



Oregon

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State Land Board

State Land Board

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Regular Meeting December 9, 2014 Agenda Item 4

Kate Brown

Secretary of State

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State Treasurer

SUBJECT

Provide the findings of the Elliott State Forest Alternatives Project and request direction for further action.

ISSUE

Whether the Department should move forward with the implementation of any of the alternatives advanced, or if any of the alternatives should be evaluated further.

AUTHORITY

Oregon Constitution, Article VIII, Section 5, specifies that the State Land Board is responsible for managing Common School Fund lands.

ORS 273.041 to 273.071; authorizing the Department of State Lands to exercise the administrative functions of the State Land Board; relating to the general powers and duties of department and board.

SUMMARY

The Elliott State Forest was created in 1930 to provide long-term funding for Oregon's K-12 public schools and is managed for the Land Board by the Department of Forestry. Over time, timber harvests have been greatly reduced, due primarily to protection of threatened species, resulting in net deficits from managing the Elliott. In Fiscal Year 2013, loss from the Elliott was \$3 million, and deficits are projected to continue. Revenue losses from assets should be carefully evaluated for their effect on the State Land Board's fiduciary responsibility to the Common School Fund. In May of 2014, the Department initiated a project to develop a range of feasible business models for future ownership and management of the Elliott.

A project team was established to carry out this work. Through group work sessions and individual contacts, the project team sought ideas from education beneficiaries, conservation and land trust representatives, timber management interests, tribal governments, elected officials, economic and community development groups, and government agencies. In addition, the project team formed an interagency technical workgroup and worked with a technical consultant (Evergreen Economics) to conduct research, model alternatives, and investigate options for the Elliott.

The results of this project are presented in the “Elliott State Forest Alternatives Project Final Report” (Appendix A) and “Elliott State Forest – Analysis of Alternatives Report” (Appendix B).

RECOMMENDATION

The Department recommends that the Land Board provide direction on how to proceed with the management of the Elliott State Forest based on the information provided and analysis performed by the Elliott State Forest Alternatives Project. The Department also recommends approval to expend preliminary resources indicated to implement the direction set by the Land Board.

APPENDICES

- A. Elliott State Forest Alternatives Project Final Report
- B. Elliott State Forest – Analysis of Alternatives

Elliott State Forest

Alternatives Project

Final Report



Presented to
the State Land Board:
December 9, 2014

Mary Abrams, Director
Oregon Department
of State Lands

Elliott State Forest Alternatives Project

Project Report

Presented to the State Land Board:

December 9, 2014

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Interested Parties

Education Beneficiaries

Conservation and Land Trust Organizations

Coos Bay-area Elected Officials and Economic Development Groups

Timber Operators and Statewide Forestry Groups

Oregon Tribes

Technical Team

U.S. Fish and Wildlife Service

National Marine Fisheries Service

U.S. Forest Service

Oregon State University

Oregon Department of Forestry

Oregon Department of Fish and Wildlife

Oregon Parks and Recreation Department

Oregon Department of Justice

Oregon Department of Administrative Services

Oregon Citizens Who Provided Comments

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SECTION 1: EXECUTIVE SUMMARY

This report describes the Elliott State Forest Alternatives Project undertaken by the Oregon Department of State Lands (Department) to examine ownership and management of the Elliott State Forest Common School lands.

The Problem. The Elliott State Forest is an asset of the Common School Fund – a trust established to benefit public schools. The State Land Board is the trustee. Since the 1930s, management of the Elliott by the Oregon Department of Forestry has generated more than \$400 million of deposits to the Fund from timber revenue, and has also provided habitat for threatened populations of marbled murrelets, northern spotted owls, and coastal coho salmon. In recent years, increased protections provided for species listed under the federal Endangered Species Act have significantly reduced timber harvests from the forest and revenue to the Fund.

In 2012, specific timber sales were halted due to a preliminary court injunction (subsequently lifted when the precipitating lawsuit was dismissed), and instead of being a productive asset, the Elliott became a \$3 million expense to the Common School Fund. Because these losses are projected to continue, the Department of State Lands began a search for alternatives that would better meet the State Land Board’s trust obligation to generate the greatest economic benefit over time from this Common School Fund asset.

The Process. There were two components to the process for assessing the problem - technical work and public outreach. Technical consultants Evergreen Economics and LandVest developed models for different management alternatives for the forest in concert with a technical advisory team of state and federal experts. The goal of the technical analysis was to reduce uncertainty around these various management alternatives and inform the crafting of one or more transition scenarios. The results of the technical analysis work by Evergreen Economics and LandVest are presented in the Evergreen Economics report that accompanies this report.¹

The public outreach effort included a series of work sessions and discussions with the general public and interest groups - education beneficiaries, environmental groups, forest industry representatives, local officials, business interests, neighbors and tribes. The purpose of the outreach effort was to solicit ideas to help fulfill the State Land Board’s trust duty of generating revenue for schools, but also to address concerns about multiple and diverse future states for the Elliott. A broad range of opinions were expressed, particularly on how the forest should be managed for the public. There was heavy emphasis from many participants, including education beneficiaries, about their desire for continued public ownership of the land to help maintain conservation and/or socio-economic values. At the same time, many people noted

¹ Evergreen Economics, 2014

their desire to decouple timber management from school education funding by changing the property's current purpose as a revenue-generating asset of the Common School Fund.

Key Considerations. Several key concerns were raised during the outreach process and are addressed in this report: education funding, recreational development, non-market values, State Land Board discretion, real estate value, and community forest solutions. The findings around these key considerations serve as the background and basis for the transition scenarios selected and presented here.

The Scenarios. The four transition scenarios presented by the Department in this report are pathways forward. They include two scenarios that would see continued state ownership of the property as an asset of the Common School Fund and two scenarios for a shift to a new public owner or a public/private partnership. Due to the expressed desire for a continued public ownership and the potential to meet the State Land Board's trust responsibility through one or a combination of the transition scenarios, the Department is not presenting the idea of an auction to the highest bidder at this time.

For each scenario below, the report includes a detailed discussion of feasibility and potential implementation approaches. The scenarios (in no actual or implied order of preference) are:

1. **Request Proposals for Management.** The state would continue to own the property as a Common School Fund asset, but the Department would seek proposals from any interested party to manage the land in a manner that fulfills the long-term trust responsibility and meets all state and federal environmental laws.
2. **Continued Management by the Department of Forestry.** The state would continue to own the property as a Common School Fund asset and would request the Department of Forestry to continue to pursue a management compromise with the federal agencies responsible for protected species oversight.
3. **Request Proposals for Ownership.** The Department would seek proposals from interested parties for a process to move as much of the property as possible to ownership by another public entity (i.e. local, state, federal or tribal ownership) or a public/private combination.
4. **Federal or Tribal Transfer.** The Department would directly negotiate a federal or tribal acquisition (or exchange) of all or part of the property.

It is possible that more than one scenario could be pursued simultaneously to generate a beneficial short-term result and set a course for a longer-term outcome. The next step, once a general direction is determined by the State Land Board, would be for the Department to enter into a design phase for more detailed due diligence. The report concludes with an indication of what the next steps might consist of for each of the four scenarios.

SECTION 2: THE PROBLEM

The problem facing the State Land Board with the Elliott State Forest is one of a business model that no longer works well to generate revenue for the Common School Fund. The property was established in the late 1920s as a forestland investment to support K-12 schools with revenues from timber harvesting. Shifting societal values and the resulting passage of the federal Endangered Species Act have placed sizeable areas within the property effectively off-limits to timber harvesting under current management policies. This has resulted in net operating losses and no foreseeable return to profitability so long as these management policies continue. Because the land is held in trust by the State Land Board to generate revenue for schools, it must be managed in the best interest of school beneficiaries. This trust responsibility leads the State Land Board to seek other options for the ownership or management of the forest.

History

Oregon's first State Forester, Francis Elliott, and Governor Oswald West are attributed with the idea of consolidating isolated tracts of Common School lands for an operable block of state forest. George Peavy, the first Dean of the Oregon Agricultural College's School of Forestry and a member of the Board of Forestry, also played a role in developing the concept of a demonstration forest for long-term investment.² After many years, the work they began in 1912 resulted in the state exchanging scattered Common School lands, which included national forest and Oregon & California railroad grant inholdings, for a consolidated block of national forest known as the Millicoma tract. This became the Elliott State Forest in 1930.

The Millicoma tract had suffered a catastrophic fire in 1868.³ It was apparently so intense that all of the timber was destroyed except in the southeastern part of the property, leaving only a few old stubs scattered about.⁴ A picture from 1915 shows what a Douglas fir forest looks like 50 years after a devastating crown fire and no replanting (Figure 1). The Millicoma block was one of several areas of federal land considered and ultimately chosen because of its proximity to a rail line and its high potential for timber productivity.

Four agendas came together in the establishment of Oregon's first state forest: a push to ensure a more stable, long-term supply of timber (Elliott); an improvement in the investment position of the Common School Fund (West); a need for a place to research and demonstrate good

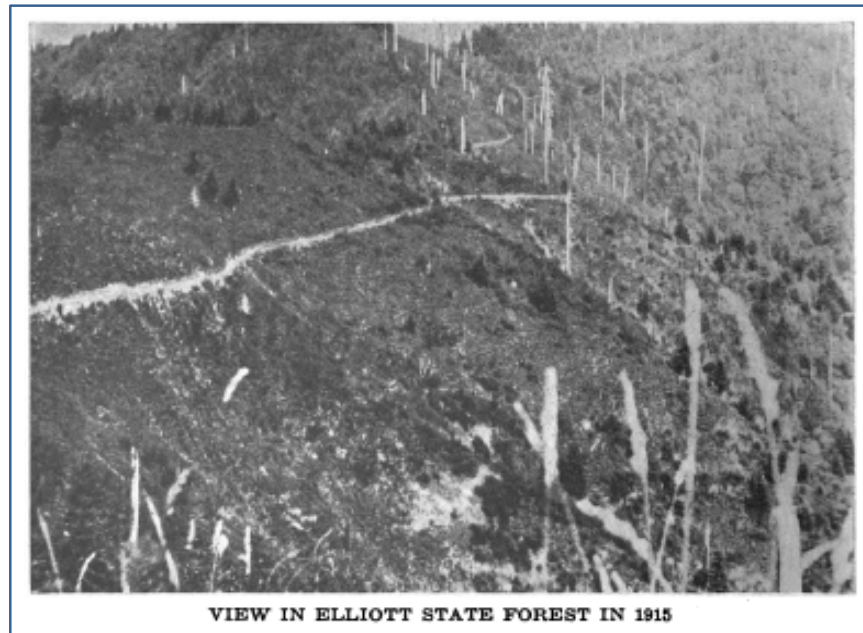
² According to a June 18, 1927 article in the Morning Oregonian, "the state forest is to be used as a laboratory for the students in the school of forestry at the Oregon Agricultural College, while the revenue from timber sales will go to the state school fund."

³ Gould, 2013.

⁴ Sunday Oregonian, December 15, 1929.

forestry (Peavy); and the prospect of a future home for forest-based, multiple-use recreation.⁵ Over the subsequent 30 years, the reality of managing a remote, forested property focused the state on the first two goals, timber and investment, as the driving factors for the business model.

Figure 1. Early Photograph of the Elliott State Forest (1915)



Source: Cronemiller (1931)

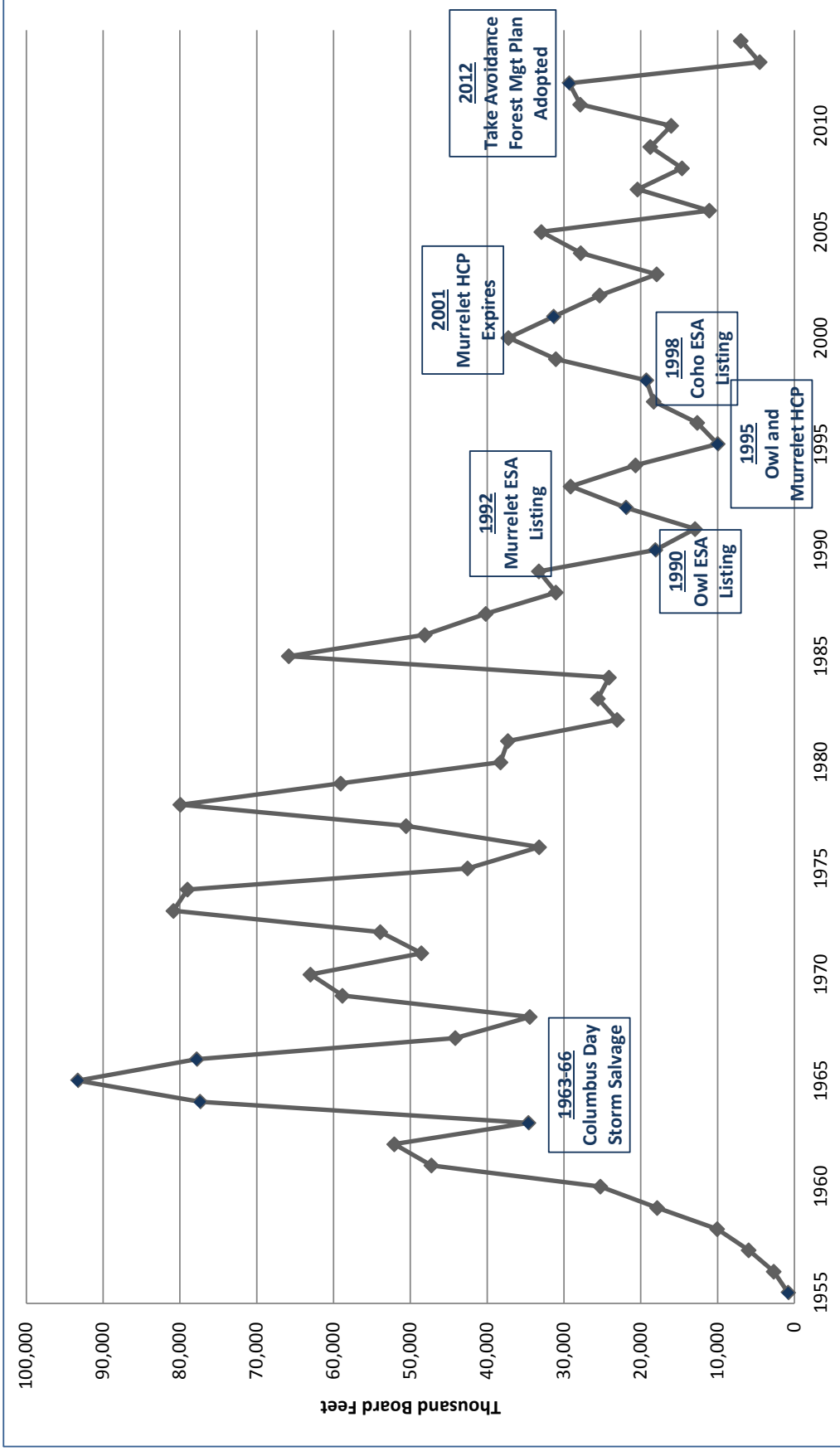
Under the stewardship of the Oregon Department of Forestry, the trees had matured enough by the mid-1950s to begin an active timber management program.⁶ From the early 1960s through the early 1980s, the Oregon Department of Forestry harvested between 30 and 80 million board feet annually from the Elliott. Figure 2 shows the gradual decline in timber production from the early 1980s through the present.⁷

⁵ Ray Torrey, Field Secretary of the National Conference of State Parks, visited Oregon in 1925. He met with State Forester Francis Elliott and members of the highway department to discuss the proposed Millicoma state forest “and the plan outlined for its administration when the final exchange is completed with the forest service.” (Morning Oregonian, 1925).

⁶ Phillips, 1997. Jerry Phillips provides an account of the history of the Elliott State Forest in his 1997 book *Caulked Boots and Cheese Sandwiches*.

⁷ Deblander, 2014. Harvest levels prior to 2001 were extrapolated from available data based on acreage percentages.

Figure 2. Estimated Timber Volume from Elliott State Forest, 1955 to 2014



Source: Oregon Department of Forestry data

Over the life of the current business model, it is estimated that timber harvesting generated approximately \$400 million in revenue to the Common School Fund.⁸ However, average annual contributions have declined over the past few decades.

Figure 3 is a detailed look at Elliott timber production from 1990 until present. During this time, harvest levels declined due to constraints resulting from species listed under the federal Endangered Species Act: first for the protection of the northern spotted owl (1990) and the marbled murrelet (1992) by the U.S. Fish and Wildlife Service, and later for coastal coho salmon (1998) by the National Marine Fisheries Service. These constraints increased substantially in the 2000s due to multiple lawsuits brought by environmental groups.

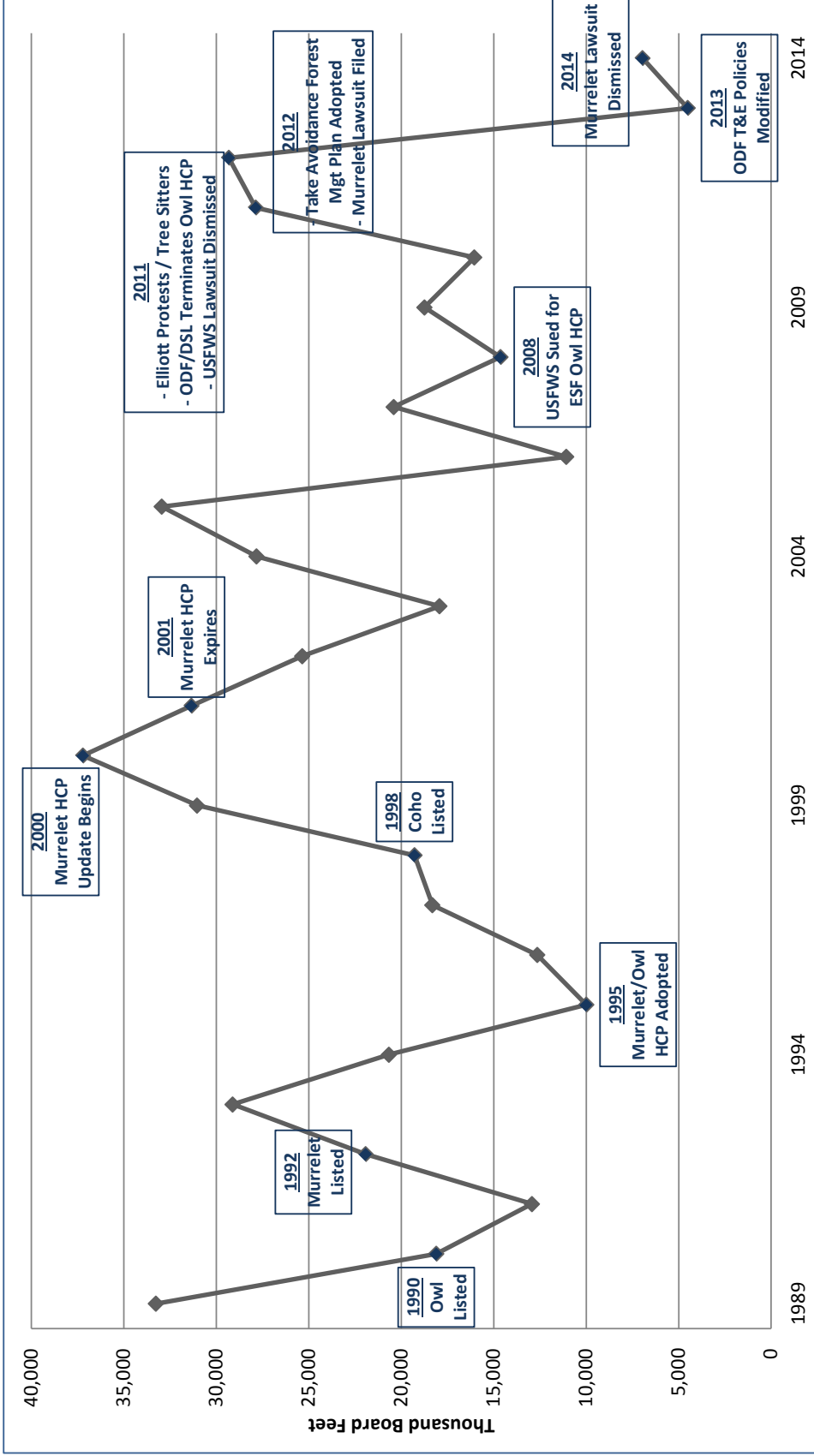
The first of the lawsuits was against the U.S. Fish and Wildlife Service and sought a reconsideration of the original 1995 Elliott State Forest northern spotted owl Habitat Conservation Plan based on some allegedly new information. The parties eventually stipulated to dismiss the case and also agreed to meet to discuss future management of the Elliott State Forest. The second legal challenge came in response to adoption of a Forest Management Plan for the Elliott using take avoidance strategies rather than coverage under a Habitat Conservation Plan. That suit was filed by environmental groups in 2012 against the state and was subsequently dismissed by the court in 2014 by agreement of the parties due to changes made by the Department of Forestry to their take-avoidance management policies. These management policy changes resulted in a net financial loss in fiscal year 2013 and 2014. Instead of contributing into the Common School Fund, the Elliott had to draw resources from the Fund to pay for fire protection, road maintenance, law enforcement and the forest management staff.



Mature Thinning-Elliott State Forest 2007 Source: Oregon Department of Forestry

⁸ The \$400 million estimate is based on information from former Oregon Department of Forestry District Forester Jim Young (Deblander, 2014).

Figure 3. Estimated Timber Volume from Elliott State Forest (Detail), 1989 to 2014



Source: Oregon Department of Forestry data

Common School Fund Mandate

The Common School Fund mandate is derived from both the Oregon Admission Act and the Oregon Constitution and is therefore a dual mandate. Under Section 4 of the Admission Act and a subsequent vote of the people, the state agreed to accept title to certain lands “for the use of schools.”⁹ Although the result of a later land exchange for some of the original school land donation, Elliott Common School lands fall under this mandate for “use of schools.”

The Oregon Constitution (as amended in 1968) places an additional requirement described in Article VIII, Section 5:

“The Governor, Secretary of State and State Treasurer shall constitute a State Land Board for the disposition and management of lands...[and] shall manage lands under its jurisdiction with the object of obtaining the greatest benefit for the people of this state, consistent with the conservation of this resource under sound techniques of land management.”

The Admission Act bound the state to use the Elliott lands to benefit schools.¹⁰ The Constitution contemplates both disposition and management of lands, but provides guidance only with respect to management. In a 1992 Attorney General opinion, Charles Crookham concluded that management must be to maximize revenue, but that maximizing revenue was to be in the context of the long-term benefit to schools:

“...the board may sacrifice present income to preserve the property, if it determines this will enhance income for the future.”¹¹

Crookham also addressed the issue of disposition, and concluded from a 1917 Oregon Supreme Court case that the trust obligation held with respect to disposition of Common School lands:

“...the school lands granted to the State of Oregon are a trust for the benefit of public education. It is the duty of the state to dispose of them for as near their full value as may be, and to create thereby a continuing fund for the maintenance of public schools.”¹²

Thus, the State Land Board may use its discretion to sell Common School Lands at fair market value or hold them. If it holds and manages the lands, revenue must be maximized over the long term.

⁹ “That sections numbered sixteen and thirty-six in every township of public lands in said State...shall be granted to said State for the use of schools.” (Oregon Admission Act, 11 Stat. 383, §4 (1859)).

¹⁰ 46 Or. Op. Atty. Gen. 468 (1992) (commonly referred to as the Crookham Opinion).

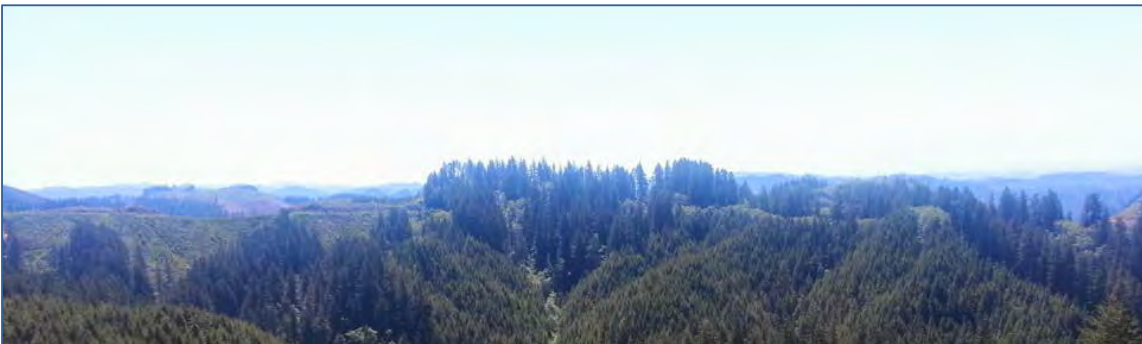
¹¹ Ibid.

¹² Ibid, citing Grand Prize Hydraulic Mines v. Boswell, 83 Or 1, 6-7, 162 P. 1063 (1917).

Federal Endangered Species Act

Certain areas of the property are potentially habitat for three threatened species: the northern spotted owl, the marbled murrelet and the coastal coho salmon.¹³ The known presence of these species in certain instances has required the State Land Board and Department of Forestry to protect habitat in order to comply with the Endangered Species Act. This protection has consequently restricted the ability to generate revenues from timber harvest. For example, once the presence of a threatened or endangered species is established, in most instances the state may not cause injury to an individual of the species nor to the habitat that supports the species' essential behaviors such as breeding, feeding and sheltering. To jeopardize either an individual or the habitat is a violation of the Endangered Species Act and subject to injunctions on use of the property.¹⁴

The Endangered Species Act has recently had a major influence on the revenue performance of the Elliott. In resolving related litigation in 2012-2014 involving marbled murrelet habitat, the parties agreed to dismiss the case after the Department of Forestry cancelled challenged timber sales and changed its murrelet protection policies. Murrelet protection policies adopted by the Department of Forestry at that time currently influence forest management activities which result in decreased revenues generated on the Elliott.¹⁵ This has led to the dilemma facing the State Land Board: the mandate to generate revenues for the Common School Fund on the one hand and the requirements around protection of wildlife on the other.



View from Dean Mountain Road, Elliott State Forest 2014

Source: Oregon Department of State Lands

¹³ A threatened species is defined as likely to become endangered in the foreseeable future in a portion or in all of its range.

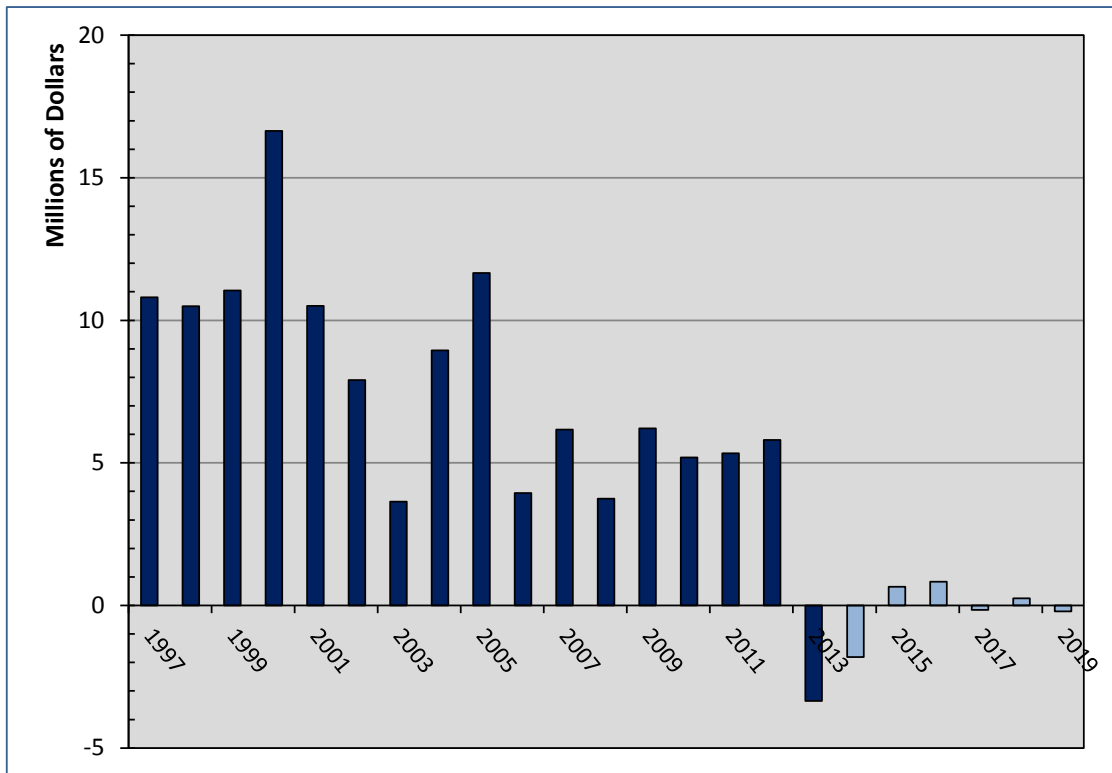
¹⁴ Boudreaux, 2002.

¹⁵ ODF, 2013.

Today's Situation

The net revenues to the Common School Fund under Department of Forestry management have been declining for a number of years, and were negative in fiscal year 2013 and 2014 (Figure 4). In light of the fact that these lands are currently causing a net loss to the Fund and projections are showing low returns or losses potentially continuing into the future, it raises the question as to whether or not continuing to hold these lands as part of the Fund's real property asset portfolio is consistent with the trustee duty of the State Land Board.

Figure 4. Net Revenue from Elliott State Forest (1997-2013)



Source: Oregon Department of Forestry data

The problem is primarily around revenue generation, not cost. The costs for the Department of Forestry to manage the Elliott have been averaging a relatively constant \$34-\$37/acre/year since at least the late 1990s.¹⁶ However, revenues have declined from \$150-200/acre/year in the late 1990s to an average of \$64/acre/year over the past five years. They are projected to be only \$3/acre/year over the next five years. This downward trend in revenues leaves only a small margin of profit even if management costs are drastically reduced.¹⁷

¹⁶ Figures noted in this section were derived from Oregon Department of Forestry data (Deblander, 2014).

¹⁷ Projections assume phased down management costs to just under \$12/acre/year for basic stewardship in 2019.

Fixed costs for owning the forest include activities such as providing a basic ownership presence to minimize illegal or irresponsible activities, fire protection, law enforcement, and road maintenance. These are estimated to cost in the range of \$9.45-12/acre/year for the Elliott. This means there is at least a \$750,000 bill every year just for owning the property and following virtually any management approach other than neglect. The \$750,000 only covers basic stewardship costs, not what would be needed for cleanup and repair after a catastrophic fire, landslide, or damage by irresponsible users of the property.

Variable costs relate to additional management activities that the owner undertakes. For instance, the Department of Forestry has been spending about \$24-27/acre/year of its overall costs for timber harvest planning, surveying for marbled murrelets, supervising harvests, replanting, and other silvicultural activities. When harvesting activity was generating \$150-200/acre in revenues, the performance of this asset was high. When it generated only \$4/acre in 2013, however, the asset performance was poor. Nevertheless, to immediately reduce staffing to stay within available revenues would mean a failure to fulfill obligations related to reforestation and a failure to generate subsequent harvests—a downward spiral from an operations and business standpoint.

The current situation would be a challenge for any landowner who sees the land as an investment, but is particularly problematic for a trustee owner with responsibility to a beneficiary. This is the situation for the Elliott and why the State Land Board and the Department of State Lands are looking at other options.



Stream Restoration, West Fork Millicoma, Elliott State Forest Source: Oregon Department of Forestry

SECTION 3: THE PROCESS

As trustees for the Common School Fund, the State Land Board must regularly assess the financial position of the assets in its portfolio. Among its assets are approximately 120,000 acres of forestland which include 84,000 acres managed as part of the Elliott State Forest. In May of 2014, the Department of State Lands began a project to further describe a range of possible ownership and management alternatives. It was undertaken to expand on the work of the Department's 2012 *Real Estate Asset Management Plan* that guides its long-term asset management approach.¹⁸

This project was intended to develop solutions to the dilemma posed by constitutional trust responsibilities on the one hand and a desire to further conservation and socio-economic values to the extent possible on the other. The approach was to make a technical assessment (prepared by consultants Evergreen Economics and LandVest) of a variety of management alternatives which were informed by focus groups representing the range of interests with concern for the property. These were to serve as the basis for one or more transition scenarios to be presented to the State Land Board

From the outset, the Department realized that no matter which business model for future ownership and management of the forest was ultimately decided on by the State Land Board, it was likely that not all interested parties would be completely satisfied. The Department undertook this project so that the State Land Board could be as informed as possible from an economic, environmental, and social standpoint about its options.

Project Goals

1. The project results describe a range of feasible transition scenarios for future ownership and management of the Elliott State Forest's Common School lands in sufficient detail for consideration and direction by the State Land Board.
2. The project actively engages with a wide range of potentially affected Oregonians; documents to the extent possible the most likely impacts for each of the various business model options; and searches for as much middle ground as possible given the State Land Board's trust responsibilities.

¹⁸ Department of State Lands, 2012.

Technical Assessment

Evergreen Economics and LandVest were engaged to provide a range of professional support and technical analysis to inform development of the transition scenarios. Their expertise included real property valuation, financial analysis, conservation, and forestland management. To expand on the capacity of the consultants, a technical advisory group was appointed by the Department of State Lands director. This group included subject matter experts from agencies such as Oregon Department of State Lands, Oregon Department of Fish and Wildlife, Oregon Department of Forestry, Oregon Department of Administrative Services, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Forest Service, Bureau of Land Management, Oregon State University, and Oregon Parks and Recreation Department.

As a starting point for the technical advisory group and the initial round of stakeholder meetings, the project team developed a series of preliminary management alternatives. These attempted to encompass the range of possible ownership and management outcomes for the Elliott.



The 8000 Road in Elliott State Forest, 2014

Source: Oregon Department of State Lands

During the technical analysis the consultants, with assistance from the technical advisory group, worked to model the likely results of a range of management alternatives that could be used to develop the transition scenarios. The modeling derived results such as net present value to a potential future owner (i.e., purchaser), the likely annual timber harvests (as a rough surrogate for quantifiable economic activity), and the likely age class distribution of the forest (as a rough surrogate for a range of conservation values).

Another component of the project, described in detail below, was public outreach and involvement. Department staff identified interested parties and solicited their participation in the project. While the State Land Board's trust mandate requires primary attention to the education beneficiaries as stakeholders, it was recognized that many other interests had a "stake" in the results of the project. Several focused work sessions were held in Portland, Salem, Roseburg, and Coos Bay, culminating in a public listening session for the State Land Board in North Bend. The complete process and its results are described in the section below.

While the intent of the project was to provide a thorough exploration of options, it was understood from the outset that additional detail and due diligence would be necessary before any final decision was made by the State Land Board on the preferred future business model and its implementation. It was made clear during the process that the Department of State Lands' responsibility was to develop alternatives and transition scenarios, not make a decision. All decisions about whether to pursue one or more of the transition scenarios (or another approach entirely, up to and including a public auction) are exclusively the prerogative and responsibility of the State Land Board.

Public Involvement

Over a period of approximately six months beginning in June 2014, the project team conducted an outreach effort seeking ideas for management and ownership of the forest. The project team toured the forest twice – once with timber harvest and education beneficiary representatives and once with local conservation groups.

Two rounds of work sessions were held with interest groups that included representatives from education beneficiaries of the Common School Fund; statewide and local conservation and land trust organizations; elected officials; local economic and community development groups; timber management interests; tribal governments; and federal and state natural resource agencies. Other meetings with tribal representatives, local officials, individuals, and groups were held when requested.

Outreach efforts culminated in a three-hour listening session by the State Land Board for the general public on October 8 at the Southwest Oregon Community College in North Bend where over 60 people provided testimony. The Department accepted written comments throughout the process, and hosted a web page that included a link for the public to provide comments by email.

Appendix A lists organizations and individuals who participated in the work sessions. Appendix B lists key suggestions made during the work session process and how these issues were to be addressed in the information provided to the State Land Board.

