

Producing and Selling Logs for Maximum Revenue

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Introduction

As a woodland owner, you need to take certain steps to produce and sell your logs for maximum revenue. By employing a systematic approach, you can maintain the value of your logs and improve the return from your timber harvest.

To **maintain** the value of your logs, you have to:

- Minimize breakage when felling
- Meet proper trim requirements
- Make cuts that avoid damage to log segments (e.g., through slabs or breaks)
- Manage the aesthetics of the logs (e.g., by making straight cuts and cutting knots flush with the bole of the tree)
- Avoid mechanical damage to logs during skidding and loading

These steps should be employed regardless of timber stand characteristics and the log specifications of the buyer.

To **improve** the value of your logs, you have to:

- Meet buyer specifications
- Take advantage of the idiosyncrasies of the Scribner log volume tables
- Comply with the Official Log Scaling and Grading Rules handbook
- Consider how the rules outlined in the Official Log Scaling and Grading Rules handbook change in relation to market conditions

These complementary practices, necessary in maintaining and improving log values, play an important role in determining the financial success of a timber harvest.

In this publication, we focus on helping you improve the value of your logs, using a step-by-step approach to:

- Researching current log market conditions
- Obtaining bids
- Selecting a buyer or buyers
- Writing purchase orders
- Understanding the Scribner log rule regarding taper
- Making decisions about bucking
- Selecting log lengths and diameters
- Bucking to remove defects and breakage
- Comparing markets

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Researching current log market conditions

Like most woodland owners, you will likely conduct very few timber harvests over your lifetime. Therefore, it is imperative to gain as much information as possible to make well-informed decisions. To achieve the best financial return when marketing your logs, you need to stay informed of annual and monthly trends in prices and markets. Researching these trends will help you recognize the right time to sell. Without a broad market perspective, you may make the common mistake of waiting too long to sell your logs.

You should make the decision to harvest based on a clear understanding of current log values and how they apply to the unique characteristics of your timber stand. Because shifts in relative prices may eliminate some markets and open others, you need to evaluate the best approach to manufacturing your logs for maximum value. For example, if export markets fall out of favor and shift to a domestic interest in veneer-length logs, you should eliminate a bucking strategy that emphasizes long logs. Whether exporting your logs or selling them domestically, always examine your timber stand and manufactured log segments based on the best available market options.

You can obtain information on log markets from a variety of sources, such as:

- Neighbors who are conducting a harvesting operation
- Local newspapers that carry advertisements from individuals and companies interested in logs and timberlands
- The Oregon Department of Forestry's quarterly reports on state log prices (egov.oregon.gov/ODF/STATE_FORESTS/TIMBER_SALES/logpage.shtml)
- Consulting foresters who specialize in marketing
- Your local OSU Extension Service forestry agent, who can help locate loggers and log buyers, and supply sample contracts and purchase orders

Obtaining bids

The typical timber sale involves a buyer visiting your site and offering a bid for your logs. The buyer's offer is then constructed in the form of a written purchase order that reflects the price and desired log dimensions, as quoted by the buyer at the time of the visit. Sometimes a buyer may offer a price without visiting the timber stand. This "phone quote" may be at a slightly lower price than if the buyer had visited the site. Therefore, you need to take into consideration how bids are made when negotiating the price. If obtaining a purchase order that was based on a phone bid, be sure the document corresponds to the verbal offer. Be certain the buyer has not made any mistakes on the purchase order or that sudden changes in the market have not resulted in an adjustment in log values—either higher or lower.

If you are considering selling your logs to more than one buyer, you need to notify all potential buyers of your strategy. This ensures that you keep an open and honest dialogue with all interested parties. When buyers offer a price, they are assuming that they are buying all of the material; knowing that you are pursuing multiple buyers may cause an adjustment in the bids. When considering going after multiple offers, keep in mind the total value of your material. It is possible that selling "parts" of what you have to several buyers will not be as profitable as selling the "whole" to a single buyer.

If you begin your log harvest and then discover another buyer with a higher bid than the one on your current purchase order, there are two important issues to remember. First, all purchase orders are for an estimated volume of timber. This protects you if you find a higher bidder or, for whatever reason, you decide not to proceed with the harvest. Second, the original buyer should be notified that there is a competing bid and given the opportunity to either match the new bid or withdraw his or her offer. Regardless of the outcome, maintaining clear communication will "keep the door open" for future transactions.

Once a verbal bid is transferred into a written purchase order, you are protected from price changes until that purchase order expires. Most written agreements either expire or require renewal

after 30 days. As the harvest proceeds, prices are likely to change within one pay period, meaning you have to stay abreast of current market conditions. In a declining market, you might elect to discontinue operations. In an advancing market, you might opt to expand your harvest or change buyers. Failure to react to these market factors can have a substantial effect on your potential revenue.

Selecting a buyer or buyers

Sources of information for selecting a log buyer are similar to those for obtaining market information. In addition, you should contact your local OSU Extension Service forestry agent and consult the Oregon Forest Industry Directory (<http://www.orforestdirectory.com>). A hard copy of the *Log Buyers Directory* is also available through your local Extension forestry agent.

Potential pitfalls in selecting a buyer include:

- **Relying on prior merchandising efforts.** Because of the uniqueness of a timber stand, a buyer you have previously sold to may or may not be the best fit for your current harvest.
- **Geographic proximity of mills.** Do not discount a buyer based solely on distance, especially if you are selling larger-diameter material and species other than Douglas-fir. If selling smaller-diameter Douglas-fir, there is a strong possibility that the mill nearest your site will be the best option. But the opposite may be true when selling high-value species like western redcedar; the most profitable option may have the longest trucking distance to available cedar buyers.

The most important thing to remember is: call before you cut! Contact all potential buyers before conducting any felling or bucking. Buyers look for timber stands that best suit the product lines of their respective operations. Similarly, you should evaluate mills whose product lines best suit the characteristics of your material. If you have studied the market and decided to harvest, it is beneficial to the buyer to examine felled trees before any bucking occurs. This gives the buyer the chance to closely inspect characteristics like ring count and possible interior defects. When felled trees are examined,

show your knowledge and experience by displaying proper stumps, minimal breakage, and attention to log aesthetics. (Keep in mind that log aesthetics are particularly important in export markets.) All log buyers desire fresh-cut logs, particularly in the case of red alder and ponderosa pine; delays in trucking these species will likely result in a serious discount in log value due to staining.

Writing purchase orders

The key component of a purchase order is the pricing structure. In the past, camp run (one price for all sawlogs and better quality logs within a given species) was frequently used in buying and selling logs. It requires considering some log-length combinations but is the simplest pricing structure. Selling by grade, in accordance with the Official Log Scaling and Grading Rules handbook was another common pricing structure, suited for larger trees and more diverse timber stands.

