



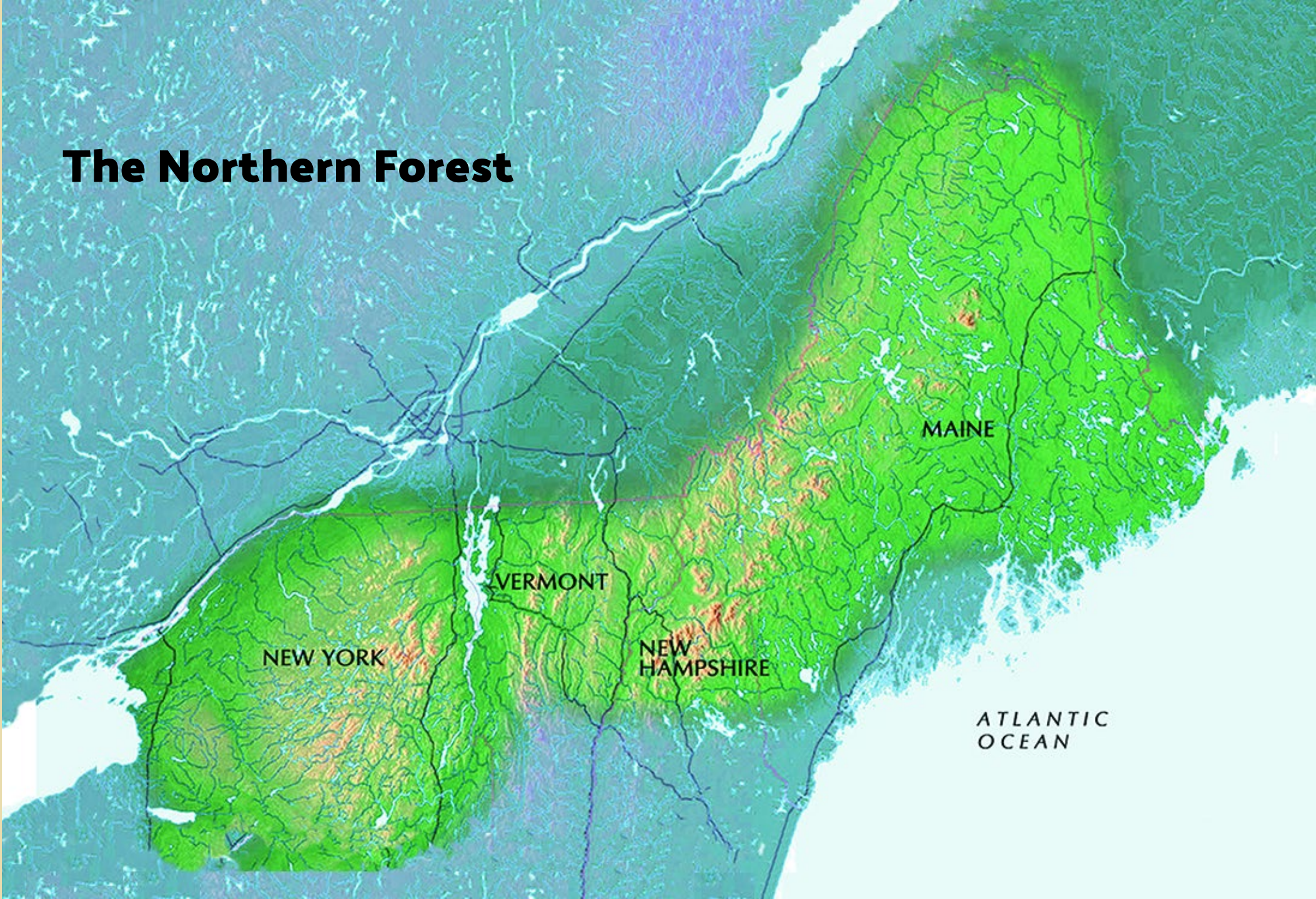
Promoting Modern Wood Heating with Feel Good Heat

Northwest Territories Biomass Week



The Northern Forest Center is a **regional innovation and investment partner creating rural vibrancy** by connecting people and the economy to the forested landscape.

