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Clean Heat Standard Legislation

Vermont's *Affordable Heat Act* went into effect on May 11, 2023. The act established the Clean Heat Standard (also referred to as S.5) to reduce greenhouse gas emissions from Vermont's thermal sector. Management of the Clean Heat Standard is under the jurisdiction of the Public Utility Commission. Foundational legislative work for the act can be found in the *Vermont Global Warming Solutions Act* and will be explained in upcoming sections. In addition, our report covers the procedures and process of the Affordable Heat Act along with possible economic impact.

Origins with Global Warming Solutions Act

The Vermont *Global Warming Solutions Act*, which addresses climate change, was enacted in 2020 to reduce the state's greenhouse gas emissions and transition to renewable energy in response to the effects of the climate crisis.¹ The findings on greenhouse gas emissions and consequences of climate change originate from the Intergovernmental Panel on Climate Change's (IPCC) findings on the impact of human activity on emissions and climate change.² The IPCC also cites the necessity of reducing the state's emissions.³ Vermont is a member of the United States Climate Alliance, a coalition of 25 states committed to meeting the emissions reduction standards and goals of the United Nation's Paris Agreement.⁴ The Paris Agreement is an international treaty to reduce emissions to prevent the global temperature from rising to 2°C above pre-industrial levels.⁵ As part of the U.S. Climate Alliance, Vermont is expected to preempt federal action concerning emissions and expedite its solutions to the climate crisis.⁶

¹ Vermont General Assembly, *Global Warming Solutions Act of 2020*, September 22, 2020. https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/ACT%20153%20As%20Enacted.pdf?_gl=1*1vpjwx3*_ga*MTI2ODg5NzgwNC4xNzI1ODIxMjA1*_ga_V9WQH77KLW*MTcyOTQzNzM4Mi45LjAuMTcyOTQzNzM4NS4wLjAuMA

² Vermont General Assembly, *Global Warming Solutions Act of 2020*.

³ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

⁴ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

⁵ United Nations, "The Paris Agreement," accessed November 7, 2024. <https://www.un.org/en/climatechange/paris-agreement>

⁶ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

The IPCC and the state of Vermont both deemed that measures to adapt and increase resilience to climate change are necessary.⁷ The *Global Warming Solutions Act* also addresses the possible economic costs of waiting to reduce emissions. One of the aims of the *Global Warming Solutions Act* is to protect the state from climate-related economic downgrades.⁸ Failure to take action to reduce emissions may result in “substantial economic damage” to the state.⁹ The IPCC also acknowledges climate change’s disproportionate impact on marginalized communities and calls for investment in public resources to minimize the impact felt on these communities.¹⁰ The Vermont Agency of Natural Resources is cited in the bill for its findings on how the impacts of climate change will affect the economic vitality of Vermont’s natural resources.¹¹

The *Global Warming Solutions Act* also amended the state’s Greenhouse Gas Reductions Requirements, 10 V.S.A. § 578.¹² Originally, the standards were Greenhouse Gas Reduction Goals, where it was Vermont’s goal rather than an obligation to reduce emissions. The Greenhouse Gas Reduction Requirements provides three emissions targets to reach over the following 25 years:

1. Not less than 26 percent from 2005 greenhouse gas emissions by January 1, 2025.
2. Not less than 40 percent from 1990 greenhouse gas emissions by January 1, 2030.
3. Not less than 80 percent from 1990 greenhouse gas emissions by January 1, 2050.¹³

The statute also calls on state programs to consider the possible increase or reduction in greenhouse gas emissions while conducting any state programs. The requirements establish advocacy for a cap-and-trade program for greenhouse gas emissions caused by transportation, heating, cooling, and ventilation to meet these reduction targets.¹⁴

Vermont Climate Action Plan

The *Global Warming Solutions Act* adopted the Vermont Climate Action Plan to introduce regulatory and legislative strategies to reach the emissions targets discussed in the Greenhouse Gas Reductions Requirements.¹⁵ Strategies of the Vermont Climate Action Plan include but are not limited to:

1. Reduce greenhouse gas emissions from the transportation, building, regulated utility, industrial, commercial, and agricultural sectors.
2. Encourage smart growth and related strategies.
3. Achieve long-term sequestration and storage of carbon and promote best management practices.
4. Achieve net zero emissions by 2025 across all sectors.

