

Oregon Board of Forestry – Virtual Public Meeting

Wednesday, November 3, 2021

With the current public gathering restrictions, the Board of Forestry will hold its November meeting virtually to allow interested persons to view the meeting and participate statewide without having to travel or assemble indoors. The Board of Forestry public meeting will be conducted online and streamed live. There will be an opportunity for the public to provide live testimony during the meeting under the general comment portion of item one and nine, as well as for decision item eight. Sign up to provide live testimony is required and available online, registration closes Friday, October 29 at 5:00 p.m. Written testimony may be submitted for information items, before or up to two weeks after the meeting day to boardofforestry@oregon.gov with the agenda item number included with the submission.

Link to view Board of Forestry Meeting available at
<https://www.youtube.com/c/OregonDepartmentofForestry>

Prior meetings' audio and this meeting's written material available on the web www.oregon.gov/odf/board. The matters under the Consent Agenda will be considered in one block. Any board member may request removal of any item from the consent agenda. Items removed for separate discussion will be considered after approval of the consent agenda. Public comment will not be taken on consent agenda items.

Consent Agenda

8:00 – 8:01	A.	<u>June 9, 2021, Board of Forestry Meeting Minutes</u>	State Forester Nancy Hirsch
8:00 – 8:01	B.	<u>Department Financial Report – September and October 2021</u>	Bill Herber
8:00 – 8:01	C.	<u>Endangered Species Management Plan</u>	Nick Palazzotto and Justin Butteris
8:00 – 8:01	D.	<u>Fire Season Summary</u>	Mike Shaw
8:00 – 8:01	E.	<u>SB762 – Certified Burn Manager progress report</u>	Tim Holschbach

Action and Information

8:01 – 8:45	1.	<u>State Forester and Board Member Comments</u> A. <u>Public Comments</u> [for topics not on agenda-see page 3]	Register online
8:45 – 9:30	2.	<u>Urban and Community Forestry Assistance Program and Oregon Community Trees</u> <i>The Department organized presentation to review the work of the Urban Community Forestry (UCF) program over the past year, plans for transition to new staff, and opportunities for increasing program outreach and impact. Oregon Community Trees will talk about the work of Oregon Community Trees (OCT), its partnership with ODF-UCF, and how it will facilitate the transition to new ODF-UCF staff. This is an information item.</i>	Kristin Ramstad, ODF-UCF Program Manager, and OCT Leader
9:30 – 9:45		Break	
9:45 – 10:45	3.	<u>Annual Forest Practices Monitoring Update</u>	Josh Barnard, Terry Frueh, Paul Clements, Adam Coble and John Hawksworth <i>The Department will provide an update on the Monitoring Unit's work over the previous year. This is an information item.</i>
10:45 – 11:30	4.	<u>Forest Health Status Update</u> <i>The Department will provide an update on current projects and pressing forest health issues to date for 2021. This is an information item.</i>	Christine Buhl and Wyatt Williams
11:30 – 12:30	5.	<u>State Forests Metrics</u> <i>The Department will provide a presentation of State Forests metrics regarding forest inventory and structure, harvest volume and value, watershed function, and recreation infrastructure and public use. This is an information item.</i>	Tyson Wepprich
12:30 – 1:15		Lunch	
1:15 – 1:30	6.	<u>Forest Trust Land Advisory Committee Testimony</u>	David Yamamoto or John Sweet <i>The FTLAC is a statutorily established committee that advises the Board on State Forests policy. This is an information item.</i>
1:30 – 2:30	7.	<u>State Forest Management Planning Update</u> <i>The Department will provide an update on the development of the Western Oregon State Forests Forest Management Plan (FMP) and Habitat Conservation Plan, including an update on the National Environmental Policy Act process. The Board will review proposed draft FMP goals and revised guiding principles with recommended changes, and be given a progress update, including stakeholder engagement. This is an information item.</i>	Liz Dent, Troy Rahmig, Tere O'Rourke, and Kate Skinner

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| 2:30 – 2:45 | Afternoon Break |
| 2:45 – 3:30 | 8. <u>Department of Forestry Climate Change and Carbon Plan</u>Danny Norlander and John Tokarczyk
<i>The Department will provide the final draft of the Climate Change and Carbon Plan to the Board, seeking adoption of the plan. This is a decision item.</i> |
| 3:30 – 4:30 | 9. <u>Board Closing Comments and Meeting Wrap Up</u>Chair Kelly and Board Members
A. Public Comments [for topics on agenda – see page 3]
B. Board Chair and members <i>to summarize meeting’s action items and provide closing comments.</i> |

Times listed on the agenda are approximate. At the discretion of the chair, the time and order of agenda items—including addition of an afternoon break—may change to maintain meeting flow. The board will hear public testimony [*excluding marked items] and engage in discussion before proceeding to the next item. * A single asterisk preceding the item number marks a work session, and public testimony/comment will not be accepted.

BOARD WORK PLANS: Board of Forestry (Board) Work Plans result from the board's identification of priority issues. Each item represents commitment of time by the Board of Forestry and Department of Forestry staff that needs to be fully understood and appropriately planned. Board Work Plans form the basis for establishing Board of Forestry meeting agendas. Latest versions of these plans can be found on the Board's website at: <https://www.oregon.gov/odf/Board/Pages/AboutBOF.aspx>

PUBLIC TESTIMONY: The Board of Forestry places great value on information received from the public. The Board will accept both oral and written comments on agenda items except consent agenda and Work Session items [see explanation below]. Live oral testimony at the meeting is designated for decision items and open comment registration is required. Those wishing to testify or present information to the Board are encouraged to:

- Provide written summaries of lengthy, detailed information.
- Remember that the value of your comments is in the substance, not length.
- For coordinated comments to the Board, endorse rather than repeat the testimony of others.
- To ensure the Board will have an opportunity to review and consider your testimony before the meeting, please send comments no later than 72 hours prior to the meeting date. If submitted after this window of time the testimony will be entered into the public record but may not be viewed by the Board until after the meeting.
- For in-person meetings, sign in at the information table in the meeting room when you arrive. For virtual meetings, follow the sign-up instructions provided in the meeting agenda.

Written comments for public testimony provide a valuable reference and may be submitted before, during, or up to two weeks after the meeting for consideration by the Board. Please submit a copy to boardofforestry@oregon.gov, and written comments received will be distributed to the Board. Oral or written comments may be summarized, audio-recorded, and filed as record. Audio files and video links of the Board's meetings are posted within one week after the meeting at <https://www.oregon.gov/odf/Board/Pages/BOFMeetings.aspx>

The Board cannot accept comments on consent agenda items or a topic for which a public hearing has been held and the comment period has closed. If you wish to provide oral comments to the Board, you must email the Board Administrator to sign up for live testimony, contact Hilary.Olivos-Rood@oregon.gov, by 5 p.m. Friday, October 29, 2021. Instructions for providing public comment virtually will be confirmed by email and the link provided before the meeting.

Three minutes will be allotted for each individual to provide their comments. The maximum amount of time for all public testimony for agenda items with a Board decision will be thirty minutes.

WORK SESSIONS: Certain agenda topics may be marked with an asterisk indicating a "Work Session" item. Work Sessions provide the Board opportunity to receive information and/or make decisions after considering previous public comment and staff recommendations. No new public comment will be taken. However, the Board may choose to ask questions of the audience to clarify issues raised.

- During consideration of contested civil penalty cases, the Board will entertain oral argument only if Board members have questions relating to the information presented.
- Relating to the adoption of Oregon Administrative Rules: Under Oregon's Administrative Procedures Act, the Board can only consider those comments received by the established deadline as listed on the Notice of Rulemaking form. Additional input can only be accepted if the comment period is formally extended (ORS 183.335).

GENERAL INFORMATION: For regularly scheduled meetings, the Board's agenda is posted on the web at www.oregonforestry.gov two weeks prior to the meeting date. During that time, circumstances may dictate a revision to the agenda, either in the sequence of items to be addressed, or in the time of day the item is to be presented. The Board will make every attempt to follow its published schedule and requests your indulgence when that is not possible.

In order to provide the broadest range of services, lead-time is needed to make the necessary arrangements. If special materials, services, or assistance is required, such as a sign language interpreter, assistive listening device, or large print material, please contact our Public Affairs Office at least three working days prior to the meeting via telephone at 503-945-7200 or fax at 503-945-7212.

Use of all tobacco products in state-owned buildings and on adjacent grounds is prohibited.

DRAFT Board of Forestry Meeting Minutes

June 9, 2021

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Items listed in order heard.

Complete audio recordings from the meeting and attachments are available within each agenda item and at www.oregonforestry.gov.

In accordance with the provisions of ORS 526.016, a meeting of the Oregon Board of Forestry was held virtually on June 9, 2021, and hosted at the Oregon Department of Forestry Headquarters on 2600 State Street, Salem, OR 97310.

All Board members joined in-person with presenters and public joined remotely in the Zoom public meeting. Chair Kelly called the virtual public meeting to order at 9:00 a.m. and conducted a roll call to confirm quorum. He noted for the record, Board member Joe Justice absence. Chair Kelly outlined the virtual Board proceedings for Board members, presenters, and the public. Stated the public meeting will

be live streamed, recorded, and posted online. He mentioned that written public testimony can be submitted through June 23, 2021, and included with the meeting record.

Board Members Present:

Karla Chambers
Ben Deumling
Chandra Ferrari
Brenda McComb
Jim Kelly

Board Members Absent:

Joe Justice

CONSENT AGENDA:

- A. MARCH 3, 2021, BOARD OF FORESTRY MEETING MINUTES
March 3, 2021, Board of Forestry meeting minutes removed from agenda, and are still in production.
- B. APRIL 21, 2021, BOARD OF FORESTRY ORIENTATION AND TOUR MEETING MINUTES
Approved the April 21, 2021, Board of Forestry meeting minutes for virtual orientation and tour.

ACTION: Approved April 21, 2021, Board of Forestry Orientation and Tour meeting minutes.

- C. 2020 GOVERNMENT-TO-GOVERNMENT REPORT ON TRIBAL RELATIONS
The Government-to-Government report on tribal relations summarized agency's annual activities under Oregon Revised Statutes (ORS) 182.162 to 182.168, and pursuant to ORS 182.166 (3). This report is the Oregon Department of Forestry's (ODF) submission for calendar year 2020.

INFORMATION ONLY.

- D. ANNUAL LETTERS TO THE STATE FORESTER
Report to the Board concerning the contents of the annual letters received from the nine non-operating forest protective associations and the written response made to those letters. For 2021, no letters were received from the Fire Protective Associations.

INFORMATION ONLY.

- E. RANGELAND ASSOCIATION BUDGETS
The Board of Forestry approved annual budgets of the Rangeland Fire Protection Associations currently operating in eastern Oregon.

ACTION: Board approved the fiscal year 2022 budgets of the Ashwood-Antelope, Bakeoven-Shaniko, Blue Mountain, Brothers Hampton, Burnt River, Crane, Fields-Andrews, Frenchglen, Gateway, Greater Pine Valley, High Desert, Ironside, Jordan Valley, Juntura, Lone Pine, Lookout Glasgow, Post Paulina, Silver Creek, Twickenham, Vale, Wagontire, Warner Valley, WC Ranches, and Wheeler County Fire & Rescue Rangeland Fire Protection Associations.

F. FINANCIAL DASHBOARD UPDATE

Department provided an executive financial report and summary submitted monthly to the Board, which includes March, April, and May 2021. The report included up-to-date information about the Department's financial condition, the financial and budgetary status, as well as other ancillary topics as appropriate for Board oversight.

INFORMATION ONLY

G. HUMAN RESOURCES DASHBOARD

Department provided an update on the agency's Human Resources program to the Board.

INFORMATION ONLY

H. FACILITIES CONDITIONS AND CAPITAL MANAGEMENT PLAN

Department provided an overview of the current status and condition of the agency's facilities statewide, the recurring and deferred maintenance needs, and investment strategy to manage the extensive network of facilities in Salem and the field to the Board.

INFORMATION ONLY

I. PUBLIC AFFAIRS REPORT

Department provided an overview on the agency's Public Affairs program and report on some of the agency's most common types of requests for information to the Board.

INFORMATION ONLY

J. STATE FORESTS PUBLIC USE RULEMAKING

Department provided an overview on the agency's Public Affairs program and report on some of the agency's most common types of requests for information to the Board.

INFORMATION ONLY

K. ODF-DEQ COLLABORATION QUARTERLY UPDATE

Department provided an overview on the collaboration interagency efforts and the anticipated outcomes for the agencies' water quality programs to the Board.

INFORMATION ONLY

Board Member Comments:

- Chair Kelly explained Item A production was delayed and removed from the agenda.
- Chair Kelly expressed difficulty in understanding the trends or state of the facilities presented for Item H and was reassured a simplified version would be considered in the future.

Brenda McComb motioned to accept consent agenda items B through K. Karla Chambers seconded the motion. Voting in favor of the motion: Karla Chambers, Ben Deumling, Chandra Ferrari, Brenda McComb, and Jim Kelly. Against: none. With Board consensus Items B through K were accepted, and the motion carried.

ACTION AND INFORMATION:

1. BOARD MEMBER AND PUBLIC COMMENTS

[Listen to audio](#) MP3 – (30 minutes and 24 seconds – 13.9 MB)

Chair Kelly welcomed Board member comments and the Acting State Forester Nancy Hirsch to provide opening comments.

Acting State Forester Comments:

- Communicated primary priorities to the Board, Department, and the public. Expressed goals around building capacity to respond to the Department's financial immediate needs, to address employee wellbeing, to rebuild trust with Board, legislators, and Governor's office, and to continue implementation of the Macias, Gini, O'Connell (MGO) recommendations.
- Reviewed additional priorities such as 2021 fire season readiness, to maintain the work to fulfill the Board's initiatives, and complete the Department's core business. Aired appreciation for the support received from the Board, various Legislators, and the Governor's office.
- Explained the potential for growing capacity, opportunity to reorganize, and available funding for the 2021-2023 biennium as the Oregon Legislative session continues moving forward. She listed the various bills the Department's budget is tied to and many outcomes unknown.
- Honored to be at the Department and looked forward to continuing working with the Board.

Board Member Comments:

- Board member McComb appreciated Acting State Forester Hirsch open communication with the Board and agreement to take on this role, also expressed gratitude to Deputy State Forester Lena Tucker for providing legislative updates to the Board.
- Board member Chambers expressed commitment to support the Department and leadership as they resolve the cash issues and optimize the financial condition of the agency. She also thanked Acting State Forester Hirsch, Chair Kelly, Bill Herber, and staff for their work on this salient issue. Chair Kelly thanked Board member Chambers for her energy and dedication to work on the financial situation.
- Board member Ferrari echoed agreement with Board member McComb and Chambers comments, as well as shared her recent acceptance of employment with the Oregon Department of Fish and Wildlife (ODFW). She clarified the separation of roles, explaining the thoughts she provides as a Board member do not reflect the views and positions of the ODFW.

Public Testimony:

- Clair Klock provided oral testimony on the composition of the Board, the rebuilding of trust relative to forest management, and the sustainability of an organization. He spoke on the resilience of the forests, climate change being discussed, and vision of Oregon's forest extend beyond timber harvest.
- Laura Wilkeson from Hampton Lumber provided oral testimony to the Board on the company's history and the role wood products have relative to world market and local economies. Noted how wood products link to carbon sequestration, but urged innovative,

large-scale solutions to be considered beyond the reliance of the forest sector to tackle climate change alone.

- Seth Barnes from Oregon Forest Industries Council provided oral testimony to the Board on welcoming the new Board members as well as Acting State Forester Hirsch. He reflected on former Gary Springer's passing. He commented on the passage of the Private Forests Accord memorandum of understanding (MOU) relative to Senate Bill 1602 and supported the outcomes of the bill. He outlined a series of concerns about the Forest Management Plan and Habitat Conservation Plan process, requesting more information, as well as how to best engage as the planning continues.

INFORMATION ONLY.

2. STATE FORESTER RECRUITMENT DISCUSSION

[Listen to audio](#) MP3 – (47 minutes – 21.5 MB)

Chair Kelly introduced the item topic, outlined the objectives for the Board discussion, and welcomed the subject matter expert (SME) who are working with the Board on the State Forester recruitment. Each SME introduced themselves in the following order: Anika Marriott, Assistant Attorney General for the Natural Resource Departments from the Oregon Department of Justice, Sylvia Van Dyke, Assistant Attorney General Labor and Employment Division from the Oregon Department of Justice, John Paschal, Executive Recruiter for the Department of Administrative Services, and Patricia Kershaw, Human Resources Director for the Department of Forestry.

Chair Kelly invited the Board members comments on what they would like to see in the next State Forester relative to desired attributes and skills, beyond the qualifications set forth by statute (ORS 526.031 (1)).

Board commented on the State Forester Recruitment Discussion.

- Chair Kelly shared Board member Justice comments on what attributes are recommended in a candidate. Listed leadership, communication, and vision as key attributes, but added an inclusive and collaborative servant-leader. Noted the role of facilitator and forester with a deep understanding of Oregon's complex ecosystems, balancing decision making with values and science, the challenges associated with fire, the agency's culture of service, and the goals from the Governor's Council on Wildfire Response.
- Board member Chambers shared her thoughts on a candidate. Relative to the job position description consider strengthening the financial management capacity.
- Board member McComb agreed that business acumen was a desirable skill, but added on the commitment to diversity, equity, and inclusion, a deep understanding of science, collaboration, and utilizing scientific information to make a decision. She encouraged the recruitment effort to be as equitable and inclusive as possible for a diverse candidate pool.
- Board member Deumling expressed that some of the listed attributes included with the 2016 job announcement seemed nuanced and narrow, how some of the experience or attributes can be achieved over time with support of the Department and does not want a position to be too rigid that it limits reaching a broader pool of qualified candidates. He concurred with his fellow board members list of desired attributes and skill sets, emphasizing executive or leadership experience as a critical attribute of an agency director.

- Chair Kelly aligned with many of the Board members thoughts on key attributes, skills, and experience. He felt the position description will have to balance the technical aspect with the humanity and bureaucratic elements of the job.
- Board member Ferrari agreed with many of the expressed attributes and sentiments from her Board colleagues. She added to the list a desire to project, promote, and foster a culture of accountability that can support a clear vision into the future for the Department and stakeholders.
- Chair Kelly offered his perspective on what attributes a new State Forester may need to be successful in this role. He asked the Board to consider what has changed from 2016 to now. Believed a leader should embrace responsibility in understanding all Oregonians expectations relative to safety, health, and a sound economy, as well as be a visionary in recognizing the need for significant structural changes and ready to work with State leadership, agency partners, and stakeholders to implement changes. He listed additional attributes that could be considered from natural communicator to perceptive leader.
- Chair Kelly invited the guest experts to share their thoughts with the Board. Marriott encouraged Executive Recruiter John Paschal to review his role and outline the steps to incorporating the feedback from the Board and public into the job announcement. Paschal explained his role and outlined the goals relative to the recruitment effort, as well as how he plans to coordinate with agency partners to fulfill the 90-day timeline for the recruitment. He asked for assistance from the Board, Human Resource business partners, and agency staff to share any distribution channels, associations, and memberships with him for the job announcement. Tricia Kershaw, ODF Human Resources Manager explained the active recruitment effort over a passive approach will be key and making connections along the way to expand the reach of the job announcement to viable candidates.
- Chair Kelly noted the legal obligations associated with the recruitment of an executive branch agency director. He shared his vision of providing opportunity for the public to comment and access the materials the Board plans to deliberate and finalize within the month of July. He offered some other considerations to the Board such as hiring an external recruiting firm, forming a Board subcommittee, and carving out time for special meetings for this effort.
 - Board member McComb reviewed the benefits of utilizing an external search firm and asked about the process in tracking the revisions to the position description until a final decision is made by the Board. Chair Kelly reviewed possible approaches in tracking the revisions and feedback of the Board. Member McComb recommended more discussion around the subcommittee as the views should be as representative as possible.
 - Board member Deumling asked how the Department staff will be asked for their input on desired attributes from their next State Forester. Deputy State Forester Lena Tucker shared the approach being considered to obtain input from staff and how the work product can be achieved within the Board's timelines. Board member McComb confirmed the opportunity for staff to provide input on attributes anonymously, and Tucker explained this will be an option.
 - Board member Ferrari inquired about the function of the subcommittee, when the interviews move from private to public forums, and whether the Board plans on utilizing the panel forums for the top candidates. Chair Kelly stated these pieces will be discussed at the subsequent board meetings.

- Board member Chambers stated comfort with reviewing and screening candidates prior to interviews and separate it out into two groups of three board members. Board member McComb agreed this could be a viable option.
- Marriott reiterated that this is the Board's process, changes can be made to the draft recruitment plan, and the Board has opportunity to conduct work sessions in between the meetings or direct staff to coordinate final drafts before the next public meeting for Board deliberation. Paschal reconfirmed the candidate review process with the Board.

Public Testimony:

- Felice Kelly and Leslie Grush provided written testimony ([attachment 1](#)) on behalf of 350PDX to the Board outlining the desired attributes, experience, and understanding on various issues they would like the new State Forester to have as the leader for the Oregon Department of Forestry.
- Lauren Anderson and et al provided written testimony ([attachment 2](#)) to the Board listing the key priorities and emerging challenges a new State Forester will be encountering in the 21st century. Outlined the skill sets, experience, and desired characteristics that may help achieve the Board and Department goals.

INFORMATION ONLY

3. FIRE SEASON READINESS
[Listen to audio](#) MP3 - (24 minutes and 23 seconds – 11.1 MB)
Presentation ([attachment 3](#))

Doug Grafe, Fire Protection Division Chief, introduced the topic, the goal for the presentation, and fellow presenter.

Ron Graham, Fire Protection Deputy Chief, reported on the fire season outlook, which includes drought monitoring, temperature probability, and precipitation probability. He emphasized the rising trend observed across western states is drought severity over the past two years. He reviewed the significant wildland fire potential for Oregon for June through August 2021. He reported on the fire statistics to date, listing origin of fires, average acres burned and number of fires with 10-year averages. He reviewed statewide data on number of fires and acres burned across all jurisdictions for 2021. Noted the keys to successful fire suppression is early detection combined with aggressive initial attacks. Expressed the potential for future investments with proposals to procure infrared cameras, contract aviation resources or on-the-ground teams, and associated equipment to be ready for the fire season in Oregon.

Graham stated the recent appropriation of funds from the legislative emergency board provided the Department to invest in advancing fire protection readiness by adding fire line leadership and support, expanding aviation capacity, and implementing strategic fuel reduction projects in fire-risk communities. He described the range of positions that were provided through this legislative investment, how the division is tracking the outcomes, and expressed support for future proposals that provide further funding.

Grafe summarized the overall outlook for the coming summer months relative to fire activity, explained how activity has come in waves, and the trends are lining up to project for another difficult fire season. He welcomed any questions or comments by the Board.

Board commented on the Fire Season Readiness presentation.

- Board inquired whether there is way to track greenhouse gas (GHG) emissions produced by the various vehicles associated with fire protection work. Grafe stated he has not seen any data presented on this topic in the wildland fire community and currently the Department does not track data relative to emissions from suppression activities. Board understood resources and capacity may be limited but understanding what the GHG costs are related with suppression efforts can be helpful in tracking the agency's carbon footprint.
- Board inquired about prescribed fire status with the 2020-21 COVID restrictions. Grafe described the collaborative work with Oregon Health Authority and the Department to assess the situation in 2020, which resulted in limiting prescribed burns start of last spring but noted the goal of making this option available this coming fall, as the risk of fire activity and smoke entering communities decreases. He reviewed the latest statistics of acres treated through prescribed burn and expressed commitment to regain momentum on this front.
- Board expressed appreciation for Grafe's leadership and work on reconciling the fire finances. She shared narrative on farm harvesting relative to fire season and drought. She reflected on the Governor's Wildfire Counsel recommendation on mitigating fuel loads across the state through treating 5.6 million high-risk acres over a 20-year period. Grafe appreciated the additional context provided relative to prescribed fire, challenges to fire suppression, and the changing conditions on the ground.
- Chair Kelly shared appreciation for Grafe and the Division's efforts in organizing and managing teams with COVID restrictions last year during a firestorm event, while maintaining the safety of the firefighters is to be commended.