While camp run and selling by grade are still used, it is more common these days to base prices on individual length or diameter breaks or both, within a given species. This requires careful examination and measurement of the merchantable tree stem's total length and diameters at selected points where bucking might occur, as determined by the requirements of the purchase order. Depending on the complexity of the contract (the number of possible log-length and diameter combinations), the process of examining and measuring a tree stem can be an arduous task.

For complex purchase orders, a thorough understanding of grading and scaling rules is needed to take full advantage of available bucking options. Hiring a professional cutting contractor is the safest and fastest way to harvest timber, but it may not be the most financially rewarding. A standard felling contract comprises approximately 10 to 15 percent of the cost of a timber harvest. If, through proper selection of log lengths, the cutter can increase your return by 10 percent (which is considered a large increase), this equates to about a one percent increase in the cutter's pay. Such a small increase is hardly worth a cutter's time and effort. Therefore, if you hire someone to cut your logs, it is your

responsibility to supervise the cutting to ensure the specifications of the logging contract are met and the cutter is doing whatever is necessary to maximize revenue.

It is up to you how you structure the pricing on the purchase order. Some woodland owners enjoy the complexity of measuring, calculating, and bucking. They want as many options as possible when selling their logs and look forward to matching wits with the log buyer. Others select the camp run purchase order, feeling the time and energy spent agonizing over pricing decisions are not worth the potential gains in revenue. How you structure your

pricing is a personal decision. Choose the method that best matches your goals and objectives.

Selecting proper log lengths, as determined by the purchase order, can be a complex process. But there are some basic guidelines that require minimal knowledge of grading and scaling rules. The table below illustrates some possible methods for structuring the pricing on the purchase order. Keep in mind that these are guidelines, and they may or may not maximize your revenue. However, they are better than “shooting in the dark” and represent a systematic process to making the proper bucking decisions.

Types of Purchase Orders

Type	Best Suited Timber Stands	Reasons for Selecting	Reasons for Not Selecting
Camp run	Uniform, smaller diameter	<ul style="list-style-type: none"> • Fewer available combinations of lengths and diameters • Easy to apply 	<ul style="list-style-type: none"> • Inability to capitalize on unique features of the stand
Grade	Larger, diverse stands	<ul style="list-style-type: none"> • Capitalize on higher-quality material 	<ul style="list-style-type: none"> • Many remaining large-diameter stands are of low-quality and grade
Diameter adjustments within individual grades	Larger, higher-quality stands	<ul style="list-style-type: none"> • Capitalize on log diameter; bigger is better 	<ul style="list-style-type: none"> • Large-diameter, low-quality stands
Length/diameter combination	All log sizes, more uniform-quality stands	<ul style="list-style-type: none"> • Use length and diameter combinations to maximize log volume and value 	<ul style="list-style-type: none"> • Confusion in selecting proper lengths or diameters or both leads to loss in revenue
Veneer	Larger-diameter stands	<ul style="list-style-type: none"> • Premium prices paid for larger-size logs in combination with larger accepted minimum diameter • Outlet for large-diameter, lower-quality material 	<ul style="list-style-type: none"> • Seller left with smaller-size material to sell individually at possible discount • Possible pencil bucking
Percentage of logs exceeding a specified length	Taller trees with little taper	<ul style="list-style-type: none"> • Popular with export buyers • Premium prices paid for long logs 	<ul style="list-style-type: none"> • Possible loss in log volume if too much taper in trees • Need to merchandise short material at a discount
Weight	Smaller-diameter hardwoods and conifer	<ul style="list-style-type: none"> • Disregard Scribner log volume tables • Simplified bucking regimes 	<ul style="list-style-type: none"> • Material over 7-inch scaling diameter often greater value when sold by volume • Requires rapid stump-to-mill delivery

Once you have determined the species and examined the exterior characteristics of the timber to be harvested, match those items with potential log buyers. Be sure to send the right log to the right market. Do not, for example, try to sell small-diameter Douglas-fir sawlogs to a cedar mill. It is unlikely the mill will accept the sawlogs, but if it does, it will pay less than they are worth in the proper market, re-merchandise them to the correct buyer, and pocket the profit at your expense.

All purchase orders require a trim allowance for logs, typically 8 to 10 inches, depending on the length of the log segment. If you provide an inadequate trim allowance, you will receive a log length deduction of 2 feet. Improper trim is one of the major causes of loss in log scale. Buyers can submit a request to the Log Scaling and Grading Bureau for Special Services to allow procedures different from those listed in the Official Log Scaling and Grading Rules handbook. Any exception to the specifications in the handbook must be clearly stated on the purchase order. Examples of a Special Service include:

- Adjustments in trim allowance
- Increase in log diameter or ring count to satisfy a particular log grade
- A rule change that employs scaling measurements in 2-foot multiples

Understanding the Scribner log rule regarding taper

Log taper is defined as the reduction in diameter from the large end of a log to the small end. Taper is measured on various log lengths and diameters, and prices reflect the quantity and quality of products that can be manufactured from these dimensions. Thus, buyers pay more for long logs because more product options are available and there is more overrun for the mill (the ratio of volume of product to volume of log scale) than with short logs.

Log volumes are determined according to the Scribner log rule, the standard unit of measurement for virtually all logs sold in the Pacific Northwest. Two sets of Scribner scaling rules exist: westside and

eastside. The set of rules used depends on geographic location, with the boundary between east and west at the crest of the Cascade Range. The biggest differences between westside and eastside scaling regard maximum log lengths (40 feet, westside versus 20 feet, eastside) and recording diameters (truncated to the inch, westside versus rounded to the nearest whole, eastside).

Because the vast majority of logs originates in western Oregon, the examples in this publication use westside rules. It is important that the set of rules used in any sale be stipulated in the language of the purchase order.

Figure 1 (page 6) provides a partial listing of the Scribner log volume tables, showing how various combinations of log diameters and lengths may have the same volume. Log scale derived through the Scribner system can result in cases where a tree stem is bucked into various combinations of lengths and diameters that do not change individual log volume but increase value, as determined by the purchase order. The opposite can also occur, where log volume increases and value declines (typically, when comparing short versus long logs). In addition, there are occasions when portions of a log are intentionally not used in order to increase value. These examples demonstrate how efforts to maximize log value do not necessarily correlate to log volume or utilization of the entire merchantable stem of the tree.