All of the comments received during the process are posted on the Department's website (see Figure 5):

http://www.oregon.gov/dsl/LW/Pages/Elliott-State-Forest-Alternatives-Project.aspx#Public_Comments

Figure 5. Elliott State Forest Alternatives Project Website Screenshot



In addition to all of the written comments, meeting notes are posted from the work sessions, along with other information about the project.

Feedback from First Round of Work Sessions

Six sessions were held to explain the project and present draft management alternatives for feedback:

- Education Beneficiaries: July 10 (Salem)
- Statewide Conservation Groups: July 14 (Portland)

- Local Officials/Economic Development Interests: July 16 (Coos Bay)
- Local Conservation Groups: July 17 (Coos Bay)
- Douglas Timber Operators: July 18 (Coos Bay)
- Oregon Forest Industries Council: August 15 (Salem)

Education Beneficiaries. Much of the conversation with the education beneficiaries centered around how to weigh non-monetary as well as monetary values, and whether it is in the purview of the State Land Board to do so. It was suggested that the consultant, Evergreen Economics, incorporate downstream economic analysis of the management alternatives being considered. Value of the forest might include such things as carbon credits, uniqueness of the forest, ecosystem services mitigation credits, and the economics of recreation.

Conservation Groups. Statewide and local groups expressed strong preference for continued public ownership of the forest, but also questioned current management and whether costs could be reduced. It was understood that disconnecting the Common School Fund from ownership of the Elliott would solve the problem faced by the State Land Board in meeting its trust responsibility to generate revenue for schools, and there was much discussion about ownership by other state agencies or by the federal government.

Concern was expressed that counties do not have the capacity to own and manage the forest. It was suggested that one option could be changing federal law and the Oregon constitution to disconnect the Elliott from education funding.

As with the education beneficiaries, there was much discussion about determining the complete value of the forest (i.e., including ecological and social values, not just the value of timber harvests.) A request was made for the State Land Board to provide a precise revenue-generating goal for the forest and concern was expressed that the recent sale of parcels in the Elliott were undervalued. Finding other revenue sources for the Common School Fund was suggested such as reinstating the “severance or stumpage tax” on volume units of timber harvested. Concern was expressed about the funding required for the State to “buy out” the Elliott from the Common School Fund and that state bonding may be the only realistic option for continued public ownership.

The need for a long-term, inter-generational view to manage the forest sustainably was stressed, and the possibility of multiple uses for the forest under different owners was discussed, e.g., ecotourism, recreation, sustainable harvests, endangered species habitat. It was suggested that priority be given to protecting the 41,000 acres of older trees.

Local Officials and Economic Development Interests. The overarching theme of the discussion was managing the Elliott for the good of the community as a whole. The forest has been an essential part of the fabric of regional communities for years, and local needs should take priority in determining future ownership and management. Education and jobs are important, but so are intangibles like recreation.

It was suggested that there be a three-pronged approach to valuing the forest: economic, community, environmental. The risk factor of lawsuits should also be considered. If the forest is sold, it was suggested that legal constraints be put in place to restrict exports and protect local jobs.

There was not a great deal of enthusiasm for ownership by the federal government, primarily because of harvesting restrictions on federal lands under the Endangered Species Act. Concern was expressed that the reach of the Endangered Species Act is too broad.

The historical mandate that the forest generate revenue to fund education was acknowledged, and concern was expressed that in determining future options for the forest, the state should fulfill its responsibility to school children. In a separate meeting with two Douglas County Commissioners, they expressed strong preference for maintaining the status quo of state ownership and urged the state to go to court to make a case for precedence of the Admission Act over subsequent federal environmental laws, particularly the Endangered Species Act.

Timber Management Interests. Discussions were held with the Douglas Timbers Operators (DTO) and members of the Oregon Forest Industries Council (OFIC). The DTO expressed concern about current costs and practices of public management and subsequently submitted a written proposal for private management of the forest.



Young Thinning (Trail Butte), Elliott State Forest Source: Oregon Department of Forestry

It was suggested that the Elliott be evaluated in the context of adjacent forests. One individual proposed setting aside a third of the forest for conservation and allowing harvest on two thirds. There was discussion of whether a Habitat Conservation Plan (HCP) could be developed with a “drop dead date” after which the Elliott would be auctioned if agreement was not reached. The impact of the Endangered Species Act on the value of the Elliott was noted, particularly the feeling that if the forest is sold, the Endangered Species Act will force the State to sell at a loss.

Participants in the OFIC discussion generally supported continued ownership by the Common School Fund and harvesting more timber to increase revenues. There was considerable discussion about private versus continued state management of the forest, and whether a management change would generate more revenue. There was also discussion of creating a separate state entity to manage the forest.

Concern was expressed that all the options being explored assume that an HCP will be required (Department staff clarified that no assumptions are being made about an HCP at this point in the process). The group expressed differing opinions about whether value would be maximized by selling the forest in one large parcel or in smaller parcels. They offered to provide information to the consultant, Evergreen Economics, to help determine the value of the forest. It was also suggested that self-financing by the State to private buyers over time be included in evaluating the options.

Feedback from Second Round of Work Sessions

Six sessions were held with the same groups who met during the first round. Key issues raised by the public in response to the first draft of management alternatives shared by the Department, along with the modeling and technical work done by the consultants:

- Statewide Conservation Groups: Sept. 22 (Portland)
- Education Beneficiaries: Sept. 23 (Salem)
- Douglas Timber Operators: Sept. 25 (Roseburg)
- Local Officials/Economic Development Groups: Sept. 30 (Coos Bay)
- Local Conservation Groups: Oct. 1 (Coos Bay)
- Oregon Forest Industries Council: Oct. 3 (Salem)

Conservation Groups. The statewide and local conservation community was generally disappointed in the modeling done by the consultants as too focused on timber harvesting to maximize financial return. Participants in both meetings felt strongly that non-monetary values were underrepresented in the analysis of management alternatives and took issue with the term “non-monetary,” suggesting “non-market” as an alternative descriptor.

The groups felt that more analysis of the effects of climate change, the potential for loss of timber to fire and disease, the value of carbon sequestration, other silvicultural techniques, and ecosystem services such as protection of groundwater should be included. They also want to see

analysis of potential revenue from jobs other than those generated by timber harvest (i.e., recreation, restoration, and new methods of forest management).

There was considerable discussion of the rationale for stream buffers and stand age in the modeling assumptions. Concern was also expressed that the term “community forest” implied county ownership and it was suggested that the name be changed or better explained. Strong support was stated for continued public ownership and management of the forest, and several participants stated that the management alternative to auction the land to the highest bidder be taken off the table.

Education Beneficiaries. The group generally thought the work done by the consultants was helpful. As in the first work session, there was extensive discussion of non-monetary values associated with the Elliott and the degree to which those values (e.g., salmon and recreation) should be considered in fulfilling the State Land Board’s trust responsibility to the Common School Fund.

One member of the group expressed concern that all interest groups were not meeting together. A question was asked and a discussion ensued about the meaning of the trust responsibility and how much flexibility the State Land Board has in fulfilling that responsibility. The group acknowledged that in making a decision about ownership and management of the Elliott, the State Land Board will be considering non-monetary values but the group felt that those values should not be the driver.



Oregon Public School Classroom, Beaverton School District, 2014 Source: Wendy Owen / Oregonian

The group discussed potential differences in compliance with the Endangered Species Act under private versus public management, and interest was expressed in further evaluation of management alternatives that provide a mix of harvesting and conservation. A request was made for more data on how the various management alternatives would play out in actual revenue distribution to schools over time.

Margaret Bird, director of the Children's Land Alliance Supporting Schools (CLASS) based in Utah, participated by phone and described her state's initiative to preserve their trust lands for children. She encouraged Oregon to do the same. Bird also spoke to a small group of interested beneficiaries in Coos Bay the morning of September 30 and attended the afternoon work session in Coos Bay on September 30, where she again advocated for not selling trust lands and encouraged Oregon to legally challenge environmental interests and preserve the right to harvest timber for revenue.

Timber Management Interests. The second round of work sessions again included discussions with the representatives of the Douglas Timber Operators (DTO) and the Oregon Forest Industries Council (OFIC). After the first round, the DTO submitted a proposal suggesting that the Elliott continue to be owned by the Common School Fund but that the State go out for bid to hire a private manager for the forest. Both groups stated that if the forest was managed differently there would be no need to sell. It was stated that the forest has a capacity to produce 80 million board feet per year, and if 40 million board feet per year could be harvested like the 2012 management plan proposal, there would be no problem. The preference of both groups was not to sell the forest; however, they also indicated that if the private management approach did not work for some reason then the Elliott would have to be sold.

Questions were raised about the certainty of the data from the Department of Forestry about marbled murrelet habitat. Questions were also raised about the amount of revenue the management alternatives other than public auction would raise over time. It was noted that the public auction alternative would bring a lump sum into the Common School Fund which the commenter said earned 17% last year from investments. It was suggested that perhaps fees should be charged for use of the forest as a way to raise revenue and that the analysis should determine what that revenue would be.

Both groups said that a compromise which addresses the most concerns would be ideal but that a significant portion would need to be a working forest for timber interests to support a compromise.

Local Officials and Economic Development Interests. Several members of the Coos Chapter of the Oregon Society of American Foresters attended and submitted a written list of questions. They indicated they would be providing formal comments.

It was suggested that the state look at the history of the forest vis-à-vis revenue generated for the Common School Fund (e.g., what happened to harvests during the spotted owl listing). Most

people in the group felt it would be better to retain ownership under the Common School Fund but change management to allow more harvest. It was stated that in the long run, selling the forest would not provide as much revenue to the Common School Fund as keeping it. Concern was expressed about the age of the trees and when some would get too old to harvest. The group commented that harvesting is needed to regulate age classes and provide for a healthy forest.

Margaret Bird spoke about Utah's experience, stating that trust lands should be treated like private lands that belong to school children. As in previous meetings, she encouraged the State to countersue against environmental interests.

In final remarks, County Commissioner John Sweet urged all parties to seek a collaborative solution that would be good for the forest and for the community, and would keep the Common School Fund whole.

State Land Board Listening Session

On October 8, the State Land Board took public comment on the Elliott for three hours at a public meeting at Southwestern Oregon Community College in Coos Bay/North Bend (Figure 12). The Secretary of State and the Treasurer attended in person and the Governor was connected via videoconference. All State Land Board assistants attended in person as did the director of the Department of State Lands.

Over 60 people spoke, most in favor of keeping the Elliott in public ownership. Several commenters spoke about values of the forest such as recreation, wildlife and habitat protection, and carbon sequestration. It was suggested that the forest is valuable to school children in other ways than just generating money. A few people raised other environmental issues such as the spraying of pesticides.

Some people commented that the forest could generate more revenue if it was managed better. The need for jobs in the community was stressed by some, and that timber harvesting would create jobs. Several people stressed the obligation of the Common School Fund to education and to children.

Most of the comments received were similar to those provided in writing and in the work sessions. The purpose of the meeting was for the State Land Board to hear these concerns directly. No decisions were made by the State Land Board during this session.

Figure 6. October 2014 State Land Board Listening Session, Coos Bay, OR



Source: Amanda Loman / The World

Written Comments

Several hundred written comments were received from individuals and organizations. The Department maintained a web page where all comments were posted.¹⁹ The majority of comments were in support of keeping the forest in public ownership and de-coupling timber receipts from school funding. Some commenters favored transferring the forest to federal ownership and some stressed the importance of values such as recreation, wildlife and habitat protection, and carbon sequestration. The importance of preserving older trees was stressed by several commenters.

Changing the way the forest is managed was suggested by several commenters. Some supported private management, some suggested management under a Habitat Conservation Plan or conservation easement, and some supported returning to the 2012 management plan.

Comments were received about the need to harvest timber to provide funding for education, stressing the obligation of the Common School Fund to Oregon's children. A few commenters provided specific suggestions for the economic analysis done by the consultants, and/or offered other ideas for consideration.

¹⁹ See http://www.oregon.gov/dsl/LW/Pages/Elliott-State-Forest-Alternatives-Project.aspx#Public_Comments

In general, written comments were similar to comments received in work sessions and meetings.

Summary of Key Points

The key points from stakeholder involvement (in no particular order) were:

- Keep the forest in public ownership
- Meet the constitutional mandate of the Common School Fund
- De-couple timber receipts from education funding
- Value aspects and uses of the forest other than timber harvest
- Support the economic vitality of the local community
- Manage the forest differently



Studying Geography in Oregon Public Schools, 2014

Source: Wendy Owen / Oregonian

SECTION 4: KEY CONSIDERATIONS

Suggestions and comments during the outreach process covered a broad spectrum of issues, some of which are addressed in this report, or the Evergreen Economics report, and some of which were beyond the scope of the project. In addition, some of the ideas received include hypotheticals that are not legally available, currently practical, or would require extreme measures with a large degree of uncertainty, and therefore risk. For example:

- Challenging the constitutionality of environmental laws, as applied to the state’s obligations under the Admission Act
- Using third-party private management to completely indemnify the state from legal responsibility
- Harvesting at the “full potential” of the forest (40-80 million board feet per year)
- Enhancing the available science accepted by the courts in evaluating murrelet cases
- Counter-suing petitioners/plaintiffs in legal challenges that result in diminishing the real property asset value of the forest
- Paying for fire protection and other carrying costs through recreational development
- Paying for basic stewardship by selling ecosystem services or carbon credits

This section of the report addresses several of these suggestions as well as other key areas of consideration that emerged.

Education Funding

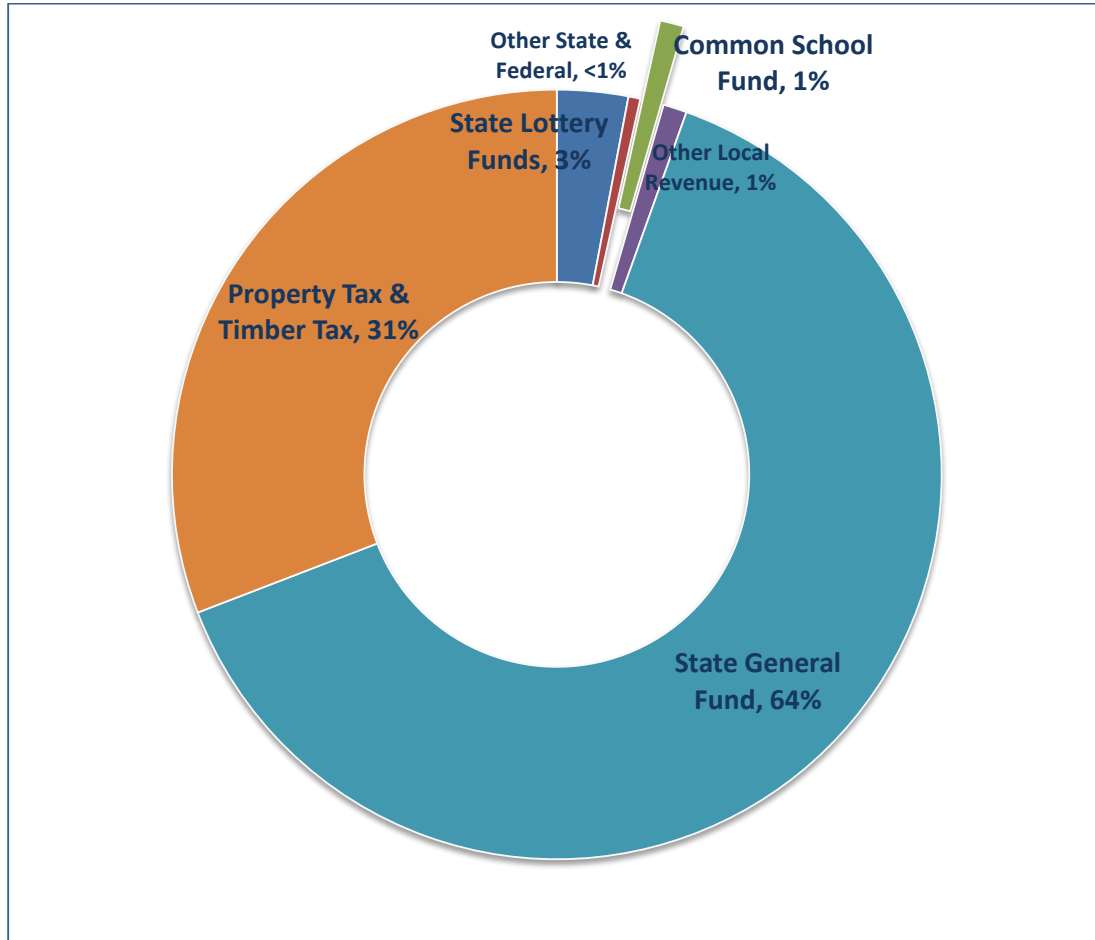
At the public meetings, questions were raised about how the Common School Fund contributes to education funding within the state. The net revenues generated by the Elliott State Forest under the current business model go directly into the Common School Fund. The Common School Fund is very similar to an endowment. In addition to its property assets, it has a body of capital (a “corpus”) that is built up through revenue (and unclaimed property) deposits. Revenue from the Elliott is one source. When timber from the Elliott is sold, the net proceeds are deposited into the Common School Fund. Those monies are added directly to the capital—or corpus. They are not directly distributed or spent, but help build the endowment. The endowment is invested in securities and other financial assets to generate additional investment revenue. Investment returns are then partially reinvested in the endowment and partially distributed to K-12 schools. On average over the modern investment life of the Common School Fund (since the mid 1990s), investment revenues have earned an annual rate of 7.9% of the corpus.²⁰

The amount of revenue provided overall to Oregon K-12 schools by the Common School Fund’s distribution is relatively modest. For example, in the current two-year budget for education, the

²⁰ The return has been 10.4% over the past three years.

Common School Fund was expected to contribute only \$100 million out of a total biennial education budget of \$9.9 billion, which is about one percent. For every hundred dollars spent on education in the state during the current biennium, about a dollar is provided by the Common School Fund. Figure 7 shows the estimated breakdown of revenue for the 2013-15 education budget.

Figure 7. Oregon's 2013-15 Biennium Education Budget



Source: Legislative Fiscal Office, 2013

This basic understanding of education funding from the Common School Fund is important to keep in mind when evaluating options for ownership and management of the Elliott.

Recreation Development

The Evergreen Economics report summarizes current recreational use of the Elliott and estimates its contribution to the local economy.²¹ Many participants in the outreach process noted the current lack of recreational opportunities in the forest citing a need for trails, campgrounds, and other park amenities. Some saw the development of recreation use as a significant opportunity to generate revenue from the Elliott.

Table 1 summarizes some of the key considerations in evaluating a property for recreation development with a brief analysis of considerations for the Elliott. These are considerations that Oregon State Parks or any public or private park provider would likely examine before committing capital funding towards park facility construction and development.

The cost of developing new park facilities can be significant depending on the need for infrastructure such as improved highway and road access, water and wastewater systems, electrical systems, public and non-public buildings, and trails. The recent phase one development of Cottonwood Canyon State Park in Gilliam and Sherman Counties (completed in 2013) cost an estimated \$7 million in capital funding to build highway access, day use areas, trails, restrooms, utilities, an information station, interpretive elements, a shop, host sites, and a small campground. The full-service park developed at Stub Stewart State Park in Washington County in 2007 cost an estimated \$20 million in capital funding to build access, day use areas, trails, restrooms, utilities, a visitor center, a shop, host sites, and three developed campgrounds.

The initial site conditions, level of development desired, and expected visitation have a major impact on overall cost. Since 2007, visitation at Stub Stewart State Park has been growing steadily. Attendance estimates for 2012 reached 43,000 day visits and 45,000 overnight campers²². This level of use is primarily generated (72%) by being within 45-60 minutes of the 2.2 million residents in the Portland metro area. Expectations for a similar development at Elliott State Forest would be lower due to the distance from major metro areas.

²¹ Evergreen Economics, 2014.

²² Bergerson and Mouw, 2013.

Table 1. Recreational Development Considerations at the Elliott State Forest

Considerations	Description	Elliott State Forest
Access	Is there good physical access to the site and is it near a major highway?	The Elliott has an excellent road system designed for timber harvesting equipment that would require improvements to accommodate public traffic and especially recreational vehicles if such use was desired to help generate adequate revenues. There is a notable absence of flat ground which would limit development possibilities considerably. The property is proximate to State Highway 101, but an hour-and-a-half from Interstate 5.
Proximity	What is the site's location relative to significant population centers?	26,000 people reside in Coos Bay/North Bend; 350,000 in the Eugene-Springfield metro area which is 2 hours away (115 miles); and 21,000 in Roseburg which is also about 2 hours away (85 miles). The 2.2 million residents in the Portland metro area are 4.5 hours away (225 miles); the 3.6 million residents in the Seattle metro area are 7.5 hours away (395 miles); and the 2.5 million in the Sacramento metro area are 7.5 hours away (472 miles). ²³
Attraction	Are there iconic features or high quality generalized landscapes that will naturally draw people to the site because of regional or national significance?	The Millicoma River runs through the property as do many smaller creeks. These have local significance, but may not have the attraction potential of nearby designated Wild and Scenic Rivers such as the Elk River, the Rogue, the Chetco, and the North Umpqua. Maturing stands of Douglas fir could potentially be highlighted as an attraction, but would compete against other areas of federal forestlands such as Cape Perpetua Scenic Area. Limitations on the Elliott include steep slopes and a need to limit human impacts to threatened species.

²³ The average distance travelled by visitors to the state parks on the south coast ranges from 125-275 miles for day use parks and 350-500 miles for overnight parks. Sixty-one percent of all coastal park visits originate within 150 miles of the park (Bergerson, 2012).

<p>Competition</p>	<p>Are there other similar recreational sites nearby that the potential opportunity would compete with?</p>	<p>There are nine state parks within easy reach of the Elliott including Umpqua, Tugman, Sunset Bay, Cape Arago, Golden and Silver Falls, Bullards Beach, and Bandon. There are 630,000 acres in the nearby Siuslaw National Forest, 1.7 million acres in the Rogue River-Siskiyou National Forest, and 1.6 million acres in the Medford/Roseburg/ Eugene Districts of Bureau of Land Management holdings including a campground at Loon Lake. The Elliott could pull use from these other areas or independently draw new users but it would take the development of a significant attraction (with high initial cost) to do so at a substantial level. A visitor experience could be designed to complement other nearby recreational opportunities such as the Dean Creek Elk Viewing Area and the Oregon Dunes National Recreational Area, but again, a significant attraction such as a high amenity campground would have to be developed.</p>
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If there is an interest from a strategic standpoint to consider a major recreational development and the creation of a new park, then due diligence calls for a cost-benefit analysis to determine whether the development would be sustainable. It takes staffing, law enforcement, maintenance, vehicles, energy, and supplies to operate a recreational facility of any size. On average, statewide revenues from state park visitors cover approximately 33% of the costs to deliver services²⁴.

From a business standpoint, it's been well demonstrated that operating public recreational facilities at the state park standard is not profitable. Costs are variable by size and type of park with developed campgrounds costing considerably more than waysides or day use parks. Typical budgets for large campground parks run in the neighborhood of \$1-3 million per year with up to 50% cost recovery. This lack of cost recovery is a major reason there are so few private park operations that are similar in amenity to state parks. Possible recreational development scenarios for a property like the Elliott could be represented by the ranges suggested in Table 2 in order to attract roughly 100,000 visitors. The figures are based on experience with state parks in the region and would differ depending on multiple variables that are impossible to determine without a detailed program plan and analysis of potential sites.

²⁴ OPRD, 2012.

Table 2. Example Recreation Development Scenario

~80-100,000	annual visitors (assumed target)
~\$15-20 million	one-time park construction subsidy
~\$1-3 million	annual park operating costs
~\$0.5-1 million	annual park user revenues
~\$1.3-1.7 million	annual economic impact ²⁵
~\$0.5-2 million	annual public subsidy necessary

While the resulting amenities from developing recreational facilities for an ‘Elliott State Park’ could generate substantial intrinsic values for the users themselves -- and some economic impacts in surrounding communities -- it would take a sizeable initial investment and an annual operating subsidy likely in the millions to develop such a park. The subsidies required would create for the owner an additional cost center, not a profit center.

Non-market Values

The Elliott State Forest provides many significant local and regional values beyond timber harvest. This was a key point raised by participants in the outreach process. “Non-market” refers to values that the land provides to people that are not typically bought and sold, and do not generate revenue directly for the Common School Fund currently. For instance, while timber is harvested and sold and generates a return to the landowner, water quality from stream restoration and careful land management is normally not something the landowner is ever paid for. However, it may have high value to a downstream water supply.

The non-market values noted most often were threatened species protection, carbon sequestration, and water protection. One natural resource economist who participated in the outreach process attempted to quantify these and other non-market values and estimated that they may provide as much as \$50,000 to \$300,000 of value per acre at the Elliott.²⁶ A 2014 Earth Economics report defined a wide range of ecosystem services (see Table 3 for Elliott interpretation) and estimated the values for State of Washington forests to range from a low of \$236/acre/year to a high of \$4,137/acre/year.

²⁵ Spending generated within 30 miles of the park based on approximately \$17 of average local economic impact per visit (OPRD, 1012). Since visitation to this hypothetical park would in part pull use away from other established parks, the net economic impact for the region might be expected to be somewhat lower, although if development were focused on high-end camping and recreational vehicle opportunities, it could be somewhat higher.

²⁶ Niemi, 2014.

Table 3. Ecosystem Services Relevant to Elliott State Forest

Ecosystem Service	Benefit to People	Elliott State Forest
Food	Crops, fish, game, fruits	Hunting and fishing access better than on private lands nearby; elk population, winter steelhead, cutthroat trout ²⁷
Medicinal Resources	Traditional medicines, pharmaceuticals, assay organisms	Source of cascara in the 1950s ²⁸
Water Supply	Surface and ground water for drinking, irrigation, and industrial use	None of the Elliott watersheds contribute to a Surface Water Drinking Source Area ²⁹
Climate Stability	Support of a stable climate through carbon sequestration	If no timber harvests were to occur for the next 40 years, Ecotrust estimates 46.6 million metric tons of carbon dioxide equivalent could be stored ³⁰
Air Quality	Clean, breathable air	Risk of fine particulate matter (PM 2.5) from potential forest fire smoke
Moderation of Extreme Events	Mitigation of floods, fires, droughts	Down-gradient off-site residential areas protected from flood; there is a past history of catastrophic fire
Soil Retention	Slope stability	Steep slopes subject to landslide initiation after high-intensity-long-duration rainfall, higher risk in clear-cut areas; ³¹ established road system less risk than forest needing new roads
Water Regulation	Natural irrigation, drainage, groundwater recharge, river flows	Small groundwater systems in or near; recharge and river flows important for salmon

²⁷ Gray, 2014.

²⁸ Phillips, 1997.

²⁹ DEQ, 2014, see <http://www.deq.state.or.us/wq/dwp/results.htm>

³⁰ Ecotrust, 2011. 46.6 million metric tons of carbon dioxide is equivalent to around 68% of the statewide emissions of greenhouse gases for Oregon in 2007.

³¹ Smith et al., 2013.

Ecosystem Service	Benefit to People	Elliott State Forest
Biological Diversity	Genetic and biological diversity, ecosystem function	Occupied and potential habitat for threatened species northern spotted owl, marbled murrelet, and coho
Aesthetics	Presence, scenery, sounds of nature	Views along Umpqua highway and from public lands; on-site appreciation; knowledge of habitat existence
Science and Education	Natural systems for education and scientific research	Appropriate and rich site for studies on habitat for fish, northern spotted owl, marbled murrelets; landslide physics; forest planning; splash dams; and logging residues

Source: categories selected and derived from Earth Economics (2014)

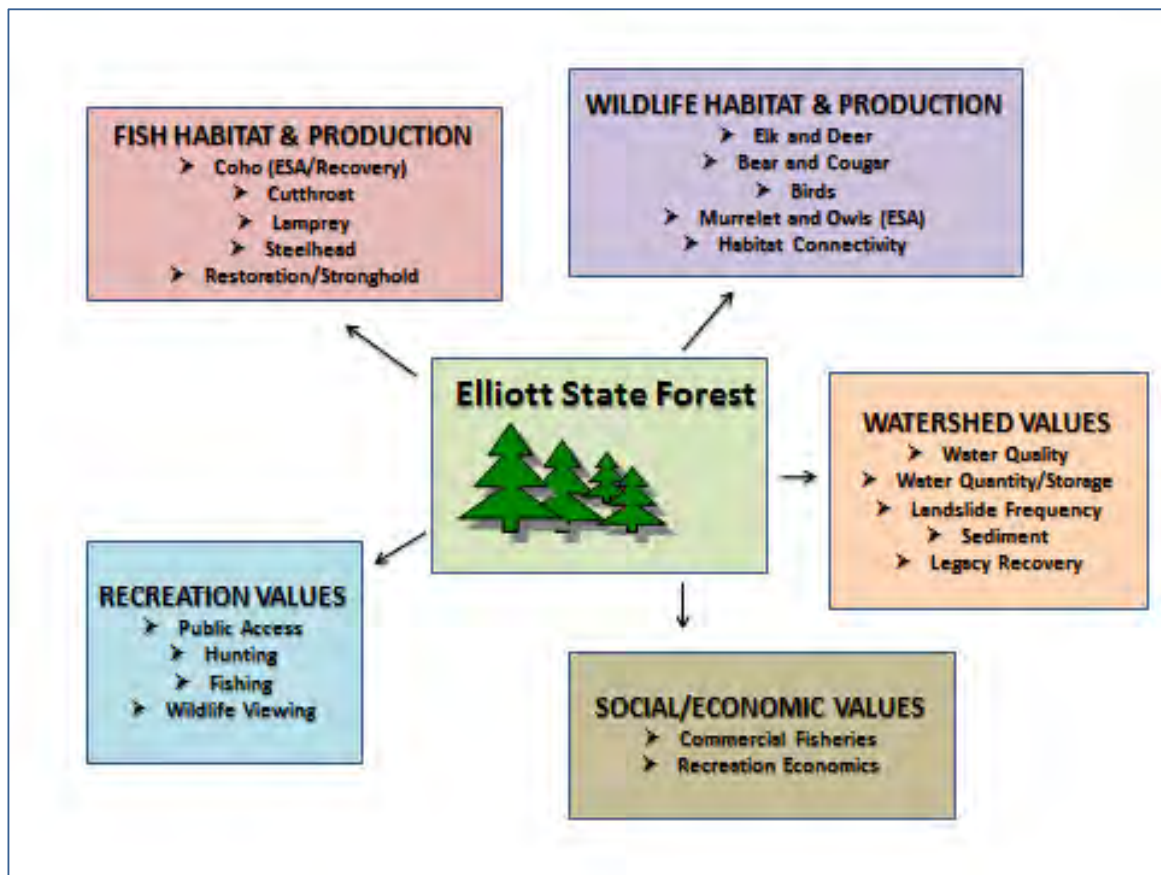
Oregon Department of Fish and Wildlife District Fish Biologist Mike Gray classified the fish and wildlife benefits provided by the Elliott into five categories.³² Figure 8 illustrates these and the many tangible and intangible fish and wildlife-related values to the State of Oregon from the Elliott. These values are addressed for salmon in the Evergreen Economics report.³³ Gray identifies the large investment that has been made by the Department of Forestry, Coos Watershed Association, Tenmile Lakes Basin Partnership, Department of Fish and Wildlife, and Watershed Enhancement Board in Elliott watershed restoration projects including fish passage improvements, riparian plantings, extra tree retention in stream buffers, improved road drainage, and placement of large wood and boulders for in-stream complexity. This investment has increased the coho habitat value of the Elliott watersheds beyond that of other managed forest lands in the region.

While the Elliott contributes many environmental (and social) values, the ability to monetize them for the Common School Fund is limited. For instance, a landowner could charge people for hunting and fishing access on the property but this may or may not result in revenue generation. Instead, it could very well displace sporting people to other public access areas located at a further distance but that are still free to use. It would also require resources for some form of enforcement.

³² Gray, 2014

³³ Evergreen Economics, 2014

Figure 8. Fish and Wildlife Values at the Elliott State Forest



Source: Mike Gray/ODFW

Other monetization opportunities suggested during the outreach process included carbon sequestration markets and conservation mitigation credits. Conservation mitigation credits are an approach to use the protection of, for example, northern spotted owl habitat on the Elliott to make up for loss of owl habitat elsewhere. If a project on another property had to impact owl habitat, the project manager could purchase mitigation credits from the Elliott landowner to satisfy regulators of a net benefit to owls -- despite the project development.

While used for many years with wetland mitigation, these markets are less well-developed for biodiversity conservation and face difficulties including standardization and regulatory acceptance particularly when the lands are in public ownership with a presumption of existing protections.³⁴

³⁴ Alvarado-Quesada et al, 2013.

Carbon sequestration is a more developed possibility, but also a not fully proven market especially when considering lands in state or federal ownership (i.e., non-private). Carbon uptake rates vary significantly by vegetative species and age. The coastal Douglas fir growing on the Elliott is particularly well suited to carbon uptake. Because of this, the potential to market carbon credits on the Elliott may be greater than in areas with slower growing or shorter-lived tree species. Ecotrust estimated that by agreeing to reduce harvests in the Elliott by 10 million board feet each year, there would be 50,000 metric tons of carbon dioxide equivalent kept in the forest.³⁵ Hypothetically, this promise to not harvest 10 million board feet could be sold to a buyer that wanted to purchase their contributions to greenhouse gas emission reduction. However, carbon credits from already publically owned lands tend to be a lower value because of “additionality,” the presumption by the markets that public lands already protect carbon.³⁶

The need to explore monetization options for carbon sequestration is appropriate for the trust obligation, but the options appear to be limited at least in the near future.³⁷ The climate trend information in the Evergreen Economics report indicates that the property’s location may have some long-term advantages from a sequestration standpoint relative to other regions, but still faces some challenges as a revenue source.



Coastal Coho on the West Fork Millicoma, Elliott State Forest Source: ODFW

x

³⁵ Ecotrust, 2011; this is the amount of annual carbon emissions of 10,000 automobiles or like taking one of every 16 registered vehicles in Coos and Douglas counties off the road (see http://www.oregon.gov/ODOT/DMV/docs/stats/vehicle/2013_Vehicle_County_Registration.pdf).

³⁶ “Additionality” is the extent to which an action such as restricting timber harvesting will create additional carbon sequestration in the future. If a property is already constrained by regulations such as the Endangered Species Act (limited harvesting) or is in public ownership (management is limited by mandate), further restrictions through a conservation easement or carbon agreement would not improve carbon sequestration overall because the property is already storing a significant amount and not projected to be harvested (i.e., there is not much additional lift by the added conservation actions). Therefore, the value of the easement or carbon agreement would be very low or non-existent on this particular land. See Gillenwater, 2012 for a more detailed discussion.

³⁷ Davis, 2006.

The Evergreen Economics report estimates that a management regime such as the Northwest Forest Plan might harvest 17 million board feet per year and the Oregon Forest Practices Act might harvest at a level of approximately 55 million.³⁸ A conservation easement promising to restrict commercial forest practices to Northwest Forest Plan limits, for instance, could therefore make as much as 190,000 metric tons of carbon available annually for emissions reduction purchasing.³⁹ This could generate revenues on the order of \$950,000 per year at \$5 per ton or \$1.9 million at \$10 per ton. These revenues, less monitoring, and verification costs (estimated at an average \$3-\$4 per acre per year) could net between \$600,000 and \$1.6 million per year (\$7-\$19/acre).⁴⁰ This gives a rough idea of what a private owner might get for carbon as part of a stream of benefits that included some lower level of timber harvest. It assumes no market reduction for the type of additionality constraints discussed above for publically held properties.

Some comments were received about the societal cost of harvesting the carbon instead of sequestering it in the Elliott. While there may well be societal costs of carbon releases that could be avoided, because such costs are not directly connected to the specific trust obligation to the beneficiaries of the Common School Fund, they were not evaluated.

