

# Gathering Fuelwood for Home Heating



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### Use of fuelwood

Wood was once the primary source of heat and energy in our nation, but it has been replaced by other forms of energy and now accounts for only about 1 percent of energy use. In 1875 the U.S. burned a staggering 140 million cords of fuelwood for homes and industry. Today, fireplace use of fuelwood is the only increasing use of wood as fuel. Current concern about the dependability of being supplied with petroleum, natural gas, and electrical heating energy is causing many homeowners to look to wood as an additional source of heating energy. The purpose of this publication is to provide information that will help homeowners avoid some of the pitfalls and safety hazards of gathering fuelwood.

Certain factors should be examined to determine if the gathering of fuelwood results in an economic savings to the homeowner. There is a limit to the amount of nearly free wood available. As the demand for fuelwood rises, the price of fuelwood may go from nearly free to a price determined by demand conditions. Thus, fuelwood may not be the best source of energy for heating homes on a long-term basis. The cost of getting wood home must be examined, particularly if the source is distant and requires a large expenditure of gasoline.

The heat produced from wood depends on how the wood is burned. A fireplace may return only about 10 percent of the heating value of wood, while some wood heaters may exceed 50 percent in their burning efficiencies. As a fireplace fire dies out, heated air from inside the house continues to be lost up the chimney. A tightly constructed and weatherstripped house, as well as glass doors on the fireplace, will tend to minimize this heat loss from the fireplace chimney. When a fireplace is not in use for extended periods, the flue damper should be closed to reduce heat loss from the chimney. But it is very important *not* to close the flue damper until the coals are completely cooled. Oregon newspapers frequently carry stories of tragedies or near tragedies caused by carbon monoxide poisoning from fires or coals in a closed structure.

Gathering fuelwood may provide a recreation outing for the family to farms or forests. The exercise involved can also be stimulating and rewarding. However, from an energy efficiency stand-

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point, fuelwood may be most valuable as an emergency source of heat should other energy sources be interrupted. The cheerful glow of a fireplace fire on a chilly evening has esthetic values that may outweigh the low heating efficiency.

### Source of fuelwood

Several sources of fuelwood are available to homeowners. Private property owned by relatives, friends, or neighbors may have a supply of wood that can be utilized for fuelwood. Some industrial forest lands may also be open for fuelwood gathering. Private landowners may have a charge-per-cord of fuelwood gathered from their property, but this depends on local conditions. Whether a charge for fuelwood is made or not, it is an excellent idea to have a written agreement with the landowner as to the location and amount of fuelwood to be taken.

Public agencies are also cooperating by making fuelwood available on public lands. The State Forestry Districts located throughout the state might be contacted to obtain a permit to gather fuelwood. A few State Forestry Districts are specially designating trees to be cut for fuelwood as a way to improve forest stands. The U.S. Forest Service is providing free permits to gather up to 10 cords of dead, down, and unmerchantable material for fuelwood from National Forest lands. In addition, the Bureau of Land Management District Offices are making arrangements for gathering fuelwood in certain designated areas. Fuelwood from public lands is provided without charge as of this writing. Charges may be made by public agencies as conditions and policies of the agency change with regard to fuelwood.

Probably the best way to obtain a permit from a public agency is to first telephone its local office for information. The availability of fuelwood changes on a daily basis and a telephone call may save a long, fruitless drive.

A major concern of public agencies is the checkerboard land ownership pattern that makes it difficult to determine property boundaries. Anyone gathering fuelwood should be certain of his exact location while cutting fuelwood.

Public agencies and private landowners often have rules of conduct while on their lands. Compliance with a few simple rules of courtesy will help assure that the land will remain open for gathering fuelwood. Driving on forest roads can be particularly hazardous and the suggestions of the landowner should be followed.



Power saw and saw accessories needed for effective woodcutting.

### Fuelwood from the forest

What kind of wood should the homeowner use for fuel? The answer to this basic question is: Whatever fuelwood is readily available. It may not be possible to be selective about the kind of fuelwood available. However, the greater the wood's density, the greater its heating value. Listed in descending order of heating values are some common fuelwoods: Oregon white oak, madrone, Oregon ash, Douglas-fir, bigleaf maple, ponderosa pine, lodgepole pine, red alder, and cottonwood. A more important consideration than the species of wood may be the amount of moisture in the wood. Before wood can burn, the water must be removed, thus using some of the fuel's heating value. For immediate use, dead wood will generally have a lower moisture content and burn better as fuel, provided that there is not too much decay present.

There are other significant considerations when gathering fuelwood. For example, how far must the material be moved by hand? Back injuries can occur from excess enthusiasm in moving heavy wood. The old-time shingle merchants devised ingenious chutes of saplings tied together and elaborate pulley systems that took maximum advantage of gravity. It is important to have the

proper equipment to be able to split knotty, tough wood into pieces that can be handled.

The following list of equipment should make the job easier and safer:

- |                            |                            |
|----------------------------|----------------------------|
| • saw and saw accessories  | • jack                     |
| • axe and wedges           | • spare tire (perhaps two) |
| • sledge or splitting maul | • fire extinguisher        |
| • shovel                   | • ear and eye protection   |
|                            | • first-aid kit            |

The owner's manual of a power saw provides information on the proper gas and oil mixture for fuel as well as the type of oil used to keep the chain lubricated. Power saw accessories should include mixed fuel, chain oil, a wrench to tension the chain properly, and perhaps a file to keep the chain sharp (filing a chain is not a task for the novice). Power saws are available for rent at various prices at equipment rental outlets and should include the above accessories. Individuals renting power saws should know how to operate the saw safely since rental outlets have no liability for the safe use of rented equipment.