The Northern Forest



NEW YORK

VERMONT

NEW HAMPSHIRE

MAINE

ATLANTIC OCEAN



Feel Good Heat is a collaborative effort by environmental and community development non-profits, wood pellet producers, and modern wood heat system distributors across New England and New York.



Evolution of the Campaign

Why Modern Wood Heat?

⚡ **The Challenge:** Declining market for pulp and paper, closure of mills across the region

The Opportunity: Whole-house automated wood heat boilers and furnaces fueled by locally sourced wood pellets and chips

- Provides a market for low-grade wood
- Encourages intentional forest management
- Creates local jobs
- Provides customers with a cost-stable, renewable heat source





Carbon

Why Modern Wood Heat

Modern wood heat helps maintain the economic viability of forests, so they stay out of development

AND

Reduce carbon emissions by 54% to 59% when substituted in place of oil and natural gas

northernforest.org/greenhouse-gases-and-wood-pellet-heat/

Greenhouse Gas Emissions of Wood Pellet Heat IN THE NORTHERN FOREST



Oct. 17, 2016

Analysis shows wood pellet fuel reduces greenhouse gas by 54% vs. oil, and 59% vs. natural gas

The Northern Forest Center commissioned a study of the greenhouse gas impacts of heating buildings with state-of-the-art wood pellet boilers. For the analysis, the Spatial Informatics Group-Natural Assets Laboratory (SIG-NAL) used data specific to the region's forest composition and harvest practices, and the pellet sourcing and manufacturing of 9 out of 10 Northern Forest pellet mills, all of which produce pellets exclusively for thermal (heat) generation. The life-cycle analysis shows:

- **On day one**, using wood pellets for heat in the Northern Forest reduces greenhouse gas emissions by more than 50% compared to oil and natural gas.
- **After 50 years**, greenhouse gas emissions from pellets drop to 62% less than oil, 67% less than natural gas, and 56% less than propane.

About this Study

SIG-NAL analyzed the greenhouse gas impacts of using modern wood heat in the Northern Forest using a forest sector life-cycle assessment tool and data not previously available.

Important Factors

SIG-NAL accounted for the following important factors in its analysis:

- The mix of energy sources used in pellet production at 9 of 10 mills in the region;
- Wood pellet composition, because the ratio of sawdust and mill residuals to low-grade wood affects the greenhouse gas impact of pellets (see page 2);
- Harvest levels. The results described in this summary are based on forest harvesting at 2015 levels, with the assumption that increased demand for pellet fiber is offset by reductions in other markets (see page 2) for no net increase in harvesting;
- Tree regrowth; and
- Forest dynamics and natural impacts that can affect unharvested trees and result in release of stored carbon.

Measuring the greenhouse gas impact of any heating fuel requires accounting for all emissions in production and use of the fuel, including:

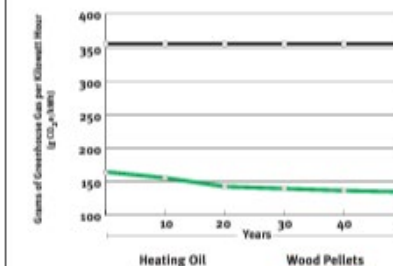
- All the greenhouse gases associated with producing the fuel (including extraction or harvesting, manufacturing or processing, transportation);
- Greenhouse gases emitted by the fuel when used;
- Efficiency of the heat generation system being used; and
- Carbon stocks in the forest such as live and dead trees (in the case of using wood).

SIG-NAL used US Forest Service forest inventory data to define forest types and age classes for a representative wood supply area within a 50-mile radius of the pellet plant, and used growth and yield projections from the Northeast Variant of the US Forest Service Forest Vegetation Simulator (FVS-NV) to assess the results of forest management options. SIG-NAL derived initial stand type and tree lists from Maine FIA plot data, which due to similarities across the Northern Forest, provided a reasonable estimation of growth response to management at the landscape scale. SIG-NAL used a new pellet life cycle assessment module for the ForGATE Forest Sector Greenhouse Gas Assessments Tool for Maine¹ to calculate total emissions for scenarios with and without pellet mills. (Herridge, C., L. Areas-Brisa, R. Cameron, J.S. Gurn, D.A. MacLean, and M. Twigg. 2015. ForGATE - A Forest Sector GHG Assessment Tool for Maine: Calculation and Overview. Gen. Tech. Rep. NRS-516. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 54 p.)

