



U.S. and European Incentives for Residential Thermal Biomass

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The Federal Landscape

- Residential thermal biomass regulated by air quality experts at EPA who often want to see fewer, cleaner units in operation.
- Other renewables regulated by DOE, which seeks to expand their systems
 - Biofuels
 - Biomass to electricity
- USDA – has some programmatic focus & support for thermal biomass through their Wood Energy Resource Center (WERC)



National Non-profits

Most support biomass to electricity to some degree;
none even has a sentence on thermal biomass

- Environmental Defense Fund
 - www.edf.org
- Friends of the Earth
 - www.foe.org
- Greenpeace
 - <http://www.greenpeace.org/usa/>
- NRDC
 - www.nrdc.org
- Nature Conservancy
 - www.nature.org
- Sierra Club
 - www.sierraclub.org
- Union of Concerned Scientists
 - www.ucsusa.org
- Wilderness Society
 - www.wilderness.org



State & Regional Groups

Much more progressive policies and programs that stress efficient uses of biomass

- The Forest Guild
 - www.forestguild.org
- National Rural Assembly
 - <http://www.ruralassembly.org/>
- NYSERDA
 - www.nyserda.org
- Rural Voices for Conservation Coalition
 - <http://www.sustainablenorthwest.org/rvcc>
- Southern Environmental Law Center
 - <http://www.southernenvironment.org/>
- Sustainable Northwest
 - www.sustainablenorthwest.org

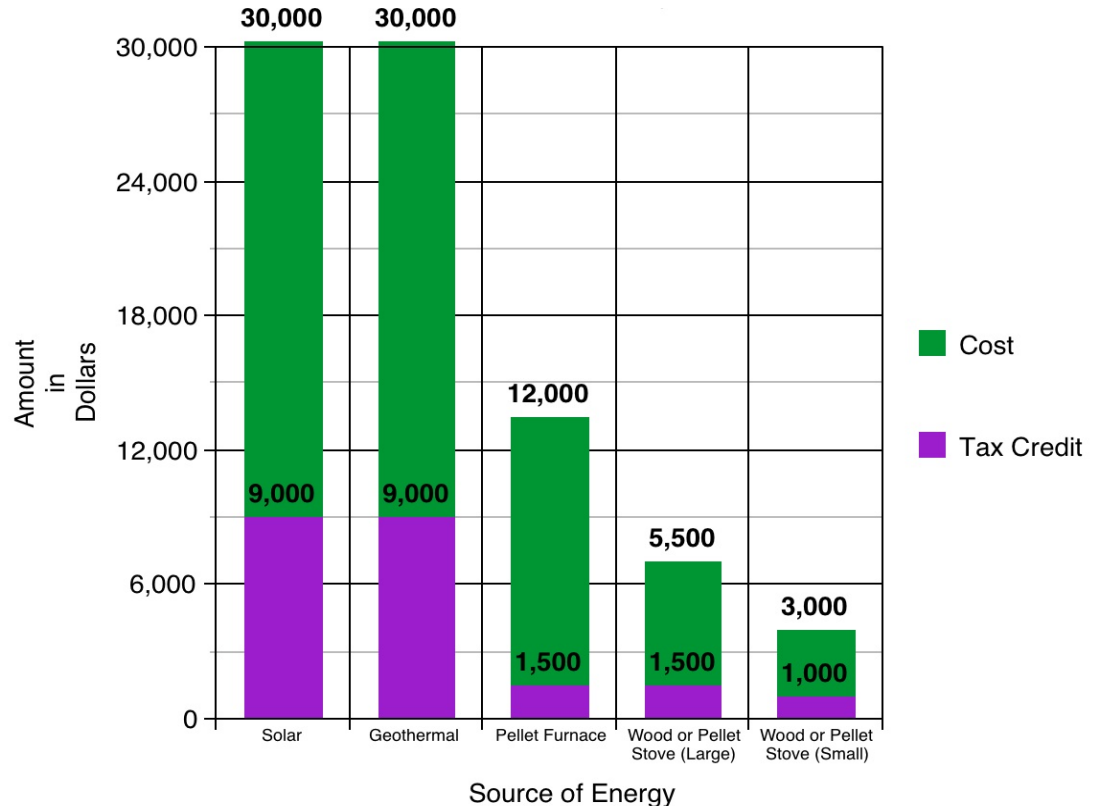


Federal Incentive Programs for Residential Thermal biomass

- IRS Federal 30%, up to \$1,500 tax credit
- Property Assessed Clean Energy Loans (PACE)
- Home Star
- Energy Star

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.
- The American Renewable Biomass Heating Act of 2010 ([S. 3188](#)), would establish a 30% corporate tax credit for commercial or industrial applications. The credit would have no maximum.



