Wood Heat:
America's Favorite Renewable

A Presentation by John Ackerly,
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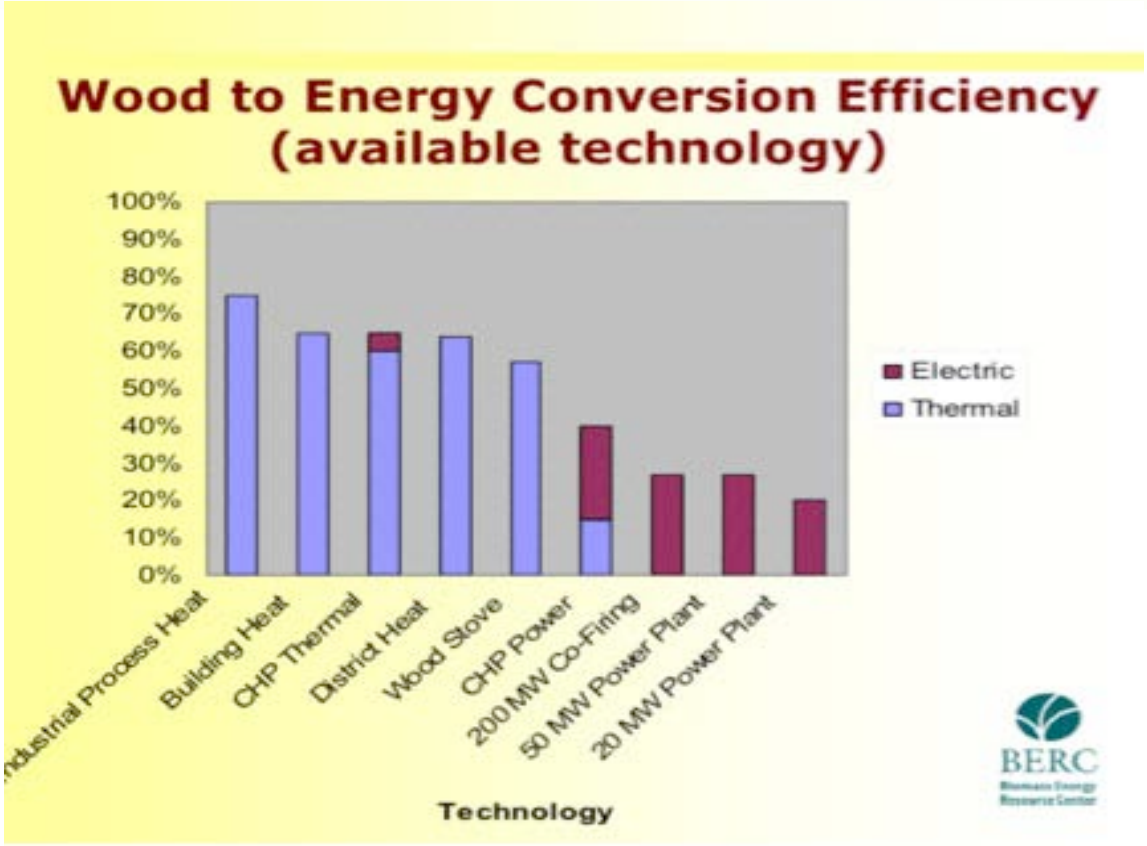
- By far most efficient use of biomass is for heating and CHP.
- Even a traditional living room wood converts biomass more efficiently than a modern power plant.



