ButtonUp Vermont

A Home Energy Workshop

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Workshops produced by

Capstone Community Action

In partnership with

Efficiency Vermont

What will we learn today?

- Why should we Button Up Vermont?
- What are the energy conservation and efficiency opportunities?
- How do homes and buildings lose heat?
- Take Action! Resources to help you Button Up.

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Why should we Button Up Vermont?

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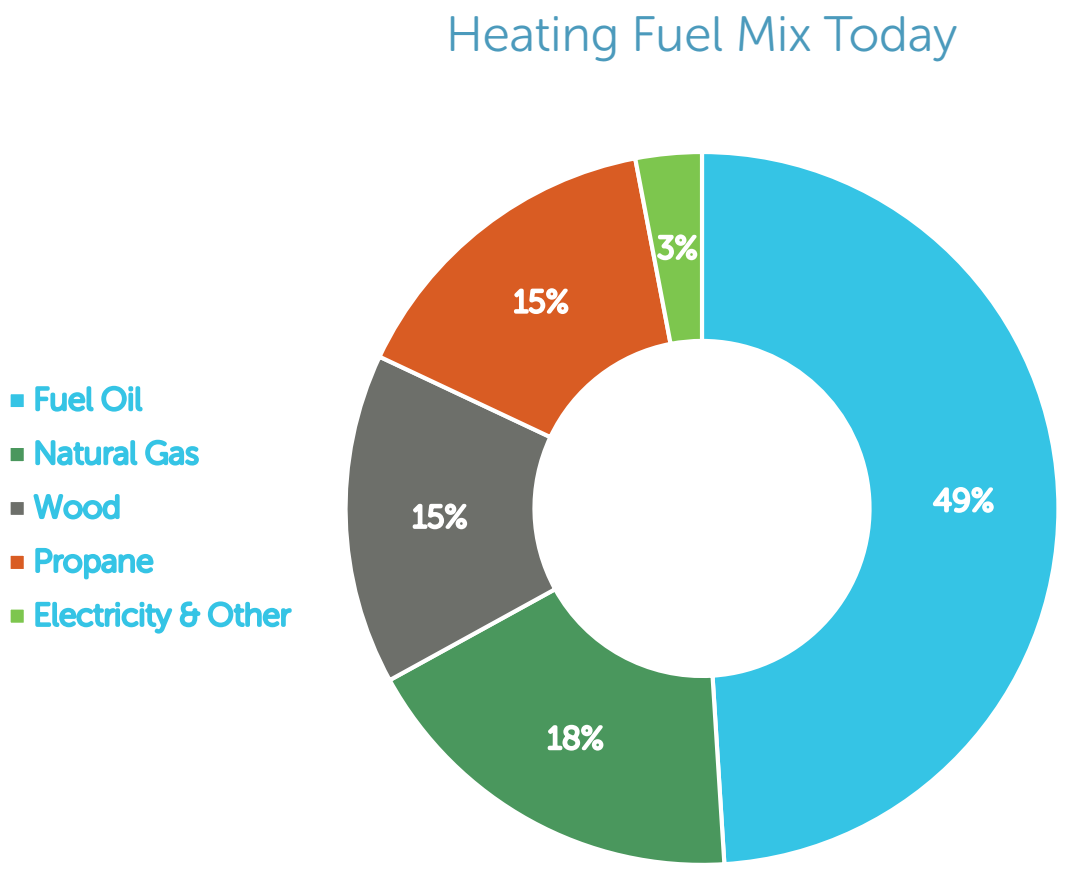
Vermont's energy situation



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Provided by Vermont Public Interest Research Group

A Comparison of Heating Fuels

Fuel Type	Unit	BTU/Unit	Efficiency	$/Unit	$/MMBtu
Natural Gas	Therm	100,000	90%	$ 1.48	$ 16.44
Wood	Cord	22,000,000	60%	$ 227.00	$ 17.20
Pellets	Ton	16,400,000	80%	$ 294.00	$ 22.41
Fuel Oil	Gallon	138,200	85%	$ 3.22	$ 27.41
Kerosene	Gallon	136,600	85%	$ 3.80	$ 32.73
Propane	Gallon	91,600	90%	$ 2.86	$ 34.69
Electricity	kWh	3,412	100%	$ 0.15	$ 43.96
Electricity (Heat Pump)	kWh	3,412	250%	$ 0.15	$ 17.58