Public Testimony: No testimony submitted for Item.

INFORMATION ONLY.

4. FOREST PROTECTIVE ASSOCIATION BUDGETS
[Listen to audio](#) MP3 – (16 minutes and 17 seconds – 7.45 MB)
Presentation ([attachment 4](#))

Doug Grafe, Fire Protection Division Chief, provided orientation to the budget topic, review the statutory obligations associated with the development of these budgets, and described the scope of work that comes from the budgeted investment.

Ron Graham, Fire Protection Deputy Chief, reviewed the 2022 fire protection fiscal budgets and described the base-level, statewide severity, and large fire cost as they relate to the different levels of funding. He explained the various funding partnerships under the complete and coordinated fire protection system, as well as outlined the private and public dollars coordinated through agreements. He shared a diagram demonstrating Oregon's fire funding framework with the base level of protection as the foundation to ensure the State is fire-ready and explained what this framework

applies to relative to operations. Grafe emphasized the presented budget is representative of the adequate level of funding to set the rates and initiate revenue collected for the protection system.

Graham described the budget development process at the district-level and how it comes to the Board annually for decision. He noted the number of districts involved, the number of acres protected, and the operations performed as a result of this base level of fire protection. He reviewed the statistics on average number of fires and acres burned over time that occur on Department protected lands, which include the origin of fires within the ten-year time period and how these numbers drive how the base level of protection is calculated. Grafe commented on the spring 2021 association meetings and the resulting budget outcomes that formed the fiscal year 2022 district and association protection budgets for Board consideration.

Board members commented on Fire Protective Association Budgets presentation.

- Board inquired about protection standards on the number of Department protected lands. Grafe explained protection standards evolve overtime and described the fiscal budgeting process as incremental advancements in the fire protection system, which adapt as necessary to align with the risk encountered from year-to-year. Noted the last State legislation occurred with the passage of the Wildfire Protection Act in 2013. Acting State Forester Hirsch clarified any unused money from previous fiscal years is nuanced by fund type and not necessarily carried over but noted how remaining funds may be applicable towards determining future rates in the next fiscal year. She emphasized how these budgets provide adequate level of protection and fall in line with biennial fiscal authority, which allows the Department to achieve the operational goals and objectives of the protection system.
- Board asked about the percentage increased from fiscal year 2021 to 2022, whether the districts are audited, and if any existing board members sit on any of the fire protection associations. Grafe explained the difference between operating associations versus agency districts and which auditing approach is applied to each organization type.

Public Testimony: No testimony submitted for Item.

ACTION: BOARD APPROVED ALL FISCAL YEAR 2022 DISTRICT AND ASSOCIATION PROTECTION BUDGETS AS PRESENTED IN ATTACHMENT ONE.

Karla Chambers motioned to approve the fiscal year 2022 District and Association Protection Budgets as presented. Ben Deumling seconded the motion. Voting in favor of the motion: Karla Chambers, Ben Deumling, Chandra Ferrari, Brenda McComb, and Jim Kelly. Against: none. With Board consensus the motion carried.

5. MACIAS GINI & O'CONNELL LLP REPORT AND DEPARTMENT IMPLEMENTATION PLAN

[Listen to audio](#) MP3 - (56 minutes and 41 seconds – 25.9 MB)
Presentation ([attachment 5](#))

Bill Herber, Deputy Director for Administration, reviewed the intent for the presentation, outlined the presentation objectives, and introduced the other presenters for this topic.

Nancy Hirsch, Acting State Forester, provided context on how the State Forester role combined with project oversight and staff alignment will attribute to the plan's implementation success. She explained agency mistakes were made, lessons were learned, and improvements are underway to ensure financial accountability, responsibility, and trust are rebuilt. Hirsch provided background on large fire costs before and after 2013, noting the funding available has not increased to meet the gross cost demands. She supported the involvement of the Governor's forestry financial oversight team and Macias Gini & O'Connell (MGO) auditors, expressing the need for immediate response. Hirsch described two moments in agency history that significantly changed policy and impacted business practices. She explained that policies can be made without a full implementation plan in place, which can result in unforeseen consequences or outcomes that the agency and policymakers must adapt to resolve. Hirsch closed by identifying the lessons learned, the actions taken to address the financial issues, the implementation plan goal relative to financial assurance and shared her hopes in working towards finding a solution for large fire funding.

Herber reviewed the composition of the Governor's forestry financial oversight team, outlined the assigned goals, and described the timeline of actions that led to the published final report. He noted the Department made substantial progress in addressing the backlog of work while MGO was assembling this report, these actions allowed MGO to focus on best practices for large fire cost processing by assessing the agency's policies and systems to build recommendations for this report. He noted the report lists 28 recommendations, identifying five areas of concerns with degree of risk associated, and explained the context of risk differentiated per issue listed.

Sabrina Perez, Senior Strategy Manager for the Administrative Branch outlined the Department work in plan development, described the plan's objectives, and noted the tracking mechanisms associated with the plan's implementation. She previewed the timeline of recommendations for the remainder of calendar year 2021. She shared an example from the Department's plan to explain how the MGO recommendations were operationalized into action items to ensure any business processes, procedures, or systems adopted were codified. Perez closed by seeking Board input on their reporting needs and how they prefer working with the Department as the plan's recommendations are implemented.

Board commented on the MGO Report and Department Implementation Plan presentation.

- Chair Kelly shared his big picture view of current issues in front of the Board and Department. He noted how rebuilding trust with others around the agency's financial reconciliation operations and third-party contractor role will establish financial credibility for the agency as they work with the Governor's office, legislators, and agency partners to address the large fire funding issue.
- Board appreciated the work done and the Department's leadership in responding to this issue. Noted how the agency's system was built to attend to \$10 million fire funding costs not \$70 million, nor to handle high fire costs accumulating over time, and the systems in place are outdated or non-existent. Spoke on Board oversight, role, and responsibility to see this plan through, and confirmed the current Board's commitment in supporting the Department's efforts. Highlighted areas of priority mentioned in the final MGO report, from dashboards to accounts receivables. Shared confidence around the Board and Department meeting the MGO deadlines and appreciated the MGO role moving forward as their auditor. Board members echoed their support for this work.

- Board supported integration of the MGO action items into the Board's work plans. Continued interest into the development of a dashboard that provides an overview of the Department's financial condition, including thresholds or metrics that flag when items require attention or are not meeting the target deadlines. Inquired if all MGO recommendations were accepted and a department management response provided. Acting State Forester Hirsch noted that all recommendations were provided a response. Chair Kelly noted if during this process, the Department finds that some recommendations do not serve the agency or are not workable, to return and discuss with the Board.
- Herber noted how this plan is a roadmap for the Department, does not expect the Board to understand each line item as this is specific to staff work, but will strive to include a dashboard view in the monthly report provided to the Board and open to modify to best meet the Board's information interests. He offered clarification around the management action plan which sometimes does not line up with how the Department conducts business but will address the recommendation with feasible operational solutions. He explained how some action items may extend past the recommended deadlines, as the agency assesses the full value to business operations, systems, and policies.
- Chair Kelly observed the challenges identified within the MGO report did not include the complex issue of the Department's militia model in relation to business operation continuity and work culture. Acting State Forester Hirsch noted there is inherent risk associated when agency redirects business needs to respond to fire season needs and acknowledged the Board's concerns. Chair Kelly mentioned if any changes made as result of the implementation plan may impact the agency's ability to fight fire or to the militia model for the Department to consider communicating with the legislature.
- Board observed that the recommendations primarily address systems and processes, where one recommendation speaks on the organization's culture and structure. Commented on how the Department may need to consider how their organizational structure may need to change to optimize and fully implement these pledged improvements, and how this should be assessed over time in a holistic way with staff.
- Board appreciated the monthly financial dashboard reports, but at times it can be unclear what thresholds or deadlines are being met or not met. Board expected to lean on Department for the detailed understanding provided in these reports and to work with agency staff and leadership moving forward.
- Board inquired about the deliverable dates, and whether they reflect agency capacity and priorities. Herber explained external factors are not representative in these deadlines, capacity is an issue, but noted how many areas of work overlap with each other to fulfill a deliverable. He shared those timelines will strive to be met, and the deliverables may shift to offset the capacity gaps. Herber clarified how the risks identified in the plan primarily match the priorities of the Department, and shared the framework used to determine priorities and shifts as needed. He explained how some recommendations rely on external collaboration and actions in order to complete the work. Acting State Forester Hirsch remarked that capacity will be required for the Department to fulfill this work and maintain core business. She listed the various ways the agency will be addressing the capacity issue and reassured the Board that they will be communicated with if the dashboards are not meeting targets.
- Board asked about an adaptive management approach to the administrative work plan, and whether there is space to revisit and adjust the implementation plan as the process continues.

Acting State Forester Hirsch remarked with “absolutely,” noting how this will be an iterative process, learning and adapting the plan versions as concerns, corrections, or modifications emerge. Herber explained how the MGO plan will be incorporated into the Board’s administrative work plan and how this work plan will evolve over time based on Department and Board input.

Public Testimony: No testimony submitted for item.

ACTION: BOARD ADOPTED THE MODIFIED BOARD ADMINISTRATIVE WORK PLAN.

ACTION: BOARD ACCEPTED AND SUPPORTED THE IMPLEMENTATION PLAN, VERSION 1.

Karla Chambers motioned for approval of the two recommendations as presented. Ben Deumling seconded the motion. Voting in favor of the motion: Karla Chambers, Ben Deumling, Chandra Ferrari, Brenda McComb, and Jim Kelly. Against: none. Joe Justice absent for vote. With Board consensus the motion carried.

6. SENATE BILL 1602 IMPLEMENTATION UPDATE
[Listen to audio](#) MP3 - (45 minutes and 20 seconds – 20.7 MB)
Presentation ([attachment 6](#))

Josh Barnard, Private Forests Deputy Chief, provided background on Senate Bill (SB) 1602, reviewed the bill’s intention and summarized statutory scope for the Department relative to the Oregon Forest Practices Act. He explained a project team was created to fulfill the many provisions outlined in the bill and implement the statutory requirements. Barnard described the composition of the division’s project team, the member’s roles, the frequency of engagement, and project goals.

Jay Walters, Forest Practices field coordinator, reviewed stream buffer requirements and related provisions. He noted the extension of the salmon, steelhead, and bull trout riparian rules to the Siskiyou region derived from this bill, and no further rulemaking is required. He shared a training video on helicopter spray buffer for landowners, operators, and stewardship foresters on the various application requirements, notices, and reporting as a result of this bill. Walters highlighted type N spray buffers and other requirements to be considered before application of pesticides, explained pesticide analytical and response center (PARC) role, and effective dates for enforcement of laws.

Joe Touchstone, Project Manager, reviewed the modifications to the electronic notification system as it applies to the notifier, registrant, and system administrator roles. He outlined how each role will have to engage a little differently with the electronic notification system, highlighted the new elements of the system to notify, subscribe, and register. He shared an example of how a notification and status is tracked in the updated system. Touchstone explained how the location of registrants can impact the waiting time leading up to a 90-day operation period. He reviewed the webpages from the Forest Activity Electronic Reporting and Notification System (FERNS) with the most substantive updates and closed out by noting the system’s release date set for December 15.

Brooke Burgess, Project Coordinator, commented on the communications and engagement coordinated with interested parties who sign up for FERNS. She reviewed the Department's enforcement role and penalties process associated with pesticide regulation. She described the Department's collaboration with the Oregon Water Resource Department (OWRD) in fulfilling the data and legislative requirements of the bill. She reviewed the type of data points being tracked within FERNS, how this data will inform the 2022 legislative report, and outlined next steps in cultivating the agency partnership with OWRD.

Paul Clements, Training and Compliance Coordinator, discussed the distribution of information on SB 1602 affects forest management practices, aerial pesticide application, and stream classifications in Oregon. He listed the wide range of audiences interested in the statutory, administrative, operational, and regulatory changes that came with this bill. He provided an example of outreach efforts related to the Siskiyou region about the new SSBT rules and spray buffers for type N streams. He outlined the various training methods deployed to reach the landowner, applicator, operator, and staff audiences. Clements closed by explaining with a new business model comes new processes, training and outreach will continually be developed to keep up with the system changes overtime.

Board commented on the Senate Bill 1602 Implementation Update presentation.

- Board asked whether there were any material deviations beyond what was originally discussed by the forestry and environmental interest groups with what passed on SB 1602. Barnard responded that he has not done a quantitative comparison between the enrolled bill and the original memorandum of understanding (MOU) but highlighted a few components that differed such as terminology and explained the division's focus is on what became law. Acting State Forester Hirsch sought background on the MOU, and Barnard offered a recap.
- Board asked about FERNS business continuity and preparation for any critical service failures on the end of the Department or user. Barnard outlined the general notification process, and the framework the division would use to respond to a system critical failure, network or server-based and explained the users' avenues to acquire or report on activities.
- Board inquired about the role the Department and Board has in the discussions held between the special interest groups relative to forest practices. State Forester Hirsch shared her perspective on the board's role historically, explained how the Private Forests Accord may have paused policy discussions, but noted the Boards' role relative to forest policy. Kyle Abraham, Private Forests Division Chief outlined the multiple agencies involved with the Accord, the landowner and conservation perspectives represented, and the participant role the Department has in the process. He recommended to allow for the work under the Accord to play out, and that he was unable to provide the Board an answer on their role given the constraints of the Accord. Chair Kelly explained it may be in the best interest of the Board to standby and provide space for the conversations under the Accord to continue its process, and to not place any hindrance on this work. He believed this could be a historical accord and is projected to come in front of the Board in the new year. Board asked about appropriate check in points on progress or scope. Abraham reported that an update on SB 1602 process was presented to the Oregon Legislature and would share the link with the Board.
- Board asked whether the members of the Accord or a subset of this group is involved with the monthly implementation meetings organized by the Division. Barnard stated there are no direct representatives, but connections were made within different stakeholder interests or companies with affiliations related to the Accord.

- Board inquired about how the water intakes are inputted into FERNs. Barnard explained there are multiple ways for this data to be entered into the system and described each option.

Public Testimony: No testimony submitted for item.

INFORMATION ONLY.

7. FOREST TRUST LANDS ADVISORY COMMITTEE TESTIMONY
[Listen to audio](#) MP3 - (17 minutes and 2 seconds – 7.79 MB)
 Handout ([attachment 7](#))

Commissioner Yamamoto, deferred to Coos County Commissioner John Sweet, who discussed housing affordability impacts on rural and urban families. He explained the high demand of timber and plywood relative to home construction or remodeling, noted increased costs for homes, and lumber at adequate levels, but cautioned the Board this is a rising issue of concern if the timber harvests cannot keep up with the inventory demand.

Commissioner Yamamoto welcomed the new Board members, the new Chair and Department leadership, and commented on the long-standing relationship the Board has with the counties since 1936 but will provide this historical context at a later time to the Board. He provided oral and written testimony to the Board on a series of issues related to the draft Habitat Conservation Plan (HCP) engaged in by the Department and Board. He outlined the conservation strategies included within the plan, emphasized the 70-year agreement that will be instituted between the Federal and State governments, and stated this will result in a number of unfavorable outcomes relative to timber harvest levels, annual harvest revenues shortfalls, and financial pressures on county-level services. He noted the plan excluded estimated impacts on employment or wages lost in communities. He explored the habitat assumptions, spotted owl recovery rates, and predatory control in the draft HCP. He introduced an alternative proposal that can meet or improve habitat outcomes for the listed species in the draft HCP that can also improve financial, social, and economic outcomes for the trust counties and special districts, while improving the financial strength of the Department and State.

Board commented on the Forest Trust Lands Advisory Committee Testimony.

- Board inquired on whether an economic analysis is being considered or conducted on the impact to rural communities in Oregon. Commissioner Yamamoto stated he utilizes an external contractor to make this assessment of the current draft HCP and bring this information back to the Board.

Commissioner Testimony: None provided.

INFORMATION ONLY.

8. WESTERN OREGON STATE FORESTS HCP AND FMP UPDATE
[Listen to audio](#) MP3 - (58 minutes and 40 seconds – 7.79 MB)
 Presentation ([attachment 8](#))

Liz Dent, State Forests Division Chief, described the scope of update for the western Oregon Habitat Conservation Plan (HCP) and companion Forest Management Plan (FMP), noted the intent for the updates, and outlined the presenters contributing to the updates. She acknowledged the tribes as the original stewards of the land and described her team's commitment to reflecting tribal interests in the lands that Oregon Department of Forestry (Department) currently manages.

Michael Wilson, State Forests Policy Deputy Division Chief, described the conservation fund establishment, fund accrual and disbursement, and scope of projects for fund allocation. He summarized the HCP monitoring goals and objectives over the permit term and explained the monitoring role relative to adaptive management. He outlined the types of monitoring and reporting associated with the HCP, described the function of each report and how they tie into adaptive management decisions.

Nick Palazzotto, State Forests Wildlife Biologist, provided context on the Habitat Conservation Areas (HCA) strategy, associated goals and objectives, scope and composition of HCAs, and the number of acres identified within the permit area. He explained the management focus in HCAs being driven by habitat improvement, and described activities the minimization measures associated with occupied, low-quality, and high-quality habitats. He added ecological forestry principles will be followed, noting utilization of various silviculture prescriptions. Palazzotto reviewed the HCA management activities, the additional actions, and strategies beyond the HCAs, and highlighted the contribution of Riparian Conservation Areas (RCAs).

Cindy Kolomechuk, Western Oregon State Forests HCP Project Manager, provided planning overview with associated timeline of the National Environmental Policy Act (NEPA) process and HCP. She reviewed the NEPA process for 2021-2023, listing the key objectives and deliverables for each phase of the process, and highlighted when updates will be provided to the Board.

Kim Kratz, National Oceanic Atmospheric Agency (NOAA) Fisheries Assistant Regional Administrator, defined the NEPA process, listed the federal services involved and their roles relative to the issuance of the incidental take permit attached to the HCP. He reviewed the timeline for the Environmental Impact Statement (EIS) and how public comment contributes to the scoping process, development of alternatives, and EIS analysis.

Deb Bartley, ICF Lead Consultant and NEPA Project Manager for the western Oregon HCP, highlighted the steps of the NEPA process, listed the recent stage completed, and outlined the steps forthcoming related to the Draft Environmental Impact Statement (DEIS). She framed the current body of work associated with developing plan alternatives and determining the scope of the DEIS analysis. Bartley listed the subsequent 45–60-day public review and comment period held for the DEIS and the Public HCP to be released at the same time as the DEIS. She described how public comments will be assessed and a response provided before the Final EIS. Bartley explained what information will be included with the record of decision (ROD) and that NOAA Fisheries and the US Fish and Wildlife Service will be required to complete a ROD before issuance of an incidental take permit.

Board commented on the Western Oregon State Forests HCP and FMP Update presentation.

- Board inquired about the proposed HCA management actions relative to the proportion of hardwood stands impacted. Palazzotto provided an estimated proportion for alder-dominated stands of 15, 000 out of 45,000 acres.
- Board inquired whether salvage logging would be allowed in HCAs. Palazzotto explained in the current draft, salvage logging would be prohibited with the exception of removing tree hazards associated with roads and other structures.
- Board asked about the socio-economic analysis, whether it would include the economic costs and benefits of the alternatives. Bartley sought clarity from the Board. Bartley explained the analysis would consider ecosystem services, government revenue, income, and employment levels, which could speak to the recreation value.
- Board inquired how the Department will pay for the costs associated with HCP implementation and asked for the Department to look at the economic impact to rural communities if the HCP was implemented. Dent stated the Department's division is responsible for covering any operational costs, which primarily derive from timber revenue. She reflected on the Commissioner's testimony provided relative to the comparative analysis completed in the fall of 2020. She shared a brief overview of how the comparative analysis was developed, how it was utilized by the Board, and the assumptions associated with the modeling. Dent spoke on the importance of the 2023 Board decision and described the additional modeling that will be conducted with more specificity and a suite of information that may provide greater certainty with modeling outcomes. Dent asked for the Board to clarify what information they will need to make their decision in 2023, as this will inform the type of modeling and assumptions associated.
- Board inquired about the assumptions being made within the HCP relative to burnable fuel loads and assumptions around HCP implementation relative to spotted owl return rates. Wilson reviewed the fuels management considered within the HCAs strategy, explaining how these areas ideally would be large and robust enough to accept a certain level of disturbance, foreseen and unforeseen. He explained the division continues to follow burn management and silvicultural practices outside the HCAs within the matrices proposed in the HCP. Board further explored the fuel reductions topic relative to the need and role of hardwoods. Dent confirmed an offline follow-up will be provided regarding the owl query.
- Chair Kelly inquired whether the Department's state forests will be a leader in climate-smart forestry. Dent explained the Department understands they will be seen as a model for managing for multiple benefits and recognized the importance of carbon sequestration and storage in forests. She envisioned this work will be implemented through the management plans, mitigation, and addressed in the companion forest management plan.
- Chair Kelly inquired on how the counties' alternative plan will be considered as part of the EIS process. Bartley elaborated on the public scoping process, how the development of the EIS alternatives and the scope of EIS analysis are considered, and described the various factors involved in the screening and decision-making process. Chair Kelly paraphrased what he heard, and Bartley honed the summarized understanding to provide a truer reflection of the intention of the DEIS process and alternatives evaluated. Bartley explained the draft purpose and needs statement is preliminary to this process and included with the notice of the DEIS. Dent clarified that all information submitted by the public will be considered, assessed, and is part of the process. Kolomechuk shared that the Board directed the Division to move the HCP into the NEPA process as the proposed action. She noted that if the Board

of Forestry directs the Division to pursue a different proposed action, the timeline of the NEPA process could be affected.

- Board inquired about when the draft FMP will be discussed next in 2021, and Wilson confirmed the Board will be provided an update in November.

Wilson noted how approving a Habitat Conservation Plan (HCP) would affect the overarching goals and strategies of a Forest Management Plan (FMP). He reviewed the definition, intention, and connection between the FMP, Implementation Plan (IP), and Annual Operating Plan (AOP). Wilson described the FMP as an overarching policy document influenced by other high-level planning processes and information, internal and external to the Department. He outlined how these various inputs contribute to the Department achieving FMP goals.

Wilson reflected on the 11 guiding principles adopted by the Board in July 2018 as the building blocks for the companion FMP. He reviewed each guiding principle, remarking that collectively they provide a high-level vision for how the Department Forest management activities will provide Greatest Permanent Value (GPV). He shared the timelines of each project, how they overlap, and inform each other's work. Wilson explained the iterative and interval approach the division staff utilizes for each work project and when updates will be provided to the Board.

Wilson provided an overview of the proposed engagement plan approach, identifying who will be involved with the engagement process and how the goals for this process will be developed. He closed out the presentation by listing the project team's next steps, deliverables, and team objectives.

Public Testimony: No testimony submitted for Item.

INFORMATION ONLY.

9. TILLAMOOK FOREST HERITAGE TRUST UPDATE [Listen to audio](#) MP3 - (19 minutes and 51 seconds – 9.08 MB)

Liz Dent, State Forests Division Chief provided background on the Tillamook Forest Heritage Trust (Trust), noting this organization is a non-profit arm of the State Forests division. She outlined the oral presentation objectives and introduced the main presenter.

Shawn Morford, Executive Director, anchored the presentation as part of an annual report out from the Trust to the Board, and noted the evolution of the non-profit since its last report in 2018. She described the Trust's role, the Trust's scope of work, and contributions. She provided context around the formation of a non-profit to support the Department, outlined the original mission for the Trust, and how it has changed over time to support the work of the agency by facilitating private donations to support recreation, education, and interpretation programs, as well as fire restoration on State Forest lands.

Morford explained that the Trust is set up to accept a wide range of donations through various mechanisms and listed some activities utilizing the Trust's funds as highlighted in the biennial report. She outlined the Trust boards' composition and mentioned that the Trust has one grantee, the Department's Recreation, Education, and Interpretation (REI) program. She reflected on the

Trust's maturation process overtime, highlighting areas the organization has grown in, including donor database efficiency to donor relation enhancement and creation of new fundraising partnerships. Morford closed by sharing the impacts to the Trust as a result of the pandemic, how the Trust is adjusting, and the likelihood of a name change to reflect the expansion of their funding objectives.

