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Clean Heat for a Cooler Planet: Vermont's Clean Heat Standard

Vermont House Energy and Technology Committee

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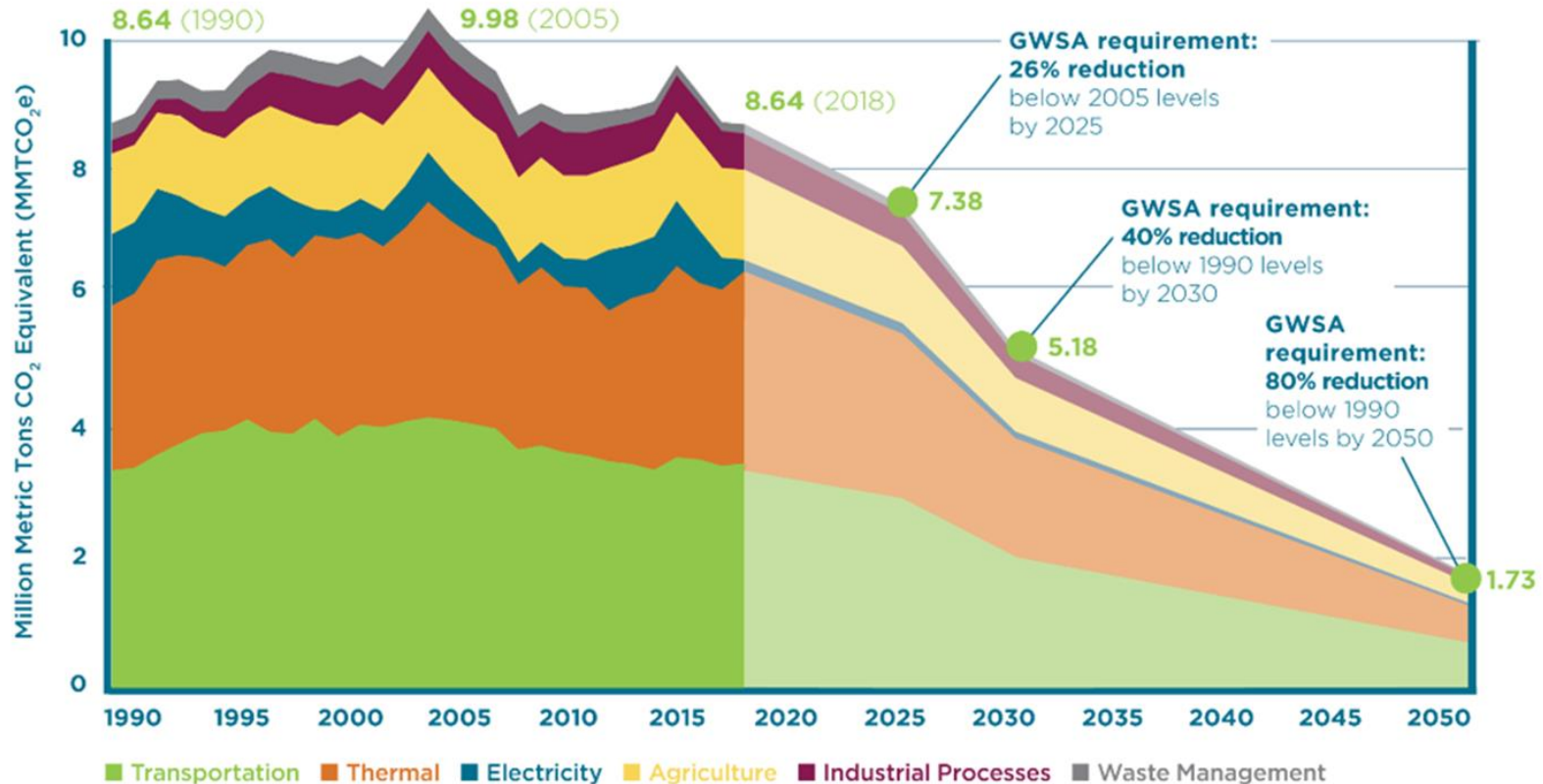
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Fossil Heat May Be Our Toughest Climate Challenge

