

# Building Heating Changes Needed to Meet the Requirements of the GWSA

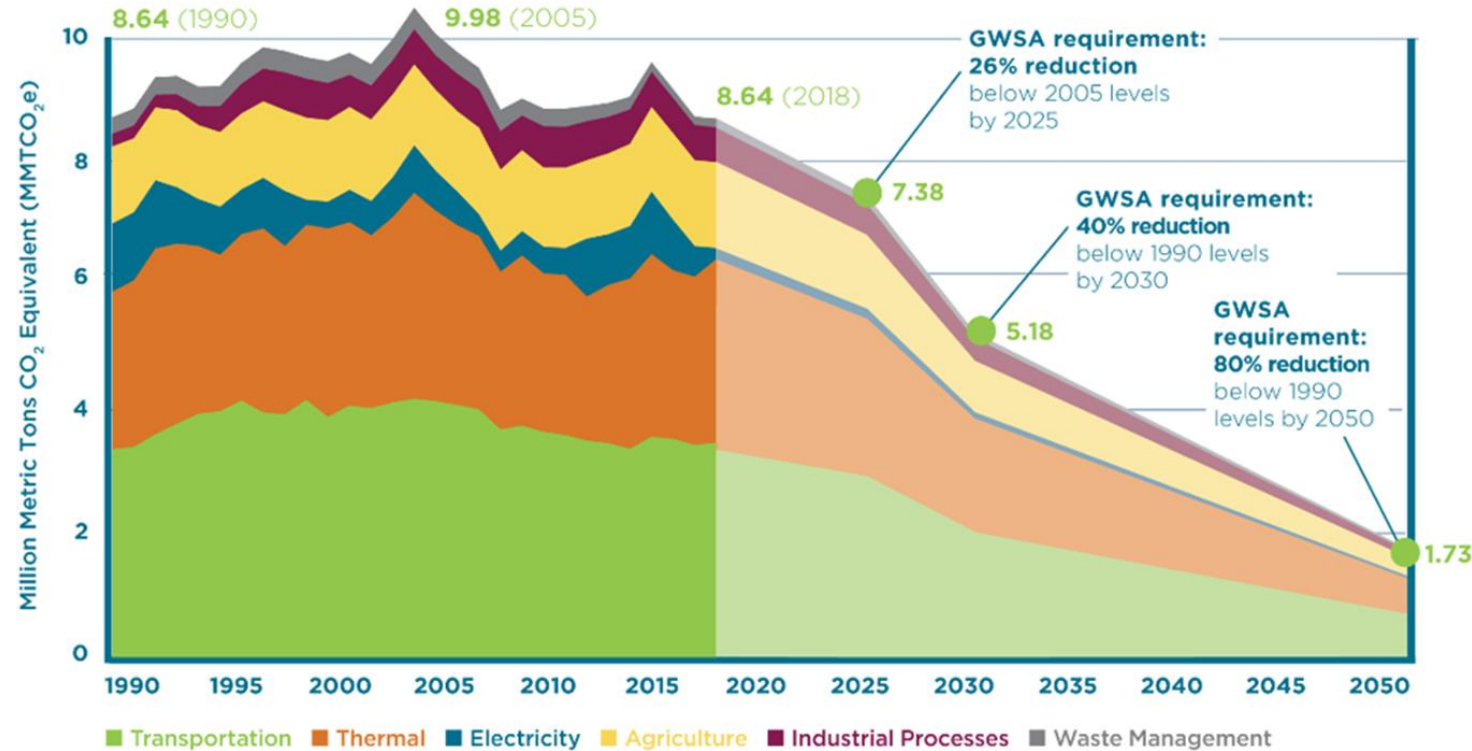
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JULIE MOORE, P.E.  
SECRETARY, AGENCY OF NATURAL RESOURCES

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# GWSA Requirements

- *Provide for greenhouse gas emissions reductions that reflect the relative contribution of each source or category of source of emissions...*
  - Section 592(d)(2)
- Building heating (or “thermal”) accounts for roughly 34% of Vermont’s GHG emissions
  - It is Vermont’s second largest source of climate pollution



