Northern Forest Center
LIVE THE NEW FOREST FUTURE

MODERN WOOD HEAT™

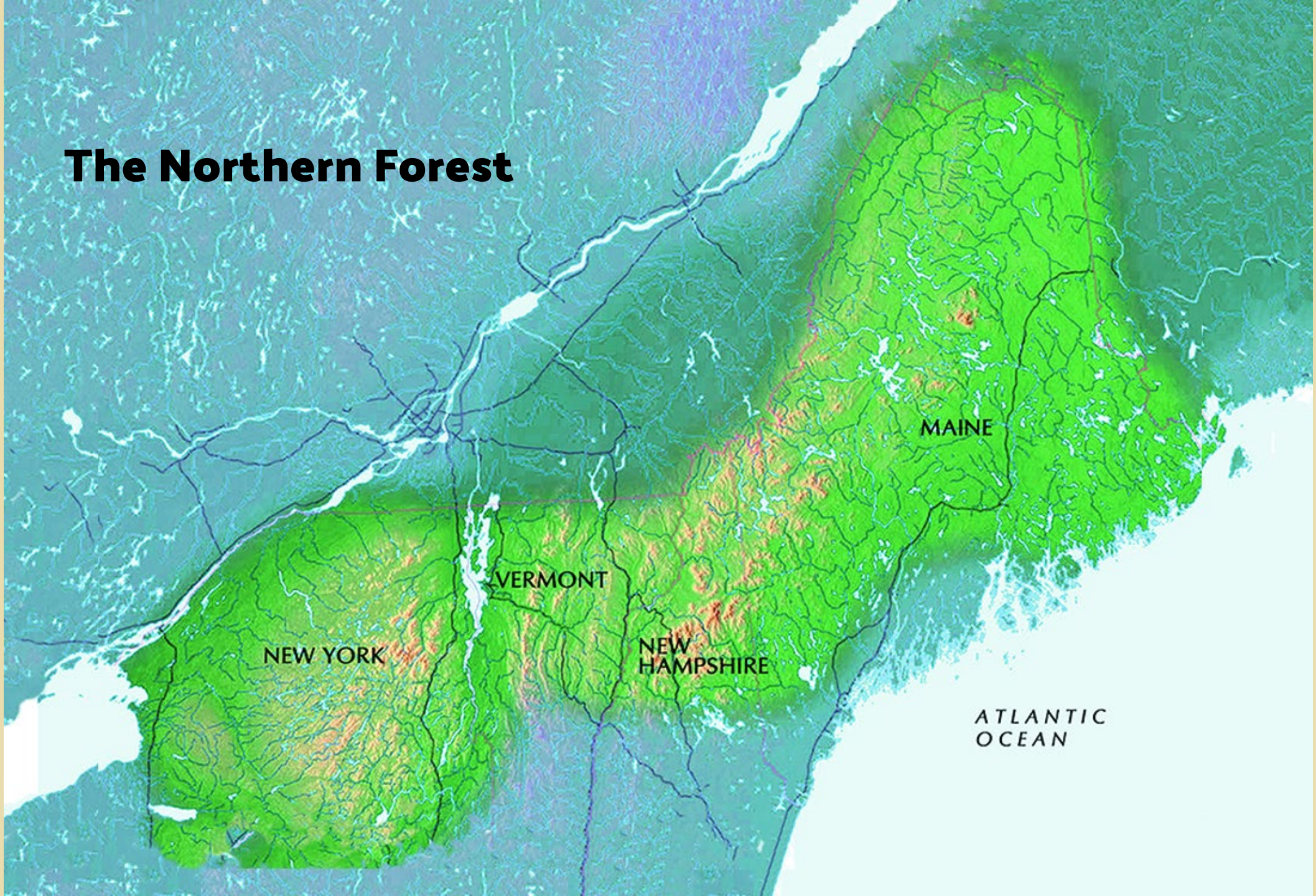
Promoting Modern Wood Heating with Feel Good Heat