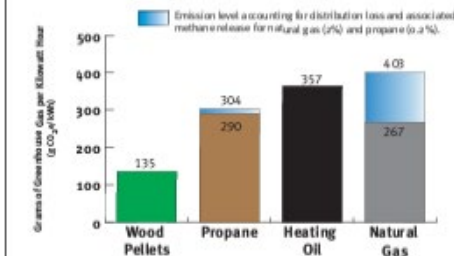
Full methodology is available at <http://nfcrcenter.org/2016/10/>

NET EMISSIONS COMPARISON—NORTHERN FOREST Life-cycle emissions by fuel type, over time

- Heating with oil produces 357 grams of greenhouse gas/kilowatt hour without reduction over time.
- Heating with pellets produces 165 grams/kilowatt hour initially and drops to 135 grams/kilowatt hour by year 50.



- At the 50-year mark, using wood pellets in modern pellet heating systems cuts greenhouse gas impact by 62% compared to oil; 67% vs. natural gas, and 56% vs. propane (based on 2015 harvesting levels and pellet composition).





Carbon

Why Modern Wood Heat?

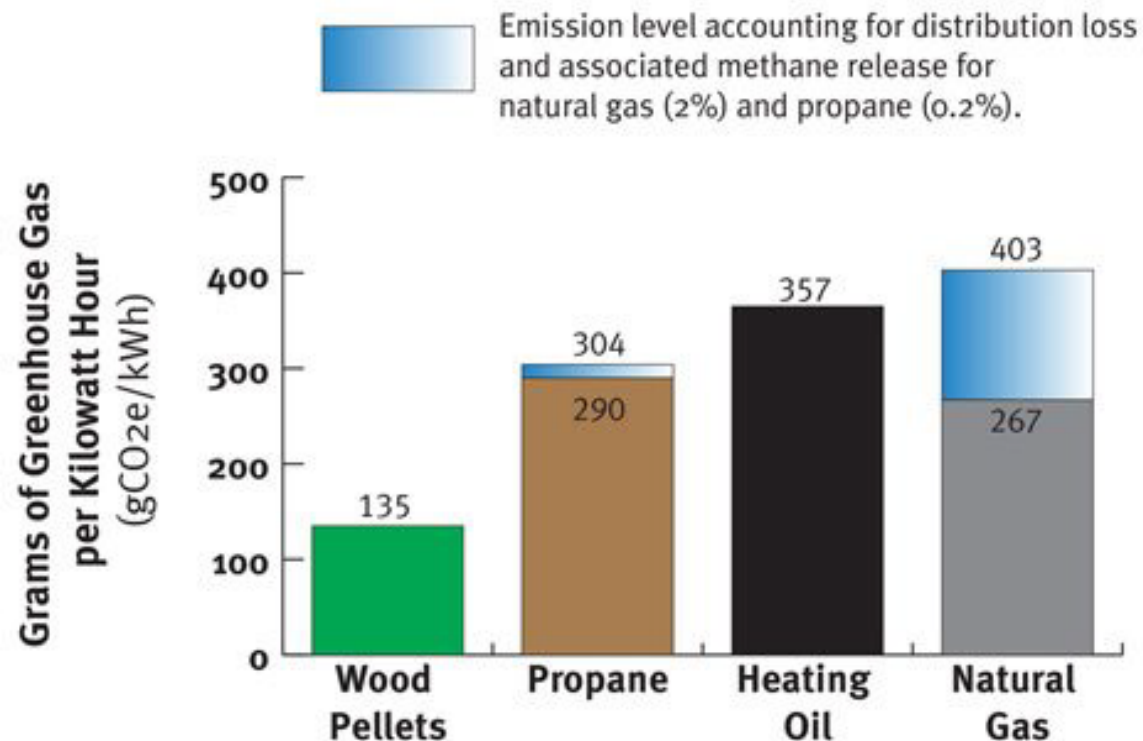
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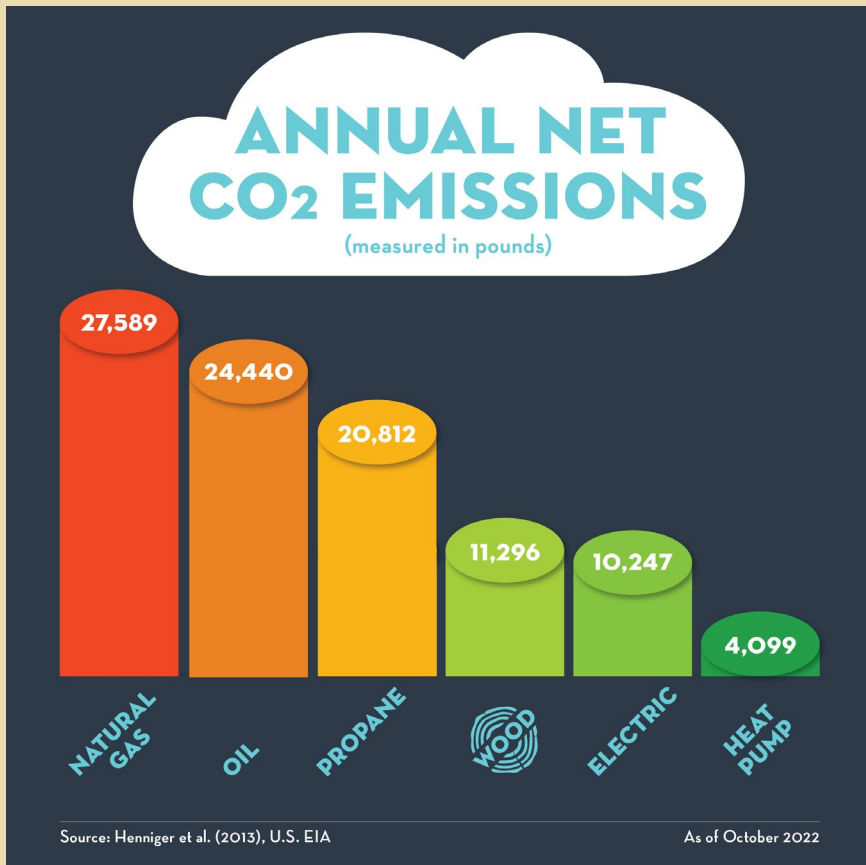
Life-cycle emissions comparison at 50-years, for the Northern Forest





Carbon

Why Modern Wood Heat?



Carbon Accounting of Modern Wood Heat Building the New Forest Future Webinar Series



Dr. Alexandra Kosiba
Extension Assistant Professor
of Forestry
University of Vermont



Dr. Robert Malsheimer
Distinguished Teaching Professor
of Forest Policy & Law
SUNY College of Environmental
Science & Forestry