⁷ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

⁸ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

⁹ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

¹⁰ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

¹¹ Vermont General Assembly, *Global Warming Solutions Act of 2020*.

¹² Vermont General Assembly, *Global Warming Solutions Act of 2020*.

¹³ Vermont General Assembly, “10 V.S.A. § 578,” accessed November 7, 2024.

<https://legislature.vermont.gov/statutes/section/10/023/00578>

¹⁴ Vermont General Assembly, “10 V.S.A. § 578.”

¹⁵ Vermont General Assembly, *Global Warming Solutions Act of 2020n*

5. Build and encourage climate adaptation and resilience of Vermont communities and natural systems.¹⁶

The Vermont Climate Action Plan details pathways to reduce transportation, buildings, electricity, and agriculture emissions. The S.5 Clean Heat Standard originates from the Buildings and Thermal Pathways for climate mitigation.¹⁷

Vermont Climate Action Plan Buildings and Thermal Pathways

In Vermont, energy for thermal use produces over a third of the state’s greenhouse gas emissions, roughly 35 percent of the state’s energy expenditure.¹⁸ For the roughly \$2 billion spent annually on fossil fuels, 75 percent of that spending leaves the state.¹⁹ The Vermont Climate Action Plan recognizes the need to implement less carbon-intensive heating practices to meet the state’s Greenhouse Gas Reduction Requirements.²⁰ The plan introduces two pathways to achieve this, reducing the carbon content of fuels for building use and heating.²¹ The Clean Heat Standard originates from pathway two. Implementing a Clean Heat Standard is strategy one of pathway two, and the Vermont Climate Action Plan provides a strategy table (see Table 1) to illustrate the process of adopting a Clean Heat Standard.²²

Clean Heat Standard Understanding and Purpose

In 2023, the Vermont Legislature passed S.5, the *Affordable Heat Act*. The *Affordable Heat Act* seeks to design and implement a Clean Heat Standard that “achieves Vermont’s thermal sector greenhouse gas emissions reductions necessary to meet the requirements of 10. V.S.A § 578 (a)(2) and (3), minimizes costs to customers, protects public health, and recognizes that affordable heating is essential for Vermonters.”²³ The Clean Heat Standard is a program established under the *Affordable Heat Act*. The task of The Clean Heat Standard is reducing Vermont’s thermal sector greenhouse gas emissions through the retirement of clean heat credits by obligated parties.²⁴ Obligated parties are defined as a utility or entity that imports, produces, refines, manufactures, or compounds heating fuel within Vermont or to customers within Vermont.²⁵ Clean Heat Credits are a “tradable, nontangible commodity” created by Vermont’s

¹⁶ Vermont Agency of Natural Resources, “Climate Change in Vermont,” accessed November 7, 2024.

<https://climatechange.vermont.gov/about>

¹⁷ Vermont Climate Council, *Initial Vermont Climate Action Plan*, December 2021.

<https://climatechange.vermont.gov/sites/climatecouncilsandbox/files/2021-12/Initial%20Climate%20Action%20Plan%20-%20Final%20-%202012-1-21.pdf>

¹⁸ Vermont Climate Council, *Initial Vermont Climate Action Plan*.

¹⁹ Vermont Climate Council, *Initial Vermont Climate Action Plan*.

²⁰ Vermont Climate Council, *Initial Vermont Climate Action Plan*.

²¹ Vermont Climate Council, *Initial Vermont Climate Action Plan*, December 2021.

<https://climatechange.vermont.gov/sites/climatecouncilsandbox/files/2021-12/Initial%20Climate%20Action%20Plan%20-%20Final%20-%202012-1-21.pdf>

²² Vermont Climate Council, *Initial Vermont Climate Action Plan*.

²³ Vermont General Assembly, *Affordable Heat Act*, May 24, 2023.

<https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf>

²⁴ Vermont General Assembly, *Affordable Heat Act*.

²⁵ Vermont General Assembly, *Affordable Heat Act*.

Public Utility Commission (VPUC) to represent attributable greenhouse gas emission reductions.²⁶

²⁶ Vermont General Assembly, *Affordable Heat Act*.