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.

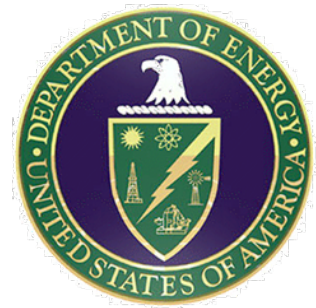
Average American Annual Carbon Footprint: 20 tons
Average Carbon from Home Heating: 5 tons

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.
- 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.

Property-Assessed Clean Energy (PACE) Loans

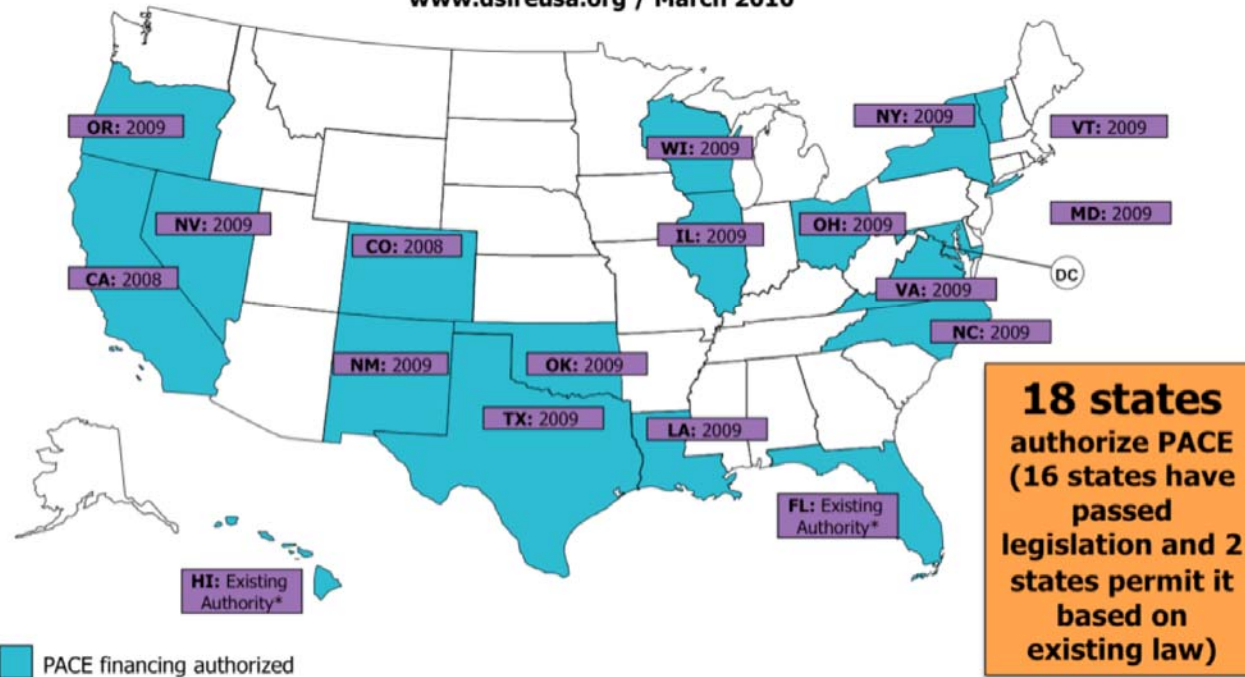


- Eligibility: energy retrofits (efficiency measures and small renewable energy systems)
- Payment: via an annual assessment on the property tax bill. Payment: Added to property tax
- Time Period: 20 – 30 years

Property-Assessed Clean Energy (PACE) Loans

Property Assessed Clean Energy (PACE)

www.dsireusa.org / March 2010



- Descriptions of individual state legislation are available through [The Database of State Incentives for Renewable Energy](http://www.dsireusa.org) (DSIRE)

Property-Assessed Clean Energy (PACE) Loans

- Specifically includes biomass appliances: CO, NV and NH.
- Seven other states, LA, MD, NC, OR, TX, VT and WI, stipulate "renewable energy" so presumably all renewables, including biomass, are included.
- Four states authorize "distributed generation renewable energy sources" and should include biomass and geothermal: CA, IL, OK and VA.
- NY authorizes only solar and wind.
- NM & OH specifically just authorize solar.

