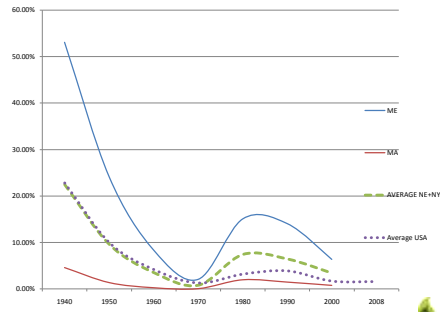


How is our industry “green”?

By John Ackerly

NEHPBA Annual Meeting
Albany, June 6, 2010

Households with wood as their primary heating source



Overview

- Forestry/sustainability/carbon
- Emissions
- Economic impact/Jobs
- Who are the true renewable energy leaders?
- Discussion/debate

Ten Reasons Wood Heat is “Green”

1. It's a renewable energy resource

Renewable means you don't run out. As long as its sustainably harvested and we do not take more than we are re-growing, wood heat is renewable.



2. Doesn't contribute to global warming

Burning fossil fuels such as oil and natural gas is like pumping carbon dioxide from the centre of the earth into the atmosphere – a one-way trip. Wood heat is a two-way trip. When wood burns, the carbon dioxide is released, only to be absorbed again by young trees.

3. Keep heating dollars in your community

Stop writing checks every month to the energy utilities. Buying cord wood usually keeps your money in your immediate neighborhood or at least within 50 miles.



4. Heat a smaller space, not your whole house

With a wood or pellet stove you can just heat the part of your house you use the most. Regardless of what you pay for energy, you can clip at least 25% right off the top and minimizes the fossil fuel heat that you are taking from the earth.

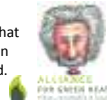
5. **Wood heat is much cleaner than it used to be**
Pre-1990 wood stoves usually emitted 30-60 grams of particulates per hour. Today's wood stoves usually emit under 4.5 gr/hr.



6. **Wood heat is affordable renewable energy for working families**
Unlike solar and geothermal, wood heat is accessible for all economic classes. Wood heat is everyman's renewable.

7. Raise your energy I.Q.

Flick the switch, turn up the thermostat. Now, what did that cost? What impact did it have on the natural world? What sins were committed in getting that energy to you? You're in touch when you heat with wood.



8. Wood heat creates jobs in rural areas

Wood heat creates tens of thousands of jobs in most states including in forestry, transportation and retail sectors.

9. Wood heat helps us be self-reliant

Wood heat helps us be responsible for our own energy consumption and the negative impacts from it, instead of the NIMBY attitudes that are content to have impacts of energy felt in someone else's community, either here or abroad



10. Wood heat can allow us to save money and spend it elsewhere

For the poorest of families, large fossil heating bills make it hard to put good food on the table during the winter. Saving money on heating allows us to give our kids opportunities, to invest in ways to reduce other energy use, etc.



10 Reasons we are not “green”

Technology

1. Old stoves
 - Only 10% of existing stoves are EPA certified
 - Too polluting and too inefficient
2. Traditional hydronic heaters
 - Less than 10% are EPA qualified
3. Our government has not invested R&D funds to make cleaner technology.
4. Lack of automation



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Inexperienced or negligent practices

5. Too many people burn green wood. Either
 - a. not seasoned enough, or
 - b. not covered properly once its seasoned
6. People burn trash in hydronic heaters
7. People choke down the air too often



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Other Issues

8. Transporting firewood can spread invasive bugs like the emerald ash borer.
9. Pellets shipped overseas are not so low carbon
10. Cord wood not always harvested as sustainably as it could be



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Carbon Cycle - Requirements for Sustainability

1. Grow more wood than we burn.
2. Do not cut down old growth forests
3. Do not convert forest to farmland
4. Need carbon reductions over long term, not in next 20 – 40 years.
5. Protect biodiversity, water sheds & habitats.



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Sustainable Harvesting

- Cord wood harvesting rarely involves clear-cutting



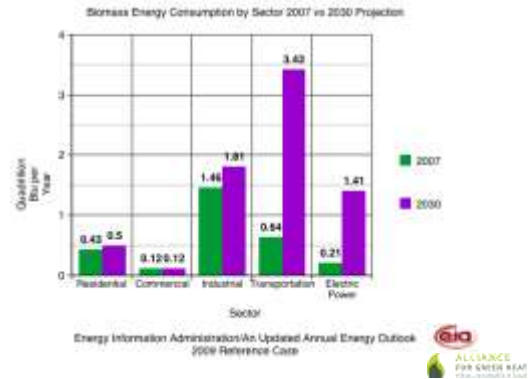
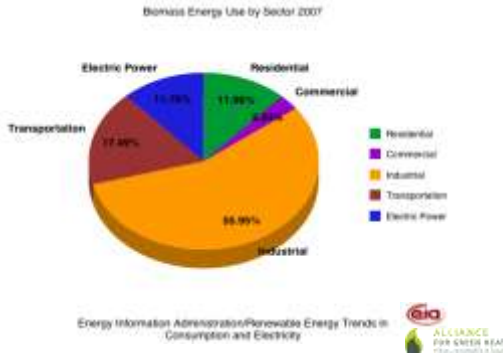
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Guidelines for Increasing Carbon Storage

- Shifting from even-aged to uneven-aged management.
- Encouraging advanced regeneration methods, such as from clear-cut to shelterwood.
- Retain reserve trees or delay their removal.
- Lengthen harvest cycles to grow trees for longer and to larger sizes.
- Encourage rapid regeneration.
- Concentrate growth on healthy crop trees that can be used to manufacture products that hold carbon for long periods.

