

**ANALYSIS OF FINANCIAL VIABILITY AND CONSERVATION MEASURES FOR A REVISED
NW OREGON STATE FOREST MANAGEMENT PLAN (2015)**

Oregon's State Forests are managed to achieve the greatest permanent value (GPV) for all Oregonians (ORS 530.050). This mandate, which is further defined in administrative rule developed and approved by the Board of Forestry, directs State Forests to manage for social, economic, and environmental benefits to provide both sustainable and predictable revenue from forest products and long-term conservation of fish and wildlife habitats as well as social values.

The Oregon Board of Forestry concluded in 2012 that the current approach for managing state-managed forestlands was not financially viable. A Board of Forestry subcommittee was formed to address these financial viability issues. Outcomes included directing the State Forests Division to examine alternatives to the current Forest Management Plan (FMP) for Northwest Oregon. The Board further directed the Division to focus the FMP Alternatives project with "twin goals" to develop a new forest management plan that is both financially viable and improves conservation outcomes in state forestlands. The Board also directed the Division to develop a "land allocation" approach as the primary strategy for a comprehensive forest management plan. More detailed background, definitions, goals and strategies are described below.

A. Financial Viability

Background

The Department's State Forests Division is financially self-sustaining (no general fund), with the vast majority of its revenue derived from a portion of timber sale receipts. On Board of Forestry (BOF) lands (the focus of the Alternative Forest Management Plan Process), counties, schools and local taxing districts in which the timber sales are located receive 63.75% of the net proceeds and ODF receives 36.25%. Monies that are received by the State are deposited in an operating fund, named the Forest Development Fund (FDF) and are made continuously available to ODF to manage the Board of Forestry lands.

The recession that began in late 2007 drove housing starts to near-record lows nationally, leading to severely depressed timber values and substantial erosion of the FDF, which serves as an operating fund for the Division. In response to the economic downturn, the Department responded with the most significant reductions in its history, laying off fifty-six positions and curtailing operations across the Division. Through layoffs and other cost reduction measures, the Division reduced expenditures by 30 percent in fiscal year 2010. While this resulted in a more stabilized management of State Forests, the FDF continues to decline as annual costs continue to exceed annual revenue. This significantly diminished investments in recreation, research and monitoring, forest inventory, silvicultural activities, and other key aspects of forest stewardship.

The agency formed a Financial Viability work group in the fall of 2011, to assess the situation and to explore ideas, develop options, and recommend policies, strategies, and actions to maintain the Division's financial viability. The work group concluded that, while the current FMP provides many benefits, it did not produce enough revenue to sustain the State Forest Division over the long term. The

group also explored options for cost reductions and ideas for revenue enhancement. In January, 2013, the BOF established a subcommittee to work with staff and stakeholders to better understand the Financial Viability workgroup findings and long-term outlook for the State Forests Division. At the Board's direction, several steps were taken:

- Established a Subcommittee of the Board to direct Division work, establish criteria for success and sideboards, and provide a liaison role between the Division and the Board
- Evaluated Alternative Revenue Sources developed by the subcommittee
- Convened a Stakeholder Group to help guide the Division's work on alternative forest management plans.

The eight-member Stakeholder Group completed four meetings while working toward a goal of developing 1-3 Forest Management Plan approaches that could potentially achieve financial viability for the agency and improve conservation outcomes on State Forests in NW Oregon. The ideas generated by the Stakeholder group were reviewed by an independent panel of scientists. Following this scientific review the BOF met on November 5th, 2014, and reached a unanimous decision accepting the subcommittee's recommendation to pursue a "land allocation" forest management approach which must meet two goals: financial viability and an increase in conservation outcomes. A "land allocation" approach will designate lands into emphasis areas, primarily for conservation (Section B) or for timber harvest production (Section C).

Financial Viability Defined

To be financially viable State Forests Division needs to have sufficient revenue to fully implement approved forest management plans and provide the desired balance of environmental, social, and economic benefits. At a minimum, State Forests Division must bring in at least as much money as it is spending. The stronger business model is for revenue to exceed operating costs in the long-term, creating a stronger FDF and greater financial security. The revenue could come from other sources than timber sales.

The FDF balance continues to decline because expenditures exceed revenue. The FDF balance is critical in the Division's business transactions cycles; i.e. when bills are due and when money is received from timber sales. Given the flexibility provided to purchasers of timber sales and the multi-year duration of these contracts, incoming cash flow is not steady. To have stable business operations the FDF balance must be high enough to accommodate cash flow cycles and be prepared for unforeseen risk. For example market conditions commonly shift with changes in demand and value of wood. If the fund balance is too low, State Forests will not be able to withstand these fluctuations and pay for standard business transactions.

