

Heating the Northeast with Renewable Biomass: A Bold Vision for 2025

Executive Summary

The Northeast (defined here as the six New England states and New York) has a thermal energy profile unlike any other region in the country. It is heavily dependent on fossil fuels to provide heating, consuming 86 percent of the nation's home heating oil. This translates into some 5.5 billion gallons of heating oil consumption annually, a greater volume of oil than all the diesel fuel used in transportation in the region!

In 2007, this region consumed 2.09 quadrillion Btu of thermal energy, **96 percent of which was generated from nonrenewable (fossil) sources**. Thermal energy, whether for space heating (or cooling), hot water, or industrial processes, represents more than one-third of the region's total energy consumption, and in fact nationwide energy use is roughly split in equal thirds between thermal, electric and transport. The northeast's overwhelming reliance on an imported fuel has resulted in painful price shocks and heightened interest in less volatile and renewable fuel sources, such as biomass.

So what is the potential of biomass resources – both forest and farm – to heat the northeast? What are the economic and environmental implications of transitioning from fossil fuels to renewable biomass for heating homes and businesses? What policy support is needed to accelerate this transition, and bring energy independence, economic vitality and sustainable forest and farm ownership to our part of the country?

In April of this year, five collaborating organizations set out to answer these questions through a policy structured report, **Heating the Northeast with Renewable Biomass: A Bold Vision for 2025**, which outlines the path towards a significant replacement of the Northeast's fossil fuel use in heating with renewable sources. The organizations that came together were the Biomass Thermal Energy Council, the New York Biomass Energy Alliance, the Maine Pellet Fuels Association, the Alliance for Green Heat, and the Pellet Fuels Institute. The groups were aided significantly in research support for the effort by the Biomass Energy Resource Center, and William Strauss, a consulting economist with the firm FutureMetrics.

The Vision

The *Vision* calls for 25 percent of the Northeast's thermal energy demand to be met by renewable sources (biomass, solar thermal, geothermal) by 2025, with 75 percent of that amount derived from renewable biomass. Presently only slightly more than 4% of the region's thermal energy needs are being met by renewable energy. Current biomass feedstocks and projected sustainable supplies across the seven state region support these goals. A very conservative estimate identifies 19 million green tons of forest and energy crop biomass available annually by 2025 above and beyond existing biomass energy demands: 7.44 million tons from forest sources and 11.65 million tons from energy crops. An extensive analysis of available data from the USDA Forest Service, state agencies and other sources was used to develop this estimate and is fully documented in the report.

Economic and Energy Independence Benefits of the Vision

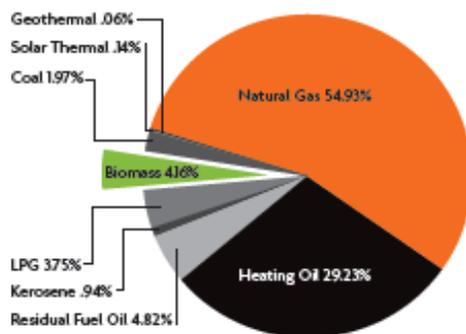
The study also documented the economic and environmental benefits of displacing heating oil and propane with sustainably produced biomass thermal energy. The increased supply of biomass and adoption of advanced chip and pellet heating technologies for residential, commercial and industrial heating and combined heat and power will create thousands of northeastern jobs and generate billions of dollars in economic activity. At the estimated 18 percent conversion rate from fuel oil and propane to biomass by 2025, the *Vision* projects:

- 1,385,000 northeastern households and businesses will use biomass for their thermal needs by 2025;
- Creation or retention of 140,200 private sector jobs from biomass harvesting and transport, fuel production, HVAC and heating appliance business growth, and other retail activities. Job losses from the displacement of fuel oil sales are estimated to be minimal, as most new job growth and retention will be by businesses that historically have delivered energy and installed heating systems, such as the fuel oil and propane industries;
- Reduced demand for foreign oil by over 20% from current consumption, or more than 1.1 billion gallons annually, with fuel dollars circulating in the regional economy instead of being exported overseas. This retention of fuel expenditures that otherwise flows out of the northeastern economy has been called the *Petro-Dependency Tax*, and amounts to over \$2 billion annually;
- \$4.5 billion in new regionally economic activity, owing to both to retention of fuel dollars and revenue from job creation.

The diagrams below summarize the present (2010) mix of energy resources used for heating the northeast, and what this mix would look like in 2025 if we are successful in achieving the *Vision*.

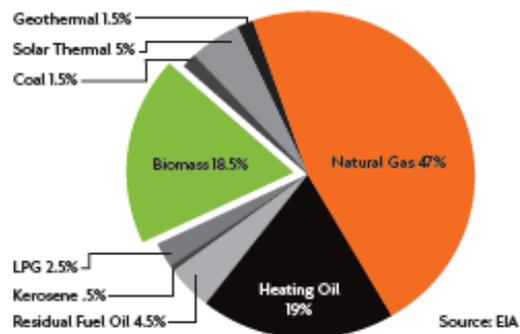
2010

New England and New York thermal energy from:



2025

New England and New York thermal energy from:



Environmental Benefits of the Vision

Environmental advantages from widespread biomass thermal adoption complement the economic benefits. Private forest landowners will have incentives to ensure long term forest management, while farmers will see new value in acres that are marginal for food production with energy crop planting and harvest. Access to and use of these sustainably produced

biomass sources will mitigate greenhouse gas emissions and harmful pollutants from fuel oil, namely CO₂, sulfur dioxide, and mercury.

The report envisions an outcome driven policy approach for advancing biomass thermal. Biomass thermal--like other renewable technologies--requires investment for significant market penetration, yet federal and state energy policy has historically focused solely on transportation fuels and electric generation. An outcome focused policy will level the playing field for renewable energy incentives by weighing efficiency, affordability, sustainability, fuel security, emissions, and climate change effects.

Vision studies are sometimes dismissed as pie-in-the-sky wishful thinking. In the case of **Heating the Northeast with Renewable Biomass: A Bold Vision for 2025**, the report and its findings and conclusions are tempered throughout by real-world analysis. One need only look to Scandinavia and western European countries to see that this dramatic transformation away from fossil heating fuels to biomass is possible: in countries such as Sweden, Germany and Austria biomass fuels have seen widespread acceptance in residential and commercial heating, district heating, and combined heat and power.

The Vision is intended to inspire optimism and fuel entrepreneurial initiative in an industry that has been hit hard by the recession of the last three years. Yes, fossil energy prices have declined dramatically from their 2008 historic highs, but expensive oil and gas will return.

The Northeast Biomass Thermal Working Group

A Northeast Biomass Thermal Working Group (NEBTWG) has been formed to advance the Vision through a coordinated strategy of advocacy, education and outreach. To learn more about NEBTWG, visit www.nebioheat.org/

Comments and discussion on the report's findings are encouraged and should be directed towards Kyle Gibeault, Deputy Director of the Biomass Thermal Energy Council. Copies of the Vision and a 4-page graphic summary can be found at www.biomassthermal.org or at www.nebioheat.org/.