Based on average costs over the past 5 years

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Typical Residential Heating Fuel Costs (75 MMBtu/Yr)

Fuel	Volume	Unit	$/Unit	$/Year
Natural Gas	833	Therms	$1.48	$1,233
Wood	5.7	Cords	$227.00	$1,289
Pellets	5.7	Tons	$ 294.00	$1,680
Fuel Oil	603	Gallons	$3.22	$2,055
Kerosene	610	Gallons	$3.80	$2,454
Propane	910	Gallons	$2.86	$2,601
Electricity	21,981	kWh	$0.15	$3,297

Based on average costs over the past 5 years

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Before You Button Up:

What are the energy saving opportunities?

Conservation & efficient technologies.

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Behavior & Technology

- **Conservation** – Use less energy by changing behaviors (mostly low and no-cost options).
- Behavior

- **Efficiency** – Get more work per unit of energy used with efficient products.
- Technology

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Controlling the temperature in your home

CONSERVATION

- For each degree you turn the thermostat down in the winter (around the clock), you save about 2% on your heating bill.

EFFICIENCY

- A programmable thermostat makes setting back the temperature more convenient.

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Hot water usage

CONSERVATION

- Set hot water tank temperature to 120° F
- Wrap warm pipes and electric tank

EFFICIENCY

- Install low-flow shower heads and faucet aerators
- Purchase high-efficiency hot water system

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Doing laundry

CONSERVATION

- Wash in cold water
- Only wash full loads
- Air dry clothes outside

EFFICIENCY

- Purchase ENERGY STAR® certified clothes washers and dryers

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Your home electronics

Home electronics account for about 15% of household electricity use. When your electronics are off, they may still use power – power that you pay for!

CONSERVATION

- Turn off electronics when not in use.

EFFICIENCY

- Use an Advanced Power Strip to shut the power off for you.

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Lighting in your home

CONSERVATION

- Turn off lights when they are not in use

EFFICIENCY

- Replace incandescent or compact fluorescent light bulbs (CFLs) with ENERGY STAR certified light emitting diodes (LEDs)

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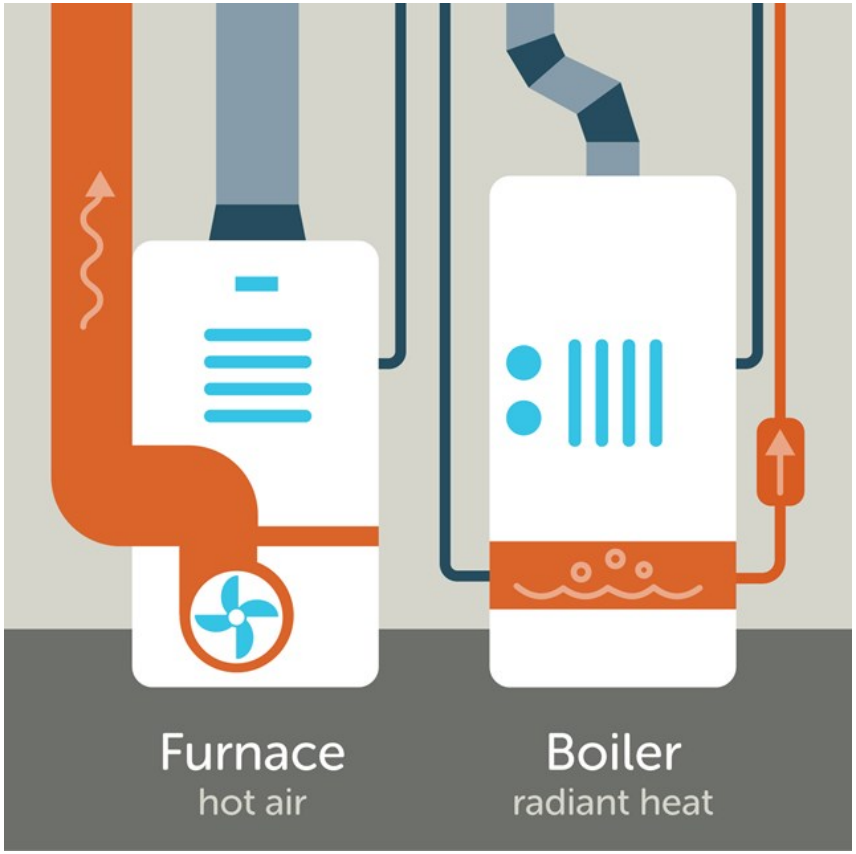
Your heating system