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

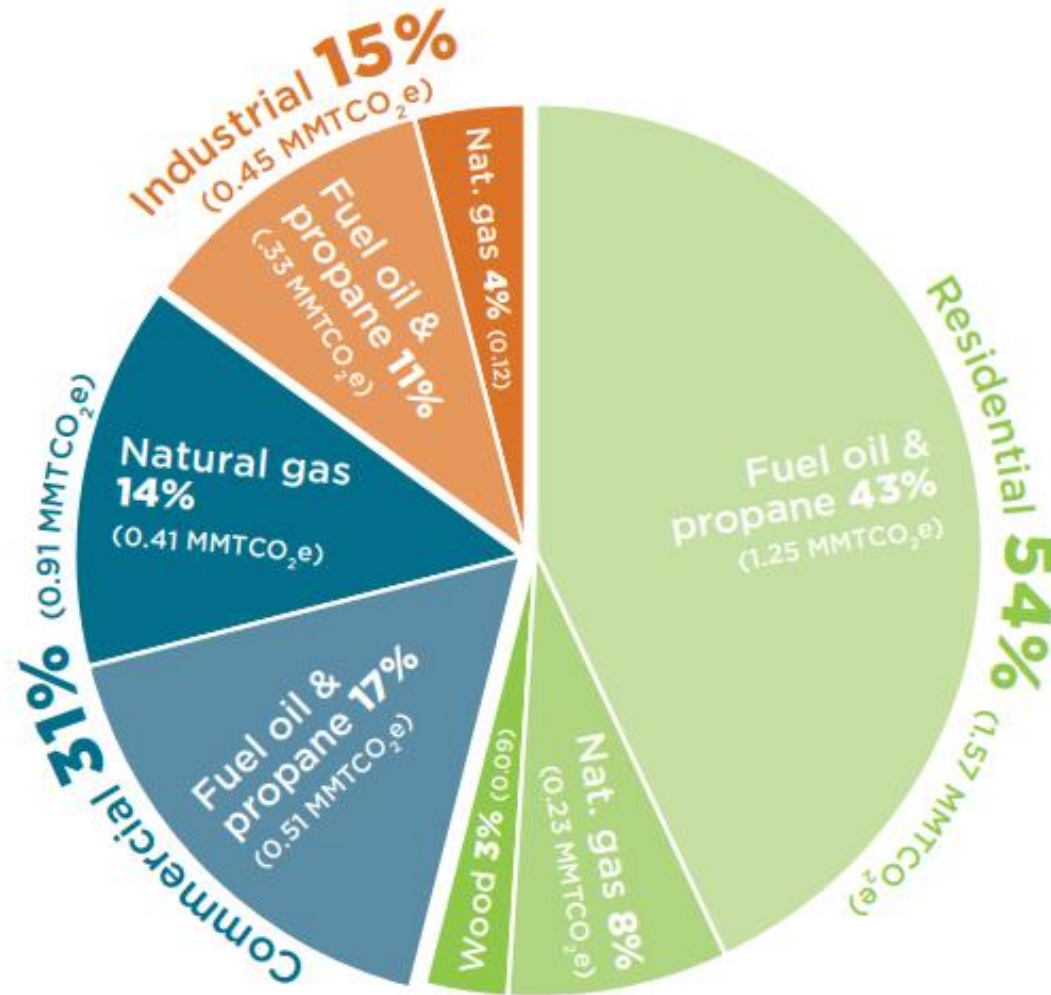
# Climate Action Plan Recommendations

- *Adopt legislation authorizing the Public Utilities Commission to administer a Clean Heat Standard consistent with the recommendations of the Clean Heat Standard Working Group... 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.*