Calculations for financial viability estimating the financial gap are only solving the "money in—money out problem" and do not include a specific dollar amount for rebuilding the FDF account. The FDF account balance will increase through phased-in implementation of the new plan. ODF will slowly add back resources to increase program services as the FDF account balance first stabilizes and then begins to increase.

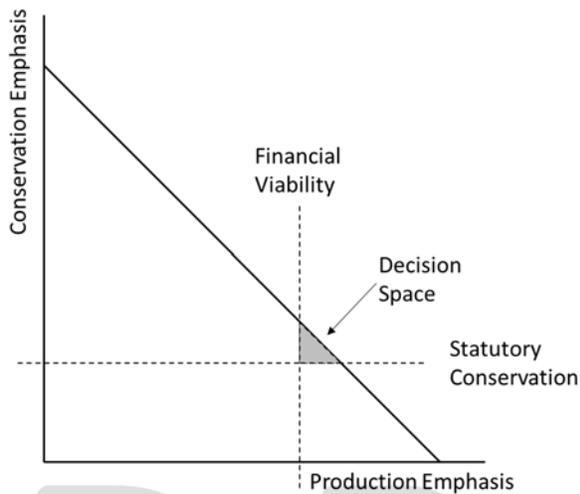
Goal

The objective is that the new forest management plan pays for full implementation including fully funded programs like Recreation, Research and Monitoring, and forest Investments that include inventory, young stand management, . An estimated \$10 million dollars of additional annual revenue is needed for full implementation of a Land Allocation management plan. This level of investment will allow for proper management of the forest. An increase of \$7 million will allow for base-level plan implementation. This funding level is similar to current operations (with inflation). The forest is adequately managed, but due to lack of resources not all plan goals are being achieved. Regardless of plan, the annual budget is projected to continue to increase 2% a year to cover inflation mainly associated with increases in existing personnel costs. Log prices are expected to trend down starting in 2018. Combined, these factors will significantly reduce annual net revenue. If the revenue is derived solely from timber harvest, about \$20 to \$28 million additional revenue would need to be generated. This accounts for both the county share and the ODF share. Please see the attached Financial Viability worksheet (Appendix 1) for the methods and assumptions used in developing the estimated dollar amounts needed to become financially viable.

Strategies

To achieve financial viability the Division is taking a multi-part approach that involves improving business practices, pursuing other sources of revenue, and developing a new forest management plan. There are several business practice improvements underway to modernize log accounting and increase efficiencies in timber sale contracting. This system is known as WALT (Wood Accounting and Log Tracking). The Division is also testing new methods of marketing by selling logs directly through sort sales, and changing how procurement contracts for seedlings are established with nurseries. These projects are improving business practices. Additional projects to modernize and improve operations will occur in future years. However, it cannot be assumed they will significantly reduce cost or generate the revenue to achieve a financially viable Division. The department has also begun pursuing other revenue sources in the form of Policy Options Packages (POPs) for General Fund money from the legislature. The Governor's Recommended Budget currently contains approximately \$3 million in "bridge funding" for the current biennium. This proposed budget will need to be approved by the legislature and the amounts recommended for the State Forests Division may be reduced, increased, or not allocated at all through this process. The development of a new forest management plan with a "land allocation" approach is also underway. Given that the majority of revenue for the Division is generated from timber sales the Division must find the appropriate balance between conservation- and production-emphasis to become financially viable. Ultimately there is a maximum possibility of production outputs from State Forests where tradeoffs occur between outputs depending on the focus, as shown in Figure 1.

Figure 1



State forest lands will be allocated primarily to either conservation or production. Any point along the downward sloping line indicates the trade-off between conservation and production, where the land-base is being fully utilized for production, conservation, or both. A point under the line indicates not all lands are being used to benefit either conservation or production. A point above the line represents a combination of outcomes that requires a larger land-base than available, and is not achievable.

The allocation to either production or conservation is constrained by meeting financial viability (i.e., the plan generates sufficient revenue to fully implement the plan; indicated by the vertical dashed line) and through meeting legally mandated conservation requirements (indicated by the horizontal dashed line). The achievable allocations that meet both financial viability and statutory conservation are indicated by the shaded triangle labeled “decision space.”

To help determine the appropriate balance and to illuminate trade-offs, the Division has begun an extensive modeling effort using Patchworks, a spatially explicit GIS-based sustainable forest management planning model. The Division has started testing some proposed concepts of the Land Allocation approach (Appendix 2).