Board commented on the Tillamook Forest Heritage Trust Update presentation.

- Board inquired about whether metrics associated with funding amounts and target goals are established by the Trust. Morford explained historically the Trust has not focused on an annual funding goal as there were large fundraising activities and goals for the organization to meet. She noted the anticipated strategic planning work of the Department's REI program and linkage to the Trust's board goal setting moving forward. Dent explained the REI program has been around since the late 80's but is restructured to align resources for division and non-profit organization. Dent provided a high-level overview of the strategic planning efforts the REI program and how this includes collaboration with the Trust board.
- Chair Kelly discussed service to all Oregonians and benefits of the State Forests. Noted how this work echoes conservation and recreation values of the forests. He commented this may be an unusual model at the State level, but the Trust supports the greater vision for Oregon. Dent provided additional context on recreation users perspectives and their willingness to donate for the Trust's efforts.

Public Testimony: No testimony submitted for item.

INFORMATION ONLY.

10. BOARD CLOSING COMMENTS AND MEETING WRAP UP [Listen to audio](#) MP3 - (16 minutes and 27 seconds – 7.53 MB)

Board Chair, Jim Kelly, provided some context to the new board members on how this agenda item was formed and how it creates an opportunity for the Board to review the day's topics as a close-out each board meeting. He welcomed any closing comments or follow-up questions on topic items.

- Board member Deumling provided his perspective on good working relationships relative to business decision. Inquired about board member involvement at appropriate levels of engagement with planning development processes or new initiatives. Chair Kelly shared his experience in working with Department staff, described the staff's willingness to engage Board members, but cautioned members to be attentive as to not have their individual perspective come across as a board direction. Acting State Forester Hirsch recognized all board members come in at different times, encouraged deeper dives into topics that interest board members during orientation with each division, and acknowledged there is balance the Department is attempting to achieve between introducing information at appropriate times and engaging the board to inform the overall work product. State Forests Division Chief, Liz Dent, welcomed the Board members to reach out during the data and analysis development phases of the plans coordinated by the division.

- Board member Chambers asked if Department of Justice (DOJ) could provide an interpretation for the definition of being *familiar with western forests* included in ORS 526.031 (1), and to which degree the State Forester candidate must be familiar. She explained this information could be helpful when the Board members begin evaluating candidates' qualifications.
- Board member Chambers commented on the challenges in front of the Board and Department in order to fulfill the 28 recommendations outlined in the MGO report. She provided her perspective on the Department's economic viability, risk tolerance, and structural changes, noting the work to rebuild the Department's financials are not to be taken lightly. She encouraged economic and financial modeling in addition to biological modeling for the two plans the State Forests division are currently working on, as this information can provide a greater understanding to the Board before a decision is made.
 - Chair Kelly affirmed with Acting State Forester Hirsch to connect with DOJ on the statute interpretation request. Hirsch confirmed, and stated in addition to this request, planned to determine in Human Resources will implement the next steps of the desired attributes draft.
- Board member McComb commented on the Governor's Executive Order 20-04 relative to greenhouse gas (GHG) emissions, carbon sequestration and storage. She suggested for a plan to document the GHG emission carbon footprint for each state agency not just forestry should be considered. She noted for the Department, consider assessing the GHG emission costs relative to forest management from timber harvest, wood product production, fighting fires, replanting, herbicide applications, and up to prescribed burning. She explained this information will most likely be assessed in the future, and a beginning indicator could be tracking the amount of fuel used during fire season each year which can be converted to carbon dioxide equivalence.
 - Chair Kelly reflected on Member McComb's suggestion and affirmed that the majority of the Board expressed their understanding if not support for her comments through head nods or other non-verbal cues.
 - Acting State Forester appreciated the comments shared by the Board and noted how she is tracking them for Department consideration. She encouraged the continuance of this strategic thinking by the Board to be explored at future discussions around the Climate change and carbon plan or during the annual planning retreat, as these comments provide context for Board direction or objectives going forward, which can help guide the agency's priorities.
- Board member Ferrari spoke on the diversification of revenue sources to fund State Forests activities and would support an action item that closely looks at implementing alternative remedies to offset funding gaps as proposed in the Habitat Conservation Plan (HCP). She reviewed the possible solutions ranging from trust land transfer, general fund appropriation, or revenue generated by the recreation program. She looked forward to further discussion on this topic.

INFORMATION ONLY.

Board Chair Kelly adjourned the public meeting at 3:53 p.m.

Respectfully submitted,
/s/ Nancy Hirsch

Nancy Hirsch, Acting State Forester and
Secretary to the Board

Agenda Item No:	B
Work Plan:	Administrative
Topic:	Financial Dashboard
Presentation Title:	Department Financial Report for September and October 2021
Date of Presentation:	November 3, 2021
Contact Information:	Bill Herber, Deputy Director for Administration (503) 945-7203, bill.herber@oregon.gov

SUMMARY AND CONTEXT

An executive financial report and summary will be submitted monthly to ensure the Board of Forestry (Board) has up-to-date information for oversight of the Department's financial condition. This report will include the financial and budgetary status of the Department as well as other ancillary topics as appropriate.

BACKGROUND AND ANALYSIS

This consent item is a transparent publishing of the Department's transmittal of monthly financial reports to the Board of Forestry. While executive-level in nature, the financial report provides information on various topics that are either germane, or direct impacts to the financial status of the agency, or other administrative functions of the organization during any given month.

This financial report will continue to evolve over time. As the Department's reporting ability matures and insights into its operational and administrative work improve, this financial report will reflect those improvements. These improvements could include operational or process improvements or the introduction of new systems and technologies that enhance the Department's administrative capabilities. In addition, Board input will be factored in as the report evolves.

NEXT STEPS

The Board will receive the Department's Financial Report the third week of every month, whether a Board meeting is occurring or not. This will allow the Department to report on the previous month while allowing for the fiscal month closing process to conclude.

ATTACHMENTS

- 1) Department of Forestry Financial Report for September 2021
- 2) Department of Forestry Financial Report for October 2021 (available before meeting)



Oregon

Kate Brown, Governor

Department of Forestry
State Forester's Office
2600 State Street
Salem, OR, 97310
503-945-7200
www.oregon.gov/ODF

September 30, 2021

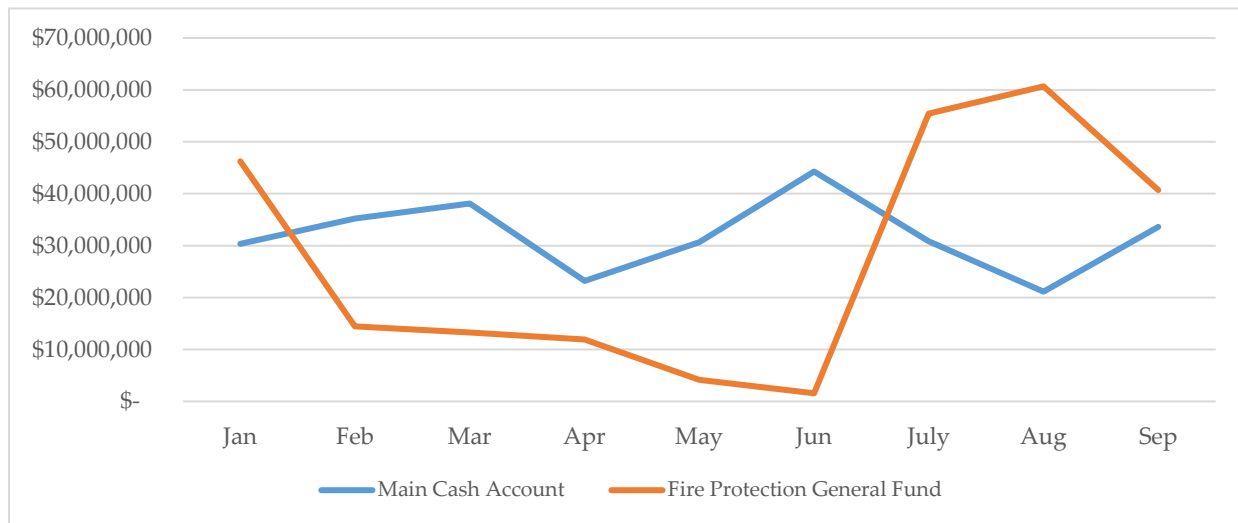
Sen. Betsy Johnson, Co-Chair
Sen. Elizabeth Steiner Hayward, Co-Chair
Rep. Dan Rayfield, Co-Chair
Joint Committee on Ways and Means
900 Court St. NE, H-178
Salem, OR 97301

Dear Co-Chairs,

Below is the Oregon Department of Forestry's monthly financial report.

Cash and General Fund Balances

Figure 1 - Cash Account and Fire Protection General Fund Balances as of September 23, 2021



Through the month of August, the department's cash balance experienced significant pressure due to the payment of large fire costs. To date, nearly \$50 million of the estimated \$126 million of 2021 fire season gross costs have been paid. An additional \$13 million is being processed this week, which will account for roughly 50% of 2021 fire costs. This is a significant increase compared to the 10% of costs that had been paid at this time last month.

To accommodate these payments, the department is strategically accessing its Fire Protection Division General Fund (GF) appropriation and the Administrative Branch's administrative pro-

rate funds. Additionally, the department has received the \$10 million in dedicated large fire funding from the Oregon Forest Land Protection Fund (OFLPF) and applied it toward large fire costs accrued by the Douglas Forest Protective Association (DFPA). These actions resulted in increases in the department’s cash reserve along with corresponding reductions in its GF balances (see Figure 1). We anticipate this trend to continue as we utilize additional GF appropriation in the coming months.

Financial Projections

Despite the variances in the department’s July projections, August’s projections were fairly accurate. Adjustments were made to the methodology to better align with how fire costs have been unfolding this year. Current projections continue to show increases in expenditures due to those large fire costs, along with their corresponding General Fund expenditures (which shows up as increases in revenue, see Table 1). Additionally, October has a projected county payment of about \$16 million, resulting in a significant decrease projected in cash balances. While the department’s near-term outlook appears manageable, the department will still need to take significant action to triage large fire cost payments and manage cash flow.

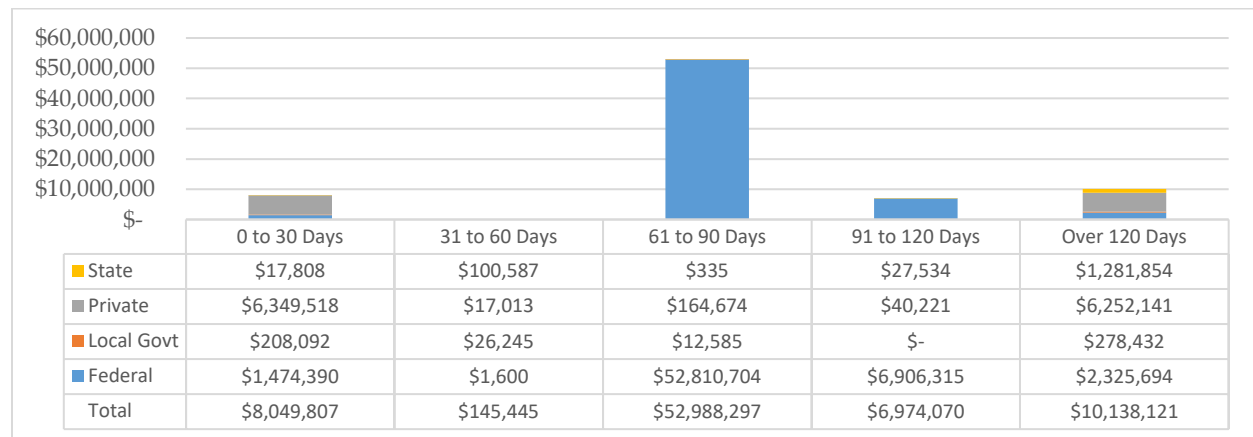
Table 1 - Financial Projections through October 2021

	Aug-21		Sep-21	Oct-21
	Projection	Actual	Projection	Projection
Total Revenue	\$23,405,744.25	\$21,126,001.58	\$65,300,286.66	\$34,385,942.85
Total Expenditures	-\$28,643,306.67	-\$29,980,796.73	-\$65,619,435.41	-\$54,559,739.36
Net Total Exp/Rev	-\$5,237,562.42	-\$8,854,795.15	-\$319,148.75	-\$20,173,796.51
Beginning Cash Balance	\$21,350,095.80	\$30,221,548.74	\$34,579,610.50	\$34,274,138.39
EOM Cash Balance	\$16,112,533.39	\$21,366,753.59	\$34,260,461.75	\$14,100,341.88
Available GF Appr	\$137,634,602.86	\$140,941,354.62	\$111,509,575.87	\$91,173,035.21
Available Resources	\$153,747,136.24	\$162,308,108.21	\$145,770,037.62	\$105,273,377.09

Accounts Receivables

Significant accounts receivables are still awaiting processing of the Public Assistance grants from the Federal Emergency Management Agency (FEMA). The department is actively working with the Office of Emergency Management on a pathway to partial and, ultimately, full payments on these invoices. Most of the recent activity within the department’s anticipated revenue stream was due to revenues from state forests timber harvests. The most recent harvest revenue posting was for \$6.3 million (see Figure 2).

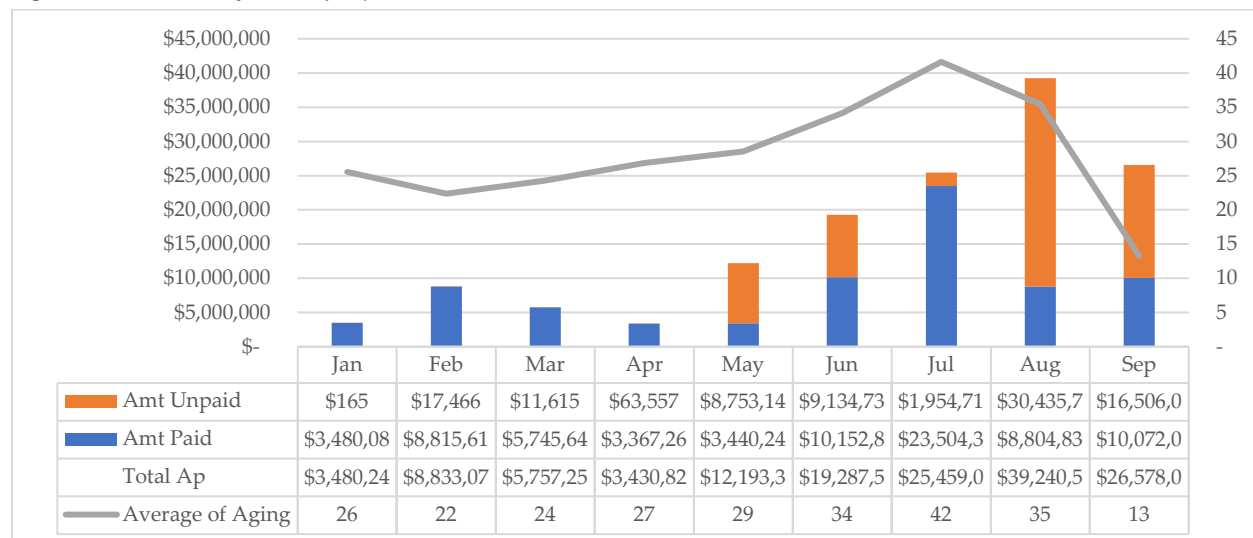
Figure 2 - Accounts Receivables Aging as of September 23, 2021



Accounts Payables

Since last month, accounts payables have sharply increased due to large fire costs making their way through the system. To better manage our cash balance, we entered into an agreement with our federal counterparts to hold payment to them for 2020 large fire costs until we receive FEMA reimbursements. Accounts payables subject to this agreement represent a majority of the past unpaid balances (see Figure 3). The current unpaid balances for August and September represent the magnitude of bills the department is facing, but despite the workload, department staff have kept the average time to pay well below the statutorily required 45 days.

Figure 3 - Accounts Payable as of September 23, 2021



Large Fire Costs

With 1,094 fires and 227,172 acres burned on ODF-protected lands to date, the 2021 fire season has accumulated, and is continuing to accumulate, significant costs. As of September 24, 2021, estimated gross fire costs are nearly \$126 million, with net costs of more than \$66 million. Given this is well above the \$50 million deductible for the state's firefighting expense insurance policy, the department has been working with its partners to facilitate the next steps in the firefighting expense insurance claim process. Identifying a long-term, sustainable large fire funding structure remains a top priority for the department and the Board of Forestry. For the most part, outstanding costs from previous fire seasons are those still awaiting required steps in the FEMA process (see Table 2).

Table 2 - Large Fire Gross Cost Summary as of September 15, 2021 (red indicates estimates – in millions)

Fire Season	2015	2016	2017	2018	2019	2020	Total
Fire Costs	76.48	20.74	60.98	109.34	34.27	139.80	441.61
Currently Invoiced	(0.33)	(0.07)	(0.17)	(1.79)	(0.25)	(58.84)	(61.45)
Outstanding to Invoice	-	-	(0.07)	(0.38)	(0.48)	(16.02)	(16.95)

MGO Update

The department's work order contract with Macias, Gini, and O'Connell (MGO) is currently working through the state's procurement processes, including legal sufficiency review. MGO will provide direct technical assistance and oversight of the implementation of the recommendations from their April 2021 assessment of the department's fire finance function. A contract for change management support for this project should be completed shortly. One of the three limited duration positions provided by the Legislature for implementation has been filled with a start date of October 1 and will provide additional capacity for fiscal analysis and implementation support. An updated version of the department's recommendation implementation Plan was presented to the Board of Forestry at their September meeting.

Sincerely,



Nancy Hirsch
Acting Oregon State Forester

c:
Legislative Fiscal Office
Chief Financial Office
Oregon State Treasury
Board of Forestry
Governor's Office



Oregon

Kate Brown, Governor

Department of Forestry

State Forester's Office

2600 State Street

Salem, OR, 97310

503-945-7200

www.oregon.gov/ODF

October 29, 2021

Sen. Betsy Johnson, Co-Chair
Sen. Elizabeth Steiner Hayward, Co-Chair
Rep. Dan Rayfield, Co-Chair
Joint Committee on Ways and Means
900 Court St. NE, H-178
Salem, OR 97301

Re: Oregon Department of Forestry (ODF)—Monthly financial condition report

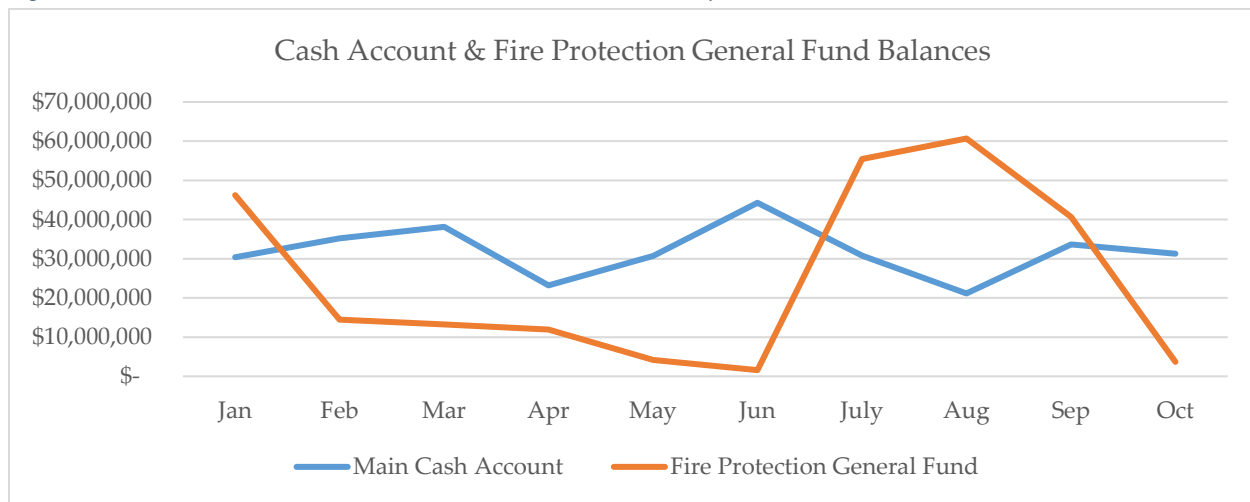
Dear Co-Chairs,

Cash and General Fund Balances

Since the last financial report, the department has paid over \$30 million more in large fire costs. This brings the total paid to date for fire season 2021 to over \$82 million. An additional \$9 million is currently being processed, which will bring the total paid to about \$91 million. Given the current estimate of \$129 million in gross costs for the 2021 fire season, this leaves approximately \$38 million outstanding. Many of these remaining large fire costs are payments to our federal partners, and it often takes considerable time before the department is invoiced.

As outlined in previous reports, the department has been executing against the bridge strategy of using fire protection General Fund appropriations to pay for large fire costs. While this strategy does keep the department's cash balance stable, it severely depletes the General Fund resources available for the department's wildfire-related work (see Figure 1). Only four months into the biennium, 5% of fire protection's biennial General Fund appropriation remains. This puts the department's fire protection operations for the 2022 fire season at risk until we seek both reimbursement of the state's portion of 2021 large fire costs and funding to offset the impact of gross large fire cost on the department's budget—either from the Emergency Board or during the 2022 Legislative Session.

Figure 1 - Cash Account and Fire Protection General Fund Balances as of October 25, 2021



Financial Projections

Fire costs through September came in higher than projected, affecting the performance of our projection model (Table 1). Projection modeling for large fire costs is dependent upon many variables, such as when the fire happens, how long it burns, and which organization is the paying agent. Work continues to enhance our ability to project against these variables.

Current projections have expenditures decreasing as fire season costs taper off. However, with the outstanding balance of large fire costs and a large timber harvest revenue disbursement to the counties in October, the department is still taking significant steps to manage ongoing cash availability. The \$71 million General Fund appropriation projected through November includes all department appropriations, including funds provided to implement new programs that came out of the 2021 Legislative Session. In addition to the risks to wildfire preparedness and response work noted earlier, use of General Fund appropriations to cover large fire costs awaiting reimbursement jeopardizes the department's ability to successfully implement these programs.

