind unless we do something differently
- There's an incredible opportunity right now with the IRA – and the Affordable Heat Act

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Potential recommendations

- Increase focus on measures that reach more households – potentially through the DDA
- Ensure TAG has a process for rapidly incorporating new measures/technologies
- Emphasize importance of the installed-measure low- and moderate-income requirement

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September 2024

LMI Vermonters' thoughts about efficiency improvements

Revisiting research from 2021 and 2022

Nick Neverisky
Manager, Consumer Insights

Hillary Andrews
Director, Marketing & Communications

Efficiency Vermont

Data sources

2022 Efficiency Vermont "Energy-Pulse" Survey

Investigates select energy-related topics and measures awareness and perception of Efficiency Vermont.

400 respondents from across Vermont
Income segmentation

- Low = <80% AMI
- Moderate = 80-120% AMI
- High = >120% AMI

Income ranges defined via household income, household size, and county of residence.

2021 Weatherization Survey

Investigated Vermonters' knowledge of, thoughts about, and experience with home weatherization.

682 respondents from across Vermont
Income segmentation

- Low = <$50,000
- Moderate = $50,000 – less than $100,000
- High = $100,000 or more

Income ranges classified in terms of household income only.

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …their interest in **planning certain, but not all, types of projects** (e.g., window replacements, appliance upgrades, lighting, and water heater upgrades).
- …**motivations** for completing energy projects (except for increasing home value, which correlates with income).
  - Primary motivations relate to saving money, and improving comfort, health, and convenience. Far fewer Vermonters say that reducing their carbon footprint is a motivator.
- …**overestimating the impact** weatherization projects will have on their energy bills (and underestimating the cost).
- …opinions about **what Efficiency Vermont should prioritize** (except for targeted support for low-income Vermonters, which was ranked higher by low-income Vermonters).
- …exhibiting a **mismatch** between high support for state climate goals and relatively low: completion of fuel switching projects, degree to which carbon is a motivator for projects, and desire for Efficiency Vermont to prioritize carbon savings over other efforts.

The lower a Vermonter's income is, the more likely they are to...

- ...be **less comfortable** in their home year-round (in summer and in winter)
- ...report that their home has a **low level of weatherization**
- ...report lower **familiarity** with "the process of 'weatherizing' a home and all the areas of a home that may benefit"
- ...disagree with the statement "My home feels like a **healthy** place to live" (relevant for low-income only)
- ...consider **managing energy expenses** (for their home and for transportation) as a high priority
- ...be unsure **how they would pay** for energy-related projects, and to report "not hav[ing] money to spend" as a primary barrier to doing projects
    - ...and be averse to taking out a **loan** to finance a project (but are more willing when the loan is messaged as breaking costs into monthly payments)
- ...report a **low likelihood of completing a project** in the future (especially projects related to heating electrification, biomass, and transportation)

Vermonters across income groups frequently have similar experiences and perceptions related to...

Efficiency Vermont

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …their interest in **planning certain, but not all, types of projects** (e.g., window replacements, appliance upgrades, LED lighting, and water heater upgrades)

	Planning to complete		
	Low	Moderate	High
Building weatherization (e.g., insulation and air sealing)	33%	37%	44%
Window replacement	34%	38%	32%
Electric or hybrid vehicle (or alternate transport, like mass transit, walking or biking)	31%	30%	32%
Switching from fossil fuel fired equipment to energy efficient electric options	30%	30%	39%
Energy storage (e.g., Tesla Powerwall battery)	28%	33%	26%
Advanced wood heat / biomass (e.g., wood or pellet stoves)	28%	27%	21%
Heating or cooling (e.g., air conditioner, furnace, heat pump)	20%	29%	26%
Efficient appliances (e.g., refrigerator, washer/dryer)	20%	27%	16%
Water heating	17%	21%	11%
LED lighting	16%	16%	15%
Conservation behaviors (e.g., turning down thermostat)	13%	20% ↑	6%
Other (please specify)	2%	0%	0%
None	8% ↑	3%	2%

Energy Pulse 2022

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …**motivations** for completing energy projects (except for increasing home value, which correlated with income)