All trees have different tapers at their base and top, but are similar in between. Because of this, the first log in a tree stem will contain the highest percentage of the total Scribner scale. A tree with a single long and single short log will have approximately 85 percent of the scale in the first long log. Based on westside scaling rules, it is almost always to your advantage to select a long log, rather than a short log, from the base of the tree. Similar patterns exist for longer tree stems. A two-log tree will have 75 percent of the scale in the butt log, making the decision to maximize scale and value in the first log of utmost importance. Similarly, a two-and-a-half-log tree contains 60 percent of the total scale in the first log, and a three-log tree has about half the total scale in the butt log.

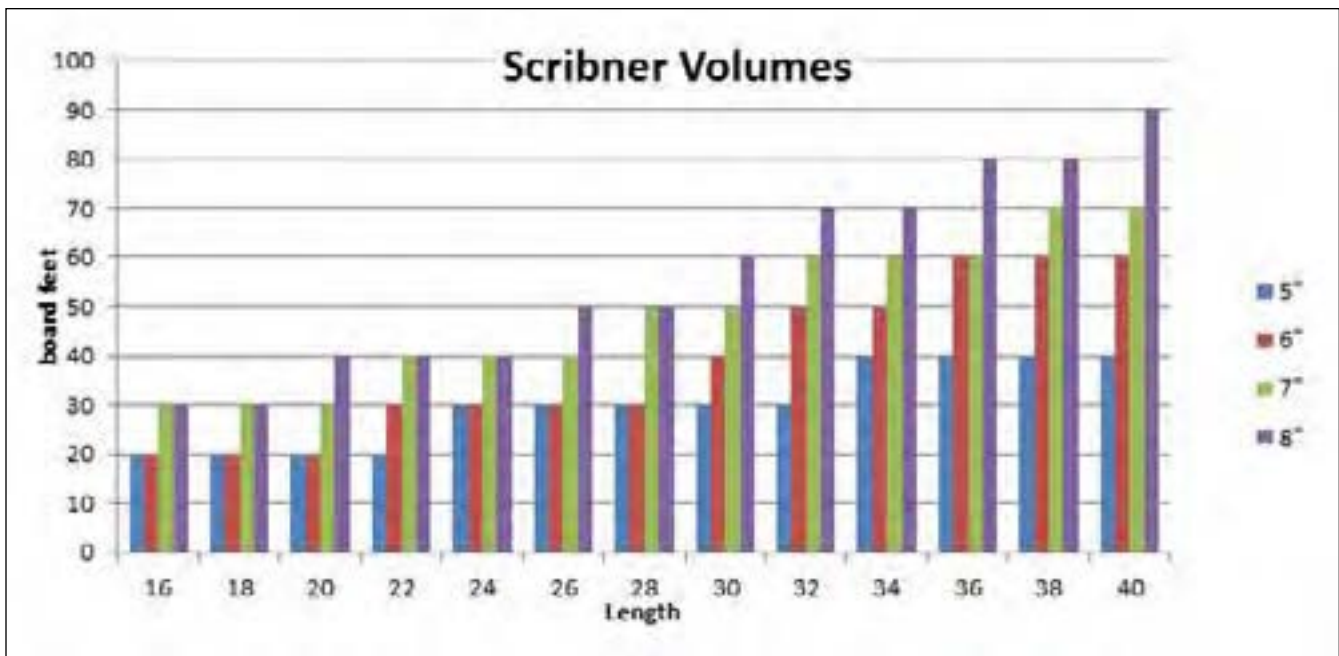


Figure 1. Scribner volumes for small diameter logs

Making decisions about bucking

There are a number of factors you need to consider when making decisions about bucking:

- Safety precautions
- Evaluation of the standing tree
- Exterior tree characteristics (knots)
- Interior tree characteristics (stain)
- Insects and disease
- Isolation of defect in the log
- Time of year of harvest

Safety precautions

After evaluating the characteristics of your timber and deciding on the structure of the purchase order, you can begin the first steps in manufacturing the logs: felling and bucking. Before getting started, be sure to take all necessary safety precautions. Safety cannot be over-emphasized in any aspect of a harvesting operation. An active logging site is a fast-moving and dangerous environment; statistics show that more injuries occur with the chain saw than with any other piece of equipment. Additional information on safe bucking techniques is described in the OSU Extension publication *Safe and Effective Use of Chain Saws for Woodland Owners* (EC 1124).

Evaluation of the standing tree

Before beginning work with your chain saw, first observe the tree you want to fell. A standing tree offers a clear view of the merchantable stem, including possible sweep, snow breaks, conks (exterior evidence of fungal decay in a log), scars, and frequency and size of limbs along the stem. With practice, you can reasonably determine the location of log segments in the standing tree and their accompanying defects. Once the tree is felled, underbrush, broken limbs, and other debris often cover portions of the stem, making defects difficult to locate. Through “virtual bucking” of the tree while it is still standing, you can more closely inspect defects than when the tree is on the ground.

After the tree has been felled, the entire merchantable length of the stem should be limbed to allow closer inspection. Observe the stem from the base of the tree, looking towards the top, and from the top of the tree, looking towards the butt. This process is particularly valuable when determining the straightness of the stem and identifying the beginning and ending locations of sweep and crook. You can remove the tree to a landing before bucking or buck at the location of the stump. Whatever you choose to do, you have only one chance to get it

right, so it is imperative to have a clear, unobstructed view of the tree.

When determining the scaling diameter of a bucked log, measurements are easy to record because the end of the log is visible for inspection. Determining diameters along points of an un-bucked tree is more difficult. You can measure across the top of the log with a logger or carpenter's tape, being especially careful to exclude bark thickness on both sides of the stem. When utilizing this method, it is common to overestimate log diameters. Removing the bark and employing large calipers or using a forester's D tape may be more accurate, but is cumbersome and time-consuming.

Exterior tree characteristics (knots)

Shorter harvesting rotations, widely spaced trees, lower-quality residual trees from previous harvests, and trees merchandised from outside a forested area are all cause for concern regarding the size and frequency of knots. The Official Log Scaling and Grading Rules handbook determines knot size by measuring the heart of the knot (dark portion).

Fast growing, widely spaced trees may have knots small enough to meet the specifications of a particular log grade but, due to wood distortion around the knots, they may fail to meet product recovery requirements. This is of particular importance if you are selling trees with scaling diameters over 12 inches because knots are one of the exterior characteristics that differentiate most #3 from #2 grade sawlogs.

If a log with a 12-inch or greater scaling diameter does not meet the product recovery requirements of a #2 sawlog (thus being designated an "oversized #3 sawlog"), the reduction in value is approximately half than if the log had been designated a #2 sawlog. These types of sawlogs are unpopular with virtually all buyers.