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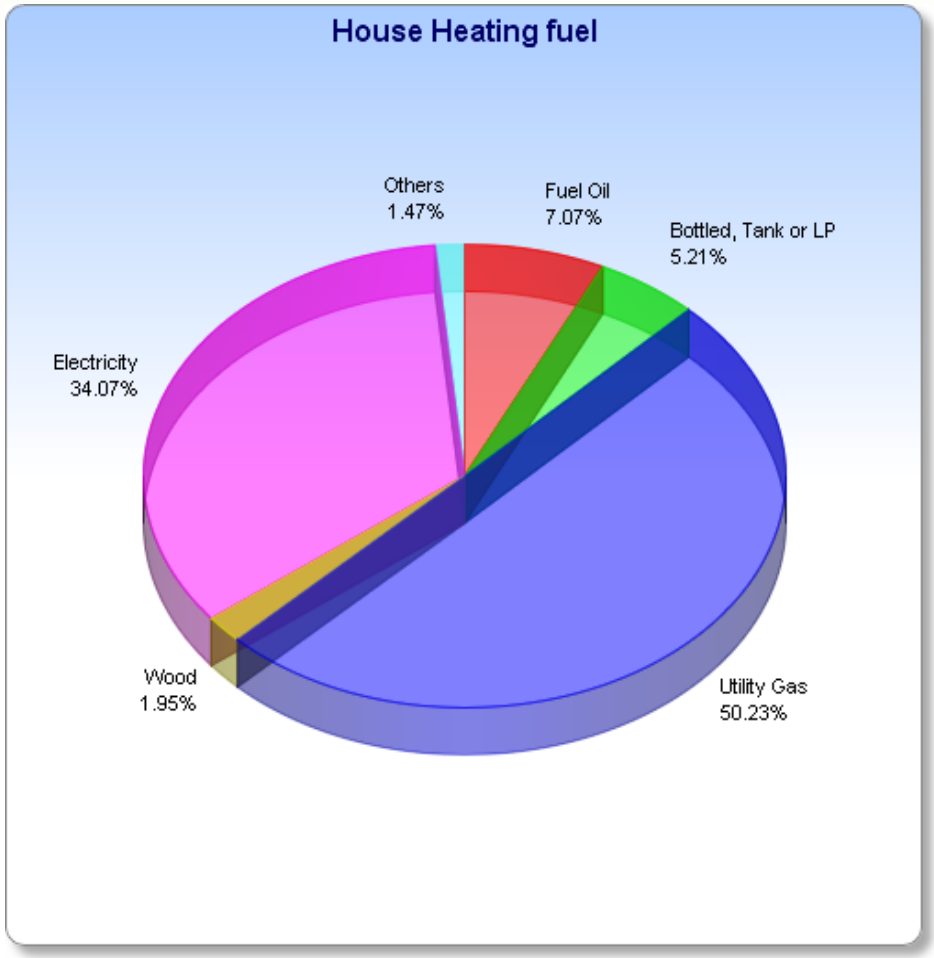
How Are Americans Heating Their Homes?



- Half of America heats with gas.
- The other half heat with very expensive fuels: LP (propane), electricity and oil.
- A rising percentage of families have a hard time paying heating bills.
- Of the 2% who heat with wood, a majority use wood stoves, followed by pellet stoves, followed by wood and pellet boilers.