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. Need to minimize bills in households with high energy burdens
4. Buildings are “hard” and “slow”

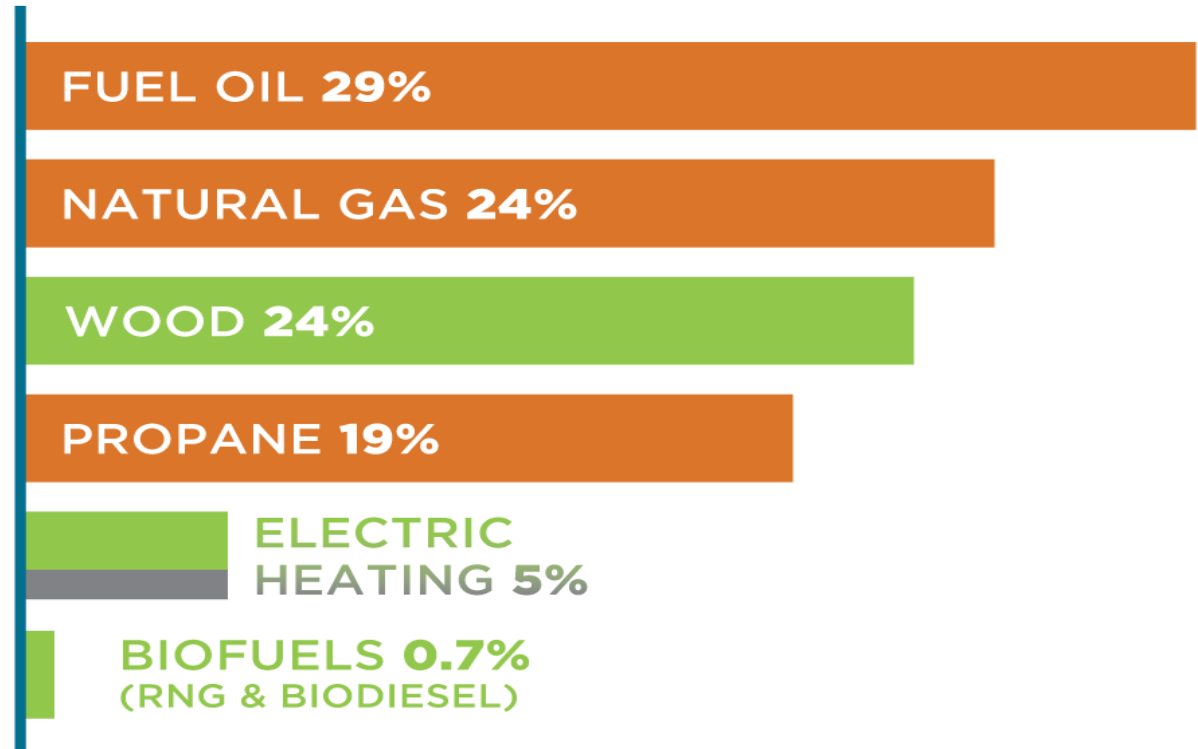
GWSA Emission Reduction Requirements



Source: Vermont Agency of Natural Resources, Vermont GHG Emissions Inventory and Forecast (1990-2017), 2021.

Vermont heat is
72% fossil fueled

Vermont heating energy sources, 2018



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

Vermont's Clean Heat Standard

The CHS is a performance standard, requiring the wholesale providers of fossil heating fuels to Vermont to deliver a gradually-increasing percentage of low-emission heating services to Vermont customers.