Interior characteristics (stain)

Stain in most sawlogs does not constitute a deduction for defect. In the pine species and in the large-diameter, high-quality logs of other species, stain may be a grade deduction but not a reduction in scale. Even if the end of the log exhibits discoloration, you will receive full scale for the segment, provided the fiber of the wood has not

begun to break down (evidenced when a wood chip is firm and cracks or breaks when bent) and its other exterior characteristics are satisfactory.

Be wary of logs exhibiting rot in one end and stain in the other, particularly in the case of white speck. If a speck appears in one log end and is accompanied by stain in the other, it virtually guarantees the segment will be culled. If you have previous experience with this particular log quality issue or believe the speck is limited in nature, you can attempt to eliminate the speck by long-butting or bucking a short log segment. If these techniques fail to eliminate the defect, you need to examine other outlets for selling the shortened segments, such as for firewood, chips, or possibly a veneer facility accepting cull-grade logs, provided the log is of sufficient length.

Insects and disease

The presence of insects can affect log value, particularly in the case of bark beetles, ambrosia beetles, and wood borers. These pests are the result of dry-weather operations and not delivering fresh logs, as specified in most purchase orders.

The presence of insects and the characteristics manifested in the log (e.g., galleries, sawdust, boring) will virtually eliminate marketing your material in higher-value markets, including poles and exports. Larger-diameter mills specializing in higher-quality products will be very hesitant to purchase logs that are not fresh-cut and show evidence of insect infestation. Dimensional sawmills may or may not accept these types of logs, depending on the current market strength.

Because these logs are not popular with any buyers, you should make every effort to avoid insects and disease in your logs.

Isolation of defect in the log

When a tree stem contains a defect, bucking decisions should be made to isolate the defect to a single log. By isolating defects, you demonstrate a desire to market a well-manufactured log that will reduce the impact the defect has on the product recovery at the mill.

Isolating defect also plays an important role in the way scalers think about and evaluate your logs. If

a large number of logs are defective, either through natural defect or mechanical damage, scalers will begin to look for issues with other logs. But if you keep the number of logs that receive a scaling deduction to a minimum, scalers have a more positive attitude about your material.

When scalers make a reduction in scale, they are required to work within the parameters of the Official Log Scaling and Grading Rules handbook. If, in the scaler's judgment, one log is "hit too hard," the scaler may lessen the severity of that decision by being more lenient on the next log. If there are too many defective logs being processed, the scaler cannot "make up" for any excessive deductions, resulting in a greater reduction in scale than might have been the case if you had made an attempt to isolate the defects to as few logs as possible.

A key question is: how much defect do you remove without leaving "good wood" at the harvest site? The simple answer is, do not strive for perfection and avoid cutting off portions of a log that result in revenue loss. All log buyers want clean, straight logs that are free of defect. This, coupled with the fact that you do not want to "give" wood to the mill, often leads to excessive removal of portions of a tree stem.

When deciding whether to remove a perceived defect in a log or knowingly deliver a log containing a defect to the mill, remember that the amount of allowable defect is dependent on the specifications of the purchase order. For example, a facility producing veneer cores and backs may accept a substantial amount of defect in their logs, albeit at a reduction in value. However, a small-diameter dimensional sawmill that accepts only defect-free, long, straight logs will likely offer no payment for any log it designates as a cull.

Time of year of harvest

Special attention is needed when harvesting and selling logs during the dry, summer months. To meet minimum scaling diameters, a merchantable sawlog must be at least 5 inches in diameter for all species. Anything less than 5 inches will be designated a cull. If bucking to a 5-inch top that is flush with the inch-mark (i.e., "exactly 5 inches"), it is possible that if the log is not delivered within a short time, enough shrinkage will occur that it is measured as a 4-inch

log, thus a cull. In the best-case scenario, you might receive some payment for the log. However, the cull price is a small fraction of what you would receive for a merchantable sawlog. If the purchase order specifies no payment for cull-grade logs, you will lose all revenue for them.

Selecting log lengths and diameters

It may seem contrary to common sense, but when selecting log lengths and diameters from long-log trees, it is rarely to your benefit to use the entire tree stem. An exception is when trees are smaller or shorter or both, and the entire stem satisfies the length requirements specified in a purchase order.

According to the *Scribner Volume & Value Tables*, short logs (16 to 20 feet) with 5- and 6-inch diameters have identical scale. Seven-inch diameter short logs share the same scale but have a 50 percent increase in scale over 5- or 6-inch diameter short logs. Thus, in trees with multiple long-log options, once there is less than 32 feet of merchantable stem remaining, it is often financially beneficial to buck a short log with at least a 7-inch scaling diameter, while using the remaining stem as another product, such as firewood, small diameter poles, or chips. Rarely, if ever, are 5-inch tops financially beneficial in these taller trees, and bucking to a 6-inch top is seldom the best option.

The Scribner volume table in Figure 1 (page 6) shows the benefit of avoiding 5- and 6-inch scaling diameters in the top log of a tree stem, especially when the top log segment cannot produce a log at least 32 feet in length. Figure 2 (page 9) illustrates the value of avoiding 5- and 6-inch scaling diameters with three options for bucking a 60-foot tree stem:

- Three 20-foot logs to maximize the entire tree stem. At \$400 per thousand board feet (MBF), the result is a total value of \$52.
- One 40-foot butt log and one 20-foot top log, utilizing the entire stem. Allowing a premium price of \$525/MBF for the 40-foot log, the total value of this option is \$55.25.
- One 32-foot log, one 20-foot log, and a residual 8-foot log segment for a total value of \$57.00.

