



# Renewable Thermal Energy

Biomass, Forest Sustainability and the Rural Economy

*There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace.*

*--Aldo Leopold*

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# Renewable Thermal Energy

- Biomass
  - What is it?
  - Where does it come from?
- Forestry in Massachusetts
  - How do we get our fuel supply?
  - What sort of harvesting is happening to create heating fuel?
- Rural Economy
  - Sourcing your fuel “locally”
  - Keeping the jobs here

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Biomass?  
Modern Wood Heat! –  
these aren't your  
grandpa's wood stoves



Cordwood heating system at Harvard Forest



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# Modern Wood Heating Fuels:

- Pellets



- Chips



- Cordwood



- Road and Utility Maintenance
- Industry Residues
- Forests
- Land Clearing
- Disaster Cleanup

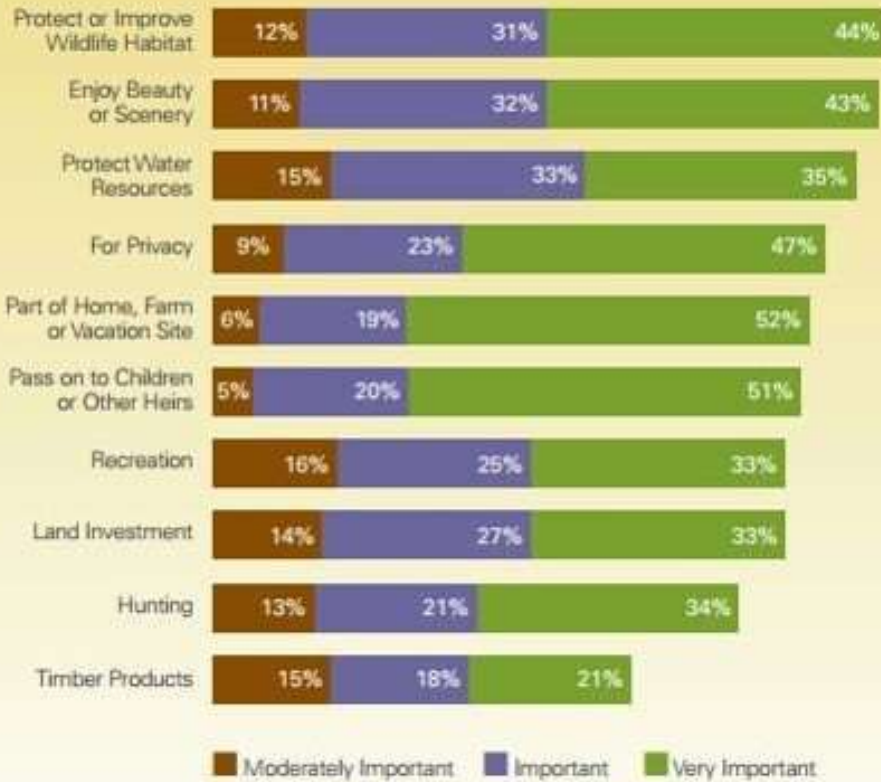
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## REASONS FAMILY FOREST OWNERS OWN FORESTED LAND

(FIGURE 4)



For many people, timber products or investment is NOT one of the primary reasons they own land.

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# Forestry in Massachusetts



## Birds with Silviculture in Mind

Birder's Dozen Pocket Guide  
for Massachusetts Foresters

Chestnut-sided Warbler

CSWA



  
*Dendroica pensylvanica*



We manage our forests for many reasons, including –

- Wildlife
- Water quality
- Income
- Recreation
- Forest Health
- Fire Mitigation
- Esthetics