- Similar to the Renewable Energy Standard for electric utilities
- Increasing annual requirements pegged to GHG goals
- Measured by delivery **at the customer level**
- Clean heat choices: Weatherization, renewable fuel (biodiesel, biogas, district heat) electric heat pumps, advanced wood heat
- Heat providers can sell clean fuels, convert heat systems, or purchase credits from others

Climate Action Plan Recommends Legislation for a CHS*

- **“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”
- **“Timeline to Implement** – Legislation by the end of the current session (May 2022) followed by no longer than 18-24 months for administrative process...”

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

Draft Comprehensive Energy Plan Recommends PUC Review of CHS*

- Recommendation for Action:

“The Public Utility Commission should, by January of 2023, complete a study the potential cost of a standard under different design parameters and expected measures, including the expected resources necessary to administer such a program. The Legislature should authorize the Commission to adopt a CHS if it can be structured to equitably meet GHG requirements at a reasonable cost to Vermont consumers.”

- The draft CEP also calls for increasing the % of renewable thermal energy to 30% by 2025, 45% by 2032, and 70% by 2042 (at p. 6-1)

Vermont Department of Public Service, Draft Comprehensive Energy Plan, at p. 6-33

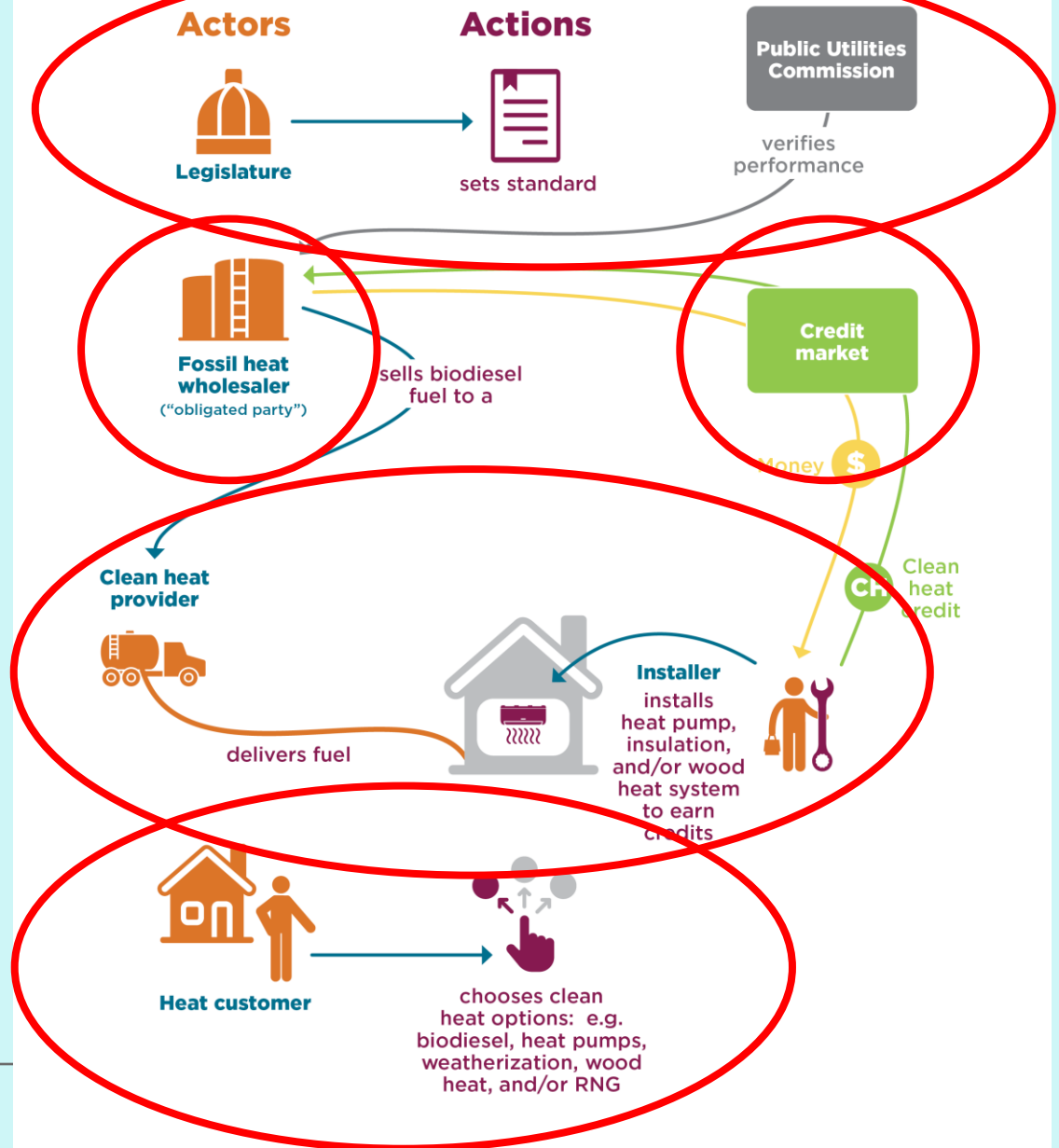
Clean Heat Working Group

- A year-long effort to design a CHS for Vermont
- Input/design help from many experts & stakeholders:
 - RAP, EFG and EAN staff and Senior Fellows, Weatherization working group, DPS and PUC staff, Electric utilities (GMP and BED), VGS, fuel dealers, (Bourne's, Energy Co-op, and others), energy and climate NGOs (VNRC, VPIRG), Efficiency Vermont, biofuels industry experts, and more...
- In-depth whitepaper covers the issues*
- Result: **We know it could work**

*R. Cowart and C. Neme, *The Clean Heat Standard* (EAN December 2021) <https://www.eanvt.org/chs-whitepaper/>

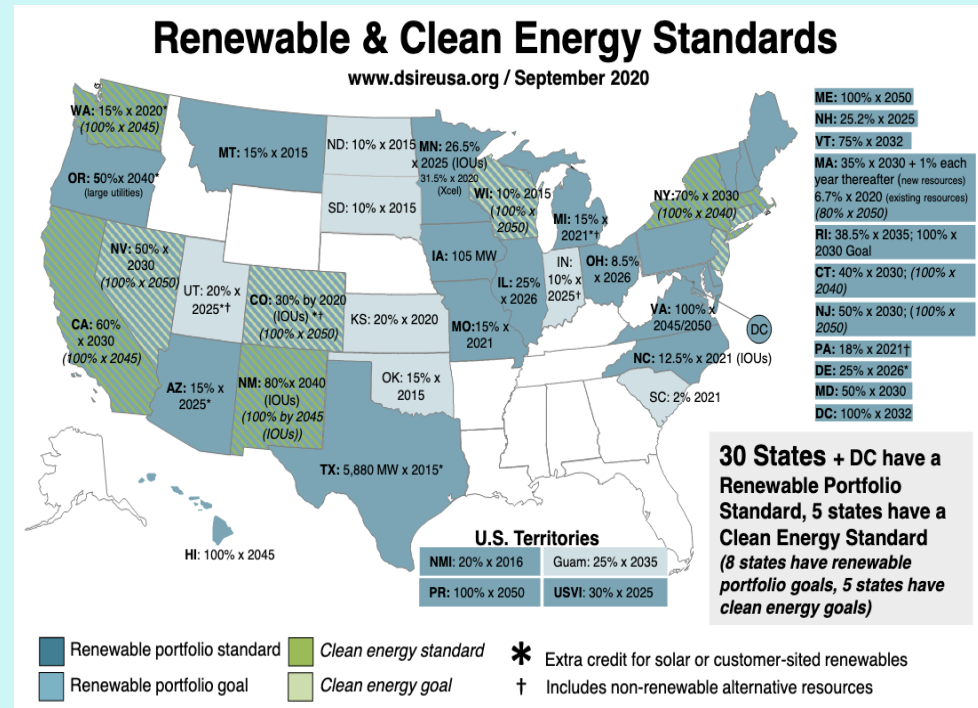
How would the CHS work?

