



# OUTPLANTING AND THE FIRST SIX YEARS

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## PLANNING FOR REFORESTATION: REGULATIONS AND COSTS

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### Abstract

This paper describes (1) regulations in the Oregon Forest Practices Act (OFPA) relating to reforestation planning, and (2) estimated operational costs for reforestation on small private forestland holdings in northwestern Oregon. The OFPA regulates harvesting and other activities on forestland to promote the growing and harvesting of trees while protecting soil, air, water, and fish and wildlife resources. Rules within the Act require landowners to reforest when stocking after harvesting is below certain levels. In general, landowners must plant a minimum of 100-200 trees per acre within two years after harvest. By the end of the sixth year after harvest, a minimum of 100-200 trees must meet the “free to grow” condition, where they are healthy and outcompeting nearby plants. The OFPA also prohibits “type 3 harvests” (generally what would be considered “clearcuts”) from exceeding 120 acres until new stands are established in adjacent type 3 harvest units.

### Keywords

Forest Practices Act, free to grow, planting.

### Introduction

This paper presents (1) the primary regulations in the Oregon Forest Practices Act that relate to reforestation planning, and (2) some estimated operational costs for reforestation work on small private land holdings in northwestern Oregon.

### The Oregon Forest Practices Act

The Oregon Forest Practices Act (OFPA) was enacted in 1971 and was the first Forest Practices Act in the United States. The OFPA has evolved since then, with many significant rule changes as forestry knowledge has increased. The policy of the OFPA is described in statute:

“Forests make a vital contribution to Oregon by providing jobs, products, tax base and other social and economic benefits, by helping to maintain forest tree species, soil, air and water resources and by providing a habitat for wildlife and aquatic life. Therefore, it is declared to be the public policy of the State of Oregon to encourage economically efficient forest practices that ensure the continuous growing and harvesting of forest tree species and the maintenance of forestland for such purposes as the leading use on privately owned land, consistent with sound management of soil, air, water, fish and wildlife resources...and to ensure the continuous benefits of those resources for future generations of Oregonians.” ORS 527.630(1)

The Oregon Board of Forestry enacts forest practice rules to carry out the policy of the OFPA. The OFPA applies on all forestland in Oregon, but most federal land management agencies have agreed to meet or exceed the requirements on their own. The Oregon Department of Forestry works in cooperation with operators, landowners, consulting foresters, and other agencies to administer the rules in ways that are practical for landowners and that protect natural resources. The Department emphasizes education and cooperation to meet the objectives of the OFPA, but enforcement action is sometimes necessary. The forest practice rules protect soil, air, water, and fish and wildlife resources by requiring activities with positive results (reforestation after harvesting, for example) and by prohibiting activities with negative results (causing sediment to enter

streams, for example). Sections of the rules relate to notification requirements, reforestation, treatment of slash, chemical application, road construction, harvesting, protection of streams and other waters, protection of wildlife sites, and limits on harvest unit size. The two sections discussed in this paper are the reforestation rules and the limits on harvest unit size.

### Reforestation rules

One of the key elements in the OFPA policy statement is “growing and harvesting forest tree species.” Before 1971, some landowners were willing to harvest trees, but were not willing to grow new trees. The results in these cases were often unproductive brushlands or patchy stands of lower value trees. The first reforestation rules were in place in 1972, with major revisions in 1991 and 1995. To ensure that all landowners reforest after harvesting, the Board of Forestry intends the rules to

“...establish standards to ensure the timely replacement and maintenance of free to grow forest tree cover following forest operations at or above stocking levels that will use the tree growth potential of forestlands in Oregon.” OAR 629-610-0000(3)

To help the reader understand the reforestation rules, an outline of how they work is provided at here. The remainder of this section elaborates on the outline.

Step 1: Has tree stocking been reduced? Reforestation is required only after a harvest reduces stocking.

Step 2: What is the cubic foot productivity class of the site? Required stocking levels vary by site productivity.

