Forest Land Conversion in Washington State

Overview

In the next one hundred years, the population of Washington State is expected to increase substantially, at least doubling in the central Puget Sound region. This will dramatically increase the region’s demand for housing and economic development. These changes, along with other factors affecting the timber industry and farming, are increasing pressure on undeveloped lands located in areas zoned as rural and resource areas.

The conversion of forest land to residential and commercial uses has many implications. Readily available and sustainable timber supply for the forest products industry may decline, along with forest wildlife habitat, clean water production and storage, and recreation opportunities. With growth in Washington’s population and continued demand for land for housing and commercial uses, the location of those changes has much to do with zoning, desired housing densities, transportation, and employment options. This, in turn, affects the forestry industry in Washington.

The objectives of the forest land conversion study undertaken by the U.W.’s College of Forest Resources are to assess the trends and dynamics of forest land conversion to non-forestry uses in Washington State. This was done by analyzing current and historical trends and patterns of conversion, and providing information about potential factors related to forest land conversion.

The analysis shows the loss of working forest land in Washington, and the multi-step process by which commercial forest land moves toward development. The primary driver of conversion is the often dramatic disparity between the economic value of forested land for timber production and the much higher value for development. Contributing factors are regulatory complexity and uncertainty, and changing landowner objectives. The adequacy of current programs to protect working forests is also assessed.
Current Situation and Trends

Timberland

Forest Inventory Analysis (FIA) reports provided a main source of data used in the Future of Washington Forests project. Using data from two FIA reports, Washington’s Public and Private Forests and Timber Resource Statistics for Non-national Forest Land in Western Washington, it is possible to estimate the changing ownership patterns and loss of timberland acres. According to these two reports, timberland (excluding national forest land) in western Washington declined at an average rate of 0.37 percent per year from 1978 to 2001 (from approximately 7.7 million acres to 7 million acres). A minimal amount of this land was reclassified out of the FIA inventory into national forest land, while the remaining loss was to either urban, right-of-ways, or agricultural land uses. One relatively dominant pattern shown from these data is the transfer of ownership from forest industry companies to other private owners, followed by the subsequent conversion to non-timberland by the other private owners.

Recently released data from the Timber Resource Statistics for Forest Land in eastern Washington shows timberland declining at an average rate of 0.35 percent per year from 1980 to 2002 (from approximately 4.3 million acres to 3.8 million acres), with a higher rate between 1970-1980 than 1980-2002.

Figures 31 and 32 show a summary of the net flow of timberland between state and other public, forest industry, and other private land owners, as well as into and out of timberland designation, based on FIA data.

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**Fig. 31**
Timberland Ownership and Net Flow on Non-National Forest Lands in Western Washington

- **Ownership group:** State and other public, Forest industry, Other private
- **In/out of FIA inventory:** National forest, Reserve
- **Non-timberland:** Right of way, Urban, Agriculture
- **Net ownership change:** Only shows changes in tracts larger than 20K acres
Forest Land Use

The U.S. Forest Service’s Forest Inventory and Analysis program monitors Washington’s forests with a statewide grid of permanent plots and various remotely-sensed data. There are several potential problems with relying only on FIA data to assess forest conversion. With the relatively infrequent updates made to the data, there is a small chance of a data point falling in areas experiencing the highest rates of forest land conversion. In addition, a grid system, although very suitable for relatively homogenous areas, may not be the best sampling scheme for areas with increasing heterogeneity of land uses.

An alternative methodology is used in this study to evaluate land use changes in western Washington. For this analysis, physical land cover information was evaluated and sorted into nine land use categories, in addition to vegetation cover. The categories are based on size of contiguous area, percent development, and number of developed clusters. The nine categories are:

- Wildland forest
- Rural forest
- Other forest
- Intensive agriculture
- Mixed agriculture
- Other agriculture
- Low-density residential
- High-density residential
- Urban

Based on satellite imagery from 1988, 1996, and 2004, changes in the land cover characteristics associated with these land use categories indicates a steeper rate of change than is suggested by the FIA data. From approximately 1988 to 2004, forest land outside of federal ownership in western Washington was converted to non-forest land uses at an estimated rate of 1.04 percent per year. It is estimated that from 1988 through 2004, 9 percent of western Washington’s non-federal land in a forest land use was converted to agriculture/mixed-rural land uses, while 5 percent was converted to residential or urban land uses. An additional 3 percent was converted to either other uses or was unclassified in the data. The remaining 83 percent of the land in forest land use in 1988 remained the same in 2004.
Fig. 34 shows land use conversion in western Washington by county, showing forest lands that either changed to agricultural/mixed-rural land uses, changed to developed land uses, or remained as forest between 1988 and 2004.