	Low	Moderate	High
Save money on energy bills	79%	71%	71%
Use less energy	65%	65%	56%
Make my home more comfortable	61%	57%	52%
Make my home healthier	53%	48%	42%
Make my life more convenient	45%	38%	42%
Reduce green house gas emissions / carbon footprint	31%	39%	29%
Improve home value	30% ↓	46% ↑	52% ↑
Opportunity to get a rebate	29%	32%	34%
Stimulate the economy / support job growth	21%	20%	16%
Try out an interesting new technology	13%	18%	8%

Percent of respondents indicated each is "Very influential" (Energy Pulse 2022)

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …**overestimating the impact** weatherization projects will have on their energy bills (and underestimating the cost).

	Average value predicted by Vermonters	Actual value
Monthly energy **savings** from having a "fully weatherized" home	$155	Variable, approximately $17-$34
Cost to fully weatherize a home	$6,445	Average of about $9,000-$10,000

(Weatherization Research 2021)

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …opinions about **what Efficiency Vermont should prioritize** (except for supporting low-income Vermonters specifically, which was ranked higher by low-income Vermonters)

	Low	Moderate	High
Helping ensure all Vermonters (e.g. low income or historically disadvantaged communities) have access to energy saving opportunities	55% ↑	41% ↓	40%
Weatherizing homes to reduce energy costs and boost comfort	51%	47%	48%
Ensuring the affordability and availability of energy efficient products	43%	52%	53%
Supporting the use of renewable energy and battery storage for cleaner, more efficient energy use	14%	17%	18%
Helping businesses lower energy costs and become more competitive	14%	14%	18%
Helping Vermonters reduce their carbon footprints	14%	17%	10%
Helping Vermonters adopt more efficient transportation technologies such as electric vehicles	9%	12%	13%

Percent of respondents ranking each item as 1st or 2nd priority (Energy Pulse 2022)

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …exhibiting a mismatch between **high support for state climate goals** and relatively low: completion of fuel switching projects, degree to which carbon is a motivator for projects, and desire for Efficiency Vermont to prioritize carbon savings over other efforts.

	Low	Moderate	High
Very important	44%	49%	32% ↓
Somewhat important	30%	37%	35%
Slightly important	12%	10%	16%
Not at all important	11% ↑	2% ↓	10%
Don't know	3%	3%	6%

How important is it that Vermont achieve its clean energy and climate change goals? (Energy Pulse 2022)

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …exhibiting a mismatch between high support for state climate goals and **relatively low: completion of fuel switching projects**, degree to which carbon is a motivator for projects, and desire for Efficiency Vermont to prioritize carbon savings over other efforts.

	Completed		
	Low	Moderate	High
Conservation behaviors (e.g., turning down thermostat)	59%	57%	74% ↑
LED lighting	55%	63%	56%
Efficient appliances (e.g., refrigerator, washer/dryer)	48%	54%	63%
Water heating	35%	36%	48%
Heating or cooling (e.g., air conditioner, furnace, heat pump)	34%	38%	42%
Building weatherization (e.g., insulation and air sealing)	31%	37%	40%
Window replacement	28%	28%	35%
Advanced wood heat / biomass (e.g., wood or pellet stoves)	18% ↓	23%	34% ↑
Electric or hybrid vehicle (or alternate transport, like mass transit, walking or biking)	12% ↓	28% ↑	15%
Switching from fossil fuel fired equipment to energy efficient electric options	10% ↓	20% ↑	16%
Energy storage (e.g., Tesla Powerwall battery)	7% ↓	15%	13%
Other (please specify)	2% ↑	0%	0%
None	9% ↑	4%	2%

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …exhibiting a mismatch between high support for state climate goals and **relatively low**: completion of fuel switching projects, **degree to which carbon is a motivator for projects**, and desire for Efficiency Vermont to prioritize carbon savings over other efforts.