B. Conservation Emphasis Areas: Definition and Principles

Background

The overarching goal of this conservation strategy is to manage for the long-term persistence of the native fish and wildlife species that inhabit Oregon's State Forests. Operationally, this goal is accomplished by maintaining a diverse array of habitats across the landscape through time. Diversity within and among forest stands and other habitats across the landscape fosters resilience of populations to disturbances at various spatial scales. It is this diversity of environments and the resilience of populations that determine the persistence of a species to a changing environment, such as those predicted by climate change.

Conservation Emphasis Defined

Conservation has intuitive meaning but can be challenging to define. For the purposes of this plan, ODF has adopted the following definition:

"Conservation is the maintenance of essential ecological processes, preservation of genetic diversity, and sustainable use of species and ecosystems".¹

This definition provides a conceptual framework to guide development of strategies that will be applied in both the conservation- and production-emphasis areas to meet conservation objectives. For the uses of this plan conservation-emphasis areas are not exclusive of human activities, but rather will be managed to achieve conservation goals. Likewise, the production-emphasis areas provide habitat that supports a diversity of species.

Three key concepts of the conservation definition are deeply rooted in ecological theory:

1. Maintenance of essential ecological processes. Ecological processes – biological, chemical, and physical – are fundamental characteristics of ecosystems. For example, primary production, microbial decomposition, nitrogen fixation, and soil formation are processes that influence the distribution and abundance of organisms living in a particular place.
2. Preservation of genetic diversity. Fundamental to biology, this is essential for a population to persist in a dynamic environment. It is worth noting that there is no "balance of nature" but an ever changing environment that provides the momentum for natural selection.
3. Sustainable use of species and ecosystems. This concept distinguishes conservation from preservation because it allows for intervention that sustains specific species and associated ecosystems.

Conservation strategies are implemented on three levels of organization: the forest stand (micro-level – 25 to 120 acres), the forest landscape (macro-level – from multiple forest stands to the extent of the forest), and aquatic networks (stream reaches, associated watersheds and wetlands). The forest stand and aquatic networks are the operational scale used in forest management. Forest stands change through time along predictable trajectories, which can be managed to meet conservation and

¹ Adapted from: International Union for Conservation of Nature and Natural Resources (IUCN). 1980. *World Conservation Strategy: Living Resource Conservation for Sustainable Development*. 77pp.

production goals. Aquatic systems are a reflection of a range of disturbance events and the associated management and protection decisions

Conservation Strategies

Consistent with a Land Allocation Approach, this plan establishes production-emphasis areas and conservation-emphasis areas. This strategy is a long-term commitment to the protection of habitat for fish and wildlife in both areas, as well as maintenance and protection of soil and water resources. Conservation-emphasis areas include areas managed as habitat for ESA-listed species and other state or federal species of concern, and habitats such as riparian forest and wetlands.

Conservation strategies are the suite of management actions that, taken together, provide for the persistence of native species that inhabit the landscape. With this approach, the entire landscape supports this conservation goal, including those stands managed for timber production and areas established for conservation emphasis. For example, a conservation strategy in production-oriented stands is to provide important habitat elements that would otherwise limit the species that occupy or utilize the site. Examples include “legacy” components from the previous stand such as green (i.e. live) trees and standing dead and downed wood. Many species of birds, small mammals, and terrestrial amphibians require such structures and would not be present or productive without them. Concomitant declines in their predators could be expected if management strategies consistently remove them from the landscape or prevent recruitment. Thus retention and recruitment of legacy structures in managed stands is an integral and critical component of a landscape approach to conservation.

Conservation strategies at the landscape scale consider the diversity, size, and arrangement of habitats required for the persistence of native species. Young stands and associated early-seral characteristics are important for diverse game and non-game species including many of state and/or federal species of concern. Older stands on the landscape foster a variety of late-seral associates, such as northern spotted owls, marbled murrelets, and red tree voles. Forests in mid-seral stages (e.g. 30 – 80 years old) provide habitat for most native forest species, including early- and late-seral associates, and enhance broader landscape function. Additional variation in stand composition and structure due to stand development, management history, site productivity, topography, region, and numerous other factors contributes to diversity across spatial scales. Riparian areas, wetlands, and unique habitats (e.g. talus slopes) add to diversity and thus also to broader ecological function and associated resilience.

