

## ENERGY ALTERNATIVES: WOOD

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Heating greenhouses with wood can be an attractive alternative for some growers. Wood and wood wastes are widely available renewable resources in some parts of Connecticut. These wastes are available in several forms:

1. Sawdust from the more than 100 sawmills and wood product manufacturing plants.
2. Wood chips from land clearing and right of way maintenance.
3. Cordwood from the many logging operations and from harvesting poor quality trees.

Wood wastes are sold by the ton or cord. A ton of dry sawdust as received from a furniture manufacturer will have the equivalent of 100 gallons of fuel oil. If the sawdust or chips come from a sawmill or chipping operation, its heat value is about 50 gallons of fuel oil. A cord of air dried hardwood, cut at least 12 months before use, equals 240 gallons and if fresh cut about 150 gallons. These are heat values before furnace efficiency is considered.

The price that you will have to pay varies widely. Factors that affect the price include the heat value, distance hauled, availability and its value for other uses. Sawdust and wood chips have been selling for \$8 to \$15 per ton in Connecticut. Cordwood which is in demand for home heating is in the \$50 to \$150 range. Assuming a slightly lower efficiency for a wood

heating unit, this makes green sawdust and chips about 25 percent the cost of oil and air dried cordwood about half the cost.

While there are significant savings in fuel costs possible with wood, substantial capital investments in new furnaces or boilers, fuel handling equipment, storage buildings and pollution control devices may be needed. Small furnaces and boilers of 100-300,000 BTU/hr output are available through stove shops and heating contractors. These units are in the price range of \$1000-2000.

Larger units are generally available directly from the manufacturer. Costs for these units are difficult to estimate because of the wide variety of equipment options and the diversity of individual installations. In some cases it may be possible to retrofit an existing boiler originally designed for wood or coal and now converted to oil. In all cases one of the first steps is to discuss your needs with firms that supply and install this equipment. There are over 100 manufacturers in the United States. Tax credits and exemptions are available at both the state and federal level which will help to offset some of the costs.

Another step that needs to be taken before any decision is made is to apply to the Department of Environmental Protection for a permit for any equipment having a heat input greater than 250,000 BTU/hr. Emissions of particulate matter and smoke must be maintained below specific levels. This may require special pollution control and monitoring equipment.

Operation and maintenance costs are considerably greater for a wood fired system than comparable oil fired units. Wood handling and

ash removal require extra personnel time and larger units may require night watchmen to oversee the operation of the boiler.

Two booklets that will help to answer more of the questions that arise when you start considering the wood fuel alternative are:

1. Why Wood? An Introduction to the Industrial Uses of Wood Fuel.
2. A Users Guide to Wood Boiler Equipment and Engineering.

Both are available at no cost from the New England Regional Commission, 53 State Street, Boston, MA 02109.