Northwest Territories Biomass Week

Northern Forest Center

LIVE THE NEW FOREST FUTURE

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
MAINE
VERMONT
NEW YORK
NEW HAMPSHIRE
ATLANTIC OCEAN

MODERN WOOD HEAT

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

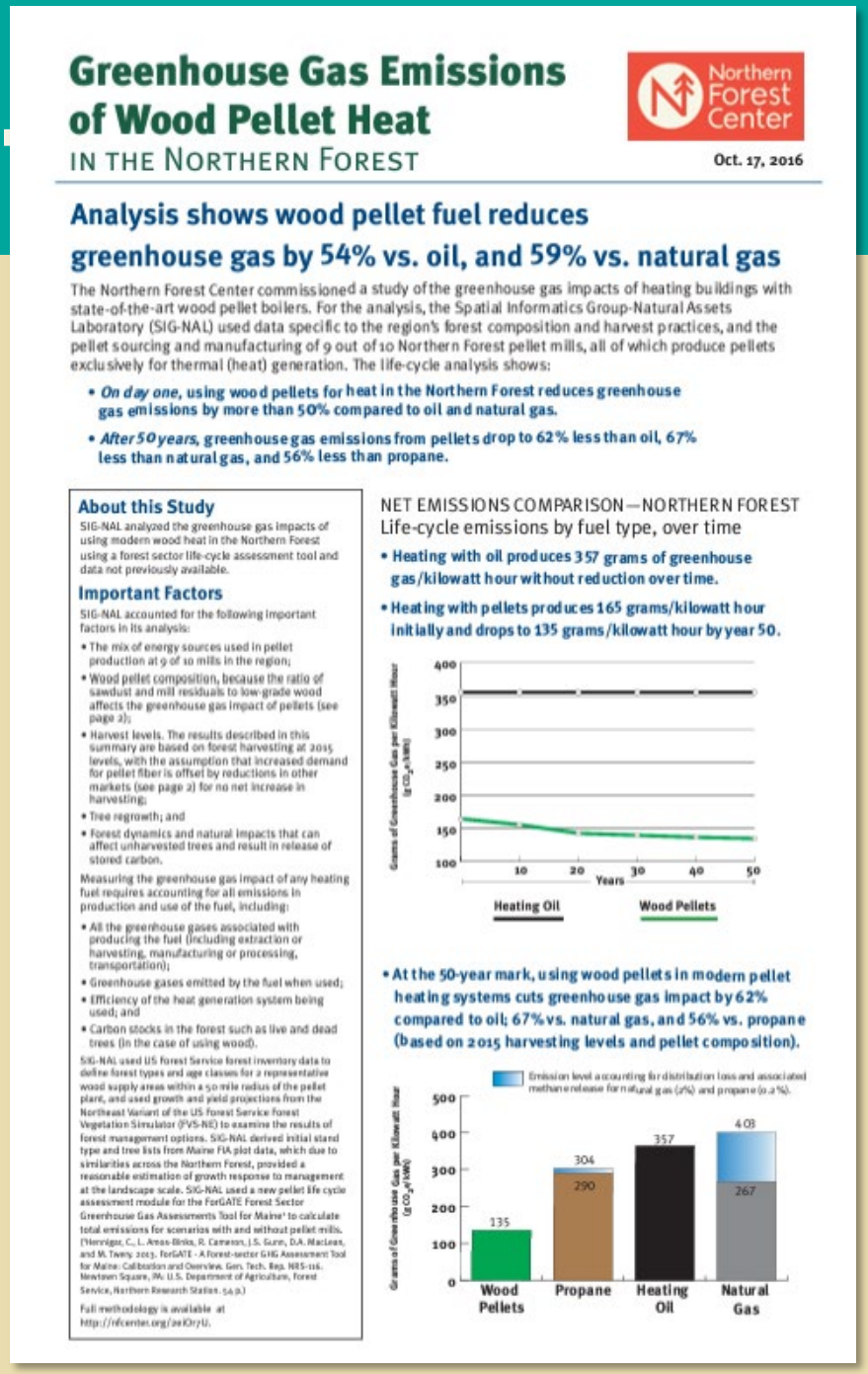
Why Modern Wood Heat

- **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

Northern Forest Center

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 2 representative wood supply areas 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-NE) to examine 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 Maine[1] to calculate total emissions for scenarios with and without pellet mills. [1Henniger, C., L. Ames-Binks, R. Cameron, J.S. Gunn, D.A. MacLean, and M. Twery. 2013. ForGATE - A Forest-sector GHG Assessment Tool for Maine: Calibration and Overview. Gen. Tech. Rep. NRS-116. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 54 p.]

Full methodology is available at http://nfcenter.org/ae1Ory1J.