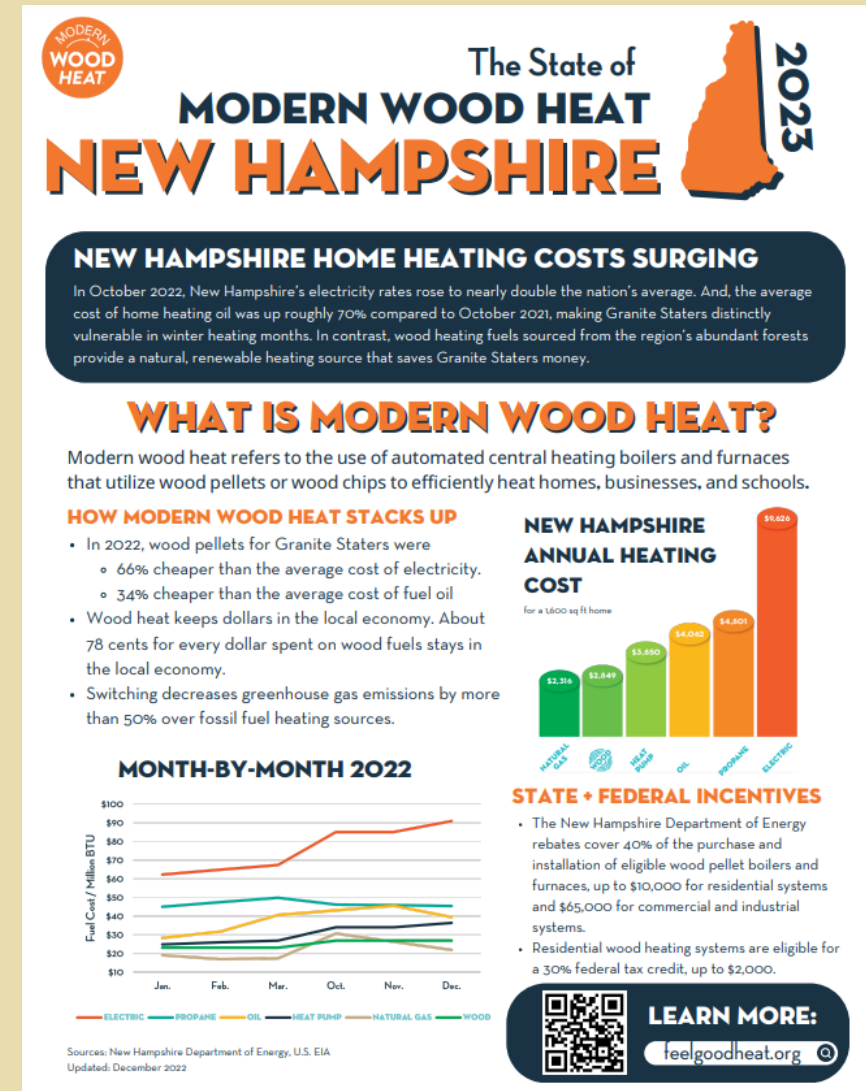
Dr. Thomas Buchholz
Senior Scientist
Spatial Informatics Group

Why Modern Wood Heat?

⤴ The trifecta of challenges in the Northeast:

- Very old housing stock that is often poorly insulated with segmented design concepts
- Heavy reliance on heating oil and propane and some of the highest electricity rates in the nation
- Long, cold winters

However, modern wood heat integrates into existing fossil-based heating systems well and is cost competitive and less volatile



MODERN WOOD HEAT

The State of
MODERN WOOD HEAT
NEW HAMPSHIRE 2023

NEW HAMPSHIRE HOME HEATING COSTS SURGING
In October 2022, New Hampshire's electricity rates rose to nearly double the nation's average. And, the average cost of home heating oil was up roughly 70% compared to October 2021, making Granite Staters distinctly vulnerable in winter heating months. In contrast, wood heating fuels sourced from the region's abundant forests provide a natural, renewable heating source that saves Granite Staters money.

WHAT IS MODERN WOOD HEAT?
Modern wood heat refers to the use of automated central heating boilers and furnaces that utilize wood pellets or wood chips to efficiently heat homes, businesses, and schools.

HOW MODERN WOOD HEAT STACKS UP

- In 2022, wood pellets for Granite Staters were
 - 66% cheaper than the average cost of electricity.
 - 34% cheaper than the average cost of fuel oil
- Wood heat keeps dollars in the local economy. About 78 cents for every dollar spent on wood fuels stays in the local economy.
- Switching decreases greenhouse gas emissions by more than 50% over fossil fuel heating sources.