Where forest land conversion is taking place
The conversion of forestland to development may be influenced by location. Unlike Oregon, where much of the forestland is buffered from development by its geographic isolation, steep slopes of the coastal mountains and poor accessibility, Washington’s forestland is in areas experiencing urban growth. The low-elevation forests of western Washington are among the most productive in the world for softwood products, and these are the areas where most of the state’s forestland is predicted to be lost.

This graph represents only acres of land that changed from a forest land use to other land uses between 1988 and 2004. Although additional land use changes were analyzed, such as agricultural land uses to developed land uses, that data is not represented in this chart. For example, Clark County has experienced more development than represented in this chart since most of the development took place on agricultural land or mixed lands rather than forest land.
According to interviews with representatives from Washington’s forest industry, land conservation organizations, and county resource managers, forestland along the I-5 corridor will likely undergo the most conversion in the future. Clark, King, Pierce, Snohomish, and Thurston counties have been identified as areas likely to see the greatest change. Grays Harbor, Jefferson, Kitsap, and Mason counties are also expected to undergo forestland conversion. In eastern Washington, Kittitas, Spokane, and Stevens counties are most likely to experience significant conversion of forestland.

Forestlands in other regions in Washington are also at risk for conversion. While some analysts suggest that areas in Whatcom and Skagit counties are likely to have housing densities increase by 20-40 percent on private forestlands, other land managers think that most of Whatcom County’s timberland is rugged and mountainous and not suitable for development. From this perspective, the lands likely to be converted for development are rural agricultural lands.

The typical patterns leading to conversion
Forest land conversion is not a one-step process. As the timberland and land use data shows, forest land appears to be transferring from traditional industrial companies to other private owners and then converting to other non-forest uses, such as low-density residential uses or non-contiguous, fragmented tracts of forest land. A review of fine-scale parcel data, forest practice permits slated for conversion, and development permits, makes it possible to trace the conversion of forest land to non-forestry uses. In King County from 1997-2003, 44 percent of the forest practice permits slated for conversion were in areas that were identified as no longer remaining in a forest land use. Additionally, 70 percent of the new parcels were identified in these same areas.
“Parcelization” alone does not necessarily mean that the land is converted to other uses, however. When the development permits are analyzed in areas of forest land conversion compared to areas of non-conversion, there are initially more developments in lands classified as other uses. This pattern appears to explain a process of forest land conversion to rural, low-density residential and mixed forest/agricultural uses followed by transition to more suburban low- to medium-development. Because the permits for development were filed for “transitional” lands, it could be expected that remaining forest land with forest practice conversion permits slated for development and the high number of new parcels would be the obvious lands in the next wave of development permits.

A trend appears for forest land conversion, beginning with an intent to convert to other uses, parcelization of the tract of forest land, and ending with eventual development.

Major Factors Influencing Forest Land Conversion

Assessment of scientific literature, and input from professionals representing Washington’s forest industry, land conservation organizations, and county resource managers indicate that the primary factors driving forestland conversion in Washington stem from population growth, urbanization, and the economic pressures felt by private forest landowners.

Population

Washington’s population rose by 21 percent between 1990 and 2000, with a growth rate much higher than the national average of 13.2 percent. Washington’s population was approximately 5.9 million in 2000; the state’s population is expected to be more than 7.8 million by the year 2025.
Urbanization and zoning

The value of forestland reflects the current use as well as the possible future use of the land. The growth of Washington’s population has led to the increased need for housing which, in turn, has stimulated demand for buildable land.

The availability of relatively affordable land outside of cities has led new residents and developers to build in rural areas. This expansion of the urban interface has caused the value of forest land to rise dramatically if converted to residential property. According to a 1999 study of rural King County, land that had recently been worth roughly $1,000/acre for the production of forest products now can sell for up to $15,000 - $20,000/acre for residential development. This rise in property value has motivated many forest landowners, both non-industrial and industrial, to convert their lands for more profitable urban and residential uses.