State Land Board Discretion

The Elliott State Forest is comprised of lands granted to Oregon through the Oregon Admission Act or through selections made in lieu of Admission Act lands that were already occupied at the time of statehood. Congressional acts pertaining to the Territory of Oregon in 1848 and 1853⁴¹, as well as the Oregon Admission Act in 1859⁴² impose a binding obligation with the federal government requiring the state to manage these lands “for the use of schools.”⁴³ The Oregon Constitution created the State Land Board for the “disposition and management” of Common School lands and other lands owned by the State.⁴⁴ The Constitution charges the State Land

³⁸ Evergreen Economics, 2014.

³⁹ Using the Ecotrust 2011 estimates, however actual amounts would be subject to quantification and verification under an established protocol such as Climate Action Reserve (CAR) Forest Project Protocol 3.1 for the particular scenario developed. The 190,000 metric tons of CO₂ comes from the hypothetical 38 million board feet reduction (55 million less 17 million) times the Ecotrust estimate of 50,000 metric tons of CO₂ per 10 million reduction. This amount of carbon is equivalent to the annual emissions of 40,000 passenger vehicles or 17,366 American homes worth of annual energy use or the greenhouse gas reduction from constructing 52 wind turbines (see <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>).

⁴⁰ If basic stewardship costs of \$9.45-\$12 per acre per year were not covered by the timber harvesting revenues, then this net amount would be lower. Richards and Stokes (2004) looked at 50 carbon sequestration cost studies and found that costs for ongoing maintenance to make sure carbon yields are realized were often not included including fertilization, thinning, security, fire and pest protection, and administrative costs. They concluded that “none of the studies have adequately addressed implementation issues that may prove to be the greatest determinants of the cost-effectiveness of the carbon sequestration option.”

⁴¹ Act of January 7, 1853, 10 Stat 150, ch 6, §§ 1, 2 (1853)

⁴² Oregon Admission Act, 11 Stat. 383, §4 (1859)

⁴³ 46 Or. Op Atty Gen. 468, 472 (1992)

⁴⁴ Oregon Constitution, Article VIII, section 5(1)

Board with managing land under its jurisdiction with the “object of obtaining the greatest benefit for the people of Oregon, consistent with the conservation of the resource under sound techniques of land management.”⁴⁵ The Admission Act and the Oregon Constitution each impose a binding trust upon the State Land Board to use the Admission Act lands for school purposes.⁴⁶ Under this trust obligation, the State Land Board’s management responsibilities with respect to Admission Act lands are “to attain the greatest benefit for the schools, consistent with the conservation of the lands under sound techniques of land management.”⁴⁷

As the trustee, the State Land Board must manage Admission Act lands with the goal of maintaining the value of and maximizing revenues to the Common School Fund.⁴⁸ A prior Attorney General opinion summarized that the State Land Board can accomplish this objective by either (1) selling the lands and crediting the proceeds to the Common School Fund, or (2) generating revenue through use of such lands and crediting the revenue to the Common School Fund.⁴⁹ In addition several Attorneys General opinions have outlined the State Land Board’s obligation to preserve the corpus of the trust and some of the pertinent points from those follow.

The State Land Board trust obligation would likely be fulfilled if the Board decides to retain Admission Act lands for long-term economic gain.⁵⁰ The State Land Board is obligated to obtain full market value from the sale, rental, or other use of Admission Act lands while conserving the corpus of the trust.⁵¹ In situations where the Admission Act land is retained, the State Land Board must manage the assets in compliance with their obligations as trustees.⁵² While stakeholders may advocate for a shift in focus from purely economic return, the State Land Board must base its investment decisions on maximizing revenue to the Common School Fund and must exclude all selfish interest and all consideration of the interest of a third person.⁵³ Focusing on the beneficiaries is paramount to maintaining the trust obligations.⁵⁴

In selecting an investment strategy, the State Land Board is subject to general trust management obligations, such as the prudent investor rules⁵⁵, which include the duty to exercise the skill and care of a prudent person in faithfully executing the trust.⁵⁶ In addition to skill and care, a trustee must also be cautious in investment decisions and make choices that preserve the assets of the

⁴⁵ Oregon Constitution, Article VIII, section 5(2)

⁴⁶ *Grand Prize Hydraulic Mines v. Boswell*, 83 Or. 1, 6, 162 P. 1063 (1917); *State Land Board v. Lee*, 84 Or 431, 441, 165 P 372 (1917); 37 Op atty gen 569, 573 (1975); 43 Or. Op. Atty. Gen. 140, 141(1983); 46 Or. Op. Atty. Gen. 208, 214 (1989); Or. Op Atty Gen OP-6383 (June 22, 1990); and 46 Or. Op. Atty Gen. 468, 473 (1992)

⁴⁷ 46 Or. Op. Atty Gen. 468, 478 (1992)

⁴⁸ 43 Or. Op. Atty Gen 140, 143 (1983) and 46 Or. Op. Atty. Gen. 468 (1992).

⁴⁹ 37 Op Atty Gen 569, 573 (1975) and 34 Op Atty Gen 1131 (1970).

⁵⁰ 46 Or. Op. Atty. Gen. 468, 479.

⁵¹ 37 Op Atty Gen 569, 572 (1975) and 46 Or. Op. Atty Gen. 468, 478.

⁵² 37 Op Atty Gen 569, 573 (1975).

⁵³ 43 Or. Op. Atty. Gen. 140, 143 (1983).

⁵⁴ 43 Or. Op. Atty Gen 140, 143 (1983).

⁵⁵ ORS 130.755 Prudent investor rule.

⁵⁶ 43 Or. Op. Atty. Gen. 140 (1983).

trust.⁵⁷ The State Land Board must have a rational, non-speculative basis for concluding that its investment choices will maximize economic return to the Common School Fund over the long term.⁵⁸ Speculative investments generally involve a relatively high risk of loss with an unusually large opportunity for profits.⁵⁹ The line by which an investment choice becomes too speculative is not clearly defined. An investment choice may be too speculative if it violates the prudent investor standard and is based on "...an intent to gamble on the swings of the market."⁶⁰

However, the State Land Board does not need to simply take a mechanical approach in consideration of economic factors to select an investment strategy.⁶¹ In developing an overall management strategy of the Common School Fund assets, the State Land Board has wide discretion in evaluating investment options.⁶² The State Land Board must consider risks, make predictions of future developments, and generally take into account all factors which affect risk and return now and in the future.⁶³

Common School Fund assets may be set aside for "banking" or conservation (in the economic sense of the term) while their economic value appreciates,⁶⁴ or for periods when no income would be affected by the designation.⁶⁵ The State Land Board is free to explore innovative mechanisms that secure the environmental and social benefits of preserving habitats, so long as the primary focus remains on maximization of revenues over the long term and does not negatively impact the Common School Fund.⁶⁶ Non-economic factors may be considered where such factors do not adversely affect the potential financial contribution to the Common School Fund.⁶⁷ However, if a management plan were to adversely affect the potential financial contribution of Common School land to the Common School Fund in the future, the designation would at that point be in conflict with the Board's trust duty.⁶⁸

⁵⁷ 41 Or. Op. Atty. Gen. 503, 511 (1981).

⁵⁸ 46 Or. Op. Atty. Gen. 468, 479 (1992).

⁵⁹ Merriam Webster dictionary defines:

*speculative: 3a : engaging in or making a practice of taking risks especially in commercial matters <a speculative trader> b : involving relatively high risk and usually an unusual potentiality for gain <a speculative enterprise><a speculative crop>also : appealing primarily to speculators <a speculative stock><a speculative situation on an exchange> c : concerned with economic speculation;

* speculation: a : an act of speculating (as by engaging in business out of the ordinary, by dealing with a view to making a profit from conjectural fluctuations in the price rather than from earnings of the ordinary profit of trade, or by entering into a business venture involving unusual risks for a chance of an unusually large gain or profit) or the condition of being speculated in <uncontrolled speculation is a danger to the national economy><land speculation in the 19th century was as common as stock speculation today>— contrasted with investment

⁶⁰ 40 Or. Op. Atty. Gen. 295 (1980).

⁶¹ 46 Or. Op. Atty. Gen. 468, 478.

⁶² 46 Or. Op. Atty. Gen. 468, 480.

⁶³ 43 Or. Atty. Gen 140, 143 (1983).

⁶⁴ 46 Or. Op. Atty. Gen. 468, 479.

⁶⁵ 38 Or. Op. Atty. Gen. 850, 853 (1977).

⁶⁶ Or. Op Atty Gen OP-6383 (June 22, 1990) and 46 Or. Op. Atty Gen 468 (1992).

⁶⁷ 43 Or. Op Atty Gen 140, 143 (1983) and 38 Or. Op. Atty Gen 850, 853 (1977).

⁶⁸ 38 Op AttyGen 850, 853 (1977).

Finally, diversification of investments may be financially prudent in the long term and consistent with the State Land Board's obligation as trustee, even though the investments result in varying rates of return in the short term.⁶⁹ The State Land Board may incur present expenses or take management actions which reduce present income if these actions are part of an overall plan intended to stabilize its investment portfolio and maximize overall income over the long term.⁷⁰ The trustee duty obligates the State Land Board to maximize the value of, and revenue from, these lands over the long term.⁷¹ The long-term investment perspective requires and authorizes the State Land Board to consider not only the immediate revenues that may be available but also the preservation of the asset and future potential revenue. The State Land Board could experiment with different investment approaches, so long as the goal remains preservation of the trust assets and maximizing the economic benefit to the Common School Fund over the long term.⁷²

Real Estate Value

Earlier in 2014, the Department of State Lands sold three parcels at the Elliott known as Benson Ridge, (Figure 9), Adams 1, and East Hakki Ridge.⁷³ These sales confirmed that a market exists for Elliott forestland and gave a general sense of what that market looks like. The recent sale of these Elliott parcels is an indication of the current value of the forest given federal Endangered Species Act constraints and is not an example of the state selling the forest for less than its value. The forest's value is defined by its inherent value minus any constraints and is best expressed by what the market is willing to pay. This is why "brownfield" sites are cheaper to buy than non-contaminated sites – they have constraints that reduce their value. Endangered Species Act constraints reduce the value of the Elliott as was witnessed in the sales prices of the aforementioned parcels.

⁶⁹ ORS 130.760 Diversification of trust investments and 46 Or. Op. Atty. Gen. 468, 479.

⁷⁰ 46 Or. Op. Atty. Gen. 468 (1992).

⁷¹ 38 OpAttyGen 850, 853 (1977).

⁷² 37 Op Atty Gen 569, 573 (1975).

⁷³ The parcels were 353, 310, and 788 acres in size, respectively.

Figure 9. Benson Ridge at Elliott State Forest



Source: Realty Marketing/Northwest, January 2014

Each of the parcels was appraised by an independent appraiser prior to auction, taking into account the specific details of each property including access, standing timber, topography, and presence of protected species or potential habitat. For the actual sales, the impact of the protected species resulted in a value that ranged from 56-76% of the estimated value of the property without protected species. The actual deduction for any particular parcel will vary tremendously based on these and other factors including the risk profile of a potential buyer. Evergreen Economics additionally constructed an approximate 90 percent confidence interval for the true net present value of the Elliott. This interval ranged from \$285 million to \$443 million which translates to an average value of \$3,400 to \$5,275 per acre.

The Evergreen Economics valuation considered the optimal level of harvest a hypothetical buyer could produce while meeting the requirements of the Oregon Forest Practices Act and all other federal and state regulations including the Endangered Species Act. The Department believes this net present value provides the best estimate of market value of fee title for the property at this time.

Conservation easements are valuable interests in a property short of fee title. For example, a landowner can convey the right to build a residence on their property to a land trust. The landowner is then restricted from construction but still owns the property. The value of the conservation easement plus the separate but remaining fee title, together constitute the entire

value of the property. Table 4 gives a hypothetical menu of conservation restrictions⁷⁴ that could potentially be used as part of a protection strategy under one or more of the scenarios presented below.

This menu gives an idea of the types of restrictions that could be placed on the property (for a cost). Any restrictions used in an ownership solution for the Elliott would have to be consistent with Oregon Revised Statute (ORS) 271.715 to 271.795 and both an easement holder and a fee owner would have to be identified.⁷⁵ The value of each such restriction would be determined by an appraiser based on the difference between the value of the property with and without the easement in place. While a restriction might mirror a regulated protection today, if the restriction was written to be in perpetuity it would have value in the case that the regulation were to change in the future.

Table 4. Hypothetical Menu of Conservation Restrictions

Item (for example)	Values	Term	Assumptions (for example)
Prohibit development	Open space	Next 80 years or in perpetuity	No buildings or utilities constructed for 80 years (or in perpetuity) on 84,000 acres
Prohibit development but reserve building envelopes	Open space	In perpetuity	No buildings or utilities constructed forever on 84,000 acres, except for 3% floating building envelopes
Prohibit harvest in 100+ year old stands	Natural	Next 80 years	No harvest in stands of 100+ years for next 80 years except emergencies
Prohibit harvest in 60+ year old stands	Natural	In perpetuity	No harvest in stands of 60+ years forever except emergencies
Prohibit harvest within 100 feet of perennial watercourses	Natural	In perpetuity	No harvest in areas within 100 feet of perennial watercourses regardless of regulatory allowances
Prohibit harvest within 300 feet of perennial and intermittent watercourses	Natural	In perpetuity	No harvest in areas within 300 feet of perennial and intermittent watercourses regardless of regulator allowances
Allow public access	Recreational	In perpetuity	Allow open, undeveloped public access to all 84,000 acres consistent with current use

⁷⁴ Donegan, 2014.

⁷⁵ There are costs associated with holding an easement for activities such as monitoring compliance and taking enforcement actions.

Item (for example)	Values	Term	Assumptions (for example)
Allow public access for hunting and fishing only	Recreational	In perpetuity	Allow open, undeveloped public access to all 84,000 acres but only for legal hunting and fishing
Prohibit log exports from the property	Forest	In perpetuity	Mechanism in easement that effectively prevents export of logs from the property
Maintain third-party certification	Forest	In perpetuity	Requirement to maintain third-party certification on the property
Restrict further subdivision	Open space	In perpetuity	Prohibit the creation of additional tax parcels

Theoretically, the value of all of the conservation restrictions together with the remaining fee title value would add up to the total current market value of the property. There would likely be an effect on interested purchaser pools depending on the type and duration of the easements sold, and it assumes that there is a market for the conservation easements. If the state merely retained an easement as part of a fee transaction, there would most likely be no secondary market for the easement, and there would be monitoring and enforcement costs for the agency holding the right.

Community Forest Solutions

Community forest scenarios vary considerably across the United States in their creation and in the design of ownership and management.⁷⁶ The basis of a community forest that local residents are involved in includes:

- Determining goals and purpose for the forest
- Creating a governance structure
- Acquiring the property
- Selecting a manager for the forest
- Overseeing the implementation of a forest management plan
- Sharing in the costs and benefits of managing the forest

Community forest efforts typically get started when a piece of forested property comes on the market and the local community becomes concerned about the potential loss of values that the forest had been providing. A group forms and begins exploring options to purchase the property

⁷⁶ This section where not otherwise cited is based on information from Cox (2008), Smith (2014), Tuchmann (2014), Gootee (2014), and the websites linked in Table 5.

from the seller. The group may be supported at this point by a non-profit land conservation organization such as The Conservation Fund, the Trust for Public Lands, Ecotrust, or The Nature Conservancy. The group may also receive assistance from conservation finance experts with access to private funding and innovative financing techniques such as revenue bonds.

Examples of community forest scenarios exist across the country. They cover a range of purposes from production of timber and protecting public access to education and research consortiums to wildlife habitat restoration and protection emphasis. Each unique solution is determined by the particular community forest design process. Table 5 summarizes a few of the many examples. The community forest approach could be used in several of the transition scenarios discussed below; however, success would be dependent on the level of interest and engagement at the local level. Organizations and financing mechanisms exist that could support an effort but without strong local involvement and initiative, a community forest solution would not be practical.

Table 5. Community Forest Solutions: A Range of Examples

Name	Location & Size	Summary
Elk Creek Conservation Area	Swan Valley, Montana 640 acres	A non-profit community group of loggers, environmentalists, retired foresters, and other interested community members formed to acquire Plum Creek Timber Company lands for sale and worked with the Confederated Salish and Kootenai Tribes and the Bonneville Power Administration to acquire the forest.
Teanaway Community Forest	Yakima Basin, Washington 50,000 acres	WA State Department of Natural Resources land managed with a community forest approach that emphasizes habitat protection for fish as well as forestry, grazing, and public access for recreation.
Farm Cove Community Forest	Downeast Lakes Region, Maine 34,000 acres	Under threat of development, a local community group formed and partnered with a forest management company and the New England Forest Foundation to protect lands in eastern Maine that are managed for timber, carbon, recreation, and an ecological reserve protected by an easement.
Black Rock Forest Consortium	Cornwall, Connecticut 3,838 acres	When a Harvard University endowment property went up for sale, a non-profit consortium formed of local universities, schools, scientific and cultural institutions, and environmental organizations to acquire and manage the property for research and education and maintain a scientific research station; benefited from private foundation and individual support.
Blue Mountain Forest Partners	Grant County, Oregon 1.7M acres	A community group of loggers, ranchers, environmentalists, timber industry representatives, local elected officials, and federal land managers has formed to help guide the management of the Malheur National Forest to find a way to accomplish both a working forest and forest restoration practices to reduce the risk of catastrophic wildfire and disease.

Name	Location & Size	Summary
Usal Redwood Forest	Mendocino County, California 50,000 acres	An innovative mix of public, private, for profit, and non-profit financing permanently protected a redwood forest in northern California. It is currently managed with limited but active timber harvesting, for restoration, and tourism.

SECTION 5: TRANSITION SCENARIOS

During the course of the project, a number of potential management alternatives were envisioned and examined for the Elliott by the Department of State Lands. The Evergreen Economics report investigated several that ranged from continued management by the Department of Forestry to a public auction where the property would be sold to the highest bidder, presumably a private owner or investor.⁷⁷ The projections associated with each management alternative have been useful in reducing uncertainty around how they might work and their likelihood of success at meeting the trust obligation of the State Land Board.

In this report, four transition scenarios are presented that span a range of ownership and management solutions, but that do not include the public auction scenario. Given the potential feasibility of the scenarios presented in this report to allow the State Land Board to meet its trust obligations and the permanence of a sale, public auction does not need continued due diligence at this time. In other words, if one of the other scenarios results in a successful future for these lands, the need to pursue a public auction could be avoided. If, however, it becomes apparent through further investigation or implementation that the transition scenarios discussed in this report are not feasible, then the public auction would need to be revisited given the nature of the State Land Board’s trust obligation.⁷⁸

The following transition scenarios are not in priority order, and no implied preference or recommendation should be assumed:

1. **Request Proposals for Management** (the state continues to own the property as an asset of the Common School Fund)
2. **Continued Management by the Department of Forestry** (the state continues to own the property as an asset of the Common School Fund)

⁷⁷ Evergreen Economics, 2014.

⁷⁸ The State Land Board has a trust responsibility to evaluate each of its assets for every course of action that could result in the greatest long-term economic benefit to the beneficiaries. Prematurely removing a specific course from consideration would not be consistent with the dual mandate of the Admission Act and the Constitution.

3. **Request Proposals for Ownership** (the property transfers to a new public owner such as local, state, federal, or tribal or a public/private partnership)
4. **Federal or Tribal Transfer** (the property transfers to a federal agency or tribal government)

It is possible the Common School Fund could continue to own the property while a new ownership solution is explored. This would allow the State Land Board to pursue different scenarios simultaneously, allowing time to fully investigate the more operationally complicated approaches.



Yarder Operating at Elliott State Forest

Source: Oregon Department of Forestry

Common School Fund Retains Ownership

Scenarios that retain the Elliott in Common School Fund ownership require certain assumptions about feasibility and risk. The biggest concern is whether the outcome would generate adequate revenue to justify it as an ongoing investment for the Fund given the trust responsibility of the

State Land Board. This concern is balanced with assumptions about the long-term value of the land and its ability to generate future revenues.⁷⁹

A selection of one of these scenarios acknowledges that the value of the Elliott as an asset looking 100 years out is extremely difficult to predict, yet could potentially be significant. This uncertainty might be a justification for not divesting of the asset at this time even with the current and projected revenue challenges. The feasibility of these scenarios assumes that the future land value could be significantly higher than its current value.

Future value increases could result from one or more of the following:

- Maturing viable carbon markets that address issues of additionality⁸⁰ on public lands and lands already constrained by mandatory species protections
- Scientific data on the status of threatened and endangered species may change and result in a significant increase in opportunities for harvesting and revenue generation in the future
- As-yet unidentified or unproven opportunities for monetizing products or services from the property may arise

Scenarios #1 and #2 would maintain the forest in state ownership as a Common School Fund asset in case new opportunities materialize. In the meantime, innovative management to cover basic stewardship costs and generate some return from the property would help meet the trust obligation.

In assessing these future outcomes, we need to consider three valuation factors that are relevant to Common School Lands: 1) the endowment (corpus); 2) the distribution to schools; and 3) the value of the land asset. Table 6 shows how three future 30-year outcomes could be compared (without discounting) - one that results from a sale of the property at its value today and invests it in the Common School Fund, and two that assume retention of ownership and a stream of revenues plus a high future value of the land.

⁷⁹ When return on investment is dependent on significant assumptions about how future events will impact short- and long-term returns, the State Land Board has relatively broad discretion, so long as the focus remains on the economic benefit to the beneficiaries. When there are reasonable arguments to retain one asset that has a traditionally stable value as a part of an overall portfolio that includes higher and lower risk investments, the State Land Board could reasonably decide to conserve such an asset as part of the corpus of the trust.

⁸⁰ “Additionality” was addressed in a footnote above, but for more information see Gillenwater, 2012.

Table 6. Three 30-Year Equivalent Value Outcomes for the Elliott State Forest

Description	Endowment at Year 30	Distribution Over 30 Years	Residual Land Value ⁸¹	Total Value by Year 30
Sell at Public Auction Today	\$6.6 billion	\$5.0 billion	\$0	\$11.6 billion
Retain and Manage to Net \$10 Million Per Year for 30	\$6.1 billion	\$4.5 billion	\$1.0 billion	\$11.6 billion
Retain and Manage to Net \$5 Million Per Year for 30	\$5.8 billion	\$4.4 billion	\$1.4 billion	\$11.6 billion

The following assumptions are required by the more optimistic (\$10 million annually) revenue option for it to have the same total value as selling at public auction today:

- The residual value of the Elliott would have to be greater than \$1.0 billion in the year 2045 (i.e., more than \$11,500 per acre or nearly three times the estimated current value)
- \$10 million is a reasonable net revenue to expect to be able to generate each year (equivalent to 25-30 million board feet harvested)
- A dollar today is as important for the Common School Fund as a dollar thirty years from now (high intergenerational equity)

The more conservative \$5 million net annual return (equivalent to 12-15 million board feet harvested) would require the 2045 residual value of the Elliott to exceed \$1.4 billion, \$16,750 per acre or about four times the estimated current value. The potential for these assumptions to become reality are important considerations in deciding to retain the property.

The other variable for consideration with these scenarios that retain state ownership as a Common School Fund asset is the potential to lower costs and increase net revenues either through competitive bidding or through finding alternate management approaches with the current manager (e.g., efficiencies or improved revenues). Based on analysis of data provided by the Department of Forestry, management of the Elliott Common School lands has cost \$34-37 per acre per year and averaged 254 thousand board feet (MBF) per acre since at least the late-1990s. A 2005 Mason, Bruce & Girard study compared cost structures for a range of management entities

⁸¹ This table solves for the land value of the Elliott at Year 30 for all of these outcomes to be equal. For instance, if it were sold today at the estimated value of \$0.4 billion, there would be no residual value at Year 30, but if the property generated \$10 million per year, it would have to be worth \$1.0 billion at Year 30 for the outcomes to generate the same total value (not discounted).

and found the results reported in Table 7 below.⁸² The amounts reported for the Elliott are based on an analysis of data provided by the Department of Forestry.⁸³

The private sector Timberland Investment Management Organizations (TIMOs) examined in this study had much higher costs overall, but were producing more than twice the timber produced by public agencies using short rotation, even-aged silviculture. These management techniques would be very challenging on the Elliott due to protected species constraints and the high level of public oversight on management of public lands.

Table 7. Representative Management Costs by Operator

Organization	Operational Expense per Acre per Year	MBF Harvested per Acre per Year	Cost per MBF
ODF - Elliott Common School Lands	\$34-\$37	254	\$0.13-\$0.15
BLM - Western Oregon	\$58	77	\$0.75
ODF - All Properties	\$40	352	\$0.11
Washington DNR	\$27 ⁸⁴	295	\$0.09
Private Sector	\$52-\$54	625	\$0.08-\$0.09

Source: Mason, Bruce & Girard, 2005

Other management alternatives to consider include the possibility of an approved Habitat Conservation Plan (HCP) that would allow for increased timber harvesting while protecting the threatened species. Management under an HCP could be either through a continuation of the agreement with the Department of Forestry or through engagement with a different management entity as described in Transition Scenario #1 below, although negotiation of an HCP with federal agencies and a new manager could be challenging and time-consuming. A competitive bid process would allow an evaluation of the potential for decreasing operational costs and/or increasing revenues. The sufficiency of improved net revenues would then need to be evaluated within the context of the projected future value of the asset.

Continuing the management agreement with Department of Forestry (in a modified form) would protect the investment in human resources, property knowledge, and physical assets that have already been made in the Elliott. It also is already established and ready to resume if an HCP were approved. The activities of the Department of Forestry have resulted in a well-managed

⁸² Mason, Bruce & Girard, 2005.

⁸³ Deblander, 2014.

⁸⁴ It was not clear if this cost included fire protection and a complete accounting for overhead.

property with an excellent road system, restored waterways, and extensive areas of older trees – older than on any similar private landholding. In fact, without the protected species constraints, the Elliott could be one of the best managed forested properties in the state from a balanced management perspective offering multiple use values.

While there are administrative overhead costs and potentially higher public labor costs than other scenarios, the overall difference with the private sector may not be as significant as some have suggested particularly given the harvesting constraint obligations for any land owner/manager to avoid take of threatened species.

Scenario #1: Request Proposals for Management

Description. The Department would request proposals for operational management of the Elliott Common School lands. Proposals would be entertained from any qualified entity - public, private, tribal, and non-profit - who was interested in managing some or all of the property in accordance with the trust mandate of these lands. The arrangement would be structured using an outcomes-based approach that puts as much management responsibility in the hands of the managing entity as possible. The state would also seek indemnification to the greatest extent possible for actions by the manager.

The instrument establishing the right of the managing entity to operate could be a contract, license, lease, or possibly an easement as specified in each proposal.⁸⁵ It could be for a three- or five-year term with extensions, or another negotiated term. The criteria for evaluating proposals would be described in the request for proposals (e.g., annual return, ongoing value of the land asset, risk for unanticipated costs to the fund, administrative costs) and would focus on positive impacts for school beneficiaries per the 1859 Admissions Act and the Article VIII constitutional mandate.⁸⁶

A public Request for Information (RFI) could be used to pre-qualify applicants and help design an effective scope-of-work, followed by a Request for Proposals (RFP) to select the successful bidder. Collaborative consortiums of interests with expertise or desire to focus on different parts of the property could be entertained so long as a primary responsible party is identified.

⁸⁵ One suggestion was to implement a long-term, temporary ownership arrangement as is done on Crown lands in Canada, Australia and New Zealand. The reserve trust management model relies on statutory authority and allows for a legal entity, a reserve trust, to temporarily hold state land, for the life of the trust. Managing risk and liability are a key responsibility of reserve trusts. Trust board members can be personally liable for breaches ranging from workplace safety and anti-discrimination to environmental protection and public access to information. The particular limitations and expectations are prescribed by statute (e.g., for the state of New South Wales see: <http://www.legislation.nsw.gov.au/maintop/view/inforce/act+6+1989+cd+0+N>).

⁸⁶ Constitution of Oregon, 2013 Edition, Article VIII, Section (5) Sub-section (2): The board shall manage lands under its jurisdiction with the object of obtaining the greatest benefit for the people of this state, consistent with the conservation of this resource under sound techniques of land management.

Discussion. This discussion will address several points related to seeking proposals in a competitive environment: authority, trust responsibility, equity, risk, and non-market values.

The State Land Board has the authority to solicit proposals and subsequently enter into an agreement with a private manager for Elliott Common School lands. A 1982 opinion from Oregon’s Attorney General concluded that the State Land Board has constitutional authority (and a mandatory duty) to manage these lands in the way it determines would be most advantageous to the Common School Fund.⁸⁷ With respect to entering into an operational management agreement, the opinion stated:

“...the board may, if it so chooses, contract with the State Forester and the State Board of Forestry to manage the state’s Common School forest lands...Or the board may instead choose to contract with a private entity to manage its forest lands, if it determines that [it] would be more advantageous to the Common School forest lands and the Common School Fund Trust.”⁸⁸

Thus, the State Land Board through the Department of State Lands would have the authority to enter into agreements to manage the Elliott, either by the authority granted to the State Forester in ORS 530.490 or the State Land Board’s constitutional authority.

Given that contracting authority exists, a determination would need to be made on the assumptions discussed above – i.e., sufficient projected increased land value of the property coupled with sufficient annual net revenues such that the trust responsibility will be met. A competitive bidding process provides all interests the opportunity to describe their management approach and the amount of net revenue to be returned to the Common School Fund given the management outcomes required in the request for proposals.

Bidders could include a variety of interests: a timber management firm, a consortium of environmental and production stakeholders, a tribe, or a public agency (including the Department of Forestry). The bid process would provide clear information on the market conditions around managing the Elliott for given outcomes such as safeguards to limit risk or potential diminishment of the land value.

Proposals could run the gamut of management regimes and levels as described in the Evergreen Economics report.⁸⁹ The result could be similar to the “Private Management Plan” management alternative suggested by the Douglas Timber Operators; one of the Community Forest management alternatives evaluated in the “Hybridx2” and “Hybridx3” models; or the “HCP” model. The Evergreen work informs the relative return that might be expected as well as

⁸⁷ Frohnmayer, 1982 suggested that the Oregon Constitution Article VIII, section 5 impliedly repealed ORS 530.490 relating to State Forester management of Common School forest lands and the Elliott State Forest.

⁸⁸ Frohnmayer, 1982.

⁸⁹ Evergreen Economics, 2014.

potential impacts. The selection of one management alternative over the other would be determined by a range of criteria that accounts for risk and feasibility as determined by the State Land Board.

There is some risk associated with the activities of the managing entity and their effect on the value of the state's Common School Fund asset. For example, potential litigation could result in an injunction on use of the land if the managing entity were negligent or otherwise violated federal or state laws. These and other questions related to legal risks and trust responsibility would need to be considered before any final decision on moving forward with this scenario.

Concerns about public access for hunting, timber exports, or stream buffer protections would be addressed in the specifications for the bid. It is important to note that such outcome requirements could negatively affect the bid amounts, and thus the potential financial return. The RFP's bid alternates could be structured to identify the impacts of specific constraints such as bids with and without continued public access. This would provide information on trade-offs between increasing net revenues and providing transparency and public access.

Scenario #1 assumes that 1) there will be interested management parties; 2) the conditions of the proposals will align with the trust mandate; and 3) the successful bidder is able to manage to the contract and meet their financial requirements. Establishing a process to assure success on this will require resources for planning and execution of the RFP. During this time, net revenues from the Elliott will continue at their current low level.

Scenario #2: Continued Management by the Department of Forestry

Description. Negotiations with federal agencies could continue to work towards a middle ground for timber harvesting and species protection, while the state continues to own the property. To reduce the risk of this scenario, an agreement would need to be reached with the National Marine Fisheries Service about reasonable protections for coho salmon from timber harvest activities. This has been a difficult and ongoing conversation for the last 13 years.⁹⁰ If an agreement around coho could be reached, there would also need to be final agreement on marbled murrelet and northern spotted owl protections with the U.S. Fish and Wildlife Service. Once the agreed protections are negotiated, a Habitat Conservation Plan (HCP) would be developed that would commit the state to taking certain measures to ensure species protection while allowing for an Incidental Take Permit (ITP) for timber harvesting.⁹¹ With this additional

⁹⁰ Current negotiations appear to have as much as a 5-16 million board feet annual harvest gap between the strategies advocated by the National Marine Fisheries Service and those by ODF to minimize and mitigate to the maximum extent practicable any take under an HCP and therefore avoid jeopardizing the continued existence of coho (Betteris, 2014).

⁹¹ There would be an up-front cost for this work that would need to be figured in which could be reduced if section 6 federal HCP planning grants are obtained. It could be from \$0-600,000 for consultants to prepare an Environmental

certainty, planning and implementing timber harvests could begin once again to generate a positive return to the Common School Fund.

Another possibility is the potential for a federal delisting of the coho salmon. If this were to happen, the state would have the option of negotiating a 'single-service' HCP exclusively with the U.S. Fish and Wildlife Service (USFWS). Based on the current status of negotiations with the USFWS regarding marbled murrelet and northern spotted owl protections, the state believes there is a high likelihood that this type of HCP could be negotiated and adopted within a period of two years or less, once the formal negotiation process was initiated.

Discussion. This scenario essentially maintains the status quo but anticipates an agreement with federal agencies that balances species protections and revenues from timber. The possibility of reaching such an agreement is by no means assured. In fact, clear risks in this approach include both the possibility that a compromise meeting the State Land Board's trust responsibility is not acceptable to the federal agencies, and that even if one was reached, a legal challenge could still affect management under the HCP. While the ITP is designed to protect the landowner, a lawsuit could still result in temporary or permanent injunctions on harvesting activities. Such a challenge was made in 2008 to the northern spotted owl HCP for the Elliott.



Loon Lake Road Entrance, Elliott State Forest

Source: Oregon Department of State Lands

Impact Statement and other documents plus from 6-18,000 hours of staff time depending on whether this grant is awarded and how the 25% non-federal cost share requirement is met (Betteris, 2014). The anticipated resulting increase to revenues would have to be enough to justify this potential cost as well as any ongoing costs required by the HCP.

The authority to undertake this scenario is already established and has been the working approach since the 1990s. The trust responsibility considerations are similar to the previous scenario #1 and would also require a shift in return expectations and possibly a higher valuation concept of the future. A final risk consideration is the potential asset value impact of an HCP in the event the State Land Board ever decided to sell the forest in the future -- which was not researched extensively for this report. A new owner could assume responsibility for the HCP, or there could potentially be liability to the state if an HCP transition was not assured. Finally, this scenario would maintain a diverse investment portfolio for the Common School Fund beyond securities, albeit in a very singular and non-diversified real estate investment.

Under this scenario, revenues and timber flow would not be more than the Evergreen Economics "HCP" management alternative. This model was developed with the most recent proposal for an HCP from the National Marine Fisheries Service and assumes such a plan and previous strategies for the other protected species would be acceptable to the USFWS.⁹² Actual buffer areas and inoperable zones could be different and may affect the predicted harvest and revenue outcomes. With respect to recreation, the assumption would be status quo although some recreational development could be considered as part of a larger package. This includes a consideration of scenarios that would retain the property as a Common School Fund asset, and the next section contemplates scenarios that would transfer ownership.

New Public or Public/Private Ownership

The rationale for scenarios #3 and #4 revolves around the concept that it makes sense to decouple timber harvesting from educational funding. The goal of the process would be to move the Elliott out of state ownership as a Common School Fund asset while keeping the Fund whole and retaining as many of the public benefits currently provided by the property as feasible.

This would be a preferred approach if one assumes that investments of the Fund's corpus in stocks and bonds and a diversified portfolio will produce more long-term revenue than the Elliott lands will either produce or appreciate in value over the long-term. When there are reasonable arguments that divesting of an asset and investing in other, non-speculative investments would bring greater returns, the trust obligations may be met by selling the asset. In other words if the constraints on timber harvesting within the Elliott are expected to reduce revenue generation on the property indefinitely, and one concludes that its value as a marketable asset will not increase significantly relative to future growth of the Common School Fund, then a 'buyout' approach that relies on the investment of sale proceeds to support schools may be the preferred approach. The long-term rate of return for the Common School Fund has been 7.9% since its modern-day investment inception in 1995.