### Cutting fuelwood

Felling trees with a power saw can be very dangerous. Timber fallers whose livelihood depends on cutting trees approach each tree with caution and respect, particularly if the tree is dead or rotten. *The inexperienced person should not try to fell trees without some training.* The common hazards of timber felling are not readily apparent, yet they make timber felling and bucking a leading cause of fatalities in Oregon's woods operations.

What are some of the common hazards that make felling and bucking so dangerous? Fallers may be hit by a large piece of bark or a loose limb dropping from tree-top heights (called a *widow maker* for obvious reasons). The tree can unexpectedly kick off the stump or split up the middle during cutting (forming a *barber chair*) and crush the faller before he has a chance to escape. A tree that becomes entangled in other standing trees (called a *hang up*) makes for an extremely unpredictable and dangerous situation for a faller when he tries to bring the tree to the ground. Dead and rotten trees (called *snags*) may require only a slight vibration from axe or saw to bring an avalanche of loose material down on the faller. As trees and logs under tension are cut, the resulting movement of trees and logs is unpredictable and deadly (like a *sidewinder*). The names of these hazards contain a dash of tragic humor, but the inexperienced operator faces real dangers in felling and bucking.

The techniques of felling and bucking large trees are beyond the scope of this report. It is probably safest for the inexperienced person to limit his fuelwood gathering to small material already on the ground. Those individuals who wish some training in felling trees should consider obtaining help from an experienced timber faller,



Safety equipment and a first aid kit are essential when gathering fuelwood.

reading literature on the subject,\* and practicing on small trees using recommended procedures.

Several brief suggestions can make the bucking operation safer and easier. Bucking scattered piles of unmerchantable material at old logging sites is a good way to pick up fuelwood and also clean up the forest. In bucking wood into burnable lengths, the homeowner should take the time to measure the length that his fireplace, stove, or furnace will accept. To cut limbs or wood under tension, the side that relieves the tension should be cut first, taking care to stay in the clear as the pressure is released. Dirt and rocks are the most common way of quickly dulling a chain. Also, there is more support for bucking the tree into fuelwood lengths by starting at the top or crown and working toward the butt.

Splitting wood can either be a frustrating experience or an enjoyable one. A few tricks and the right equipment can make the difference. The most common problems are large, unwieldy pieces, pieces with knots, and pieces with spiral grain. The dotted lines indicate the best place to strike the wood for easier splitting.



split sapwood in line with existing cracks    split parallel with knots    split parallel with spiral grain

The size of pieces will also control the rate of burning.

As a matter of courtesy, small material and limbs should be removed or scattered to leave the area clean and neat. Cleaning up the roadway and ditchlines is especially important. Bark has excellent heating value and should be considered a good fuel source.

After loading up a truckload of fuelwood, it may be disturbing to find the truck stuck. Staying on firm ground or rocky roads is the best advice. Once on State highways, a loaded vehicle is subject to weight limitation statutes. Any vehicle over

\*Literature sources on felling and bucking include *Loggers Safety Manual*, available at local State Accident Insurance Fund Offices; "Felling and Bucking with Safety and Profit," PNW 111, available at County Extension Offices; and *Safety Code for Logging* from the Workmen's Compensation Board, Salem, Oregon.

8,000 pounds gross weight is overloaded unless it has a special license or an overload permit. Utility trailers are licensed separately and can haul additional material up to 8,000 pounds, de-



This truck is overloaded and requires an overload permit. Permits are issued by the Department of Motor Vehicles as special trip permits. Registration cards or titles are needed to obtain permits. Fees are \$5 for 5 days or \$10 for 10 days.

pending on the trailer construction. The weight of wood is deceptive; the wood pictured here is a verified overload and subject to a citation. Overload tickets increase the price of fuelwood.

Wood should be stored in a sheltered place and piled very loosely to allow the air circulation to further dry the wood. A small airspace should be left between woodpiles and the walls of buildings to prevent decay from attacking the structure.

#### Summary: do's and don'ts

This brief publication on gathering fuelwood for home heating cannot cover all the situations that might be encountered. Only some common pitfalls and safety hazards have been described. Good judgment and common courtesy are needed when gathering fuelwood. As a form of review and summary the following "do's and don'ts" are listed.

#### *Don't*

1. Take wood without obtaining written permission from the landowner.



Wood piled in log decks is ready to go to the sawmill, not the fireplace. Do not cut any piled wood since it is in the lengths required by the mill.



2. Cut wood already cut for other uses (i.e. logs stored in log decks).
3. Travel on dirt roads in wet weather.
4. Overload your vehicle without a permit or special license.
5. Close stove damper or fireplace flue damper while coals are still producing heat (produces carbon monoxide gas).
6. Fall timber across roads unless the road is blocked and clear.
7. Get poison oak (recognized as tan colored stalks and vines in winter and three-leaved shrubs and vines in summer).

#### Do

1. Get a permit from the landowner.
2. Find out where the property is located.
3. Watch out for loggers and other woods traffic.
4. Obey safety rules when felling, bucking, and using a power saw.
5. Have the proper equipment and carry a first-aid kit.
6. Close the fireplace flue damper if the fireplace is not used for extended periods.

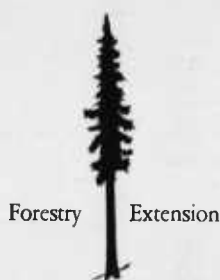
The authors thank Stan Corder for his assistance in describing how wood burns in his publication *Wood and Bark as Fuel*, Forest Research Laboratory Research Bulletin 14, 1973.



Respect the rights of landowners. They may allow wood-cutting if permission is asked first.



Clean debris out of roads and ditch lines as a matter of courtesy.



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