CONSERVATION

- Whether you have a furnace or a boiler, proper maintenance is important
- Seal ducts outside heated space
- Keep air registers clear

EFFICIENCY

- Consider investing in a more efficient heating system



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We've done the research on efficient products for you

- Look for SMART CHOICE when shopping
  - At local retailers for lighting, electronics & appliances
  - Proven to save you money and energy

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Prevent heat loss by buttoning up

Sweater & Windbreaker

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Air sealing creates an air barrier

Stops air leaks that are coming through the attic and basement

" The Shell"
or "Windbreaker"

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Insulation creates a thermal barrier

Insulation helps your home resist conductive heat loss.

"*The Sweater*" –
less effective if air flows through it

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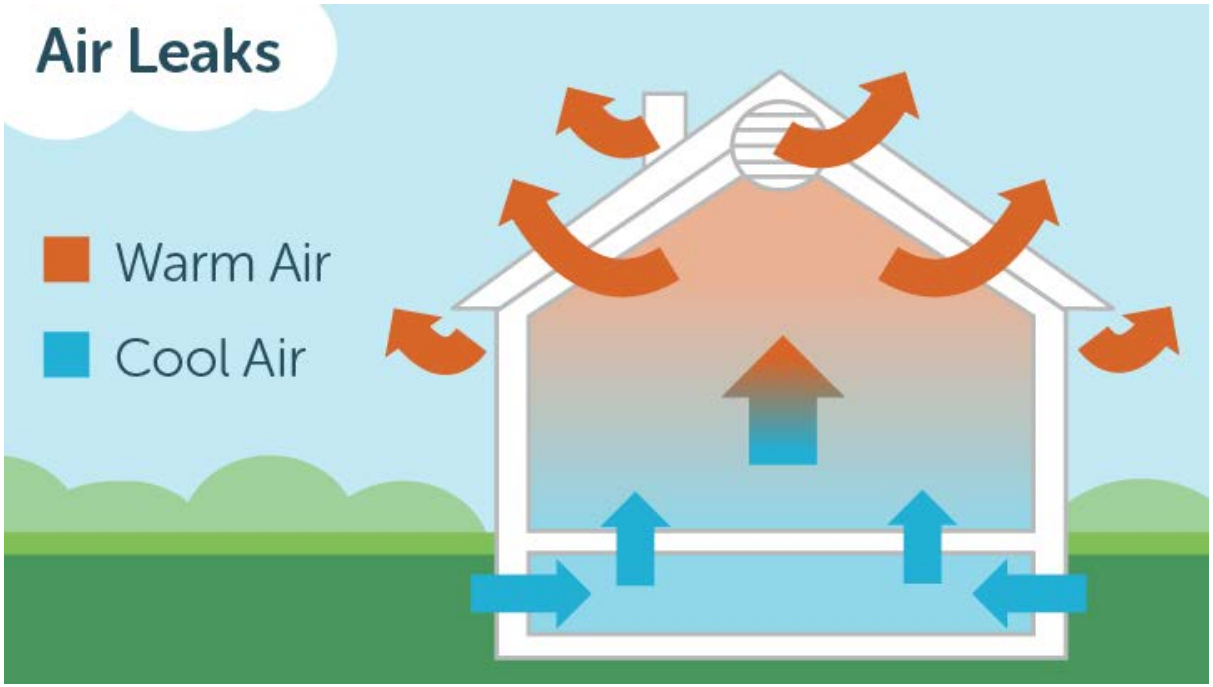
Air sealing