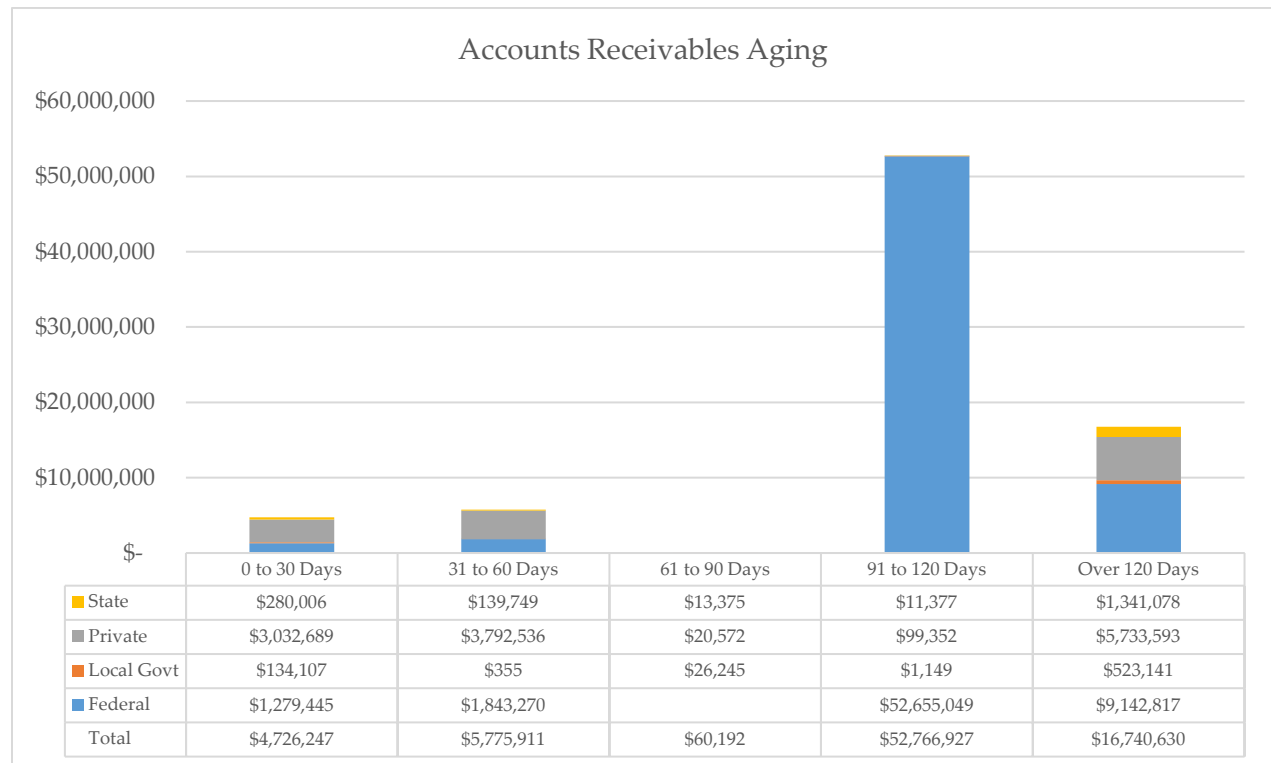
Table 1 - Financial Projections through November 2021

	Sep-21		Oct-21	Nov-21
	Projection	Actual	Projection	Projection
Total Revenue	\$65,300,286.66	\$73,497,910.07	\$34,328,369.01	\$35,823,835.08
Total Expenditures	-\$65,619,435.41	-\$87,224,250.92	-\$54,559,739.36	-\$35,736,839.12
Net Total (Rev-Exp)	-\$319,148.75	-\$13,726,340.85	-\$20,231,370.35	\$86,995.96
Beginning Cash Balance	\$34,579,610.50	\$38,013,636.35	\$23,982,235.39	\$917,346.41
Ending Cash Balance	\$34,260,461.75	\$24,287,295.50	\$3,750,865.04	\$1,004,342.37
Available GF Appropriation	\$111,509,575.87	\$100,689,507.17	\$80,295,852.68	\$71,008,543.71
Available Resources	\$145,770,037.62	\$124,976,802.67	\$84,046,717.72	\$72,012,886.09

Accounts Receivables

Revenue activity for the department remains relatively light. Most of the revenue continues to be state forest timber revenue (see Figure 2). An uptick in revenue is anticipated in November, as timber harvests and receipts from annual Forest Patrol Assessments begin to come in. Work continues with the Office of Emergency Management and the Federal Emergency Management Agency (FEMA) to recover the \$52 million in Public Assistance grants from the 2020 fire season.

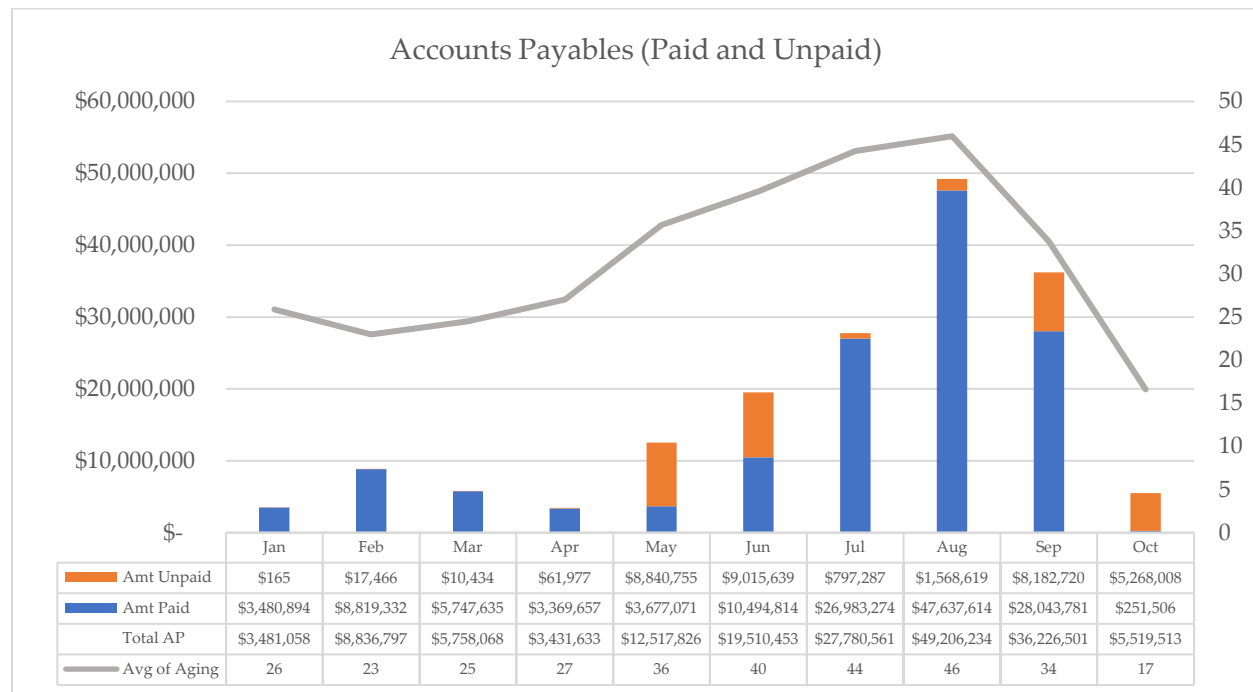
Figure 2 - Accounts Receivables Aging as of October 25, 2021



Accounts Payables

Significant triaging of fire costs payments has occurred to manage cash resources within the department's Accounts Payables (AP) unit, which has driven up the average days of payment (see Figure 3). This was anticipated, as holding payments has been the department's best strategy for managing the timing of inflows and outflows of cash. The sharp decrease in AP is indicative of the remaining payments for large fire costs belonging to federal partners.

Figure 3 - Accounts Payable as of October 25, 2021



Large Fire Costs

As noted earlier, current estimates for the 2021 fire season are \$129 million in gross costs, with net costs of nearly \$69 million. This makes 2021 the most expensive fire season for net costs and second most expensive for gross costs. With more than \$50 million in net costs, the state met the deductible for its firefighting expense insurance policy, and the department and partners are working through the claim process.

Regarding reconciliation of past fire season costs, nearly \$1 million in 2020 fire costs have been invoiced since the department's last report. (See Table 2).

Table 2 – Gross Large Fire Cost Summary (red indicates estimates – in millions) as of October 25, 2021

Fire Season	2015	2016	2017	2018	2019	2020	Total
Total Costs	76.48	20.74	60.98	109.34	34.26	139.80	441.60
Currently Invoiced	(0.33)	(0.07)	(0.17)	(1.39)	(0.24)	(59.65)	(61.85)
Outstanding to Invoice	-	-	(0.07)	(0.38)	(0.48)	(15.13)	(16.06)

MGO Update

The department recently finalized the work order contract with Macias, Gini, and O'Connell (MGO). MGO will provide direct technical assistance and oversight of recommendation implementation from their April 2021 assessment of the department's fire finance function. Work has also started with our change management consultant to ensure appropriate support for staff during the implementation of recommendations that significantly change business practices or organizational structuring. The department is continuing to assess the roles and responsibilities of key staff engaged in our implementation to ensure we are adequately staffed to address the recommendations.

An [updated version of the department's Implementation Management Plan](#) (starts on page 60) for MGO's recommendations was presented to the Board of Forestry at their September meeting. As MGO comes onboard, one of the early contract deliverables is a review of the department's implementation planning to date and identification of any gaps that could impact achievement of desired outcomes. An interim report from MGO is scheduled for the January Board of Forestry meeting.

Sincerely,



Nancy Hirsch
Acting Oregon State Forester

c:
Legislative Fiscal Office
Chief Financial Office
Oregon State Treasury
Board of Forestry
Governor's Office

Agenda Item No.:	C
Work Plan:	State Forests Work Plan
Topic:	Marbled Murrelet Management
Presentation Title:	Endangered Species Management Plan
Date of Presentation:	November 3, 2021
Contact Information:	Nick Palazzotto, Wildlife Biologist 503-945-7366, Nick.Palazzotto@Oregon.gov Justin Butteris, Policy Analyst 503-945-7481, Justin.Butteris@Oregon.gov

CONTEXT

The Oregon Fish and Wildlife Commission (Commission) directed the Oregon Department of Fish and Wildlife (ODFW) to conduct a status review of the marbled murrelet in December 2019 to determine if its status should be changed from threatened to endangered under the state Endangered Species Act (ESA; Oregon Revised Statute 496.171 to 496.192; Attachment 1) following a petition for reclassification submitted in 2016. The Commission voted to uplist the marbled murrelet from threatened to endangered at its July 2021 meeting. The decision to uplist triggers a statutory requirement for state landowners and land managers to develop an Endangered Species Management Plan (ESMP) for the listed species. The uplisting has no impact on private landowners. Landowners have 18 months to develop and submit their ESMP to the ODFW Commission, who then has 6 months to approve it. The process of development and final approval of the ESMP by the Commission is required to be completed within 2 years (ORS 496.182).

The State ESA establishes a process of plan development and approval (ORS 496.182), and plan content requirements have been established by the Commission in Oregon Administrative Rule (OAR 635-100-0140).

BACKGROUND AND ANALYSIS

The state ESA gives authority to the Commission to investigate native wildlife species and determine whether those species are threatened or endangered (ORS 496.172(1)), and to work cooperatively with state agencies to determine their roles within their statutory obligations in the conservation of endangered species (ORS 496.172(3)).

At its July 2021 meeting, the Commission voted to uplist the marbled murrelet from threatened to endangered and adopted survival guidelines (OAR 635-100-0137) that apply unless an agency has a Commission approved ESMP or an Incidental Take Permit. The guidelines are what the Commission considers necessary to ensure the survival of individual members of the species (ORS 496.182(2)(a)) in the absence of an ESMP. These guidelines were previously adopted in 2018 as voluntary measures. The Division has been implementing these requirements following their adoption, with the exception of the trash management requirements at recreational facilities. The adoption of the guidelines as mandatory will thus have a limited impact on State Forests management but will increase costs and the workload associated with managing recreation.

The uplisting of the marbled murrelet to endangered sets in motion a series of actions that must be taken by the Commission, ODFW, ODF, and the Board, most notably the development and approval of an ESMP. Many of these actions have discrete timeframes established. Overarching direction (ORS 496.182(2)(b)) is given to the Commission to “work with private landowners, affected cities, affected counties and affected local service districts, as defined in ORS 174.116, to mitigate the adverse impact on local economies when the commission adds a species to the list of threatened species or endangered species pursuant to ORS 496.172.” The engagement by not only the Division and the Board, but also the Commission, with our County partners will be critical to ensuring successful completion of the plan within the required timeframes.

Within four months of the listing decision (i.e., by November 9, 2021) the Commission is required to “in consultation and cooperation with the state land owning or managing agency, shall determine if state land can play a role in the conservation of endangered species. The commission and the land owning or managing agency shall consider species biology and geography of the land base to determine if the species or its habitat is found on state land. If the species or its habitat is not found on state land, the commission shall determine that state land has no role to play in the conservation of the species” (ORS 496.182(8)(a)(A)). While the Division has not been contacted formally by the Commission, through collaborative discussions between ODFW and ODF there is agreement that ODF has a role.

Following the finding that ODF can play a role, the next step is for the Division to determine the role for State Forests lands in the conservation of marbled murrelets (ORS 496.182(8)(a)(B)). This determination is made in consultation with ODFW and is done in the context of the statutory mandates of the lands (i.e., GPV for Board of Forestry lands). This role may include, but is not limited to conservation, contribution toward conservation, or take avoidance. The Division is obligated to balance: (1) the statutory requirements, rules, and policies applicable to the management of state forests, (2) the social and economic impacts that conservation would have on the state, (3) the conservation needs of the species, and (4) the purpose of the land and the roles of other ownership categories when determining the role of State Forest lands in the conservation of marbled murrelets.

Within 18 months of the listing decision (i.e., by January 2023), the Division is required to develop and approve an ESMP and submit that plan to the Commission for their review and approval (ORS 496.182(8)(a)(C)). The Commission is given an additional six months to review the submitted plan to determine whether the plan achieves the role defined for the land (ORS 496.182(8)(a)(D)). Based on the biology of the endangered species the Commission may modify the ESMP if necessary to be consistent with the role defined for the land. The Commission must approve the plan as submitted or modified within 24 months from the date the species is listed as endangered (i.e., by July 2023).

These statutorily established timelines require the Division to proceed with development of the ESMP, while working on the Habitat Conservation Plan (HCP) and associated Forest Management Plan (FMP). The ESMP will align with the current FMP, which is not connected to an incidental take permit. Should the Board adopt an HCP, it will supersede the Division’s ESMP for marbled murrelets, consistent with ODFW’s adopted survival guidelines and the statutory policy to avoid duplicative overlapping state and federal regulations related to listed species.

The Division is working actively with ODFW staff, recognizing the complexity of developing the ESMP and will engage both the Board and the Commission throughout the process. Staff will return to the Board in March 2022 for a Board decision on the proposed role for State Forests in the conservation of marbled murrelets, and to review the general content of the ESMP. The rule governing ESMPs requires the following topics to be addressed, at a minimum:

1. What state land is covered by the plan;
2. What role that state land is to play in conservation of the species and how the agency defined that role (i.e., how the agency balanced the factors listed in sections (3) and (4) of this rule);
3. How the agency will manage the state land to achieve its defined role;
4. Whether the agency will monitor implementation of the plan, and if so, how and when;
5. Whether the agency will reassess and review the plan and its implementation, and if so, how and when. For example, the agency may determine that new biological information, catastrophic events, changes in the species' listing status, changes in land use practices, or other factors will trigger the agency's reassessment and review of the plan;
6. How the agency's plan relates to other state agency endangered species management plans, federal recovery plans and state and other recovery efforts;
7. What process the agency used in developing the plan, including the review and approval process, if any.

A progress update will be given to the Board in July 2022, and a final draft ESMP will be presented to the Board for approval in November 2022. The Board-approved ESMP will be submitted to the Commission no later than January 2023 for their review and approval.

RECOMMENDATION

This item is information only.

NEXT STEPS

1. The Division will return to the Board in March 2022 for a Board decision to approve the Agency role and the ESMP content framework.
2. The Division will provide a status update on the development of the content of the ESMP in July 2022.
3. The Division will provide the final draft ESMP to the Board for approval in November 2022. Following Board approval, the ESMP will be submitted to the Fish and Wildlife Commission.

ATTACHMENTS

1. State Endangered Species Act – ORS 496.171 to 496.192

THREATENED OR ENDANGERED WILDLIFE SPECIES

496.171 Definitions for ORS 496.171 to 496.182; applicability date. Notwithstanding ORS 496.004, with respect to state agency actions taken under ORS 496.171 to 496.182 after July 17, 1995, as used in ORS 496.171 to 496.182:

(1) “Conservation” means the use of methods and procedures necessary to bring a species to the point at which the measures provided under ORS 496.171 to 496.182 are no longer necessary. Such methods and procedures include, but are not limited to, activities associated with scientific resource management such as research, census taking, law enforcement, habitat acquisition and maintenance, propagation and transplantation.

(2) “Native” means indigenous to Oregon, not introduced.

(3) “Species” means any group or population of wildlife that interbreeds and is substantially reproductively isolated.

(4) “Verifiable” means scientific information reviewed by a scientific peer review panel of outside experts who do not otherwise have a vested interest in the process. [1995 c.590 §2]

496.172 Commission management authority for threatened or endangered species; rules. In carrying out the provisions of the wildlife laws with regard to the management of wildlife that is a threatened species or an endangered species, the State Fish and Wildlife Commission:

(1) Shall conduct investigations of wildlife species native to this state and shall determine whether any such species is a threatened species or an endangered species.

(2) By rule, shall establish and publish, and from time to time may revise, a list of wildlife species that are threatened species or endangered species. Listed threatened species or endangered species shall be protected as provided in ORS 496.182.

(3) Shall work cooperatively with state agencies that have land management authority or regulatory authority to determine their roles within their statutory obligations in the conservation of endangered species, as described in ORS 496.182 (8).

(4) By rule, shall establish a system of permits for scientific taking of threatened species and endangered species and shall establish a system of state permits for incidental taking of state-designated threatened species and endangered species not listed by the federal government under such terms and conditions as the commission determines will minimize the impact on the species taken. An incidental taking permit or statement issued by a federal agency for a species listed under the federal Endangered Species Act of 1973 (P.L. 93-205, 16 U.S.C. 1531), as amended, shall be recognized by the state as a waiver of any state protection measures or requirements otherwise applicable to the actions allowed under the federal permit.

(5) Shall cooperate with the State Department of Agriculture in carrying out the provisions of ORS 564.105.

(6) Shall adopt administrative rules to carry out the provisions of ORS 496.171 to 496.182 and 498.026. [1987 c.686 §3; 1995 c.590 §3]

496.176 Listing species; procedure; matters to be considered; periodic review. (1) The lists of threatened species or endangered species established pursuant to ORS 496.172 (2) shall include:

(a) Those species of wildlife listed as of May 15, 1987, as a threatened species or an endangered species pursuant to the federal Endangered Species Act of 1973 (P.L. 93-205, 16 U.S.C. 1531), as amended; and

(b) Those species determined as of May 15, 1987, by the State Fish and Wildlife Commission to be threatened species or endangered species.

(2) The commission, by rule, may add or remove any wildlife species from either list, or change the status of any species on the lists, upon a determination that the species is or is not a threatened species or an endangered species.

(3) A determination that a species is a threatened species or an endangered species shall be based on documented and verifiable scientific information about the species' biological status. To list a species as a threatened species or an endangered species under ORS 496.004 and 496.171 to 496.182, the commission shall determine that the natural reproductive potential of the species is in danger of failure due to limited population numbers, disease, predation or other natural or human actions affecting its continued existence and, to the extent possible, assess the relative impact of human actions. In addition, the commission shall determine that one or more of the following factors exists:

(a) That most populations are undergoing imminent or active deterioration of their range or primary habitat;

(b) That overutilization for commercial, recreational, scientific or educational purposes is occurring or is likely to occur; or

(c) That existing state or federal programs or regulations are inadequate to protect the species or its habitat.

(4) Determinations required by subsection (3) of this section shall be made by the commission on the basis of verifiable scientific and other data after consultation with federal agencies, other interested state agencies, private landowners, affected cities, affected counties, affected local service districts as defined in ORS 174.116, other states having a common interest in the species and interested persons and organizations.

(5)(a) Any person may petition the commission to, by rule, add, remove or change the status of a species on the list.

(b) A petition shall clearly indicate the action sought and shall include documented scientific information about the species' biological status to justify the requested action.

(c) Within 90 days of receipt of a petition, the commission shall respond in writing to the petitioner indicating whether the petition presents substantial scientific information to warrant the action requested.

(d) If the petition is found to present such information, the commission shall commence rulemaking.

(e) A final determination by the commission concerning the action requested in a petition shall be provided within one year from the date of receipt of the petition, with the option for an additional 12-month extension of time to complete the listing if the commission determines that limited information or other appropriate considerations require the extension.

(f) If the petition is denied, the petitioner may seek judicial review as provided in ORS 183.484.

(6) The commission may determine not to list a species as a threatened species or an endangered species in any of the following cases:

(a) If the species has been listed pursuant to the federal Endangered Species Act of 1973 (P.L. 93-205, 16 U.S.C. 1531), as amended.

(b) If the species is currently on the list as a sensitive species, or is a candidate species or has been petitioned for listing pursuant to the federal Endangered Species Act of 1973 (P.L. 93-205, 16 U.S.C. 1531), as amended.

(c) If the species has been determined, pursuant to the federal Endangered Species Act of 1973 (P.L. 93-205, 16 U.S.C. 1531), as amended, to not qualify as a threatened species or an endangered species.

(7)(a) Notwithstanding subsections (1) to (5) of this section, the commission shall take emergency action to add a species to the list of threatened species or endangered species if it determines there is a significant threat to the continued existence of the species within the state.

(b) The commission shall publish notice of such addition in the Secretary of State's bulletin and shall mail notice to affected or interested persons whose names are included on the commission's mailing list for such purposes.

(c) Such emergency addition shall take effect immediately upon publication in the Secretary of State's bulletin and shall remain valid for a period no longer than one year, unless during the period the commission completes rulemaking procedures as provided in subsection (5) of this section.

(8) The commission shall periodically review the status of all threatened species and endangered species listed under ORS 496.171 to 496.192. Each species shall be reviewed at least once every five years to determine whether verifiable scientific information exists to justify its reclassification or removal from the list, according to the criteria listed under subsections (3) and (4) of this section. If a determination is made to reclassify a species or remove it from the list, the commission, within 90 days, shall commence rulemaking to change the status of the species.

(9) Notwithstanding the provisions of this section, the commission:

(a) May decide not to list a species that otherwise qualifies as a threatened or endangered species within this state if the commission determines that the species is secure outside this state or the species is not of cultural, scientific or commercial significance to the people of this state.

(b) May not include *Branta canadensis leucopareia*, commonly known as the Aleutian Canada goose, on the lists of threatened species or endangered species. [1987 c.686 §4; 1995 c.590 §4; 2005 c.402 §1; 2011 c.319 §20; 2012 c.40 §1]

496.182 Protection and conservation programs; mitigation of adverse impact on local economies; compliance by state agencies; rules. (1) The burden of protecting and recovering threatened species or endangered species can be a significant cost to the citizens of this state and it is therefore the policy of this state to minimize duplication and overlap between state and federal laws dealing with threatened species or endangered species. To this end, nothing in this section is intended to prevent the adoption of cooperative state or federal programs when such programs provide protection for listed species without significant impact on the primary uses of state lands.

(2)(a) At the time the State Fish and Wildlife Commission adds a species to the list of threatened species or endangered species under ORS 496.172, the commission shall establish by rule quantifiable and measurable guidelines that it considers necessary to ensure the survival of individual members of the species. These guidelines may include take avoidance and protecting

resource sites such as spawning beds, nest sites, nesting colonies or other sites critical to the survival of individual members of the species.

(b) The commission shall work with private landowners, affected cities, affected counties and affected local service districts, as defined in ORS 174.116, to mitigate the adverse impact on local economies when the commission adds a species to the list of threatened species or endangered species pursuant to ORS 496.172.

(3) For threatened species listed under ORS 496.172 and in the absence of an approved endangered species management plan described in subsection (8) of this section for an endangered species, if a state agency determines that a proposed action on land it owns or leases, or for which it holds a recorded easement, has the potential to violate the guidelines established under subsection (2) of this section, it shall notify the State Department of Fish and Wildlife. Within 90 days of such notice, the department shall recommend reasonable and prudent alternatives, if any, to the proposed action which are consistent with the guidelines.

(4) If a state agency fails to adopt the recommendations made under subsection (3) of this section, it shall, after consultation with the department, demonstrate that:

(a) The potential public benefits of the proposed action outweigh the potential harm from failure to adopt the recommendations; and

(b) Reasonable mitigation and enhancement measures shall be taken, to the extent practicable, to minimize the adverse impact of the action on the affected species.

(5) When an action under this section is initiated by a person other than a state agency, the agency shall provide final approval or denial of the proposed action within 120 days of receipt of a written request for final determination.

(6) The provisions of this section do not apply to lands acquired through foreclosures of loans made pursuant to programs of the Department of Veterans' Affairs.

(7) State land owning or managing agencies shall set priorities for establishing endangered species management plans required by subsection (8) of this section after consultation with the commission on the level of biological threat and, in consideration of available funds, the immediacy and seriousness of the threat to any listed species.

(8)(a)(A) Within four months of the listing of an endangered species, the commission, in consultation and cooperation with the state land owning or managing agency, shall determine if state land can play a role in the conservation of endangered species. The commission and the land owning or managing agency shall consider species biology and geography of the land base to determine if the species or its habitat is found on state land. If the species or its habitat is not found on state land, the commission shall determine that state land has no role to play in the conservation of the species.

