

Vermont's Thermal Future: Affordable & Clean

S.5 – The Affordable Heat Act

House Committee on Environment & Energy

March 22, 2023

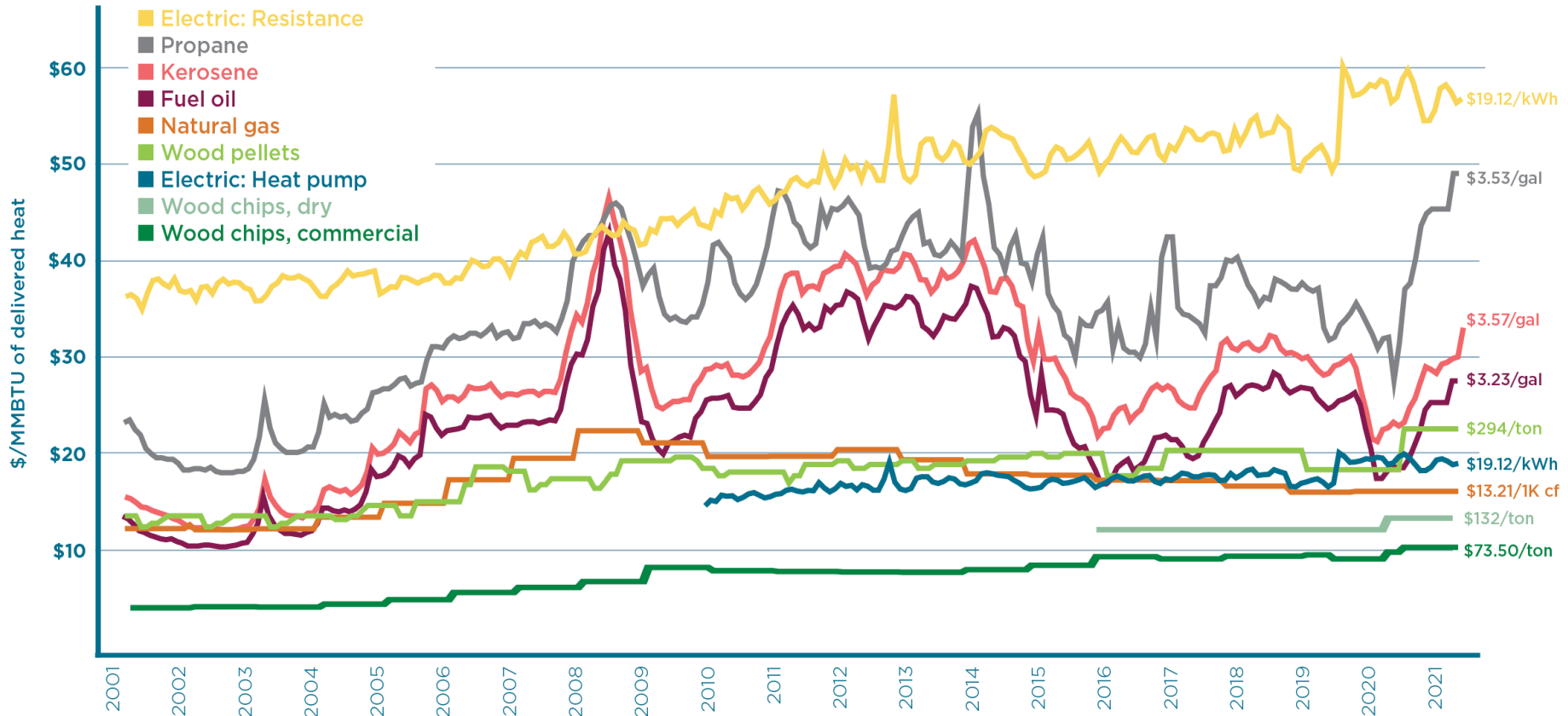
Richard Cowart

Fossil Heat May Be Our Toughest Climate Challenge

1. 34% of VT's climate emissions
 - Mostly heating, but also hot water, industrial processes, other uses
2. Large reductions are required - 40% by 2030, 80%+ by 2050 to meet climate goals, legal mandates
3. **Equity focus** -Lower income HH have higher energy burdens, less efficient housing and expensive heating sources
4. Housing stock is old, turnover rate is slow
5. Solutions require “kitchen table” decisions

