

Eastern Washington Timber Supply Analysis

An average 1.1 billion board feet of timber has been harvested annually in Eastern Washington by federal, state, private, and Native American forest landowners over the past 30 years. The UW's College of Forest Resources and CINTRAFOR recently completed a study of the Eastside timber supply to assess how future timber inventories and harvest conditions might change over the next 100 years. While U.S. Forest Service harvests in Eastern Washington are expected to decline by about 230 million board feet, or 65%, compared to historic levels, potential forest inventories and harvests by other groups are more variable and will ultimately be determined by environmental constraints, management practices, market conditions, natural disturbances, and public policies.

Available Timberland

Of the 26.6 million acres that make up Eastern Washington, 5.6 million acres are forest land capable of producing industrial wood and available for commercial timber production. Over 4 million acres of this timberland, or 70%, is controlled by non-federal owners including the state of Washington, the forest industry, Native American groups, and non-industrial private landholders (see Figure 1).

Forest types in Eastern Washington vary considerably, but the dominant commercial species are ponderosa pine, Douglas-fir, and western larch. The stand structure and age class distribution of Eastside forests are fundamentally different than those of the Westside, and forest health issues are a primary concern. Most Eastside forests are not clearcut but are under uneven-aged management. Silvicultural alternatives are likely to play an increasing role in managing forest health problems.

Harvest Trends and Projections

The timber harvested by all forest owners in Eastern Washington has fluctuated around an average annual harvest of 1,100 million board feet (MMBF) over the past 30 years, from a historic low of 726 MMBF in 1982 to a high of 1,359 MMBF in 1989. The UW study projects several potential decade-average harvest levels for the next 100 years that differ according to the various ways Eastside forests can be managed. The analysis is based on U.S. Forest Service Forest Inventory and Analysis (FIA) Unit inventory data for all Eastside owners and simulates future inventories and harvest conditions for non-federal owners using forest growth and harvest scheduling models—evaluating a range of management alternatives and harvest flow constraints. Forest Service harvests are held constant throughout the analysis at 133 MMBF per year based on the agency's recent management plans. Two large land areas, or timbersheds, are defined and used in the study: the Central Cascades, which includes the counties on the eastern slope of the Cascade Range, and the Inland Empire, which includes the remaining counties in Eastern Washington.

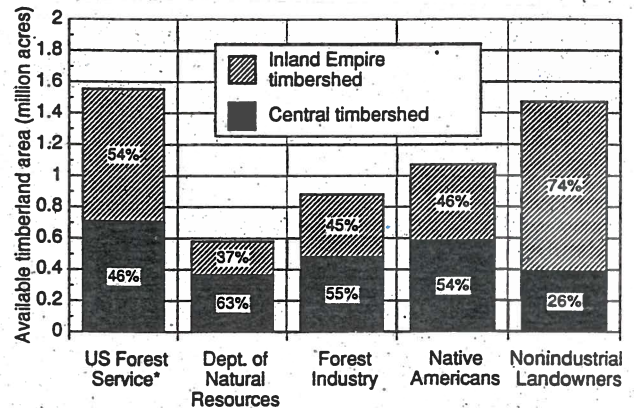
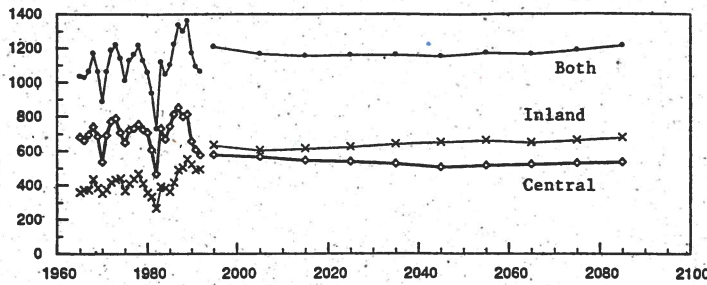