Clean Heat Standard: Sample Process

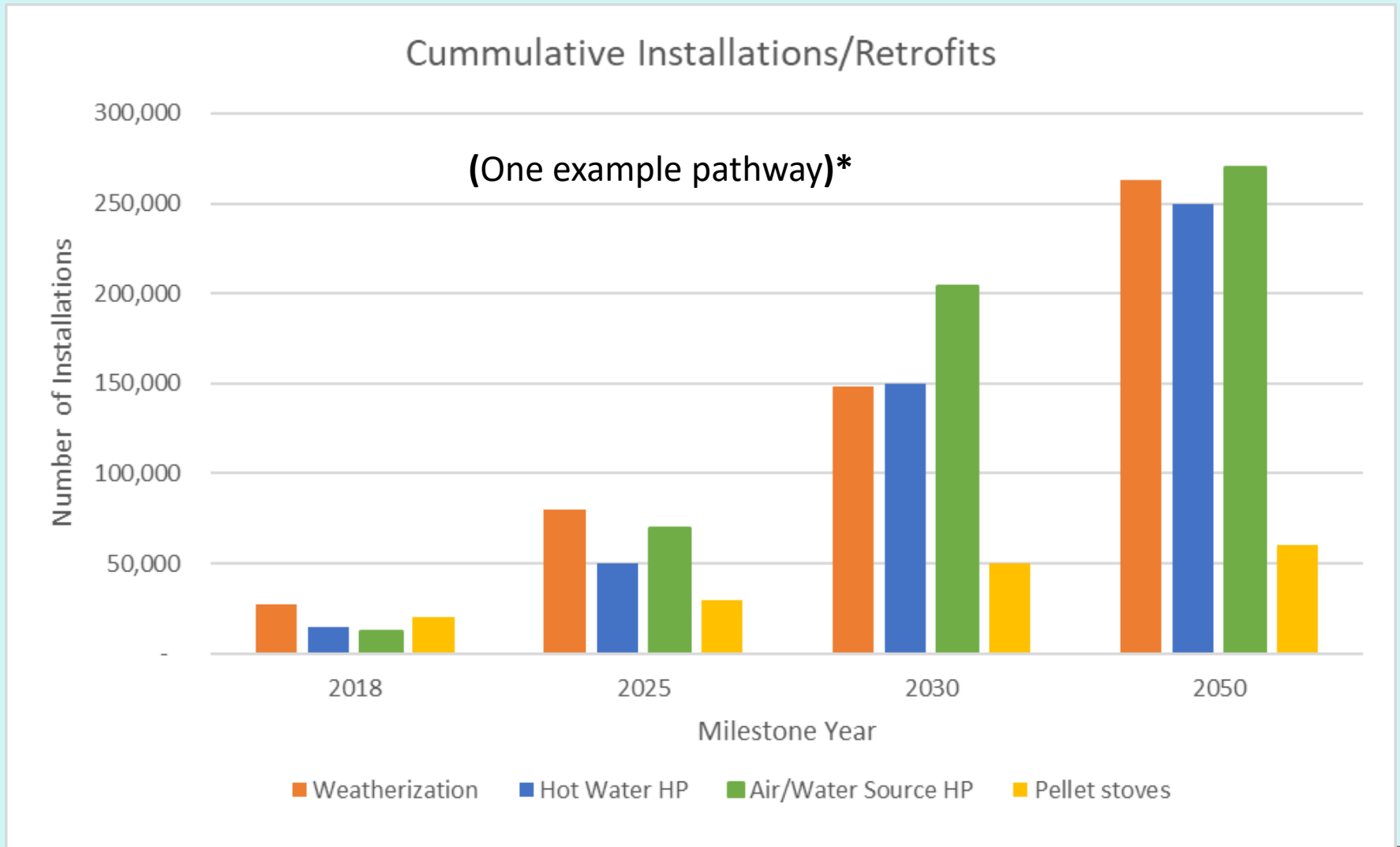


Experience to draw upon

- 30 states have renewable performance standards
- 25 states have EE performance stds
- Vermont EE, RES & Tier 3 (fossil) performance stds
- Low Carbon Fuel Standard in CA, WA, OR (for transportation fuels)
- Colorado Clean Heat Standard (for natural gas)
- New York biofuels mandates