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Residential wood heat uses very little wood compared to all the other uses of wood.



Where does our oil come from?

- Crude oil production:
 - Domestic: 1,938,128,000 barrels
 - 25% from Gulf of Mexico
 - Imported: 3,307,058,000 barrels
 - Canada: 707,316,000 barrels, 9%
 - Mexico: 400,174,000 barrels, 5%
 - Saudi Arabia: 360,934,000 barrels, 4%

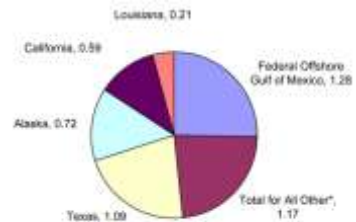


Source: Energy Information Administration, 2009



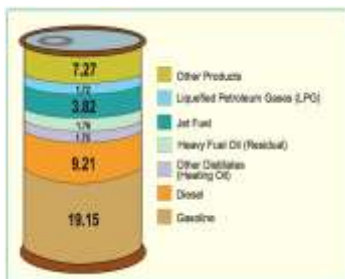
Domestic Oil Production

- 2007, million barrels/day:

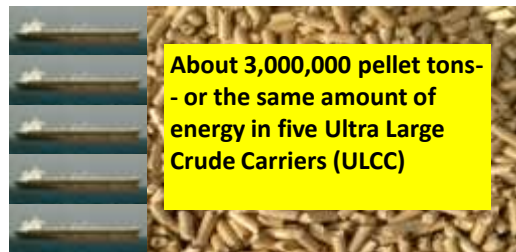


A barrel of oil (44 gallons) yields 1.75 Gallons of heating oil

- 1.75 Gallons of heating oil equals 3.2 lbs of wood pellets



Energy Equivalency of Pellet Industry



Heating is the Most Efficient Use of Biomass

Energy Potential for U.S. Biomass

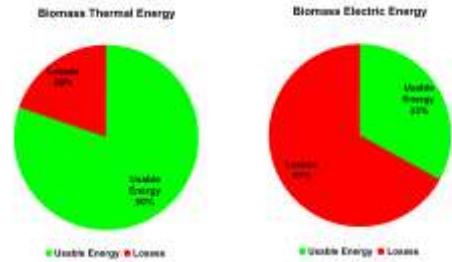
The examples in this chart are based on 1 million tons of green biomass.

Thermal Energy 78 – 85% Efficient	Electricity Feedstock 30 – 40% Efficient	Transportation Fuel 10 – 15% Efficient
Yield x 87,000 households	Yield x 73,000 households	Yield x 29,000 households
Jobs Created x 200	Jobs Created x 25	Jobs Created x 30
Foreign Import Reduction x 1,310,000 bbl. Foreign crude	Foreign Import Reduction x 0	Foreign Import Reduction x 860,000 bbl. Foreign crude
GHG Reduction x 520,000 metric tons	GHG Reduction x 700,000 metric tons	GHG Reduction x 230,000 metric tons
US Taxpayer Spending x None	US Taxpayer Spending x Production Tax Credit: \$8M	US Taxpayer Spending x Production Tax Credit: \$40M
Technology Advanced technology in place	Technology May require technology upgrade	Technology Unproven cellulosic technology required

Source: Woodpellets.com



Biomass Efficiency heat vs. electricity



U.S. wood stoves can be very clean

Vermont Castings Encore Wood Stove



The Vermont Castings Encore stove emits 0.6 grams per hour or 0.7 grams per hour of particulates for the non-catalytic version - the lowest of any wood burning stove in America. Moreover, it was designed more than 20 years ago in 1986. In 1988, the EPA set the national standard at more than 10 times the particulate level emitted by the Encore – 7.5 grams per hours.



European boilers are leading the way

Froling P4 Pellet Boiler

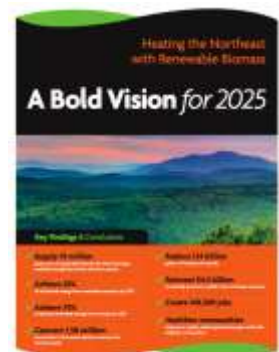


The Froling pellet boiler is a high-technology appliance that features a bulk delivery system with a built-in automatic feed device to deliver pellets. Built in Austria, it is 90% efficient and ensures optimal fuel to air ratios. The boiler can automatically remove ash using a heat exchange cleaning system - keeping combustion clean and emissions low.