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

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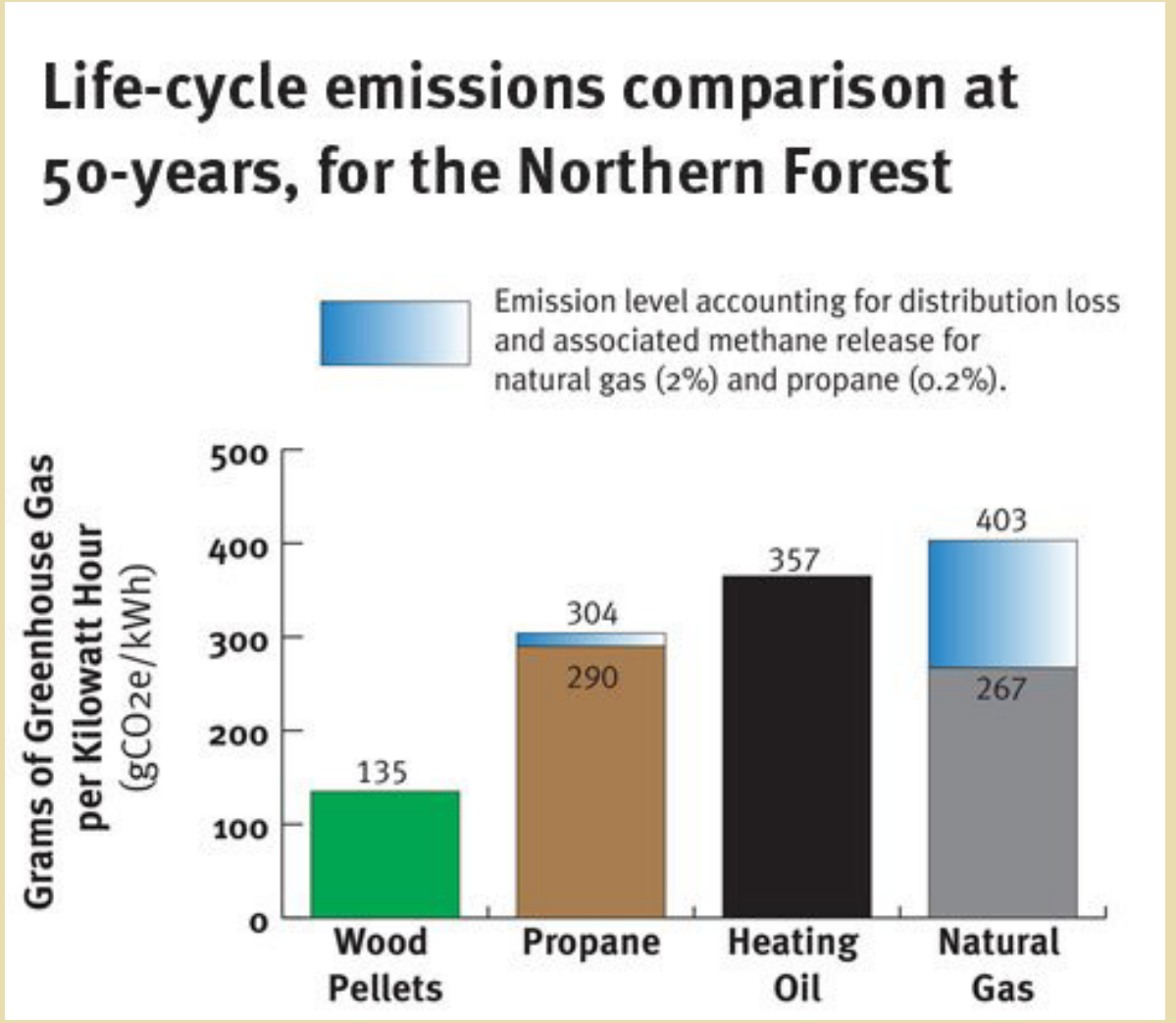
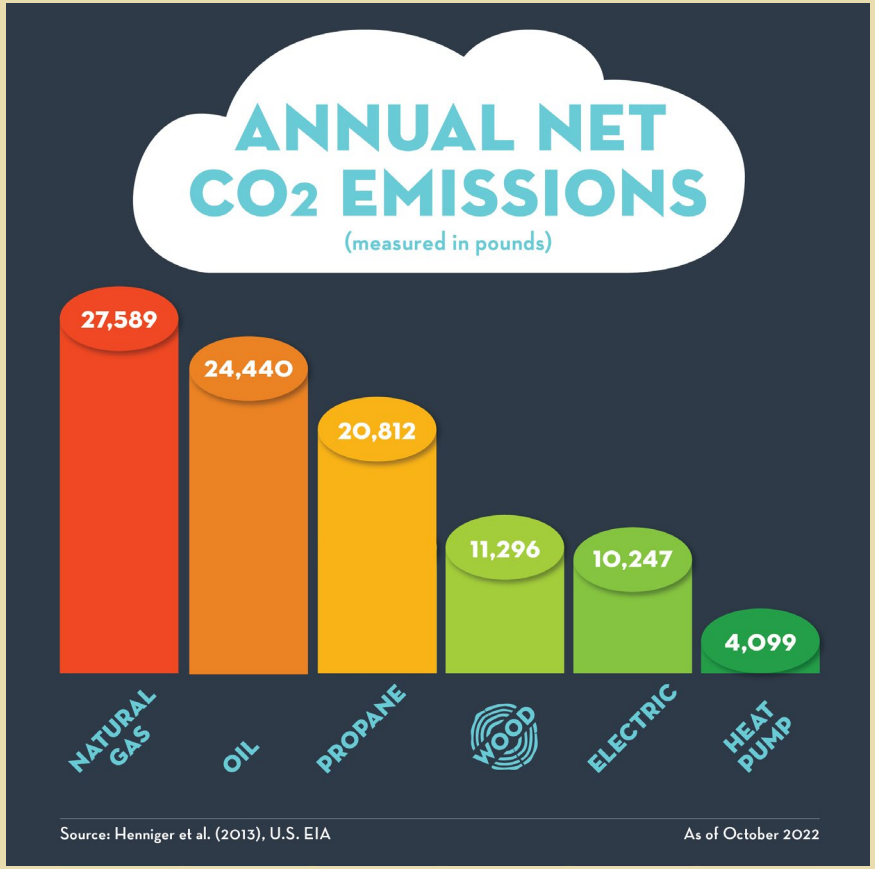


Carbon

Why Modern Wood Heat?