Designation of some lands for production will change over time as circumstances change on the landscape. As conservation areas are established in production-emphasis areas in response to, for example, a newly occupied site of a federally listed species, other areas that are no longer occupied or where conservation status is no longer warranted or needed it may be re-designated as production-emphasis areas to ensure financial viability goals are met over time and maximize conservation.

Principles for Establishing and Managing Conservation-Emphasis Areas

The allocation, durability, and management of conservation emphasis areas will be directed through policy decisions. The durability of conservation and production areas are described later in the paper.

- Designated conservation-emphasis areas distinguish portions of the landscape where the primary purpose of forest management activities is to maintain ecosystem functions. These areas should include the majority of habitat that is required to achieve clean water standards,

comply with endangered species act and meet habitat requirements for native fish and wildlife. Timber harvest and other management activities will be conducted in these areas to restore or maintain ecosystem functions.

- Conservation strategies above identify appropriate passive and active practices for each area, including any allocations where only passive management is employed, and where active management is used to create or maintain stand structures and successional stages to achieve intended trajectories.
- Conservation strategies above identify primary and secondary management applications that would occur for each conservation-emphasis area.
- Conservation strategies above identify areas with high conservation value to restore, maintain, and protect unique resources.
- If necessary, both the conservation- and production-emphasis areas will be modified to maximize conservation benefits, respond to disturbance events, and reflect new information. Such changes would be made using transparent methods through the forest planning process.

Implementation

Implementing strategies in conservation-emphasis areas will consider the diversity, size, and arrangement of habitats and species across the landscape and over time. Management within conservation areas will occur to support ecological goals.

Implementation will be considered at the stand-, aquatic network-, district- and planning-area scales. The approach will efficiently and effectively promote benefits for native fish and wildlife. A likely scenario may include but is not limited to:

- Maintain habitat for ESA listed species (e.g. northern spotted owl and marbled murrelets) and other species of concern.
- Maintain all existing old growth trees (same as current FMP, or approximately 175-250 years of age) and stands.
- Retain green trees in harvest units and maintain or create snags and downed wood.
- Establish riparian buffers to provide for a range of riparian and watershed functions, and to meet the federal clean water act as administered by the State Department of Environmental Quality.
- Establish and maintain protection areas to address landslide prone and debris flow prone areas.

The intent of these scenarios is to meet the conservation-emphasis goals and strategies.

Measures of Success

Broad-scale measures that evaluate the conservation-emphasis area's success in meeting or exceeding current conservation objectives:

- Promote diverse stand types (ages, seral stages, composition, structural elements etc.) and habitats across spatial and temporal scales to foster and enhance resilient systems and landscapes and diverse wildlife and fish communities.
- Maintain, enhance, and restore native wildlife communities to promote ecosystem resilience and adaptation.
- Provide landscape level configurations of habitat that benefit multiple native wildlife species.
- Maintain riparian networks across the landscape, which serve as migration corridors for aquatic and terrestrial organisms and pathways for nutrients and organic matter.
- Promote the development of mature riparian forests capable of delivering large wood and other organic material to streams.
- Maintain water quality standards for water temperature and turbidity.

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C. Production-Emphasis Areas: Definition and Principles

Background

The GPV mandate directs State Forests to manage for social, economic, and environmental benefits to provide both sustainable and predictable revenue from forest products and long-term conservation of fish and wildlife habitats. Coupled with a conservation approach, managing a percentage of each district's land base for timber production has the potential to more efficiently and effectively produce greater revenues than with structure-based management or conservation alone.

Production Emphasis Defined

The overarching goal of production-emphasis areas is to provide environmental, social, and economic benefits, with the primary focus on maximizing the volume and value over the entire planning horizon. These areas will be managed in a way that reduces risk of future encumbrances and ensures these areas remain as production-emphasis areas. The production-emphasis areas will still provide conservation-based outcomes through various management strategies represented in the conservation definition and with landscape level strategies that will apply across both emphasis areas.

Production-emphasis areas will be designated where the primary purpose is to achieve long-term sustainable timber production. Such areas should be designed to promote the best silvicultural practices, including regeneration harvest, if appropriate, for each stand type and ecosystem allocation. The design should also minimize, to the extent practicable, environmental impacts and effects on other forest uses. Management for conservation values will occur in production-emphasis areas through landscape level strategies.

Current Forest Condition

Approximately 70% of the land base in State Forest's Northwest Oregon Area is dominated by conifer forest. Before these lands became state forests, large fires killed and logging removed older conifer forests. In the northwest Oregon state forests today, most conifer forests are less than 85 years old. Active management of state forest lands has resulted in a working forest with a multitude of stand types contributing wildlife habitat and harvest opportunities.

