Provided by Charlie Niebling - Innovative Natural Resources 8-3-16
Biomass Study Mtg.

Modern Wood Heat: Local Renewable Energy for Commercial and Institutional Building Owners

Benefits to New Hampshire in 2015

Economic Benefits

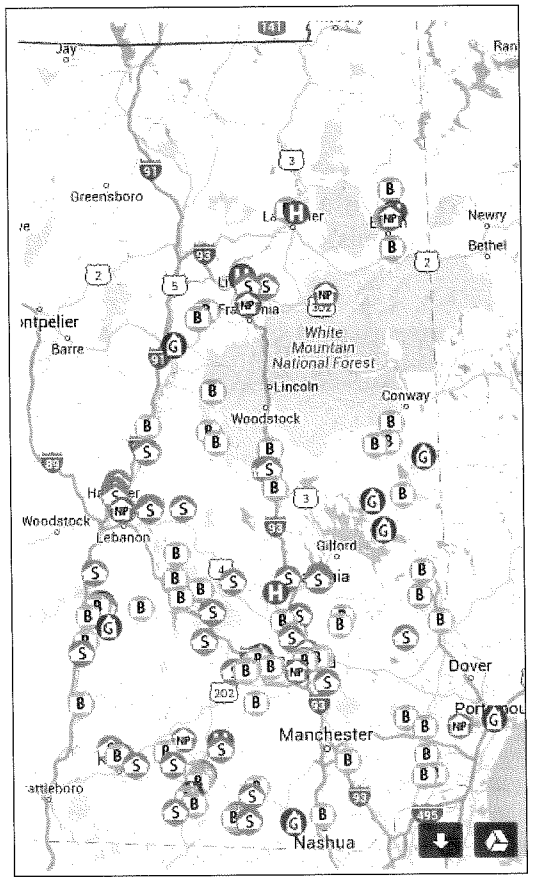
$11.8 million saved in heating costs
$5.8 million direct spending on wood pellets and chips
$35.9 million in total economic benefit to New Hampshire

Environmental Benefits

69,091-ton net reduction in carbon dioxide emissions

Proven Reliability

116 public and private buildings stay warm with wood pellet and wood chip heat



See interactive map of installed wood energy systems in New Hampshire at www.nhwoodenergycouncil.org

116 commercial, institutional and small industrial sites were analyzed for this economic impact study. The map and link above provide detailed information on each site, coded as follows:

B – business
S – school
H – hospital
G – government (state, county, municipal)

Please flip the page to see the full story!

NH WOOD ENERGY COUNCIL
PROFESSIONAL GUIDANCE ON CONVERSION TO WOOD HEAT SYSTEMS
A PUBLIC/PRIVATE PARTNERSHIP COORDINATED BY NORTH COUNTRY RESOURCE CONSERVATION & DEVELOPMENT

The Full Story

By using sustainably sourced wood chips and wood pellets instead of fossil fuels to heat commercial and institutional buildings, New Hampshire benefits economically and environmentally.

Proven: In 2015, more than 116 New Hampshire schools, hospitals, municipal buildings, low income housing facilities, and businesses used modern wood chip and pellet heating instead of imported fossil heating fuels.

Local: These facilities consumed an estimated 7500 tons of pellets and 93,000 tons of wood chips, mostly from New Hampshire forests and wood manufacturing residues.

Renewable: Nearly all these facilities burned imported heating oil in the past. By switching to modern wood heating they reduced oil use by the equivalent of 7.66 million gallons.

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Cost Effective: By switching fuels, these facilities saved about $11.8 million in heating costs vs. heating oil.

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Beneficial: Money spent on wood chips and pellets pumped $5.8 million into the local economy.

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Powerful: Direct spending on wood fuels, combined with retained wealth through heat cost savings and jobs and taxes associated with this sector generated a total of $35.9 million in economic activity in New Hampshire.

Carbon Better: Reducing use of high carbon fossil fuels and using low carbon wood chips and pellets from sustainable sources instead reduced overall carbon dioxide emissions by 69,091 tons.

Analysis by NH Wood Energy Council—All data and calculations available upon request

Key Assumptions in Analysis

Moisture Content	Bone dry wood at 0% moisture content = 4.9 MWH per ton energy content; Chips at 40% moisture content = 2.9 MWH/ton; pellets at 4% moisture content = 4.7 MWH/ton; Dry chips at 30% moisture content = 3.4 MWH/ton; solid wood at 20% moisture content = 3.9 MWH/ton.
Efficiency	Chip boiler AFUE = 75%; Dry chip boiler AFUE = 80%; Pellet boiler AFUE = 85%; Cordwood boiler AFUE = 60%; Oil boiler AFUE = 80%
Fuel Cost	Green chips delivered price/ton = $50/ton except for Concord Steam, $30/ton; Bulk pellets delivered price/ton = $240/ton average; Dry Chips delivered price/ton = $125/ton average
Energy Equivalents	1 MWH = 3,412,000 BTU; 1 Gallon #2 Heating Oil = 138,000 BTU
Savings Calculation	Heat cost savings vs. oil calculated by using 5 year rolling averages for cost of heating oil per NHOEP
Economic Impact Calculation	Total Economic Impact = $ spent on fuel x 90% (90% stays local) + heat cost savings x multiplier of 2.1 (multiplier per Ontario Ministry of Natural Resources; total formula per Northern Forest Center)
Carbon Calculation	Using sustainably sourced wood fuels reducing net atmospheric carbon emissions by 82% compared to oil (Source: BERC)