

Tracking Vermont's Energy Transition

Overview of EAN's Vermont Energy Dashboard for
the House Energy & Digital Infrastructure
Committee

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February 18, 2025



Data & Analysis

ENERGY ACTION NETWORK

ANNUAL
PROGRESS
REPORT

for
VERMONT
2023

on EMISSIONS,
ENERGY, EQUITY,
and the ECONOMY





EAN is dedicated to producing **high-quality, open and accessible** research and analysis to support the state's progress toward its energy and climate commitments.

In addition to our Annual Progress Report for Vermont, we provide additional resources and tools for individuals, organizations, and communities throughout the state to access energy & emissions data.



Vermont Energy Dashboard

- Published in February 2024
- Data from Efficiency Vermont, VGS, Burlington Electric Department, and state weatherization programs
- Designed to track progress toward the highest impact “Pathways” targets in the Vermont Climate Action Plan
- Simple, user-friendly interface
- Visualize and download data at the local level

Vermont Energy Dashboard

EAN Vermont Energy Dashboard

View data by:

- Town**
- County
- RPC*

Select measure

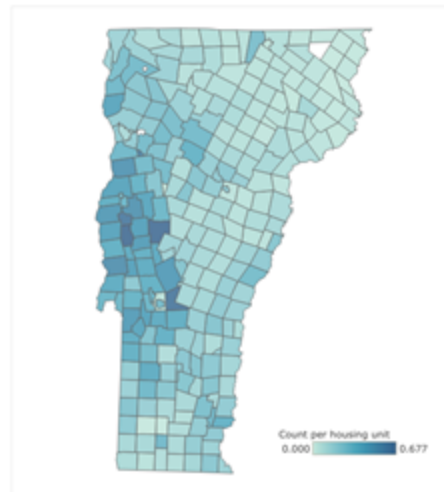
- Cold-climate heat pumps
- Heat pump water heaters
- Weatherization
- Electric vehicles

Select year

2023

Cold-climate heat pumps by town as of 2023

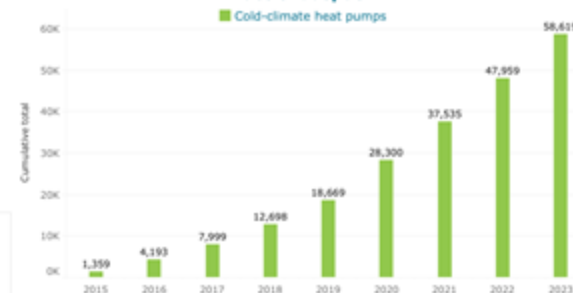
Click on a town to filter



* RPC = Regional Planning Commission



Pace of adoption



Cumulative Total Cold-climate heat pumps as of 2023:

58,619

Cold-climate heat pumps: Actual to date statewide vs. future targets in the VT Climate Action Plan





Vermont Energy Dashboard

The tool tracks adoption of the four highest-impact climate pollution reducing activities recommended in the 2021 Vermont Climate Action Plan:

- Comprehensive home weatherization
- Cold-climate heat pumps
- Heat pump water heaters
- Electric vehicles

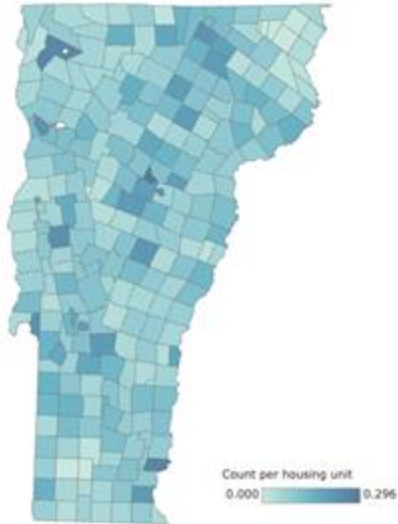


Vermont Energy Dashboard

Aggregate data by town, county, Regional Planning Commission, or statewide

Weatherization by town as of 2023

Click on a town to filter



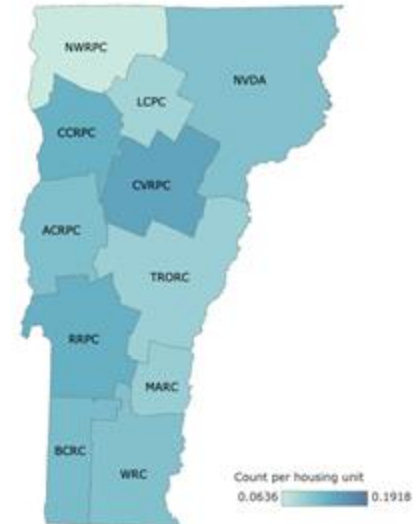
Weatherization by county as of 2023

Click on a county to filter



Weatherization by RPC as of 2023

Click on a Regional Planning Commission to filter



EAN Vermont Energy Dashboard

View data by:

- Town
- County**
- RPC*

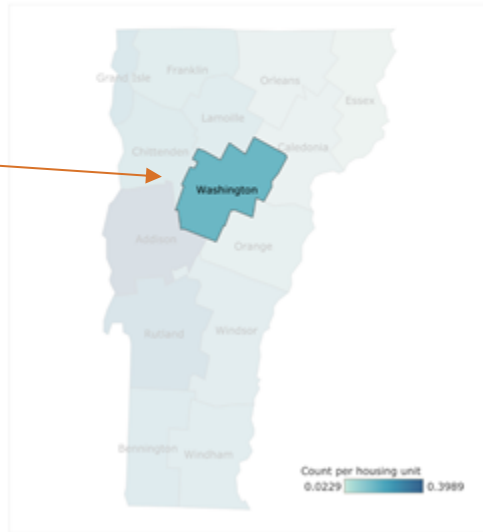
- Select measure
- Cold-climate heat pumps
 - Heat pump water heaters
 - Weatherization
 - Electric vehicles