Other types of vegetation dominate the remaining acres, including grass, brush, and various species of hardwood trees, such as alder and bigleaf maple.

Management Goals of the Production-Emphasis Area

- Manage the timber resource to provide sustainable and predictable timber harvest which will generate sufficient revenue to support State Forest business operations; provide revenue to counties and local taxing districts; provide revenues to the Common School Fund; and contribute to Oregon's timber supply;
- Promote the maintenance, growth, and development of forest trees and stands through active management, guided by the use of appropriate silvicultural techniques;
- Maximize the value of timber products produced, based on current and future forest condition and customer demands.

Management Strategies

Apply silvicultural techniques to:

- Promote the growth of trees in a manner designed to attain desired products;
- Manage risks of future encumbrances so that stands in the production-emphasis areas remain available for harvest;
- Manage risk of loss due to insects, disease, fire, and wind throw; and
- Ensure resilience to uncertainty in market demand, climate change, etc.

Silvicultural practices that will be considered for the management of timber include, but are not limited to:

- Regeneration harvests;
- Site preparation/Reforestation
- Young stand management, including pre-commercial thinning, fertilization, herbicide application, mechanical vegetation control, animal damage control;
- Commercial thinning;
- Rehabilitation of underproductive stands (e.g., diseased stands and hardwood dominated stands).

Implementing the Management Goals

The objective goals and strategies of management is to produce trees in a range of diameter (14"-28" dbh) and age classes (40-80 years old). This product range allows for flexibility in producing a mixture of products for future markets, the ability to capitalize on high points in market conditions, and maintain production-emphasis area acres by reducing the risk of future encumbrances. Targeting the envisioned range of products will provide the Department and the counties with the most revenue over the next rotation of trees on the landscape. This is accomplished by maximizing volume and revenue produced while minimizing T&E risks.

It is important to note that given the current forest condition larger and older trees will be harvested in the production-emphasis areas in the near-term to bring the production-emphasis area in line with the policy and management goals.

Management in the production-emphasis areas will be based on a combination of district- and stand-specific silvicultural pathways that target diameter ranges and a range of ages. A likely scenario would be:

- Regeneration harvest;
- Intensive mechanical and/or chemical site preparation as necessary;
- Site appropriate planting densities and species;

- Competing vegetation release treatments if needed;
- Pre-commercial thinning where necessary, especially districts with significant hemlock component;
- Evaluate fertilization opportunities where appropriate;
- Commercial thinning dependent on stocking, past treatments, stand condition.

The silvicultural treatments used will be determined on a stand-by-stand basis using stand-specific attributes and financial evaluation, e.g. Net Present Value or other financial metrics, to achieve the desired results.

This vision of implementation is preliminary and will be informed and modified, if necessary, through modeling the Forest Management Plan and the subsequent Implementation Plans.

Measures of Success

Broad-scale measures that evaluate the production-emphasis area's success in meeting or exceeding current production and revenue objectives:

- Achieve and maintain financial viability;
- Achieve and maintain a balance of acres across age and size classes to produce a sustained yield consistent with Implementation Plan(s) acreage ranges;
- Appropriately match site and species composition with silvicultural prescriptions that promote high volume production;
- Regeneration harvests occur as targeted stand age and size are met;
- Improve the productive potential of all the goods and services desired from production-emphasis areas;
- Generate long term sustainable volume that provides product diversity to meet the needs of future markets.

D. Durability and the Land-Allocation Management Approach

Maintaining Conservation and Production Emphasis areas over time

The principles and strategies above provide the basis for the allocation of conservation and production emphasis areas across State Forests and the durability of those areas over time and across the landscape. The benefits of durability will be housed in the Forest Management Plan. Following these principles and assumptions the intent is to maintain approximately 30% of the landscape designated for conservation emphasis and 70% for production emphasis. As conditions change or information improves, there may be adjustments but the intent is to maintain the ratio over time. Examples of how adjustments may occur are illustrated below:

- New threatened and endangered species site is found in the production zone. In order to respond to this information, some of the production emphasis area would need to be

reallocated to conservation and some of the conservation emphasis areas would need to be reallocated to production.

- Possible areas that we may be able to move back into production are areas that were once thought inoperable, but with further in depth review are found to be operable, or the assumed conservation benefits are not provided by the area.
- As streams are surveyed to verify fish distribution conservation strategies associated with streams would be adjusted.

The changes described above would be made using transparent methods through the forest planning process.