(B) If the species or its habitat is found on state land, the land owning or managing agency, in consultation with the State Department of Fish and Wildlife, shall determine the role its state land shall serve in the conservation of the endangered species. This role may include, but is not limited to conservation, contribution toward conservation or take avoidance. To carry out its consulting role under this subsection, the department shall provide state agencies with an assessment of the conservation needs of the endangered species. In making this determination, the land owning or managing agency shall balance the statutory requirements, rules and policies applicable to the agency's programs, the social and economic impacts that conservation would have on the state, the conservation needs of the species, the purpose of the land and the roles of other ownership categories. The agency shall balance these factors consistent with the

commission's rules related to the biological aspects of species management and the statutory obligations of the land owning or managing agency, including the statutory purpose of the land.

(C) After determining the role its state land shall serve in conservation of the species, the land owning or managing agency, in consultation with the State Department of Fish and Wildlife and consistent with the commission's rules related to endangered species management plans, shall develop and approve an endangered species management plan within 18 months from the date the species is first listed as endangered. Endangered species management plans shall be based on the statutes, rules and policies applicable to the agency's programs and shall take into account any social or economic impacts that the plan may have on the state. The land owning or managing agency shall submit the plan to the commission for review and approval as provided in subparagraph (D) of this paragraph.

(D) The commission shall review the endangered species management plan approved by the land owning or managing agency under subparagraph (C) of this paragraph to determine whether the plan achieves the role defined for the land under subparagraph (B) of this paragraph. Based on the biology of the endangered species the commission may modify the endangered species management plan if necessary to be consistent with the role the land owning or managing agency has defined for the land under subparagraph (B) of this paragraph and shall approve the plan as submitted or modified within 24 months from the date the species is listed as endangered.

(b) For state agencies other than land owning or managing agencies, the commission, in consultation and cooperation with the agency, shall determine whether the agency can serve a role in the conservation of endangered species. If the commission determines that the agency has a role to play in conservation of the endangered species, the agency shall determine what role it shall serve in conservation of the endangered species. The agency shall make this determination as provided in the commission's rules related to the biological aspects of species management and in a manner consistent with the agency's statutory obligations. [1987 c.686 §5; 1995 c.590 §5; 2012 c.40 §2]

Note: Sections 1, 2, 6 and 7, chapter 532, Oregon Laws 2019, provide:

Sec. 1. Section 2 of this 2019 Act is added to and made a part of ORS chapter 496. [2019 c.532 §1]

Sec. 2. (1) The State Department of Fish and Wildlife may refuse to disclose information described in subsection (3) of this section regarding the habitat, location or population of a fish or wildlife species that is:

(a) Listed by the federal government or by the State Fish and Wildlife Commission as a threatened species or an endangered species;

(b) Under consideration by the commission for listing as a threatened species or an endangered species; or

(c) A sensitive species as defined by the department by rule.

(2) The department may refuse to disclose data described in subsection (3) of this section if:

(a) The species has value as a commercial species or game species, or has black market value;

(b) There exists a history of harm to a local population of the species from malicious or unlawful behavior, accidental taking, disturbance or harassment and the behavior or ecology of the species makes the species especially vulnerable to that harm;

(c) There is a known demand for illegally taking or harassing the species; or

(d) The species has limited distribution and concentration or is an endemic species.

(3) The department may refuse to disclose telemetry, radio frequency or other locational data about a species, an individual member of a species or the habitat of a species or individual member of a species, that are described in subsection (1) or (2) of this section if the data concern:

(a) Present, projected or recent past locations of individual members or populations of the species;

(b) Present, projected or recent past habitat used by the species, including but not limited to habitat used for breeding, nesting, denning, migration, dispersal or other sensitive or vulnerable life stages, if disclosure of the habitat could be expected to lead to discovery of the location of the species or of an individual member of the species;

(c) Results or other specific information from the unpublished data and findings of research, monitoring or evaluation efforts conducted by the state or by an entity acting jointly with the state; or

(d) Confidential information provided on a voluntary basis by private landowners or representatives of private landowners.

(4)(a) The department may disclose data withheld under subsections (1) to (3) of this section to a requester that is one or more of the following:

(A) The federal government, a tribal government, a public body as defined in ORS 174.109, a public utility or an accredited college or university;

(B) Owners of, lessees of rights-of-way in or holders of easements on private land to which the data pertain;

(C) Holders of public grazing permits for the land to which the data pertain;

(D) Owners of agricultural land or forestland, if the disclosure might prevent loss to an agricultural or forest operation; and

(E) Resource management partners and stakeholders.

(b) If the department refuses disclosure because disclosure could harm a species or member of a species, the department shall issue a proposed order refusing the disclosure request and provide the requester with notice of rights and remedies as provided in ORS 183.415.

(5) The department shall require a recipient of information disclosed under subsection (4) of this section to sign an agreement to maintain the confidentiality of the information. The agreement may include, but need not be limited to, a proposed protective order for use, if necessary, in a legal proceeding to maintain confidentiality of the information. If the department is prohibited under subsection (8) of this section from withholding the information, the agreement may prohibit the recipient from disclosing the information, except to further the protection or conservation of a species in a manner described in subsection (8) of this section.

(6) A disclosure of information under subsection (4) of this section does not require that the department disclose the information to any other party.

(7) Subsections (1) to (3) of this section may not be used to withhold data, studies or other information about the total numbers or health of a species in this state or in a region of this state.

(8) The department may not withhold information under subsection (3) of this section if the information is relevant to:

(a) An ongoing petition, litigation or other administrative or legal action in furtherance of the protection or conservation of a species; or

(b) The preparation of a petition, or for a litigation or other administrative or legal action, in furtherance of the protection or conservation of a species.

(9) If the department provides data described in this section, to the extent practicable the department shall aggregate the data to a scale that does not create a risk to the fish or wildlife species or members of the species. [2019 c.532 §2]

Sec. 6. Section 2 of this 2019 Act is repealed on January 2, 2024. [2019 c.532 §6]

Sec. 7. (1) The Legislative Assembly intends that section 2 of this 2019 Act and the amendments to ORS 192.345 by section 3 of this 2019 Act apply retroactively to September 1, 2018. The Legislative Assembly hereby validates any disclosure refusal by the State Department of Fish and Wildlife on or after September 1, 2018, and prior to the effective date of this 2019 Act [July 15, 2019] regarding information described in section 2 of this 2019 Act or in the amendments to ORS 192.345 by section 3 of this 2019 Act.

(2) Section 2 of this 2019 Act does not allow the department to refuse information in violation of a data sharing commitment or obligation, including but not limited to a commitment under a management plan, entered into by the department prior to the effective date of this 2019 Act. However, section 2 (9) of this 2019 Act applies to any such data sharing. [2019 c.532 §7]

496.192 Effect of law on commercial forestland or other private land; effect on other laws. (1) Nothing in ORS 496.004, 496.171 to 496.182 or 498.026 is intended, by itself, to require an owner of any commercial forestland or other private land to take action to protect a threatened species or endangered species, or to impose additional requirements or restrictions on the use of private land.

(2) Notwithstanding subsection (1) of this section, other statutes may authorize administrative rules or programs to protect wildlife species, including threatened species or endangered species, and nothing in ORS 496.004, 496.171 to 496.182 or 498.026 shall diminish the force or effect of such rules or programs. [1987 c.686 §6a]

STAFF REPORT

Agenda Item No.:	D
Work Plan:	Fire Protection
Topic:	Ongoing Topic; Fire Season Update
Presentation Title:	2021 Fire Season Summary
Date of Presentation:	November 3, 2021
Contact Information:	Mike Shaw, Acting Chief of Fire Protection 541-447-5658, Michael.H.Shaw@Oregon.gov

SUMMARY

Oregon revised statute (ORS) 477.005 defines the Department's Fire Protection policy, which requires a complete and coordinated system. This system relies on the partnership between the Oregon Department of Forestry (Department) and forest landowners with a commitment to ongoing communication and collaboration with many other state and federal agencies.

Attachment 1, Interim Joint Committee on Ways and Means letter, contains the summary of the 2021 fire season pursuant to ORS 477.777. This report has been traditionally presented to the Board in a visual manner by Department staff.

The Department will follow-up with the Board regarding a breakdown of acres burned by ownership as that information becomes available.

ATTACHMENTS

- (1) Department letter to the Interim Joint Committee on Ways and Means



Oregon

Kate Brown, Governor

Department of Forestry

State Forester's Office

2600 State St.

Salem, OR, 97310

503-945-7200

www.oregon.gov/ODF

October 18, 2021

Senator Elizabeth Steiner Hayward, Co-Chair
Senator Betsy Johnson, Co-Chair
Representative Dan Rayfield, Co-Chair
Interim Joint Committee on Ways and Means
900 Court Street NE
H-178 State Capitol
Salem, OR 97301

RE: 2021 Fire Season Report

Dear Co-Chairpersons:

Nature of the Emergency/Request

The Oregon Department of Forestry (ODF) respectfully requests permission to appear before the Interim Joint Committee on Ways and Means at its November 2021 meeting for the purpose of providing:

1. The final report on the 2021 fire season in Oregon.
2. The preliminary report of losses on private lands of timber, buildings, fencing, livestock, and grazing land capacity if the land is expected to be unavailable for two or more grazing seasons as required by HB2501.

Agency Action

2021 fire season report

The 2021 fire season was characterized by early season predictive services outlooks indicated an increased probability of potential significant wildfire potential and an above average fire season in the state of Oregon. Below average snowpack in many areas coupled with early snow melt and significant drought intensifying in the state required early preparation and preparedness for the 2021 fire season. Seasonal firefighters were hired earlier, and additional resources were utilized to be at the ready for the increased initial attack and large fire potential.

The statistics as of October 6 highlight the complexity, severity, and length of the fire season. For 2021, the year-to-date (YTD) number of fires on ODF-protected lands is 1,117, which exceeds the 10-year average of 912 fires. Acres burned for 2021 are at 224,332, which also exceeds the 10-year average of 94,968 acres. Human-caused fires accounted for 907 of this year's fires on ODF-protected lands, also exceeding the 10-year average of 661, burning 56,655 acres (10-year average: 62,597 acres burned).

AGENDA ITEM D

Attachment 1

Page 1 of 6

Across all jurisdictions in the state, approximately 1,891 fires occurred that consumed 816,880 acres. This fire season the Oregon/Washington geographic area was at the highest level of preparedness (PL5) for 65 consecutive days.

Fall weather patterns have brought much needed rain to most parts of the state significantly moderating any new fire starts and fire behavior on the remaining fires burning in the state. At the time of this letter, all west side ODF districts, except for the Southwest Oregon District, had terminated fire season. Southwest and the remaining east side districts anticipate terminating the fire season prior to the end of October.

The 2021 fire season started early, with extended attack fires occurring as early as March 2021. Fire occurrence continued at a pace well above the 10-year average throughout April, May and June. By the end of May, five districts had declared fire season. By mid-June, another five districts declared fire season. ODF Incident Management Teams (IMTs) first deployed to the Cutoff Fire in the ODF Klamath-Lake District on June 19, 2021. That fire was contained at 1,288 acres. The next ODF IMT deployment was to the Lewis Rock Fire in ODF's Central Oregon District and was contained at 368 acres. These early fires exhibited fire behavior consistent with fires typically later in the year. By June 25, all the remaining districts had declared fire season.

On June 29 ODF assisted Redmond Fire and Deschutes County Fire with a series of fires just outside of Redmond that imminently threatened over 100 homes and prompted evacuations as well as the closure of the airport and community college. The fires qualified as Oregon's first FEMA FMAG fire of the year authorizing suppression cost reimbursement to the state and cooperating agencies.

On June 30, Governor Kate Brown declared a state of emergency due to the imminent threat of wildfire across Oregon. On the heels of record-breaking high temperatures, much of the state was in high or extreme fire danger with red flag warnings in effect for hot, dry, windy conditions and dry thunderstorms. With the extended forecast in Oregon calling for unseasonably high temperatures with no rain in the forecast—and with 19 counties already in declared drought emergencies—the threat of wildfire in Oregon was imminent.

In July, ODF IMT 2 mobilized to the Grandview Fire near Sisters, and on the same day, ODF IMT 1 mobilized to the Bootleg Fire in Klamath County, this fire was eligible for reimbursement under the FEMA FMAG program and eventually burned a total of 413,717 acres in Klamath and Lake Counties. On July 18, ODF IMT 3 mobilized to the Elbow Creek Fire near Troy, which resulted in all 3 ODF IMTs being mobilized at the same time.

In early August, several "complexes," or multiple fires being managed as a single incident due to their geographic proximity, ignited in Southwest Oregon. To highlight the incredible value of initial attack, especially when resources are so limited regionally and nationally, two complexes did not become large fires on the landscape because successful initial attack kept them small. In ODF's Southwest Oregon District, the Applegate Complex included 43 lightning fires in the Medford Unit, and the Apple Foot Complex was 23 fires on the Grants Pass Unit. These fires all occurred within a five-day period, but early detection and aggressive initial attack kept all those 66 fires from becoming large

incidents and further drawing down local, state, and national resources. The largest fires within those complexes were the Round Top Fire at 23 acres and the Buck Rock Fire at 17 acres. The resulting five large fire complexes were comprised of 104 fires that started during extensive predominantly dry thunderstorms that produced significant lightning.

The 18 Skyline Ridge Complex fires started on or around August 1 on ODF-protected lands 5 miles east of Canyonville, ODF IMT 1 was deployed on August 3. The 38 Devil's Knob Complex fires started on or around August 3 on federal lands 30 miles southeast of Roseburg. The 32 Rough Patch Complex fires started on or around July 27 on federal lands 26 miles southeast of Cottage Grove. The 11 Middle Fork Complex fires started on or around July 29 on federal lands 9 miles north of Oakridge. The 5 Bull Run Complex fires started on or around August 3 on federal lands 9 miles south of Detroit in the Bull of the Woods Wilderness Area on Mt. Hood National Forest.

Oregon National Guard (ONG) aviation resources were once again deployed on multiple fires for direct fire suppression missions as well as aerial medical extrication. ONG firefighting hand crews were deployed to the Bootleg and Rough Patch fires. Traffic Control Point (TCP) resources were also deployed to multiple incidents.

In Eastern Oregon, a swiftly moving lightning storm produced two positive lightning strikes, one in Klamath County and one in Lake County. The fires became the Willow Valley Fire, predominantly burning on BLM jurisdiction in Klamath County and the Patton Meadow Fire burning in Lake County and were managed as a complex known as the Fox Complex, ODF IMT 3 was assigned on August 13. The Patton Meadow Fire qualified as the state's third FEMA FMAG incident. In total, ODF IMTs deployed seven times, for a total of 92 days. Drought continued to intensify and as of September 9, 2021, all of Oregon was in drought: 27% of Oregon was in "exceptional" status, 50% in "extreme," 22% in "severe," and 1% in "moderate."

Fire season estimated costs

Fire season 2021 costs to date as of October 7th are once again significant. This year gross costs are estimated currently at \$129,174,634, while after fire cost recoveries from federal agencies and FEMA reimbursements, net costs are \$68,939,782. This results in an estimated claim against the catastrophic firefighting expense insurance policy through Lloyds of London of approximately \$18.9 million.

Fire prevention

Fire prevention remained a primary focus throughout fire season, with coordinated public outreach campaigns with our key fire prevention partner "Keep Oregon Green." ODF actively engaged with our local, state, and federal partners, including private landowners. The Oregon Department of Transportation supported the prevention effort through highway reader boards highlighting the extreme fire danger.

General Fund investments

There were a number of General Fund investments that were invaluable to ODF's operations during the 2021 fire season.

In January, the Emergency Board invested \$13 million in advancing fire protection in Oregon. These funds were valid through June 30, 2021. Investments included 33 limited duration positions for key fire line leadership and support capacity and additional months of funding for seasonal firefighters for the 2021 fire season. There was also an investment of \$5 million in funding for all-ownership strategic fuel reduction projects around communities was appropriated. Thirty-seven projects were awarded targeting 7,199 acres of fuel reduction, including prescribed fire. This included 1,400 hours of volunteer work, 500 hours of young adult training, 30 miles of right-of-way and hiking trails fuel mitigation treatments, and the hiring of 8 ODF limited duration FTE.

The General Fund and the Oregon Forestland Protection Fund partnership in ODF's severity program can be accredited for much of our initial attack success. The Emergency Board allocated \$5 million in State of Oregon General Funds to bolster the severity program through June 30. This provided a significant ability to add resources to our local districts and associations to respond quickly, safely, and effectively. Type 2 and 3 helicopters and additional ground resources were utilized and ODF added a next generation large airtanker and additional SEATs. Having the ability to mobilize necessary resources, when needed throughout the state continued to be a proactive approach to successful suppression. Additionally, ODF's infrared camera mounted on our state's aircraft funded through OFLPF's strategic investment program played critical role in successful early detection of fires when they were small. Estimated expenses for these resources is \$3.2 million.

A one-time General Fund increase of \$2 million was made to the Fire Protection Division's 2021-23 budget in recognition of the increased length and complexity of modern fire seasons. This increase was to provide additional capacity to staff all aspects of fire management and intended to off-set costs to all landowners.

Special Purpose Appropriation (SPA) Severity Program

The department manages a severity program, as introduced earlier in the report, by contracting for one large air tanker, eight medium helicopters, one small helicopter, five single-engine air tankers, two fire-detection planes and several ground-based resources. Additional aviation and ground resources were added during periods of very high fire danger and increased fire activity. Additional resources were procured through call-when-needed (CWN) contracts and local incident resource agreements. Over the past decade, the SPA has provided for the availability of statewide severity resources for use where and when fire conditions were most severe.

With the passage of HB 2050 during the 2013 Legislative Session, the annual SPA funding of \$2 million for the severity program was matched with up to \$3 million annually from the OFLPF, for a total severity program of \$5 million. In the 21-23 biennial budget, an additional \$5 million of general fund has been added to the SPA for total landowner and general fund investment of \$10 million. The severity program has been highly effective at keeping fires small by supporting ODF's ability in 2020 to keep 97 percent of fire starts on ODF-protected lands at 10 acres or less. The statewide severity program resources are in addition to district aviation resources already positioned throughout the state. The estimated SPA request for the 2021 fire season is currently \$9.3 million.

COVID-19

As a result of the COVID -19 pandemic, ODF spent significant time and effort implementing COVID-19 mitigation strategies with local, state, and federal partners for wildland firefighting. ODF partnered with Office of the State Fire Marshal (OSFM) to incorporate “health and wellness liaisons” into the IMT structures at both agencies. The modules added specialized capacity to the IMTs that allowed the teams to focus on their firefighting objectives while additional responders focused on COVID-19 mitigation, personnel health, and relationships with county public health departments. ODF, OSFM and OHA worked together to address needs and concerns specific to COVID-19 and fire camps, with the goal of keeping firefighters and communities safe and healthy. By all indications, these efforts proved very successful in limiting the spread of COVID-19 among firefighting personnel. This fire season there were only eleven known positive cases of COVID-19 on ODF wildfire incidents in the state.

HB2501 Preliminary Report on Losses on Private Lands

The department is required to report on wildfires more than 1,000 acres regarding the losses on private lands of timber, buildings, fencing and livestock, and of grazing land capacity if the land is expected to be unavailable for two or more grazing seasons (HB 2501). During the 2021 fire season, 10 fires met the reporting criteria. This preliminary loss assessment report is consistent with the expectation of law, but limited by the time, capacity, and expertise required to offer a fair and comprehensive assessment of loss relative to what the state has experienced. As a result, these numbers are likely to change in the coming months.

The Bootleg Fire impacted 154,124 acres of private forestland and destroyed 408 structures; 161 were homes at a value of more than \$40.7 million.

The Log 329 Fire impacted 5,682 acres of private forestland.

The Elbow Creek Fire resulted in an estimated timber stumpage loss of \$29,829,550 across 14,551 acres of privately owned timberlands. Six structures were destroyed at an estimated value of \$698,000.

The Grandview Fire burned 1,552 acres of private forestland resulting in more than \$3.6 million in estimated timber stumpage loss. 14 structures were destroyed at an estimated value of more than \$2 million.

The Patton Meadow Fire burned 1,245 acres of private forestland resulting in about \$868,000 in estimated timber stumpage loss. Four structures were destroyed at an estimated value of \$122,000.

The Joseph Canyon Fire burned 3,602 acres of private forestland resulting in more than \$494,000 in estimated timber stumpage loss.

The Ponina 132 Fire burned 1,191 acres of private forestland resulting in \$893,460 in estimated timber stumpage loss. Seven structures were destroyed at an estimated value of \$253,000.

The Cutoff 215 Fire burned an estimated 1,000 acres of private forestland. 22 structures were destroyed at an estimated value of \$560,000.

The Poole Creek Fire burned 5,291 acres of private forestland resulting in more than \$99 million in estimated timber stumpage loss. Seven structures were destroyed at an estimated value of \$253,000.

The Cougar Peak Fire burned 29,826 acres of private. Ten structures were destroyed at an estimated value of over \$1 million.

Action Requested

Acknowledge and accept the following:

1. The final report on the 2021 fire season in Oregon.
2. The preliminary report of losses on private lands of timber, buildings, fencing, livestock, and grazing land capacity if the land is expected to be unavailable for two or more grazing seasons as required by HB2501.

Legislation Affected

None.

Thank you for your consideration. Please feel free to contact me with any questions.

Sincerely,



Nancy Hirsch
Oregon State Forester
(503) 945-7211

c: Jason Miner, Governor's Office
Oregon Board of Forestry
Matt Stayner, Legislative Fiscal Office
Renee Klein, Chief Financial Office

Agenda Item No.:	E
Work Plan:	Fire Protection
Topic:	Evolving Topic: Governor's Council on Wildfire Response
Presentation Title:	2021-2023 Wildfire Rulemaking Overview Certified Burn Manager Progress Report
Date of Presentation:	November 3, 2021
Contact Information:	Tim Holschbach, Deputy Chief – Policy & Planning 503-945-7434, Tim.J.Holschbach@Oregon.gov

SUMMARY

The purpose of this agenda item is to seek Board of Forestry (BOF) approval for submittal of a progress report on the Certified Burn Manager program required by Senate Bill 762, Section 27.

BACKGROUND AND ANALYSIS

Following the 2013-2015 fire seasons, two parallel review processes were initiated, the Secretary of State (SOS) Audit and the Fire Program Review. Both of these efforts were aligned to help continue a highly functioning wildfire protection system for Oregon into the future. The Department has fully embraced the findings and recommendations from both final reports. The 2017-2108 fire seasons experience reinforced the need for the agency to continue efforts on these recommendations. Additionally, the Governor issued Executive Order 19-01 creating the Governor's Council on Wildfire Response.

- The Department's 2015 Fire Protection Program Review - Response Committee was coordinated with all agency partners through a transparent process including legislators, governor's office, forest landowners, and cooperators to reach for continuous improvement in Oregon's complete and coordinated fire protection system;
- The Secretary of State Performance Audit offered a third-party review of the Department's ability to sustain its multiple missions, as increased demand to support the fire protection effort has been required from the entire agency;
- The Governor's Council on Wildfire Response offered 37 recommendations to improve Oregon's wildfire protection system. Many of the recommendations required legislative action to be carried out.

Senate Bill 762 captured many of the recommendations of the Governor's Council on Wildfire Response, providing legislative direction to the Board of Forestry regarding the wildland-urban interface; statewide fire risk mapping; prescribed fire; directed the Department to review and clarify the enforcement of rules pertaining to forestland; and baseline standards for unprotected and under-protected lands in Oregon.

SUMMARY OF REQUIRED ACTIONS

Prescribed Fire

- Requires the Oregon Department of Forestry (ODF) to establish by rule a Certified Burn Manager Program. Requires ODF to consult with the Oregon Prescribed Fire Council concerning best practices for conducting the program, initiate rulemaking to establish the program by November 2021, and provide a progress report to the Legislative Assembly by December 1, 2021.
- Allows a person to conduct a prescribed fire that burns across land ownership boundaries if the person obtains a permit, complies with its conditions, and obtains consent from relevant landowners. Requires related ODF rulemaking to be completed by November 30, 2022.

RECOMMENDATION

The Department recommends the Board approve the Certified Burn Manager Progress Report for submittal to the legislative assembly, as required by Senate Bill 762, section 27.