⁹² Phippen, 2014. The Evergreen Economics model assumed the most optimistic interpretation of the National Marine Fisheries Service strategy from a harvesting standpoint.

To illustrate the rationale, it helps to examine two simulated approaches using data from past performance. In 1995 the Department was putting together its first Asset Management Plan and looked at the value of the Elliott at that time, and did so again in 2005 after members of the 2003 Ways and Means Natural Resources Subcommittee expressed interest in selling the property.⁹³ Using a conservative value estimated from these two time periods, Table 8 compares the different results that would have accrued had the property been decoupled from the Common School Fund in 1995 or in 2005 versus the actual asset performance. The results demonstrate the impact to the property value since 1995, but also show that even a sale in 2005 would have resulted in an estimated \$100 million more in total value than the actual performance.

Table 8. Simulated Prior Elliott Sale versus Actual Elliott Management

Simulation	Simulated Endowment in 2014	Simulated Distribution Over Time Period ⁹⁴	Estimated Residual Land Value ⁹⁵	Total Value Over Time Period ⁹⁶
(Actual) Managed for Timber Since 1995	\$1.4 billion	\$0.7 billion	\$0.4 billion	\$2.5 billion
Sale in 1995 and Invested Proceeds ⁹⁷	\$2.5 billion	\$1.4 billion	\$0	\$3.9 billion
Buyout in 2005 and Invested Proceeds ⁹⁸	\$1.8 billion	\$0.8 billion	\$0	\$2.6 billion

Past performance is not an indicator of future outcomes, but balanced portfolios are often recommended to spread risk across different investment instruments. The invested portion of the Common School Fund is a balanced portfolio – including a wide range of stocks and bonds in the national and international markets. It is managed by the Oregon Investment Council. In contrast, the real property portion of the Common School Fund is significantly less diversified in that it is limited to real property within the state’s boundaries and includes mostly geographically limited forestlands and rangelands with a small amount in commercial properties.

⁹³ Mason, Bruce & Girard, 2005.

⁹⁴ In 2014 dollars.

⁹⁵ See Evergreen Economics (2014). Residual net value is estimated by the median of Evergreen Economics’ net present value for a public auction less a 2% transaction cost ($\$362,547,618 \times 0.98 = \$355,296,665$).

⁹⁶ In 2014 dollars.

⁹⁷ PGP Valuation Inc., 2005. A 1995 buyout valuation was calculated from data in this report based on a 1993-94 forest lands market valuation applied just to Elliott acres with a 2% transaction cost ($\$1,066,000,000 \times (85,000/133,000) \times 0.98 = \$667,000,000$).

⁹⁸ Mason, Bruce, & Girard, 2005. A 2005 buyout valuation was calculated as the median range in sale value estimated with a 2% transaction cost ($\$377,000,000 \times 0.98 = \$369,000,000$).

Scenario #3: Request Proposals for Ownership

Description. The Department would seek proposals from interested parties for a process to move as much of the property as possible to ownership by another public entity (i.e. local, state, federal or tribal ownership) or a public/private combination. The Department would request proposals that included at least some component of continued ownership by a public entity. Proposals would be entertained from any qualified entity or consortium of entities. They could be directly from a public entity or could be from a private entity such as a non-profit or other organization that wanted to broker the transfer and the public ownership component. The criteria for evaluating proposals would be described up front (e.g., consistent with the 1859 Oregon Admission Act and the Oregon Constitution, Article VIII mandates) and would necessarily focus on undivided loyalty to, and positive impacts for, school beneficiaries.⁹⁹

A public Request for Information (RFI) could be used to pre-qualify applicants and help design an effective solicitation followed by a Request for Proposals (RFP). The selected proposal could be awarded a purchase-and-sale agreement, or possibly an option, through a direct transfer process at the Department's estimate of value or a negotiated transfer.¹⁰⁰ This would allow the bidder time to put together the collaboration and funding necessary whether it was a public entity or private entity coordination effort. Collaborative consortiums of interests with expertise or desire to focus on specific parts of the property could be entertained so long as a primary responsible party is identified to conduct the design process and lead the transaction. A community forest process could be considered or any similar approach that could help determine what amount of the property is protected as public lands and in what ownership type (e.g., conservation easement versus fee ownership).

Discussion. This scenario seeks to decouple the Elliott and its timber harvesting business plan from the Common School Fund. If the property could be transferred to a different owner in whole or in part, many of the values that people feel strongly about could be protected without violating the State Land Board's duty to schools. The underlying assumption is that there are people with a strong interest in the Elliott who would like to work on a cooperative solution to decouple the property from the Common School Fund but keep a public ownership component. It could be a community forest collaborative, conservation buyer, tribe, land broker, or a public agency that takes the lead.¹⁰¹

Authority to undertake this scenario would lie within the constitutional mandate of the State Land Board to generate proceeds for the Common School Fund. Department rules allow for direct sales and negotiated sales with State Land Board approval. An open RFI process seeking parties interested in finding solutions gives a level of assurance to the proposers and their

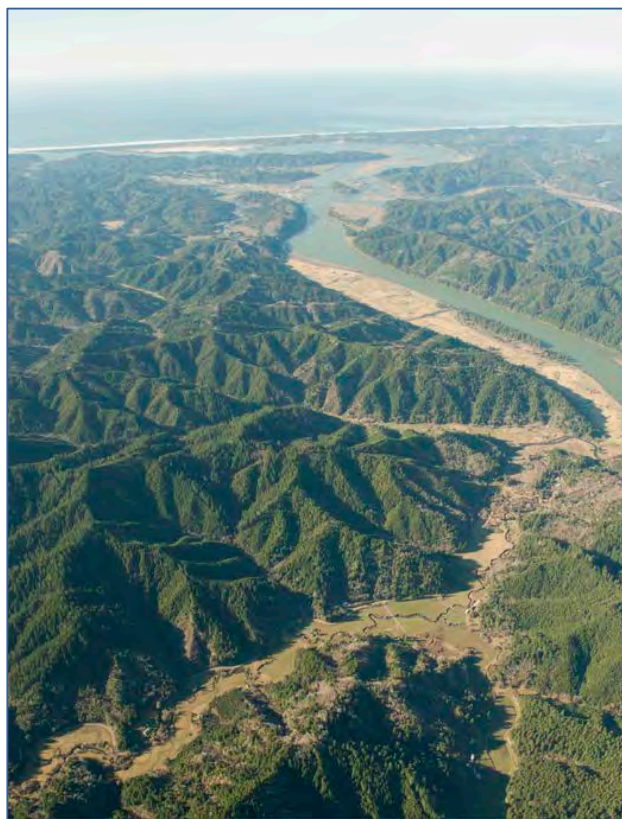
⁹⁹ including legally maximizing the return over the long-term and fair market value.

¹⁰⁰ see OAR 141-067-0270.

¹⁰¹ please see discussion of a Trust Land Transfer program below.

financial partners that they are in a recognized relationship with the Department. It is also a fair and equitable way to choose between multiple responders. This phase could help identify potential collaborators while it also refines the sideboards for the RFP.

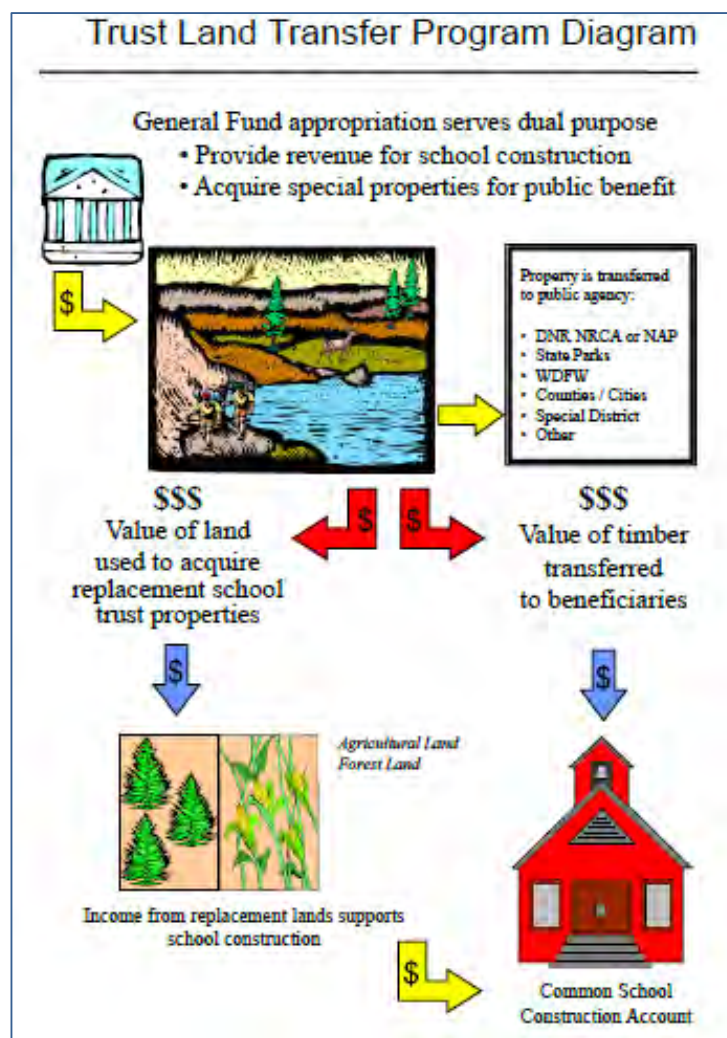
Proposals that helped the State Land Board meet the prudent investor standard would be rated higher than those that did not. However, because of the Board's discretion in doing what they believe is in the best interest of the beneficiaries, this approach could be considered preferable to a public auction because it might result in an innovative solution with an ultimately higher benefit to schools both today and in the future. For example, a proposal might offer to maximize revenue by consolidating areas of diminished value (i.e., due to the presence of protected species) into the public holding with future educational benefits to schools, while making other areas available to private buyers. There would, of course, be no obligation on the part of the State Land Board in asking for ideas until final agreement was negotiated on price and terms. The value is in tapping the public for helping answer the question "how would you like to see the Elliott transferred and how would you pay for it?"



Elliott Looking West along Umpqua Source: Realty Marketing/Northwest

A similar variant approach has been effective in Washington State through their Trust Land Transfer Program.¹⁰² Founded in 1989, their program has successfully shepherded 116,455 acres of low revenue-producing lands from Common School trust status to other ownerships. The program was established by legislation that gave the state an option for protecting public values that had accrued on Common School Lands but still meet their trust responsibility to schools. This innovative approach is described in Figure 10. A program that established a broker agency to help with large-scale conservation or public agency buyouts in Oregon could be beneficial to the Elliott and possibly other trust landholdings.

Figure 10. Washington State Trust Land Transfer Program



Source: WA DNR (2013)

¹⁰² WA DNR, 2013.

Risks surrounding this scenario can, in most instances, be mitigated. The first risk is that there may be no entities willing to propose a workable, cooperative solution -- one that brings people and organizations together to find a win for the partners, for the schools, and for the local communities. This is a distinct possibility because of the investment of time needed for partnership development. However, it would not be a costly approach for the Fund, and the suggested variant of this scenario (i.e., trust land transfer program) or even a public auction would still be available. The risk could be mitigated by keeping the solicitation sideboards to a minimum and developing a strong communications plan to encourage capable parties to step forward.

Secondly, legal risk could be mitigated through close coordination with legal staff in developing the request and in negotiating the transaction(s). It could also be mitigated by transparency and a high level of communication around the purpose and goals of the process.

An accurate prediction of either the outcome of this scenario or its impact on non-market values such as public access, protected species habitat, water quality, and carbon sequestration is dependent on the proposals received. The strong public concern for these values could be partially addressed, however, through a base level of ownership by a public entity in the solution.¹⁰³ Competitive proposals might lead to results similar to any of several of Evergreen Economics' model results; from the Community Forest "Hybridx2" and "Hybridx3" models that balance ownership across a spectrum to the "HCP"¹⁰⁴ or "Federal Agency" models that anticipate a full public buyout. A separate, direct path to the latter is described in the next scenario.

Scenario #4: Federal or Tribal Transfer

Description. Under this scenario, the Department would negotiate a direct sale or exchange with a federal agency or a recognized tribe at the Department's estimate of value for the Elliott Common School Lands.¹⁰⁵ Buyers could potentially include the U.S. Forest Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, or one of the federally-recognized tribes. The Department would explore the level of interest among these agencies and governments and more fully understand the applicable federal or tribal acquisition process.

If a land exchange were determined to be the preferable route for all or part of the Elliott, the Department would work with the federal or tribal partner to find acceptable exchange lands.

¹⁰³ Other defensible conditions or opportunities could be developed during the solicitation process, or through legislation for a Trust Land Transfer program, in areas such as: timing, financing, temporary management, reversionary rights, mitigation of downside risk, and so forth.

¹⁰⁴ A proposal could anticipate an HCP, but that would most likely be the responsibility of the buyer to develop.

¹⁰⁵ This would likely coincide with a federal uniform appraisal standard.

This process could take several years to complete and would require a short-term arrangement for stewardship of the property. An acquisition would compensate the Fund for the fair market value of the property most likely in accordance with the *Uniform Appraisal Standards for Federal Land Acquisitions*.¹⁰⁶ An exchange could potentially involve forest land, but only for a less constrained property. The exchange property could then be managed by the Department for revenues or sold to benefit the Fund.

Discussion. This scenario is essentially the reverse of the effort that created the Elliott State Forest in the first place. The Millicoma tract (plus additional lands added since 1930) could be transferred back to the federal government or a tribal entity in exchange for other federal/tribal lands or a payment of fair market value or combination thereof. Authority to make such a transfer has precedent and lies within the constitutional mandate of the State Land Board to generate proceeds for the Common School Fund. Department rules allow for direct sales and negotiated sales or land exchanges with Board approval. A direct negotiation with an interested federal agency or tribal entity might be considered less equitable than an open solicitation for proposed solutions, but this concern could be mitigated through a transparent process and milestones for review at public State Land Board and federal forums.

The possible risks of this scenario are: lack of interest among federal agencies or tribal entities; time to find agreeable exchange lands, federal appropriation or tribal financing; and political support locally or nationally. Preliminary, informal inquiries indicate that there is some interest in exploring this approach, at least at the local staff level within one federal agency and with multiple tribal entities.

The U.S. Forest Service and Bureau of Land Management have been processing a combined average of over 60 land exchanges per year nationwide in recent years, taking from two months to twelve years to complete.¹⁰⁷ Examples cited in a 2014 Strata Policy report included an exchange currently in process between the U.S. Forest Service and the State of Minnesota of 86,000 acres of school trust lands within the Superior National Forest's Boundary Waters Canoe Area Wilderness.¹⁰⁸ In that case, the parties are currently conducting a feasibility analysis which if positive would lead to a National Environmental Policy Act (NEPA) review with multiple opportunities for public review.

The outcome of this scenario for the Elliott in terms of non-market values such as public access, threatened species habitat protection, and water quality would be expected to be similar to the values provided on other federal lands in the area if the Elliott was transferred through sale or exchange to a federal agency. Results from Evergreen Economics' "Federal Agency" management alternative which relied on the protections afforded by the Northwest Forest Plan would most closely approximate this scenario. Results from one of the hybrid models might best

¹⁰⁶ ILAC, 2000.

¹⁰⁷ Strata Policy, 2014.

¹⁰⁸ Ibid

reflect this scenario if the Elliott was transferred through sale or exchange to a tribal entity. However both federal agencies and tribal governments have specific protection requirements under the Endangered Species Act that are different than private entities.



Coastal Coho, West Fork Millicoma, Elliott State Forest

Source: ODFW

Comparison of Transition Scenarios

The four transition scenarios presented in this report all have the potential to meet the State Land Board’s trust duty as indicated above within the assumptions provided. Their relative differences depend on a number of factors including the types of proposals received and assumptions about discount rates, as well as the potential future value of the property. Table 9 (Page 62) compares the four scenarios with respect to ownership, management, and the most likely applicable management alternatives developed by Evergreen Economics which are further described in their report.

The returns to the Common School Fund by each are approximated in the Evergreen Economics report, assuming that the change in ownership proposals will end up with an appraisal that falls within the range of net present value calculated for the public auction scenario.¹⁰⁹ While the details of an approved Habitat Conservation Plan are unpredictable, the Evergreen Economics

¹⁰⁹ Evergreen Economics, 2014.

result is based on the best federal proposal to date. Finally, the return to the Common School Fund from a potential private manager is the biggest unknown. There are many legal and operational details to consider but this would best be assessed with serious proposals in hand.

With all of the considerations outlined in this report and elsewhere, it is valuable to review the obligations of a trustee such as the State Land Board. A trustee must apply the best, reasonable judgment to determine what course of action will result in the greatest economic benefit to the trust beneficiaries. When return on investment is dependent on significant assumptions about how future events will impact short- and long-term returns, a trustee has relatively broad discretion, so long as the trustee's focus remains on the economic benefit to the beneficiaries. When there are reasonable arguments to retain one asset that has a traditionally stable value as a part of an overall portfolio that includes higher and lower risk investments, a trustee could reasonably decide to conserve such an asset as part of the corpus of the trust. When there are reasonable arguments that divesting of an asset and investing in other, non-speculative investments would bring greater returns, the trust obligations may be met by selling the asset. Provided the State Land Board makes a reasonable assessment of potential short- and long-term return on investment, the decision whether to retain a Common School Fund asset or sell and invest the proceeds would be within its discretion.



Coho Massing Below Stulls Falls, Elliott State Forest

Source: ODFW

Table 9. Comparison of Elliott State Forest Transition Scenarios Presented

Transition Scenario Presented	Owner	Manager	Management Alternative ¹¹⁰	Mechanism	Financing
Request Proposals for Management	Common School Fund	To Be Determined	"Private Mgt Plan," "HCP," or "Hybridx3"	RFP	Land Revenues and CSF Subsidy Until Transition
Continued Management by the Department of Forestry	Common School Fund	ODF	"HCP"	Intergovernmental Agreement and HCP/ITP	Land Revenues and CSF Subsidy Until Transition
Request Proposals for Ownership	To Be Determined	To Be Determined	"HCP," "Hybridx3," "Hybridx2," or "Federal Agency"	RFP or Trust Land Transfer Program	To Be Determined, State Funding, Lands of Equivalent Value, Private Equity
Federal or Tribal Transfer	Federal or Tribal	Federal or Tribal	"HCP," "Hybridx3," "Hybridx2," or "Federal Agency"	Federal/Tribal Acquisition or Exchange	Federal or Tribal Funding, Lands of Equivalent Value

¹¹⁰ Most likely representation in the Evergreen Economics modeling work (see Evergreen Economics, 2014).

SECTION 6: NEXT STEPS

The Department of State Lands has presented in this report four transition scenarios for the future of the Elliott State Forest. Two of them anticipate continued ownership by the Common School Fund and two do not. Among these four, two of the scenarios provide a more specific path forward (i.e., “Continued Management by the Department of Forestry” or “Federal or Tribal Transfer”), and two open up the process for other parties to step forward and make their best proposals for either an alternative management or ownership future. Other combinations of these scenarios are also possible, perhaps where one approach is implemented while another is further explored or where one approach is pursued for part of the property and another for the rest.

It is anticipated that the State Land Board will provide the Department with further direction on this work. This direction may be to pursue one or more of the scenarios presented here or another approach altogether. The following information is meant to inform the State Land Board’s direction with an idea of what the next steps might be for each scenario, if directed, and approximately what resources might be committed to its pursuit. This work could take anywhere from ten months to two years and will require expenditure of Common School Fund resources.

Scenario #1: Request Proposals for Management

a) Next Steps

1. Research procurement options
2. Complete due diligence on legal matters
3. Develop a scope-of-work and evaluation criteria
4. Review with stakeholder group
5. Prepare and issue the procurement(s)
6. Review results and preliminarily evaluate
7. Complete legal due diligence on high scoring responses
8. Return to the State Land Board with specific recommendation
9. If approved, negotiate a contract
10. If contract reached, implement and monitor
11. De-certify lands with Department of Forestry, if necessary
12. Evaluate at Month 6 and 12, then biennially with State Land Board

b) Resources Needed (goal)

1. Staff time (2,500 – 5,500 hours)
2. Possible consultant to support the process (<\$40,000)
3. Department of Justice time (unknown but likely to exceed \$25,000)
4. Possible consultant to monitor the contract (<\$80,000/year)

c) Timeframe

1. Goal to have contract in place by September 2015

Scenario #2: Continued Management by the Department of Forestry

a) Next Steps

1. Renegotiate the agreement with the Department of Forestry
2. Reinitiate annual marbled murrelet survey
3. Continue with scheduled harvests, as possible under current status quo
4. Explore a community forest with the Department of Forestry as lead
5. Negotiate a Habitat Conservation Plan (HCP) with the federal agencies
6. If negotiation leads to extended timeline, cancel this approach
7. Revise forest management plan
8. Bring proposed plans to State Land Board for approval
9. If approved, implement
10. Evaluate at Month 6 and 12 with State Land Board

b) Resources Needed (goal)

1. Staff time (3,000-6,000 hours)
2. Department of Forestry staff time (8,000-16,000 hours)
3. Consultant to develop HCP (<\$0-600,000)¹¹¹
4. Possible consultant to support community forest (<\$120,000/year)
5. Department of Justice time (unknown but likely to exceed \$10,000)
6. Ongoing cost of HCP once it is in place (unknown)

c) Timeframe

1. Goal to have agreement to develop HCP in place by July 2015
2. Goal to have new plan in place with approved HCP by December 2016

Scenario #3: Request Proposals for Ownership

a) Next Steps

1. Research procurement options
2. Complete due diligence on legal matters
3. Develop a scope-of-work
4. Develop evaluation criteria
5. Prepare and issue the procurement(s)

¹¹¹ The range in estimated staff hours and consultant cost is influenced by whether a section 6 HCP planning assistance grant is received from USFWS.

6. Review results and preliminarily evaluate
7. Complete legal due diligence on high scoring responses
8. Return to the State Land Board with recommendation
9. If approved, negotiate a contract to conduct process or transfer
10. If contract reached, implement
11. Monitor contract
12. Evaluate at Month 6 and 12 with State Land Board
13. De-certify lands with Department of Forestry, if necessary

d) Resources Needed (goal)

1. Staff time (3,500-7,000 hours)
2. Possible consultant to support the process (<\$100,000)
3. Department of Justice time (unknown but likely to exceed \$25,000)

e) Timeframe

1. Goal to have agreement in place by January 2016
2. Goal to have property transfer complete by June 2016

Scenario #4: Federal or Tribal Transfer

a) Next Steps

1. Communicate interest to all potential participants
2. Identify most likely/interested partners
3. Research appropriate acquisition process
4. Preliminary design of one or more approaches
5. Review with State Land Board
6. Develop detailed design of preferred alternative
7. Return to State Land Board with recommendation

b) Resources Needed (goal)

1. Staff time (<2,000-3,000 hours)
2. Possible consultant to support design (<\$60,000)
3. Department of Justice time (unknown but likely to exceed \$15,000)

c) Timeframe

1. Goal to identify preferred alternative by December 2015
2. Implementation for a federal acquisition would require further time and may depend on congressional funding allocation

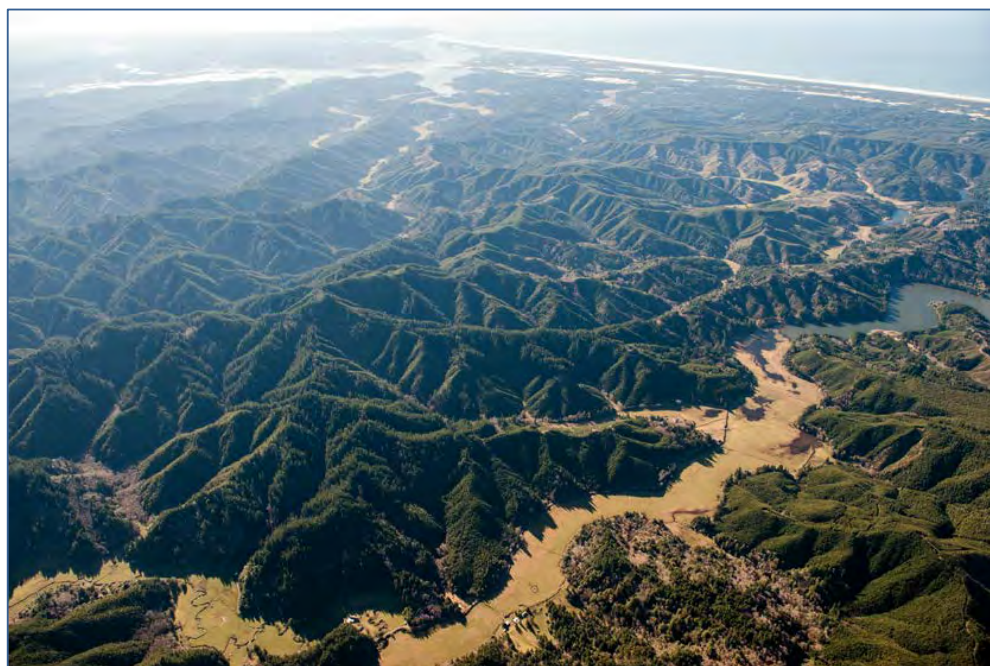
These preliminary estimates could be refined if direction is given on one or more of the scenarios.

SECTION 7: CONCLUSION

The Department of State Lands has evaluated a body of information on managing the Elliott through technical analysis, legal counsel and input from the public. The information has reduced uncertainty and allowed the Department to focus on four refined transition scenarios. While it needs to be retained as an ultimate possibility due to the State Land Board's trust obligation, the Department is not presenting a public auction scenario at this time to give an opportunity to investigate and potentially implement one or more of these scenarios.

The Department now requests direction from the State Land Board on how to proceed to best meet the dual mandates of the Admission Act and the Constitution. In recognition of the importance of further due diligence for ownership and management options, the Department also notes the need for resources to do this additional work and would expend Common School Fund monies to implement the direction set by the State Land Board.

Finally, the Department notes that any of the scenarios presented here would take time to evaluate and implement. Reduced revenues from the Elliott will continue to negatively affect real property asset contributions to the Common School Fund until full implementation of any future scenario.



Elliott State Forest Looking South to Coos Bay

Source: Realty Marketing/Northwest, January 2014

APPENDIX A: WORK SESSION PARTICIPANTS AND STAKEHOLDERS

LAST NAME	FIRST NAME	ORGANIZATION
Aasen	Andrew	Lone Rock Timber Co
Allbritton	Marnie	
Amrhein	Amy	US Congress-Sen Merkley
Baake	Tom	Westways Press
Baertlein	Bill	Tillamook County Commissioner/FTLAC
Barnes	Audrey	Douglas Timber Operators
Batz	Nick	US Government
Beaver	Tresa	
Beeken	Max	Coast Range Forest Watch
Bennett	Chuck	Confederation of Oregon School Administrators
Bertrand	Bruce	Southcoast Anglers STEP
Bilderback	Diane	
Bird	Margaret	Children's Land Alliance Supporting Schools
		Confederated Tribes of Coos, Lower Umpqua, and
Brainard	Chief Warren	Siuslaw
Brandt	Tom	Oregon People
Brogdon	Mary Grace	
Bronson	Melissa	Roseburg Forest Products
Bronson	Ryan	Lone Rock Timber Co
Brooks	Isabel	
Brown	Susan	Curry County Commissioner
Burke	Patty	BLM
Byer	Lee	Oregon Legislature-Senate District 6
Byers	Dean	Douglas County Democrats
Byrne	Greg	Lone Rock Timber Co
Callery	Martin	Port of Coos Bay
		Partnership for Economic Development in Douglas
Campbell	Alex	County
Chandler	Will	Al Peirce Company
Clem	Brian	Oregon Legislature-House District 21
Clemens	Sailee	Coast Range Forest Watch
Corbin	Greg	Stoel Rives Attorneys at Law
Costales	Forrest	Georgia Pacific
Courtney	Dan	Cow Creek Bank of Umpqua Tribe
Cribbons	Melissa	Coos County Commissioner
Curtiss	Heath	Oregon Forest Industry Council
Daggett	Diane	Trust for Public Lands
Davies	Brent	Ecotrust

LAST NAME	FIRST NAME	ORGANIZATION
Davis	Charles	
Davis	John	Hancock Natural Resource Group
Delimont	Bill	Society of American Foresters
Dembrow	Michael	Oregon Legislature-House District 45
Devlin	Richard	Oregon Legislature-Senate District 19
Diaz	David	Ecotrust
Dickson	Pamela	Curry County Econ Development
Doll	Roger	Coquille Watershed
Doroff	Sue	Western Rivers Conservancy
Dudley	Jim	Swanson Group Inc
Eatherington	Francis	Cascadia Wildlands-Conservation Director
Edwards	Chris	Oregon Legislature-Senate District 7
Engelmeyer	Paul	Audubon
Erickson	Kathy	US Senator DeFazio
Fabrizius	Margaret	NW Farm Credit Services
Farm	Eric	Oregon International Port of Coos Bay, Campbell Group
Fay	Anna	
Finley	Cordelia	Cascadia Forest Defenders
Finnerty	Dean	Trout Unlimited
Flathers	Courtney	Chief of Staff, Oregon Legislature District 9
Folk	Scott	Roseburg Forest Products
Ford	Allyn	Roseburg Forest Products
Forester	Mike	North Bend School District
Foster	Tom	ARG Trans
Frazer	Virgil	South Coast Lumber
Freeman	Tim	Oregon Legislature-House District 2
Freese	Mike	Oregon Farm Bureau
Frichtl	Steve	Douglas Timber Operators/Stuntzner Eng
Friedrich	Dennis	Reedsport School District
Gaab	Dana	
Garcia	Bob	Confederated Tribes of Coos, Lower Umpqua, and Siuslaw
Geisinger	Jim	Oregon Loggers
Gibbs	Jake	Oakland School District Board/Lone Rock
Gilman	Tenay	
Goldberg	Don	Trust for Public Lands
Gonzales	Jason	
Gould	David	North Bend School District/CLASS
Gould	Donna	North Bend School District/CLASS
Grady	Erin	Cascadia Forest Defenders

LAST NAME	FIRST NAME	ORGANIZATION
Granger	Dawn	Coos Bay School District
Gray	Mike	ODFW-District Fish Biologist
Grayson	Nancy	
Greco	Ryan	ODF-Assistant District Forester
Greenhill	Phil	Western Oregon Advanced Health Center for Biological Diversity-Endangered Species Program Director
Greenwald	Noah	
Greif	Steven	Coos Bay Historical Society
Griffin	Jeff	Regional Solutions
Gurney	Don	
Guyer	Eric	Roseburg Forest Products
Hampton	David	Hampton Affiliates
Hart	Christine	Earth
Hayley	Richard	Cascadia Forest Defenders
Haynes	Jen	
Helm	Ken	Oregon Legislature-Elect for House District 34
Hensey	Alison	Oregon Environmental Council
Hoesly	Tom	Campbell Group
Holt	Steven	
Holvey	Paul	Oregon Legislature-House District 8
Hopkins	Susan	
Houghtaling	Daniel	
Hubbard	Cristina	Forest Web of Cottage Grove
Huppi	Tom	
Hyde	Anthony	Columbia County Commissioner/FTLAC
Jacquot	Fred	South Coast Development Corp
Johnson	Mark	Douglas Timber Operators
Jones	Ben	Cascadia Forest Defenders
Jones	Jenny	
Josi	Tim	Tillamook County Commissioner/FTLAC
Joyce	Bonnie	
Kline	Norma	ODF-District Forester
Klock	Clair	
Kluting	Bill	Carpenters Industrial Council
Knablin	Richard	
Knutson	John	Knutson Towbot
Koch	David	Port of Coos Bay
Krieger	Wayne	Oregon Legislature-House District 1
Kruse	Jeff	Oregon Legislature-Senate District 1
Labhart	Mark	Tillamook County Commissioner
Laughlin	Josh	Cascadia Wildlands-Campaign Director

LAST NAME	FIRST NAME	ORGANIZATION
Lawrence	Jan	Confederated Tribes of Coos, Lower Umpqua, and Siuslaw
Lawrence	Rhett	Sierra Club
Lee	Scott	Clatsop County Commissioner/FTLAC
Lehman	Mike	Oregon Coast Community Action
Leno	Reynold	Confederated Tribes of Grand Ronde
Liniger	Ann	Oregon Legislature-House District 38
Lorenz	Dave	ODF-Southern Oregon Director
Love	Stuart	ODFW-District Wildlife Biologist
Lucero	Bill	North Bend School District
MacWhorter	Chris	Douglas Timber Operators
Mader	Mike	Tenmile Lakes Basin Partnership
Main	Bob	Coos County Commissioner
Manton	Jonathan	Sawnee Services
McCaffree	Jody	
McCoy	Steve	1000 Friends of Oregon
McKay	Philip	SW Environmental Action for Recreation (SWEAR)
McKeown	Caddy	Oregon Legislature-House District 9
McKeown	Joe	Al Peirce Company
McMahon	Clark	Coast Range Forest Watch
McNitt	Kristina	Oregon Forest Industry Council
Meade	Brenda	Coquille Indian Tribe`
Meskel	Micah	Audubon Society of Portland
Miller	Susan	
Miner	Jason	1000 Friends of Oregon
Moore	Doug	Oregon Conservation Network
Morgan	Lance	Coos County Forester
Morgan	Susan	Douglas County Commissioner
Mork	Dick	
Mukumoto	Cal	CEDCO
Nielsen	James	Society of American Foresters
Orahoske	Andrew	
Otterby	Lon	Sierra Club
Partin	Tom	American Forest Resource Council
Patterson	Craig	
Pedery	Steve	Oregon Wild
Pettygrove	Grace	Coast Range Forest Watch
Pew	Brian	ODF-Deputy Division Chief, State Forests
Phillips	Jerry	Retired State Forester
Pigsley	Delores	Confederated Tribes of Siletz
Pinit	Tom	The Conservation Fund

LAST NAME	FIRST NAME	ORGANIZATION
Plummer	Pam	Bay Area Chamber of Commerce
Pope	Craig	Polk County Commissioner/FTLAC
Prahl	Dan	Coast Range Forest Watch
Prozanski	Floyd	Oregon Legislature-Senate District 4
Quinn	Pat	Umpqua Watersheds
Ragon	Bob	Douglas Timber Operators
Reavis	Kelsey	Coast Range Forest Watch
Reeder	Brian	Oregon Department of Education
Rees	Bob	Association of NW Steelheaders
Rich	Amanda	The Nature Conservancy
Richardson	Rachel	Rachel Richardson Realty
Riddle	Dale	Seneca Sawmill
Riley	Eric	Partnership for the Umpqua Rivers
Robinson	Jake	Native Fish Society
Robison	Mike	ODF/Douglas Timber Operators
Roblan	Arnie	Oregon Legislature-Senate District 5
Rofsky	Jana	The Nature Conservancy
Rose	Ozzie	Oregon Association of Education Service Districts
Ross	Gordon	
Rowe	Matt	City of Coquille
Ruggiero	Ryan	McKenzie River Trust
Rumker	Dave	Campbell Global
Rundell	Michael	Plum Creek Lumber
Runyan	Casey	
Sadler	Ron	
Sallinger	Bob	Audubon Society of Portland-Conservation Director
Saperstein	Ralph	Boise Cascade
Schab	Rob	Coos Bay-North Bend Water Board
Schulz	Gary	
Schwarz	Sam	
Scott	Dr. Patty	SW Oregon Community College
Scott	Tracy	
Shamet	Barbara	
Shields	Butch	Gold Coast Truck Repair
Shoji	Crystal	Mayor, City of Coos Bay
Shull	Bruce	Myrtle Point School District
Skinner	Rick	Knife River/Bay Area Chamber of Commerce
Slater	Timm	Bay Area Chamber of Commerce
Smith	Chris	
Smith	Jake	North Bend School District
Smith	Jason	Southport Forest Products