Fossil Heat : an expensive roller-coaster

Cost comparison of different heating options over time

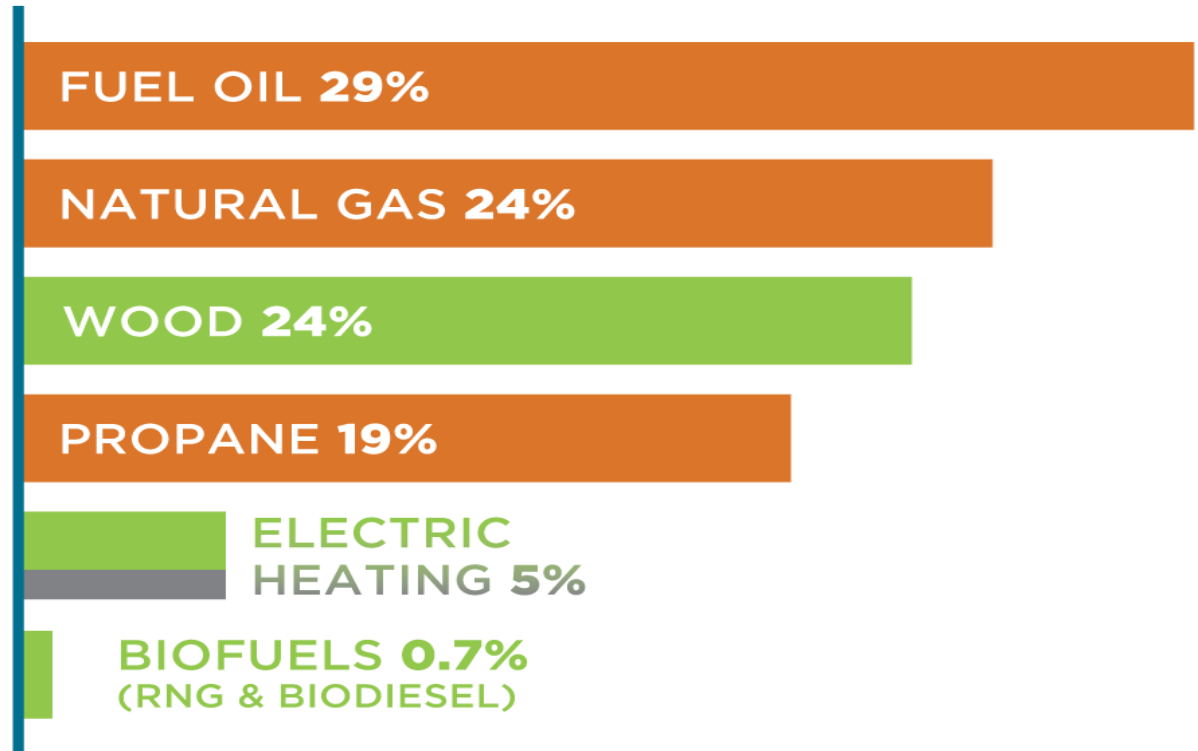


Source: Biomass Energy Resource Center, 2021. Note: electricity prices presented here are a statewide average. Electricity prices vary by utility territory.

Vermont heat is
72% fossil
24% gas

US average:
58% fossil
49% gas

Vermont heating energy sources, 2018



Source: EIA, 2020; Vermont Department of Public Service, 2020; Efficiency Vermont, 2020; Vermont Agency of Natural Resources, 2020