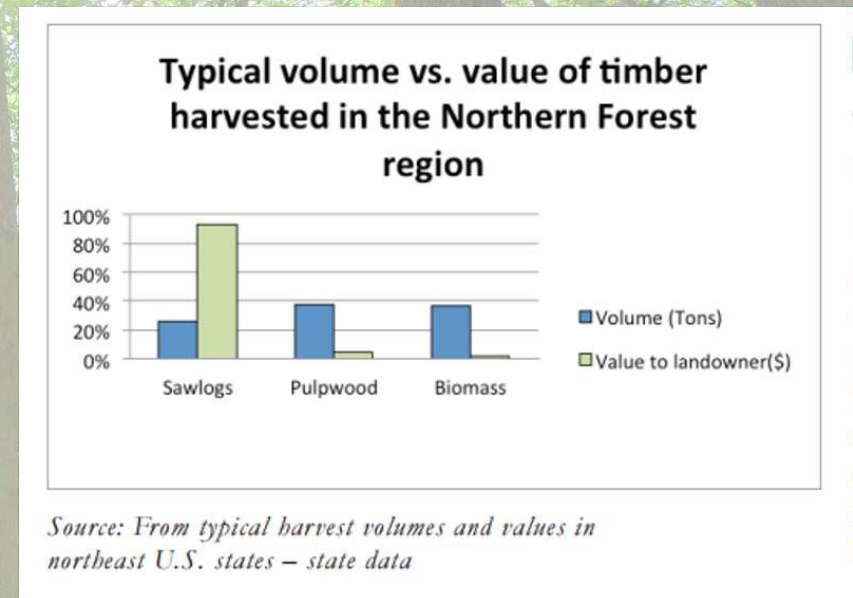
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# Assuring Sustainability



- Here in Massachusetts we don't generally harvest specifically for pulpwood or heating markets, although some small scale harvesters do focus on firewood;
- Roughly **25% of the volume**, but over **90% of the value** is in the high value products;
- Over **70% of the volume**, but about **10% of the value** is for the low quality products



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## A forest ready for harvest

Trees with a slash are marked to be cut as saw logs.

The tree with a dot is likely to be cut for cordwood, chips, or pellets. The tops of the two trees marked as sawlogs will likely also end up for that purpose.

The tree in front will be left to increase in value, sequester more carbon, and act as a seed tree.



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Where do the trees go?



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This is what we leave the woods looking like:



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And this is what it looks like just a little while later . . . The next crop of trees regenerating.



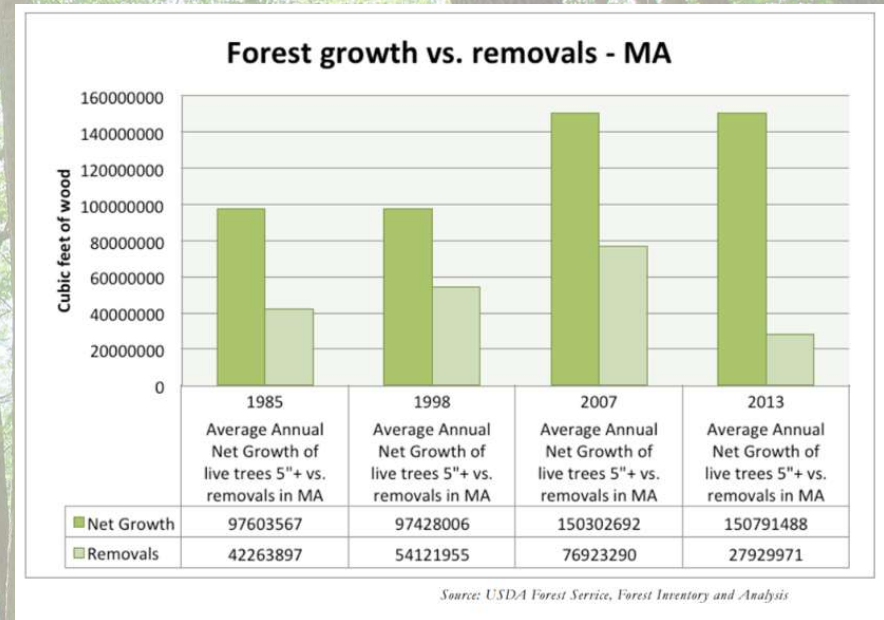
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# Assuring Sustainability



- Strict harvesting regulations;
- Foresters and loggers are licensed, and undergo continual training - they face stiff fines for improper actions;
- Many harvests are visited before, during and after harvest by state inspectors;
- We harvest far less than our forests produce – we harvest an amount equal to ¼ of our new growth;
- From 2007-2013 the carbon stored in our trees has INCREASED 7%.