LAST NAME	FIRST NAME	ORGANIZATION
Smith	Randy	ODF-Forestry Biologist
Smith	Tricia	Oregon School Employees Association
Souder	Jon	Coos Watershed Association
Spitt	Christy	Oregon Conservation Network
Sproul	Jed	Roseburg Forest Products
St. Martin	Amanda	Coast Range Forest Watch
Starkey	Scott	Campbell Group
Stewart	Faye	Lane County Commissioner/FTLAC
Stone	Greg	Society of American Foresters/Stuntzner Engineering
Stone	Mindy	
Stoneburg	Joe	Douglas Timber Operators
Stuntzner	Ron	Stuntzner Engineering
Schwarz	Samuel	
Sweeney	Tim	Coquille School District
Sweet	John	Coos County Commissioner
Tetreault	Jan	
Tuchmann	Tom	US Forest Capital
Tymchuk	Keith	Mayor, City of Reedsport
Van Dyk	Bob	Wild Salmon Center`
Vega-		
Pederson	Jessica	Oregon Legislature-House District 47
Verger	Joanne	Oregon Legislature-Former Senator from District 5
Vitek	Charmaine	Port of Umpqua
Wall	Mark	Roseburg Forest Products
Warner	Dean	City of Lakeside
Wellborn	Cal	Carpenters Industrial Council
Wetherell	Rick	Mayor, City of North Bend
Whitworth	Joe	The Fresh Water Trust
Wimmer	Laurie	Oregon Education Association
Witt	Brad	Oregon Legislature-House District 31
Wolf	Tom	Trout Unlimited
Yester	Bill	North Bend School District

APPENDIX B: KEY SUGGESTIONS FROM OUTREACH MEETINGS

#	Stakeholder Meeting	Suggestion Made	Modeling Re-runs?	Consultant Report?	Address in DSL Report?
1	Environmental - Portland	Adjust assumption that clearcut is possible on all models where no murrelets?		X	
2	Environmental - Portland	Explain what "heavy thin" means.		X	
3	Environmental - Portland	Look at recreational economic impacts for all of Western Oregon to match timber analysis?	X	X	X
4	Environmental - Portland	Work up the results in different older age classes in addition to >150 years, like use 100-150 years as "older."	X	X	
5	Environmental - Portland	Fire should not be left out of risk analysis.		X	X
6	Environmental - Portland	Climate should be accounted for.		X	X
7	Environmental - Portland	Add the cost of carbon loss into stream of costs for NPV like at \$30/ton that Feds use.		X	X
8	Environmental - Portland	Show how much less biomass each model would generate for carbon storage as a carbon proxy.		X	X
9	Environmental - Portland	Consider revenue from other sources besides timber harvesting in the modeling.		X	X
10	Environmental - Portland	Show how much revenue Loon Lake makes.			X
11	Environmental - Portland	When model is told "maximize financial return" it dictates one outcome.		X	
12	Environmental - Portland	Define what "community forest" means.		X	X
13	Environmental - Portland	For Community Forest model change 1/2 State HCP to 1/2 NWFP.	X		
14	Environmental - Portland	Add more analysis of ecosystem services like groundwater declines, erosion impacts, drinking water impacts, wildlife diversity, and connectivity.		X	X
15	Environmental - Portland	Add costs into the analysis for property tax and road building and	X	X	

#	Stakeholder Meeting	Suggestion Made	Modeling Re-runs?	Consultant Report?	Address in DSL Report?
		maintenance.			
16	Environmental - Portland	Consider other silviculture instead of clearcut and heavy thin.		X	
17	Environmental - Portland	Analyze jobs from restoration or a different type of forestry.		X	X
18	Environmental - Portland	Show how much harvesting would be needed in production areas to pay off debt.		X	X
19	Education Beneficiaries	Consider log exports in model.		X	
20	Education Beneficiaries	Put non-market values in an appendix.		X	
21	Education Beneficiaries	Compare alternatives by actual distribution to schools.			X
22	Education Beneficiaries	Look at recreation fees that could be charged.			X
23	Education Beneficiaries	Compare the catastrophic fire risk of each alternative.		X	X
24	Education Beneficiaries	Model the NPV as if endangered species were not a consideration.			X
25	Douglas Timber Operators	Model the 2011 ODF Plan at 40 MMBF and all assumptions in that plan.	X	X	
26	Douglas Timber Operators	Consider lower discount rates for Public Auction.	X	X	
27	Douglas Timber Operators	Estimate discount rates from the 3 land sales and apply them.		X	X
28	Officials/Business - Local	Change annual harvest to show even flow for 20 years on Public Auction.	X	X	
29	Officials/Business - Local	Estimate discount rates from the 3 land sales and apply them.		X	X
30	Officials/Business - Local	Consider potential future increase in timber prices.		X	
31	Officials/Business - Local	Bring option forward of CSF ownership but pushing back on legal challenges.			X
32	Officials/Business - Local	Analyze real rate of stumpage increase		X	
33	Officials/Business - Local	Model and assign values to legal, political, financing, and environmental risks			X
34	Officials/Business - Local	Include an option for selling the forest in small blocks			X
35	Officials/Business - Local	Clarify that the federal HCP is same as NMFS proposal		X	
36	Officials/Business - Local	Make it clear on charts that there will be no ongoing annual harvest or		X	

#	Stakeholder Meeting	Suggestion Made	Modeling Re-runs?	Consultant Report?	Address in DSL Report?
		income from Elliott to CSF from public auction alternative			
37	Officials/Business - Local	Clarify whether job projections include secondary or supporting employment		X	
38	Local Environmental	Change 'non-monetary' to 'non-market.'		X	
39	Local Environmental	Model the new OFPA buffer proposals.		X	
40	Local Environmental	Review export data and assumptions.		X	
41	Local Environmental	Show how management costs were handled.		X	
42	Local Environmental	Use 20' stream buffer for OFPA.		X	
43	Local Environmental	Review no cut assumptions in all buffers.		X	
44	Local Environmental	Change 'tree age' to 'stand age.'		X	
45	Local Environmental	Make a graph that looks at pollution costs, carbon, and other externalities comparing alternatives.	X	X	X
46	Local Environmental	Use the Ecotrust carbon report to model carbon.		X	X
47	Local Environmental	Estimate potential recreational wages and jobs by alternative.		X	X
48	Local Environmental	Consider federal exchange and NPV and economic impact of logging on trade lands.		X	X
49	Local Environmental	Identify all of the gaps and unknowns left.		X	X
50	Local Environmental	Consider CSF speculation that endangered species come off the list at some point.		X	X
51	Additional Thoughts	Model 1/3 Reserve with 1/3 in-between HCPs with 1/3 OFPA and maximize even flow.	X	X	X
52	Additional Thoughts	Model revised federal HCP proposal.	X	X	
53	Additional Thoughts	Show actual Status Quo with negative NPV.	X		X

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Elliott State Forest

Source: Oregon Department of State Lands



EVERGREEN
ECONOMICS

LandVest[®]

Elliott State Forest—Analysis of Alternatives

Final Report

**Submitted by Evergreen Economics
and LandVest**

November 19, 2014

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1 Introduction

In July 2014, the Department of State Lands (DSL) engaged Evergreen Economics and LandVest (the Evergreen team) to analyze alternatives to the status quo management of the Elliott State Forest. Under the status quo, management of the forest relies on a take-avoidance strategy to protect the three species listed as threatened under the Endangered Species Act (ESA) and present in the Elliott: the northern spotted owl, the marbled murrelet, and the Oregon coast coho salmon.

Over the course of the study period, the Evergreen team analyzed six alternatives to the current status quo management of the Elliott State Forest. Between September 22 and October 3, 2014, we presented the draft result of six alternatives to stakeholder groups in Portland, Salem, Coos Bay, and Roseburg. Based on feedback from the stakeholders and new information provided by the National Marine Fisheries Service (NMFS), we substantially revised three of the alternatives. We present in this report the results of our analysis of the final six alternatives DSL Staff directed us to consider. These alternatives encompass a range of potentially feasible alternatives for the Elliott. These include:¹

1. **Federal Agency:** Represents management of the Elliott under the assumption that it is transferred to federal ownership either through direct sale or a land exchange and is managed under guidelines of the Northwest Forest Plan (NWFP);
2. **HCP:** Represents the habitat conservation plan (HCP) proposed by NMFS in September 2014 that is intended to provide strong protection for coho salmon habitat as well as the northern spotted owl and marbled murrelet;
3. **Private Management Plan:** Represents management of the Elliott as described in the 2011 Elliott State Forest Management Plan, approved by the Land Board in 2011;²
4. **Hybrid x 2:**³ Represents an approximation of how the Elliott could be divided into two approximately equal areas with one-half managed with an emphasis on older forest structure and the other half managed with an emphasis on timber production; See Chapter 7 for a map of the two-way split of the Elliott assumed for the Hybrid x 2 alternative.
5. **Hybrid x 3:** Represents an approximation of how the Elliott could be divided into three approximately equal areas with one-third managed with an emphasis on older forest structure, another third managed for timber production, and the final third

¹ Not in order of likelihood, priority, or preference.

² http://www.oregon.gov/odf/pages/state_forests/elliott.aspx#Forest_Management_Plan

³ The Hybrid x2 and Hybrid x3 alternatives are revisions to the draft *Community Forest* alternative presented to the stakeholder groups. These alternatives are intended to approximate how the Elliott might be managed if it were transitioned to a community forest, but also represent any other transition in which the forest is divided into two or three areas with different management regimes applied to each area.

managed in a way that attempts to “balance” conservation and timber production. See Chapter 7 for a map of the two-way split of the Elliott assumed for the Hybrid x 3 alternative.

6. **Public Auction:** Represents a scenario where the forest is sold at auction to the highest bidder and is managed for timber production.

A key assumption underlying our analysis is that each alternative is possible from legal, political, and administrative standpoints; however, we do not purport to provide legal or administrative assurances. Our assignment was to analyze each alternative as if it were possible.

The primary purpose of our analysis is to develop estimates of annual timber harvests and revenue and changes in forest structure over a 100-year planning horizon for each of the alternatives, based on a set of reasonable assumptions and meeting all applicable state and federal laws. We compare the results of each of the alternatives in three ways.⁴

1. We compare the alternatives based on annual harvest volumes and financial returns associated with timber harvesting.
2. We compare the alternatives based on two measures intended to indicate the *relative* conservation benefits associated with each alternative: the changes in the number of acres in older forest structure over the planning horizon, and the number of acres that are within riparian management zones (RMZs) and removed from harvesting activities.⁵
3. We compare the economic impacts (e.g. jobs, wages) from timber harvests for each alternative.

In addition to the comparative analysis of the six alternatives, we examine the following issues:

- The types and magnitude of recreation currently enjoyed by visitors to the Elliott;
- The importance of the Elliott with respect to salmon production;
- Other non-market benefits provided by the Elliott;
- The potential effect of climate change on the Elliott; and
- The forest’s potential for carbon storage.

⁴ Timber harvesting represents the primary driver of market value for the Elliott.

⁵ The acres contained in stream buffers and acres in older forest structure are not mutually exclusive.

2 Summary of Findings

In this chapter, we examine the results of our analysis of each of the Elliott alternatives, comparing the differences between each alternative with respect to annual harvest, financial return from timber harvests, older forest structure, and regional economic impacts from harvesting and milling of logs. Before examining the results of the analysis, we briefly describe how each of the alternatives differs with respect to operable acres (i.e., acres that may be harvested).

1. **Federal Agency:** Provides for the widest no-cut riparian zones of any of the alternatives, effectively removing nearly 38,000 acres from operable acres. Model assumptions: Stands older than 100 years will not be clearcut and stands older than 125 years will not be thinned. This alternative is consistent with the management proposals from many in the conservation community.
2. **HCP:**⁶ Designates watersheds representing approximately half the forest as “fish-focused” and the remaining watersheds as “timber-focused.” While the differences in the width of riparian zones are minor, the fish-focused watersheds also include harvest exclusions on landslide prone areas. Model assumptions: Stands older than 100 years will not be clearcut and stands older than 125 years will not be thinned.
3. **Private Management Plan:** For this alternative, annual harvests are constrained to be 40 million board feet (MMBF) of timber per year for all 100 years of the projection period. Model assumptions are consistent with the private management proposal from Douglas Timber Operators (DTO).
4. **Hybrid x 2:** Conservation portion of forest under timber-focused management described for the HCP alternative. Stands older than 100 years will not be clearcut and stands older than 125 years will not be thinned. Timber production portion of forest managed under Oregon Forest Practices Act.
5. **Hybrid x 3:** One-third of forest managed as no-harvest reserve. One-third of forest managed under the “timber-focused” management described for HCP alternative. Stands older than 100 years will not be clearcut and stands older than 125 years will not be thinned. One-third of forest managed under Oregon Forest Practices Act.
6. **Public Auction:** Forest managed under Oregon Forest Practices Act.

In applying each of the alternative management regimes to the inventory and GIS data for the Elliott State Forest, we obtain projections of harvests, forest inventory, stand structure, and financial returns that differ substantially between alternatives. For all alternatives except the Private Management Plan, we held harvests for 2015 and 2016 to be equal to the

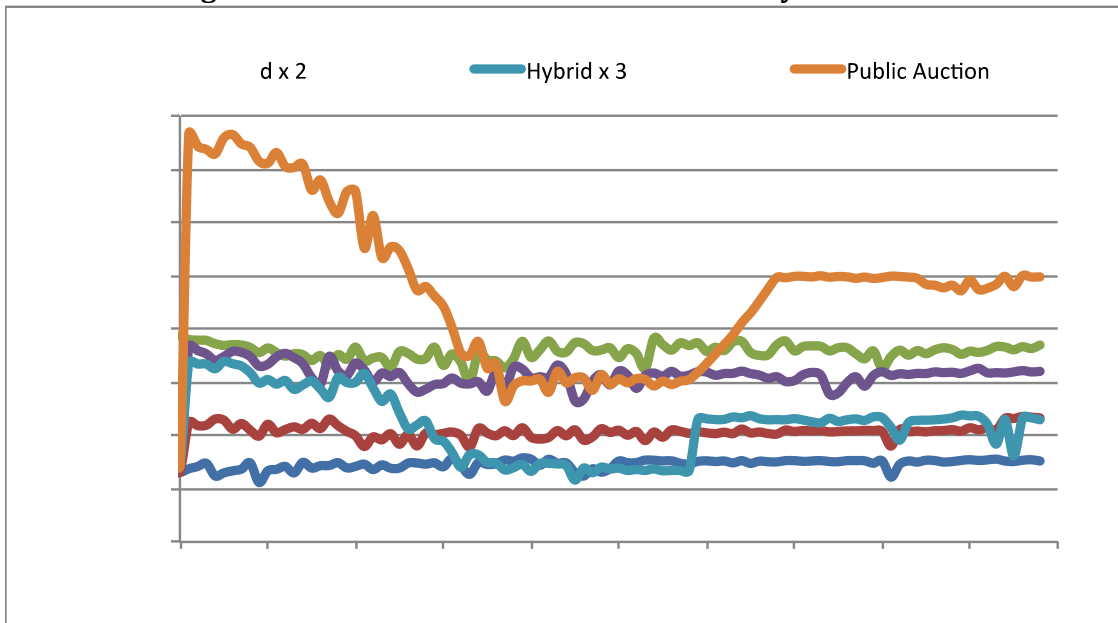
⁶ Represents the most recent proposal from NOAA for an HCP.

average harvest volume experienced in recent years. Our reason for doing this was that we assume that any of these alternatives will require about two years to implement.

Annual Harvests and Changes in Forest Structure

Figure 1 shows projected annual harvests for each alternative. For the Public Auction alternative, we assume the owner would be a private timber company and the company would operate with the objective of maximizing financial returns from the forest. In doing so, the owner would set a relatively high annual harvest level for the first 20 years (2017 through 2036) and then would allow timber harvests to decrease while the forest settled into a uniform distribution of acres by age class.⁷ After bottoming out at 35 MMBF through 2070, harvests would then increase through 2082 and settle at an annual harvest level of approximately 55 MMBF per year.

Figure 1: Annual Softwood Timber Harvest by Alternative



Source: Analysis by the Evergreen Team of Oregon Department of Forestry (ODF) data

For the Hybrid x 3 alternative, the distribution of harvests through time is similar to the Public Auction alternative except that harvest volumes are significantly lower each year, especially in the early years of the projection.

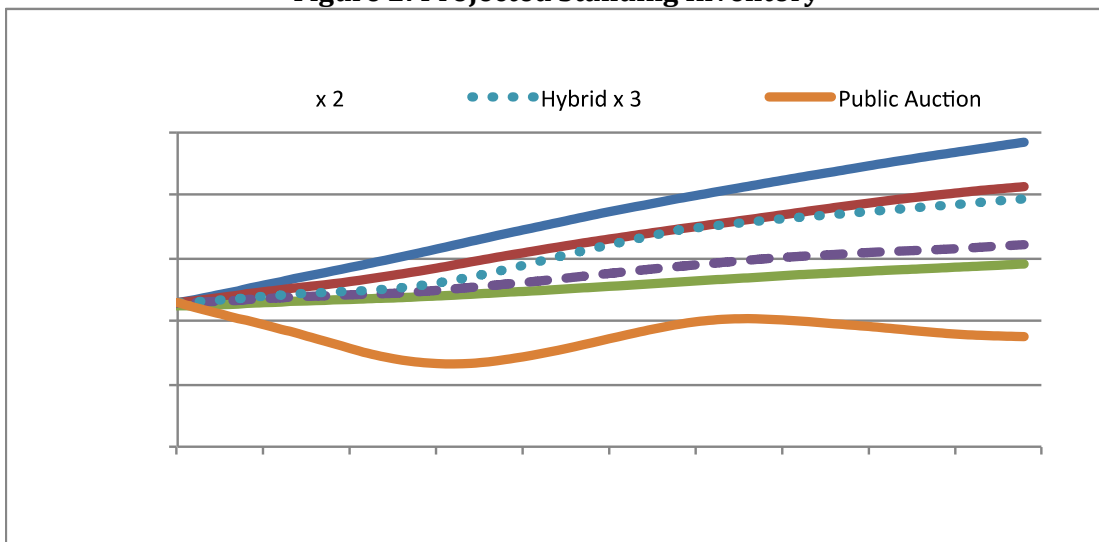
For the Federal Agency, HCP, and Private Management Plan alternatives, harvest would be even or approximately even throughout the projection period at 17 MMBF, 23 MMBF, and 40 MMBF, respectively.

⁷ We assume for each alternative, except the Private Management alternative, that harvest for 2015 and 2016 will remain at the average for the three previous years (about 15 MMBF).

For the Hybrid x 2 alternative, the distribution of harvests through time is nearly identical to the HCP alternative except that harvest volumes are 9 MMBF to 16 MMBF higher each year.

Figure 2 shows our projections of how standing inventory will change through the projection period. Harvest levels and growth in standing inventory are negatively related. The Federal Agency alternative experiences the lowest annual harvest and achieves the greatest volume of standing inventory. At the other extreme, the Public Auction alternative experiences the greatest annual harvest, resulting in a forest inventory that is lower at the end of the period than at the beginning.

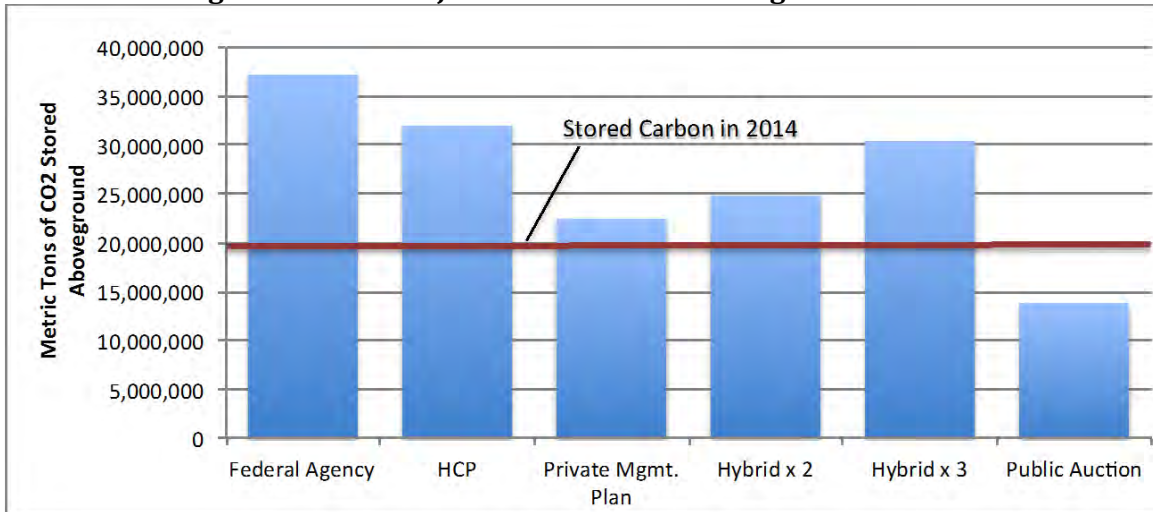
Figure 2: Projected Standing Inventory



Source: Analysis by the Evergreen Team of ODF data

Figure 3 shows our estimates of CO₂ stored above ground in the bole and branches of trees. Not considered in Figure 3 (or our analysis) is belowground storage of CO₂ (in roots of trees), storage in soil, or storage in wood products and landfills. CO₂ stored belowground and in the soil would be relatively even across alternatives. CO₂ storage in wood products and landfills would be greatest in the Public Auction alternative.

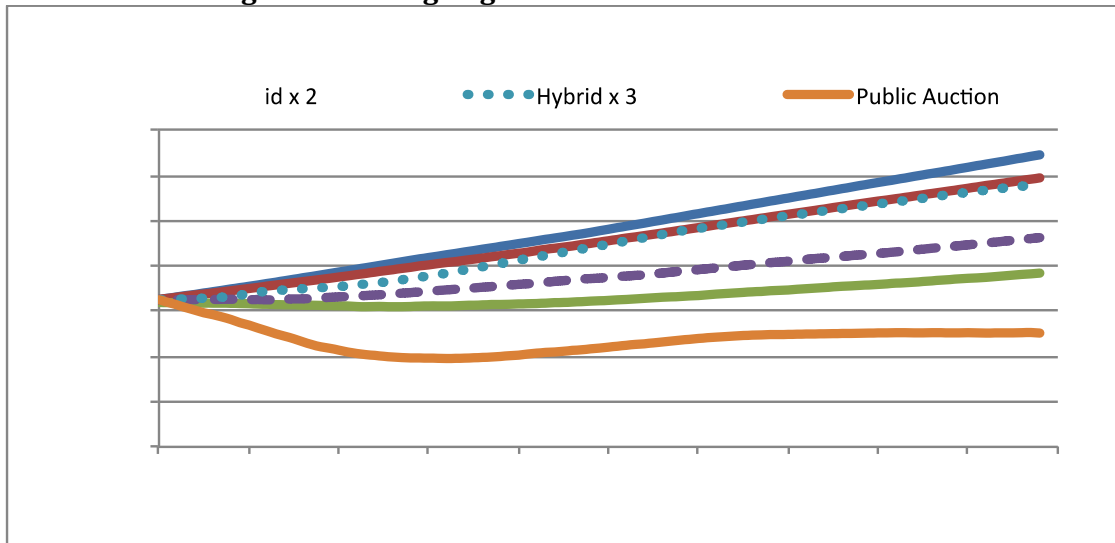
Figure 3: Total Projected CO2 Stored Aboveground in 2110



Source: Analysis by the Evergreen Team of ODF data

Given the discussion above, changes in the average age of the forest through the projection period, as shown in Figure 4, should not be surprising. The average age of the forest would be greatest under the Federal Agency, HCP, and Hybrid x 3 alternatives and lowest for the other alternatives. For the Public Auction alternative, the average age of the forest would decline slightly over the projection period.

Figure 4: Average Age of Forest for Each Alternative



Source: Analysis by the Evergreen Team of ODF data

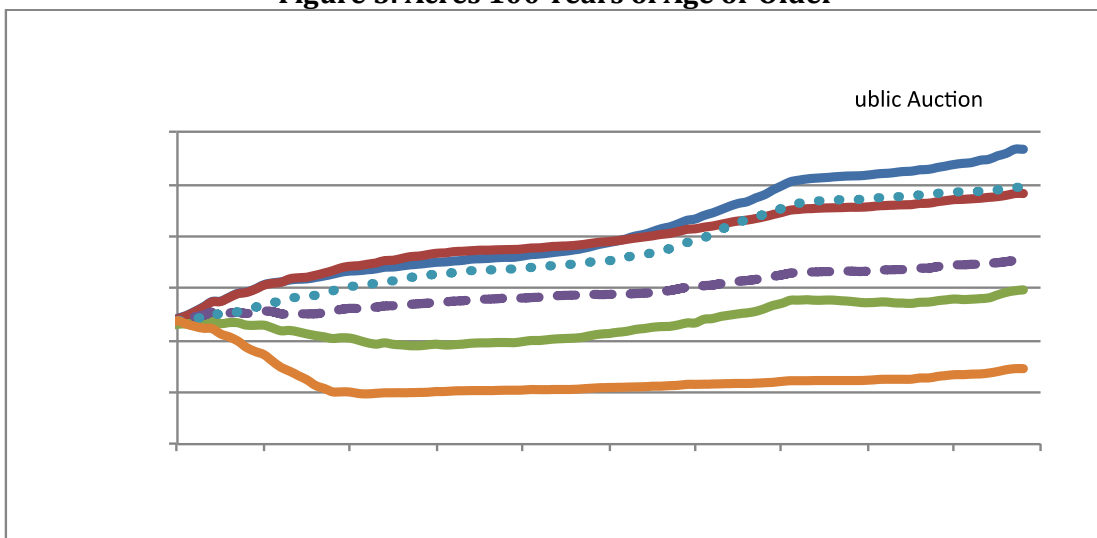
Conservation Benefits

There are numerous conservation benefits associated with the Elliott; however, identifying each of these benefits and quantifying how they would differ between alternatives would be largely subjective. Instead, we provide two objective measures of conservation benefits comparable across alternatives that capture at least in part the myriad of conservation benefits important to many stakeholders. These measures include the change in the number of acres in older forest structure and the number of acres in no-cut riparian zones and no-cut steep slope zones.

While we do not make any claims as to the relative conservation value of older forest structure, such stands are associated with suitable habitat for the northern spotted owl and the marbled murrelet, both of which are listed as threatened under the Endangered Species Act (ESA).

Figure 5 shows the change in the number of acres in older forest structure, defined as 100 years or older.⁸ For each alternative except Public Auction, the number of acres in older forest structure increases through the 100-year projection period. For the Federal Agency, HCP, and Hybrid x 3 alternatives, more than half the forest will be in older forest structure by 2110.

Figure 5: Acres 100 Years of Age or Older



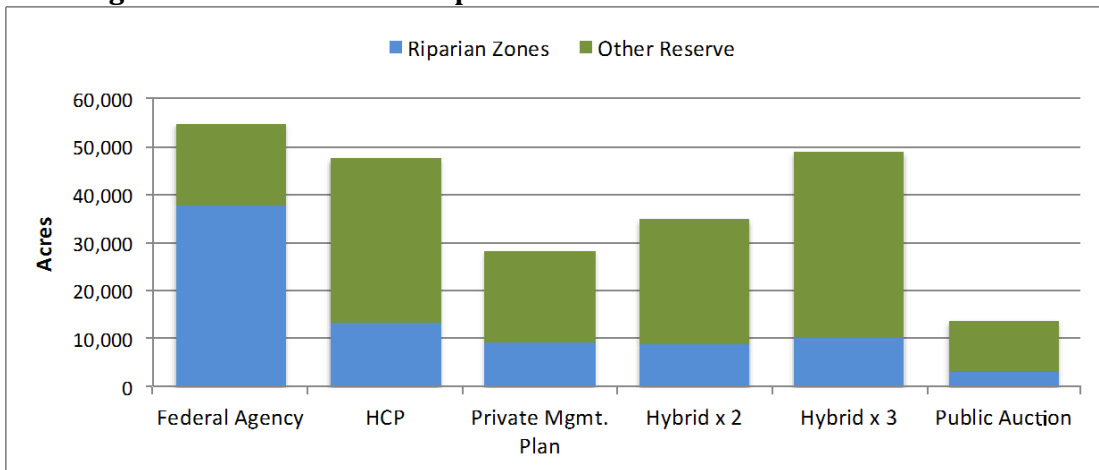
Source: Analysis by the Evergreen Team of ODF data

Figure 6 shows the projected number of acres in no-cut riparian zones and other no-cut reserves in 2110. For each alternative, the number of acres in no-cut riparian zones is constant through the 100-year planning horizon, while acres in other reserves increase

⁸ See Chapter 5 for detailed year-by-year charts of projected forest structure for each alternative.

over time due to set-asides for northern spotted owls and marbled murrelets, as well as for acres that reach the no-harvest age, which differs by alternative.⁹ Even for the Public Auction alternative, we project nearly 14,000 acres will be in reserves by 2110, which represents 16.5 percent of forested acres in the Elliott. For the other alternatives, no cut reserves will be significantly greater.

Figure 6: Acres of No-Cut Riparian Zones and Other Reserves in 2110*



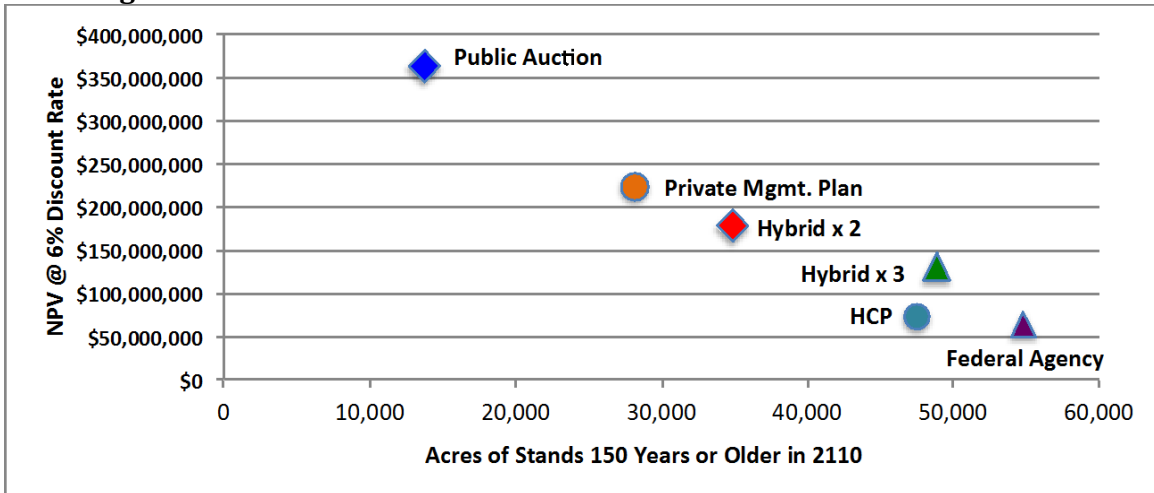
Source: Analysis by the Evergreen Team of ODF data

Note: The number of acres in riparian zones is constant through 100-year planning horizon. Other Reserve acres consist of owl cores, no-cut Murrelet habitat, and old-growth reserves. Other Reserve acreage increases over time.

Figure 7 shows a tradeoff curve for the Elliott between financial returns (as measured by Net Present Value or NPV) and acres in older forest structure (100 years or older). Using the Private Management Plan alternative as the base, the alternatives that favor greater numbers of acres in older age structure necessarily do so providing lower financial returns from timber harvests. Likewise, the Public Auction alternative delivers significantly greater financial returns than the Private Management Plan alternative, but at the expense of about 15,000 fewer acres of older forest structure.

⁹ There is not an age-based harvest restriction for the Public Auction alternative or the production-focused portion of the Hybrid x 3 alternative.

Figure 7: Tradeoff Between Financial Return and Older Forest Structure



Source: Analysis by the Evergreen Team of ODF data

Economic Impacts

In addition to examining changes in harvests and forest structure associated with each alternative, we also examined how changes in harvest level might affect the regional economy. In doing so, we only examine the economic impacts associated with timber harvests because, while there may be other non-timber economic impacts associated with each of the alternatives (e.g. change in recreational visits or salmon production), we have no basis for estimating the magnitude of such changes. We are, however, certain that they will be much smaller than the economic impacts associated with timber harvesting.

Harvesting, hauling, and milling of Elliott logs provide important economic impacts to Coos Bay/North Bend, Roseburg, and other communities in Western Oregon. For each alternative, we used the Western Oregon Forest Sector Market Model, developed at Oregon State University (OSU), to estimate the impact that harvests in the Elliott would have on regional log flows. The market model accounts for the market interactions between different log producers (private, federal, state) and each lumber and plywood mill in Western Oregon.

By considering how both mills and the other log producers may react to the various levels of harvests from the Elliott associated with each alternative, we are able to more accurately estimate the economic impacts associated with each alternative. Thus, rather than estimate the economic impact of harvests for each alternative assuming no change in regional harvests or lumber production, we estimate the *net* impact in regional log harvests and lumber production allowing for changes in harvest levels by other forest owners and changes in lumber production by Western Oregon mills.

We use outputs from the Western Oregon Forest Sector Market Model as inputs for an economic impact model to estimate average annual changes in economic output, employment, wage income, and state and local taxes associated with each alternative. We use the IMPLAN modeling system to develop the economic impacts.¹⁰ IMPLAN is the standard modeling platform used for regional economic analysis in the U.S. because of its comprehensive structure of industry sectors and linkages. Nevertheless, IMPLAN has a potentially serious shortcoming for analyses—such as this one—that consider long-run impacts. The IMPLAN model represents a static characterization of an economy; it does not account for potential market dynamics or changes in technology, both of which could be significant over a 100-year horizon. Because of this, we cannot state with certainty that the estimates of economic impacts presented below would persist for the duration of the study period. It is likely that the estimated impacts will persist for at least a few years, up to about a decade. The true impacts will likely decline over time as milling technology, the regional economy, and national consumer demand change.

Table 1 shows our estimates of annual economic impacts (jobs, total wages, and total economic output) for each of the six alternatives we analyzed. These impacts represent a change relative to the status quo management of the Elliott. Based on our analysis, we do not believe that harvests associated with the Federal Agency alternative would result in any change in harvests; therefore, there would be no change to the regional economy.

¹⁰ IMPLAN (for IMPact analysis for PLANning) is an input-output modeling framework, developed at the county level for the entire U.S. The IMPLAN model provides an empirical representation of an economy (be it a single county, or state, or an aggregation of counties or states) including the relationships among the various industry sectors, final consumers, and the larger (regional or national) economy. IMPLAN is a proprietary product of the Minnesota IMPLAN Group Inc. <http://implan.com/v3/>

Table 1: Estimated Annual Impact on Regional Jobs, Wages, and Economic Output for each Alternative, 2015–2025, 2014 Dollars*

Alternatives	Economic Characteristic	Logging & Reforestation	Hauling	Lumber & Plywood	Total
Federal Agency	Jobs	0	0	0	0
	Total Wages	\$0	\$0	\$0	\$0
	Total Output	\$0	\$0	\$0	\$0
HCP	Jobs	8	1	13	22
	Total Wages	\$346,682	\$46,137	\$633,362	\$1,026,181
	Total Output	\$980,715	\$146,531	\$2,456,813	\$3,584,059
Private Mgmt. Plan	Jobs	36	8	75	119
	Total Wages	\$1,558,031	\$328,029	\$3,660,726	\$5,546,786
	Total Output	\$4,407,450	\$1,041,813	\$14,067,861	\$19,517,124
Hybrid x 2	Jobs	30	7	60	97
	Total Wages	\$1,299,214	\$280,480	\$2,952,870	\$4,532,565
	Total Output	\$3,675,294	\$890,800	\$11,331,808	\$15,897,901
Hybrid x 3	Jobs	23	5	43	71
	Total Wages	\$998,463	\$218,420	\$2,086,402	\$3,303,285
	Total Output	\$2,824,511	\$693,699	\$8,028,799	\$11,547,008
Public Auction	Jobs	103	27	199	329
	Total Wages	\$4,340,563	\$1,124,364	\$9,760,527	\$15,225,454
	Total Output	\$12,172,876	\$3,570,958	\$37,665,289	\$53,409,124

Source: Analysis by the Evergreen Team

* Includes direct effects associated with timber harvesting, indirect effects associated with additional spending by logging, reforestation, log hauling, and lumber and plywood companies, and induced effects associated with additional spending by workers employed in those industries.