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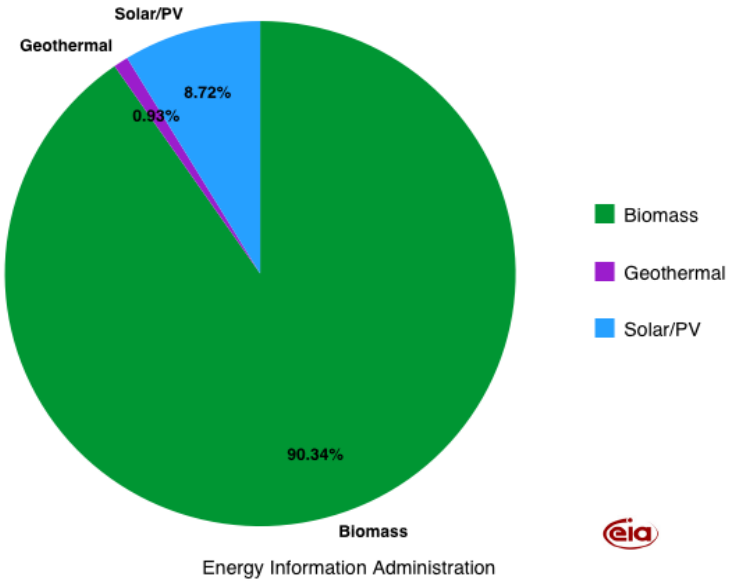
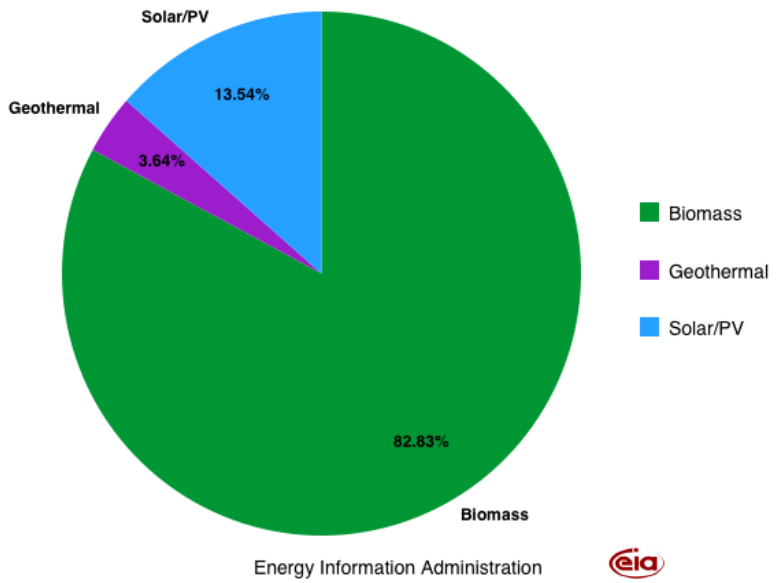
Source: US Census Bureau

Residential Renewable Heating Sources

1990



2006



- Wood dominates residential renewable energy and will continue to do so potentially for decades.
- The U.S. has the potential to champion clean, modern wood heat systems, as it does with solar and geothermal.
- Growth of solar likely to be gradual and rely heavily on incentives and tax credits.

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Who Burns Wood To Stay Warm?

The Top 10 - Per Capita Residential Wood Heating (Primary or sole source of heat)

2000	1940
Nat'l Average – 1.7%	**National Average – 22.8%**
1. Vermont – 9%	1. Mississippi – 79%
2. Idaho – 8%	2. Arkansas – 77%
3. Montana – 8%	3. Oregon – 73%
4. Oregon – 7%	4. South Carolina – 58%
5. Maine – 6%	5. Alabama – 56%
6. West Virginia – 6%	6. Georgia – 55%
7. New Mexico – 5%	7. Florida – 55%
8. Arkansas – 5%	8. North Carolina – 54%
9. Washington – 5%	9. Maine – 53%
10. New Hampshire – 4%	10. Washington – 52%

States on both lists are **Arkansas, Maine, Oregon and Washington**.

In 2000:

- Residential wood heat is most common in the Northeast and Northwest.
- New Mexico, Arkansas, West Virginia stand out.

In 1940:

- Wood heat most common again in northwest, but also in the deep south.
- New England states absent due to early penetration of coal and oil.