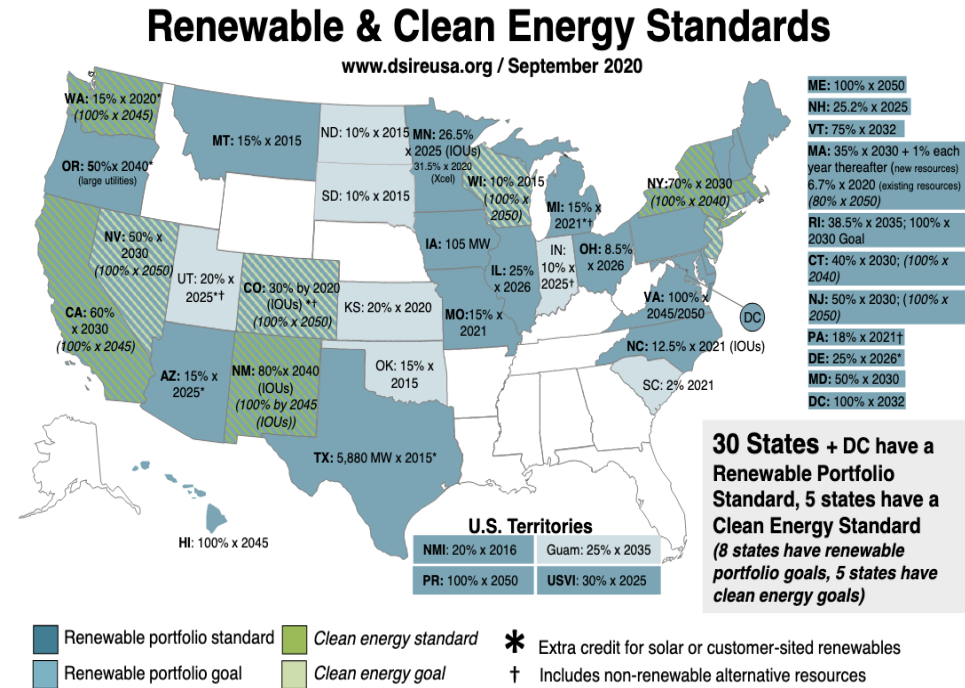
Basic Concept of a Clean Heat Standard (CHS)

*The CHS is a **performance standard**, requiring heat providers to deliver a gradually-increasing percentage of low-emission heating services to customers.*

- Similar to the renewable portfolio standard
 - Rising level tied to GHG goals
 - Measured by delivery at the customer level
- Clean heat choices: weatherization, electric heat pumps, low-emission fuels, geothermal, etc.
- Obligated parties can choose how to comply

Energy Performance Standards

- 30 states have renewable portfolio standards
- 25 states have EE performance standards
- Low-carbon fuel standards (transportation only) in CA, WA, OR
- Clean Heat Standard in the VT and MA Climate Plans
- CO Clean Heat Plan (pipeline gas utilities only)



CHS is the single most important recommendation of the Climate Action Plan

- **“Implement a Clean Heat Standard”** -- “Adopt legislation authorizing the PUC to administer a Clean Heat Standard consistent with the recommendations of the Clean Heat Standard Working Group”*
- **Why not a carbon tax?**
 - Even high prices won’t drive change in this sector
 - RFF study for the Legislature (2019) found impacts of carbon pricing “relatively small”. CO2 price of \$100/ton would reduce emissions by just 10%.**
 - Government is ill-prepared to be Vermont’s heating service utility

* Vermont Climate Action Plan, December 2021 at p. 99

**Resources for the Future, “Analysis of Decarbonization Methods in Vermont” Exec Summary at p.2 (2019)

Architecture of a CHS

1. What is the obligation?
2. Who are the obligated parties?
3. Obligation pathway – how fast, how far in total?
4. How to promote equity?
5. What actions or fuels earn credits?
6. Are certain heat choices excluded or promoted?
7. Regulation & administration