NEW HAMPSHIRE ANNUAL HEATING COST
for a 1600 sq ft home

Heating Source	Annual Cost
NATURAL GAS	\$2,316
HEAT PUMP	\$2,849
WOOD PELLETS	\$3,250
OIL	\$4,043
PROPANE	\$4,801
ELECTRIC	\$9,426

MONTH-BY-MONTH 2022

Fuel Cost / Millions BTU

Month	ELECTRIC	PROPANE	OIL	HEAT PUMP	NATURAL GAS	WOOD
Jan.	~\$60	~\$30	~\$30	~\$30	~\$30	~\$20
Feb.	~\$60	~\$30	~\$30	~\$30	~\$30	~\$20
Mar.	~\$60	~\$30	~\$30	~\$30	~\$30	~\$20
Oct.	~\$60	~\$30	~\$30	~\$30	~\$30	~\$20
Nov.	~\$60	~\$30	~\$30	~\$30	~\$30	~\$20
Dec.	~\$60	~\$30	~\$30	~\$30	~\$30	~\$20

STATE + FEDERAL INCENTIVES

- The New Hampshire Department of Energy rebates cover 40% of the purchase and installation of eligible wood pellet boilers and furnaces, up to \$10,000 for residential systems and \$65,000 for commercial and industrial systems.
- Residential wood heating systems are eligible for a 30% federal tax credit, up to \$2,000.

LEARN MORE:
feelgoodheat.org

Sources: New Hampshire Department of Energy, U.S. EIA
Updated: December 2022



Cost: 2022-2023 Heating Season

Why Modern Wood Heat?

ANNUAL COST

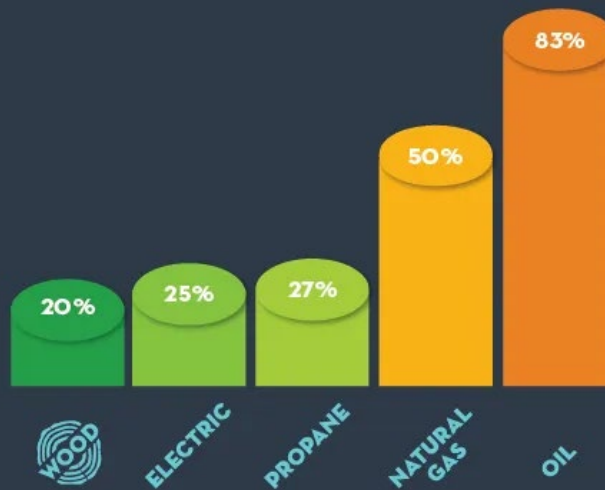


Source: NY, VT, NH, ME Energy Offices; U.S. EIA]

As of March 2023

PRICE INCREASE

Since January 2020

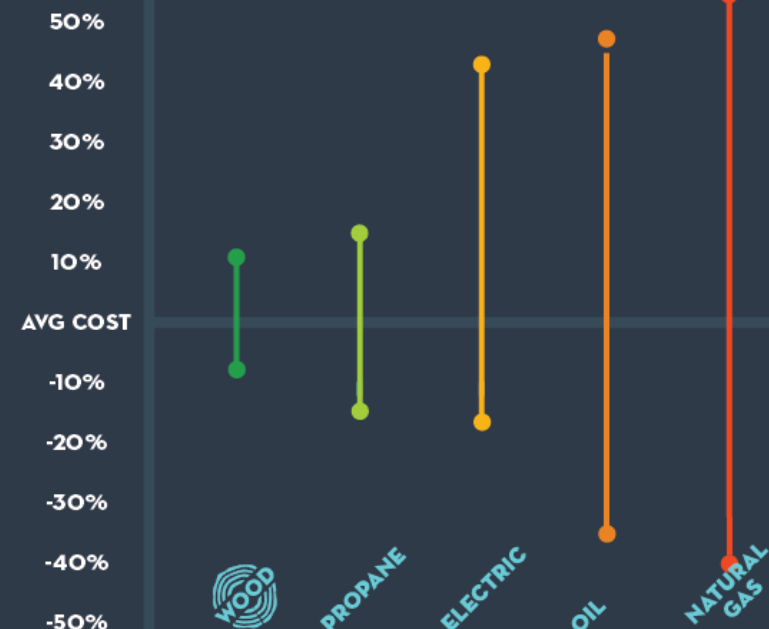


Source: NYSERDA

As of December 2022

PRICE VOLATILITY

Since January 2020



Price volatility (all fuel sources); NYSERDA, NH DOE, EIA

As of December 2022

www.feelgoodheat.org/why-switch



Education on Wood Heat

The Feel Heat Campaign

⚡ **What:** Three-year promotional, brand-neutral effort to educate consumers on residential modern wood heat.