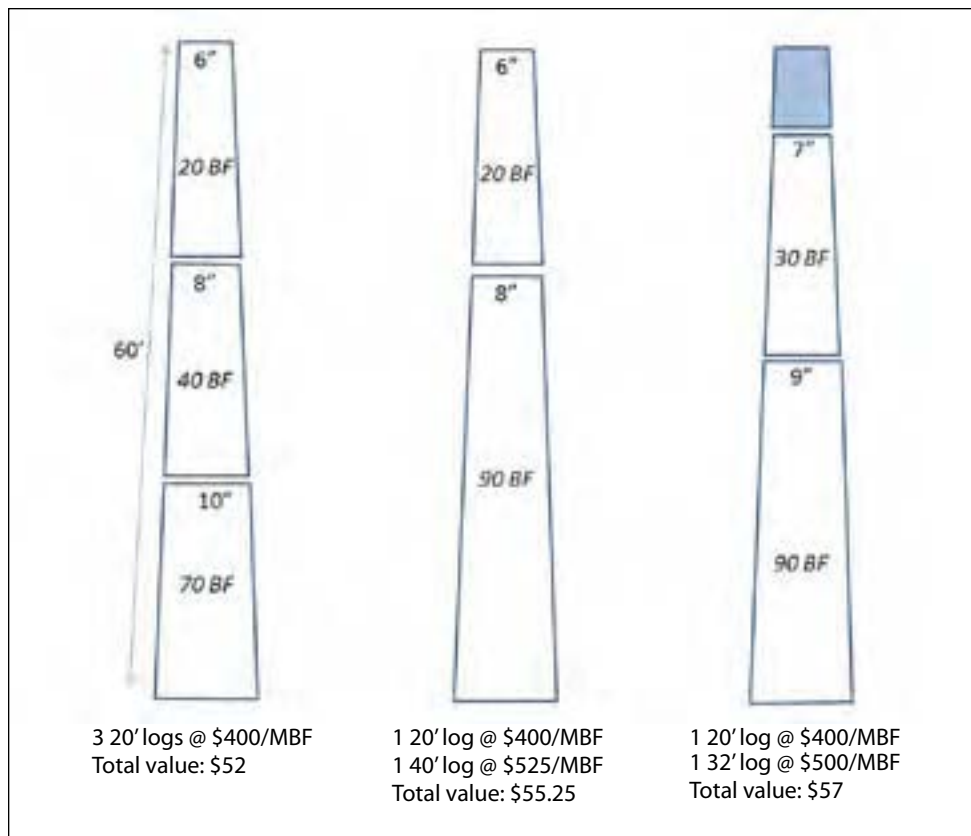


Figure 2. Value differences in bucking to a top greater than 6 inches

When examining a purchase order with length and diameter combinations, most will contain price breaks for more than a single length and diameter. For example, many dimensional mills structure long-log prices in 2-foot increments (from 32 to 40 feet) and offer another price for short logs (from 16 to 20 feet), including trim. Under most circumstances, it is to your advantage to select the shortest required length or the smallest acceptable diameter or both, within a given price range. This approach conserves as much of the remaining merchantable stem as possible, allowing you to select additional log lengths and diameters. If there are different lengths and diameters containing the same Scribner scale, choosing the shortest and smallest log will likely also give you more options.

Short versus long logs

Westside scaling rules favor bucking a long log from the butt. An exception is if you are selling all short logs. Once you have selected the long log, continue to select long logs until the merchantable stem has been used. Only when a premium length is unavailable should you begin utilizing short logs.

An example of when this pattern does not maximize the value of an individual tree is when the short log becomes the best option after the long log from the butt. At this point, maximum revenue will nearly always be met by continuing to buck short logs throughout the rest of the tree stem. Do not buck a short log from the middle of a tree after selecting a long log at the butt and at the top of the tree.

A strategy used by some woodland owners is to cut as many logs as short as possible to recover additional scale. Others cut as many logs as long as possible to receive premium prices. The correct approach lies somewhere in between. Some general guidelines to assist you include the following:

- The greater the taper in the tree, the greater the possibility of utilizing short logs to maximize revenue.
- Conversely, taller trees with minimal taper are better merchandised as long logs for maximum revenue.

It is your responsibility to measure lengths and diameters to determine how greater log volume in

short logs of a lesser value compares to less volume in long logs of a greater value. Merchandising short logs results in added costs through additional skidding, loading, and hauling. If logs are processed on the landing, hauling remains the premier cost factor, due to added loading costs and lesser volumes that can be hauled on an individual truck.

Figure 3 uses the example of a 40-foot stem to illustrate the volume and value differences in bucking long versus short logs. At first glance, it may seem that bucking the log to two 20-foot segments will generate more value. After all, the Scribner scale shows 80 board feet (BF) in the two 20-foot segments versus 70 board feet in the single long log. Remember, the actual value you will receive is based on the stipulations in the purchase order.

For this example, let us assume that the purchase order states that the mill will pay \$500 per thousand board feet (MBF) for 40-foot logs and \$375 per MBF for 20-foot logs. Therefore, the single long log is worth \$35 ($\$500 \times 70 / 1,000$) whereas the combined value of the two short logs is only \$30 (the top log is

worth \$11.25 and the bottom log is worth \$18.75). And this does not take into account the extra costs involved in loading and hauling two segments versus one.

Figure 4 (page 11) shows what results if there is a \$100/MBF price difference for long versus short logs (i.e., \$500 versus \$400). In this example, a 64-foot stem is bucked into four 16-foot logs with a total scale of 230 board feet at \$400/MBF. This results in a total value of \$92. The same tree stem bucked into two 32-foot logs results in a total scale of 190 board feet at \$500/MBF, with a total value of \$95. In this example, bucking long logs from a longer tree stem has greater value than bucking short logs, before including logging and hauling costs.

Typically, the price difference between short and long logs is between \$75 and \$125/MBF (approximately 20 percent). Many purchase orders have a \$100/MBF premium price for long logs, with specific price breaks based on long-log length. For example, some buyers will offer a premium for 32- to 34-foot logs, with an increase for 36- and 38-foot logs, and an additional premium for 40-foot material.

Lengths and corresponding diameters of the tree stem need to be measured to determine the appropriate dimensions for maximum revenue, but this can be a time-consuming task. A purchase order as simple as two long-log and two short-log options results in 24 possible log combinations. A slightly more complex contract with three long-log and three short-log options results in 720 possible combinations. It is enough to make you feel paralyzed to do anything!

From a practical standpoint, and in consideration of your time and effort, you need to inspect five to seven trees indicative of your stand and do a close examination of lengths that will generate the greatest return. For a standard purchase order, this will entail approximately a dozen or so combinations. Once your examination is complete, a bucking strategy will emerge that gains you the greatest revenue, gives the buyer preferred lengths, and is time efficient. This approach, along with a little common sense, should be adequate to give you a sense of satisfaction and accomplishment with your sale.