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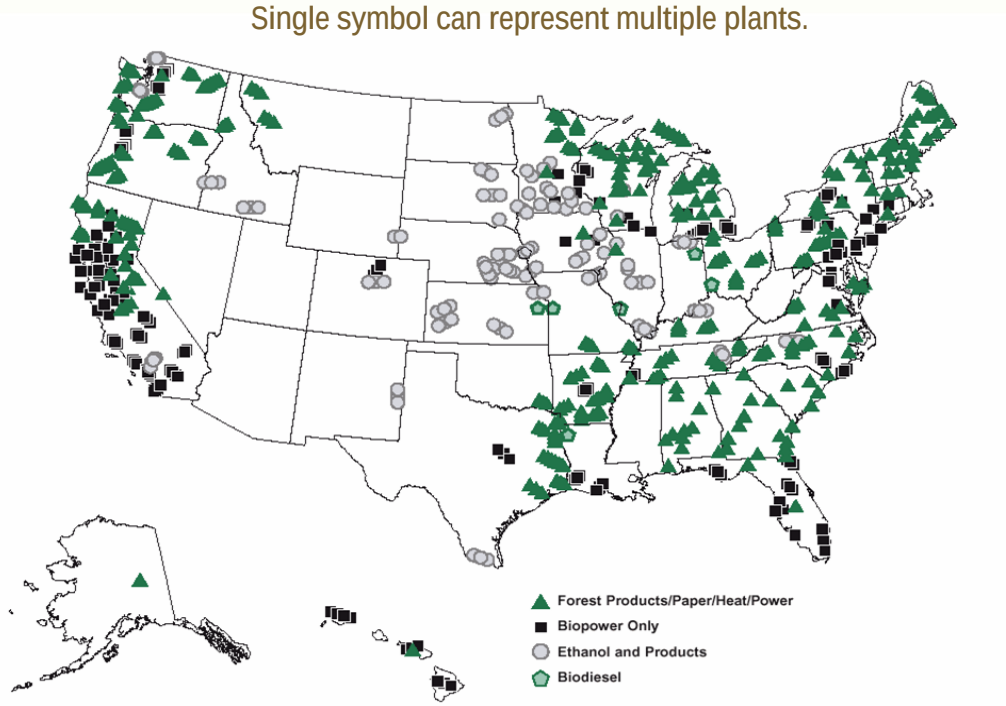
U.S. Biomass Facilities



- Most of America has significant biomass resources and can sustain a rapid rise in use of biomass for heat.
- Corn, like wood pellets, is an excellent, high efficiency heating fuel and should be developed more quickly throughout the Midwest.

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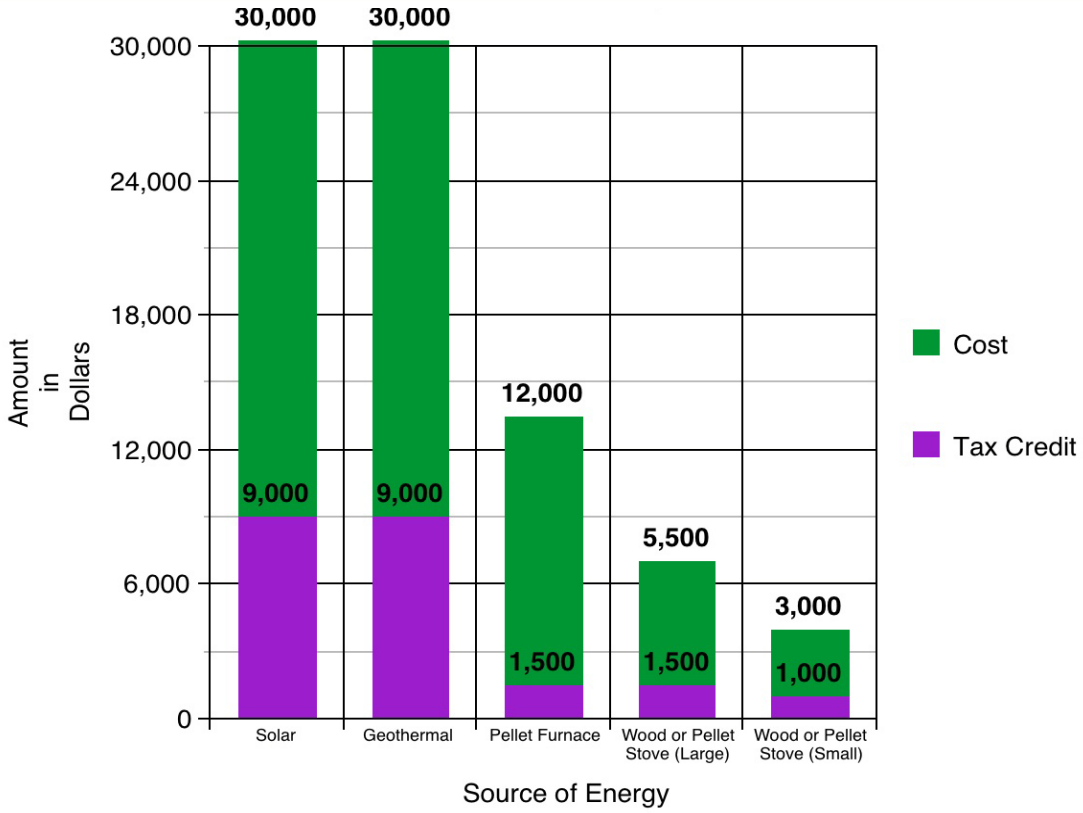
Residential Renewable Energy Tax Credits