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## Economics and the Rural Economy:

We are the 3<sup>rd</sup> most densely populated and the 8<sup>th</sup> most densely forested state.

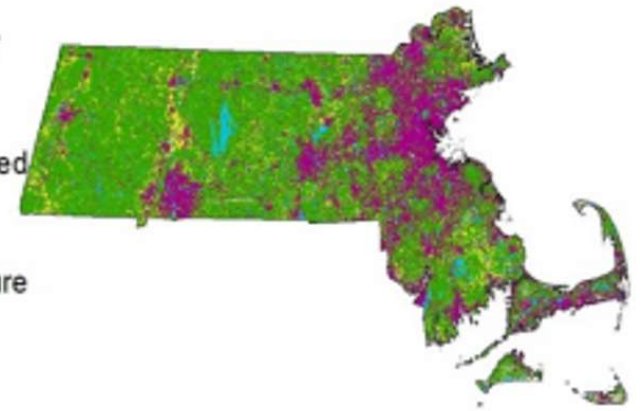
Across southern New England large intact **forest landscapes have been carved up** and cut down to feed suburban sprawl and economic growth.

Support for sustainable forest management provides an **opportunity to improve the value of the forests.**

The use of low grade trees that need to be weeded to improve the growth and quality of stands can be used to provide a **low cost heating fuel while keeping heating dollars in the community.**

Increasing the sustainability of the forests benefits everyone who wants **clean air, clean water and a planet we can live on.**

### Land Cover



**Figure 1.—Forest and other land cover, Massachusetts, 2011.**  
Source: National Land Cover Database (Jin et al. 2013)

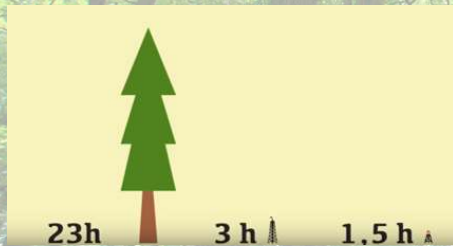
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## Local Employment:

Heating your home with wood for one year



Wood, oil, and natural gas are all value-added products that take labor to produce. Where that value is added, and therefore where the jobs are located though is key.

Payroll for forestry and logging jobs in Massachusetts is about \$24.5 million while the gross output is about \$62 million – more than 1/3 of forest product revenue is paid to its labor!

Locally produced fuels means the money stays in our communities.

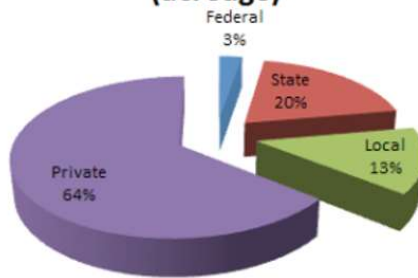
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## Local Ownership

Figure 2

**Massachusetts Forestland Ownership  
(acreage)**



*Source: USDA Forest Service, Forest Inventory and Analysis & private data*

- In 1600 (pre-European settlement) there were about 4.5 million acres of forest in Massachusetts
- In 1870 there were 1.5 million acres
- Today there are about 3 million acres.
- 1.9 million acres of that (about 2/3) are owned by individuals and families.
- Not only is more of the labor local, but the raw material supplier is local as well.

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## Small and Distributed

There are about 300 licensed timber harvesters (logging companies) and over 150 licensed foresters.

These are local small businesses – community based, locally owned, labor intensive businesses serving their neighbors.

They are vested in our lands and in our community.



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## Make your Fuel \$\$\$ Count!

Don't just save money and help the environment, help local natural resource based businesses as well.



**Northeast**

**Switching to 18.5%  
Biomass Heating**

**140,000 jobs**

**\$4.5 Billion Dollars Stay  
in the Local Economy**

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### Special Thanks for Graphics & Photos:

- Mike Leonard of North Quabbin Forestry for most of the great photos
- North East State Foresters Association for many of the charts
- Austrian Energy and Climate Fund for a few of the graphics
- Biomass Energy Resource Center; Stefan Schwehofer, Harvard Forest and Hull Forest Products for additional photos

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