Table 1: The Vermont Climate Action Plan’s Clean Heat Standard Strategy Table²⁷

Legislature	
Action 1 - Adopt legislation authorizing the Public Utilities Commission to administer a Clean Heat Standard consistent with the recommendations of the Clean Heat Standard Working Group ¹⁰⁵	Impact – TBD based on program design; potentially high if required emissions reductions are indexed to building/thermal sector share of GWSA reduction targets
	Equity – Can be designed to mitigate the disproportionate energy burdens and negative distributional effects of existing heating fuel costs on low- and moderate-income Vermonters. Works in concert with complementary programs, such as low-income weatherization and fuel assistance programs, to assist in the transition to cleaner heating solutions.
	Cost-Effectiveness – TBD based on program design
Timeline to Implement - Legislation by the end of the current session (May 2022) followed by no longer than 18-24 months for administrative process, including program design, orders, or rulemaking	Co-Benefits <ul style="list-style-type: none"> - Provides choice in how to meet GWSA requirements Reduces energy bills - Creates a predictable and stable marketplace as fossil fuel businesses transition to clean energy services - Improves health - Creates local jobs
	Technical Feasibility - Yes

Oversight of the Clean Heat Standard, along with implementation and drafting, is the VPUC’s task. The VPUC expects to submit final proposed rules to the Vermont General Assembly on or before January 15, 2025.²⁸ Issues may arise with achieving this deadline as the VPUC has stated the need for additional time to produce a ruleset suitable for Vermonters.²⁹ The VPUC’s request for additional time is in the VPUC’s initial checkback report submitted to the Senate Committee on Finance, Senate Committee on Natural Resources and Energy, and House Committee on Environment and Energy on February 15th, 2024.³⁰ The report details the steps taken by the VPUC up to the submission of the report; however, it does not provide “estimates of the impact of the potential Clean Heat Standard on customers and their fuel bills, fossil fuel reductions, greenhouse gas emissions reductions, or impacts on Vermont’s economy.”³¹ According to the report, the VPUC has “issued 26 orders seeking recommendations and information on discrete

²⁷ Vermont Climate Council, *Initial Vermont Climate Action Plan*, December 2021.

<https://climatechange.vermont.gov/sites/climatecouncilsandbox/files/2021-12/Initial%20Climate%20Action%20Plan%20-%20Final%20-%202012-1-21.pdf>

²⁸ Vermont General Assembly, *Affordable Heat Act*.

²⁹ Public Utility Commission, *First Checkback Report on the Clean Heat Standard Under Act 18 of 2023, Section 6(i)*, February 15, 2024. <https://puc.vermont.gov/sites/psbnew/files/documents/clean-heat-checkback-report-1-021524.pdf>

³⁰ Public Utility Commission, *First Checkback Report on the Clean Heat Standard Under Act 18 of 2023, Section 6(i)*.

³¹ Public Utility Commission, *First Checkback Report on the Clean Heat Standard Under Act 18 of 2023, Section 6(i)*.

topics and making rulings on others, established the Equity Advisory Group and Technical Advisory Group, created a Clean Heat Standard webpage to facilitate participation, and created the annual fuel dealer registration form and related materials.”³² The Equity Advisory Group and Technical Advisory Group are established through § 8129. Clean Heat Standard Equity Advisory Group and § 8128. Clean Heat Standard Technical Advisory Group respectively.³³ The VPUC created both groups to assist the management of the Clean Heat Standard.

The Clean Heat Standard Technical Advisory Group is to be composed of 15 members appointed by the VPUC.³⁴ Members of the Technical Advisory Group include representatives from the Department of Public Service, the Agency of Natural Resources, and the Department of Health, along with experts in climate studies, climate health, and gas emissions.³⁵ Members of the Technical Advisory Group duties are, but are not limited to:³⁶

1. Assess the sustainability of the Clean Heat Standard,
2. Establish and revise the value of the clean heat credit,
3. Set the expected life length for clean heat measures,
4. Communicate and organize with other energy programs,
5. Calculate the expected cost and impact of the clean heat credits.