CHS Goals

Climate accountable -

Meet GWSA mandates and global needs

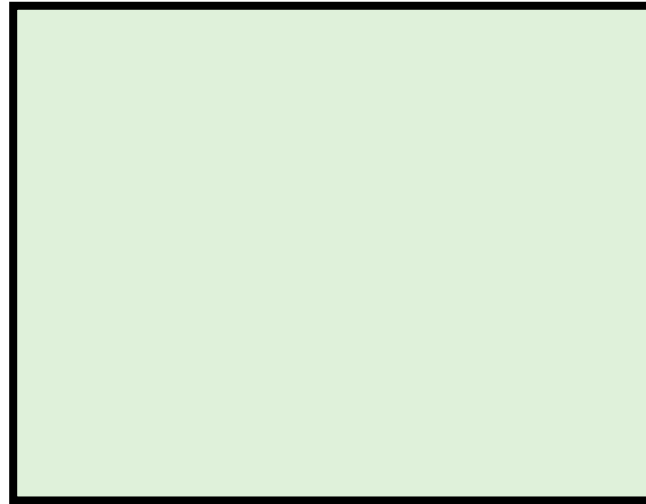
Equitable –

Ensure benefits to those with highest energy burdens;
Serve all regions of VT

Achievable –

Re: building stock, costs, workforce, customer choices

Affordable – Lower VT's high, volatile heat bills; hold down transition costs



Nature of the Obligation

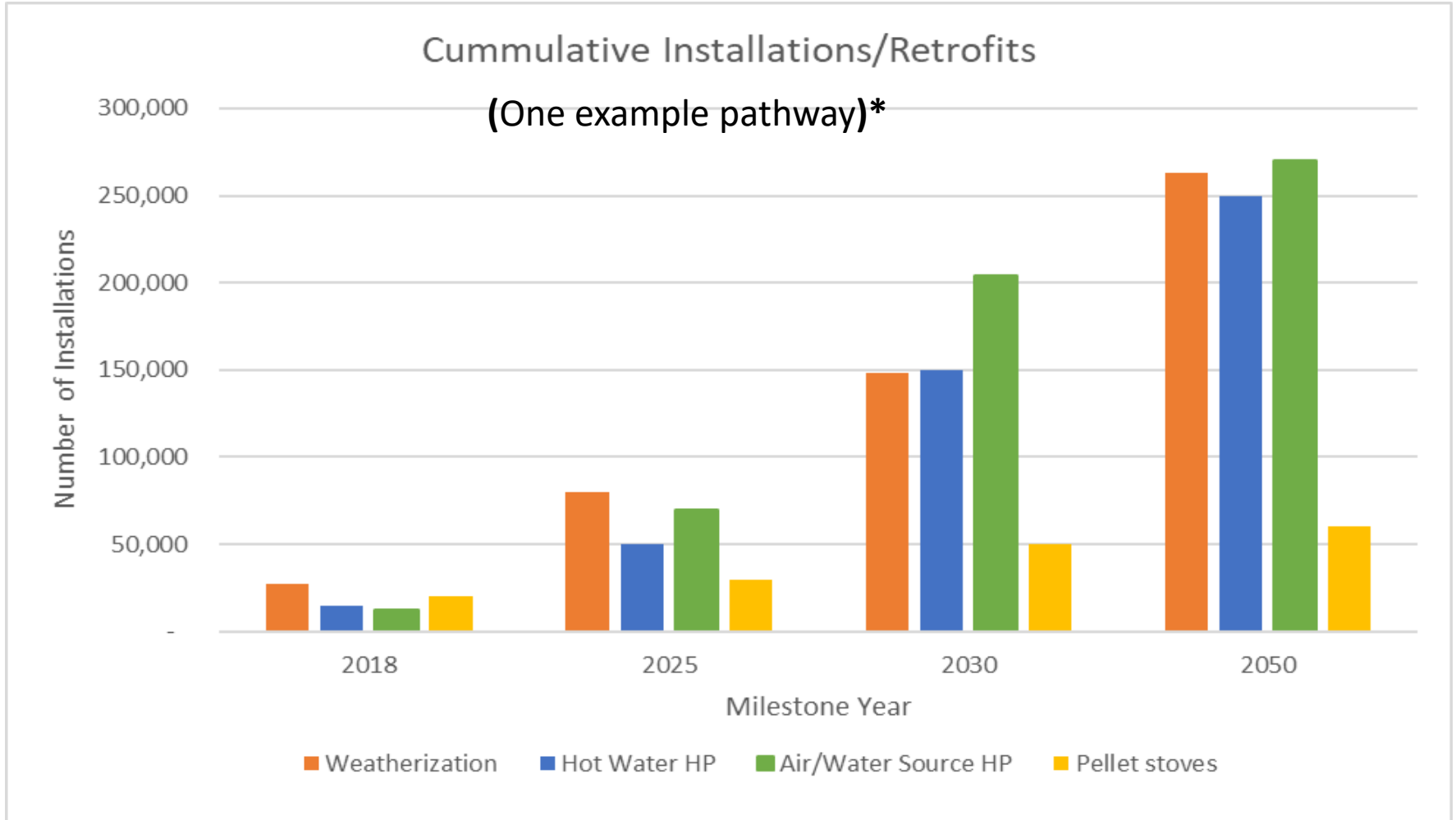
- Focus: lower **GHG emissions** in the thermal sector to meet state climate mandates
- **Obligated parties: all fossil heat importers**
 - Vermont Gas and delivered fuel importers
 - In proportion to their Vermont fossil fuel sales
- Credits are earned by **actions at VT customer locations that reduce emissions**, measured in tons of CO₂e