Select year

2023

Cold-climate heat pumps by county as of 2023

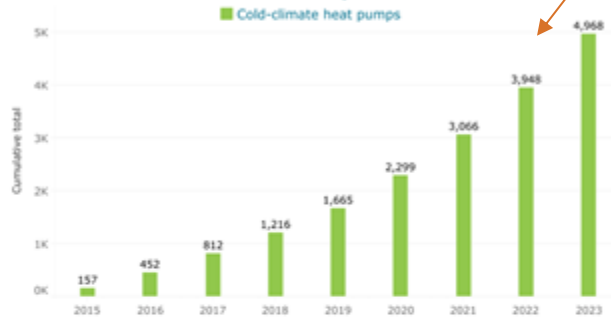
Click on a county to filter



Washington county selected

Visualize progress over time in Washington county

Pace of adoption



Cumulative Total Cold-climate heat pumps as of 2023:

4,968

Cold-climate heat pumps: Actual to date statewide vs. future targets in the VT Climate Action Plan



* RPC = Regional Planning Commission



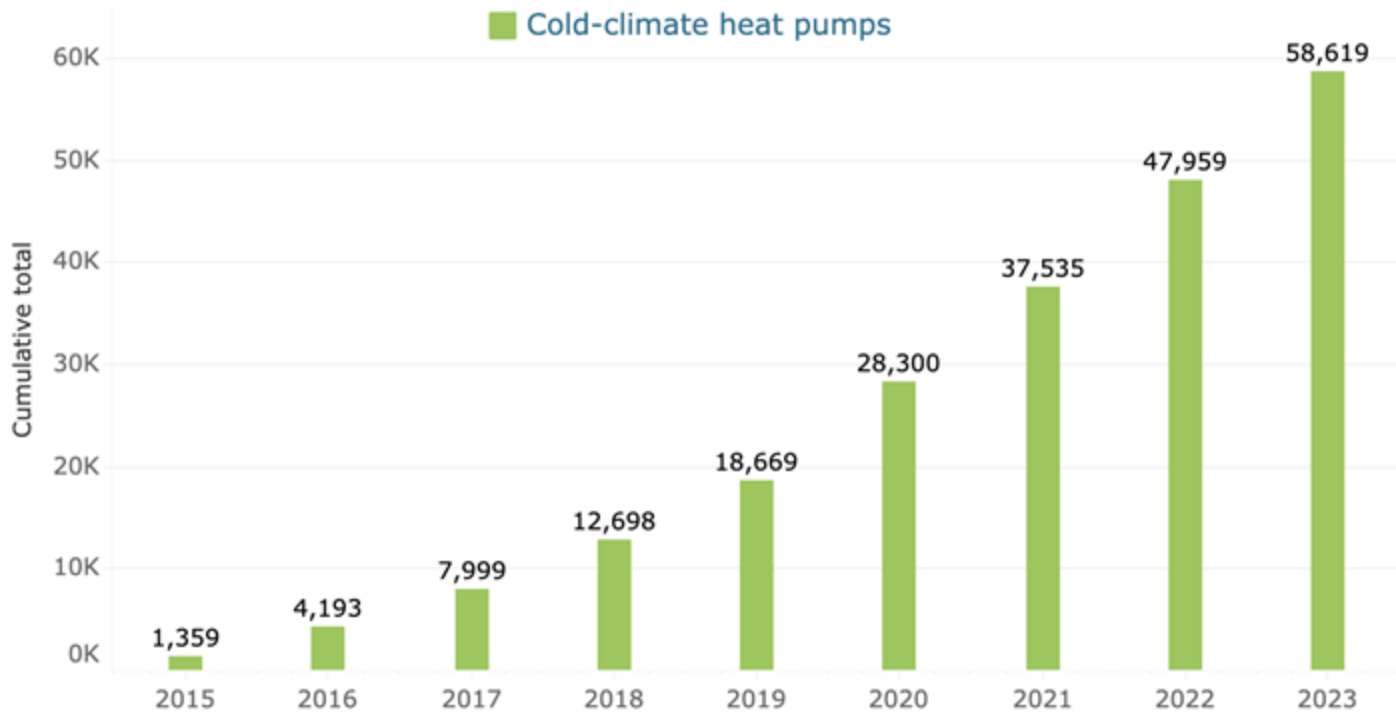
Track progress over time

Pace of adoption

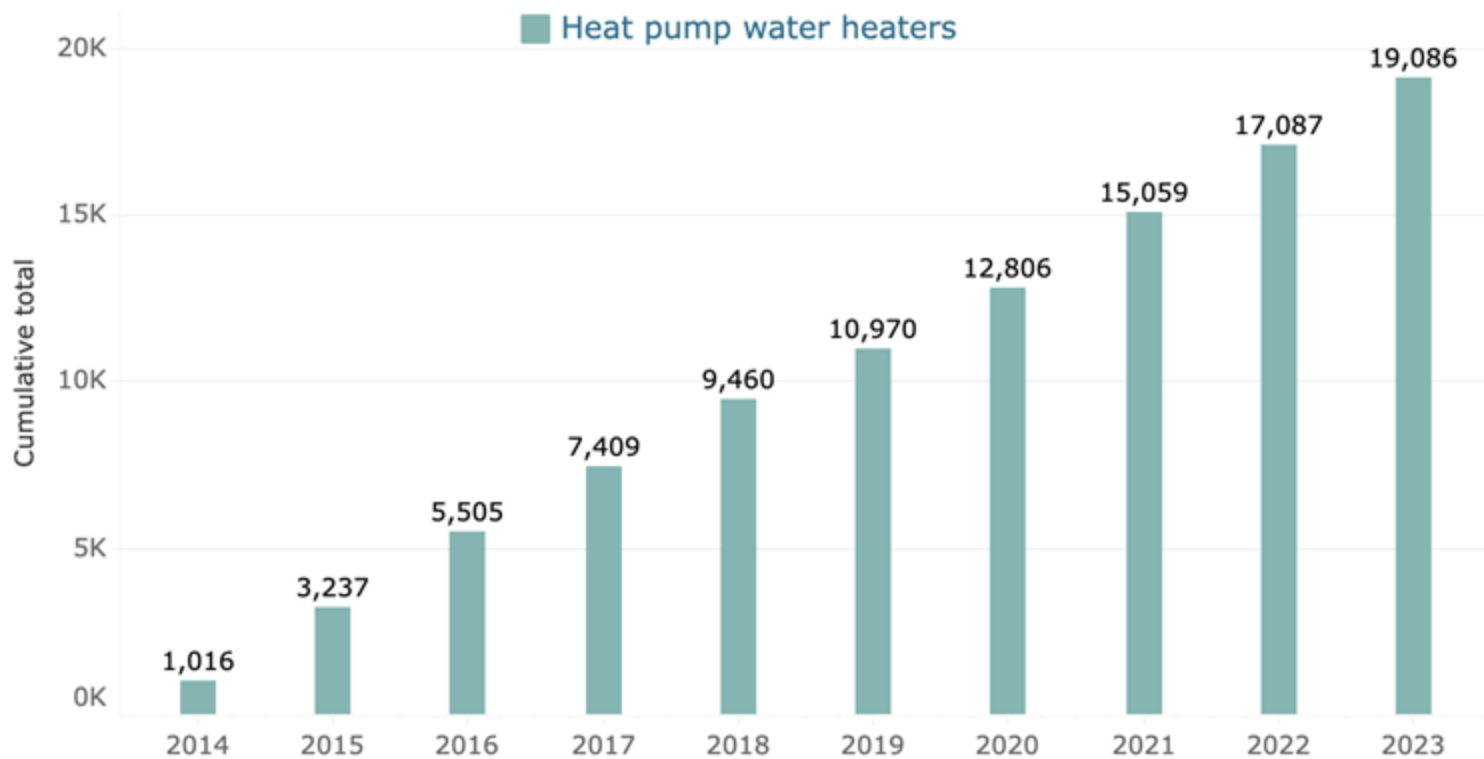
■ Weatherization



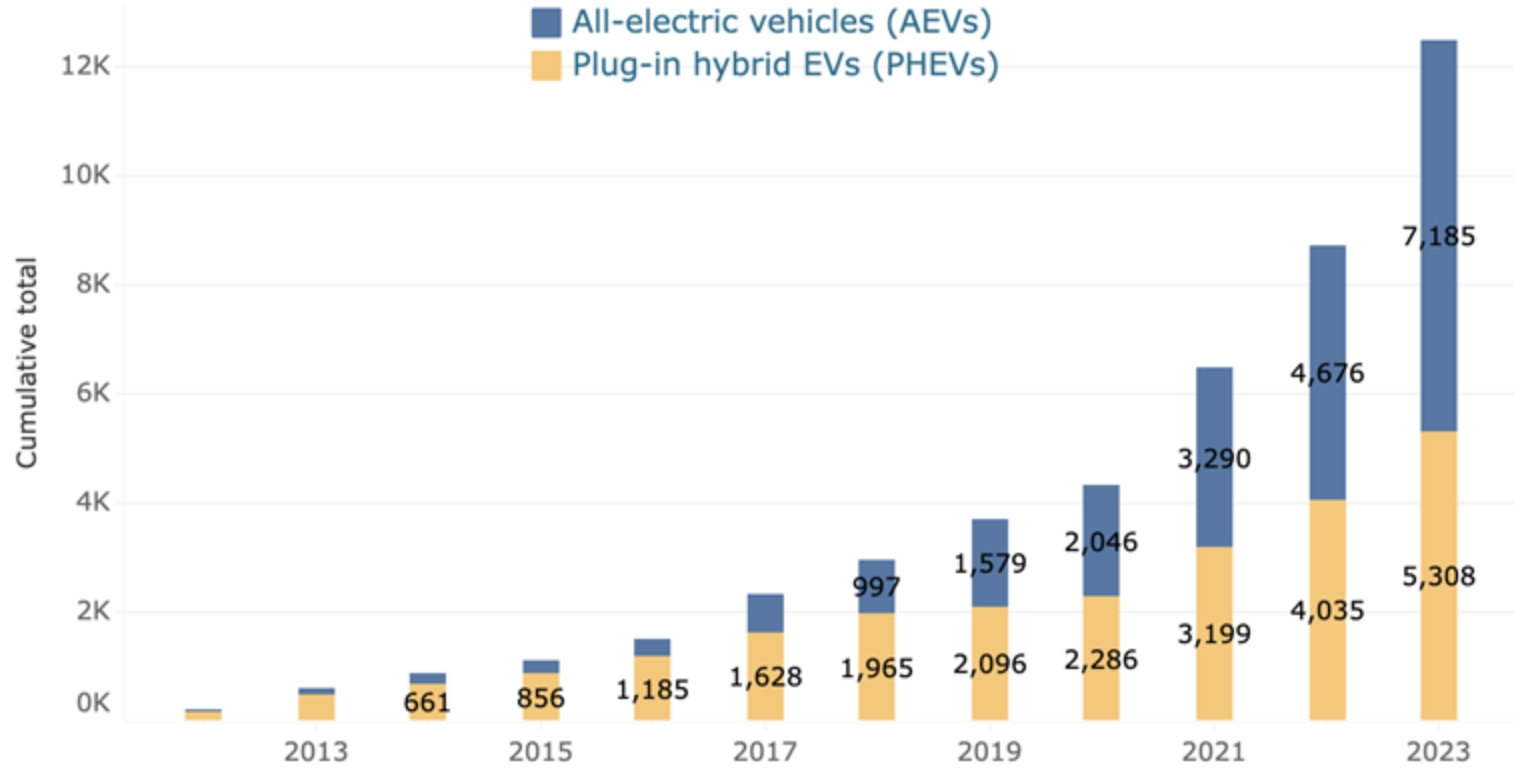
Pace of adoption



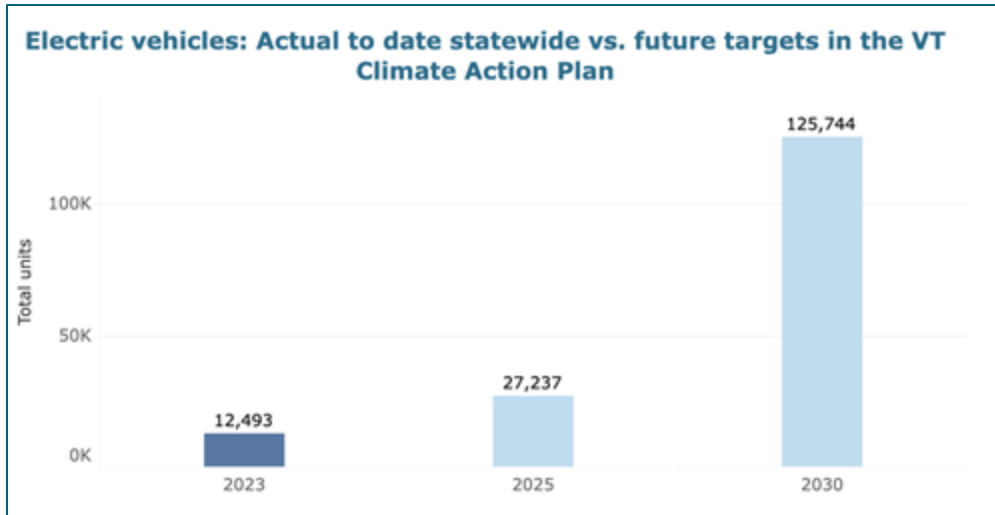
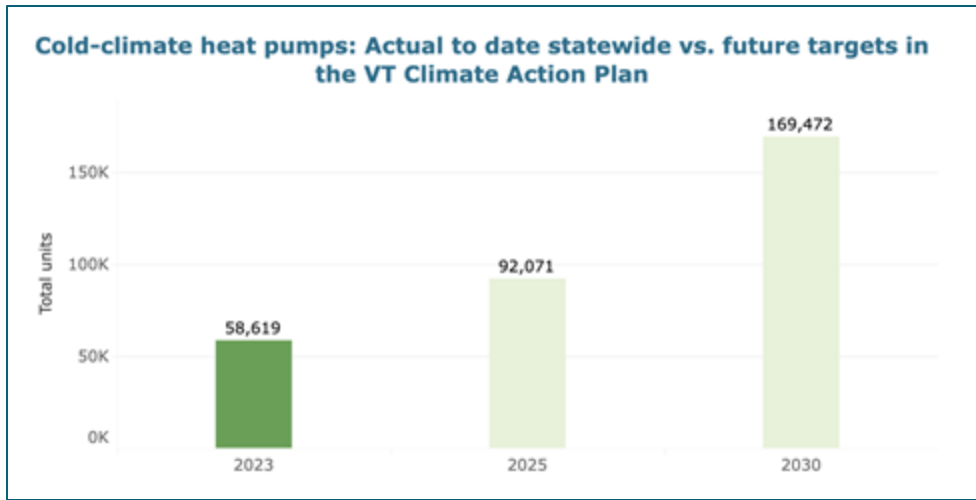
Pace of adoption



Pace of adoption



*Assess progress
toward Climate