- Warm air pushes upward through holes at the top of house
- Warm air leaks through the top, creating negative pressure that sucks in cold air through holes at the bottom



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Air sealing priorities

- Attic – you can stop warm air leaking out
- Basement – you can stop cold air being sucked in
- Center level of house – can be challenging and costly

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Seal the attic hatch

Weather-stripping is a cost-effective way to create a seal and insulate your attic hatch

Images courtesy of EnergySmart of Vermont

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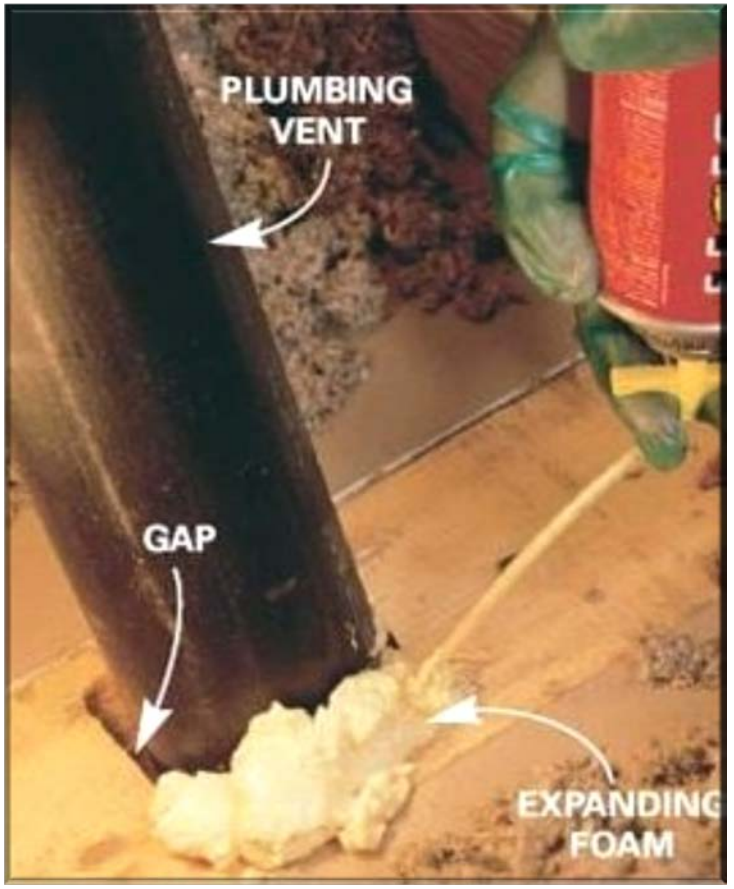
Seal plumbing penetrations



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Seal chimney bypass

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Seal the bulkhead door

Image courtesy of Efficiency Vermont

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Seal the box sills & foundation

- Seal with caulk or spray foam around rigid foam at:
  - junction of sill and foundation,
  - foundation windows,
  - plumbing and wiring penetrations,
  - and small cracks in the foundation.

Images courtesy of EnergySmart of Vermont

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Insulation priorities

- **After air sealing,** add insulation to achieve recommended R-values, where feasible

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Adding insulation

- Insulating walls and attics is one of the most cost-effective energy improvements
- Air sealing and insulation in one step: blowing cellulose fiber into closed cavities (wall, slant, floor)

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Why health and safety matter

- A BPI certified professional will test and correct any issues with:
  - **Carbon monoxide** caused by incomplete burning
  - **Moisture and mold** which can cause health and building problems
  - **Back drafting** when gases from combustion appliances come back in your house
  - Other health and safety issues

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Resources to help you Button Up

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Services are available

- If you are **income eligible**, you should contact your local Weatherization Assistance Program to find out about free home energy improvements.
- When you participate in Efficiency Vermont's Home Performance with ENERGY STAR program, you hire a certified contractor and have access to incentives.