What Actions Earn Credits?

Many possibilities:

- Weatherization
- Heat pumps and heat pump water heaters
- Some biofuels and renewable gases
- Low-carbon district heating
- Advanced wood and solar thermal heating
- Renewable hydrogen
- Customer choice is key to acceptance
- Key feature: Anyone can earn credits

How many heat switches do we need?



* Biofuels are not shown here but are also expected to play a role.

Clean Heat for a Just Transition

- The energy transition must be a just transition
- Ensure inclusion of low & moderate income Vermonters
- S.5 does this: Progressive fraction of measures must come from low & moderate income HH,
- At least 50% must be long-lived measures that lower bills long-term (e.g., weatherization, heat pumps, AWH)
- Equity Advisory Group to look at other ideas

Cleaner heat and lower heat bills

1. A flexible CHS is the least costly, most consumer-friendly way to meet our climate goals
2. Time to get off the global fossil fuel roller coaster
3. Many clean options already cost less than fossil fuel
4. CHS will help Vermonters capture federal IRA \$\$
5. Abatement study for Vermont Climate Council found CHS actions by 2030 would save \$2 Billion (lifetime)
6. Energy performance standards have improved technologies, lowered their costs by 75%- 90% (e.g., wind, solar, lighting).
7. S.5 requires a clean heat potential study and legislative approval before the CHS begins

CHS Design features

- How to measure success? >**Life-cycle analysis**
 - Peer-reviewed science, established models
- Keeping costs low: customer choice, range of **clean heat options**
- Focus on **VERMONT's heat bills and emissions**
 - Credits for action here, not “offsets” globally
- Build on, support **ongoing clean heat efforts** (weatherization, EVT, Utility Tier 3, heat pump and advanced wood heat programs, etc.)

Accounting for Biofuels

- Biofuels can earn CH credits, BUT
 - Only on a net lifecycle GHG-avoided basis
 - Subject to increasingly stringent qualifications
 - Only if sustainably sourced
- Renewable methane (“RNG”) on the VGS system
 - Only if it’s reducing waste gasses
 - VGS must own the gas and its attributes
 - VGS must have a contractual delivery path to Vermont
 - Only on a net lifecycle GHG-avoided basis

Administration

- CHS implementation regulated by the Vermont PUC and DPS
- Statewide Default Delivery Agent (DDA) can implement in whole or in part - similar to Efficiency Vermont today
- Technical Advisory Group (TAG) will advise on credit values and lifecycle rates - similar to the TAG used for Tier 3 and energy efficiency measures
- Equity Advisory Group to help insure affordability and broad inclusion in CHS benefits

Conclusion: Why we need a Clean Heat Standard

- We need a policy driver to get off the fossil roller-coaster and save \$Billions in heat bills
- We need a **policy driver** to deliver large GHG savings
 - Incentives alone - are not enough
 - Public funds and taxes – not reliable enough
 - Businesses need a predictable path
- **Equity built in from the outset**
- **CHS supports diverse heating solutions, gives Vermonters choices**
- **Performance standards work**