We believe it is reasonable to assume that these annual impacts would be relatively constant over the next 10 years, but would likely decline over time due to changes in labor-saving technology and changes in the regional economy.

At the other extreme, we estimate that the Public Auction alternative would result in more than 300 additional jobs in Western Oregon, \$15 million in additional payroll, and more than \$50 million in additional economic output. Much of these impacts would be concentrated in Coos and Douglas counties, but would also affect neighboring counties with strong forest products sectors.

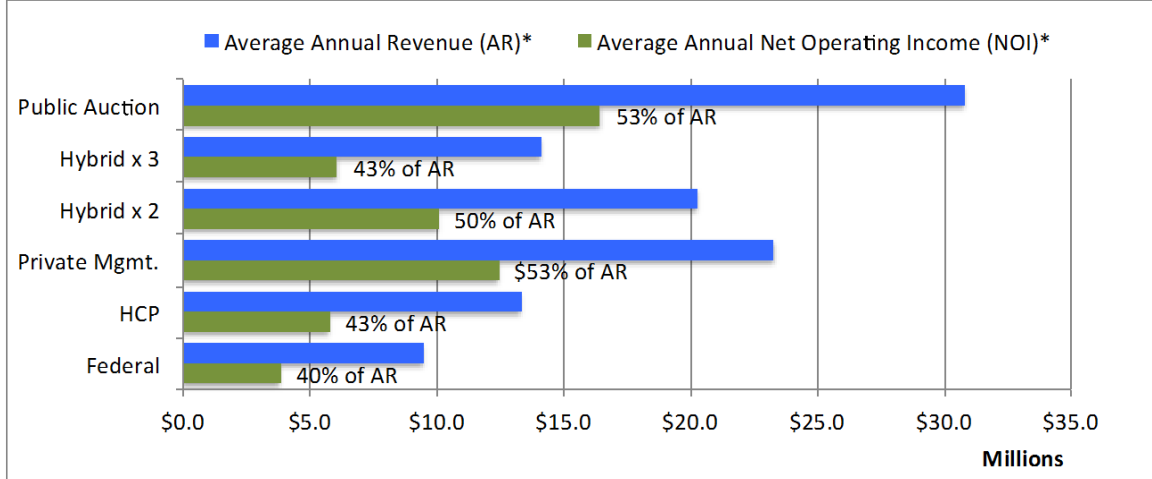
Financial Returns

For each of the alternatives, we estimate three measures of financial return: Annual Revenue (AR), Net Operating Income (NOI), and Net Present Value (NPV). While the three financial measures are related, they each provide a different picture of the financial returns associated with the alternatives.

Figure 8 shows the average annual revenue and net operating income in 2014 dollars for each alternative. Annual revenue represents average revenue earned each year from timber harvests before operational, maintenance, and other expenses. Net operating income represents annual revenue minus operational expenses, which include only the

costs associated with harvesting timber (i.e. logging, hauling, road costs associated with harvesting, and other expenses directly related to harvests and reforestation). Expenses that are not included in net operating income are those related to fire prevention, public safety, administration, ESA surveys, litigation, etc.

Figure 8: Average Annual Revenue and Net Operating Income by Alternative, 2014 \$



Source: Analysis by Evergreen Economics of data provided by ODF

Note: For both AR and NOI, bars in figure represent average annual (real) values over the 100-year planning horizon.

To compare the financial returns of the alternatives, one must convert the annual revenues of each alternative to a single year; that is the purpose of discounting. The choice of a discount rate is a key determinant in calculating NPV. The lower the discount rate, the greater the NPV. We chose the 6 percent discount rate because we believe it appropriately incorporates much of the risk associated with a hypothetical purchase of the Elliott State Forest.¹¹ While one may argue that a lower or higher discount rate is more appropriate, by choosing a consistent discount rate for all alternatives, we ensure that we maintain the relative difference between alternatives.

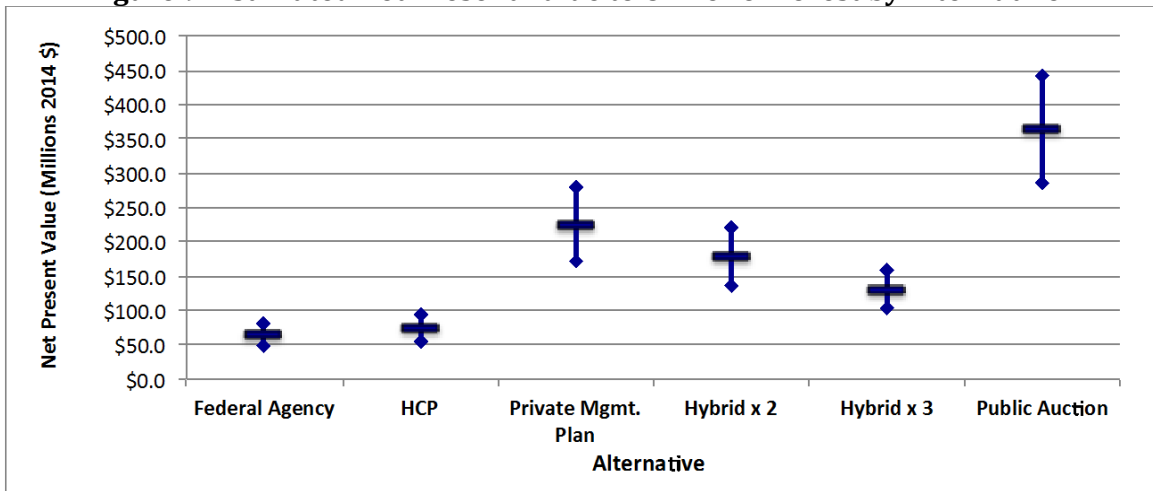
Furthermore, because we consider alternative discount rates in computing the approximate 90 percent confidence interval, we accommodate assumptions about the “appropriate” discount rate in a consistent manner. The confidence intervals account for uncertainty in the long-term average price of logs harvested from the Elliott, as well as

¹¹ Forestland is a relatively low risk investment and 5 percent is a standard discount rate used in determining the price a potential purchaser is willing to pay to purchase private timberland. However, because the Elliott is a Common School Trust property, there is additional risk associated with the legal ability of the Land Board to sell the property. There is also the added regulatory risk associated with the threatened species occupying the Elliott. These additional risks argue for a higher-than-standard discount rate to account for the additional risks.

risks and uncertainty related to federal and state regulation, and long-term productivity of the forest.¹²

Figure 9 shows our estimates of NPV for each alternative (horizontal bars) with the lower and upper bounds of an approximate 90 percent confidence interval for the “true” NPV. We computed the NPV for each alternative based on a 6 percent discount rate, which is at the upper-end of standard discount rates used in forestry.¹³ In comparing the NPVs for each alternative, it is important to note that one should not compare ranges, but rather compare the means and consistent points within each range (e.g. compare lower bounds across alternatives).

Figure 9: Estimated Net Present Value to Owner of Forest by Alternative*



Source: Analysis by Evergreen Economics of data provided by ODF

* The estimates of NPV represent the return to the owner of the forest, not the return to the CSF under the alternative.

¹² Uncertainty in the long-term average price of logs is accounted for through the standard error of westside log prices (1979 through 2011), which is about \$19/MBF; uncertainty in other factors are accounted for through alternative discount rates, 5% (upper bound) and 7.5% (lower bound)

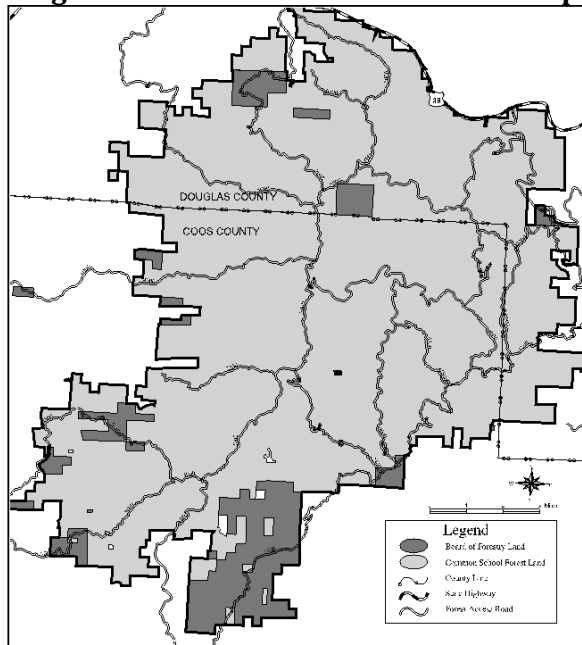
¹³ Standard discount rates used in valuation of forestland (though discounted cash flow analysis) generally range from 4.5% to 6.5% for private-to-private transactions.

3 Current Forest Context

Forest Inventory and Other Attributes

The Elliott State Forest is located in Coos and Douglas counties in southwest Oregon. Most of the forest, about 84,000 acres—and the portion of interest for this analysis—is owned by the Common School Fund. The remainder of the forest is Board of Forestry land.

Figure 10: Elliott State Forest Ownership



Source: Elliott State Forest Management Plan, November 2011

Based on forest inventory data from the Oregon Department of Forestry (ODF), there is approximately 2.3 MMBF (billion board feet) of timber on the Elliott State Forest. Douglas fir is the dominant tree species on the forest, representing more than 80 percent of timber volume (see Table 2). Whitewood, which includes western hemlock and all species of true firs, represents about 9 percent of timber volume.¹⁴ Red alder represent 5 percent of timber volume and other hardwoods (e.g. big leaf maple, bitter cherry) represent about 3 percent.

¹⁴ Whitewood includes western hemlock and all species of “true” firs, which are members of the *Abies* genus (e.g. grand, white, noble, Pacific silver). It does not include Douglas fir, which is its own genus, *Pseudotsuga*.

Table 2: Timber Volume by Species

Age Class	MBF	Percent
Douglas Fir	1,875,044	82%
Whitewood*	198,621	8.7%
Spruce	12,836	0.6%
Cedar	18,113	0.8%
Other Conifers	387	0.0%
Red Alder	114,077	5.0%
Other Hardwoods	66,891	2.9%
All Species	2,285,969	100%

Source: Analysis by Evergreen team of data from ODF

*Whitewood include hemlock and true firs

A standard measure of size class of a forest is tree “diameter at breast height” (DBH). Based on ODF data, just over half the forest inventory is in trees with a DBH greater than 16 inches (see Table 3).

Table 3: Timber Volume by Diameter Class

DBH*	MBF	Percent
< 5”	140,292	6%
5” – 8”	313,917	14%
8” – 12”	333,838	15%
12” – 16”	310,382	14%
>16”	1,187,541	52%

Source: Analysis by Evergreen team of data from ODF

* DBH = diameter at breast height

Site index is a standard method for characterizing the productivity of forest stands based on the typical height of a dominant tree at a particular age.¹⁵ For the Elliott, ODF measures site index at 100 years. Table 4 shows the distribution of acres by site class. The majority of acres are in site class 3, which predicts that the dominant trees will be 95 feet to 114 feet tall at 100-years of age. Another 27 percent of the forest is in site class 2, which is associated with dominant trees of up to 134 feet at age 100.

¹⁵ A dominant tree from a forestry perspective is one that receives full light from above (is not below the tree canopy) and generally receives some light from the side. A single stand may have many dominant trees.

Table 4: Distribution of Acres by Site Class

Site Class	Tree Height at 100 Years	Acres	Percent
2	115 - 134 ft.	22,947	27%
3	95 - 114 ft.	55,431	66%
4	75 - 94 ft.	1,957	2%
5	55 - 74 ft.	2,447	3%
6	Unforested	1,293	2%

Source: Analysis by Evergreen team of data from ODF
* Note: Slight overlap onto non-Common School lands.

The Elliott State Forest contains hundreds of miles of streams, most of which are small and are non fish-bearing, but often feed into fish-bearing streams. The Elliott does contain about 150 miles of fish-bearing streams, many of which are important habitat for the Oregon coast coho salmon, which is listed as threatened under the ESA. Each of the alternatives we analyzed in this study considers a different level of stream protection through the application of no-harvest riparian buffers. The buffers applied in each alternative meets or exceeds that which is required under the Oregon Forest Practices Act.

Table 5: Timber Volume by Species

Stream Type	Miles
Large Fish-bearing	59
Medium Fish-bearing	54
Small Fish -bearing	41
Medium Non-fish	8
Small Non-fish Perennial	267
Small Non-fish Seasonal	64
Small Unknown / Unclassified	197

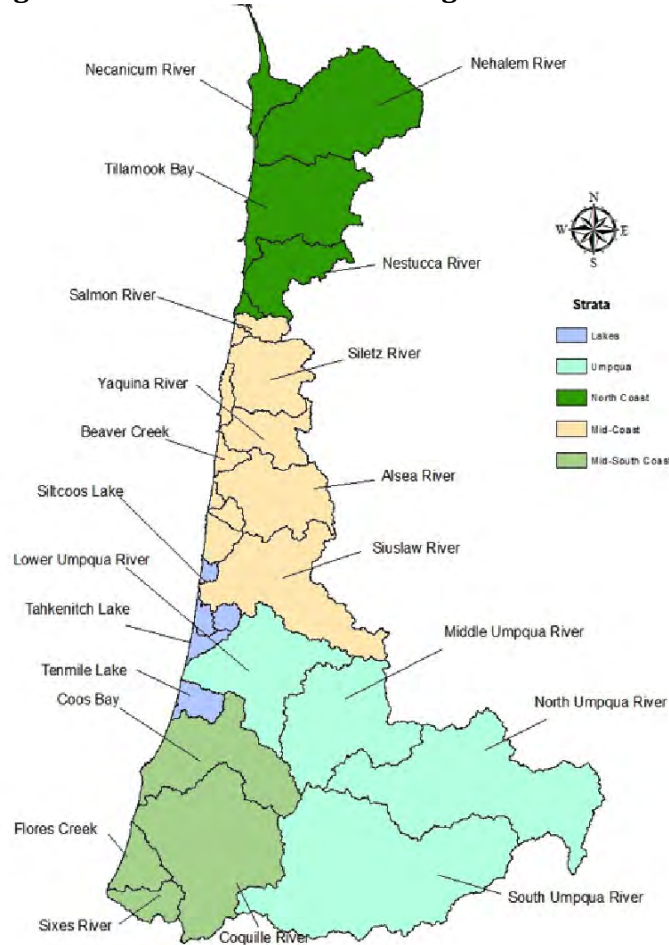
Source: Analysis by Evergreen team of data from ODF

Salmon

Many of the streams in the Elliott provide important habitat for coho salmon, steelhead, and other species of fish. The high quality of the water and fish habitat on the Elliott are the main reasons why the Elliott is recognized by the Oregon Department of Fish and Wildlife (ODFW) and the National Marine Fisheries Service (NMFS) as an important source of habitat within the Oregon coast coho ESU (evolutionary significant unit), which extends almost the full length of the Oregon Coast (see Figure 11). The Oregon coast coho population consists of 21 independent populations and 35 dependent populations spread

out over approximately 6,987,468 acres and distributed across nearly 7,000 stream miles.¹⁶

Figure 11: Distribution of the Oregon Coast Coho ESU



Over the past decade, annual returns of coast coho have been strong, averaging more than 180,000 fish each year (see Table 6). Comparatively, in the past decade, the annual spawner count averaged approximately 120,000 fish. Table 6 provides estimates of the number of coho spawners attributable to the Elliott State Forest. Research and monitoring of salmonid populations by ODFW no longer includes stream-specific estimates of population counts. However, before 2004, ODFW did develop estimates of coho production from streams entirely contained in the Elliott as well as streams with headwaters in the Elliott.

¹⁶ Oregon Coast Coho Conservation Plan, 2013-2011 Annual Report, Oregon Department of Fish and Wildlife.

Table 6 shows the annual estimate of coho spawner production attributed to the Elliott from 2004 to 2013, as well as lower and upper bound estimates of spawner production, based on ODFW data and research from previous years. Between 1997 and 2003, this ODFW data shows that, on average, 22 percent of Oregon coast coho was attributable to the Elliott. While the Elliott constitutes a relatively small portion of the Oregon coast coho ESU—less than 100,00 acres out of nearly 7,000,000 acres—its value as coho habitat is significant.

Table 6: Spawner Counts for Oregon Coast Coho ESU and Estimates for the Elliott

Year	Coho Spawners Total ESU	Spawners Attributable to Elliott State Forest		
		Mean Estimate	Lower Bound	Upper Bound
2004	172,778	37,200	20,727	63,506
2005	154,595	33,285	18,545	56,822
2006	128,819	27,735	15,453	47,348
2007	66,271	14,268	7,950	24,358
2008	179,686	38,687	21,555	66,045
2009	262,735	56,568	31,518	96,570
2010	283,405	61,018	33,997	104,167
2011	356,243	76,701	42,735	130,940
2012	99,145	21,346	11,894	36,441
2013	124,411	26,786	14,924	45,728
10-Year Average	182,809	39,359	21,930	67,193

Source: Oregon Adult Salmonid Inventory and Sampling (OASIS) Project, Oregon Department of Fish and Wildlife.

Oregonians Value Salmon

Salmon are one of the quintessential icons of the Pacific Northwest, affecting the region’s culture, politics, and economy (Montgomery and Helvoigt, 2006). Oregonians value salmon as a source of food and sport, as well as for a myriad of “non-use” reasons.

Table 7 shows the results of two commonly-cited studies conducted in the Pacific Northwest that estimate the value of salmon to sport anglers.¹⁷ Each of these studies uses the contingent valuation (CV) method to develop estimates of the *willingness to pay* (WTP) for the opportunity to sport-catch one more salmon or steelhead based on individuals’ responses to a carefully designed survey instrument. The estimates of economic value vary depending on the location of the study and the characteristics of the salmonid considered.

¹⁷ We do not know how many coho salmon attributable to the Elliott State Forest are caught by sport or commercial fishermen each year. It may be anywhere from a few hundred to thousands. We also do not know how the number of salmon produced by the Elliott might change under any of the alternatives considered in this report. Our purpose for including this information is to acknowledge the value of salmon provided by the Elliott for sport.

Table 7: Recreational Angler's Willingness to Pay for NW Salmon and Steelhead

Study	Location	Species	Study Method	WTP per Fish (\$2014)
Olsen et al., 1990	WA (Ocean)	Salmon	CVM	\$72.00
Olsen et al., 1990	OR (Coastal)	Steelhead	CVM	\$111.00
Olsen et al., 1990	WA (Freshwater)	Salmon	CVM	\$64.00
Olsen & Richards, 1992	Rogue River	Fall Chinook	CVM	\$118.00
Olsen & Richards, 1992	OR Rogue River	Steelhead	CVM	\$19.00
Olsen & Richards, 1992	OR Rogue River	Steelhead	CVM	\$38.00

Source: Analysis by Evergreen Economics of results presented in Olsen et al., 1990 and Olsen and Richards, 1992

While Table 7 shows the significant sport “use” value that recreational anglers place on salmon, the vast majority of Oregonians do not fish but still value salmon for other, “non-use” reasons. The non-use values of salmon include the bequest value of conserving salmon populations for future generations; the altruistic value of ensuring others are able to fish for salmon today; the option value for fishing or viewing salmon themselves sometime in the future; and the value of simply knowing that salmon exist. While one cannot readily observe these values through market transactions, economists have long recognized that such values do exist and some have used the CV method to estimate their value through surveys.

Until 2008, the Oregon Office of Economic Analysis and the Oregon Progress Board conducted the Biennial Oregon Population Survey (OPS), a household survey administered to more than 4,000 Oregon households. The survey asked Oregonians how much they were willing to pay per month for salmon habitat restoration and improved water quality to help improve salmon runs in Oregon. 2006 and 2008 are the two most recent years in which a large number of Oregon households were asked about their WTP for salmon habitat protection, so we focused on the results for these two survey years.

In 2006, the survey results showed, on average, that each Oregonian household was willing to pay \$5.20 per month in 2014 dollars, a total of \$62 per year. The results for 2008 were very similar: \$5.00 per month, a total of \$60 per year. We took the lowest estimate from these two survey years and applied it to the estimated number of households in Oregon in 2014 (1,621,000 households). Based on this analysis, we estimated that Oregonians’ willingness to pay for salmon habitat restoration and improved water quality is about \$97 million.¹⁸

Recreation

The Elliott State Forest is home to recreational activities including hunting, fishing, and wildlife viewing. The market value of forestland does not typically reflect these recreational benefits. Some of the alternatives may affect recreation in the Elliott by altering the

¹⁸ For comparison, Oregon’s Gross State Product (GSP) was about \$200 billion in 2013.

frequency or duration of visits and/or the types of recreational activities. However, this is difficult to predict as a thorough analysis would require substantial assumptions. For the purposes of this analysis, we characterize and estimate the economic value of recreation as it currently occurs in the Elliott, but do not attempt to project how recreational activities or value might change under any of the alternatives.

We express the dollar value of recreation in terms of consumer expenditure and “consumer surplus.” Consumer expenditure includes all spending on travel, lodging, equipment, etc. associated with Oregonians and others choosing to partake in recreational activities in the Elliott. We estimated the economic impacts to Coos County and the state associated with recreational spending by visitor to the Elliott.

Consumer surplus is a measure of the economic value derived by visitors beyond the cost of traveling to and recreating in the Elliott. We estimated the consumer surplus of visitors to the Elliott using the benefit transfer method, a standard approach in resource valuation in which estimates of values of similar sites published in the peer-reviewed literature are applied to the location of interest. The estimates of consumer surplus we present below represent the WTP by visitors to the Elliott in excess of their actual costs.

We provide a brief discussion of the results of our analysis of recreation in the Elliott and include in the appendix a detailed description of the recreation analysis.

Table 8 shows our estimates of the statewide economic impact associated with hunting and other recreation in the Elliott State Forest. Based on our estimate of 14,000 visitor days per year by hunters and 10,000 visitor days by non-hunters and per-day estimates of spending of \$65 for hunting and \$45 for other recreation (see Table 23 in the Appendix), we estimate total annual spending in Coos County of about \$1.26 million by hunters and \$460,000 by non-hunters, in 2014 dollars.

Table 8: Estimated Economic Impacts in Oregon from Recreation in the Elliott, Based on Estimated \$1.7 Million in Visitor Spending in Coos County, 2014 \$

Activity	Impact	Direct	Indirect	Induced	Total
Hunting	Output	\$568,126	\$188,980	\$209,512	\$966,618
	Wages	\$162,086	\$55,378	\$63,122	\$280,586
	Jobs	6.8	1.3	1.7	9.8
	Other Income	\$89,852	\$43,642	\$50,729	\$184,223
Other Recreation	Output	\$195,017	\$64,223	\$75,393	\$334,633
	Wages	\$67,710	\$19,068	\$22,714	\$109,492
	Jobs	2.7	0.5	0.6	3.8
	Other Income	\$24,447	\$15,106	\$18,256	\$57,808
Total Recreation	Output	\$763,144	\$253,203	\$284,905	\$1,301,252
	Wages	\$229,796	\$74,446	\$85,836	\$390,078
	Jobs	9.5	1.8	2.3	13.6
	Other Income	\$114,299	\$58,748	\$68,984	\$242,032

Source: Analysis by Evergreen Economics using IMPLAN software

Note: Because the only data available to us is for spending in Coos County, these estimates of statewide economic impact should be considered a "lower-bound."

The fact that our estimates of total economic output for the state (about \$966,000) is less than total annual spending by hunters and non-hunters (about \$1.72 million) indicates the degree to which recreational spending leaks out of the local and state economy. For example, much of the recreational spending is likely on gasoline and diesel fuel produced outside of Oregon, thus the local and statewide impacts associated with purchasing motor fuels are relatively small.

Consumer Surplus

Consumer surplus represents the *willingness to pay* (WTP) for a good or service above the actual market cost of that good or service. For recreation on the Elliott State Forest, consumer surplus represents the economic value enjoyed by visitors above the monetary cost of traveling to and recreating in the Elliott. We obtained estimates of consumer surplus for various types of recreation from a 2005 report published by the U.S. Forest Service.¹⁹ We converted the reported values to 2014 dollars and computed an average per-day value for each recreational activity that might occur on the Elliott. We also computed the lower and upper bounds of a 90 percent confidence interval of the per-day consumer surplus for each activity (see Table 9).

¹⁹ Loomis, John, 2005, Updated outdoor recreation use values on national forests and other public lands. Gen. Tech. Rep. PNW-GTR-658. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 26 p.

Table 9: Per-Day Estimates of Consumer Surplus for Outdoor Recreation, 2014 \$

Activity	Average	Lower 90%	Upper 90%
Fishing	\$41.50	\$21.00	\$62.00
Boating/ Rafting/ Canoeing	\$31.80	\$29.10	\$34.50
Hiking	\$93.40	\$38.53	\$148.22
Hunting	\$65.00	\$29.00	\$101.00
Mountain Biking	\$56.80	\$51.30	\$62.30
Wildlife Viewing	\$33.20	\$25.20	\$41.30
Camping	\$54.20	\$26.30	\$82.10

Source: Analysis by Evergreen Economics of data from Gen. Tech. Rep. PNW-GTR-658

In addition, we estimated the total consumer surplus for recreation in the Elliott by multiplying the estimated visitor days by the mean consumer surplus for each type of recreation. We assumed that 30 percent of non-hunting visitor days could be attributed to camping, 30 percent to fishing, 30 percent to wildlife viewing, and 10 percent to all other non-hunting recreation.²⁰ Table 10 shows the estimated mean consumer surplus values and associated confidence interval for hunting and all other recreation.

Table 10: Estimated Current Recreational Activity and Economic Value (WTP above travel costs), 2014 Dollars

Recreation Activity	Visitor Days Per Year	Per Day WTP	Total WTP	Total WTP Lower 90%	Total WTP Upper 90%
Hunting	14,000	\$65.00	\$910,000	\$406,000	\$1,414,000
Other Recreation*	10,000	\$45.00	\$450,000	\$257,000	\$638,000
Total	24,000	\$56.67	\$1,360,000	\$663,000	\$2,052,000

Source: Analysis by Evergreen Economics of data various sources

Total Value of Recreation on the Elliott

Based on our analysis, we estimate that recreation in the Elliott is responsible for approximately \$390,000 in wages in Oregon and about \$1.3 million in economic output. In addition, we estimate consumer surplus for recreation in the Elliott (economic value in excess of the cost to visit the Elliott), to be about \$1.4 million for 2014.

Non-Market Goods and Services

In addition to providing important habitat to the coastal coho salmon and other anadromous species (those that ascend rivers from the sea for breeding), the Elliott State Forest likely provides a myriad of non-market goods and services. While it is beyond the scope of this analysis to estimate their economic importance or project how the provision of these goods and services might change under any of the alternatives examined in this study, it is important to acknowledge that they exist and to note that they possess

²⁰ In fact, we do not know the actual distribution of activities, but it is likely the lower and upper bounds of the confidence interval captures the actual distribution.

economic value. Table 11 provides some examples of non-market goods and services that the Elliott may provide.

The economic importance of many of the goods and services listed in Table 11 may not be obvious because they are not based on market transactions. For instance, hunters, anglers, and other recreationalists do not pay the Common School Fund for the fish and wildlife habitat provided by the Elliott. Nevertheless, the habitat provided by the Elliott is economically important insofar as it supports activities such as sport hunting and fishing, and wildlife viewing.

Table 11: Non-Market Goods and Services Potentially Provided by the Elliott

Functions	Examples of Goods and Services Produced
Habitat for threatened and endangered species	Older forest structures provide habitat favored by some species listed as endangered or threatened, potentially reducing regulation on adjacent and/or nearby private lands.
Regulation of water	Natural features of an ecosystem capture precipitation; filter, retain, and store water; as well as regulate levels and timing of runoff and stream flows.
Formation & retention of soil	Wetlands accumulate organic matter and prevent erosion to help maintain productivity of soils. Trees and understory plants reduce the energy of rainfall impact on soils, helping prevent erosion and increase slope stability.
Regulation of atmosphere & climate	Trees and understory plants produce oxygen, sequester carbon, and help maintain air quality.
Regulation of disturbances	Wetlands reduce flood damage by storing floodwaters, reducing flood height, and reducing a flood's velocity.
Regulation of nutrients and pollution	Wetlands and riparian vegetation improve water quality by trapping pollutants before they reach streams and aquifers; natural processes improve water quality by removing pollutants from streams.
Provision of habitat	Wetlands, streams, and forests provide habitat for economically important wildlife.
Production of recreational resources	Streams and other water resources, forests, fish, waterfowl, and other wildlife provide basis for outdoor sports, eco-tourism, etc.

Source: Adapted by Evergreen Economics from De Groot, R., M. Wilson, and R. Boumans. 2002. "A Typology for the Classification, Description and Valuation of Ecosystem Functions, Goods and Services." *Ecological Economics* 41: 393-408; Kusler, J. 2003. *Assessing Functions and Values*. Institute for Wetland Science and Public Policy and the Association of Wetland Managers, Inc.; and Postel, S. and S. Carpenter. 1997. "Freshwater Ecosystem Services." in *Nature's Services: Societal Dependence on Natural Ecosystems*. Edited by G.C. Daily. Washington, D.C.: Island Press, pgs. 195-214.

4 Future Alternatives Analysis

Forest Modeling

The primary focus of this study is to estimate annual timber harvests, financial returns from timber harvests,²¹ and changes in the standing forest inventory and related structural forest characteristics over time. We conducted the analysis over a 100-year planning horizon beginning on December 31, 2014. The driving information of this analysis is the stand-based timber inventory maintained by the Oregon Department of Forestry (ODF).

The Data

ODF organizes the timber inventory of the Elliott State Forest at the stand level, which it identifies using aerial photography and other means. ODF maintains information for each stand as polygons in a Geographic Information System (GIS). ODF considers each of these polygons to be a unique forest stand and describes the stand using a sample of ground plots and statistical expansion techniques. Each stand has an associated average tree list per acre, which we used in the growth and yield analysis.²² We did not conduct a qualitative review of the data provided by ODF; however, the data appeared to be complete and we found it to be detailed and well-documented.

Analytical Approach

Figure 12 outlines our general approach to forest modeling in this study. It consists of three major components:

- Growth and Yield Analysis
- Harvest Scheduling
- Regional Log Market Model

These three components rely on the initial timber inventory for the Elliott, assumptions about harvesting methods, costs, and log prices, as well as constraints on harvesting operations related to state and federal logs. The results of this analysis are estimates of timber harvests, cash flow, and forest characteristics for each year throughout the 100-year planning horizon.

Growth and Yield Analysis

We used the Forest Projection and Planning System (FPS) and the ORGANON growth and yield modeling programs to conduct growth and yield modeling for each alternative.²³

²¹ While there may be other potential sources of income that could be earned from the Elliott State Forest, such sources are speculative and we did not consider them in this analysis.

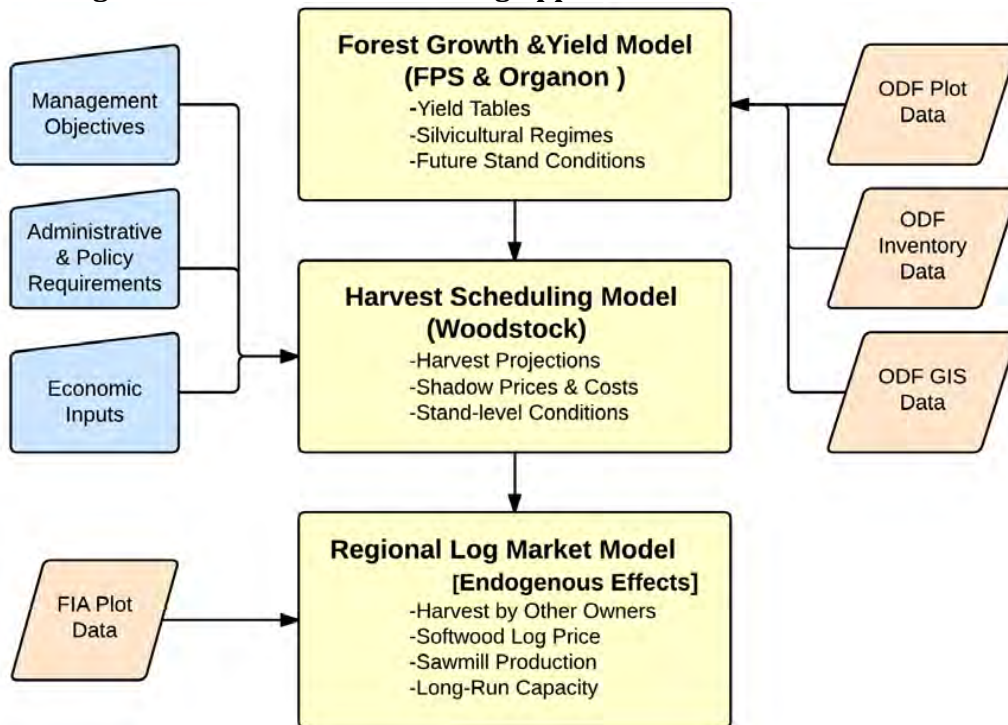
²² ODF expanded the sample-based information to characterize the entire stand based on timber volume, (diameter) size classes, site quality of the soil, stand age, vigor, etc.

²³ FPS, developed by the Forest Biometrics Research Institute (FBRI), uses a stand-based relational database linked to a forest-wide GIS mapping system to provide a range of tools for managing a working forest, including cruise compilation, valuation, growth projections and long-term planning under alternative silvicultural treatments. (footnote continued)

While different in many respects, these two growth and yield models are both individual tree growth models. They model each individual tree’s growth in terms of changes in diameter, height, and crown over time. At each time interval, the models use allometric equations to calculate other individual tree characteristics (e.g. volume and biomass to specified merchantability specifications). We used these models to summarize the individual tree growth information to the stand level (e.g. number of trees, basal area, average height, volume per acre) in five-year intervals.

We evaluated our growth and yield projections against real-world forest inventories for a similar coast range forest to ensure that our projections were reasonable over the 100-year time horizon. We used these growth and yield results to produce inputs for the harvest scheduling software, in the form of yield tables.

Figure 12: Generalized Modeling Approach Used for Each Alternative²⁴



ORGANON, developed by The Forest Research Laboratory (FRL) of Oregon State University, is an individual tree growth model developed for Southwest Oregon, Northwest Oregon, the lands of the Stand Management Cooperative, and red alder plantations in Oregon and Washington. It is used to project stand development for several species mixes, stand structures and management activities.

²⁴ FIA is the acronym for the Forest Inventory and Analysis program of the U.S. Forest Service, which conducts periodic sampling of forests (private and public) to gather information on the current conditions of forest, as well as changes in forest over time.

Harvest Scheduling

The next step was to construct the harvest-scheduling model to characterize alternate stand-level conditions in the Elliott throughout the planning horizon. We used the yield tables from the growth and yield models in conjunction with a myriad of other parameters as inputs to the Harvest-scheduling Model, as shown in Figure 12. Key parameters we used to develop the harvest-scheduling model include:

- **Log Values** - In the analysis, we assumed delivered log prices will remain constant in real terms at \$650 per thousand board feet (MBF).²⁵ Log prices have fluctuated considerably over the past three decades, with prices at or below \$400 per MBF for much of the 1980s and a period immediately following the 2008 recession.²⁶ Log prices were above \$800 per MBF for much of the 1990s and reached \$1,200 per MBF in 1993, due in part to reductions in the availability of federal timber and increased demand by North American home builders.²⁷ Figure 13 shows the quarterly log prices using ODF's Western Oregon log price index, in 2014 dollars. This index is a weighted average of delivered log prices that accounts for variation in species and grade. Between 1979 and 2011, the average log price was \$647 per MBF and the median was \$645 per MBF.