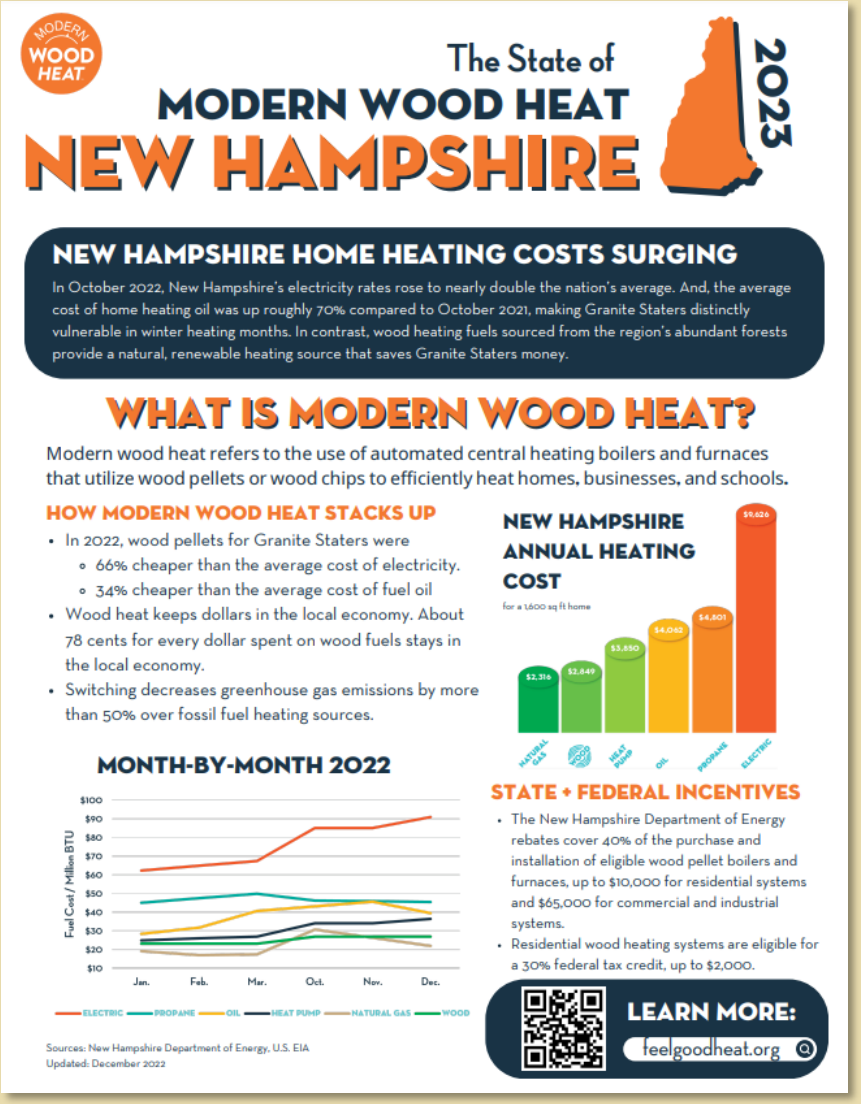
Cost

Why Modern Wood Heat?

The trifecta of challenges in the Northeast:

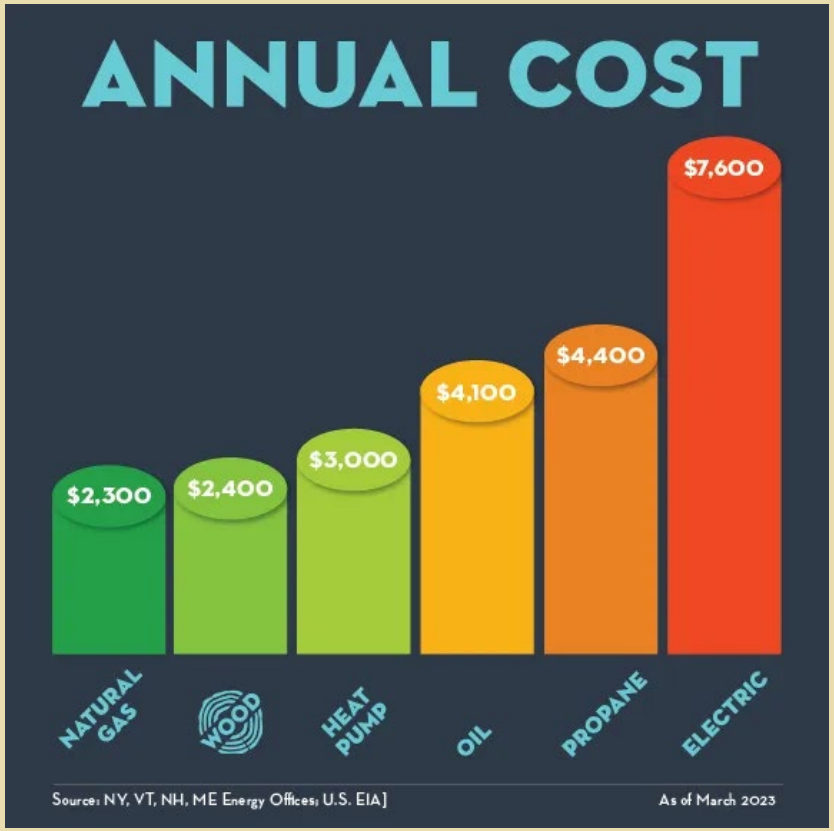
- Very old housing stock that is often poorly insulated with segmented design concepts
- Heavy reliance on heating oil and propane and some of the highest electricity rates in the nation
- Long, cold winters

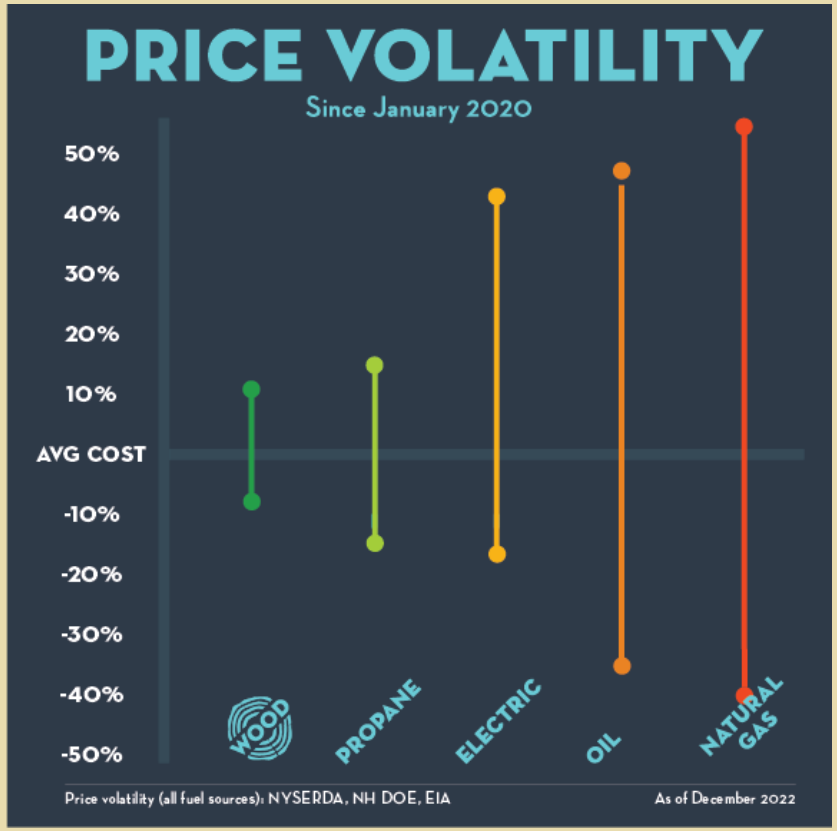
However, modern wood heat integrates into existing fossil-based heating systems well and is cost competitive and less volatile



Cost: 2022-2023 Heating Season

Why Modern Wood Heat?