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E. Social Implications of a Land-Allocation Management Approach

Background

Oregon's rich natural resources fueled the state's economy for generations. In recent years, high technology has assumed the role previously played by forest products, but forests, farms and ranches, retail trade, and tourism are significant elements of the state's economic profile.

During the past two decades, Oregon made the transition from a resource based economy to a more mixed manufacturing and marketing economy, with an emphasis on high technology. Oregon's hard times of the early 1980s signaled basic changes had occurred in traditional resource sectors – timber, fishing and agriculture – and the state worked to develop new economic sectors to replace older ones. Most important, perhaps, was the state's growing high-tech sector, centered in the three counties around Portland. However, rural Oregon counties were generally left out of any shift to a new economy.

Oregon's state forests contribute to the traditional resource economy by providing raw material for the region's mills and wood products infrastructure. The forests also support recreation and environmental benefits for all Oregonians, including the high tech sector located near the Tillamook and Clatsop State Forests.

Specifically, in Tillamook and Clatsop counties, there are an estimated 1,960 people employed in the forest sector. This is approximately five percent of all employment for the two counties (results from 2012 IMPLAN data, does not include tourism). Growth rates for Clatsop and Tillamook Counties have been positive since 1990, but slower than Oregon's growth rate. The post-recession growth rates for these two counties have been 0.6 percent and 0.3 percent, respectively, far below the average Oregon 2.6 percent post-recession growth-rate (US Census Bureau).

Among its findings, the Financial Viability Workgroup concluded that further reductions in the program would reduce abilities to meet critical business functions and that the Division should pursue ways to create revenue from current unfunded mandates and services that flow from State Forests. The subcommittee made several recommendations in June, 2013, to the Board, including proceeding on the assessment of alternative Forest Management Plans and the assessment of alternative revenue sources for State Forests. The following discussion underscores the importance of a financially viable State Forests Division to provide the broad range of goods and services stakeholders have come to expect. In addition, the Division will not have to rely on general funds from the legislation, which is not reliable from biennium to biennium, and the Division would be in a position to fully implement the revised Forest Management Plan through generated reliable revenue flow.

Conservation-Emphasis Areas

A split between Conservation- and Production-Emphasis Areas will not be discreet or singular, since there will be conservation values on production lands and production values on conservation lands.

Recreation on State Forest lands contributes considerably to the economic health of the local counties. In recent years, activities such as camping, biking, and off-highway vehicle use have been increasing in intensity on State Forest lands in Northwest Oregon. From 2009 to 2014, camping at the designated campgrounds has increased by 50%. In that same period, the Clatsop State Forest has averaged 13,995 visitors annually, generating an average of \$44,156 in revenues to Clatsop County and the Department.

The Tillamook Forest Center, opened in 2006, hosted an average of approximately 47,000 visitors annually from 2006 - 2013. The Center focuses on education and interpretation of the history of the Tillamook State Forest, the Tillamook burn, and forest management. It hosted an average of approximately 6,000 participants in education programs and another 6,000 in interpretive programs in that same time period. It has a gift shop and takes donations to support the Tillamook State Forest Heritage Trust. Retail sales at the Center average approximately \$68,000 annually. Visitation, spending, and donations all have been increasing steadily since the Center opened.

Visitors to the Oregon coast also play an important role in the economies of both Tillamook and Clatsop Counties, but most visitors are not participating in activities on state forests. Many activities are beach or resort-related and may only indirectly affect recreation supply and demand relationships on the Tillamook and Clatsop State Forests.

Recreation opportunities on state forest lands bolster the local tourism industry, resulting in direct economic effects such as fishing- or hunting-guide jobs, as well as, indirect and induced economic impacts as workers spend their paychecks. As with timber management, recreation impacts ripple through the economy, including effects on employment, personal income, taxes, and revenues returned to schools, counties, and local governments. Recreation opportunities can also provide a significant amenity value, and may assist in attracting professionals in medical, tech-related, and other desirable fields to the region.

Establishment of conservation-emphasis areas will provide visible conservation areas with durable strategies for achieving conservation. These strategies address goals for protecting, maintaining, or restoring habitat, and a range of conservation for native fish and wildlife. These represent social values of the conservation community.

Production-Emphasis Areas

Approximately seventy percent of northwest Oregon state forests are found in Clatsop and Tillamook Counties. These two counties have had relatively weak economic growth compared with most counties in the Willamette Valley, and this trend could continue. The economies of both Clatsop and Tillamook Counties have become less dependent on manufacturing industries, such as the lumber and wood products industry, and more dependent on service industries and non-earned income, such as transfer payments and investments. Transfer payments include all payments from retirement and social welfare programs, such as Social Security, pensions, disability payments, unemployment insurance, and public assistance.