As of February 2024, the Technical Advisory Group held three meetings, and the notes of the meetings are available on the VPUC’s website through the Clean Heat Standard portal.³⁷

The Clean Heat Standard Equity Advisory Group is a temporary group of up to 10 members. These members are representatives of the Department of Public Service, the Department of for Children and Families’ Office of Economic Opportunity, Efficiency Vermont, the Vermont Housing Finance Agency, the Vermont Fuel Dealers Association, the Vermont Association of Area Agencies on Aging, along with property owners and community action agencies specializing in low-income weatherization and aiding residents of manufactured homes. The Equity Advisory Group aims to develop and implement the Clean Heat Standard that provides an equitable share of the measures to low and moderate-income Vermonters. The *Affordable Heat Act* states that Vermonters’ purchasing heating fuel will not be negatively affected. The Equity Advisory Group will complete its purpose by, but not limited to:

1. Providing feedback for the VPUC on engagement strategies for low to moderate-income Vermonters,
2. Assessing the equity of the clean heat measures and providing means of improvement,
3. Recommending additional methods to support low-to-moderate income Vermont customers,

³² Public Utility Commission, *First Checkback Report on the Clean Heat Standard Under Act 18 of 2023, Section 6(i)*.

³³ Vermont General Assembly, *Affordable Heat Act*, May 24, 2023.

<https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf>

³⁴ Vermont General Assembly, *Affordable Heat Act*, May 24, 2023.

³⁵ Vermont General Assembly, *Affordable Heat Act*, May 24, 2023.

<https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf>

³⁶ Vermont General Assembly, *Affordable Heat Act*, May 24, 2023.

³⁷ Public Utility Commission, *First Checkback Report on the Clean Heat Standard Under Act 18 of 2023, Section 6(i)*, February 15, 2024. <https://puc.vermont.gov/sites/psbnew/files/documents/clean-heat-checkback-report-1-021524.pdf>

4. Providing information to the VPUC on possible challenges that Vermonters face in equitably accessing clean heat measures.³⁸

Once the General Assembly adopts the initial Clean Heat Standard rules, the Equity Advisory Group will cease to exist.

Economic Impact of Clean Heat Standard

The VPUC expects to produce the economic impact of the Clean Heat Standard by January 2025. The VPUC’s preliminary report “does not provide estimates of the potential Clean Heat Standard on customers and their fuel bills, fossil fuel reductions, greenhouse gas emissions reductions, or impacts on Vermont’s economy.”³⁹ The VPUC wrote in the report that they are concerned regarding the time constraints established by the *Clean Heat Standard Act*.⁴⁰ The VPUC released a funding report for the Clean Heat Standard, reporting a \$1,725,000 budget from the Vermont legislature.⁴¹ The money comes “from the General Fund for fiscal year 2024 for the VPUC and the Department to begin work on the potential Clean Heat Standard.”⁴² The VPUC has requested \$878,346 to fund its fiscal year 2025 work required by the *Affordable Heat Act*.⁴³ The VPUC wrote that by utilizing the General Fund, there is no need to tax citizens or create new fees to fund the program. Instead, the allotted amount is adjustable and based on the eventual costs of the program.⁴⁴

The VPUC also suggested issuing a tax rebate to make clean heat accessible to low-income Vermonters, specifically those in the Low-Income Home Energy Program. This rebate would be the amount a Low-Income Home Energy Program participant would pay for the increase in average fuel cost. However, “as more Vermonters transition to cleaner heating solutions, there would be few people paying into the fund supporting the administration program.”⁴⁵ This makes the tax rebate unsustainable in the long term if enough Vermont citizens switch to clean heat. The preliminary report produced by the VPUC explained in the short term that the General Fund will fund the Clean Heat Standard program.

The Vermont Department of Public Service produced a study focused on the optimized potential of Act 18. Officials wrote, “there is a lot of uncertainty about how the clean heat credits would be delivered and how any related programs would be administered” when discussing the societal

³⁸ Vermont General Assembly, *Affordable Heat Act*, May 24, 2023.

<https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf>

³⁹ Public Utility Commission, *First Checkback Report on the Clean Heat Standard Under Act 18 of 2023, Section 6(i)*, February 15, 2024. <https://puc.vermont.gov/sites/psbnew/files/documents/clean-heat-checkback-report-1-021524.pdf>

⁴⁰ Public Utility Commission, *First Checkback Report on the Clean Heat Standard Under Act 18 of 2023, Section 6(i)*.

⁴¹ Public Utility Commission, *Act 18- Clean Heat Standard Funding Report*, February 12, 2024.

<https://puc.vermont.gov/sites/psbnew/files/documents/clean-heat-standard-funding-streams-legislative-report.pdf>

⁴² Public Utility Commission, *Act 18- Clean Heat Standard Funding Report*.

⁴³ Public Utility Commission, *Act 18- Clean Heat Standard Funding Report*.