While there is a trend of rising land values across the United States, the widening difference in value between forestland and urban lands is particularly significant in the Pacific Northwest. A 2004 study assessed forestland values for 38 counties in western Oregon and Washington and found average land values to be $1,483/acre in forest use and $165,947/acre in urban use.
Local governments influence the pattern of development, as well as the market value for new uses of forest land, through zoning. Local governments attempt to avoid incompatibility in neighboring land uses, and to balance the costs of extending urban infrastructure into surrounding areas with the tax base to help support those costs. Counties planning under Washington State’s Growth Management Act created ‘rural’ and ‘resource’ zones where housing densities are limited to serve the purposes of land use compatibility and infrastructure cost control. These zones also serve to protect working landscapes, natural amenities, and environmental services such as flood control. This planning approach resulted in large lot zoning in the rural and resource zones. Under Growth Management Act planning, while rural zoning was intended to encourage low-density development, large lot zoning was intended to discourage development of rural and resource lands, and provide sufficient land base to maintain traditional rural and resource economic activities. Planning under the Growth Management Act typically looks forward in twenty-year increments. With an assumption of limited development in rural and resource zones, this strategy might be successful. However, current development trends suggest there is a threat of substantial conversion in the central Puget Sound region over the next century. The timing and magnitude of risk varies in other parts of the Cascade foothills and the state, but similar concerns are now being voiced by those interested in protecting working forest lands.

Large lot conversion can be a source of economic, ecological, and social consequences. From an economic standpoint, undesirable fragmentation created by conversion compromises the functionality of resource operations and reduces the land base available to support necessary business infrastructure ranging from mills to timber operators to truck drivers. Conversion also has negative ecological consequences. Additional impervious surfaces reduce water storage and infiltration. Residential wells exempt from permits put pressure on the quantity and quality of groundwater. Fragmentation also affects habitat by reducing important migration corridors between protected areas. From a social standpoint, fragmentation may result in longer commute times. Sprawl could cause Washington to lose the character and appeal that attracts business and inspires residents.
Cost and complexity of harvest

Urbanization and the growing populations of suburban and rural communities have an impact on forestland management far beyond urban boundaries. The urban-rural interface has become a broadening geographic area where forest management meets urban development. It is also a political arena where people holding different values for the forest interact. Urban migrants have attitudes, needs, and values that are often very different from those of long-term rural residents. New forest neighbors may hold expectations that are at variance with the way their neighbors manage their forests.

These differences can result in conflicts such as opposition to traditional forest management practices. A typical example is that of new residents building homes in rural areas and then considering their neighbors’ timber harvest practices a nuisance. This spurs concern by both non-industrial and industrial forest landowners that these new residents will influence the actions of decision makers who approve forest policies, such that they will face greater regulatory pressure from new ordinances for more restrictive forest management practices.

To ensure the provision of public goods from forest lands, Washington has developed one of the most comprehensive sets of Forest Practice Rules in the United States. The intent of these provisions is to minimize environmental impacts by regulating such forest practices as road building, harvesting methods, streamside protection, and the use of chemicals. However, regulations can make forestry operations more costly and can act as an incentive for non-industrial and industrial landowners to convert forest to other uses. Forest products industry representatives warn that Washington’s forest land owners are on fragile economic footing in the global market. This conundrum has driven land conservation groups to investigate market-based, voluntary strategies to address long-term growth.
Landowner objectives and decision factors

Concerns of industrial forest landowners

In Washington, between four and five million acres of the state’s total private forestland is owned by nearly 60 large industrial and non-industrial private landowners (excluding Indian tribes). The effects of urbanization on resource lands and the value of forestland for development uses are factors of keen interest to industrial forestland owners. Obligations to shareholders may dictate that they seek to sell portions of their high-valued timberland holdings for even higher-valued development.

Some industrial owners of Washington forestland have indicated that they have chosen to sell their holdings in counties with high development pressure to avoid the difficulties of conducting forest practices in an increasingly urban landscape. Concern about the perceived unpredictability of the regulatory climate of Washington is also a factor that weighs heavily in decisions whether or not to retain forestland for timber harvest. Sales of commercial tree farms are replacing thousands of acres of contiguous forest with residential development lots ranging from 5 to 20 acres. Most forest products companies now have real estate development divisions and are actively marketing properties. Constraints on these conversions under local growth management plans may be limited to the minimum 80-acre lot size in ‘resource’ zones, intended to be compatible with commercial forest activities. However, development in ‘rural’ zones can take place, and large areas of 80-acre parcels in ‘resource’ zones may not be compatible with commercial forest management.

Considerations of family forest landowners

In Washington, about 3.2 million acres of forestland are owned by family forest landowners. These landowners feel a close tie to their land and see the implications of the conversion of surrounding forestland as a threat to their quality of life.

The demographics of Washington non-industrial forest landowners are shifting. As forestlands are increasingly divided into parcels, the number of small family forest owners is increasing. Recent survey findings for Washington State indicate the average age of family forest landowners is between 57 and 67 years old. Nearly half of the land owned by Washington’s family forest owners is held by individuals who are 65 or older. The elevated age of small forest landowners suggests that inter-generational transfer could be an issue.