RULE DEVELOPMENT TIMELINE

Promulgation of Oregon Administrative Rules (OAR) adhere to the Administrative Procedures Act (APA) outlined in Chapter 183, and with the Department engaging in a multifaceted rule making effort, timelines may change to ensure the Legislative outlined deadlines are met.

ATTACHMENTS

- (1) Certified Burn Manager Progress Report (available before meeting)



Oregon

Kate Brown, Governor

Department of Forestry

State Forester's Office

2600 State Street

Salem, OR 97310-1336

503-945-7200

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www.oregon.gov/ODF



*"STEWARDSHIP
IN FORESTRY"*

November 3, 2021

The Honorable Senator Jeff Golden, Chair
Senate Interim Committee on Natural Resources and Wildfire Recovery
900 Court Street NE
H-178 State Capitol
Salem, OR 97301-4048

RE: OREGON BOARD OF FORESTRY – 2021 SB 762 Certified Burn Manager Report

Dear Chair:

The passage of Senate Bill 762 requires the Board of Forestry (Board) to report on the establishment and implementation of the Certified Burn Manager Program. The Board welcomes this opportunity to connect with the legislature on this critical topic. Across the west, we have experienced dramatic impacts from wildfire, including civilian and fire fighter loss of life. SB 762 brings to the forefront an opportunity to advance wildfire risk reduction and promote mitigation tactics through the development of a Certified Burn Manager program, increasing the available workforce and educational opportunities related to this important mitigation tool. Please accept this report as the Board's effort to fully meet the intent of SB 762, Section 27, and our unwavering commitment to mitigating the risk of adverse impacts of wildfire on our communities and natural resources.

Rulemaking Status

At the July 21, 2021 meeting of the Board of Forestry, the Department of Forestry (Department) presented to the Board a summary of the directives included in the legislation. The requirements of the Certified Burn Manager program were also presented to the Board. After the Department's presentation, the Board directed the Department to initiate rulemaking to establish the Certified Burn Manager Program.

The Department has been conducting monthly Rule Advisory Committee (RAC) meetings since August 18th, consulting with a wide range of interested groups (Attachment 1) to ensure a robust and inclusive program design. Board Member Brenda McComb has been designated as the Board representative and has attended each meeting. The Department consulted with the Oregon Prescribed Fire Council in mid-July regarding best practices and the implementation of the program. The Oregon Prescribed Fire Council is also a member of the RAC and has provided valuable input into the rulemaking process.

Promulgation of Oregon Administrative Rules (OAR) adhere to the Administrative Procedures Act (APA) outlined in Chapter 183.

The Board reviewed work plans for the upcoming two-year planning cycle at its October planning retreat. The Board is scheduled to be provided an update from the Department on the progress of the rulemaking work in July 2022 and direct the Department to move forward with rulemaking and receive public comment. The final rules are scheduled to be adopted by the Board, along with the results of public comment, at the November 2022

AGENDA ITEM E

Attachment 1

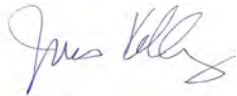
Page 1 of 3

Board meeting. The Department will be directed to launch the program after the administrative rules are adopted.

As stated above, please accept this report as the Board's efforts to fully meet the intent of SB 762, Section 27 and express our unwavering commitment to mitigating adverse impacts of wildfire on our communities and natural resources.

Thank you for your time.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jim Kelly", is positioned above the printed name.

Jim Kelly
Chair, Oregon Board of Forestry

Attachment 1 – Certified Burn Manager Rules Advisory Committee Membership



Certified Burn Manager Rulemaking Advisory Committee Member list

Organization (alphabetical by organization name)	Primary Contact	Alternate
Associated Oregon Loggers	Amanda Astor	
Confederated Tribes of Grande Ronde	Colby Drake	
The Nature Conservancy	Katie Sauerbrey	Pete Caligiuri
Oregon Department of Environmental Quality	Michael Orman	Margaret Miller
Oregon Forest Industries Council	Rick Allen	Kyle Williams
Oregon Prescribed Fire Council	Amanda Rau	
Oregon Small Woodlands Association	Roger Beyer	
Oregon State University	Christopher Adlam	
Sustainable Northwest	Jenna Knobloch	

Acting State Forester, Board Member, and Public Comments

Agenda Item No.:	2
Work Plan:	Private Forests
Topic:	Urban Forestry
Presentation Title:	Urban Forestry Program Update
Date of Presentation:	November 3, 2021
Contact Information:	Kristin Ramstad, Urban and Community Forestry Program Manager 503-945-7390, Kristin.Ramstad@oregon.gov Josh Barnard, Acting Division Chief Private Forests 503-551-8568, josh.w.barnard@oregon.gov

SUMMARY

The Oregon Department of Forestry (Department) Urban and Community Forestry Assistance (U&CF) Program turned 30 in 2021. Building on decades of successful engagement with Oregon cities, universities, nonprofits, and residents, the U&CF Program has continued to optimize its outreach and technical education is actively promoting a statewide tree-mapping platform and has grown the ranks of Tree City USA communities. Nationwide, urban and community forestry is the focus of broad and nuanced attention for its potential roles in carbon drawdown, improving human health and equity, mitigating climate extremes, and providing pathways to employment. This agenda item will provide a brief program update, showcasing U&CF tree mapping software and continuance of effective urban and community forestry outreach in 2022 since both the Program Manager and the community assistance forester will be retiring in the first half of next year.

CONTEXT

The Board of Forestry's (Board) 2011 *Forestry Program for Oregon* recognizes the value of Oregon's urban and community forests, which are "major contributors to the health and well-being of its citizens." The discussion of Goal B states urban and community forests "provide numerous health and environmental benefits: they help purify our air and water, control stormwater runoff, provide shade, reduce soil erosion, create wildlife habitat, and improve the health of riparian areas."

The Board also recognized in recent decades, as Oregon becomes more populated and urban, resources to manage the urban forests have lagged. The Oregon Legislature states, "Trees not only are important to the economic and environmental well-being of Oregon but also represent a significant component of the quality of life for urban residents. As a matter of policy, it is important to promote and protect the human habitat values that accrue from a healthy urban forest. Therefore, it is declared to be the public policy of the State of Oregon to encourage cities to plant and properly care for trees within the cities' urban growth boundaries and develop management plans to protect and promote urban forests."

The Department implements the Urban and Community Forestry Assistance Program under ORS 526.510 (1), "State Forestry Department shall provide technical assistance to cities, counties, other governmental units, nonprofit and civic organizations, and other groups interested in planting and caring for trees in communities." The mission of the Urban and Community Forestry Assistance Program is to help Oregonians improve their quality of life by promoting community investment in our urban forests. The primary funding source for this Program is federal funds through the USDA Forest Service State and Private Forestry. The Program provides periodic updates to the Board on its activities and trends, and issues in urban forestry.

BACKGROUND AND ANALYSIS

Program Manager, Kristin Ramstad (1.0 FTE, federally funded), serves as the point of contact for the federal-state partnership, coordinating all aspects of grant writing, grant administration, program delivery, performance accounting, and fiscal management. The Program Manager also serves as a Director on Oregon Community Trees Board, as the ODF-representative (and current Chair) on the Oregon Heritage Tree Committee, and contributes to educational program delivery, statewide program leadership, technical assistance, and volunteer coordination. Kristin has worked in the U&CF Program since 1991.

The U&CF Program has one field Community Assistance Forester. This position held by Katie Lompa (0.75 FTE, federally funded through Consolidated Grant Payment, and temporary 0.25 FTE funding through Tree Mapping LSR) provides technical assistance, volunteer coordination, organizational assistance, and educational guidance to Oregon's 241 incorporated cities, 36 counties, multiple state agencies, colleges, and universities, and non-profit organizations. The Community Assistance Forester also administers the Tree City USA program for the state. Katie has worked in the U&CF Program since 1998.

Both U&CF staff members have urban forestry-related university degrees. They have maintained their ISA-certified arborist credentials, in addition to pursuing additional professional training, for decades.

The last time the U&CF Program manager, Kristin Ramstad, provided a Program update to the BoF was in November 2020.

UPDATES AND ONGOING GRANT PROJECTS

Oregon TreePlotter™ Inventory Project

In 2018, the U&CF Program received an LSR grant to procure an urban tree inventory and mapping platform to make it available to Oregon cities. Tree inventories are an essential component for developing urban and community forestry management plans. Many cities cannot afford to purchase the proprietary software or spare the staff time to complete a tree inventory. By making available easy-to-use software, our goal was to gain engagement of small and medium cities to administer their own tree inventories. Tree data added to this program will incrementally grow a statewide urban tree database. In 2021, the progress of this project has been slowed by key agency retirements and pandemic restrictions, which have limited onsite outreach. Nonetheless, interest in this resource is slowly increasing. Several cities are now currently using the software, have shared their tree inventory data, and/or are planning to get started. In the recent virtual state urban forestry conference, one of the presentations was "The Time to Plot is Now," which featured how the software can be widely used by communities. Additionally, the U&CF Program offers a monthly "TPI Tuesday" videoconference for cities that have questions or want to learn more about the Tree Plotter platform.

Urban Forest Resiliency Grant

In 2020, the Washington State Department of Natural Resources, Urban Forestry Program, and the Oregon U&CF Program received a grant to coordinate invasive insect species communication and collaboration. This project is focused on aligning both the inventory software and urban tree inventories in each state to create an "early warning system" for responding to invasive insects in urban forests. Both programs plan to update and align our respective statewide tree databases, work with cities on preparedness, and provide training to city staff, utilizing the resources created by both programs: [Emerald Ash Borer Readiness and Response Plan for Oregon](#) and [Washington's Urban Forest Pest Readiness Playbook](#). In 2021, the pandemic has also curtailed the implementation of this project due to onsite outreach issues and the limited availability of data collectors. This project is slated to move forward in 2022.

Current to Future U&CF Trends and Program Projects

- **Urban and Community Livability and Equity.**

An increasing number of studies have correlated human well-being in cities with an increased tree canopy. Yet, all too often, the distribution of tree canopy in cities favors the more affluent areas. Similarly, the Oregon cities that have the broadest and most well-funded urban forestry programs tend to be those that are larger and more affluent than most. As Oregon experiences fluctuations in climate patterns, a key focus of future program efforts needs to be in promoting urban trees to promote human health, especially in areas where observed health outcomes could be improved by the presence of tree canopy. In 2021, both U&CF Program staff and several OCT directors participated in an excellent three-month training on Environmental Justice through the Alliance for Community Trees. Plans are afoot for increasing OCT's and the U&CF Program's diversity, equity, and inclusion (DEI) outreach effectiveness, with a greater emphasis on creating and sustaining canopy in underserved communities.

- **Carbon**

Seattle, California, and other states have carbon credit programs that include urban forests. Oregon cities that include forested areas, such as Astoria and Portland, may have the opportunity to create ongoing carbon offsetting partnerships. Other cities may provide opportunities to both improve the livability of underserved neighborhoods and offset carbon by intensive tree planting in these areas.

- **A Statewide Urban Forestry Strike Team.**

Urban Forestry strike teams comprise individuals with arboriculture and disaster response backgrounds who can assess tree risk in towns that have been disaster struck. Since 2015, UF Strike Teams have been mobilized in the South and Midwest regions of the US. Recent wildfires and ice storms in Oregon impacted local communities, but more broadly, many urban communities experience damage from hurricanes and flooding. Much of Oregon is also in an earthquake zone. One focus of the Program is to develop a statewide, if not regional, UF Strike Team in Oregon. Discussions of implementing UF Strike Teams throughout the West are occurring, but little has happened in Oregon so far.

- **Urban Lumber**

The utilization of urban wood is a growing focus in some Oregon communities. Urban lumber usually comprises city trees with high-risk factors, such as blowdown or those removed for developments. Urban wood is often viewed as a waste and valueless, with the cost of its disposal shouldered by cities. Nowadays, urban wood is becoming recognized as having value for building, cabinetry, or biofuel (i.e., biochar), and new city policies are needed to manage this under-utilized asset. In 2021, the Oregon Urban Lumber Network (OR-UWN) launched. Although still unincorporated, the OR-UWN seeks to connect urban wood producers and customers to improve the utilization of removed tree and wood waste from urban forests, reduce air pollution from wood debris burning, and decrease carbon release from current urban wood disposal methods. In 2022, after incorporating as a 501(c)3 nonprofit, the OR-UWN will be able to participate more fully as a full member of the national [Urban Wood Network](#). The U&CF Program plays a coordination role for this group.

- **Building pathways into the arboriculture and urban forestry professions.**

The Pacific Northwest is an area with high need and high growth opportunities for arboriculture and urban forestry. Several groups are looking for ways to provide access into these fields for high school and college students, and for underrepresented communities. Additionally seeking ways to build capacity for employment. In 2021, the U&CF Program provided a \$5000 Small Projects grant to OCT to assist in the production of the annual U&CF conference and help with outreach to underrepresented communities by providing complimentary scholarships to the conference's

representatives of these groups. Through outreach and nominations from U&CF partners, there were five recipients who received these scholarships.

PARTNERSHIPS AND OUTREACH

Oregon Community Trees

The U&CF Program has continued to build and rely upon its relationship with Oregon's urban and community forestry council, the nonprofit Oregon Community Trees (OCT). OCT comprises some of the most dedicated and well-trained urban forestry professionals and advocates in Oregon. OCT was a key partner, along with Medford's One Sunny Day Initiatives, for the Green Legacy Hiroshima Peace Tree Project. (For the ODF Hiroshima Peace Tree webpage and storymap, go [here](#).) The all-volunteer OCT Board of Directors includes municipal foresters, private sector business owners, educators, arborists, nursery representatives, and others working in U&C. For many of OCT's directors, serving on the Board is not only an opportunity to advise a state program but also to receive professional training in leadership and organizational development. Except for 2020, the U&CF Program provides annual cost-share scholarship grants to attend relevant training conferences to several OCT directors every year.

Oregon Heritage Tree Committee

One of the most rewarding partnerships of the U&CF Program is with the Oregon Heritage Tree Committee (HTC), which is supported by the Oregon Travel Information Council. The Department's U&CF Program manager has been the chair of this committee for the past two years. Spurred by feedback that the language on a state Heritage Tree plaque was dated and insensitive, in 2021, the Oregon Heritage Tree Committee undertook an intensive analysis of its Heritage Tree line-up. Over the past year, HTC reviewed its signage texts, introduced a new award program to recognize Tree Heroes, and taken steps to increase the number of stories and histories of underrepresented (often non-White) people and groups told by Oregon's Heritage Trees. This summer, in a ceremony with city residents and local tribal members, the HTC inducted the first Oregon Heritage Tree with an indigenous name. Nuuk'wii-daa-naa-ye', (pronounced "Noo Kwee DAH Nah Yay," and meaning "Our Ancestor" in the Siletz language), is a giant 400-year-old Sitka spruce tree in the coastal town of Lincoln City, Oregon. To view a short documentary on Nuuk'wii-daa-naa-ye' go [here](#).

Other Outreach Activities

Since June 2019, the ability of U&CF staff to travel around the state for onsite visits and outreach has been limited. The Department imposed agency-wide cost reduction measures in the second half of 2019, and the Covid 19 restrictions started mid-March in 2020. Along with our usual phone and email communication, and seasonal e-newsletter, *Community Tree Connections*, the U&CF Program has made good use of video conferencing during this time, initially inviting our cities to attend our "office hours" if they needed our assistance with tree challenges in their cities. In 2021, the Program focused on creating a new newsletter format for [Community Tree Connections](#), updating its webpage, and producing a virtual urban forestry conference. (See the following paragraph.)

- **Oregon Annual Urban and Community Forestry Conference**

One of the U&CF Program's key outreach mechanisms has been the Annual Oregon Urban and Community Forestry Conference, traditionally held at the World Forestry Center in early June. The conference is hosted by the Department, OCT, and the USDA Forest Service and generously sponsored by many UF-related businesses. The monies raised via the sponsorships, usually around \$10K, are used to fund the OCT Arbor Day grant program, offset Directors' travel, and lodging expenses for quarterly meetings, and support the work of OCT. In March 2020, the conference committee decided to postpone the conference until 2021. In September 2021, the U&CF Program and OCT worked with a Portland-based company, Social Enterprises, to produce a virtual urban forestry conference over two half-days. Themed "Water-Wise Community Forests: Strategies for our Future" the conference featured 11

presenters on topics ranging from drought, selecting climate forward trees, urban forest resiliency in the face of climate change, preparing an urban forest for storms, dealing with ice storm damage, and best practices for green infrastructure technologies. Conference speakers and the presentation agenda can be viewed on the [OCT website](#). This year, conference scholarships were offered to underrepresented groups, and five attendees received these scholarships with total attendance at 150 people.

- **Arbor Day Foundation Recognition Programs**

Since the U&CF Program's inception, it has administered the Arbor Day Foundation recognition programs Tree City USA (TCUSA), TCUSA Growth Awards, Tree Campus Higher Education (for universities), and Tree Line USA (for utilities). One of the key leadership roles for the Program's community assistance forester is running Oregon's Tree City USA program. The TCUSA program provides an excellent incentive for Oregon cities to engage with urban and community forestry by meeting four basic "Standards."

- a. Standard 1 – demonstrate they have a city tree advisory board or UF department
- b. Standard 2 – show they have a tree ordinance that regulates public trees
- c. Standard 3 – spend at least \$2/capita on tree care
- d. Standard 4 – proclaim and celebrate Arbor Day

The number of Oregon's TCUSAs seems to increase by 1-3 almost every year. Currently, Oregon boasts 69 TCUSAs, 28.6 percent of Oregon's 241 incorporated cities. Because most of Oregon's larger and medium-sized cities are TCUSAs, this means that over 80 percent of Oregon's urban population lives in a TCUSA. The U&CF Program does everything it can to incentivize all communities to become TCUSAs such as targeting them for OCT Arbor Day grants, offering registration discounts to the annual U&CF conference, and giving them first chance to adopt a Green Legacy Hiroshima Peace Tree. In 2021, the U&CF Program produced a ["storymap"](#) celebrating Oregon's Tree City USAs. While TCUSAs are the communities that are the most engaged with urban forestry and the U&CF Program, they are not the only cities that receive U&CF outreach.

- **Leadership**

Both the U&CF Program staff serve on key committees of Oregon Community Trees. Until 2018, the community assistance forester served on the board of the PNW-International Society of Arboriculture. The U&CF Program manager has served on the Heritage Tree Committee, which operates under the auspices of Oregon's Travel Information Council, since 1991. Since 2019, the current U&CF manager has served as the chair of the Committee. Additionally, over the last several years, the U&CF Program staff participated in several leadership opportunities outside of Oregon. In January 2021, working with OCT, the State Forester, and the Governor's office, the U&CF Program advocated for the reinstatement of a statewide recognition of the benefit of trees. In 2021, Governor Brown designated April as Oregon's Arbor Month with a statewide proclamation.

RECOMMENDATION

This is an information item.

NEXT STEPS

The Department will provide updates on this topic as directed.

Agenda Item No.:	3
Work Plan:	Private Forests
Topic:	Board Updates
Presentation Title:	Annual Forest Practices Monitoring Update
Date of Presentation:	November 3, 2021
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SUMMARY

This agenda topic provides an update on Private Forests Monitoring activities since September 2020. This includes monitoring projects that assess implementation and effectiveness monitoring, as well as other monitoring-related work. We also include the re-assessment of previous implementation study efforts.

CONTEXT

The Board's 2011 Forestry Program for Oregon supports an effective, science-based, and adaptive Oregon Forest Practices Act (FPA) as a cornerstone of forest resource protection on private lands in Oregon (Objective A.2). The discussion of Goal A recognizes that the FPA includes a set of best management practices to ensure that forest operations meet state water quality standards. The Board's objectives also promote management practices that protect forest soil productivity from losses due to human-induced landslides, soil erosion, and soil compaction (Objective D.8). The Board's guiding principles and philosophies includes a commitment to continuous learning, evaluating and appropriately adjusting forest management policies and programs based upon ongoing monitoring, assessment, and research (Value Statement 11). The Board has also adopted administrative rules that emphasize effectiveness monitoring for riparian management areas, landslides and public safety, and pesticides.

BACKGROUND

At their September 2020 meeting, the Board received a general update on Private Forests monitoring activities. Topics included a progress update on the implementation study, a summarized literature review for the Siskiyou Project, and progress reports on sufficiency of streamside protections in Western Oregon.

ANALYSIS

High-priority monitoring projects over the last year include:

- Draft of a Memorandum of Understanding with the Department of Environmental Quality for protecting and improving water quality on non-federal forestlands.
- Third-party assessment of previous implementation study efforts (Attachment 2), and the agency's response plan to this assessment (Attachment 3).
- Revision of the protocol for the reforestation implementation pilot study per recommendations in Attachment 2 and initiation of the study.

Monitoring Unit personnel were also extensively involved in 2020 post-fire response work.

RECOMMENDATION

This agenda item is informational only.

ATTACHMENTS

- (1) Forest Practices Implementation and Effectiveness Monitoring: 2021 Update
- (2) Mount Hood Environmental final report: *Oregon Forest Practices Act Implementation Study: History, Issues, and Potential Solutions*
- (3) ODF response plan to Mount Hood Environmental report

Forest Practices Implementation and Effectiveness Monitoring: 2021 Update

1. Introduction

The Board of Forestry has approved the department's current Monitoring Strategy which set priorities for the study of implementation and effectiveness of current FPA standards, and a process for revisiting priorities as new situations arise. The Monitoring Unit continuously links our work with the Strategy, as shown in Table 1.

Table 1. Current monitoring studies and related questions.

Monitoring study	Question from 2016 Monitoring Strategy (priority ¹)
Implementation pilot study on reforestation rules	What is the level of compliance with reforestation rules? (M)
Western Oregon Streamside Protections Review	What fraction of riparian areas in forest operation areas are currently on track to meet FPA riparian "desired future condition" targets? (H) Are forest practices, including roads, under current rules effective in meeting all applicable water quality criteria established by the Oregon Department of Environmental Quality (DEQ), including those established by TMDLs, for water quality parameters affected by forest practices on fish and non-fish bearing water bodies? (H) Do the riparian rules promote streamside forest stand structure and large wood recruitment levels that mimic mature riparian stand conditions? (L)

¹ L=low; M=medium; H=high.

2. Implementation Monitoring

2.1 Reassessment of 2013-2017 implementation monitoring

ODF received critiques regarding the study design, analysis, and reporting of results in our previous implementation study. To address this, ODF hired Mount Hood Environmental (MHE) to assess the validity of the critiques and recommend solutions to address valid concerns. Attachment 2 contains the MHE final report and their recommendations for our implementation study. Our response to their recommendations is described in Attachment 3.

2.2 Forest Practices Act (FPA) Implementation Study: Reforestation Pilot

The Monitoring Unit is moving forward with a pilot study on reforestation.

The principal questions of this pilot study are:

1. Did the landowner replant trees within the required time?
2. Did the landowner plant enough trees?
3. Did the landowner plant the right species of trees?

The pilot study will test and improve the protocol that was revised based on input from MHE (Attachment 2). This pilot study is intended to streamline our field methods while using the

appropriate statistical analyses, to provide initial error estimates that will be useful when determining appropriate sample size, and to test our implementation of MHE recommendations.

This pilot study will incorporate MHE's identification of areas for improvement. Regarding the issue of non-response, the pilot focuses only on private industrial (PI) landowners, who historically have a high rate of granting access. Since there is only one stratum (PI landowners), the calculation of confidence intervals is easier. We are working with the Implementation Study External Review Team, to gather input. We have worked with this team over the years, and they have provided helpful perspective on the implementation study. Additionally, we have presented to affected landowner groups to obtain their support for this project, which is especially helpful since we need permission to access their properties.

We are currently acquiring permission to access sample sites. Fieldwork is projected to begin this fall and continue through the first quarter of 2022. Preliminary results are expected by June 2022, with a final report completed by the end of 2022. Data will be collected by ODF staff. The geographic scope is the entire state, which will provide for better reporting on this Key Performance Measure.