Timber sales to lumber and other wood products mills have historically been the primary commodity output sold from state forests in northwest Oregon. In 2013, 28 percent of timber harvested in Clatsop County originated on state lands. In Tillamook County, 41 percent of the timber harvested in 2013 originated on state lands (Oregon Department of Forestry, Timber Harvest Report).

Logging and other timber management activities provide direct social benefits such as logging and tree-planting jobs, and also indirect and induced benefits when timber industries buy supplies and workers spend their paychecks. Timber management activities on northwest Oregon state forests ripple through the economy. Their economic impacts include effects on employment, personal income, taxes, and revenues returned to schools, counties, and local governments. Lumber and wood products

employment remains significant in both counties, generating approximately 13 percent of the personal income in both counties (2012 IMPLAN data).

State forest timber harvests also affect tax receipts and government expenditures. Almost all of the revenue generated from northwest Oregon state forests comes from timber harvest. Most timber harvesting revenues come from Board of Forestry Lands rather than from Common School Lands, but the proportions vary. From 1994 through the first half of 2013, 76 percent of stumpage revenues generated in northwest Oregon state forests came from Board of Forestry Lands (Oregon Department of Forestry, Forest Revenues data). Revenues from Board of Forestry Lands are distributed according to a multi-step distribution formula in which 36.25 percent of the revenues are distributed to the Department of Forestry for management and fire protection expenses, and the remainder to the counties where the timber was harvested. The counties pass along most of their share to school districts within the counties, offsetting the need for General Fund appropriations. Revenues from State Forest timber harvests reduce the statewide expenditure from the General Fund on education. Revenues from the Common School Lands are distributed to the Common School Fund, with the Department of Forestry being reimbursed for management expenses.

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Appendix 1: Financial Viability Worksheet

Projected Costs and Current Plan Revenue 2017-2021			Projected additional cost FULL IMPLEMENTATION Land Allocation Approach						
5 Yr avg total cost	5 Yr Avg of projected revenue	Avg Projected Revenue minus avg total cost		District and Salem Staffing Shortage plus S&S	Forest Investments	Research and Monitoring (3% of Budget)	Recreation (10% of Budget)	Total projected new expenditures	Total ODF Revenue Needed
			Projected costs for full implementation	\$1,121,018	\$1,100,000	\$1,117,319	\$3,724,398		
			Current expenditures	\$0	\$0	(\$331,678)	(\$3,358,528)		
(\$37,118,940)	\$30,987,357	(\$6,131,583)	Projected new expenditures	\$1,121,018	\$1,100,000	\$785,641	\$365,870	(\$3,372,530)	(\$9,504,113)
Projected Costs and Current Plan Revenue 2017-2021			Projected additional cost BASELINE IMPLEMENTATION Land Allocation Approach						
5 Yr avg total cost	5 Yr Avg of projected revenue	Avg Projected Revenue minus avg total cost		District and Salem Staffing Shortage plus S&S	Forest Investments	Research and Monitoring (1.2% of Budget)	Recreation (9% of Budget)	Total projected new expenditures	Total ODF Revenue Needed
			Projected costs for baseline implementation	\$200,000	\$600,000	\$431,678	\$3,358,528		
			Current expenditures	\$0	\$0	(\$331,678)	(\$3,358,528)		
(\$37,118,940)	\$30,987,357	(\$6,131,583)	Projected new expenditures	\$200,000	\$600,000	\$100,000	\$0	(\$900,000)	(\$7,031,583)

Draft Estimate February 2015

Appendix 2: Draft Modeling Scenarios (January, 2015)

The Division has begun an extensive modeling effort using Patchworks, a spatially explicit GIS-based sustainable forest management planning model. The Division has started testing some proposed concepts of the Land Allocation approach. To do this, there are many required assumptions for the model in initial runs. Some assumptions are driven by legal constraints (e.g. protected areas for ESA-listed species), others by policy decisions (e.g. to meet GPV). Current model implementation is listed below. Implementation will change as policy decisions are recommended and made by the BOF. Also field staff will conduct model-solution reviews to verify operational implementation.