Although family forest landowners have a close tie to their land and see it as an economic investment, many of their adult children lack interest in managing their parents’ forestland. Consequently, these older landowners often look to liquidate their forest land assets for retirement purposes or to cover other family expenses. In some instances, when family forest owners do pass their land on to their heirs, the high value of the forestland - whether because of the quality of timber or its potential for development - can force the heirs to subdivide the land in order to cover the high cost of estate taxes.

Family forest owners have expressed frustration with regulatory restrictions at the federal, state and county levels and have said they feel that the respective governments and administering agencies lack trust in them to steward their forestlands.
under appropriate forest practices. They feel they are being asked to absorb the costs of culvert replacement to improve fish passage for salmon. Washington’s recent Forest and Fish rules are cited as an example of regulations with a disproportionate impact on owners of small parcels, which in some cases may be largely covered by streamside buffers. (See the Focus Area on page 49.) In addition, the complex rules for streamside management require technical expertise, which many family forest landowners don’t have or cannot afford. Given these conditions, the development value of a landowner’s holdings is often an attractive incentive to sell or convert their forestland.

Predictions for the Future and Implications
Current Incentive Programs

Many of the programs intended to support working forest lands and landowners are not adequately funded to support all interested landowners. Some of the programs require that the participating lands be home to threatened or endangered species. Participation requires navigation of a system that many landowners neither have the time nor inclination to initiate.

Six potential incentives for maintaining working forestlands were identified during this project:

Direct Payment Programs: Direct payment programs offer payments to landowners for changing particular aspects of their management to meet conservation objectives or for placing a portion of their land in a conservation easement. These payments are often in the form of grants and cost share programs. The largest payment programs are offered by federal or state agencies with many of the federal programs with impacts on forest landowners funded through the Federal Farm Bill. In 2005, Washington landowners received $101 million in conservation payments for programs funded through the Farm Bill, placing the state 10th (relative to other states) in terms of the dollar value of payments. However, payments available through the Farm Bill are primarily directed at agricultural producers, and only a few are applicable to forest landowners. Payments through the Forest Service’s Forest Legacy Program provided an additional $2.7 million in 2005; Washington again ranked 10th (relative to other states) in overall funding support for this program.

The Washington Department of Fish and Wildlife also offers programs to support specific species and habitat protection. Additional payment programs are available or administered through the Washington Department of Natural Resources. In 2005, these programs provided $4.7 million in support of several conservation programs for small forest landowners. Direct payment arrangements may also be negotiated between private parties, and include conservation easements purchased by conservation organizations and land trusts.

Regulatory Relief Programs: Regulatory relief programs provide assurances that as long as landowners adhere to particular management requirements, they may

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be considered exempt from current or future regulations. In some cases, alternate management plans based on particular site specific needs may be developed to help landowners continue operating while meeting the goals of particular regulations (such as the Forest and Fish Law).

Tax Relief: Tax relief offers a break from various taxes for landowners who maintain their land in forestry classification.

Improved Public Awareness: Forestland owners have identified a diminishing ‘social license’ to practice forestry as a reason that they (or their heirs) divest of forestlands. Improving public awareness of the benefits provided by forestry may help to increase acceptance of commercial forest practices.

Technical Assistance Programs: Technical assistance programs include educational programs aimed at teaching landowners how to implement new regulations, new technologies or management plans.

Ecosystem Services: There are newly emerging opportunities for market valuation of environmental benefits provided by forest management. In recent years, there has been a large effort to develop markets for ‘ecosystem services’ (described in the Focus Area on page 57). There is much evidence that the public value of currently un-marketed attributes of working forests can be significant. The increase in attention to voluntary carbon credit transactions, wetland mitigation and biodiversity conservation banking, debt for nature swaps, and use of tax breaks demonstrate the growth in payments for ecosystem services. To date, these examples represent the disparate efforts of a few organizations and companies, and an actual market may be a long way off. It is likely that efforts aimed at monetizing ecosystem services will continue to gain momentum as there is a growing recognition that the traditional regulatory approach aimed at preventing environmental damages may not achieve all of its intended goals, or worse, may serve to increase rates of forest conversion.

Conclusion
The dramatic disparities between forestland’s value for commercial forestry versus development indicates that marginal economic incentives may be insufficient to prevent owners of large and small commercial forest parcels from converting their lands. In such cases, usually in areas relatively close to urbanizing areas and urban infrastructure, complete purchase of development rights’ may be the only reliable way to retain the land in working forest management with all its diverse benefits. In other cases, more distant from urban areas or where development is for whatever reason less immediate, incremental incentives like the ones described here may be sufficient to induce forest landowners to keep their land in working forests.