Action Plan targets*



Dashboard Demo

<https://eanvt.org/vermont-energy-dashboard/>

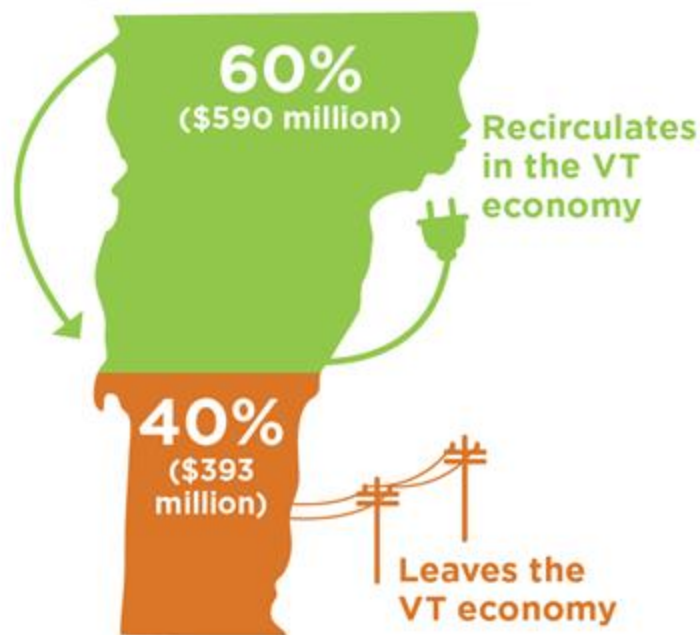


Vermont fossil fuel spending, 2023



Sources: Fossil fuel spending: Vermont Department of Taxes, 2024; VGS, 2024. Dollar recirculation share: Ken Jones, Senior Fellow for Economic Analysis, 2024. **Note:** This graph includes spending on thermal and transportation fuels only.