Log Values are a key driver in the financial analysis associated with the different alternatives, thus a discussion of log exports is warranted. In this analysis, we did not explicitly consider the possibility (or potential) of exporting logs from the Elliott. As a state forest, logs harvested from the Elliott cannot currently be exported. This ban would stay in place under the alternatives that assume a transfer of the timberland to another State or Federal agency. However, if all or part of the Elliott is sold or transferred to private ownership, the State must choose whether or not to place log export restrictions on the sale. So under some of the alternatives, the ban on exports assumption may change. For the purposes of our analysis, we do not believe that an export restriction would materially affect the bid price offered by most domestic buyers, but it may dissuade some potential buyers (either domestic or international) from bidding on the property. We would expect potential buyers to consider the impact of log export restrictions during their independent valuation efforts, by adjusting their discount rates and/or required rate of return. For our purposes, we believe it is reasonable to simply assume that the logs would not be exported, and rely on domestic log pricing trends.

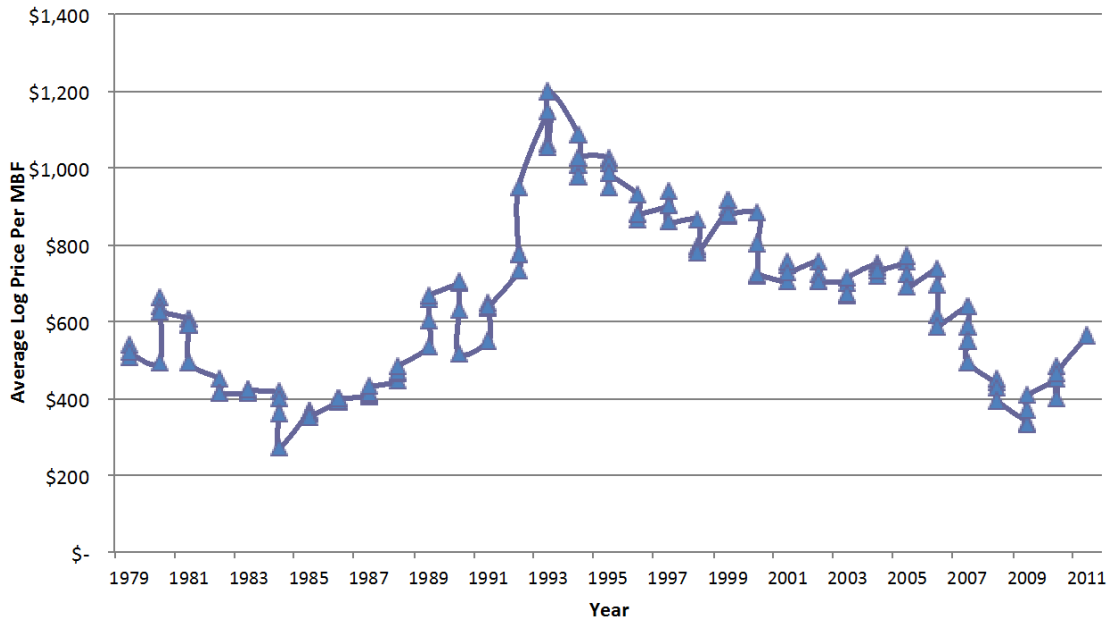
- **Haul Costs** - We assumed hauling costs equivalent to the cost of hauling logs to the nearest log market, in Coos Bay. While some logs will travel to other markets (e.g. Roseburg, Eugene/Springfield), logs are sold in a competitive marketplace and prospective buyers will bid the logs based on the knowledge that closer competitors have lower hauling costs.

²⁵ This assumption of \$650 per MBF log price is in 2014 dollars.

²⁶ Based on data collected and published by ODF: http://www.oregon.gov/odf/pages/state_forests/frp/charts.aspx

²⁷ ODF's western Oregon log price index was \$1,199 in the fourth quarter of 1993 (in 2014 dollars).

Figure 13: Western Oregon Log Price Index, 1979-2011, Adjusted for Species and Grade, in 2014 Dollars per MBF



Source: Oregon Department of Forestry

The harvest-scheduling model is a linear optimization model that optimizes financial returns from timber harvesting of operable areas, subject to a set of constraints. Some of these constraints differ across alternatives (e.g. acres off-limit to harvesting due to stream buffers) while others do not (e.g. federal laws protecting threatened and endangered (T&E) species).

For this study, we used the Woodstock harvest scheduling software developed by Remsoft Corporation (www.remsoft.com). Woodstock is widely used across North America in the development of both strategic and tactical harvest plans. In essence, the software translates data (initial inventory), potential yields (grown inventory), assumptions (harvest methods, financial assumptions, costs), and management considerations (value objectives, constraints on harvest or cash flows) into a multi-dimensional matrix consisting of all possible harvest scenarios. Woodstock passes this matrix to a mathematical algorithm, which finds the optimal (best) solution. For this study, the optimal solution is the one that provides the highest financial return while satisfying all legal, regulatory, and management considerations.

Therefore, the solution to the harvest-scheduling model is a strategic plan for managing the Elliott under the objectives defined for each alternative. The outputs include annual harvest volume and revenue, acres by age class, and estimates of above ground carbon storage. The model also provides estimates for a host of stand-level conditions throughout the 100-year planning horizon.

The most important considerations in the harvest-scheduling model are the drivers of harvest flow, and thus value. These key drivers are harvest choices and transitions.

Harvest Choices

For each alternative, the harvest-scheduling model considers three alternative harvesting methods to apply to a forest stand: clearcutting, heavy thinning, or light thinning.²⁸ The decision of which harvesting method to use is affected by stand age, northern spotted owl and marbled murrelet habitat considerations, forest type classification of the stand, and the age of the stand.

- **Clearcutting** is an even-aged method of harvesting whereby most trees in a stand are removed before the stand is replanted. This method generally yields the greatest financial return as the harvest occurs all at once, making it a practical and efficient approach. While the harvest-scheduling model does not force any stand to be harvested using clearcutting, the cost-effectiveness generally make this the preferred method within the harvest-scheduling model unless it would violate one or more of the specified constraints (e.g. constraints on harvesting within stream buffers).
- **Heavy Thinning** is a partial-cut method of harvesting in which approximately 40 percent of standing volume is harvested evenly across species and size classes.
- **Light Thinning** is a partial-cut method of harvesting in which approximately 20 percent of standing volume is harvested evenly across species and size classes.

Table 12 shows the harvesting choices available for a stand when northern spotted owls are present and Table 13 shows harvesting choices available when marbled murrelets are assumed present. Table 14 shows the age-based restrictions we used for modeling each alternative.

²⁸ We do not consider single-tree harvesting methods because they are not commonly used in western Oregon due to their relative high cost. *Allowing* for single-tree harvests would not change the results of our modeling effort; *forcing* the model to choose a single-tree harvesting method would lead to lower harvests, higher relative harvesting costs, and lower NPV—and would not be consistent with standard industry practices.

Table 12: Stand-Level Harvesting Activities When Northern Spotted Owl Present

Alternative	Owl Core	Inner 0.7 Mile Circle	0.7 – 1.5 mile Outer Circle
HCP	Fish-Focus: No Harvest <i>Timber-Focus: No Harvest</i>	Fish-Focus: Light Thin <i>Timber-Focus: Light Thin</i>	Fish-Focus: All Activities <i>Timber-Focus: All Activities</i>
Federal Agency	No Harvest	Light Thin	All Activities
Private Mgmt. Plan	No Harvest	All Activities	All Activities
Hybrid x 2	<i>Timber-Focus: No Harvest</i> Production: No Harvest	<i>Timber-Focus: Light Thin</i> Production: All Activities	<i>Timber-Focus: All Activities</i> Production: All Activities
Hybrid x 3	Reserve: No Harvest Fish-Focus: No Harvest Production: No Harvest	Reserve: Light Thin Fish-Focus: Light Thin Production: All Activities	Reserve: All Activities Fish-Focus: All Activities Production: All Activities
Public Auction	No Harvest	All Activities	All Activities

Table 13: Stand-Level Harvesting Activities When Murrelet Present

Alternative	Assumed Occupied	No Murrelet Present
HCP	Fish-Focus: No Harvest <i>Timber-Focus: No Harvest</i>	Fish-Focus: All Activities <i>Timber-Focus: All Activities</i>
Federal Agency	No Harvest	All Activities
Private Mgmt. Plan	Light Thin	All Activities
Hybrid x 2	<i>Timber-Focus: No Harvest</i> Production: Light Thin	<i>Timber-Focus: All Activities</i> Work Forest: All Activities
Hybrid x 3	Reserve: No Harvest Fish-Focus: No Harvest Production: Light Thin	Reserve: All Activities Fish-Focus: All Activities Production: All Activities
Public Auction	Light Thin	All Activities

Table 14: Age-Based Restrictions on Silvicultural Treatments

Alternative	Silvicultural Treatment		
	Clearcut	Light or Heavy Thin*	Light Thin
HCP	Fish-Focus: Age <=85 <i>Timber-Focus: <=85</i>	Fish-Focus: Age <=125 <i>Timber-Focus: <=125</i>	Fish-Focus: Age <=125 <i>Timber-Focus: <=125</i>
Federal Agency	Age <=85	Age <=125	Age <=125
Private Mgmt. Plan	No Limits	No Limits	No Limits
Hybrid x 2	<i>Timber-Focus: Age <=85</i> Production: No Limit	<i>Timber-Focus: Age <=125</i> Production: No Limit	<i>Timber-Focus: Age <=125</i> Production: No Limit
Hybrid x 3	Reserve: Not Eligible Fish-Focus: Age <=85 Production: No Limit	Reserve: Age <= 125 Fish-Focus: Age <=125 Production: No Limit	Reserve: Age <= 125 Fish-Focus: Age <=125 Production: No Limit
Public Auction	No Limits	No Limits	No Limits

For each alternative, we also created no-harvest buffers around streams and other riparian areas using the GIS data provided by ODF. The stream buffers differ for each alternative

based on their underlying ownership/management objectives. For example, for the Federal Agency alternative we assume the Forest Service owns the Elliott and that the Forest Service would manage the Elliott based on the Northwest Forest Plan. Table 15 and Table 16 show the no-cut stream buffers we applied to streams based on whether they are fish-bearing or non-fish-bearing and the stream size, as identified by ODF.

Table 15: No-Cut Buffers Applied to Fish Bearing Streams (in feet, slope distance)

Alternative	Large	Medium	Small
HCP	Fish-Focus: 115 Timber-Focus: 115	Fish-Focus: 115 Timber-Focus: 115	Fish-Focus: 115 Timber-Focus: 115
Federal Agency*	400	400	400
Private Mgmt. Plan	115	115	115
Hybrid x 2	Timber-Focus: 115 Production: 100	Timber-Focus: 115 Production: 70	Timber-Focus: 115 Production: 50
Hybrid x 3	Reserve: 115 Fish-Focus: 115 Production: 100	Reserve: 115 Fish-Focus: 115 Production: 70	Reserve: 105 Fish-Focus: 115 Production: 50
Public Auction	100	70	50

* All buffers are measured in horizontal distance

** Converted from slope distance of 440'

Table 16: No-Cut Buffers Applied to Non-Fish Bearing Streams (in feet, slope distance)

Alternative	Large	Medium	Small Perennial	Small Seasonal
HCP	Fish-Focus: 115 Timber-Focus: 115	Fish-Focus: 115 Timber-Focus: 115	Fish: 100 Timber-Focus: 60	Fish: 50 Timber-Focus: 40
Federal Agency*	200	200	200	200
Private Mgmt. Plan	115	100	35	35
Hybrid x 2	Timber-Focus: 115 Production: 100	Timber-Focus: 115 Production: 50	Timber-Focus: 60 Production: 0	Timber-Focus: 40 Production: 0
Hybrid x 3	Reserve: 115 Fish-Focus: 115 Production: 100	Reserve: 115 Fish-Focus: 115 Production: 50	Reserve: 100 Fish-Focus: 60 Production: 0	Reserve: 60 Fish-Focus: 40 Production: 0
Public Auction	100	50	0	0

* All buffers are measured in horizontal distance

** Converted from slope distance of 440'

Transitions

Following a harvest activity, it is necessary to define the post-activity condition of the stand within the harvest-scheduling model.

A clearcut stand transitions to bare ground immediately following the harvest and then to a planted stand condition in year two. This transition reflects the practical transition that

occurs on industrial forestland. Costs associated with the planting activity are included in the analysis.

Heavy Thinning and Light Thinning operations have one of two transitions. The model chooses the transition that optimizes financial returns subject to the constraints described above, as well as any harvest flow constraints.

- Transition to a post thinning state that is eligible for clearcutting after a holding period, assumed to be 20 years.
- Transition to a reserve state; in this state, the remaining timber continues to grow but is no longer eligible for any subsequent harvesting activity.

Harvest Flow

Harvest flow is a constraint used to varying degrees in modeling each alternative. A harvest flow constraint restricts the model to simulate the actual management of the forest by not allowing wide year-to-year variability in timber harvest. Two primary factors control harvest flow for each alternative.

One of these factors is the stated management objective to maximize value subject to constraints described in Table 17. This objective pushes the model to harvest each stand at its financial maturity, where the change in value on a discounted cash flow basis is no longer positive. This factor can be thought of as the upward push on harvest levels.

The other important factor acts as a limit to harvest levels; it is expressed in the harvest-scheduling model with limits on the level or rate of change over time in harvest. This factor varies across alternatives and manifests in the following ways:

- **Even Flow** – These constraints require that the harvest be maintained at a common level, within a small, specified percent change, over a time horizon specified by the analyst. There may be multiple even flow constraints covering different years of the planning horizon.
- **Maximum or Minimum Levels** – In order to recognize that a significant change in harvest activity may take time to enact, all alternatives, except Private Management, are subject to a maximum harvest level of 15 MMBF over the first two years of the planning horizon.
- **Flow Control** – The change in harvest can also be constrained such that only a certain amount of change, in percent or absolute terms, is allowed from year to year.

Table 17 shows the details of harvest flow constraints for each alternative.

Table 17: Forest-Level Optimization Constraints

Alternative	Years 1 & 2	Years 3 – 100
HCP	Harvest <= 15.0 MMBF	Even Flow
Federal Agency	Harvest <= 15.0 MMBF	Even Flow
Private Mgmt. Plan	Harvest <= 40.0 MMBF	Even Flow (40.0 MMBF) Adjust (10%): Years 50-60
Hybrid x2	Harvest <= 15.0 MMBF	Even Flow (model determine)
Hybrid x3	Harvest <= 15.0 MMBF	Even Flow (model determine) Adjust (5%): Years 23-40, 60-70
Public Auction	Harvest <= 15.0 MMBF	Even Flow (model determine) Adjust (5%): Years 23-40, 60-70

After specifying each harvest-scheduling model, the models are “run.” The output resulting from each run includes comprehensive information on standing inventory, harvests, financial returns, and tree growth. Much of this detail is broken out to the tree species/grade level; all of the output is available at time zero (12/31/2014) and on an annual basis for 100 years.

Log Market Model

We used the Regional Log Market Model to estimate the potential impacts of harvests from the Elliott on short-term and long-term regional log flows in Western Oregon. We also used output from the regional log market model as inputs to the Economic Impacts model, which estimated how harvests in the Elliott affect employment, income, and output in the regional forest products sector (“direct” effects), as well as “indirect” and “induced” effects on employment and incomes in other industries and households.

Statistical Error and Range of Certainty

For this analysis, we assumed the extensive forest inventory data provided by ODF are accurate and, therefore, we did not include the inventory inputs in the range of certainty analysis. Instead, we considered only two parameters in our uncertainty analysis: delivered log price and discount rate. Our baseline assumption of delivered log price is \$650 per MBF (in 2014 dollars), which is the 30-year average reported by ODF for Western Oregon. For our upper- and lower-bound estimates, we considered log prices that are one standard error above and below the long-term mean price: \$678 and \$618, respectively.

We assumed hauling costs based on the distance to the nearest milling center. We estimated annual tree volume growth for existing and regenerated stands using FPS and ORGANON, two of the standard growth and yield models used in Western Oregon.

While we are confident that all of our assumptions are reasonable, our analysis considers a 100-year planning horizon. Things can change significantly over the next 10 years in ways that we are unable to predict, let alone the next 100 years.

Across all of the estimates provided by our analysis, we believe it is only necessary to present a range of certainty for NPV. This is because NPV explicitly considers all economic

uncertainty in the analysis (e.g. prices, costs, discount rates), as well as uncertainty about forest growth and restrictions on harvests. In addition, NPV is the output that characterizes the difference in “market value” between the alternatives. In this context, the market value consists of the estimated value that a private party might pay for the Elliott, the “subsidy” associated with choosing any of the other alternatives, and the implicit value of older forest structure and/or less intensive harvesting.

Our baseline assumption for the discount rate is 6 percent. Because our analysis does not include price inflation (for logs, wages, etc.), the 6 percent discount rate encompasses both a reasonable return on investment by a hypothetical private purchaser *and* a measure of risk and uncertainty associated with future log markets, environmental conditions, and potential legal/regulatory issues. While we believe that 6 percent is a reasonable discount rate to apply to the hypothetical sale of the Elliott, it is possible that some potential bidders may see such a purchase as having risk that is either higher or lower than that embodied by 6 percent. For this reason, we considered an upper-bound discount rate of 7.5 percent and a lower-bound discount rate of 5 percent.²⁹

²⁹ Note: a higher discount rate (e.g. 7.5%) results in a lower NPV and a lower discount rate (e.g. 5%) results in a higher NPV, all else being equal.

Salmon and Recreation Going Forward

It is beyond the scope of the study to evaluate the change in salmonid production on the Elliott. While the level of riparian protection associated with each of the alternatives may differ, we cannot translate that change in riparian protection to a numerical change in salmonid production. See Figure 6 for information on the number of acres protected through stream buffers and other reserves.

It is also beyond the scope of this project to evaluate the costs and benefits associated with potential development of recreational amenities in the Elliott (e.g. campgrounds, hiking trails, boat ramps). One is able to estimate the economic impacts and consumer surplus associated with an increase in recreational visits under the current (undeveloped) conditions of the Elliott. Based on our analysis, we estimate that each additional day of hunting on the Elliott results in \$90 of additional spending in Coos County and each additional non-hunting visitor day on the Elliott results in an additional \$45 in spending in Coos County. Such estimates may represent a lower-bound change in economic impacts because our analysis is based on recreation as it currently occurs on the (recreationally) undeveloped Elliott.

Likewise, one could estimate the change in consumer surplus associated with a change in visitation. Based on our review of the literature, each additional hunting day increases consumer surplus by about \$65 and each additional non-hunting visitor day increases consumer surplus by \$45 (the estimates of per-day consumer surplus shown in Table 10)

Climate Change

In this section, we evaluate the current climatic conditions and their impact on the forest. We also consider projections of rainfall and temperature in the Elliott and their relation to estimates of annual rainfall and temperature from the past century. Therefore, we present a brief discussion of the Elliott's current climate and a brief presentation of the potential impact of Swiss needle cast on Elliott forest growth. We end with a quick look at future climate projections and their potential impact on productivity and fire risk.

Temperature and Precipitation in the Elliott

Temperature fluctuations are relatively moderate in the Elliott State Forest and typical rainfall is quite high due to the influence from the Pacific Ocean.³⁰ The average minimum January temperature is approximately 32°F and the average maximum temperature in July is 76°F.³¹ While rainfall varies across the Elliott, it averages 65 inches per year at lower elevations on the western edge of the forest, and 115 inches per year on the high, interior ridges. Rainfall is slightly less prominent on the eastern side of the Elliott.³²

³⁰ Oregon Department of State Lands & Oregon Department of Forestry. *Elliott State Forest Management Plan*. November 2011.

³¹ *ibid*

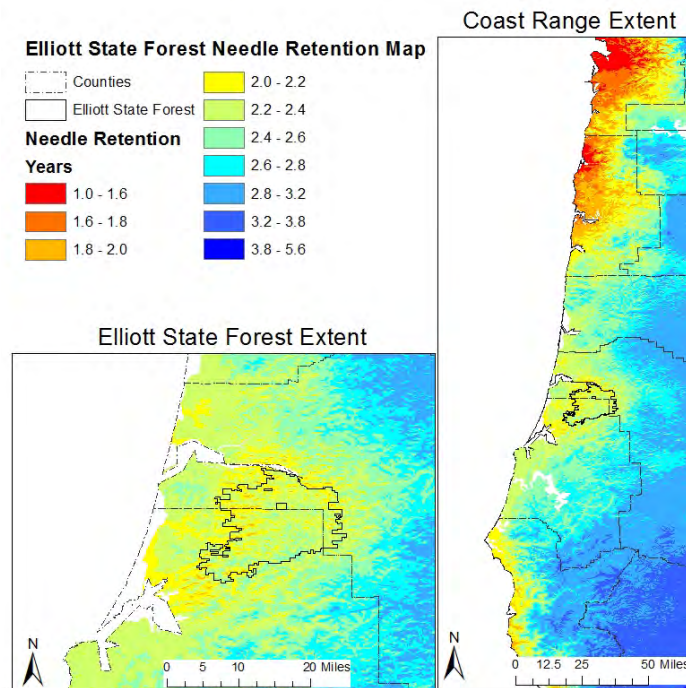
³² *ibid*

During the dry summer months, fog contributes a significant amount of moisture to vegetation on the western side of the Elliott through condensation, reducing moisture stress on vegetation.

Current Climate Productivity Impacts on the Elliott

In the Coastal Range of Western Oregon and Southwest Washington, Douglas fir is currently experiencing foliage loss and growth impacts from a foliage disease known as Swiss needle cast. This fungus clogs leaf stomates resulting in carbon starvation, foliage loss, and eventually a decline in tree growth. Cold winter temperatures deter growth and spread of the fungus.³³ As a member of the Swiss Needle Cast Cooperative, ODF has been monitoring and developing models to predict and assess potential forest growth losses due to Swiss needle cast. These models typically rely on measurements of the minimum temperatures in the winter and an indicator of leaf wetness in the late spring. Figure 14 shows one such model from Latta et al. (2010), which highlights the decrease in needle retention within the Coast Range as well as a close-up of the Elliott. The areas in yellow would be expected to see some level of growth reduction while red areas along the western edge indicate patches of severe impacts similar to those observed from ODF's annual aerial surveys.³⁴

Figure 14: Douglas-fir Needle Retention for Coast Range and Elliott State Forest



Source: Latta et al. (2010)

³³ How long in the year the Douglas fir needles stay wet also drives the spread of the fungus, so warming temperatures with no change in rainfall patterns may also deter growth and spread of the fungus as needles would dry out earlier in the year. Of course, warmer average temperatures may also lead to greater wildfire risk.

³⁴ Since 1996, ODF has been making annual observations of Swiss needle cast severity from aerial surveys, the maps of which can be found at (<http://sncc.forestry.oregonstate.edu/survey-maps>)

While forest managers do not have control over climate, they do have some control over the extent of these impacts associated with Swiss needle cast. For instance, when disease causes the potential economic loss in value growth of Douglas fir to be greater than the reduction in log value from the other species, they can modify their silvicultural efforts to favor species other than Douglas fir.

Future Climate Productivity Impacts on the Elliott

In order to understand recent historical climate variability in the Elliott State Forest, we examined annual temperature and precipitation data for the period 1895–2012 (see Figure 15). We produced these historical estimates using the Parameter-elevation Regressions on Independent Slopes Model (PRISM).³⁵ The PRISM data sets were developed at Oregon State University and are the most widely used spatial climate data sets in the United States.

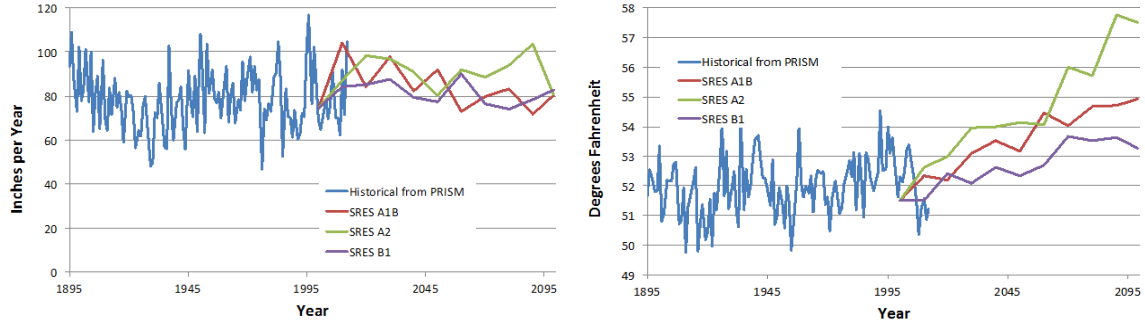
Figure 15 also includes a range of potential future climate regimes for the Elliott State Forest, based on analysis by Latta et al. (2010). The authors developed these projections using output from General Circulation Models (GCM)³⁶ for a suite of scenarios published in the fourth assessment report by the International Panel on Climate Change (IPCC). These future scenarios were also described in the IPCC General Guidelines on the *Use of Scenario Data for Climate Impact and Adaptation Assessment* (IPCC-TGICA, 2007). They represent three different future economic and environmental states of the world as follows:

- **SRES_A1B** - Balanced energy sources, globalization, rapid economic growth, population peaking mid-century then declining, and rapid introduction of technologies;
- **SRES_A2** - More regionalized future of slower economic growth, population that continuously rises, and slower adoption of technological advances; and
- **SRES_B1** - Environmentally sustainable focus with a shift toward an economy centered on service and information, with the same population growth assumptions as A1B.

³⁵ See Daly et al., (1994), Daly et al. (2008); The PRISM interpolation method is used to develop data sets that reflect, as closely as possible, the current state of knowledge of spatial climate patterns in the United States

³⁶ General Circulation Models (GCMs) are mathematical models developed to represent the physical processes occurring in the atmosphere, ocean, cryosphere and land surface. GCMs are widely regarded as the most advanced tools (currently) available for simulating the response of the global climate system to increased concentration of greenhouse gases.

Figure 15: Historical and Projected Average Annual Temperature and Precipitation for the Elliott State Forest

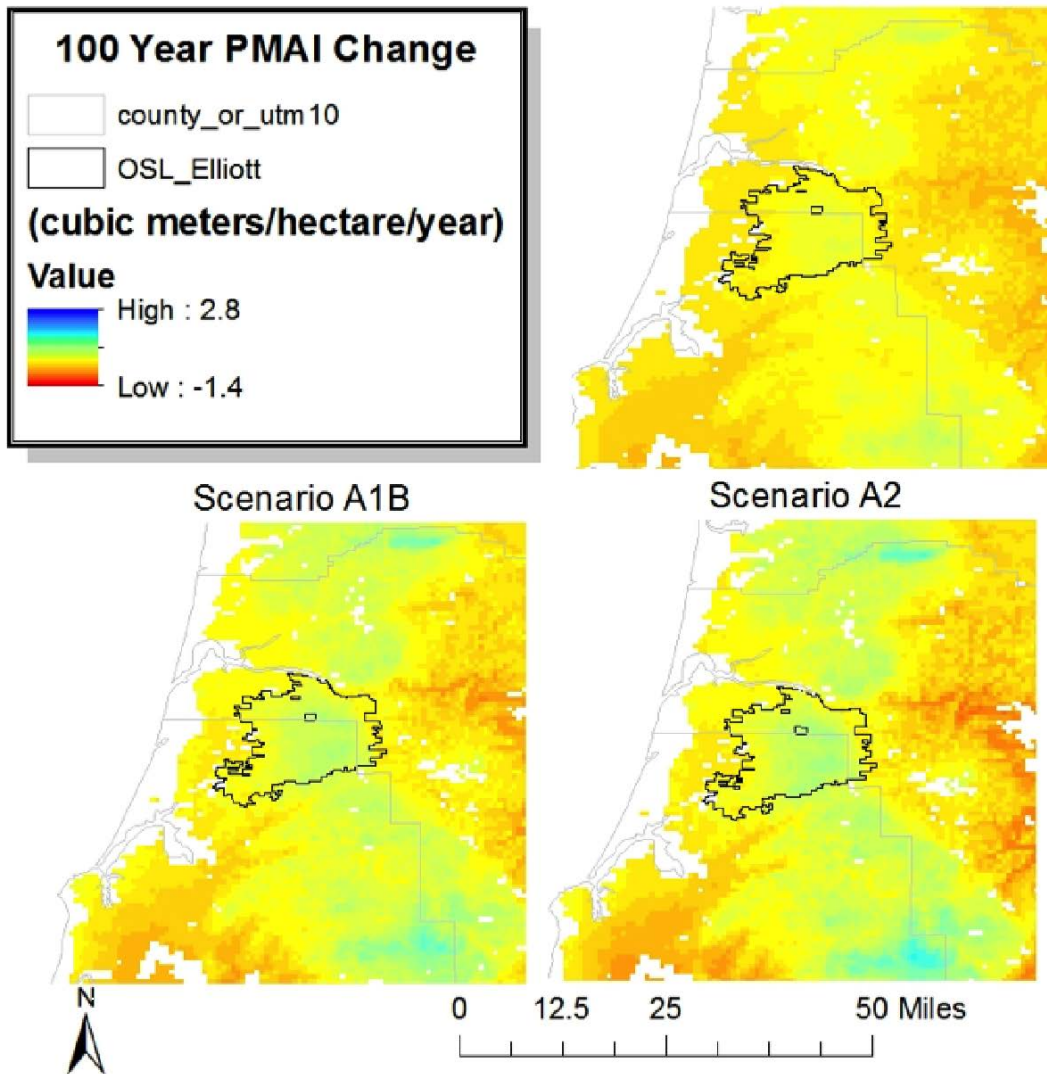


Source: Analysis by Evergreen Economics of data and analysis results from Daly et al., 1994

The authors found a significant amount of variability between the estimates provided by the different scenarios, as well as within each individual scenario at the regional level. Figure 16 depicts the Latta et al. (2010) data for the Elliott.³⁷ This figure indicates that the impacts of Swiss needle cast will be much less severe on the Elliott than in nearby regions, due to the presence of sufficient moisture and the moderate temperatures.

³⁷ We zoom in on data for Latta et al. (2010) Figure 6 in particular.

Figure 16: 100-year Change in Forest productivity for IPCC Scenarios
Scenario B1



Source: Analysis by Evergreen Team of information from Latta et al (2010)
 PMAI = potential mean annual increment; MAI is a standard measure of tree diameter growth

Conclusion

We do not believe that uncertainty about future climate conditions negatively affects the market value of the Elliott. Based on the results of Latta et al., it does not appear that climate change will affect the productivity of the Elliott over the next 100 years. Likewise, we do not know of any recent timberland sales in the Northwest where the risks associated with climate change have been explicitly included in the valuation. In this analysis, we do not explicitly consider the potential impacts—either positive or negative—changes in climate might have on the Elliott State Forest. While climate change may indeed pose significant risks to the Elliott at some future time, we believe that projected changes in

climate would not have a significant impact on the auction price offered by any potential purchaser of the Elliott.

Carbon Storage

Several stakeholders expressed interest in the potential income that the Common School Fund could realize through participating in the carbon-offset market. The carbon-offset market is a mechanism by which emitters of greenhouse gases pay another party to absorb a compensating amount of carbon, avoid releasing this amount of carbon by altering their management regime, or some combination of these two options.

Feasibility to Participate in the Carbon Offset Market

In 2010, ODF studied the feasibility of carbon storage in the Elliott State Forest as a source of revenue for the Common School Fund. They concluded that the Elliott could not generate sufficient revenue through the sale of carbon-offset credits to meet its mandate for the Common School Fund, mostly due to the protocol requirements for determining credits.

Risks Associated with Managing Forest for Carbon Sequestering

Even without generating income for the Common School Fund, there are societal benefits associated with carbon sequestration as a mitigation strategy for human-caused climate change. In a 2011 report, Ecotrust examined the carbon storage potential for the Elliott under five alternative scenarios for forest growth, timber yield, and carbon storage:³⁸

1. Maximum carbon storage
2. 30 MMBF annual timber harvest
3. 35 MMBF annual timber harvest
4. 40 MMBF annual timber harvest
5. Forest industry-like management

Under the maximum carbon storage scenario, the authors projected the total amount of carbon stored on site by 2050 would be 46.6 million metric tons of carbon dioxide equivalent (MMtCO_{2e}), which they equate to 68.5 percent of the annual emissions of greenhouse gases for the State of Oregon in 2007. The authors found that on-site storage of carbon under the maximum storage scenario is approximately double the on-site storage under their assumption of management under private ownership.

While not included within the executive summary of their report, the authors do acknowledge that their analysis does not account for secondary effects associated with any of the alternative scenarios.³⁹ Secondary effects come from the increased greenhouse gas emissions that will likely occur on other lands due to decreased (or lack of) harvesting in

³⁸ Davies, B.; Dettman, S.; Goslin, M.; Mertens, M.; Silverman, H. 2011. Carbon analysis of proposed forest management regimes on the Elliott State Forest. Ecotrust, Portland, OR. 35pp.

³⁹ *ibid* (p27).

the Elliott. In essence, the authors acknowledged that removing the Elliott from the regional timber supply does not affect the derived demand for timber, which is primarily a function of the demand for wood products within the North American economy.

The authors also failed to address the issue of wildfire risk associated with the maximum carbon storage scenario, or any of the other scenarios. Pursuing a management strategy that maximizes on-site carbon could increase the risk of catastrophic wildfire in the Elliott. In a recent study published in the journal *BioScience*, the authors state:⁴⁰

“...the carbon maximization approach neglects the influence of changing climatic conditions and stand density on fire weather, fire behavior, fire severity, and tree mortality, and ultimately the potential for a very slow forest recover...”

One can find evidence of the effects of catastrophic wildfires in the State of Oregon. The 2002 Biscuit Fire in southwest Oregon was the largest contiguous wildfire in Oregon history, covering nearly 500,000 acres. Campbell et al. (2007) estimated the direct release of carbon from the Biscuit fire to be equal to one-third of Oregon’s annual carbon release from the burning of fossil fuels.⁴¹ The authors also estimate that the Biscuit Fire reduced Net Biome Production in Oregon by more than half.⁴² Thus, while society may look to forests to mitigate the buildup of CO₂ in the earth’s atmosphere, doing so is not without risk, especially when the policy’s goal is to maximize onsite carbon storage.

⁴⁰ Hurteau and Brooks (2001) p141.

⁴¹ Campbell et al. (2007) p10.

⁴² *ibid*; *Net Biome Production* (NBP) is a measure of the net accumulation of organic matter in a large area and includes both the accumulation of carbon through sequestration and the loss of carbon in the ecosystem from timber and crop harvest, deforestation, fire, etc.).

5 Projected Age-class Distributions for Each Alternative

Figure17 through Figure21 show the distribution of acres by age class over the 100-year planning horizon for each alternative. For each figure, the starting distribution (in 2014) is the same. Over the ensuing 100 years, the distributions of age classes evolve differently for each alternative. For all alternatives, the number of acres 100 to 149 years of age decreases over the planning horizon and acres 66 to 99 years disappear. For every alternative, the number of acres in the 150+ age class increase.