Figure 1. Land Use Distribution by Timbershed and Owner

A sample projection of total potential harvest by timbershed, based on management plans for each owner group, is shown in Figure 2. The lines represent the maximum ten-decade sustainable harvest level from Eastside forests when harvests from one decade to the next are not allowed to increase (or decrease) by more than 5%. The potential total harvest of 1,207 MMBF (average for the first decade, 1991-2000) is above the 1992 actual harvest level of 1,062 MMBF. Despite Forest Service harvest declines, non-federal owners may potentially increase their harvests by as much as 232 MMBF during the first decade compared to their late-1980s levels. The lines represent potentials only—actual harvest levels on non-federal lands have historically fallen short of maximum potential and may continue to do so over the projected period due to harvest losses, estimation errors, the variability of ownership objectives, and changing policies.

Figure 2. Potential Average Annual Harvest (in million board feet) by Timbershed for All Owners



Environmental Factors

An open question is whether environmental factors will contribute to a dramatic decline in the non-federal harvest. Private forest owners have expressed concern that there could be a 15-20% reduction in available timberland on non-federal lands through mandates to create streamside buffers and to protect wildlife habitat. Assuming a decade-to-decade harvest requirement of plus or minus 5% for the two timbersheds modeled, any timberland reduction would consequently reduce the 100-year harvest flows due to the reduction in harvestable inventory. However, non-federal owners could decide to offset the impact of land reductions by harvesting mature stands of timber in the short term, opting to face harvest declines several decades later, or by replanting and managing young forests more intensively to speed up the next harvest cycle and "replacing" the reduced timber supply over the long term. By tolerating a plus or minus 25% change in harvest levels between decades, as much as 7 billion board feet of mature timber could be liquidated from non-federal lands over a 10-20 year period without reducing the ten-decade harvest level.

The changes in stand characteristics that would result from such an accelerated harvest may have both positive and negative impacts on regional forest health and biodiversity. The existing high share of very dense stands are contributing to substantial fire risk over the next few decades which could be reduced by accelerating the selective removal of the more mature trees. However, current management patterns would not restore the larger diameter trees that were more prevalent in earlier periods. Increasing management to the highest levels tested (including underplanting) produced the highest ten-decade (sustainable) harvests but resulted in a significantly lower volume of standing inventory.

The Bottom Line

Environmental constraints, management practices, market conditions, forest health, natural disturbance and policy are all likely to be important determinants of future harvest levels. The decline in federal harvests and constraints from forest practices changes on private harvests, along with reduced industry harvests due to declining mature inventories, may be more certain than increased harvests from DNR and Native American lands or increased harvests from managing lands more intensively. With declining harvests resulting in high prices, increased harvests from non-industrial lands are more likely, potentially offsetting the industry decline. An overall decline in harvest of about 100-200 MMBF, or 9-18% of the historical average, is likely—even without additional constraints from changing forest practices. Part of this decline could be deferred by several decades by accelerating the removal of existing mature inventory.

The forest sector directly employs about 7,000 workers in the region, and the employment level is affected both by timber harvest and the value of timber on the market. A 15% reduction in the available forest land decreases employment by 7-12%. While higher prices and increased secondary forest products manufacturing may offset many job losses due to harvest declines, a worst case for rural forest-based employment develops if forest owners are forced to reduce the acreage available for harvest and the costs or risks of management exceed levels where investment in the region's forests is attractive.

A recently-completed analysis of Eastern Washington's timber supply is available from CINTRAFOR as Special Paper 18. An analysis of Western Washington's timber supply and associated yield tables are available as Special Papers 12 and 12a.

Projections show that forest industry harvest levels are likely to decline by about 120 MMBF per year over the next decade compared to a 1985-92 base period, returning to the average level of the last three decades. The Washington DNR could increase potential harvest levels by 70 MMBF during the first decade, and both Native American groups and private non-industrial landowners could each increase harvests by 140 MMBF to offset the decline in federal and forest industry harvests. As mature inventories are harvested in the two timbersheds, the Inland harvest levels are expected to increase as the Central harvest levels decrease, with the average diameter of standing trees declining from 20 inches to 14 inches over 100 years. This results in a relatively stable inventory consisting of a larger number of smaller trees.