Vermont electricity spending, 2023



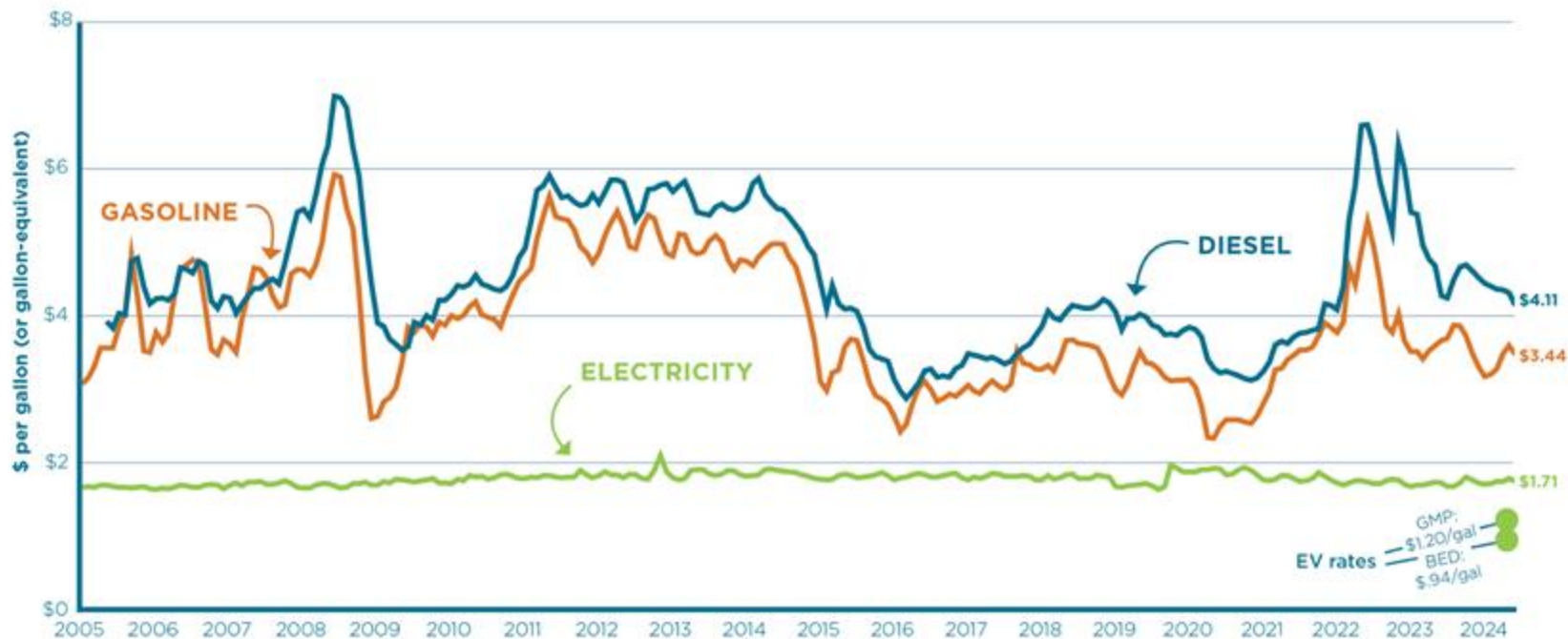
Sources: Electricity spending: Vermont electric utilities. Dollar recirculation share: Ken Jones, Senior Fellow for Economic Analysis, 2024. **Note:** Dollar recirculation share was updated in January 2025 to reflect out-of-state transmission costs.



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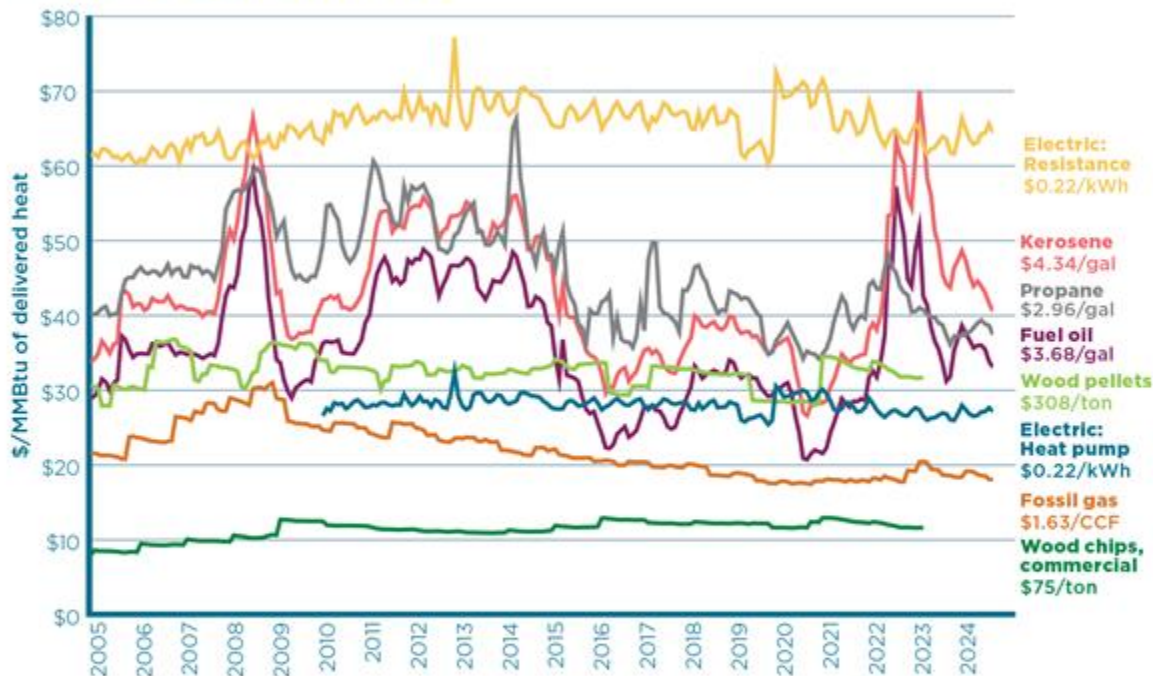
Cost comparison of different transportation fuels over time in VT (adjusted for inflation, June 2024 dollars)



Sources: VT gas and electric prices: EIA, 2024. Diesel: Vermont Agency of Transportation, 2024. EV rates: Green Mountain Power and Burlington Electric Department, 2024. **Note:** Data through June 2024. Prices shown are in June 2024 dollars, using the U.S. Bureau of Labor Statistics Consumer Price Index.