3. Effectiveness Monitoring

3.1 Western Oregon Streamside Protections Review

The FPA water protection rules for vegetation retention along fish streams were designed to produce desired future conditions (DFC) for riparian stands along streams in Oregon. This DFC is to grow vegetation so that conditions become similar to those of mature streamside stands. In the FPA, mature stands are characterized as often being dominated by conifer trees, 80-200 years of age that provide ample shade over the stream channel, an abundance of large wood in the channel, root masses along edge of channel, snags, and regular inputs of nutrients through litter fall¹.

ODF initiated the Riparian Function and Stream Temperature (RipStream) study to evaluate the effectiveness of FPA rules at promoting DFC and providing an abundance of large wood in streams in western Oregon. The Western Oregon Streamside Protections Review (i.e., Western Oregon Project; Fig. 1) will use multiple lines of analysis of DFC and large wood recruitment, including: 1) RipStream field data, 2) a systematic review of scientific literature on DFC and large wood, and 3) modeling analysis to project long-term (e.g., 80-200 years) changes in stand conditions and large wood recruitment.

The RipStream field data were analyzed in the ODF Technical Report #21 (Coble and Allen, 2020; see References for link to report) that addresses harvesting effects on riparian stand conditions, understory vegetation, downed wood in RMAs, and large wood in streams. For the literature review, staff have completed all literature searches, filtering of relevant papers, and initial steps toward extracting relevant data from the literature. Finally, staff developed a Request for Proposal (RFP) for the modeling analysis. The components of the Western Oregon Project described above will be integrated to create a comprehensive report.

¹ OAR 629-642-0000(2)

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Coble A and M Allen. 2020. Influence of harvesting on riparian stand structure and function in Western Oregon. Oregon Department of Forestry, Technical Report #21.
<https://www.oregon.gov/odf/Documents/workingforests/monitoring-technical-report-21.pdf>

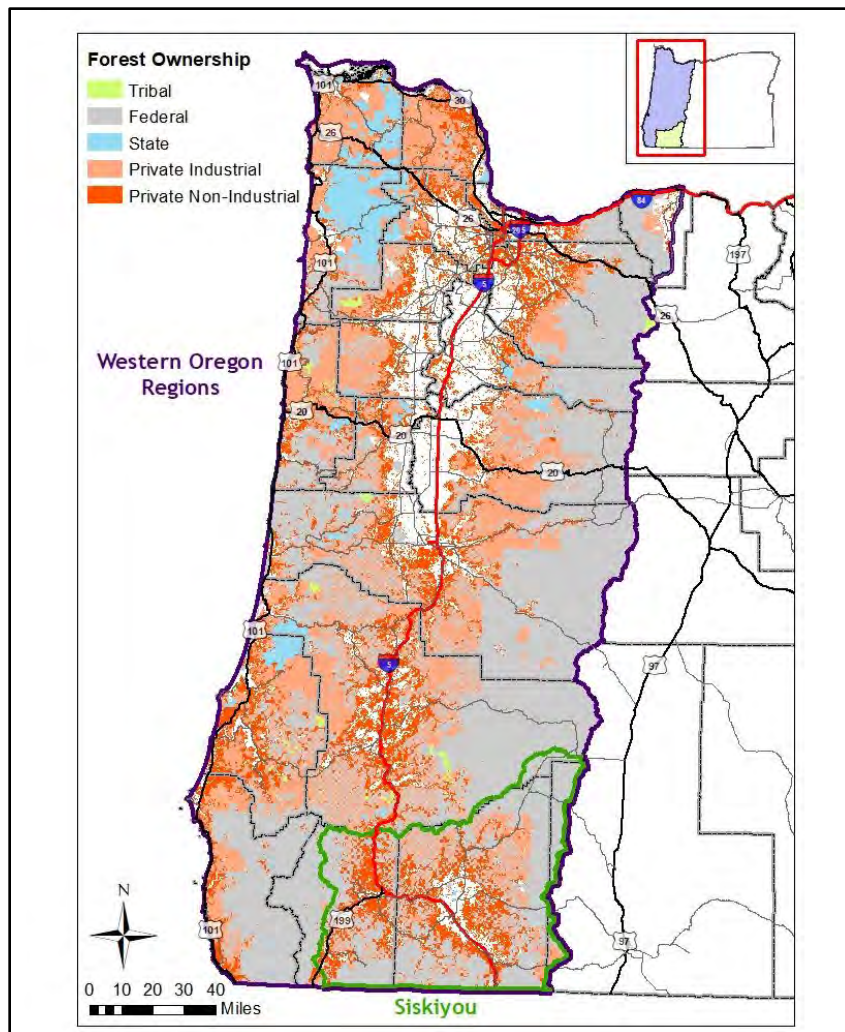


Figure 1. Map of ownership in the area addressed within the Western Oregon Streamside Protections Review (purple outline).

4. Other Monitoring work

4.1 Collaboration with Oregon Department of Environmental Quality (DEQ)

The Board requested the Department to work closely with DEQ on the relationship of Total Maximum Daily Loads (TMDLs) and how the information and analysis can be used in determining sufficiency of forest practice rules. The agencies expanded this work to develop a new interagency memorandum of understanding (MOU) that outlines a collaborative process to protect and improve water quality on non-federal forestlands in Oregon. This topic will be the focus of a joint Board of Forestry – Environmental Quality Commission meeting later this year.

4.2 Monitoring resources and budget

The Monitoring Unit had two vacant staff positions in addition to the Monitoring Manager position. Division Chief Kyle Abraham acted as the Monitoring Unit supervisor. Adam Coble was recently promoted to the Forest Health and Monitoring Unit Manager position, effective September 1, 2021. He has made a priority to fill vacancies within the unit, starting with a new position, Riparian and Aquatic Specialist, followed by three monitoring specialist positions.

4.3 Other engagement and support

Although Monitoring personnel typically participate in some wildland fire work every year, the 2020 Labor Day fires necessitated a substantial portion of the Unit's time. This work included:

- An assistant fire investigator on one of the large 2020 fires to determine its origin and cause.
- Technical experts (two staff) on the Erosion Threat Assessment/Reduction Team that concluded in November 2020 and produced a report to focus post-fire recovery efforts to protect resources and lives.
- Participant on the Governor's Post-Fire Recovery Research and Monitoring Team that considers research and monitoring in the context of an all-lands research and monitoring approach to post-fire recovery.
- Private Forests lead (3 months) and team lead (4 months) for the ODF Fire Recovery Operations Team (FROT) that was established from November 2020 to June 2021. Developed a final report.

Unit and Division personnel also:

- Represented the department on the interagency water-monitoring group, Stream Team.
- Provided support to Committee for Family Forestlands and the three Regional Forest Practices Committees.
- Participated in DEQ effort on total daily maximum loads (TMDLs) for the Willamette Basin.
- Engaged in the Water Quality Pesticide Management Team.
- Participated in training for, and support of, the agency mission for fire protection.

OREGON FOREST PRACTICES ACT IMPLEMENTATION STUDY: HISTORY, ISSUES, AND POTENTIAL SOLUTIONS

Final Report

Prepared by:

Mount Hood Environmental, Sandy, OR

Prepared for:

Oregon Department of Forestry, Salem, OR

June 15, 2021



Documents Addressed

- Groom, J. 2020. 2017 ODF Compliance Audit Report Summary of Identified Issues.
- McComb, B. 2018. Comments on compliance rate estimation methods. Email correspondence to Peter Daugherty, December 31, 2018.
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- Stevens, D. L. 2019. Memorandum to Bob Van Dyk, Wild Salmon Center. RE: Comments on “Forest practices compliance audit: 2017 Annual Report”. February 26, 2019.

Suggested Citation:

- Mount Hood Environmental (MHE). 2021. Final Report: Oregon Forest Practices Act Monitoring Audits: History, Issues, and Potential Solutions. Submitted to the Oregon Department of Forestry. June 15, 2021.

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EXECUTIVE SUMMARY

Forestry practice rules or best management practices (BMP) exist in every U.S. state (Cristan 2016) to promote harvest sustainability and environmental protection. A subset of states have compliance monitoring programs to satisfy BMP guidelines, however the goals and focus of each state's program vary. For Oregon's compliance program, timber harvest operations are monitored for adherence to rules developed through the Oregon Forest Practices Act (HB 1624, 1971). Compliance results are reported by the Oregon Department of Forestry (ODF) Private Forests Division through its Forest Practices Implementation Study (2013-2017). Following the release of the 2017 report, critiques were received by members of the Board of Forestry and external reviewers regarding the study design, data analysis, and results reporting. In response to critiques, we (Mount Hood Environmental) were contracted by the ODF to conduct an independent review of the 2017 Implementation Study, assess critiques, and propose solutions for future compliance monitoring.

Our independent review identified several aspects of the study design and analysis that limited the scope of inference and introduced potential bias into the compliance estimates. First, the population size (i.e., number of harvested units) was unknown because unit suitability (i.e., harvest completion) could not be determined from harvest notifications. Suitability was verified after samples were drawn and when landowners responded to inquiry requests. Without population estimates for each stratum (ownership and Administrative Area), sample selections could not be appropriately weighted for sample allocation. Harvest unit suitability (harvest completed and access allowed) varied by strata, resulting in a nonrandom sample selection that may have biased compliance rates. This site selection process limited the scope of inference to observed units within strata. Second, landowner participation was noncompulsory and some landowners did not respond to ODF inquiry or refused land access. This led to nonrandom draws within strata and may have introduced unquantified bias into compliance estimates. Given the limited scope of inference and potential bias, the reliability of the Implementation Study results is unknown.

We also identified issues related to the statistical methods used to estimate compliance rates. Although the data's scope of inference was limited to observed units within strata, it was used for statewide compliance estimation. Further, compliance rate estimates did not report confidence intervals or account for collinearity and measurement errors. Without reporting the confidence surrounding estimates, the strength of inferences cannot be ascertained.

While these issues preclude the 2017 Implementation Study from providing results with known statistical reliability, results can address the six goals identified by ODF. ODF has defined performance criteria for achieving goals at basic and high degree. Using these criteria, some goals are met at a basic degree while others are not. Goals that meet basic criteria include providing data to (1) the Oregon legislature and (2) the Board of Forestry, and (3) using results for operator training. Goals that do not meet criteria to a basic degree include (4) informing third-party certification systems and (5) improving public trust. Generally, goals that do not meet basic performance criteria are the result of unknown statistical reliability. The performance of the

Implementation Study to meet the sixth goal, relating to efficient usage of resources, could not be evaluated without a relative comparison. Overall, the ability of the Implementation Study to achieve any agency goal is restricted by the limited scope of inference, introduced bias, and that the strength of inference could not be assessed.

Retrospective and prospective solutions are offered to address the Implementation Study's limited scope of inference and potential bias. Retrospective solutions can be conducted through a reanalysis of existing data and would mitigate some issues and estimate the potential impact of others. However, reanalysis cannot broaden the scope of inference, determine if bias was introduced, or address fundamental flaws in study design. Therefore, we do not recommend reanalysis of the Implementation Study results. On the contrary, prospective solutions would build on the existing monitoring program processes by addressing shortcomings of the current study design, data analysis, and reporting. We developed three options, each with a common set of process changes, to provide a range of solutions to address ODF's goals. Process changes address sources of bias and error found in the Implementation Study, produce reliable compliance rates, and increase sampling efficiency. Our solutions range in their ability to meet agency goals from a basic to high degree with commensurate increases in effort and cost. Using budgets from the 2013-2017 Implementation Study, we present itemized cost estimates for each of the three options.

Our final recommended option is an intermediate approach that maximizes the utility of results while addressing agency goals, given ODF's available resources. The cost of the first year is comparable to the current maximum of ODF's resources available for compliance monitoring. Following the first monitoring year, the estimated annual cost would be reduced by approximately 33% (\$100,000). This approach will:

1. Account for bias and error to produce reliable compliance estimates and associated confidence intervals for a subset of FPA rules.
2. Stratify by ownership class to provide finer scale reporting and more targeted outreach and training.
3. Provide results for comparison across years to identify trends in rule compliance.
4. Leverage 2013 – 2017 Implementation Study data to inform sample selection and estimate population size.
5. Allow flexibility for study design changes. For example, modifying which rules are assessed to align with a new policy focus or increasing sample size for tighter confidence intervals.
6. Determine ideal sample sizes and measurement frequencies, providing known confidence in results and reducing bias while minimizing survey cost.

This option builds upon the existing infrastructure of the program focused on sample selection, field data collection, and data analysis. Further, many components of the program will remain

intact, while others would be modified to improve statistical reliability and achieve agency goals to a higher degree than the 2017 Implementation Study.

1. REVIEW OF WORK TO DATE

BACKGROUND

The Oregon Department of Forestry (ODF) regulates forestry operations on non-federal land to manage and promote stewardship of Oregon's forests. In 1971, the Oregon state legislature adopted the Oregon Forest Practices Act (FPA) with the objectives to:

*“encourage economically efficient forest practices that ensure the continuous growing and harvesting of forest tree species and the maintenance of forestland for such purposes as the leading use on privately owned land, consistent with sound management of soil, air, water, fish and wildlife resources and scenic resources within visually sensitive corridors as provided in **ORS 527.755 (Scenic highways)** and to ensure the continuous benefits of those resources for future generations of Oregonians.”-ORS 527.630 (1)*

These objectives serve as the foundation for statutes and rules developed by the Oregon Board of Forestry. The first set of FPA rules were implemented by the ODF in 1972 and covered tree replanting, road construction and maintenance, and stream protection. Early FPA amendments addressed stream protection for compliance with the Federal Clean Water Act (33 U.S.C. §1251 et seq. 1972). FPA rules and statutes continued to evolve and expand with improved scientific understanding and shifting public interests. For example, public debate over the adequacy of FPA regulations to address declining salmonid populations led to Senate Bill (SB) 1125 in 1991. SB 1125 directed ODF to investigate timber harvest effects on riparian areas and water quality, resulting in a series of water quality rule changes in 1994. This included: expanding protections for Waters of the State (WOS) by categorizing stream types, expanding riparian buffers around water bodies, promoting rapid replanting after harvest, and enhancing regulations for pesticide use. Further rule changes continue to address water quality concerns and fish habitat and have resulted in broadened stream type definitions and expanded protections for riparian zones, fish habitat, and water quality.

The ODF enforces FPA rule compliance through inspections performed by its trained foresters. However, due to the sheer number of forest operations, only a subset of sites are inspected and data collected are not intended to provide generalizable results. Consequently, ODF instituted the Implementation Study to monitor and report FPA compliance.

Best Management Practices Compliance Monitoring Project

Compliance auditing has been conducted several ways over the past twenty years. To directly monitor and estimate compliance rates, the ODF Forest Practices Monitoring Program initially implemented the Best Management Practices Compliance Monitoring Project (BMPCMP) in 1998. The objectives of the BMPCMP were to (1) determine, through statistically valid sampling, the level of operator/landowner compliance with best management practices (BMPs) designed to protect water quality, and (2) identify opportunities to improve program administration, operator education, technology transfer, and rule clarity. A pilot was conducted in 1998 followed by full study in 1999 and 2000 (ODF 1999, 2002).

Results of the BMPCMP pilot study calculated that 189 harvest units were sufficient for 10% and 5% precision on harvest unit and stream crossing results, respectively. The full study collected data from 189 units distributed across fourteen ODF districts and three ownership types (private industrial, private non-industrial, and other). Oregon State SB 1125 and subsequent FPA rule revisions prompted the study to focus on rules pertaining to water quality. Therefore, sampling was restricted to units bordering waters of the state (WOS) or protected wetlands. Further, passage of the Oregon Plan for Salmon and Watersheds in 1998 emphasized protection and restoration of salmon habitat on private lands, which led to a high proportion of sampling at sites along fish-bearing streams. In total, a subset of 150 FPA rules from 10 rule divisions were sampled for compliance.

The BMPCMP reported both unit and rule level compliance. Compliance was calculated by dividing the number of rule applications in compliance by the total number of rule applications. A total of 13,506 individual rule applications were surveyed for the study. The average unit level compliance rate was 96.1%, with similar ranges across the ownership types. Overall rule level compliance was 96.3%, with an average of 2.7 rule applications reported not in compliance per unit surveyed. Of the 150 rules surveyed, 10 were consistently identified to have compliance rates of 48-94%. These included mechanical piling of slash near WOS, stream crossing fill stability, road surface drainage, removal of petroleum-related waste, felling of conifers into small non-fish bearing streams, removal of temporary stream crossings, skid trails near WOS, protection of small wetlands, as well as prior approval and written plan requirements. Based on the reported compliance estimates, the ODF focused forest operator education on road drainage, identification of small ephemeral streams and wetlands, and compliance with rules pertaining to small non-fish bearing streams. In addition to those focal issues, it was recommended that future compliance monitoring studies include supplemental monitoring for rules with small sample sizes. In the decade following the BMPCMP report, compliance audits were not conducted.

Implementation Study

In 2011 the Oregon legislature passed House Bill (HB) 5023 which included a budget note directing the ODF to “report to the Joint Committee on Ways and Means at the next regular legislative session (January 2013) on the process and results of contracting compliance

monitoring” (Figure 1). To fulfill this directive, the ODF Private Forests Division designed and implemented the Forest Practices Monitoring Implementation Study¹ (Implementation Study). The study evaluated FPA compliance on non-federal forested lands with a focus on road construction and maintenance, timber harvest, and a subset of water protection rules. The Implementation Study was intended to fulfill six ODF goals:

1. Provide data for annual reporting to the Oregon Legislature.
2. Verify implementation of forest practices on private property, for potential use in third-party certification systems, such as the Sustainable Forestry Initiative, American Tree Farm System, and the Forest Stewardship Council.
3. Provide an informed and systematic basis for targeted training efforts by both ODF and forest industry to increase compliance with rules.
4. Improve the public’s trust in both ODF, and those it regulates.
5. Provide data to the Board of Forestry regarding ODF’s efforts to administer the FPA.
6. Provide for efficient use of state resources and corresponding workload in monitoring unit capacity.

¹ The Implementation Study was referred to as the Forest Practices Compliance Audit prior to 2018.

Department of Forestry		Legislative Action		Budget Note Summary	
Budget Note #	Budget Note Title	Budget Structure	Program	Fund Type	Amount
1	Contracting for compliance monitoring	050-00-00	Private Forests	General Fund, Other Funds & Federal Funds	\$92,887 \$61,925 \$13,819
Budget Note #1: The Department of Forestry shall report to the Joint Committee on Ways and Means at the next regular session of the Legislature (January 2013) on the process and results of contracting compliance monitoring.					
Budget Note #	Budget Note Title	Budget Structure	Program	Fund Type	Amount
2	Contracting for cost savings, efficiencies and cost avoidance strategies.	050-00-00	Private Forests	General Fund, Other Funds.	\$545,522 \$363,677
Budget Note #2: The Department of Forestry will contract with an independent third-party to assess and make recommendations on cost savings, efficiencies, and cost avoidance strategies that could prove effective for the administration of the Forest Practices Act. The Department is to work with representatives from other state agencies and private and public forest land owners, to develop a recommendation on the potential budgetary, programmatic, and service delivery alternatives. The report and recommendations are to be completed and submitted to the interim Joint Committee on Ways and Means or Emergency Board no later than July 1, 2012.					

Figure 1. Budget note from Oregon House Bill 5023 passed during the 2011 legislative session directing the Forest Practices Implementation Study.

STUDY DESIGN

ODF developed the following monitoring questions² to fulfill their directive to report on FPA compliance as defined by the 2011 HB 5023 budget note (Figure 1) and address their goals:

1. How often did operators comply with the Forest Practice Rules pertaining to harvesting, road construction and maintenance, and water protection?
2. How does compliance vary by FPA Administrative Area and landowner type?
3. Which rules have relatively high and low compliance rates?
4. What is the scale of resource impacts resulting from non-compliance?
5. How do compliance patterns compare to those stated in the 2002 report?
6. In what practices, if any, do landowners, operators and ODF staff need more training and education to reduce resource impacts? (ODF 2015, 2017, 2018)

² Monitoring questions were taken from Groom (2020).

In contrast to the BMPCMP evaluation, contractors performed the field data collection for the Implementation Study. The use of contractors limited the evaluation of rules to compliance with written plans, quantitative measurements, and qualitative features. For instance, some road building and maintenance rules (e.g., OAR 629-625-200) require the judgement of an experienced Stewardship Forester rather than a discrete measurement and therefore were not evaluated by contractors. While question five was intended for a comparison of Implementation Study results with the 2002 compliance report (ODF 2002), differences between the study designs precluded direct comparison for all rules. For example, 57 FPA rules were evaluated during the Implementation Study compared with 150 in the BMPCMP (Table 1). The study design developed in 2013 continued to evolve throughout the program (2013 – 2017). It should be noted that an Implementation Study was not conducted in 2015 due to landowner privacy concerns.

Table 1. Study design and methods for the 1999 – 2001 Best Management Practices Compliance Monitoring Project and the 2013 – 2017 Forest Practices Implementation Study.

Design Element	BMPCMP (1999 – 2001)	Implementation Study (2013 – 2017)
Stated focus	Water quality and fish habitat protection	Harvesting, road construction and maintenance, and water protection
FPA rules assessed	150	57
Rule Divisions assessed	605: Planning Forest Operations	625: Road Construction and Maintenance
	615: Treatment of Slash	630: Harvesting
	620: Chemical and Other Petroleum Products	640: Vegetation Retention Along Streams
	625: Road Construction and Maintenance	645: Significant Wetlands
	630: Harvesting	655: Other Wetlands and Seeps
	640: Vegetation Retention Along Streams	660: Operations Near Waters of the State
	645: Significant Wetlands	
	650: Lakes	
	655: Other Wetlands and Seeps	
	660: Operations Near Waters of the State	
Sites visited	189	500
Stratification method	Stratified by ODF district and ownership type (42 total strata)	Stratified by ODF Administrative Area and ownership type (9 total strata)

Design Element	BMPCMP (1999 – 2001)	Implementation Study (2013 – 2017)
Site requirements	1. Timber harvest units associated with any stream or wetland with non-federal ownership 2. Harvest units with a 1998 notification 3. Suitability criteria ³	1. Timber harvest clearcut or thinning operations with non-federal ownership 2. Two to three years post-harvest 3. Harvest operations between 5 and 500 acres 4. Suitability criteria
Site selection	At random within strata, number of sites per strata proportional to the acreage of harvest notifications in strata	At random within strata, number of sites per strata proportional to number of notifications (2013) or acreage (other years) in strata
Survey personnel	Retired Forest Practice Foresters	Independent contractors
Compliance determined on-site	Yes	No
Noncompliance ratings	1. Administrative noncompliance 2. Potential Resource Impact 3. Resource Impact	No
Minimum site replication	6 out of 189 (3%)	1 out of every 10 sites surveyed (10%)
Landowner nonresponse and access refusal	Yes	Yes

Sample selection process

ODF surveyed a subsample of harvest operations across Oregon that represented various landowner types, resulting in a sample population stratified by Administrative Area (Area) and ownership class. ODF Areas are designated as Northwest Oregon, Southern Oregon, and Eastern Oregon (Figure 2). Ownership classes were defined as Private Industrial (PI), large privately owned lands greater than 5,000 acres; Private Nonindustrial (PNI), small privately owned lands less than 5,000 acres; and Other (OTH), those that did not fit PI or PNI definitions and were generally non-federal lands owned by the public, trusts, or non-profit organizations. This resulted in a total of 9 strata comprised of a combination of Area and ownership class.

³ Suitability criteria were similar: harvest operation must have been a completed commercial harvest and was not a land use or ownership change.