- Initial Climate Action Plan at p. 99

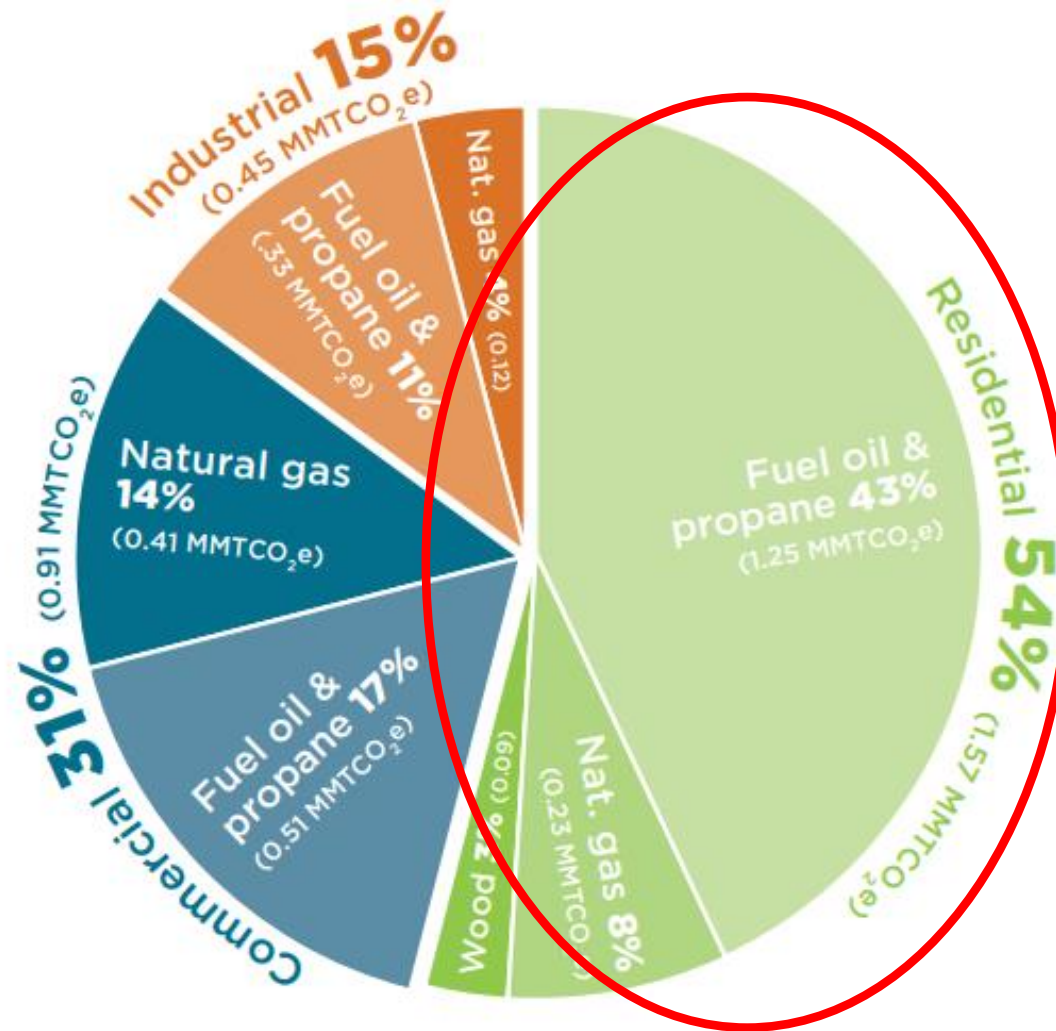
- So, why?