Step 3: Is the “free to grow” stocking below standards for the site after harvest? Reforestation is required only when the answer is yes.

Step 4: Within 2 years after harvest, landowners must plant to meet the stocking standards. Natural reforestation methods are allowed if the landowner obtains approval of a plan from the Forestry Department.

Step 5: Landowners must ensure that by the end of the sixth year after harvest, the new stand meets the stocking standards. Only “free to grow” trees may be counted to meet standards at this time.

### Step 1: Has tree stocking been reduced?

Landowners are responsible for determining if reforestation is required and to reforest when it is required. Forest Practices Foresters with the Oregon Department of Forestry work with landowners to help them understand the rules, with enforcement action available if necessary. Reforestation is required only when there has been a harvesting operation and stocking of free to grow trees is below rule standards (see steps 2 and 3 below). Landowners sometimes harvest in stands that have been killed by insects, disease, or fire. If stocking is below standards after harvesting, landowners must still reforest these stands after harvesting, even though the stocking was reduced

by the damaging agent, not the logging.

The concept of “free to grow” is key to the reforestation rules. Landowners may only count “free to grow” trees to determine if reforestation is required after harvesting, or to determine if reforestation work meets rule standards. Free to grow means “...a tree or stand of well-distributed trees, of acceptable species and good form, [that] has a high probability of remaining or becoming vigorous, healthy, and dominant over competing vegetation.” As the definition states, trees must be of “acceptable species” to be considered free to grow. “Acceptable species” means the trees are ecologically suited to the site, which usually means native to the site or to similar sites in the local area. Trees used for reforestation can be hardwoods or conifers.

### Step 2: Cubic foot site productivity class

To avoid regulations that lead to overstocked or understocked young stands, the stocking standards vary with site productivity, which in this case is measured by the expected annual growth of stands on the site in cubic feet per acre. Stands that are not capable of producing at least 20 cubic foot per acre per year (many juniper sites in eastern Oregon, for example) are considered noncommercial for forestry and are not subject to the reforestation rules. The rules group sites into low, medium and high productivity classes. Fewer trees per acre are required on low sites, more on high sites. Table 1 shows how the stocking standards vary by site

class for Douglas-fir (*Pseudotsuga menziesii*), and also how the cubic foot site productivity classes relate to Douglas-fir 100 foot site index measures. Similar information is available for ponderosa pine (*Pinus ponderosa*) sites.

### Step 3: Stocking standards

Reforestation is required only when free to grow stocking after a harvest operation is below the stocking standards. The standards are also used to determine if reforestation is adequate (see steps 4 and 5 below). Residual or reforested stands may have all one size of tree, or may be composed of various tree sizes. Table 1 shows the stocking standards in terms of seedlings and larger trees. In a simple example, if a site was in the high productivity class and had only seedlings, the standard would be 200 trees (seedlings, in this case) per acre. Other stands might have a mix of tree sizes. The Oregon Department of Forestry has a stocking survey form that gives the proper weight to each size class of trees as an aid in calculating the stocking of a stand. Reforestation is not required when landowners complete a land use change that is allowed by the local county regulations and is not compatible with forest use.

### Step 4: Planting after two years

Within two years after harvest, landowners must plant to meet the stocking standards. Trees must be of acceptable species, but are not required to be free to grow at this point. The Oregon Department of Forestry advises landowner to plant trees at higher densi-

ties than required in the rules, to allow for the inevitable loss of some seedlings. Natural reforestation methods (leaving seed trees, for example) are allowed in lieu of planting if the landowner obtains approval of a plan from the Forestry Department.

### Step 5: Free to grow stand after six years

Landowners must ensure that by the end of the sixth year after harvesting, the new stand meets the stocking standards for the site. At this point, only “free to grow” trees may be counted to meet standards. To achieve this goal, landowners must usually monitor planted trees, treat competing vegetation, and replant. The Oregon Department of Forestry advises landowners to start reforestation planning before the start of harvesting. Historically, 90 to 95 percent of stands have met reforestation requirements; the Oregon Department of Forestry is still evaluating compliance rates for the relatively new free to grow standard.