	Low	Moderate	High
Save money on energy bills	79%	71%	71%
Use less energy	65%	65%	56%
Make my home more comfortable	61%	57%	52%
Make my home healthier	53%	48%	42%
Make my life more convenient	45%	38%	42%
Reduce green house gas emissions / carbon footprint	31%	39%	29%
Improve home value	30% ↓	46% ↑	52% ↑
Opportunity to get a rebate	29%	32%	34%
Stimulate the economy / support job growth	21%	20%	16%
Try out an interesting new technology	13%	18%	8%

Percent of respondents indicated each is "Very influential" (Energy Pulse 2022)

Vermonters across income groups frequently have similar experiences and perceptions related to…

- …exhibiting a mismatch between high support for state climate goals and **relatively low**: completion of fuel switching projects, degree to which carbon is a motivator for projects, and **desire for Efficiency Vermont to prioritize carbon** savings over other efforts.

	Low	Moderate	High
Helping ensure all Vermonters (e.g. low income or historically disadvantaged communities) have access to energy saving opportunities	55% ↑	41% ↓	40%
Weatherizing homes to reduce energy costs and boost comfort	51%	47%	48%
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Helping Vermonters reduce their carbon footprints	14%	17%	10%
Helping Vermonters adopt more efficient transportation technologies such as electric vehicles	9%	12%	13%

Percent of respondents ranking each priority as 1st or 2nd (Energy Pulse 2022)

The lower a Vermonter's income is, the more likely they are to...

Efficiency Vermont

The lower a Vermonter's income is, the more likely they are to...

- ...be **less comfortable** in their home year round (in summer and in winter)

	Less than $50,000	$50,000 to less than $100,000	$100,000 or more
Comfortable in home in winter (7-10 rating)	66%	73%	79%
Uncomfortable in home in winter (1-4 rating)	18%	12%	9%
Comfortable in home in summer (7-10 rating)	64%	72%	75%
Uncomfortable in home in summer 1-4 rating)	16%	15%	12%

(Weatherization Research 2021)

- ...report that their home has a **low level of weatherization**

	Less than $50,000	$50,000 to less than $100,000	$100,000 or more
Home is very weatherized (7-10 rating)	43%	69%	74%
Home has a way to go to be weatherized (1-4 rating)	26%	12%	14%

(Weatherization Research 2021)

The lower a Vermonter's income is, the more likely they are to...

- ...report lower **familiarity** with "the process of 'weatherizing' a home and all the areas of a home that may benefit"

	Less than $50,000	$50,000 to less than $100,000	$100,000 or more
Aware of weatherization (7-10 rating)	57%	78%	85%

(Weatherization Research 2021)

- ...disagree with the statement "My home feels like a **healthy** place to live" (relevant for low-income only)

	Low	Moderate	High
Agree strongly	44%	50%	57%
Agree somewhat	30% ↓	46%	41%
Neither agree nor disagree	12% ↑	3%	0% ↓
Disagree somewhat	10% ↑	1%	2%
Disagree strongly	3% ↑	0%	0%

My home feels like a healthy place to live (Energy Pulse 2022)

The lower a Vermonter's income is, the more likely they are to...

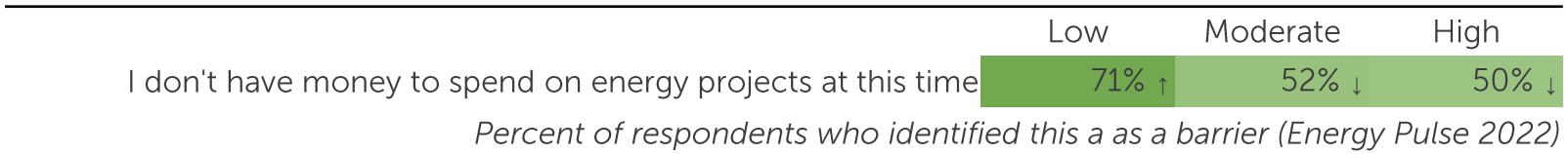
- ...consider **managing energy expenses** (for their home and for transportation) as a high priority

	Low	Moderate	High
The cost of energy you use in your home	61%	55%	55%
The comfort of your home	59%	61%	65%
The energy efficiency of your home	45%	46%	40%
The cost of transportation	45% ↑	37%	27% ↓
Greenhouse gas emissions from your energy use	22%	21%	18%

In the context of other priorities in your life, how important are the following? Percent indicating "Very important" (Energy Pulse 2022)

The lower a Vermonter's income is, the more likely they are to...