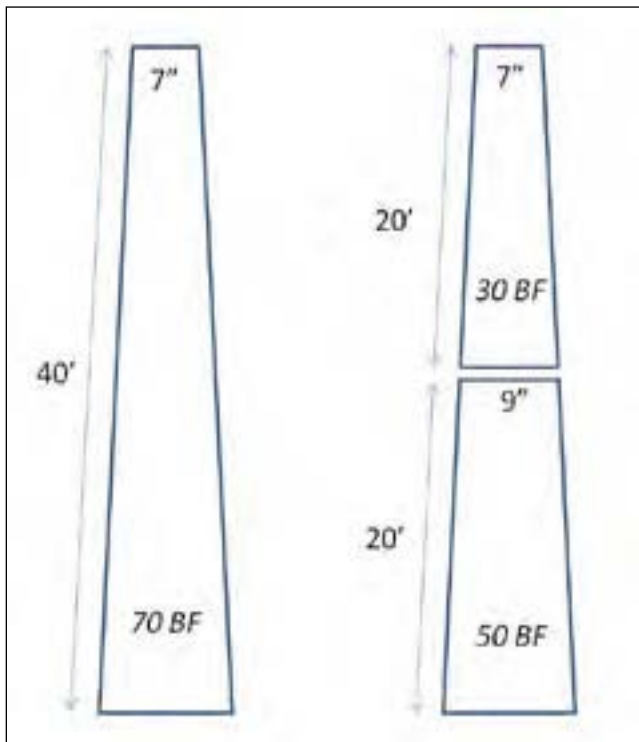


Figure 3. Volume and value differences for long logs versus short logs

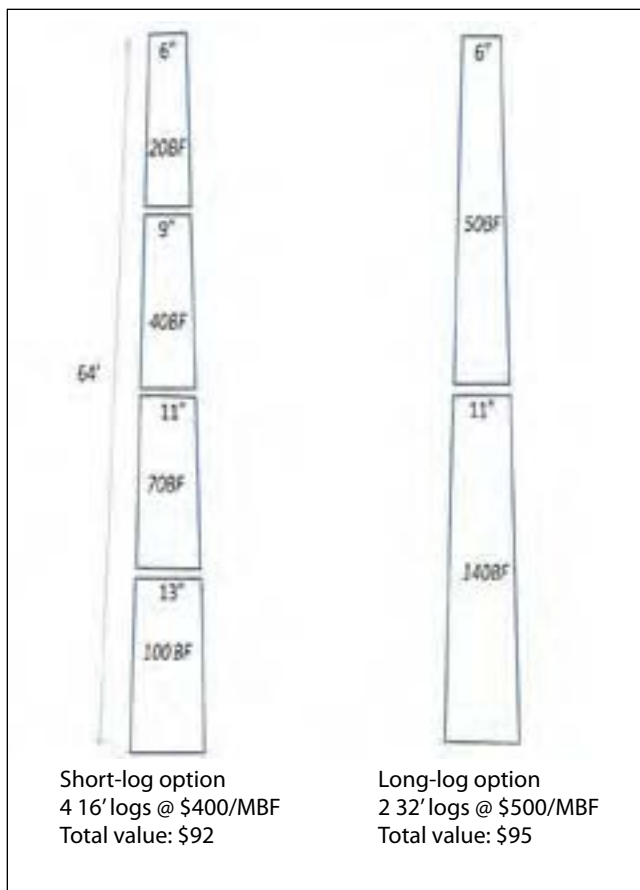


Figure 4. Volume and value differences for long logs versus short logs at different prices

Bucking to remove defects and breakage

Long-butting: log lengths

Long-butting usually pertains to the removal of wood from the large end of the butt log, but it is a technique that can be applied to any portion of the merchantable stem. What if this practice is applied to remove a 2-foot portion from a long log (32 to 40 feet) in hopes of eliminating hook, sweep, or crook? When scaling diameters are 12 inches and smaller, reducing a log segment by 2 feet results in an approximate volume loss of 6 percent. You need to decide whether to deliver a defect-free log or incur a possible loss in the premium price for long logs. Keep in mind that many purchase orders do not accept logs in all 2-foot increments and there may be occasions when additional portions need to be removed to attain an acceptable log length.

The vast majority of logs coming from private woodlands are processed from second- and

third-growth timber stands. The structure of the Scribner volume tables means scaling diameters are essential to maximizing revenue. While not an absolute relationship, there is a very close correlation between maximizing log volume and maximizing revenue. Retaining defect in a log and receiving a length deduction will benefit you by enabling you to merchandise the largest scaling diameter possible, but this only applies if you operate within the guidelines of the purchase order.

Long-butting: log diameters

Retaining scaling diameters in second-growth stands is of the utmost importance. When removing a portion of the tree stem to eliminate a perceived defect, the top portion of that log (and any remaining logs in the stem and their corresponding scaling diameters) is extended up the stem by whatever length was removed for the defect. In the case of long logs, as diameters become smaller, the percentage loss in volume becomes greater. When reducing the scaling diameter in long logs from 6 inches to 5 inches, you will incur a volume loss of at least one third of the total scale. By decreasing scaling diameters by 1 inch in logs whose diameters are between 7 and 13 inches, you have a 10 to 28 percent reduction in log scale. The percentage loss is dependent in part on the idiosyncrasies of the Scribner log rules, but the decrease in log value is determined by the structure of the purchase order.

There are occasions when long-butting to remove defect is in both your and the buyer's best interest. It means you are able to merchandise quality, well-manufactured logs that are desirable to mills, and it means buyers obtain a clean, defect-free log. While it is almost impossible to sell defect-free logs, retaining limited defect to maintain scaling diameters is both desirable for you and acceptable to the buyer, provided the practice is within reason. As Figure 5 (page 12) illustrates, a 4-foot butt log results in a 15 percent loss of scale and possible loss in dollars per MBF, based on length and diameter breaks specified in the purchase order.

Inadequate trim

Figure 6 (page 12) illustrates how employing a 2-foot Special Services rule would result in a 32-foot log with a 6-inch scaling diameter. Because

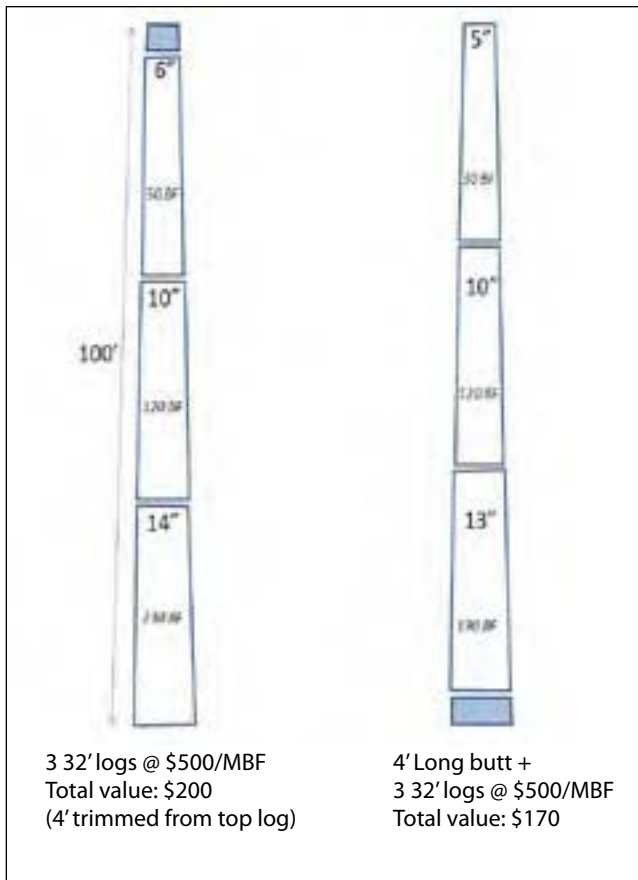


Figure 5. Bucking to remove defect

it contains inadequate trim, it would be measured as a 30-foot log with the same diameter, a volume loss of 20 percent. Reasons for incorrect trim may include a broken or spliced logger's tape, slanted cuts, intentional decrease of the trim to achieve a larger scaling diameter by bucking through a knot whorl—all examples of operational error and failing to maintain log value.