- Federal tax credit is 30% with no upper limit for solar, wind and geothermal.
- Many states offer equally generous tax credits for solar, wind and geothermal.
- Biomass also receives 30% but is capped at $1,500 even though it is by far the most popular and useful renewable energy device for low and middle-income families



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

	Average Cost	After Rebates	Carbon Offset (Per Ton)	Government Price	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

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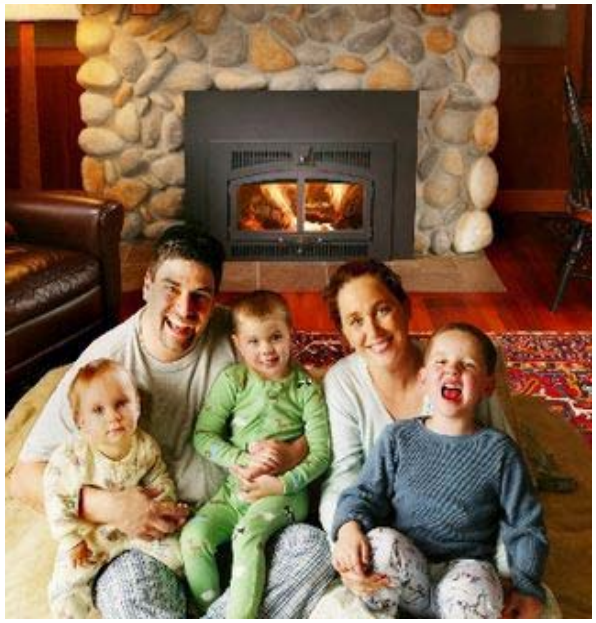
The Future of Renewable Energy in the United States



Rob Cardillo

- Both of these families represent the future of renewable energy use in the US.
- Solar and biomass technologies complement each other incredibly well: solar provides electricity and biomass heat. Neither is efficient at providing the other energy.

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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 more than $10,000 in tax credits and the wood heaters probably received nothing.
• Parity in tax credits between renewable energies could enable lower and middle income families to upgrade to incredibly modern, clean and efficient wood burning technologies.

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The Future of Residential Biomass Heating: Automated, Clean and Efficient

Ecotek Elena Pellet Stove

Froling Boiler

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Policy Recommendations

1. Eligibility

Because it provides even greater energy savings and carbon reductions than solar, wind, or geothermal, biomass should be eligible for the same types of production, investment, and usage tax credits as afforded other renewables.

2. Tax Credit

Extend the residential tax credit beyond 2010 and include biomass as a renewable energy source, not a energy efficiency measure.

3. Energy Star

Energy Star program for wood and pellet stoves to 1. steer consumers towards best appliances and 2. incentivize manufacturers to build more efficient products.

4. Change Out Programs

Fund wood stove change out programs. Similar to "cash for clunkers" but much more cost effective way to reduce pollution and greenhouse gases. $20 million is already included in Waxman-Markey bill and in the draft Senate bill.

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Policy Recommendations

5. Tiered Incentives

Consider tiered incentives and tax credits so that middle-income families receive, for example, 40% tax credit and highest income bracket only 20%, instead of everyone receiving 30%.

6. EPA Standards

The EPA is about to set new emission standards for all classes of wood burning – stoves, furnaces, fireplaces. Current standards were set in 1988 and are now lax and outmoded. Congress should monitor this and help ensure that we adopt the cleanest and most efficient possible standards.

7. Cap and Trade

Biomass heating should 1. qualify as an offset and 2. be a fundable program focus with funds from auction proceeds.

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The Alliance for Green Heat promotes biomass as a carbon neutral, sustainable and affordable heating solution.

For more information about the Alliance and to sign up for our monthly e-newsletter, go to www.forgreenheat.org

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