- ...be unsure **how they would pay** for energy-related projects and to report "not hav[ing] money to spend" as a primary barrier to doing projects



Percent of respondents who identified this a as a barrier (Energy Pulse 2022)

The lower a Vermonter's income is, the more likely they are to...

- ...be unsure **how they would pay** for energy-related projects and to report "not hav[ing] money to spend" as a primary barrier to doing projects
- ...and be averse to taking out a **loan** to finance a project (but are more willing when the loan is messaged as breaking costs into monthly payments)

	Less than $50,000	$50,000 to less than $100,00	$100,000 or more
Pay with **loan** from friends / family	17%	33%	44%
Pay with **loan** from bank	23%	43%	47%
Pay for project **monthly** if no interest or impact on overall cost	63%	69%	75%
Pay **monthly** on electricity / fuel bill	53%	50%	60%

Percent of respondents who would "Somewhat..." or "Very strongly consider" (Weatherization Research 2021)

The lower a Vermonter's income is, the more likely they are to...

- ...report a **lower likelihood of completing a project** in the future and the past (especially projects related to heating electrification, biomass, and transportation)

	Less than $50,000	$50,000 to less than $100,000	$100,000 or more
Very likely to complete a project in the future (7-10 rating)	49%	74%	74%
Very likely to complete a project in the future (1-4 rating)	22%	15%	10%

(Weatherization Research 2021)

	Low	Moderate	High
Conservation behaviors (e.g., turning down thermostat)	59%	57%	74% ↑
LED lighting	55%	63%	56%
Efficient appliances (e.g., refrigerator, washer/dryer)	48%	54%	63%
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Window replacement	28%	28%	35%
Advanced wood heat / biomass (e.g., wood or pellet stoves)	18% ↓	23%	34% ↑
Electric or hybrid vehicle (or alternate transport, like mass transit, walking or biking)	12% ↓	28% ↑	15%
Switching from fossil fuel fired equipment to energy efficient electric options	10% ↓	20% ↑	16%
Energy storage (e.g., Tesla Powerwall battery)	7% ↓	15%	13%
Other (please specify)	2% ↑	0%	0%
None	9% ↑	4%	2%

Percent of respondents that report having completed (Energy Pulse 2022)

Relative to higher-income Vermonters, many lower-income Vermonters live in **less comfortable** homes that have **lower levels of weatherization**. Many of these Vermonters report **not being as familiar** with weatherization (what it is and how to do it) as their higher-income peers.

Ongoing **energy costs** are important to lower-income Vermonters and the **upfront costs** of projects are often a barrier. Many do not want to **take out a loan** for an energy project (although more would consider "breaking project costs into monthly payments"). These Vermonters report **lower rates of completing** energy projects (including "**switching from fossil fuel fired equipment** to energy efficient electric options") than their higher-income peers do.

Although many Vermonters think its important for the state to achieve its **climate goals**, many of these same Vermonters are **not taking some of the steps** that would support this achievement (like fuel switching) **nor encouraging Efficiency Vermont** to prioritize this work over efforts that would save them money via energy reduced energy use.

Recommendations

Promote heat pumps in terms that align with customers' motivations (cost savings, comfort, health).

- Messaging may include mentions of carbon reductions, but this alone will not drive them beyond the cost barrier.
- Consider getting customers "in the door" by promoting the cooling benefits of heat pumps. As summers warm, demand for cooling in Vermont homes increases (and almost all Vermont homes already have functional heating).

When relying on financing to enable customers to complete projects, describe that financing as "breaking costs into monthly payments" and make accessing and paying off that loan simple (e.g., include it on an existing utility bill).

Simplify programs and decisions whenever possible. Complex programs and confusing decision-making contexts will prevent customers from participating.

Future research

- Identify the total cost of ownership for home heating with heat pumps (including secondary systems, maintenance, usage costs) to refine accurate messaging about cost and payback periods.
- Understand customer prioritization of clean heat projects compared to other personal (non-energy) projects/expenses. Deeper understanding of concerns with clean heat tech may also be helpful.
- Test consumer appetite for/reaction to program design(s), before finalizing approach.