Another important point to consider when removing defect involves gross and net log scale. The payment structure of the purchase order is based on log measurements before applying deductions for defect (gross), while volumes remaining after deductions (net) constitute payment to you. You need to determine whether leaving defect in the log to retain a premium price outweighs removing the defect and receiving full payment for the log, but at a reduced value through the loss of a premium length or diameter.

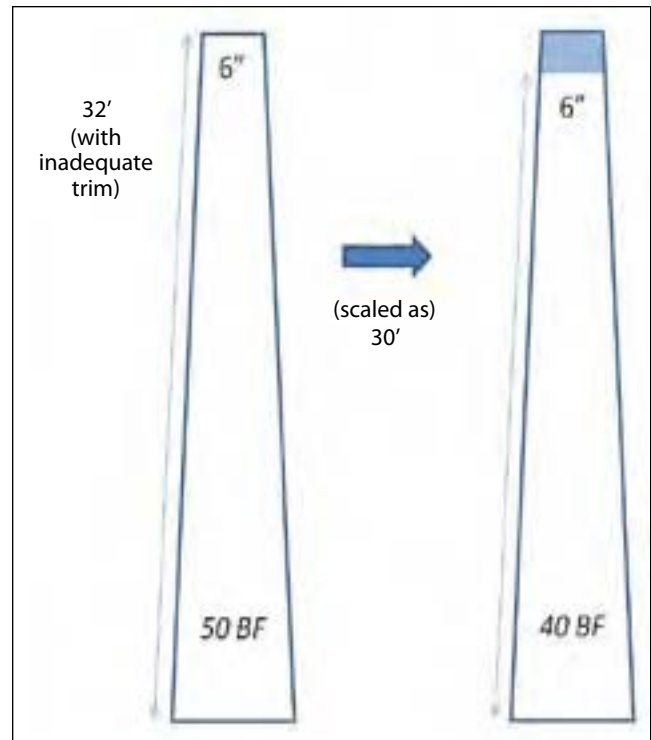


Figure 6. Volume loss due to providing inadequate trim

When participating in the domestic log market, you will be better served to “give” the mill defective wood as determined by the log scalers in lieu of retaining premium log lengths or diameters or both. Because very few woodland owners are adept log scalers, when removing a portion of a log, you risk removing a section that would not receive a deduction from the scaler. Alternately, removing too little defect means losing some value through a decrease in length or diameter, and risking that the scaler will make a further reduction.

In practical terms, timber stands of small woodland owners tend to be more diverse than those found on industry lands, and a harvesting operation performed by landowners is sometimes inferior to those performed by professional loggers. Poor practices by one small woodland owner can reflect badly on other woodland owners. For example, if you meet the specifications of your purchase order, but deliver logs with excessive sweep, hook butts, or rot, the buyer may decline an offer to purchase logs from you in the future and become hesitant to do business with other small woodland owners.

The key is to make sure the incidence of defect is not “excessive.” Some defect is acceptable, but it becomes excessive when, even to the untrained eye, a log looks “ugly.”

Comparing Markets

There are a number of factors that you need to consider when marketing your logs for export or for sale as poles.

Exports

When manufacturing logs intended for export markets, allowable defect becomes a more important issue. High-quality export sorts allow for a certain amount and type of defect but are more stringent than for domestic markets. Export market options are higher value precisely because they require a better-quality log. When comparing the export and domestic markets, you need to determine if more lower-quality and lower-value material in one market (domestic) will generate greater revenue than a smaller volume of higher-quality and higher-value material in another market (export).

Some individuals select a buyer based solely on the highest dollars per MBF, a primary reason why many individuals choose the export market. This logic may or may not be the correct decision. In Figure 7, we have attributed an export-value premium of \$100/MBF over the price per MBF at domestic mills (\$600/MBF versus \$500 for long logs and \$400 for short logs). This is a large difference in values, occurring infrequently and requiring a high-quality log, but we have used it here as an example to provide perspective on the markets.

In Figure 7, a 96-foot tree stem is bucked into two 40-foot logs for export, with a residual 16-foot log. Alternately, that same tree stem could be bucked into three 32-foot logs to be sold to a domestic mill. Total value for the export option is \$206 versus \$200 for the domestic one. This does not take into account the additional costs and likely loss in value to merchandise the residual log.

Most buyers have a minimum average length requirement in their contracts. Delivering a number of short logs may result in failing this requirement and taking a loss in value. Because definitions of export log sorts vary from buyer to buyer and are

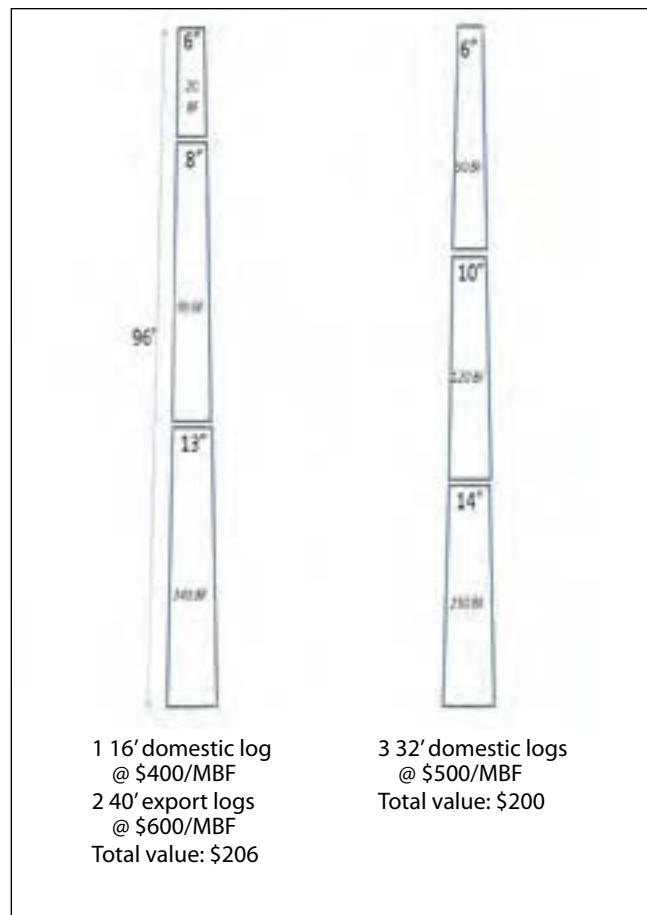


Figure 7. Export versus domestic markets

much more difficult to understand than domestic log grades, there will likely be a degree of uncertainty about the exact dollars per MBF you will receive.