How: Video and display ads across YouTube, Google, and Bing; updated FeelGoodHeat.org

Results: Video and display ads were viewed **35+ million times** generating **240,000+ clicks**. **171,300** visitors used FeelGoodHeat.org, and hundreds connected to wood heat system and wood fuel distributors.



The New York Times

ADVERTISEMENT



 Modern Wood Heat

Wood Heat Is In High Demand

Get Quote

Don't Be Left In The Cold; Reserve Your Modern Wood Heat System Today



Video Campaign

Piggy Bank Ad

www.youtube.com/@feelgoodheat



Start Saving with Modern Wood Heat

And start saving.

only
\$2,400
per year



Watch later Share





Video Campaign

Wood Pellets & The Forest



The Challenge: Common misunderstanding of how wood pellets affect the environment and forest management.

The Opportunity: Show the impact of using wood pellets on the forest, people, and communities.





Video Campaign

From Woods to Warmth



How: A multimedia campaign that features eight perspectives within three categories

- Video Series with 1-minute profiles
- Library of images, b-roll, and other assets

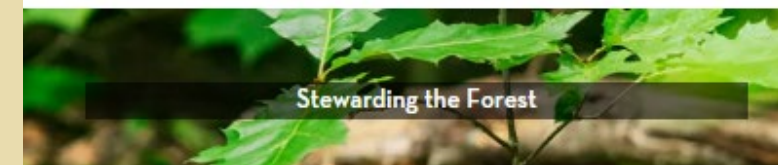
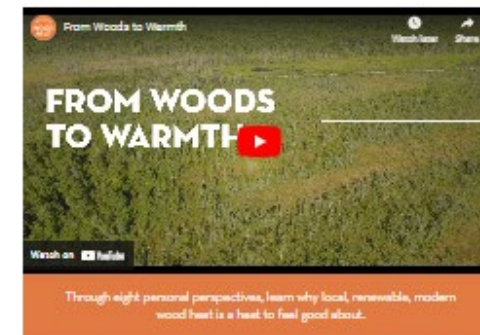
Themes: Forest stewardship, rural employment, cost savings, wood as a renewable resource

feelgoodheat.org/our-stories/from-woods-to-warmth

Discover the stories of your neighbors advocating for sustainable forest management and transforming the perception of heating with wood.

"From Woods to Warmth" delves into the interconnected narratives revealing how opting for modern wood heat, rather than fossil fuels, bolsters sustainable forest practices, generates rural employment, and offers cost savings to those who embrace it.

Enter the woods with experts who spend their days among the trees, follow wood waste as it becomes usable pellets and chips, and hear from homeowners and businesses about how modern wood heat works for them.



CONSERVATIONIST

The Penobscot Nation stewards the land with the next seven generations in mind. Chuck shares how forest stewardship and access to low-grade markets such as those for wood heat help protect the land for his daughter and others to come.

"Wood heat is important because it's a renewable resource that's not reliant on fossil fuels—it promotes wildlife, clean water, and healthy ecosystems."



LANDOWNER

Hear from Walter on how becoming a forest landowner helped him understand how logging and forest management benefits the forest, outdoor recreation, and his local community.

"I've seen instances where we could improve the wood lot, harvest some trees, and not negatively impact biking at all."





Video Campaign

From Woods to Warmth



FROM WOODS TO WARMTH



Video Campaign

Series Trailer

www.youtube.com/@feelgoodheat





Feel Good Heat Campaign

Key Takeaways



Consistent Messaging is Key

- When possible, cost comparison of wood pellets to other heating fuels is most effective message.
- Modern wood heat has many benefits – highlighting one at a time more digestible.

Images and Videos are Compelling: Faces in materials and ad content received the most interaction.

Be Transparent: Wood heat isn't always the cheapest; lean into other benefits when it's not. Installing a system has a big upfront cost, but also long term pay-off.





Feel Good Heat

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Visit feelgoodheat.org to learn more