Model Assumptions

Initial draft assumptions for the Harvest Scheduler Model can be grouped into a few basic categories:

GIS information

- Riparian Buffers – currently no entry (regen or thinning) allowed.
 - 115 ft. on Type F streams
 - 30-35 feet on perennial seasonal and debris-flow prone Type N streams.
- Marbled Murrelet Management Areas (MMMA) – no entry (regen or thin) allowed, except for light thinning in MMMA buffers
- Northern Spotted Owl (NSO) Circles – Any stand at least 50 - 75 years old is currently defined as NSO habitat.
 - A minimum of 40% total acres in an outer circle (1.5 mile radius from activity center) must be classified as NSO habitat.
 - A minimum of 50% total acres in an inner circle (0.7 mile radius from activity center) must be classified as NSO habitat.
- High Landslide Hazard Locations (HLHL) – for current model implementation, if over 50% of a harvest unit is determined to be high risk, then the entire unit is off-limits to harvest. On Tillamook district, the threshold was lowered from 50% to 35%.
- Inner Gorges – no harvest allowed
- Approximate Harvest Unit Locations – combination of district input and past contract work conducted by Logging Engineering International (LEI).
- Stand Level Inventory Spatial Locations

Growth and Yield curves from SLI measured stands, including allowable thinning combinations

- Uses imputed stand values for unmeasured stands

Cost/revenue inputs (Stumpage, or net revenue, is estimated as pond value minus harvest/transportation costs)

- Estimated gross revenue (from pond value estimate and projection)
- Timber harvest costs (varies between units by harvest type, harvest unit configuration, stand conditions)
- Transportation costs
 - Fixed costs – road upgrade, road construction, spur costs
 - Variable costs – hauling/transport, road maintenance cost
- Net Revenue equals Estimated gross revenue minus timber harvest costs minus transportation costs

Model Outputs

All outputs with annual estimates use a periodic (5 year) average. Some of the outputs that will be available from the model currently include:

- Projected total inventory (MMBF) over the planning horizon.
- Projected total harvest level (MMBF/year) over the planning horizon.
- Estimated net revenue (\$/year) over the planning horizon – subject to inputs.
- Harvest level by district and county (MMBF/year) over the planning horizon.
- Estimated revenue by district and county (\$/year) over the planning horizon.
- Amount of LYR and OFS structure on the landscape over the planning horizon.
- Estimated amount of harvest within NSO circles and MMMA buffers (MBF/year)
- A set amount of area that is unavailable for harvest (to comply with legal obligations or operable constraints)

Information not currently included in model output reports, but available if desired, include:

- Estimate of snags/acre
- Estimate of down wood/acre

Model Scenarios

The initial scenarios are designed to address the following questions:

- What is the maximum non-declining even-flow (~0% variation) timber harvest over a 150-year planning horizon, given the current set of assumptions and input data (including all listed above), and with a minimum net revenue across the entire planning horizon?

At this point, the model is being validated by the modeler in Salem and field staff to answer two primary questions:

- Does the model properly use all input data, and does it follow all of the applicable assumptions/rules?
- Does the model violate any limitations identified by district experts, and if so, are these violations significant across the landscape? If significant, how should assumptions and rules be modified to more closely conform to operational/tactical limitations?
- What is the size, distribution, and cumulative acres of the conservation-emphasis areas?

Following these initial checks, the model can be used to determine outcomes based on varied inputs.

There are three basic strategic scenarios that will be directly compared, in order to consider a broad decision space. In these comparisons, key quantitative metrics will be compared (e.g., timber harvest level, relative estimates of net revenue, and average stand age).

1. Land Allocation (LA) – the proposed strategic plan.
2. Structure Based Management (SBM) – the existing strategic plan.
3. Forest Practices Act (FPA) – a theoretical scenario that models a timber harvest plan. This scenario has been modeled in past modeling revisions, including the H&H model.
 - LA to SBM – This comparison will be made to compare key outcomes between these two high-level strategies. This comparison will (in part) address the question of whether LA increases financial viability and conservation outcomes compared to SBM.
 - LA to FPA – This comparison is made for several reasons, including (i) it shows the effect of LA restrictions on harvest levels if LA constraints are not included, (ii) it provides an endpoint for sustainable harvest levels while meeting minimal legal constraints.

The information presented above represents an initial draft to model the proposed Land Allocation Forest Management Plan. The preliminary factors are intended to model and further refine production and conservation components of the revised FMP. These factors will, in part, support the evaluation of what is likely needed to create a financially viable FMP that meets conservation goals. The information is used to represent production and conservation as well as implications for forest health and the Division's contributions to rural communities. If financial trends change sufficiently and the Division is able to reinvest in the State Forests Monitoring program, some of the information can also be used to inform implementation and effectiveness of the new plan. This modeling effort will demonstrate how the FMP influences or is influenced by fiscal, conservation, and social trends.