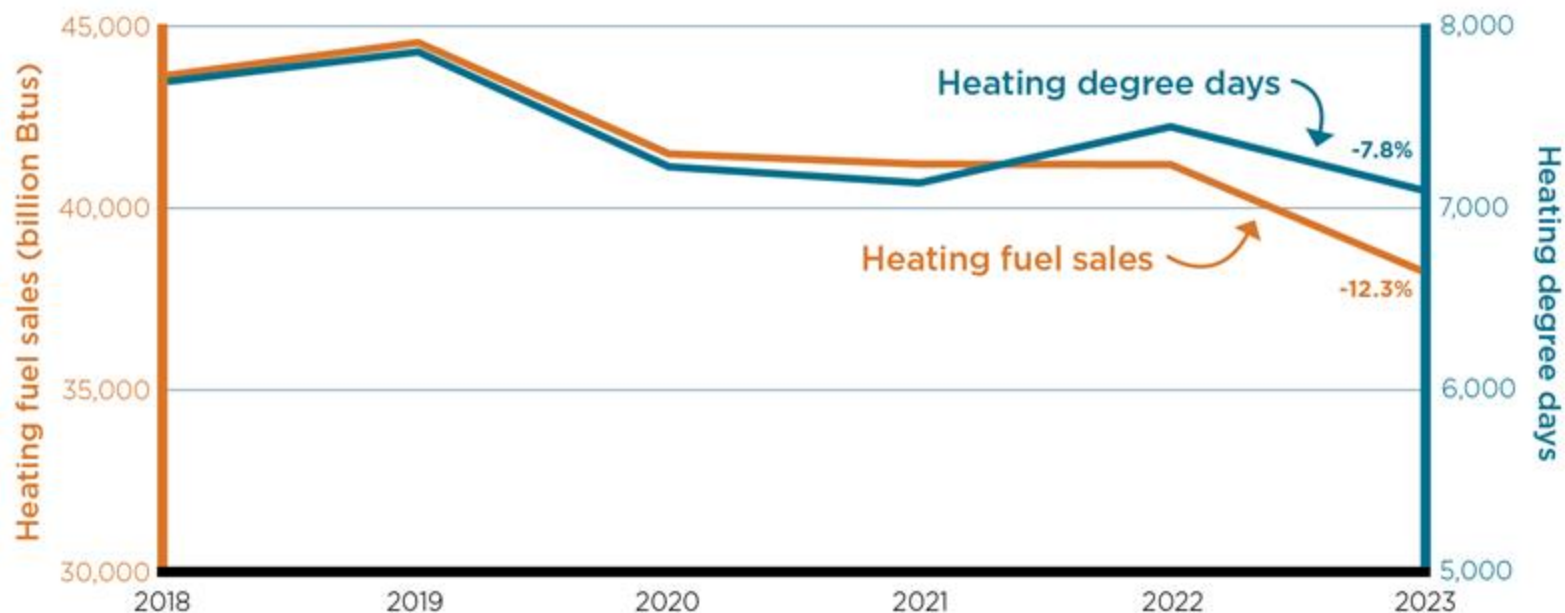
Cost comparison of different heating fuel options over time (adjusted for inflation, June 2024 dollars)



Sources: Fuel oil, propane, kerosene prices: VT Department of Public Service, Retail Prices of Heating Fuels, 2024. Fossil gas: VGS, 2024. Electricity: EIA, 2024. Wood chips, wood pellets: Biomass Energy Research Center, 2023. **Notes:** Electricity prices presented here are a statewide average but vary by utility territory. The reason propane is usually 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 (66% of the energy of fuel oil per gallon). Prices reflect data availability at the time of publication: through June 2024. Prices shown are in June 2024 dollars, using the U.S. Bureau of Labor Statistics Consumer Price Index.



Total fossil heating fuel sales and heating degree days in Vermont, 2018-2023



Sources: Heating fuel sales data: Vermont Department of Taxes, 2023; VGS, 2023. Fuel heat content conversion factors: U.S. Energy Information Administration, 2023. Heating degree days: NOAA Center for Weather and Climate Prediction, 2023. **Note:** Heating degree days are a measure that compares the mean outdoor temperature on a given day to a standard temperature of 65 degrees Fahrenheit.



Lifetime cost savings of switching to an electric vehicle



Estimated savings on fuel and maintenance: ~\$9,500



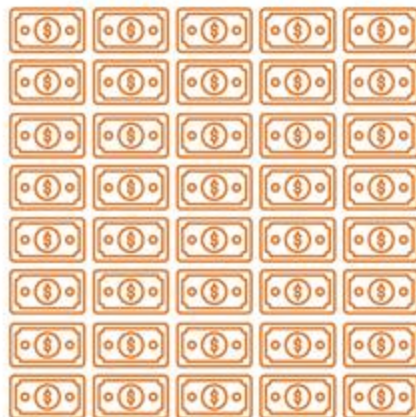
Avoided social costs from reduced fuel-related GHG emissions over the life of the vehicle: ~\$7,000

Sources: Annual mileage assumed to be 11,084 based on 2022 data for Vermont from Federal Highway Administration; Fuel economy assumptions from the 2021 Vermont Transportation Energy Profile; Gasoline and electricity prices are 2023 averages for Vermont from EIA; gasoline emissions factors from EIA and EPA; electricity emissions intensity assumed to decrease linearly to 100% carbon-free by 2035; Social Cost of GHG values from the EPA (2023), using a 2% discount rate. Calculation based on a vehicle lifetime of 8 years, per assumptions in the 2023 Vermont Tier III Technical Reference Manual. **Note:** Upfront vehicle costs vary based on make/model and incentive eligibility; because of this variance, upfront vehicle costs are not quantified here. All costs and savings presented in 2024 dollars.