⁴⁴ Public Utility Commission, *Act 18- Clean Heat Standard Funding Report*.

⁴⁵ Public Utility Commission, *Act 18- Clean Heat Standard Funding Report*.

costs of the program.⁴⁶ The study discusses that the amount of incentive coverage that is necessary will depend on:

1. Vermonters wanting to participate in the program.
2. The amount of clean heat credits required,
3. The opportunity cost of getting clean heat.⁴⁷

Non-incentive program costs include three percent for biofuel and 15 percent for energy efficiency/fuel switch measures.⁴⁸ However, the writers note a considerable uncertainty in these measures and that they are “very low compared to current EVT and BED spending on non-incentive costs.”⁴⁹ The market effects of the *Affordable Heat Act* include costs based on current market prices for fuel, which also holds uncertainty because those costs are subject to volatility. According to the study, the effects of the *Affordable Heat Act* significantly impact on the prices of the technology required for the installation of clean heat. Prices rely on clean fuels from out-of-state sources such as California, New York, and Massachusetts. If prices in the listed states rise, they will likely rise in Vermont, and supply will be lower.⁵⁰ The study expects high demand for citizens to replace their current heat source with clean heat, which can result in price increases “due to shortages in trained contractors and the availability of additional incentive money.”⁵¹ These are short-term cost predictions: as more contractors will see the increased demand and thus be incentivized to join the market supply.⁵²

The Inflation Reduction Act “enhanced and extended tax credits for energy efficiency and decarbonization, while also establishing two energy efficiency rebate programs.”⁵³

⁴⁶Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*, September 1, 2024.

<https://publicservice.vermont.gov/sites/dps/files/documents/NV5%20-%20VT%20Act%2018%20Clean%20Heat%20Standard%20Potential%20Study%20Report.pdf>

⁴⁷ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

⁴⁸ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

⁴⁹ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

⁵⁰ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

⁵¹ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

<https://publicservice.vermont.gov/sites/dps/files/documents/NV5%20-%20VT%20Act%2018%20Clean%20Heat%20Standard%20Potential%20Study%20Report.pdf>

⁵² Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

⁵³ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

Table 2: Federal funding for homes and High-Efficiency Electric Home Rebate Act (HEEHRA) by year ⁵⁴

Program	2026	2027	2028	2029
Homes	\$4,893,820	\$4,893,820	\$4,893,820	\$4,893,820
HEEHRA	\$4,865,360	\$4,865,360	\$4,865,360	\$4,865,360
Total	\$9,759,180	\$9,759,180	\$9,759,180	\$9,759,180

Table 3: 25C Tax credit for certain electrification, efficiency, and electrification-ready measures ⁵⁵

25C	Single Family	Multifamily	Mobile Home
Air Source Heat Pumps	\$2,000	\$2,000	\$2,000
Wood Stoves	\$2,000	\$800	\$1,700
HPWH	\$800	\$800	\$800
Insulation	\$1,200	\$1,000	\$1,000

Table 4: 25D Tax credit on geothermal heat pumps (and other technologies not eligible for clean heat credits under Act 18). ⁵⁶

25D	Single Family	Multifamily	Mobile Home
Geothermal Heat Pumps	\$12,000	\$4,500	\$9,900

⁵⁴ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

⁵⁵ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*.

⁵⁶ Vermont Department of Public Service, *Clean Heat Standard Assessment of Thermal Sector Carbon Reduction Potential in Vermont*, September 1, 2024. file:///Users/jimanymarshall/Downloads/992497362504600onbase-unity_4662637071358489953055584.pdf

Conclusions

Our report provides information on the Clean Heat Standard (S.5) established by the *Vermont's Affordable Heat Act* went into effect on May 11, 2023. The goal of S.5 is to reduce greenhouse gas emissions from Vermont's thermal sector. Management of the Clean Heat Standard is under the jurisdiction of Vermont's Public Utility Commission. Foundational legislative work for the act can be found in the *Vermont Global Warming Solutions Act* and will be explained in upcoming sections. In addition, our report covered the procedures and process of the *Affordable Heat Act* along with possible economic impact.

This report was completed on November 10, 2024, by Abby Stevens, Taylor Abrams, and Gabriel Friz-Trillo under the supervision of VLRS Deputy Director, Dr. Jonathon "Doc" Bradley, and VLRS Director, Professor Anthony "Jack" Gierzynski, in response to a request from Representative Lisa Hango.

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