EPA's VEIB loans



- Similar to the DOE promoted PACE loans. However, the EPA's Voluntary Environmental Improvement Bond (VEIB) program might limit some or all biomass systems to change-outs, so no new first time buyers would be eligible.
- Could be excellent vehicle for outdoor boiler change-outs.
- EPA documents explain that a payment for a new "\$3,500 wood stove becomes less than \$19 a month" under a VEIB program.

Policy Goals of the Alliance for Green Heat



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- All state PACE programs should include clean and efficient wood appliances, except where they are restricted for air-quality reasons:
 - Stoves (under 4.5 g/hr for wood stoves; under 2.5 pellet stoves)
 - Indoor boilers – at least 80% efficient; strict emission limits ASAP.
 - Outdoor boilers – Phase 2 qualified with reasonable setback and stack-height requirements

Biomass Appliances in Home Star



Whole house heaters

- Indoor wood/pellet boiler/furnace
- Outdoor wood/pellet boiler/furnace
- Large wood stove
- Large pellet stove

Space/room heaters

- Small wood stove
- Small Pellet stove

Building Star - commercial & multi-family Boilers

Efficiency	Emissions	Rebate	Restriction
80%	none	\$1,000	
80%	.32 lbs/mmBTU	\$1,000	
75%	4.5 g/hr	\$1,000	replaces existing stove
75%	2.5 g/hr	\$1,000	
75%	4.5 g/hr	\$500	replaces existing stove
75%	2.5 g/hr	\$500	
75%		unknown	replaces existing boiler

Who Burns Wood for Heat?

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 Car. – 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 Hamp. – 4%	10.	Washington – 52%

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

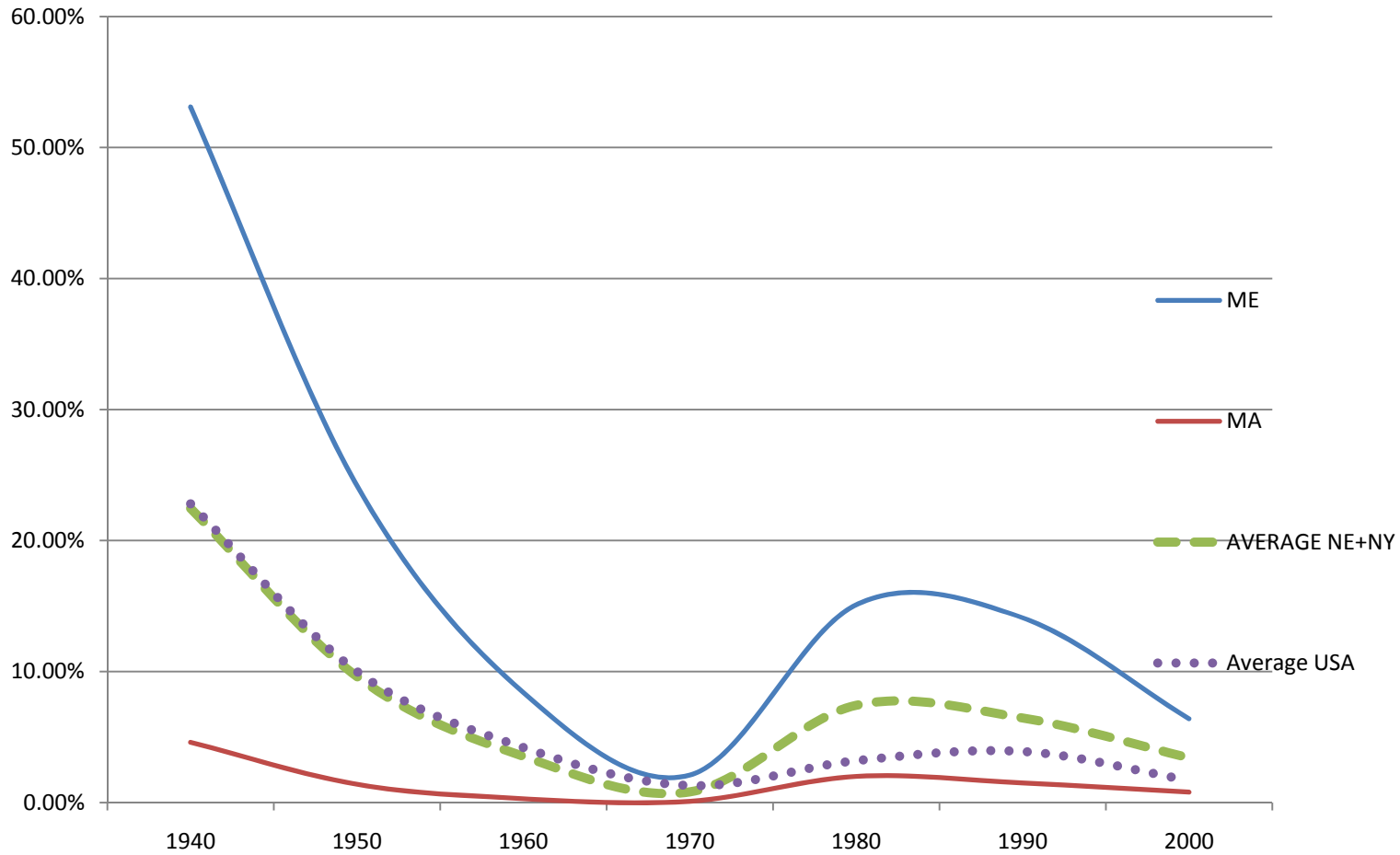
In 2000:

- 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.

Households with wood as their primary heating source



Federal and State Incentives for Residential Biomass Heat

	<i>Tax-deduction</i>	<i>Tax credit</i>	<i>Low interest loan</i>	<i>Rebate</i>
Federal				
IRS		\$1,500		
Home Star **				\$500 - \$1,000
States				
Alabama	100%			
Arizona	\$500			
Connecticut			up to \$25,000	
D.C.**				undetermined
Idaho	100%			
Maine			up to \$30,000	
Montana		\$500 - \$1,000		
Oregon		\$300		

** Not yet finally approved

AL: For whole house heaters to convert from gas or electricity to wood

AZ: To convert fireplace to certified wood stove

ID: 40% deduction first year, then 20% each year thereafter. Max \$20,000.

European Incentives for Residential wood heat

- Support depends on
 - Type (Boiler/stove)
 - Power
 - Efficiency
 - Investment

Austria



- Pellet or wood chip appliance: € 120,-/kW for 0-50kW (170,000 BTU/hr) appliances
- € 60,-/kW for every additional kW up to a maximum of 400kW.
- *Maximum of 30% of the purchase value*
- *Installations exceeding 400 kW qualify for a government grant of 20% of the investment.*
- http://www.publicconsulting.at/kpc/de/home/umweltforderung/fr_betriebe/erneuerbare_energie/

Germany



Appliances for biomass for residential heating (except wood chips):
€ 36 / kW, for 5 kW to 100 kW (17,000-340,000 BTU/hr). The minimum rebates are:

For pellet stoves with water reservoir: € 1000

For pellet boilers: € 2000

For pellet boiler with newly built buffer tank with a storage capacity of at least 30 l / kW: 2500 Euro.

For air fired pellet boilers from 5 to 100 kW: flat rate \$ 500 but no more than 20%

Wood chips appliances: € 1000 rebate

http://www.bafa.de/bafa/de/energie/erneuerbare_energien/biomasse/index.html

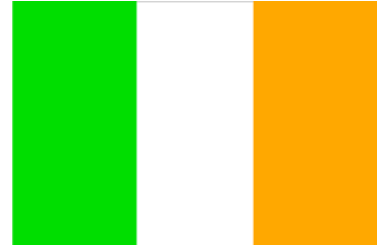
Belgium – Wallonia



- € 250 to € 3500 grant, depending on
 - *power of the boiler,*
 - *system for loading (manual or automatic),*
 - *nature of biomass used (wood or crops)*
 - *nature of the investor (private or public)*
- maximum 50 % of total investment - maximum investment of 25.000 €
- *Also tax deductions are available:*
 - *40% with maximum of € 2770*