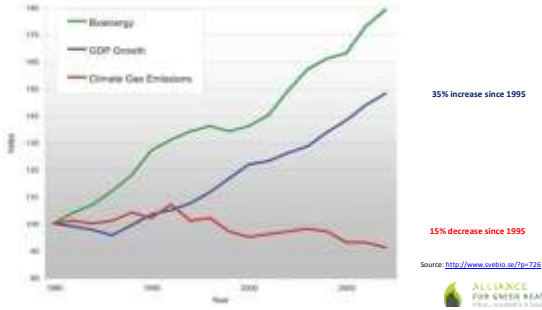


Jobs

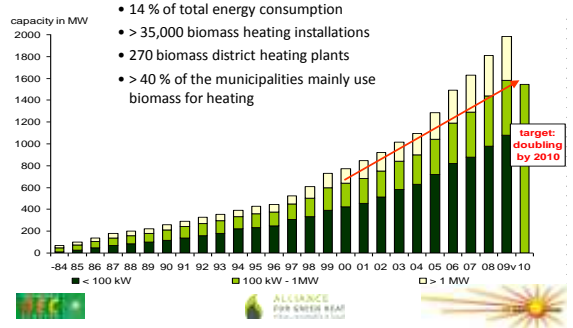
- Vision for 2025 prospects:
 - 18.50 % of all heat from biomass in NE+NY
 - Creation of 140,216 new permanent jobs
 - Displacement of 1.14 bln gallons of oil
 - Retention of \$ 1.6 bln dollars in local economy
- <http://www.forgreenheat.org/resources/vision2025.html>



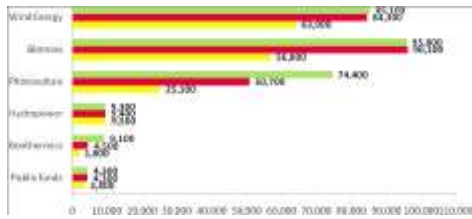
Sweden significantly reduced carbon while strengthening their economy



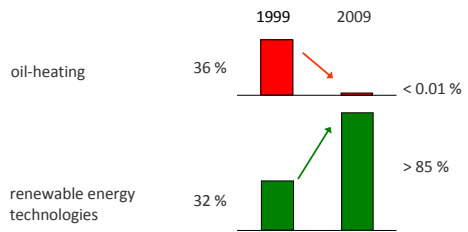
Biomass heating in Upper Austria



Biomass job potential for one country



Austria: the end of the oil-era?



Comparison of Costs and Displaced Carbon from Solar PV vs. Wood or Pellet Stove

	Typical Cost	After tax Credits & Rebates	Carbon Offset	Government Price (per ton)	Homeowner Price (per ton)	Payback Period*
4 KW Solar PV	\$30,000	\$12 - \$20,000	4 tons	\$2,500 - \$4,500	\$3,000 - \$5,000	5 - 15 years
Wood / Pellet Stove	\$3,000	\$2,100	3 tons	\$300	\$700	3 - 7 years
Wood / Pellet Furnace	\$12,000	\$10,500	7 tons	\$210	\$1,500	5 - 8 years

*Payback varies widely depending on the cost and kind of fossil fuel that is displaced and the amount used.

Average American Annual Carbon Footprint: 20 tons
Average Carbon from Home Heating: 5 tons

Tax Credits: Solar versus Wood



- Both of these homes probably generate about the same amount of renewable energy, one with solar panels and one with a wood burning stove.
- The solar family probably received \$10,000 - \$20,000 in tax credits and the wood heaters received a maximum of \$1,500 if they purchased in last 18 months - and nothing before that.

Biomass Appliances in Home Star



Whole house heaters

Indoor wood/pellet boiler/furnace
 Outdoor wood/pellet boiler/furnace
 Wood stove
 Pellet stove

Efficiency	Emissions	Rebate	Restriction
80%	none	\$1,500	
80%	.32 lbs/mmBTU	\$1,500	
75%	3.0	\$1,500	replaces existing stove
75%	3.0	\$1,500	



Summary of NY OWB regulations

Requirements applicable to New OWBs

1. emission limit of 0.32 pounds per million British thermal units (mmBtu)
2. must be located 100 feet or more from the nearest property boundary line
3. stack extending a minimum of two feet above the peak of any roof structure located within 150 feet of the OWB and no less than 18 feet above ground level.

Summary of NY OWB regulations

Requirements applicable to Existing OWBs

1. stack extending a minimum of two feet above the peak of any roof structure located within 150 feet of the OWB and no less than of 18 feet above ground level effective October 1, 2011.
2. An existing outdoor wood boiler installed prior to September 1, 2005 must be replaced with a new outdoor wood boiler or removed by August 31, 2015.
3. An existing outdoor wood boiler installed between September 1, 2005 and April 14, 2011 must be replaced with a new outdoor wood boiler or removed within ten years of the commence operation date but not later than August 31, 2020.

QUESTIONS & COMMENTS?

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