Average annual fuel savings from switching to an EV: Vermont high gasoline users vs. typical gasoline users

\$4,034/year in savings



High gasoline user: fuel savings after switching to an EV



\$943/year in savings



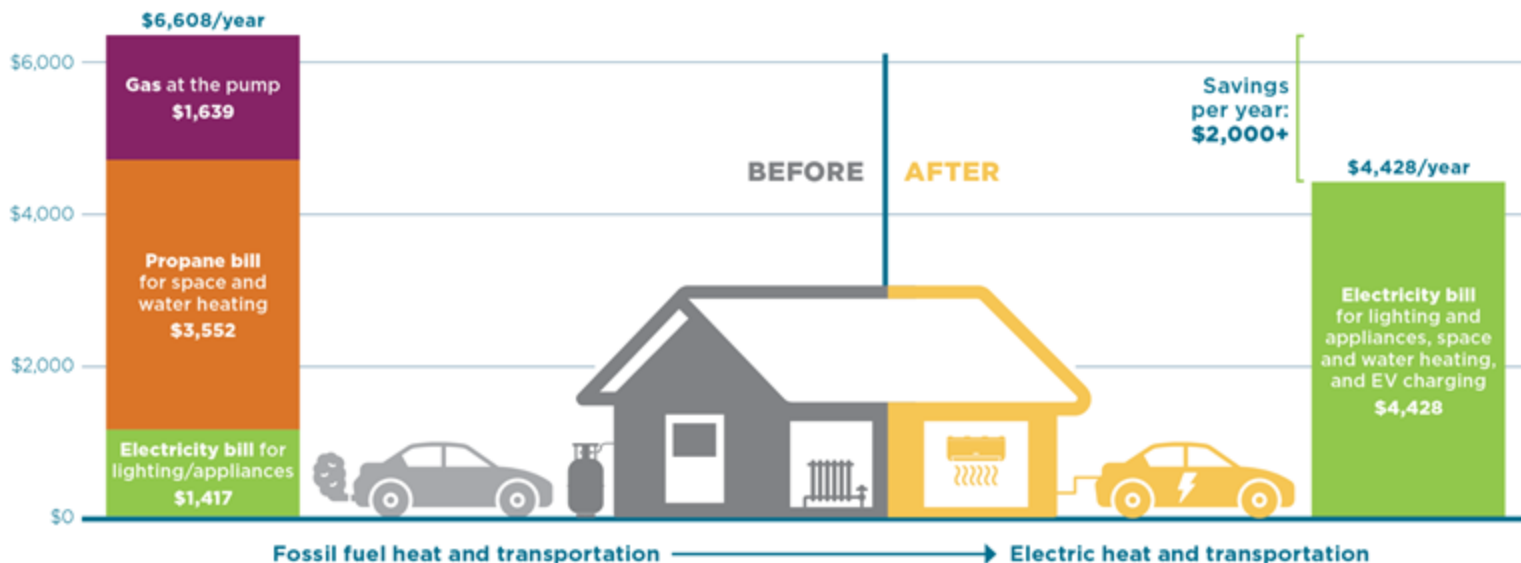
Typical gasoline user: fuel savings after switching to an EV



Source: Coltura, Gasoline Data Center, 2024. **Note:** High gasoline users are defined as the top 10% of U.S. light-duty vehicle drivers in terms of gasoline consumption. Approximately 14% of Vermont drivers fall into this category (Coltura refers to these drivers as "gasoline superusers"). Gasoline consumption depends on both vehicle miles traveled and vehicle fuel efficiency (MPG). On average, high gasoline users in Vermont consume 1,874 gallons of gasoline per year.



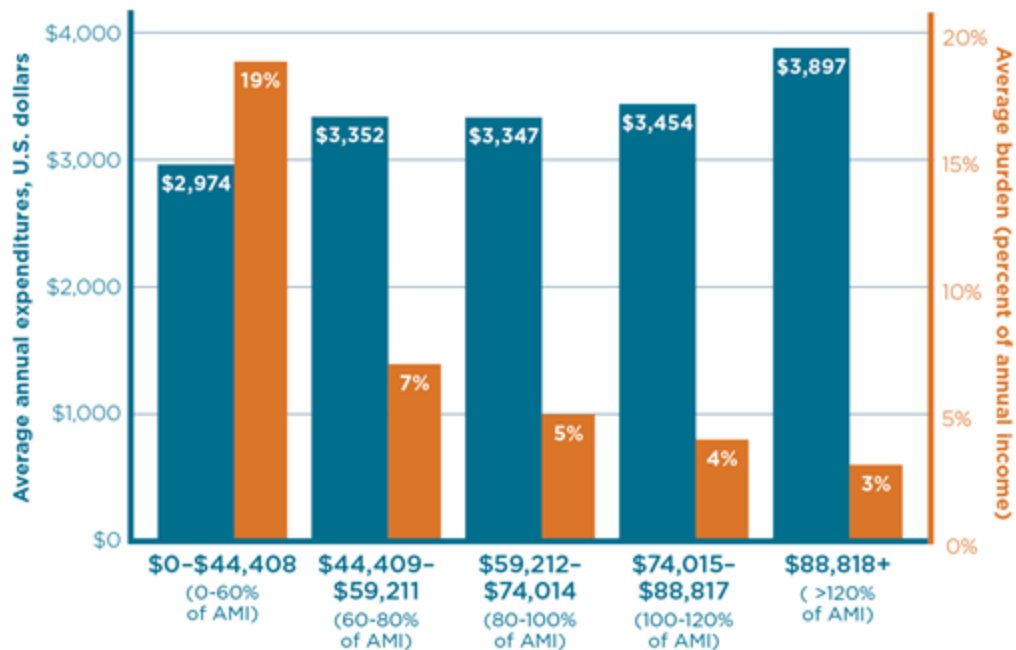
Estimated annual energy bill costs for a sample Vermont single-family household, before and after electrification