# Building Heating Uses a Variety of Fuels



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

# Building Heating Uses a Variety of Fuels

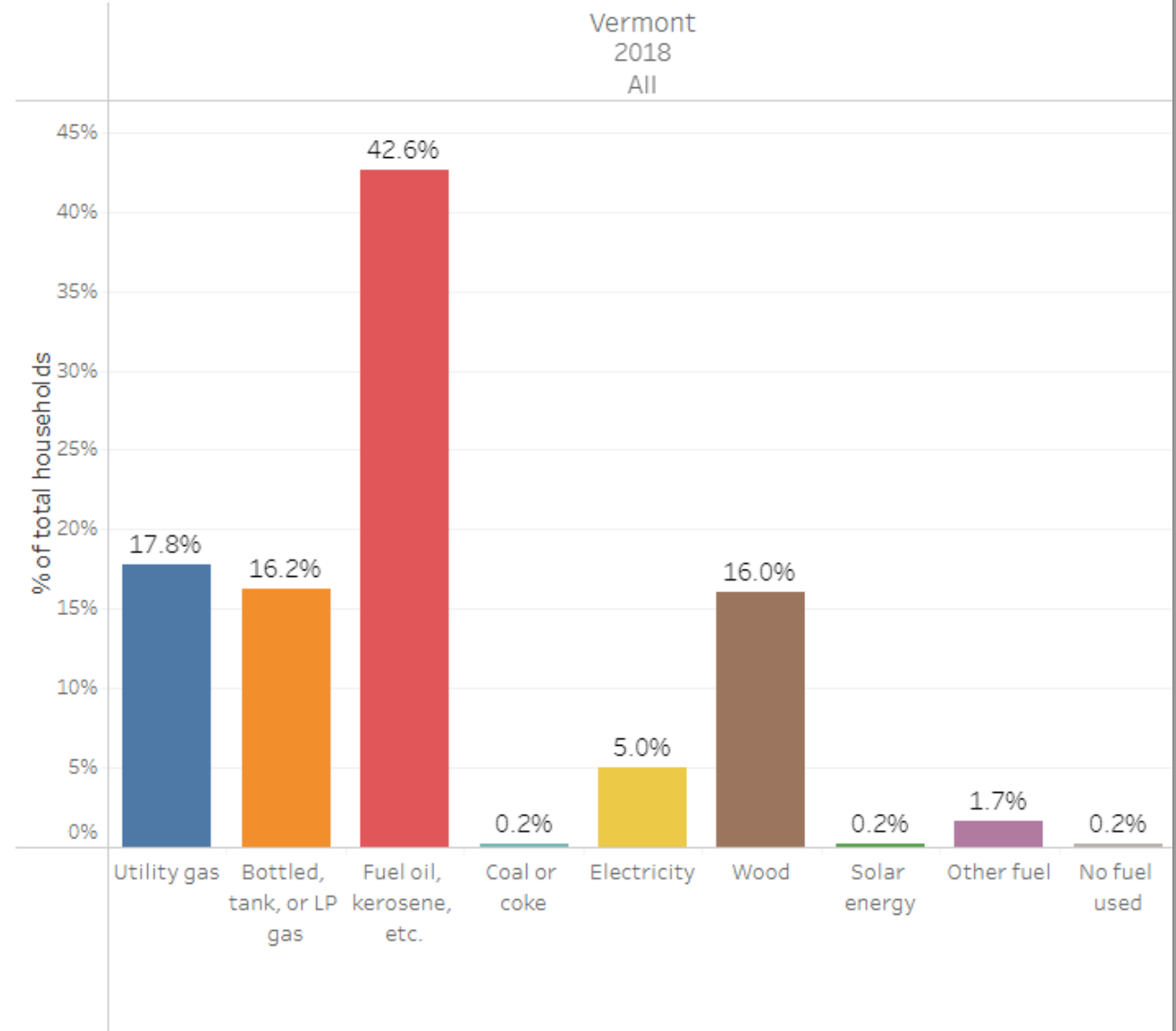


**Source:** Vermont Agency of Natural Resources, Vermont Greenhouse Gas Emissions Inventory and Forecast (1990-2017), 2021.

# Home Heating Uses a Variety of Fuels

- ~ 332,000 housing units in Vermont
  - More than 75% (over 255,000) of homes are heated primarily by fossil fuels

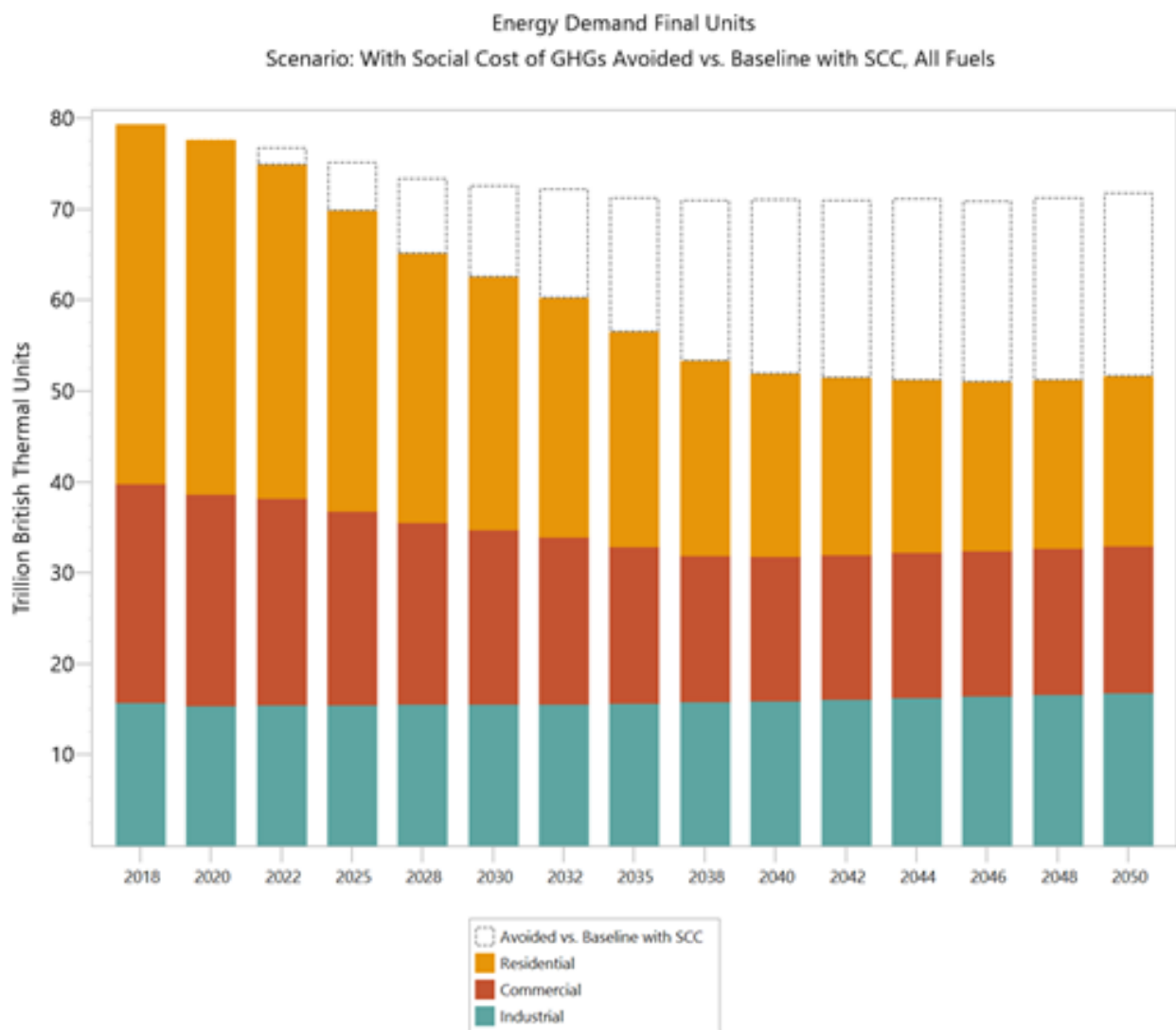
Estimated households by primary heating fuel