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.

Video Campaign

Piggy Bank Ad

www.youtube.com/@feelgoodheat

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

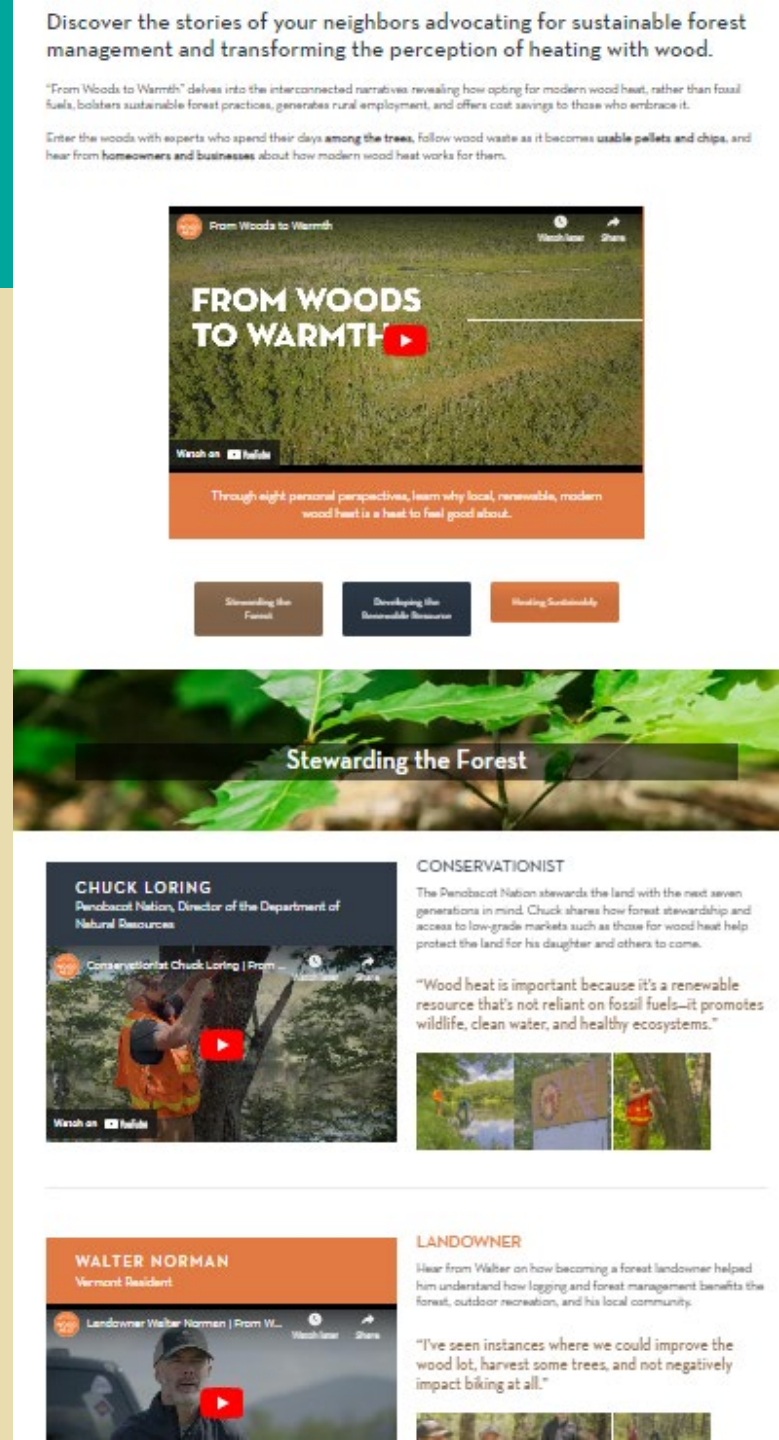
From Woods to Warmth

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



Video Campaign

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