In summary, consider export markets only when there is a substantial value difference in export versus domestic markets, and when you are within a reasonable trucking distance to points of delivery.

When selling export logs, extra care is required in logging aesthetics. Export logs require:

- Straight bucking cuts
- Removal of stump shot or uneven felling cuts from the butt log
- Limbing flush with the bole of the tree
- Minimizing or eliminating defect
- Avoiding damage during processing

Over the past few years, some areas of the export market have accepted additional tree species and have lowered quality standards. The reasons are

twofold. First, demand from overseas buyers and the end use of those logs has allowed for a decrease in quality. Second, export logs are delineated by “sorts” and not log “grades.”

Domestic log grades are determined by the Log Scaling and Grading Bureau under the National Log Rules Advisory Committee. Export sort specifications are determined by the log buyer, the overseas user, and the strength of the market. Sorts (which are a set of specifications for length, diameter, and quality characteristics like growth rate, number and size of limbs, etc.) tend to “loosen” in strong markets and “tighten” in weak ones. Again, it is your responsibility to investigate each market, consult with the log buyer on the merits of your timber stand, and compare the options to determine which market will maximize revenue.

Poles

Utility pole (generally simply referred to as “poles”) values will always exceed those of domestic sawlogs and nearly always surpass those of export sawlogs. The reason is simple: Poles have a very stringent set of specifications met by a small percentage of trees. Keep in mind that:

- Virtually no defect is allowed
- Poles require a certain amount of sapwood
- Poles require a limited number and size of knots
- They need to be “string-line” straight
- They must have a certain amount of taper

An excellent stand of timber will include approximately 10 percent of logs as poles, and many stands will have no pole-quality material. Always consult with the buyer before any cutting occurs to have him or her designate which trees will generate a pole and what pole length to cut.

Most premium pole lengths are greater than 40 feet (the maximum westside length for a single log). To determine volume, lengths greater than 40 feet are “split scaled.” For example, a 50-foot segment intended as a pole is scaled as a 26- and a 24-foot log. For additional information on determining lengths and diameters, see the Official Log Scaling and Grading Rules handbook.

If the segment is not accepted as a pole, so that it must be marketed as a domestic sawlog, the buyer will pay a discounted price because of the shorter, split-scaled lengths. It is also possible that the domestic log buyer will not accept logs over 40 feet, requiring you to remanufacture the log by bucking two lower-value short logs or a single long log with a discarded portion.

If you are selling poles, be sure the buyer guarantees designated trees as poles while they are still in the timber stand. Except for reasons of mechanical damage, do not allow a pole to be reevaluated at the point of delivery, rejected as a pole, or designated as a lower-quality or lower-value product.

Special care needs to be taken in skidding, loading, and hauling poles so that no slabbing, grapple gouging marks, or mechanical damage occurs during delivery. If you have trees that meet the stringent requirements of the pole market, the decision to sell is an easy one, but the processing is more time-consuming and requires special care.

Summary

There are no shortcuts in the proper production and selling of logs. To successfully navigate the process, you need to:

- Monitor the markets prior to harvest
- Conduct a thorough search for a log buyer whose purchase order is best suited to the unique attributes of your timber
- Take measurements and make bucking decisions that maximize revenue based on the buyer’s purchase order
- Continue to monitor the sale in case events require a reevaluation of markets or log specifications or both

The time and energy requirements are substantial, but, if these necessary steps are performed properly, the benefits will be financially rewarding.

Whether you perform the necessary tasks or supervise contractors, log values need to be maintained and then improved through the practices described in this publication. Understanding the pricing and product specifications for the domestic

log market as it correlates to the length and diameter measurements of individual tree stems enables you to participate in any markets that use the Scribner scale as a basis for payment. Once you understand the marketing and manufacturing process, you can explore possible options for higher-value markets such as poles, exports, or specialty orders, all of which are dependent on the attributes of each timber stand.

The relationship between you (the seller), log buyers, and contractors (if you choose to use them) is one that requires prudence to protect the financial interests of each individual and organization. It is in the best interests of all parties to attempt to meet each other's needs to ensure a successful conclusion to the current operation as well as create a positive relationship for future activities. If you successfully follow the guidelines, producing and selling logs to maximize revenue can be a rewarding experience.

For more information

There are a number of other helpful publications available on various topics related to the management of a timber sale.

OSU Extension Service publications

- *Selling Timber and Logs* (EC 1587) offers a comprehensive overview of the process of managing a timber sale from start to finish.
- *Stand Volume and Growth: Getting the Numbers* (EC 1190) offers a simple, yet accurate, method of determining log volumes.

- *Contracts for Woodland Owners and Christmas Tree Growers* (EC 1192) covers many of the legal aspects of a timber sale and contains some examples of logging contracts and road easements. These examples can serve as a basis for structuring a contract that meets your goals and objectives for a timber sale.
- *Measuring Timber Products Harvested from your Woodland* (EC 1127) contains information for understanding how logs are measured and includes some of the conversion factors for comparing various wood products.

Other publications

- *Official Rules for the following Log Scaling and Grading Bureaus* (also known as Official Log Scaling and Grading Rules handbook). (Northwest Log Rules Advisory Group)

Online resources

Listed below are online presentations that walk you through the process of finding and selecting a log buyer, and Oregon Department of Forestry log price information.

- *Income Opportunities from Logs* (video) http://www.youtube.com/watch?feature=player_embedded&v=9KkY_Uvx0Ys
- *Income Opportunities from Logs* (slide show) <http://www.cof.orst.edu/org/owic/IncomeOpps/LogMarkets/>
- Log price information http://egov.oregon.gov/ODF/STATE_FORESTS/TIMBER_SALES/logpage.shtml

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