Source:

U.S. Census Bureau: American Community Survey 5-year estimates (Table B25117, B25040)

# Weatherization, Alone, Isn't Enough



(Forthcoming) *Pathways Analysis* projects reduction in energy demand achievable with ambitious weatherization and better, more efficient heating equipment BUT no change in fuel mix

- ~25% reduction by 2050

GWSA requires:

- 40% reduction by 2030
- 80% reduction by 2050

# The Role of a Clean Heat Standard (CHS)

- Clean heating is not an either/or situation, requires a mix of:
  - Better building envelopes (weatherization);
  - More efficient heating systems (heat pumps, district heat); and,
  - Cleaner energy sources (renewable electricity, advanced wood heat, biofuels and renewable natural gas)
- Creates a framework for thoughtful implementation and, done right, supports a just transition
  - Environmental (!!)
  - Economic: affordable clean heat
  - Social: fuel sector workers



# The Role of a Clean Heat Standard (CHS)

- Offers customer choice
  - CHS is a performance standard applied to wholesale suppliers of fossil-fuel heat
  - Requires gradually-increasing percentages of low-emission heat, but is “fuel neutral”
- Engages existing fuel dealers in the transition to a clean thermal sector
- Integrates with many other building sector initiatives, including weatherization
- Supports cost-effective emissions reductions and, when designed well, cost-savings for those who need them most

# Possible Alternatives to a CHS

- Carbon pricing
  - Changes in fuel prices alone have not historically driven much change in heating systems – most Vermont families cannot change their baseline heating demand
  - Potentially expensive means to drive change in the buildings sector
- Building codes and appliance standards
  - Best for improving performance of new construction in Vermont, and of replacement water heaters and furnaces.
  - Pace of new construction, less than 1% per year and the expected percentage improvement in appliance efficiencies, alone, are too low and too slow to deliver the reductions needed
- ANR regulatory mandates
  - While often administratively “simple,” regulations tend to be less equitable and more consequential to Vermonters

# Key Takeaways

- Addressing GHG emissions associated with building heating is essential to meeting the requirements of the GWSA
  - Without clear legislative direction, it will be extremely difficult to meet the requirements
- GWSA timelines are tight and demand immediate forward progress
  - Developing a CHS now means proposed ARPA investments can help support and accelerate initial implementation
- There are a lot of important details to work out - focus should be on creating a structure that supports Vermont families in this transition and ensures the system is equitable

*It is daunting. It is very hard, and it should be hard, and if you don't start off expecting it to be hard, you'll get disappointed and quit...*

John Doerr,  
*Speed & Scale: An Action Plan for Solving Our Climate Crisis Now*