Sources: Energy bill savings calculated based on the average monthly prices for propane, gasoline, and electricity in 2023, from the Vermont Department of Public Service and EIA. Electricity bill costs for lighting and appliances reflect statewide average annual household electricity expenditures (Efficiency Vermont, "Vermont Energy Burden Report," 2023). Annual transportation fuel costs calculated using average fuel efficiency of 23.4 MPG for vehicles registered in VT from the 2021 Vermont Transportation Energy Profile and VT average annual vehicle miles traveled (VMT) of 11,084 miles/year from the Federal Highway Administration. **Note:** Actual energy bill savings will depend on a number of factors, including a household's electricity rate. Several Vermont utilities offer lower electric rates for managed EV charging, providing additional savings to households with access to those rates. Upfront equipment/vehicle costs vary based on model and incentive eligibility; because of this variance, upfront costs are not quantified here. Savings estimates are for a one car household. Savings will be higher for households replacing multiple gas vehicles with electric vehicles.



Vermont combined average household heating and electricity fuel costs and burden by income level, 2018-2022



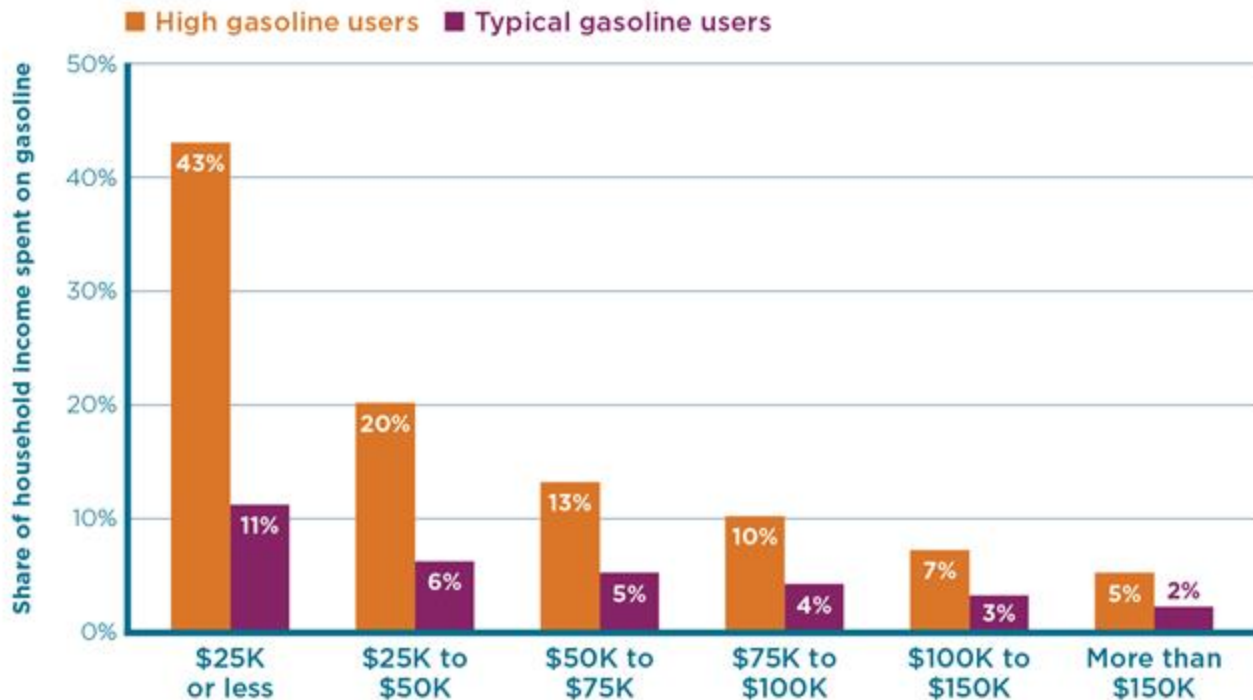
Source: U.S. Census Bureau, 2018-2022 American Community Survey 5-year Public Use Microdata Samples. **Notes:** Income categories are based on 2018-2022 median household income in Vermont of \$74,014. Energy burden refers to the share of annual household income spent on energy. Costs include fuel only and are not inclusive of equipment and maintenance costs.



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Gasoline energy burden by income in Vermont



Source: Coltura, Gasoline Data Center, 2024. **Note:** Data include only expenditures on gasoline and are not inclusive of other transportation or vehicle ownership costs. "High gasoline users," which Coltura refers to as "Superusers," are the top 10% of light-duty vehicle drivers in the U.S, in terms of gasoline consumption, 14% of Vermont drivers fall into this category.



Questions/observations:

- Do you want reported just the # of sellers (gasoline stations, fuel dealers) or also the volume of fuels sold and # of employees in each energy sector?
- Note: statewide transportation fuel sales data is available from the Tax Department, as are fuel oil/kerosene and propane sales. Fossil gas (aka natural gas) sales data is available from VGS.
- Note: statewide clean energy employment is tracked and reported in the Clean Energy Industry Report from the Clean Energy Development Fund



Questions/observations:

- Would recommend looking at *total* energy spending in Vermont (i.e., all fuels, broken down by type – not just electricity rates).
- Fuel oil, kerosene and propane prices are tracked by Public Service Department (PSD), in collaboration with (Energy Information Administration) EIA.
- Gasoline prices reported by PSD
- Fossil gas (aka natural gas) prices reported by VGS
- Diesel prices tracked and reported by VTrans (fuel price adjustment document)
- *Prices for cord wood, wood chips, and wood pellets not currently tracked/reported for Vermont*