- <http://www.erec.org/policy-actions/national-policies.html>

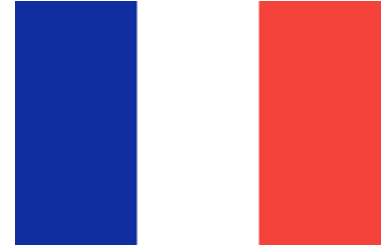
Ireland



- Maximum grants:
 - Biomass – Boiler: € 2500
 - Biomass – Stove: € 800
 - Biomass - Stove w/ built-in boiler: € 1400

- <http://www.seai.ie/Grants/GreenerHomes/>

France



- France

- Efficient wood fired boilers: tax credit up to 50%
- For households

- Luxemburg

- Grants for private households: biomass boilers (25-30%) of the investments

<http://www.erec.org/policy-actions/national-policies.html>

Finland – Denmark



- Finland

- Exemption from CO2 tax if biomass or solar is used



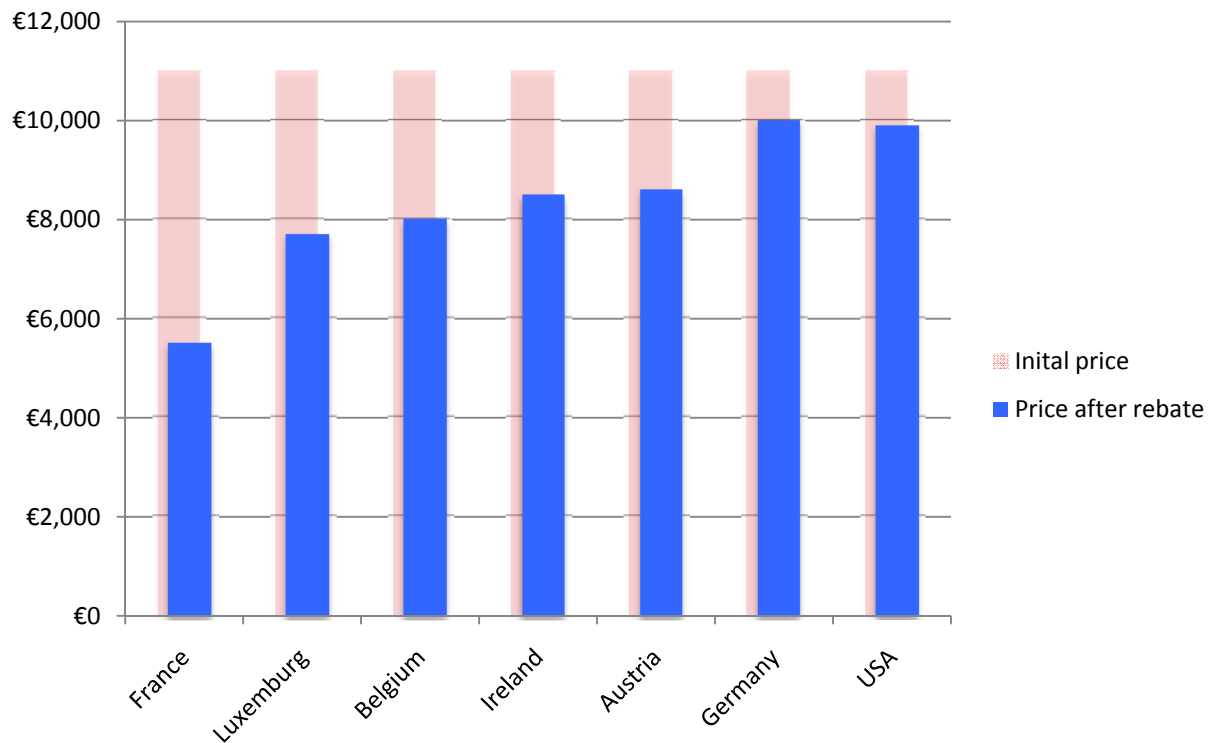
- Denmark

- Exemption from CO2 tax if biomass or solar is used

<http://www.erec.org/policy-actions/national-policies.html>

Case study

- Ökofen PELLEMATIC PE
- 20 kW (68,000 Btu/hour)
- € 11,000





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The Alliance for Green Heat promotes biomass as a low carbon carbon, 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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