### Limits on harvest unit size

In 1991 the Oregon Legislature placed limits on the size of what were called at that time “clearcuts.” Simply stated, the intent of the law is to prohibit harvests that would traditionally be considered “clearcuts” from exceeding 120 acres on a single same ownership until a new stand is well established in adjacent “clearcut” harvest units. The term “clearcut” was difficult to define and has been replaced by the term “harvest type 3.” As discussed in the previous section of this paper, landowners must

reforest harvest units when the residual stocking is below rule standards. To provide a measure of wildlife habitat, landowners must also retain two live or dead trees per acre when harvest units of at least 25 acres are below the standards shown below for Douglas-fir (*Pseudotsuga menziesii*). Information is available for ponderosa pine (*Pinus ponderosa*) sites as well. See Table 1 for the definition of high, medium, and low cubic foot productivity classes.

1. For high cubic foot productivity sites, the standard is 50 trees per acre at least 11 inches DBH, or an equivalent basal area per acre in larger trees.
2. For medium sites, the standard is 30 trees per acre at least 11 inches DBH, or an equivalent basal area per acre in larger trees.
3. For low sites, the standard is 15 trees per acre at least 11 inches DBH, or an equivalent basal area per acre in larger trees.

When both reforestation and wildlife tree retention are required on a harvest unit, the unit is considered a type 3 harvest, may not exceed 120 acres in size on a single ownership. Adjacent units on the same ownership that meet

the definition of a harvest type 3 are included in the calculation, so that at any given time, there should not be more than 120 acres of a harvest unit resembling a “clearcut” on a single ownership. Harvest units are not considered adjacent if they are separated by at least 300 feet of stands that have stocking levels above the standards shown immediately above. Harvest units are not considered “adjacent” if they are on different ownerships. Adjacent units are no longer considered type 3, and so would not be part of the calculated acreage, when they meet the stocking standards in the reforestation rules and (1) the stands are at least four feet tall, or (2) the stands meet the “free to grow” standard and have been in the ground on the site for at least 48 months.

The Oregon Department of Forestry may approve requests for harvest type 3 units larger than 120 acres for understocked hardwood stands, or where stands have been damaged by forces beyond the landowner’s control (wildfire, for example) and a larger-scale harvest is needed for reasons of forest health or protection. The Department may also approve requests for type 3 harvests of up to 240 acres when

the larger harvest size would better meet the purpose of the OFPA. The Board of Forestry intends that these exceptions be relatively rare.

## Reforestation Costs on Small Private Land Holdings in Northwestern Oregon

The costs shown below are typical for small private land holdings in northwestern Oregon, but vary with local conditions. Landowners with larger holdings will likely have lower costs because of economies of scale. Landowners in other areas of Oregon will likely have different costs.

<b>Mechanical Clearing</b>	\$100-\$200/acre +
<b>Slash Burning</b>	Varies widely methods used and fuel conditions
<b>Tree Seedlings</b>	\$.25-\$.50/tree
<b>Tree Planting</b>	\$.25-\$.50/tree
<b>Tubing for seedling protection</b>	
labor	\$.25-\$.50/tree
materials	\$.15 to \$1.50/ tube
<b>Chemical Application</b>	
ground	\$50-\$100/acre
aerial	\$70-\$100/acre

Table 1. Reforestation Stocking Standards

Cubic Feet/ acre/year	Productivity Class	100-yr. site index (Douglas-fir)	Trees below 1 inch DBH (trees/acre)	Trees 1-10 inch DBH (trees/acre)	Trees 11 inch DBH+ (basal area sq.ft./acre)
120+	High	I-III	200	120	80
50-119	Medium	IV, V	125	75	50
20-49	Low		100	60	40

Below 20—Reforestation is not required.