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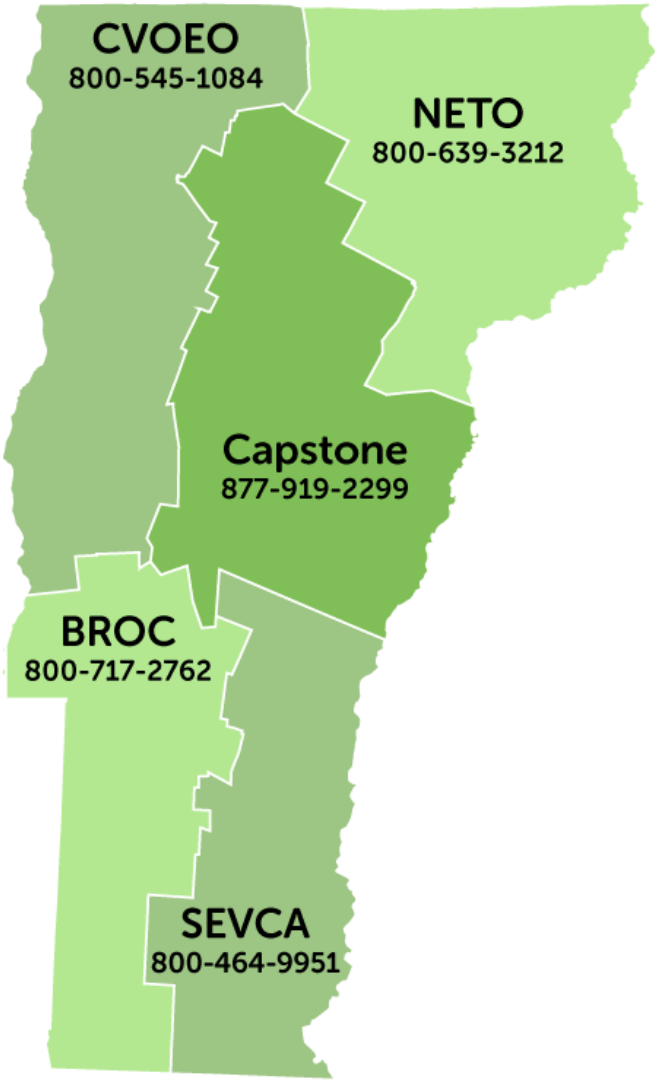
Vermont's Weatherization Assistance Program

- Free diagnostic and improvement services for low-income Vermonters, operated by Community Action Agencies
and other agencies



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DIY Weatherization

Eligible Projects:

1. Build or purchase an air tight, well insulated attic hatch
2. Air seal and insulate the box sill and rim joists in your basement
3. Build an air tight, well insulated bulkhead door in your basement
4. Spot air seal and insulate your attic
5. Install a new window, Low-E storm window or panel
6. Weatherize windows
7. Weatherize exterior doors

Visit **www.efficiencyvermont.com/DIY** for guidance and how-to videos to help you complete each project

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Home Performance with ENERGY STAR

- Eligible for incentives from Efficiency Vermont upon completion
- Visit www.efficiencyvermont.com to find an Efficiency Excellence Network contractor

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What to expect from these home energy improvement services

- A certified professional to guide your home energy improvements
- Air sealing and insulation
- Heating system improvements and recommendations
- Moisture control and ventilation
- Health and safety issues addressed

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Building Performance Program for small to medium businesses

- Incentives help reduce the cost of insulation upgrades
- Visit www.efficiencyvermont.com to find a participating contractor certified by the Building Performance Institute

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How do you pay for this?

- Incentives from Efficiency Vermont pay for a portion of the work.
- Low-interest loans from participating lenders (credit unions and banks) 4%-9%

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Heat Saver Loan	NeighborWorks of Western VT Energy Loan
Low interest	Low interest
100% financing available	100% financing available
$35,000 max amount	$40,000 max amount
Terms of up to 15 years	Terms of up to 15 years
Easy application- approval within 2 days	Easy application- approval within 2 days
No or low closing costs (can roll into loan)	Low closing costs (can roll into loan)
For thermal home energy improvements	For thermal and renewable home energy improvements
Traditional loan available to all VT homeowners	Traditional loan available to all VT homeowners
No cash-flow analysis required	No cash-flow analysis required

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Thank you!

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