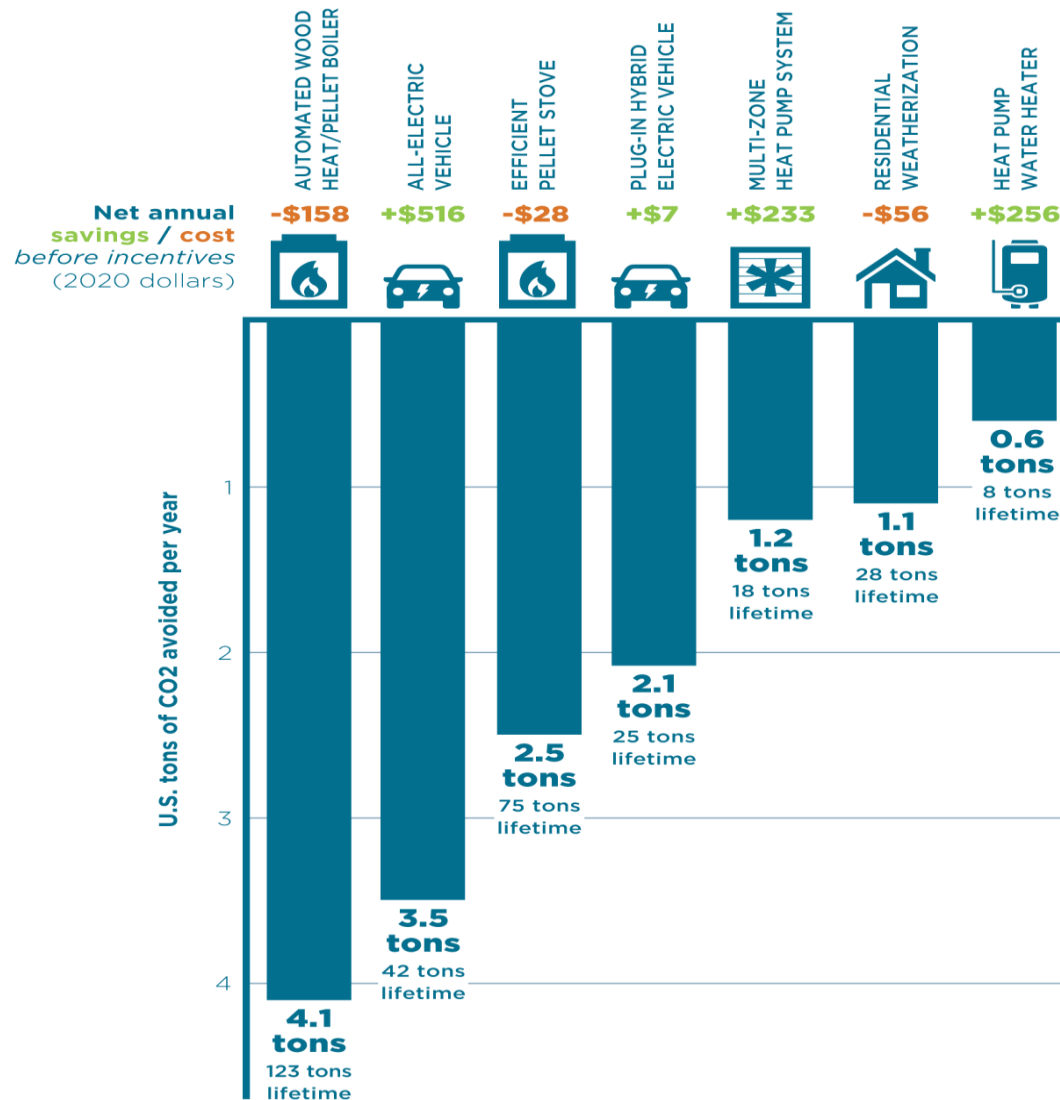
How many heat switches do we need?