Figure17: Changes in Age Class Distribution, Federal Agency Alternative

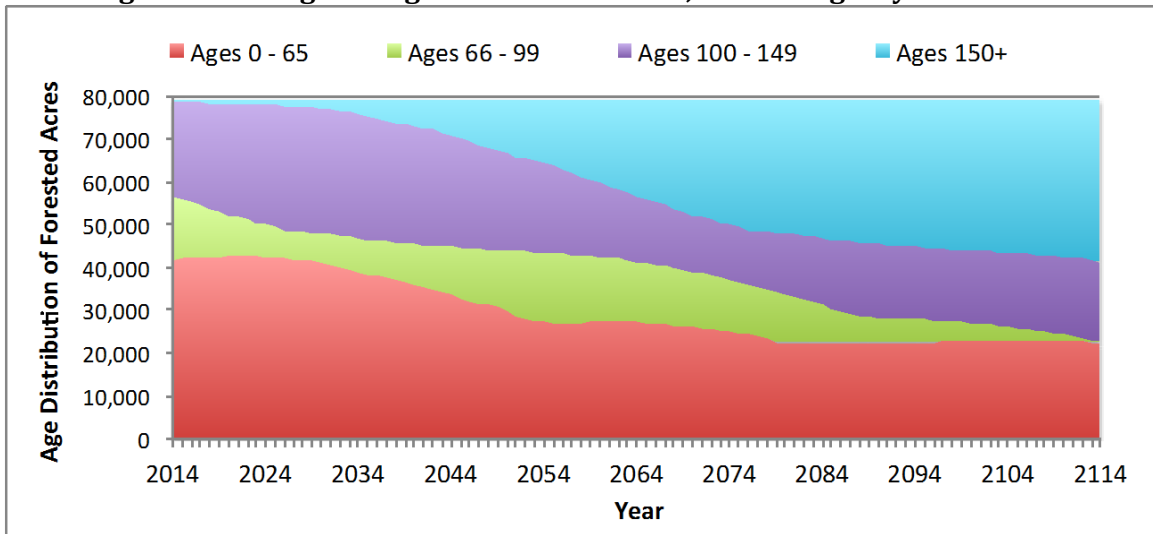
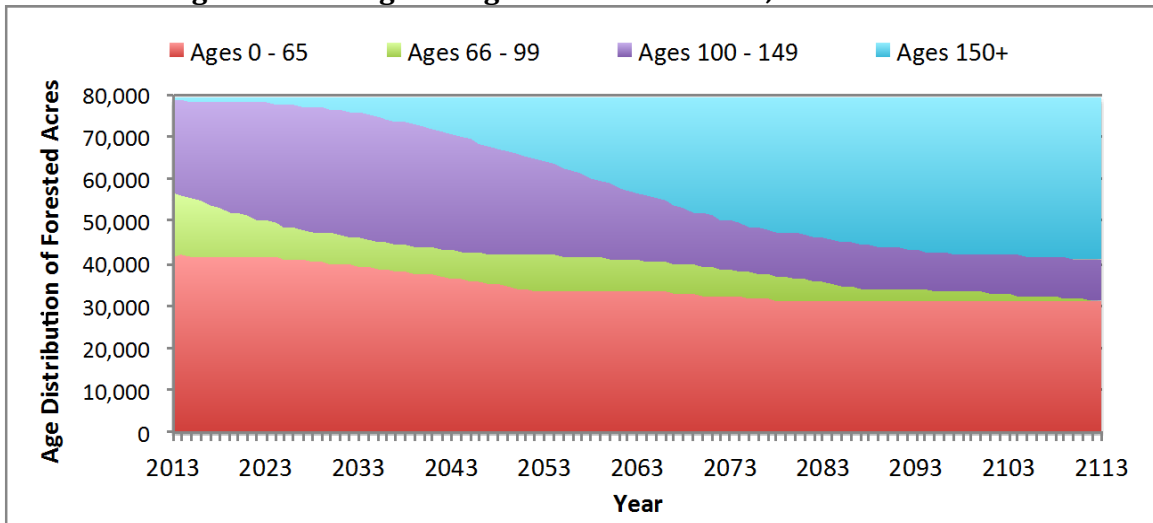


Figure 16: Changes in Age Class Distribution, HCP Alternative



The differences between alternatives with respect to NPV are explained by differences in the number of acres in the youngest age class—65 years or younger. This age class represents the “working forest.” The larger the working forest, the greater the NPV. Not surprisingly, the Public Auction alternative has by far the greatest number of acres in this age group (more than 60,000 for most of the planning period). Comparatively, the number of acres 0–65 years old for the Federal Agency alternative drops below 30,000 by 2050 and does not increase above 23,000 after 2078.

For each of the other alternatives, the number of acres in the “working forest” is somewhere between the Public Auction and Federal Agency alternatives.

Figure 19: Changes in Age Class Distribution, Private Management Plan Alternative

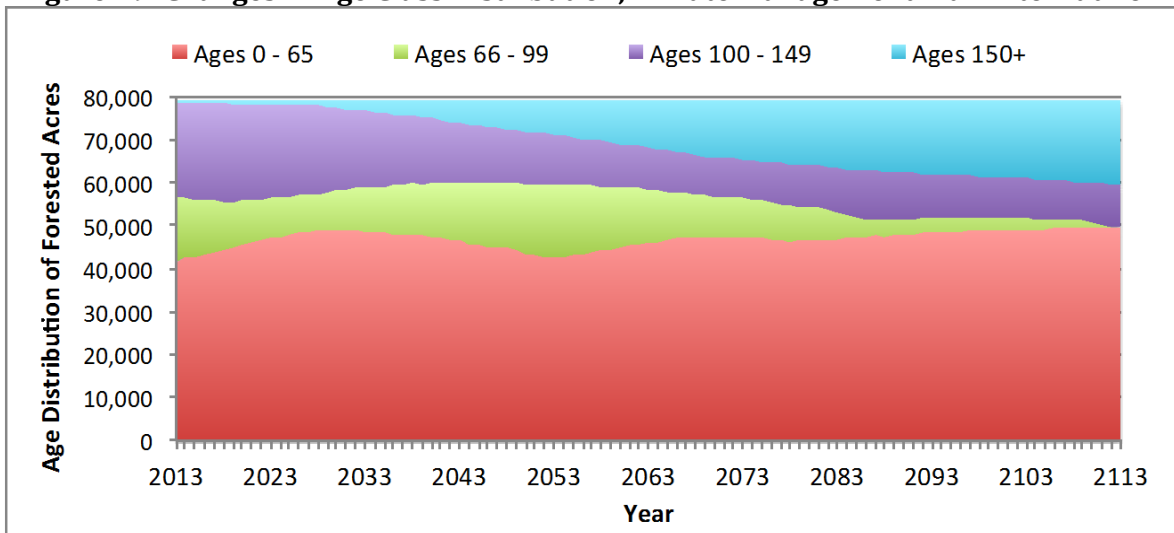
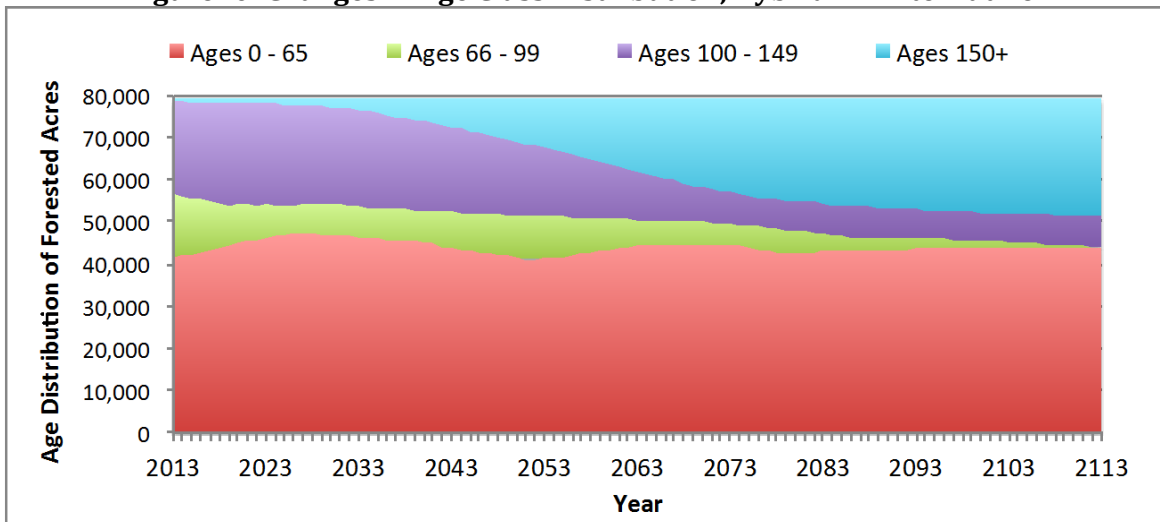


Figure 20: Changes in Age Class Distribution, Hybrid x 2 Alternative



Finally, it is important to note that our analysis assumes no large-scale natural disturbance in the Elliott such as fire, insect, or extreme windthrow. Instead, each figure projects the age distribution of the Elliott under continuous “normal” conditions. While it would be impossible to project the magnitude and timing of a large-scale natural disturbance, it is certainly possible that one could occur under all alternatives and perhaps especially for alternatives that emphasize biomass accumulation (e.g. Federal Agency and HCP alternatives).

Figure21: Changes in Age Class Distribution, Hybrid x 3 Alternative

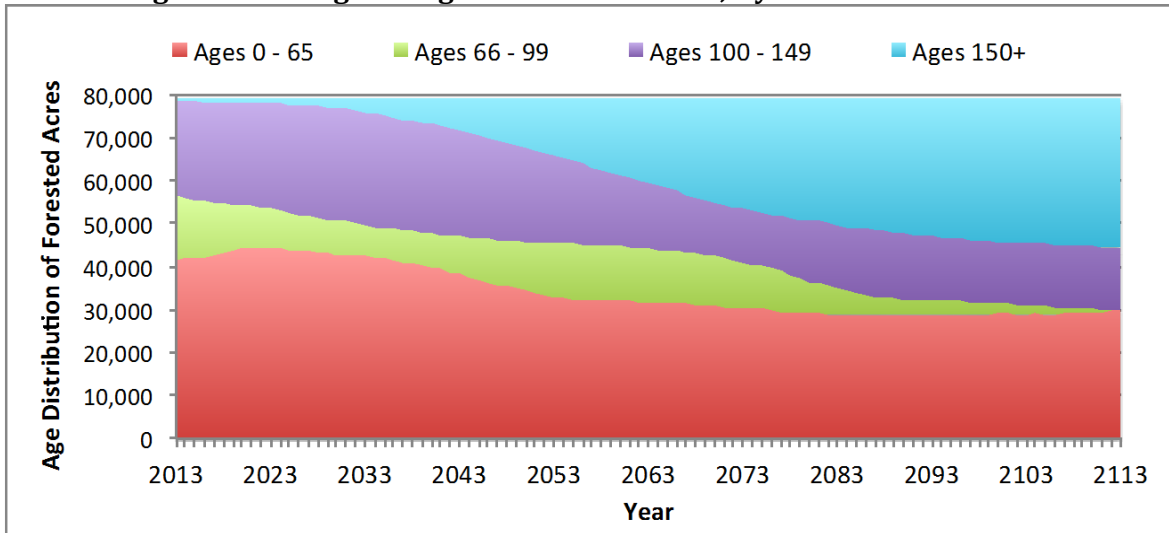
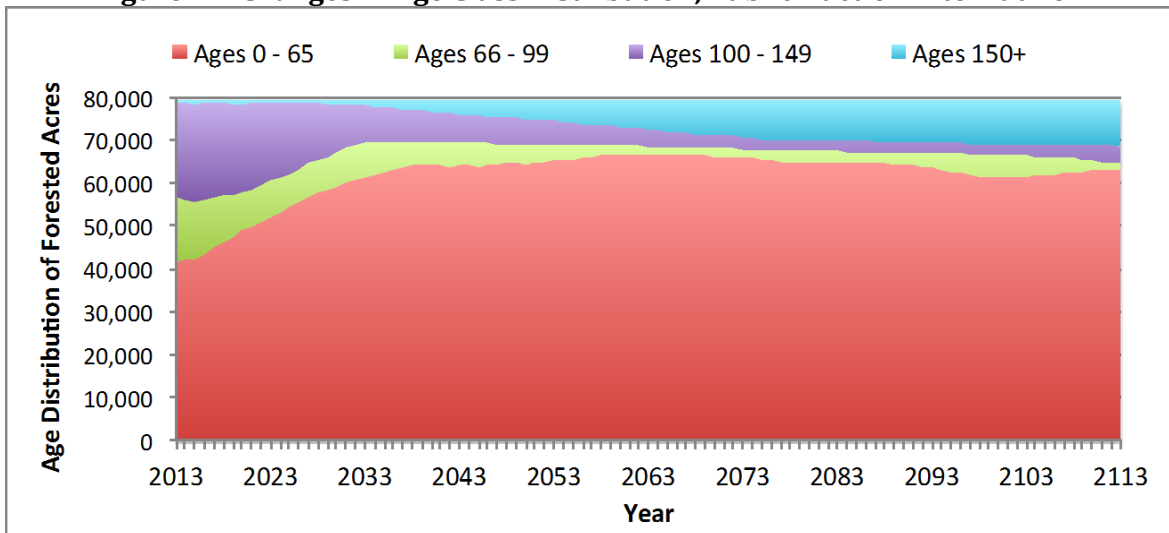


Figure 17: Changes in Age Class Distribution, Public Auction Alternative



6 Appendix Analysis of Current Recreation

The Elliott State Forest is home to recreational activities like hunting, fishing, and wildlife viewing. Recreation provides benefits to consumers that are not reflected in the market value of the land. Some of the alternatives may affect recreation in the Elliott by altering the frequency or duration of visits and/or the types of recreational activities. However, this is difficult to predict as a thorough analysis would require substantial assumptions. For the purposes of this analysis, we characterize and estimate the economic value of recreation as it currently occurs in the Elliott, but do not attempt to project how recreational activities or value might change under any of the alternatives.

We express the dollar value of recreation in terms of consumer expenditure and “consumer surplus.” Consumer expenditure includes all spending on travel, lodging, equipment, etc. associated with Oregonians and others choosing to partake in recreational activities in the Elliott. We determined the value of these expenditures by estimating the dollar value of all trip expenditures and modeling their economic impacts in Coos County and the state. Consumer surplus is a measure of the economic value derived by visitors beyond the cost of traveling to and recreating in the Elliott. We estimated the consumer surplus of visitors to the Elliott using the benefit transfer method, a standard approach in resource valuation in which estimates of values of similar sites published in the peer-reviewed literature are applied to the location of interest. The estimates of consumer surplus we present below represent the *willingness-to-pay* (WTP) by visitors to the Elliott in excess of their actual costs.

Recreational Visits

As part of a larger study on the economic impacts of the Elliott State Forest published in 2001, the researchers conducted a survey of visitors to the Elliott during fall and winter.⁴³ When these visitors were asked about their recreational activities in the Elliott, 90 percent said they were hunting. Other common recreational activities included wildlife viewing (42%), sightseeing (39%), camping (24%), off-highway vehicle (OHV) use (20%), and hiking (17%). Among *all* visitors, 84 percent identified hunting as their primary activity. For this reason, we elected to analyze recreation on the Elliott in two groups, hunting and all other recreation.

In a 2005 study of the Elliott conducted by Mason, Bruce & Girard, the authors estimated the total number of recreation visitor days spent in the Elliott each year to be about 24,000.⁴⁴ Based on information in the 2011 Elliott State Forest Management Plan, we assume recreation has remained and will continue to remain moderate.⁴⁵ Therefore, we

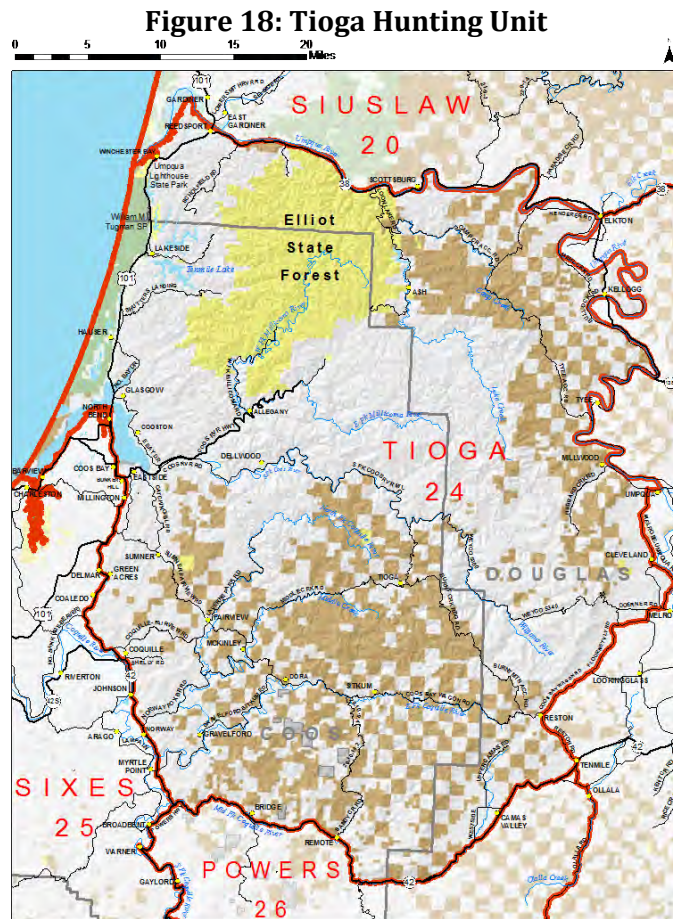
⁴³ John Anderson, Dae Beck, John D. Barnes, Chris Carter, Rebecca Johnson, Gary J. Lettman, Casey Pileggi, Thomas Potiosky, Hans D. Radke, Brian Rooney, Kanhaiya Vaidya. *Elliott State Forest Management Plan Revision: Connections to State and Local Economies*. ODF. September 2001.

⁴⁴ Mason, Bruce & Girard. *A Cost-Benefit Analysis of the Elliott State Forest Common School Fund Lands*. Prepared for Oregon Department of State Lands and Oregon Department of Forestry. January 2005. p42.

⁴⁵ “Recreational use of the Elliott State Forest is expected to remain moderate because of the steep terrain, distance from major metropolitan areas, and relative lack of access” (p 123). November 2011, DSL & ODF

believe the estimate of 24,000 recreational visitor days per year is a reasonable estimate for 2014.

In order to determine the number of visitor days in the Elliott attributable to hunting, we analyzed hunting tag counts from the Oregon Department of Fish and Wildlife⁴⁶ for the most common game species hunted in the Elliott (blacktail deer, Roosevelt elk, and black bear).⁴⁷ Ten percent of land in the Fish and Wildlife’s Tioga hunting management unit lies within the Elliott and 33 percent of the Tioga hunting unit is in public ownership.⁴⁸ Thus, the Elliott constitutes 30 percent ($0.10/0.33 = 0.30$) of public lands in the Tioga hunting unit.



Because hunters may not have access to many of the private lands within the Tioga unit, we assumed that two-thirds of Tioga hunters use public lands and that 30 percent of them

⁴⁶ http://www.dfw.state.or.us/resources/hunting/big_game/controlled_hunts/reports/

⁴⁷ Oregon Department of State Lands & Oregon Department of Forestry. *Elliott State Forest Management Plan*. November 2011. p42.

⁴⁸ Conversation with ODFW staff.

hunt the Elliott.⁴⁹ Therefore, we estimate that 20 percent ($0.667 \times 0.30 = 0.20$) of Tioga hunters hunt on the Elliott. From this, we estimate that the annual number of hunters and hunting days on the Elliott is equal to 20 percent of the 5-year average for total Tioga hunters and days (see Table 18).

Table 18: Estimation of Hunter Counts and Days for the Elliott

Year	Deer		Elk		Bear		Total	
	Hunters	Days	Hunters	Days	Hunters	Days	Hunters	Days
2009	3,960	29,264	4,312	30,048	1,140	15,004		
2010	4,006	30,417	3,916	24,467	1,620	19,279		
2011	3,475	29,892	3,827	25,725	985	9,846		
2012	3,889	28,793	4,267	25,925	NA	NA		
2013	4,113	30,261	3,833	23,086	1,457	13,605		
5-Year Avg.	3,889	29,725	4,031	25,850	1,301	14,434	9,220	70,009
Est. Elliott	778	5,945	806	5,170	260	2,887	1,844	14,002

Source: Analysis by Evergreen Economics of data from Oregon Department of Fish & Wildlife and other sources

Based on the ODFW hunting tag data and our assumptions, we estimate that approximately 14,000 visitor days are attributable to hunting in the Elliott and therefore, the remaining 10,000 visitor days are attributable to non-hunting recreational activities.⁵⁰

Visitor Spending

The Elliott State Forest 2000-2001 visitor survey⁵¹ asked respondents to estimate how much money they spent in Coos County in 16 different sectors and three types of “other” categories during their trip to the Elliott. The researchers adjusted visitor expenditures to isolate the proportion of spending devoted to the Elliott. The survey found that 13 percent of visitors were visiting multiple locations; within this group, 76 percent of visitor spending was devoted to the Elliott. For those visiting multiple locations, we only consider those expenditures devoted to the Elliott. For those only visiting the Elliott, we included all of their trip expenditures. Respondents reported the average trip expenditures in 2001 dollars, as shown in **Table 19**.

The survey also found that 58 percent of the people who visited multiple locations said they would still have made the trip if the Elliott had not been available. Since their expenditures (even those devoted to their time in the Elliott) would have occurred if the Elliott were not available, we cannot attribute their expenditures to the Elliott. Since 13 percent of respondents visited multiple locations, we estimated that the percentage of

⁴⁹ *ibid*

⁵⁰ Note: The only way to truly know what percent of hunters that drew tags for the Tioga hunted the Elliott would be to conduct a scientific survey. However, our only purpose in estimating the number of hunters and hunter days on the Elliott is to apportion the assumed 24,000 visitor days between hunters and non-hunters. Thus, for our purpose, a reasonable approximation is sufficient.

⁵¹ John Anderson, Dae Beck, John D. Barnes, Chris Carter, Rebecca Johnson, Gary J. Lettman, Casey Pileggi, Thomas Potiosky, Hans D. Radke, Brian Rooney, Kanhaiya Vaidya. *Elliott State Forest Management Plan Revision: Connections to State and Local Economies*. ODF. September 2001. P123-130.

visitors whose expenditures cannot be attributed to the Elliott is about 7.5 percent ($0.58 \times 0.13 = 0.0754$). We calculated the trip expenditures attributable to the Elliott to be 92.5 percent ($1 - 0.0754 = 0.9246$) of the expenditures reported for the average trip to the Elliott.

In order to convert the trip costs to daily costs, we divided the average expenditure in each sector by the average trip length reported in the 2001 report (2.8 days). Finally, we adjusted the values to 2014 dollars using the All Urban Consumer's Price Index (CPI). The last two columns in **Table 19** show the average per-day sector-level spending made by visitors attributable to the Elliott, in 2014 dollars.

Table 19: Local Expenditures Attributable to Recreation in the Elliott State Forest

Sector	Spending <i>per Trip</i> for Visit to Elliott 2001 Dollars ⁵²		Spending <i>Per Day</i> Attributed to Elliott 2014 Dollars	
	Hunters	Non-hunters	Hunters	Non-hunters
Hotel, motel, cabin, bed & breakfast	\$1.62	\$7.90	\$0.69	\$3.36
Private campgrounds	\$2.39	\$1.97	\$1.02	\$0.84
Public campgrounds	\$3.08	\$1.97	\$1.31	\$0.84
Temporary hunting or fishing licenses	\$16.71	\$2.83	\$7.11	\$1.20
Fishing/hunting guides, access fees	\$3.97	\$0.0	\$1.69	\$0.0
Gear, bait, ammunition	\$38.17	\$4.62	\$16.24	\$1.97
Other fishing & hunting expenses	\$25.21	\$4.98	\$10.73	\$2.12
Food & beverage stores	\$33.99	\$41.08	\$14.46	\$17.48
Eating & drinking places	\$8.99	\$6.72	\$3.82	\$2.86
Gasoline & oil	\$52.10	\$31.54	\$22.17	\$13.42
Auto, RV, or OHV rental	\$0.03	\$0.13	\$0.01	\$0.06
ATV registration fee	\$0.87	\$1.23	\$0.37	\$0.52
Other transportation expenses	\$4.75	\$1.96	\$2.02	\$0.83
Recreation equipment rental	\$0.0	\$0.0	\$0.0	\$0.0
Tourist attraction admissions	\$0.0	\$0.0	\$0.0	\$0.0
Other recreation expenses	\$0.60	\$0.0	\$0.26	\$0.0
Other retail expenses	\$19.72	\$0.64	\$8.39	\$0.27
Total Expenditure	\$212.20	\$107.57	\$90.28	\$45.77

Source: Analysis by Evergreen Economics of survey data from 2001 DSL/ODF report.

We calculated the total annual visitor spending attributed to the Elliott for recreation by multiplying the daily expenditures for visitors to the Elliott by the estimated number of visitor days for hunters and non-hunters. These values were the inputs for our economic impact models.

We estimated the economic impacts using the IMPLAN input-output model.⁵³ The IMPLAN model uses 440 different industry sectors and calculates estimated impacts based on

⁵² *ibid.*

historical economic data for Coos County, allowing it to reflect the unique nature of the local economy. The IMPLAN model generates three types of economic effects:

- *Direct effects* are driven by project spending and represent production changes brought by increases in final demand. For example, expenditure on hunting/fishing supplies increases final demand for fishing poles, bait, and ammunition.
- *Indirect effects* result from changes in the demand for “factor inputs” caused by project activities. For instance, indirect effects account for any additional materials purchased or rented by the hunting/fishing guides hired by visitors.
- *Induced effects* result from the ways households and workers spend newfound money, from labor income, on general consumer goods and services. The term “induced” refers to the fact that these effects reflect impacts on industries that were not directly involved with the recreation or in supplying a recreationist’s factor inputs.

When spending occurs outside the local economy, the impact of this spending will not show up in a county-level model. Due to the rural nature of Coos County, we expect that a significant portion of goods and services will come from outside the county. For this reason, we ran a separate Oregon State model that captures the economic impacts of recreation on the Elliott that fall outside of Coos County but within the state.

We used the same per-day spending inputs for the state and county models, which we computed based on information reported in the 2001 ODF report. The recreation spending information reported in the ODF report only considers spending that occurred within Coos County. The authors of that 2001 report did not collect information on spending by visitors to the Elliott that occurred in other parts of Oregon. Because of this, one should view our estimates of statewide economic impacts as a lower-bound estimate of the actual statewide impacts associated with recreation on the Elliott.

Table 20 shows our estimates of the economic impact associated with hunting and other recreation for Coos County and Table 21 shows the same information for the State of Oregon. Based on our estimate of 14,000 visitor days per year by hunters and 10,000 visitor days by non-hunters and the per-day estimates of spending shown in **Table 19**, we estimate total annual spending in Coos County of about \$1.26 million by hunters and \$460,000 by non-hunters, in 2014 dollars. The fact that our estimates of total economic output at both the county and state level are less than total annual spending by hunters and non-hunters (about \$1.72 million) indicates the degree to which recreational spending leaks out of the local and state economy. For example, much of the recreational spending is

⁵³ The IMPLAN model is the most commonly used model in the U.S. to estimate economic impacts. It is based on data assembled for national income accounting purposes, thereby providing a tool that has a robust link to widely accepted data development efforts. The United States Department of Agriculture (USDA) recognized the IMPLAN modeling framework as “one of the most credible regional impact models used for regional economic impact analysis” and, following a review by experts from seven USDA agencies, selected IMPLAN as its analysis framework for monitoring job creation associated with the ARRA of 2009. See excerpts from an April 9, 2009 letter to MIG, Inc., from John Kort, Acting Administrator of the USDA Economic Research Service, on behalf of Secretary Vilsack, at www.implan.com.

likely on gasoline and diesel fuel produced outside of Oregon; thus, the local and statewide impacts associated with purchasing motor fuels are relatively small.

Table 20: Estimated Economic Impacts in Coos County from Recreation in the Elliott, Based on Estimated \$1.7 Million in Visitor Spending in Coos County, 2014 \$

Activity	Impact	Direct	Indirect	Induced	Total
Hunting	Output	\$568,126	\$93,841	\$86,180	\$748,147
	Wages	\$162,086	\$25,582	\$22,405	\$210,074
	Jobs	6.8	0.8	0.8	8.4
	Other Income	\$89,852	\$24,292	\$25,390	\$139,534
Other Recreation	Output	\$195,017	\$31,928	\$33,963	\$260,909
	Wages	\$67,710	\$8,844	\$8,830	\$85,383
	Jobs	2.7	0.3	0.3	3.3
	Other Income	\$24,447	\$8,274	\$10,006	\$42,727
Total Recreation	Output	\$763,144	\$125,769	\$120,143	\$1,009,055
	Wages	\$229,796	\$34,426	\$31,235	\$295,457
	Jobs	9.5	1.1	1.1	11.7
	Other Income	\$114,299	\$32,565	\$35,396	\$182,261

Source: Analysis by Evergreen Economics using IMPLAN software

Table 21: Estimated Economic Impacts in Oregon from Recreation in the Elliott, Based on Estimated \$1.7 Million in Visitor Spending in Coos County, 2014 \$

Activity	Impact	Direct	Indirect	Induced	Total
Hunting	Output	\$568,126	\$188,980	\$209,512	\$966,618
	Wages	\$162,086	\$55,378	\$63,122	\$280,586
	Jobs	6.8	1.3	1.7	9.8
	Other Income	\$89,852	\$43,642	\$50,729	\$184,223
Other Recreation	Output	\$195,017	\$64,223	\$75,393	\$334,633
	Wages	\$67,710	\$19,068	\$22,714	\$109,492
	Jobs	2.7	0.5	0.6	3.8
	Other Income	\$24,447	\$15,106	\$18,256	\$57,808
Total Recreation	Output	\$763,144	\$253,203	\$284,905	\$1,301,252
	Wages	\$229,796	\$74,446	\$85,836	\$390,078
	Jobs	9.5	1.8	2.3	13.6
	Other Income	\$114,299	\$58,748	\$68,984	\$242,032

Source: Analysis by Evergreen Economics using IMPLAN software

Note: Because the only data available to us is for spending in Coos County, these estimates of statewide economic impact should be considered a "lower-bound."

Consumer Surplus

Consumer surplus represent the *willingness to pay* (WTP) for a good or service above the actual market cost of that good or service. For recreation in the Elliott State Forest,

consumer surplus represent the economic value enjoyed by visitors above the monetary cost of traveling to and recreating in the Elliott. We obtained estimates of consumer surplus for various types of recreation from a 2005 report published by the U.S. Forest Service.⁵⁴ We converted the reported consumer surplus values to 2014 dollars and computed an average per-day value for each recreational activity that might occur in the Elliott. We also computed the lower and upper bounds of a 90 percent confidence interval of the per-day consumer surplus for each activity (see Table 22).

Table 22: Per-Day Estimates of Consumer Surplus for Outdoor Recreation, 2014 \$

Activity	Average	Lower 90%	Upper 90%
Fishing	\$41.50	\$21.00	\$62.00
Boating/ Rafting/ Canoeing	\$31.80	\$29.10	\$34.50
Hiking	\$93.40	\$38.53	\$148.22
Hunting	\$65.00	\$29.00	\$101.00
Mountain Biking	\$56.80	\$51.30	\$62.30
Wildlife Viewing	\$33.20	\$25.20	\$41.30
Camping	\$54.20	\$26.30	\$82.10

Source: Analysis by Evergreen Economics of data from John Loomis' 2005 study

In addition, we estimated the total consumer surplus for recreation in the Elliott by multiplying the estimated visitor days by the mean consumer surplus for each type of recreation. We assumed that 30 percent of non-hunting visitor days could be attributed to camping, 30 percent to fishing, 30 percent to wildlife viewing, and 10 percent to all other non-hunting recreation.⁵⁵ Table 23 shows the estimated mean consumer surplus values and associated confidence interval for hunting and all other recreation.

Table 23: Estimated Current Recreational Activity and Economic Value (WTP above travel costs), 2014 Dollars

Recreation Activity	Visitor Days Per Year	Per Day WTP	Total WTP	Total WTP Lower 90%	Total WTP Upper 90%
Hunting	14,000	\$65.00	\$910,000	\$406,000	\$1,414,000
Other Recreation*	10,000	\$45.00	\$450,000	\$257,000	\$638,000
Total	24,000	\$56.67	\$1,360,000	\$663,000	\$2,052,000

Source: Analysis by Evergreen Economics of data various sources

Total Value of Recreation on the Elliott

Based on our analysis, we estimate that recreation in the Elliott is responsible for approximately \$390,000 in wages in Oregon and about \$1.3 million in economic output. In

⁵⁴ Loomis, John, 2005, Updated outdoor recreation use values on national forests and other public lands. Gen. Tech. Rep. PNW-GTR-658. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 26 p.

⁵⁵ In fact, we do not know the actual distribution of activities, but it is likely the lower and upper bounds of the confidence interval captures the actual distribution.

addition, we estimate consumer surplus for recreation in the Elliott (economic value in excess of the cost to visit the Elliott), to be about \$1.4 million for 2014.

7 Maps of Hybrid x 3 and Hybrid x 4 Alternatives

Figure 19: Split of Elliott Assumed for Hybrid x 3

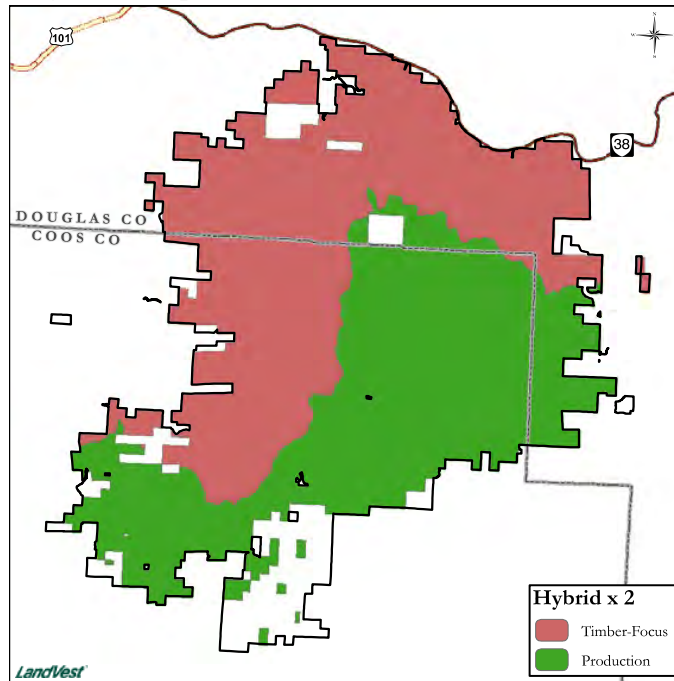
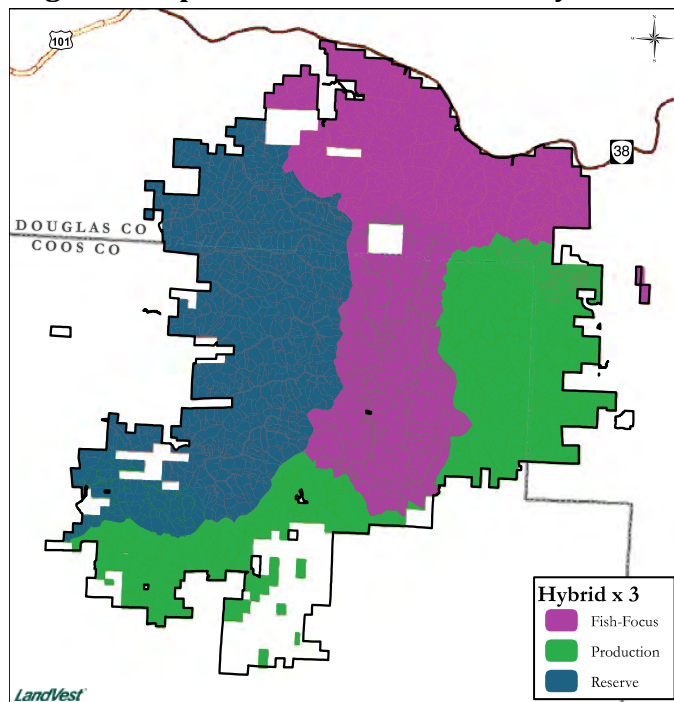


Figure 20: Split of Elliott Assumed for Hybrid x 3



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