Many clean heat packages save carbon AND save money*

* The estimated net savings/cost are likely conservative, in part because they do not reflect recent substantial increases in fossil fuel prices.

Household \$ savings and GHG reductions from energy actions



Sources: Household Savings: Vermont Agency of Commerce and Community Development, 2020. Tons of CO2 avoided: Vermont Public Service Department, CO2 Cost Effectiveness Model, 2020.



ENERGY ACTION NETWORK

Implementing the CHS: Clean Heat Credits

- **Obligated parties** must retire clean heat credits (CHCs) in proportion to their prior year's fossil fuel sales
- **Anyone can generate credits**
 - Fuel dealers, HVAC business, Efficiency Vermont, power companies, Vermont Gas, pellet stove seller, weatherization providers, and more
- Credits can be **bought and sold**
- Wide range of **eligible actions** can earn credits
 - Selling biofuels, installing heat pumps or advanced wood heat systems, weatherization, district heat, and more

Implementing the CHS: Accounting for Biofuels

- Biofuels can earn CH credits, BUT
 - Only if sustainably sourced (e.g., no palm oil)
 - Only on a net lifecycle GHG-avoided basis
 - California LCFS rates for reference
- Renewable methane (“RNG”) on the VGS system
 - 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

Implementing the CHS:

Links with other programs

- Heat pumps benefit from tight buildings: CHS links to **Weatherization programs**
 - Enhances comfort
 - Reduces power demand, esp in cold periods
- **Utility Tier 3** obligations (fossil fuel reductions) can mesh well with CHS programs
- Efficiency Vermont, VGS and other **thermal efficiency measures** can earn clean heat credits

Implementing the CHS:

Focus on equity

- The energy transition must be a just transition
- Almost all homes must heat-switch by 2050
- Start now with those who have highest energy burdens
- Program ideas:
 - High fraction of CHCs must come from low & moderate income homes
 - Extra credits for clean heat in rental housing
 - Link clean heat with every Wx job
 - Make incentive payments income-sensitive
 - Other ideas following outreach and input from those on the front lines, most affected

Implementing the CHS: Regulatory roles

- PUC may be the best agency to oversee the CHS
 - Links to power and gas; experience with the RPS and Tier 3;
- DPS would work with parties, develop and present evidence, do independent analysis;
- Key role for a CHS Technical Advisory Group (Clean Heat TAG)
 - Based on VT experience with Tier 3 TAG, EE TAG – these have worked well

Implementing the CHS: Fuel industry transition

- Thermal transition requires trusted “boots on the ground”
- Fuel dealers are valued, essential
- Transition needed: From delivering fossil to providing clean energy services
- CHS offers time to transition, train labor force

Conclusion: Why we need a Clean Heat Standard

- **Focus on customers** – where the real decisions are made
- **A sustainable path for fuel dealers**
- **Maximizes flexibility and choice**
 - Doesn't pick winners
 - Customers can choose – so can providers
- **Equity can be built in from the outset**
- **Electricity is moving to clean – It's time for fossil heat to join the transition**

Why a Clean Heat Standard ? (con't)

- **CHS supports diverse heating solutions**
 - We can't simply “electrify everything”
 - Open door to better ideas
 - **Most important: We need a solution that will grow and deliver large GHG savings.**
 - Energy efficiency crucial, but less than 25% of the answer
 - CHS does not need or rely on fuel taxes or public funds
 - Performance standards work
- **Competition and choice: Lowest cost path to reducing thermal climate pollution**



Questions & Discussion