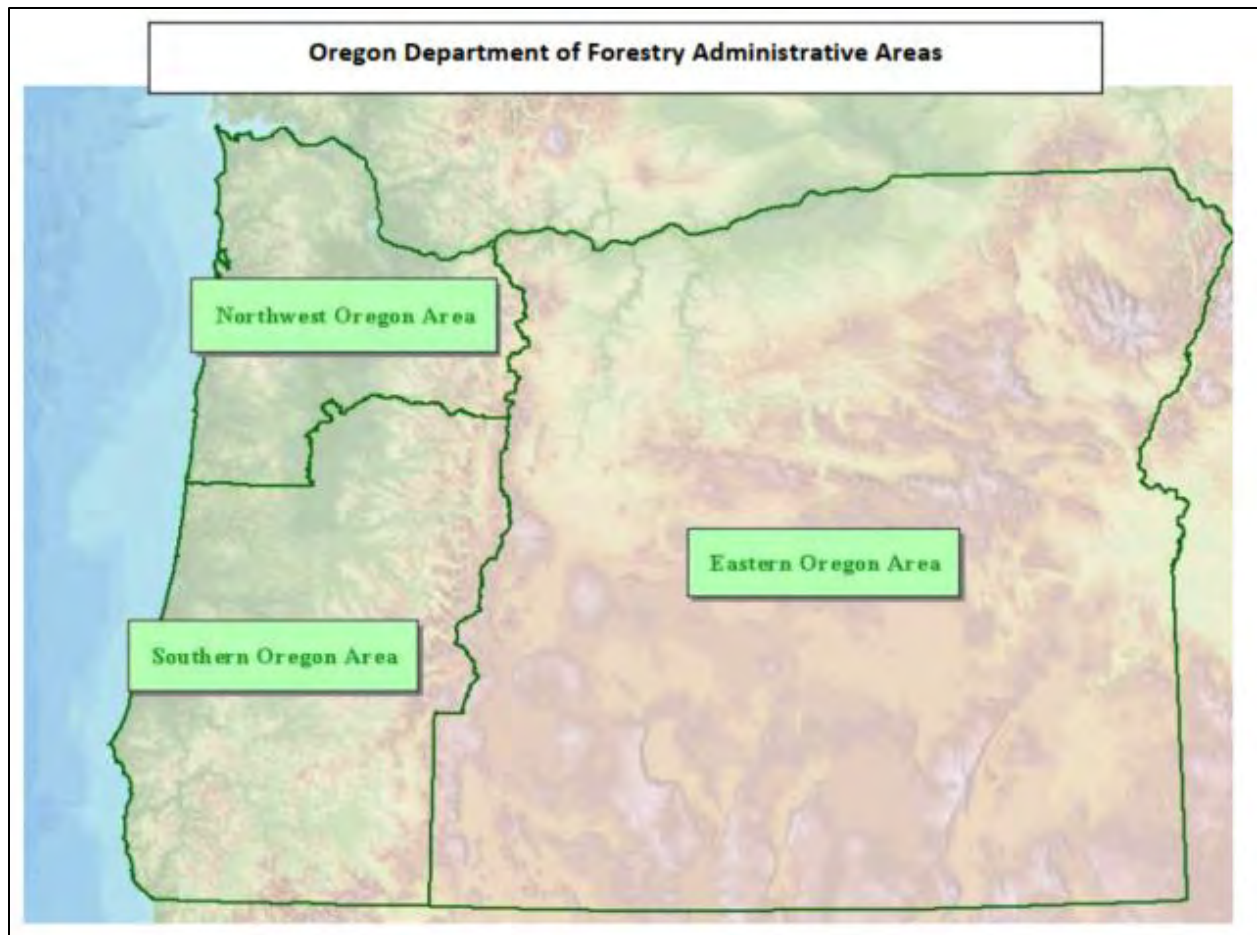


Figure 2. Oregon Department of Forestry Administrative Areas. Source: ODF (2017).

Samples were drawn using the FACTS⁴ and FERNS⁵ databases. These databases are comprised of legally required Notification of Operation and/or Application for a Permit completed by landowners and operators to conduct forest practices such as timber harvest or chemical applications. Samples for the 2013 and 2014 studies were drawn from the FACTS notifications. In 2016 and 2017, samples were drawn from notifications in the FERNS database. Notifications from these databases were filtered to meet the following criteria:

- Include only non-federal and non-tribal timber harvest clearcut and thinning operations that were scheduled to occur on forest land and did not result in a land use change.
- Include locations that had a scheduled harvest between two and three years prior.

⁴ Forest Activities Computerized Tracking System

⁵ Forest Activity Electronic Reporting and Notification System

- Include harvest operations between 5 and 500 acres. This logistical consideration was added after a 4,000-acre harvest unit was randomly selected in 2013.

Once the list of candidate harvest notifications was filtered from the databases, notifications were stratified by Area. In the 2013 Implementation Study, the number of samples that would be drawn from each Area were determined using the relative proportion of candidate notifications from each Area. This resulted in 20% of sites in Eastern Oregon, 40% in Northwest Oregon, and 40% in Southern Oregon. For subsequent Implementation Study years, the number of samples drawn in each Area were proportional to the number of acres that were scheduled for cutting relative to all Areas. These alternate methods produced similar results with less than 5% change in sample allocation between them (Table 2).

Table 2. Number of units surveyed in each monitoring year by Administrative Area and ownership class.

Administrative Area	2013			2014			2016			2017		
	PI	PNI	OTH	PI	PNI	OTH	PI	PNI	OTH	PI	PNI	OTH
Eastern Oregon	8	6	6	9	8	1	9	9	1	7	9	2
Northwest Oregon	32	18	40	30	14	1	32	12	2	20	12	7
Southern Oregon	38	17	35	19	13	5	18	13	4	27	14	2
Total	78	41	81	58	35	7	59	34	7	54	35	11

Next, candidate notifications were stratified by ownership class. In the 2013 site selection process, one third of sites within each Area were selected from each ownership class. However, landowner nonresponse and access refusal led to the PNI ownership class representing only 20.5% of all sampled sites, while PI and OTH accounted for 39% and 40.5%, respectively. In subsequent years, the proportion of samples by ownership class was selected by creating sample size targets proportional to acreage stated in notifications, resulting in increased weighting of PI operations. Similarly, sample size targets were not reached in 2014, 2016, and 2017 among the PNI strata. PNI landowner nonresponse and land access refusal continued to influence the site selection process (Table 3).

Table 3. Summary of site selection process from the 2013 – 2017 Forest Practices Implementation Study.

	2013			2014			2016			2017		
	PI	PNI	OTH	PI	PNI	OTH	PI	PNI	OTH	PI	PNI	OTH
Site inquiries	114	142	128	97	190	23	180	204	34	89	231	25
Landowner nonresponse	5	32	5	6	81	8	28	84	4	6	69	4
Sites unsuitable	27	52	30	17	55	5	14	63	5	15	92	4
Land access refused	5	16	5	0	7	0	3	19	1	7	33	0
Sites available to survey	77*	42	88	74	47	10	135	38	24	61	37	17
Sites surveyed	78*	41	81	58	35	7	59	34	7	54	35	11

*Discrepancy between values is due to either a versioning or mathematical error in the 2013 report.

Within each Area and ownership class stratum, samples were drawn from timber harvest notifications in the databases. If a notification had multiple harvest operations on-site, a single harvest unit was randomly chosen. Once samples were selected, landowners were contacted to determine unit suitability and obtain site access by ODF's Stewardship Foresters (2013) or Salem staff in subsequent years. Sites were deemed suitable when harvest had occurred two to three years prior, was not ongoing, and did not include a land use change. Sample size targets were not met in 2013 due to landowner nonresponse, unsuitable sites, and landowner access refusal, thereby requiring additional samples to be drawn after the initial draw process. In subsequent years, sample size targets were met by drawing more sites than what could be logistically surveyed (overdraw) to account for unsuitable sites, nonresponse, and access refusal.

Field data collection

After the sample units for the monitoring year were drawn, ODF directed independent contractors to conduct field surveys. FPA rules may apply to specific points (e.g., landings) or continuously along features (i.e., the entire length of a stream or road). Further, it was not feasible to take continuous measurements, so data was collected at discrete points or intervals. For example, measurements for FPA rules 629-640-100-2b and 629-640-200-2b⁶ and Rule 629-625-600-2⁷ (Table A- 1) were collected at evenly spaced intervals, start and end points, and all junctions with other streams and roads, respectively. Contractors digitally submitted field survey data in packages of 10 or more sites, resulting in a total of 20 packages (200 sites) in 2013 and 10 packages (100 sites) in each subsequent year. Data packages included field measurements for all sites, photo documentation, and spatial data.

⁶ Rule stating that all trees must be retained within 20 feet of high-water level along type D, F, and L-M N streams.

⁷ Rule stating that all roads must be maintained with a stable surface and effective drainage system.

QA/QC

From each data package, the ODF selected a single harvest unit and performed an independent survey to validate data accuracy. Sites were selected subjectively for validation based on site complexity. Generally, selection of the most complex site was based on the greatest number and variety of rule applications. When submitted data did not meet ODF-defined data standards (ODF 2017), protocols required contractors to conduct a new survey at the same site. However, remediation methods were subjectively chosen based on the perceived severity of errors in the unit (Hawksworth 2021). If re-submission of data was required, the ODF selected a second site from the package to survey and evaluate contractor accuracy. If the survey of a second site resulted in another failure, the ODF returned the data package and required a meeting with the contractor.

Analysis

Compliance was assessed by the ODF after field data was delivered from contractors and transferred to Microsoft Access, geographic information system (GIS), and Excel databases. Rule compliance or non-compliance was determined by analyzing field measurements with database queries and definitions of compliance for 57 FPA rules. This subset of rules focused on harvest practice, road construction and maintenance, and water protection (Table A- 1).

For a given rule, sites could have anywhere from zero to over 100 rule applications. Compliance rates for each rule were then calculated for each unit by dividing the number of compliant applications by the total number of applications of the rule in the unit. For example, if a unit had 100 total applications of a given rule and 25 applications were found non-compliant, then the unit would have a 75% compliance rate for the rule.

Compliance estimates were summarized and reported at several levels: across all applicable rules by harvest unit, within strata (Area and ownership class), within Area, within ownership class, and overall. Further, overall compliance estimates were summarized by rule and rule division (Table A- 1, Table 4). Summaries of compliance rates at each level were calculated by taking the number of rule applications in compliance and dividing by the total number of rule applications. For example, the overall compliance estimate for 2017 assessed 25,600 rule applications and 24,975 were compliant while 625 were noncompliant. This resulted in a 98% ($24,975 / 25,000 \approx 0.98$) overall compliance rate.

Table 4. Rule Divisions evaluated in the 2013 – 2017 Forest Practices Implementation Study.

Rule Division	Description
625	Road Construction and Maintenance
630	Harvesting
640	Vegetation Retention Along Streams
645	Protection for Significant Wetlands
655	Protection for "Other Wetlands"
660	Operations Near Waters of The State

In 2013, 2014, and 2016, the ODF also reported 95% confidence intervals for estimated compliance. Confidence intervals for all compliance rates were estimated from the binomial compliance data using a Generalized Linear Model with a logit link function for the binomial distribution family. Models were fit for each of the nine strata and weighted by the number of rule applications per unit to estimate the mean and 95% confidence interval surrounding the compliance rate estimate. However, sample sizes for the three strata containing ownership class OTH were inadequate in 2014 and 2016, resulting in OTH units being grouped across Areas. It should be noted that there was a management decision to omit confidence intervals surrounding estimated compliance rates in the 2017 report (Hawksworth 2021).

Reporting

Implementation Study reports were generated in 2013, 2014, 2016, and 2017 (ODF 2013, 2014, 2016, 2017). These reports detail the study’s purpose, methods, and compliance estimates. Compliance rates were reported by rule, rule division, Area (Table 5), ownership class (Table 6), and overall. In all years, overall compliance was estimated to be greater than 95%. These results are similar to compliance estimates from the 2002 BMPCMP report, which reported average unit level compliance at 96%. Compliance rates were prefaced with the caveat that estimates of compliance should be considered ‘apparent compliance’ rather than a direct assessment. As stated in the 2017 report, “without a full enforcement investigation and legal decision on compliance, the agency considered outcomes as apparent rates of compliance or non-compliance” (ODF 2017).

Table 5. Reported compliance estimates for 57 FPA rules by Administrative Area in the 2013 – 2017 Forest Practices Implementation Study.

Administrative Area	2013	2014	2016	2017
Eastern Oregon	96%	94%	96%	98%
Northwest Oregon	98%	96%	98%	98%
Southern Oregon	95%	97%	96%	97%
Overall	96%	96%	97%	98%

Table 6. Reported compliance estimates for 57 FPA rules by ownership class in the 2013 – 2017 Forest Practices Implementation Study.

Ownership class	2013	2014	2016	2017
Private Industrial	96%	96%	98%	98%
Private Nonindustrial	94%	96%	96%	98%
Other	98%	98%	97%	97%
Overall	96%	96%	97%	98%

Applications and limitations of findings

Results of the Implementation Study were not intended for determinations of compliance by landowner, FPA enforcement, or rule effectiveness. Rather, they were primarily used to support agency goals. This included submitting compliance estimates to the Oregon legislature, presenting findings to the Board of Forestry, and providing publicly available digital copies of Implementation Study reports. Results were also used to demonstrate to third-party verification and certification systems (e.g., Sustainable Forestry Initiative) that mechanisms were in place to regulate forest practices and included a system to measure compliance. Additionally, data and findings from the Implementation Study were used by the ODF as tools for resource allocation and training. Results have been used to identify topics for operator and ODF staff training and landowner outreach programs. Specifically, measurement data and photos taken during survey efforts provide effective training resources.

2. ASSESSMENT OF ISSUES

Following the release of the 2017 Implementation Study report, concerns were raised by the Board of Forestry regarding the study design, analysis, and reporting of results. Comments and critiques were solicited and later submitted to the ODF Private Forests Division by members of the Board of Forestry and scientific experts from Wild Salmon Center and Mendoza Environmental (ODF 2019). Eleven primary critiques were summarized in Groom (2020). To assess the 2017 Implementation Study and validity of critiques, we (Mount Hood Environmental) were contracted as a third-party to review and provide guidance for the future of the program. Our independent review revealed the same issues identified in several critiques submitted to the ODF. Moreover, we found that most critiques were adequately summarized in Groom (2020). Beyond the submitted critiques, we identified and assessed three issues.

Critiques of the Implementation Study were primarily focused on study design, analysis, and reporting. We evaluated each critique using three categories: (1) the critique poses a scientifically defensible argument that affected the results, (2) the critique poses a scientifically defensible argument that did not affect the results or the effect is unknown, and (3) the critique is irrelevant to the Implementation Study (i.e., the critique was a product of miscommunication or

lack of detail). We further qualify the magnitude of effect on results for each category as unquantified or known.

Critiques are also discussed in the context of Figure 3, which outlines the sample selection process and identifies when potential sources of bias and error were introduced (red text). Further, Figure 3 illustrates how potential sources of bias and error were sequentially carried through the sample selection process. The effects of these points of process error and bias are shown in Figure 4, which summarizes how sources of bias and error limited the scope of inference for Implementation Study results. The target scope of inference (pink box) is consistent with the 2017 study which reported statewide rule-level compliance. The grey boxes indicate the sampling methodology and population information that determine inference.

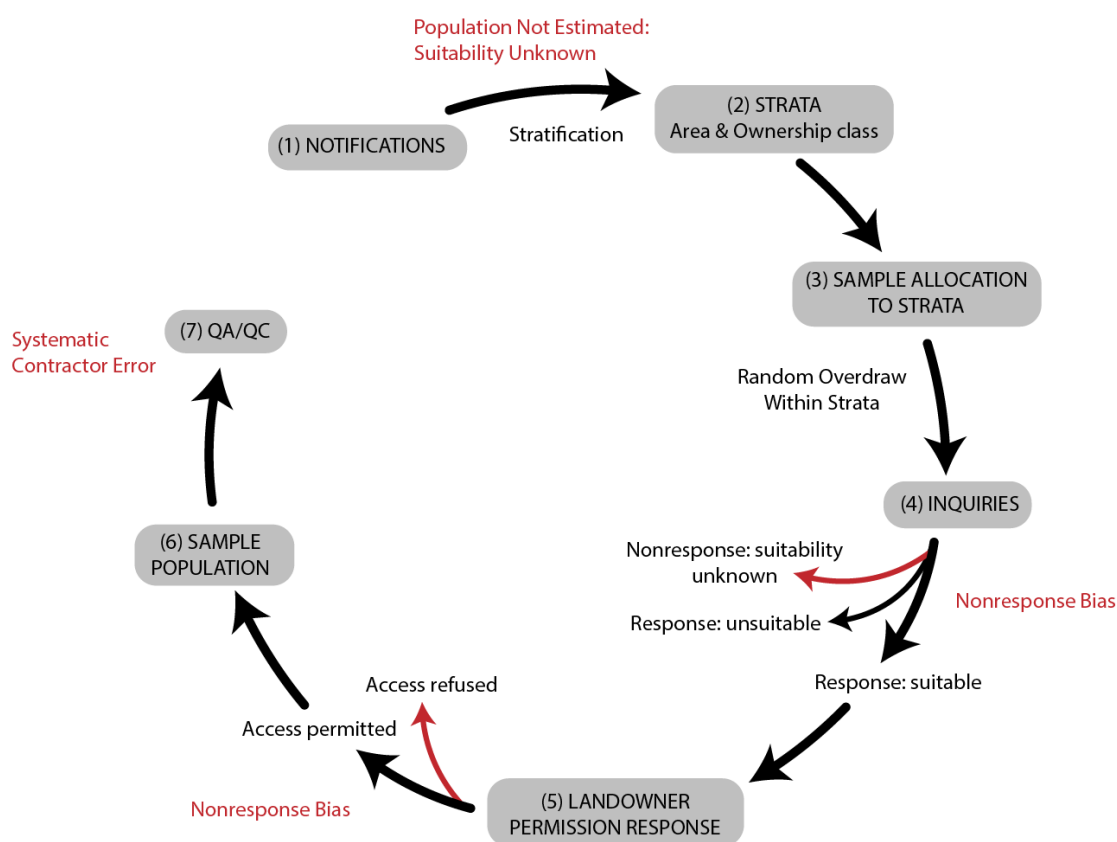


Figure 3. Potential points of bias and error in the sample selection and QA process during the 2017 Implementation Study. Red text indicates issues identified in the study design.

Sample Selection Methodology		Known Population all suitable notifications	Unknown Population suitability not determined a priori
	Random Draw Within Strata	Inference is generalizable to all notifications in Oregon*	Samples cannot be allocated proportionally to strata, inference limited to within strata
	Non Random Draw Within Strata sampling bias occurred (nonresponse)	Inference limited to the observed units	Inference limited to the observed units

*Strata weights must be accounted for

Figure 4. Scope of inference matrix for the 2017 Implementation Study. The pink box indicates desired scope of inference.

STUDY DESIGN

Stratification

Stratification of the notifications was identified as a potential flaw in the study design. Generally, the purpose of stratification is to obtain accurate estimates within strata, with the assumption that the mean and variance of the parameter(s) of interest may be different across strata. Critiques⁸ focused on two issues, sampling from an unknown population size for each stratum (Critique 4) and sample allocation by acreage within each stratum (Critique 5).

4. *“In order to obtain a stratified estimate, we must know the total size of the population to which we wish to make inference. However, a high proportion of the notifications selected via sampling turned out to fall outside of the desired sample frame – forest operations never occurred, operations did not represent commercial harvest, etc. Therefore, the population size of the sample frame is unknown.”*

The process by which the sample frame was created from the FERNS database resulted in samples drawn from groups stratified first by Administrative Area and then by ownership class.

⁸ Critiques are numbered following the Groom (2020) summary.

Although the FERNS database contains all suitable harvest units, it also includes unsuitable units, such as units where harvest operations did not occur or other suitability criteria were not met. While the study population was not explicitly stated, the Implementation Study implies that all harvest operations that met suitability criteria were within the population. Because the database included an unknown number of unsuitable units, the population size is unknown. Without population estimates for the entire sampling frame and strata, the relative weight given to strata will not reflect their proportion of the population. Unit suitability rates differed among strata and as a result, strata with lower suitability rates artificially inflated sample allocation to these strata. For example, Northwest Oregon OTH units had a 100% suitability rate of respondents by acreage while suitability in Southwest Oregon PNI units was 29% (Table 7). The unsuitable sites included during sample allocation to strata resulted in each suitable acre in the Southwest Oregon PNI stratum to have over three times the weight of a suitable acre in the Northwest Oregon OTH stratum. Therefore, the initial sample draw was random within strata, even though unsuitable units were included, but samples were not proportionally allocated to strata. We conclude that the population size was unknown during stratification in the sample selection process (Figure 3). This constrained the scope of inference and results of the study (Figure 4) to strata. Critique 4 poses a scientifically defensible argument that affected results, but the magnitude of effect is unquantified.

Table 7. Inquiry response, suitability, and landowner permission rates by strata and in the 2017 Implementation Study, summarized using harvest operation acreage.

Ownership class	Area	Inquiry response rate	Suitability rate	Permission rate
OTH	EO	92%	97%	100%
OTH	NWO	79%	100%	100%
OTH	SWO	98%	64%	100%
PI	EO	93%	82%	100%
PI	NWO	92%	78%	97%
PI	SWO	99%	85%	90%
PNI	EO	73%	70%	88%
PNI	NWO	54%	38%	69%
PNI	SWO	70%	29%	46%

5. “Strata are drawn proportional to acreage without justification and acreage is not used as a reporting element.”

The sample allocation method caused a sampling bias issue due to differences in suitability among strata. Critique 5 is specifically focused on the use of and justification for sample allocation by acreage. Stratification methods should follow assumptions of differences between strata, be clarified in report methods, and relate to study goals. Allocation by acreage may imply that harvest acreage was an important consideration, however, the rationale was never defined.

This method weighted samples to strata with larger harvests compared to allocation by unit, which was weighted toward harvest frequency. However, the two methods may be correlated. Critique 5 poses a scientifically defensible argument however the effect on results is unknown.

Sample Selection

1. *“Non-response by landowners or landowner access refusal presents the possibility that results are biased, particularly for Private Non-industrial Landowners (PNI) which exhibited the greatest rate of non-responses/refusal.”*

After sample allocation was determined, the ODF selected sites within each stratum using notification data. The sample draw and selection process was as follows: (1) notifications were received by ODF and filtered for a subset of suitability criteria, (2) units were stratified, (3) sites were allocated and drawn from each strata, (4) landowners of selected sites were mailed a form used to determine unit suitability and landowners that did not return the form were contacted by email and phone (if available); site suitability was determined for landowners that responded, and (5) land access permission was requested from landowners with suitable units (Figure 3).

This process introduced potential bias via landowner ‘nonresponse’. Nonresponse occurs when there is a failure to collect measurements for a selected sample; this introduces bias to the data if there are differences between the characteristics of respondents and non-respondents (Lavrakas 2008). Nonresponse bias is a common obstacle for survey data and must be accounted for in study design and analysis to obtain defensible inference (Lohr 2010). The potential for nonresponse bias was introduced during initial contact to the landowner (Inquiry Response) and when land access permission was requested (Permission Response) (Figure 3). Inquiry Response rates were lowest in the PNI ownership class with strata estimates ranging from 69% to 84% when summarized by unit (Table 8), and 54% to 73% when summarized by acreage (Table 7). Permission Response was also lowest in the PNI ownership class, ranging from 61% to 83% when summarized by unit (Table 8) and 46% to 88% when summarized by acreage (Table 7). This indicates both inquiry and permission nonresponse resulted in missing data that was were biased toward the PNI ownership class, and likely introduced nonresponse bias. The reason for landowner nonresponse is unknown. Regardless, patterns in nonresponse led to data that was not missing at random. Therefore, we conclude that nonresponse introduced bias to the site selection process, leading to a sample that was not random within strata. This limited the scope of inference to observed units only (Figure 4). Critique 1 poses a scientifically defensible argument that affected results, but the magnitude of effect is unquantified.

Table 8. Inquiry response, suitability, and landowner permission rates by strata in the 2017 Implementation Study, summarized using the number of units drawn.

Ownership class	Area	Inquiry response rate	Suitability rate	Permission rate
OTH	EO	75%	83%	100%
OTH	NWO	80%	100%	100%
OTH	SWO	86%	57%	100%
PI	EO	93%	77%	100%
PI	NWO	91%	77%	96%
PI	SWO	95%	86%	91%
PNI	EO	84%	60%	83%
PNI	NWO	68%	40%	61%
PNI	SWO	69%	28%	73%

It is unlikely that all nonrespondents to inquiry actually met suitability criteria. Therefore, nonresponsive landowners may not always contribute to nonresponse bias. Site suitability was determined when the landowner responded, after a unit was drawn into the sample. Units that did not meet suitability criteria were outside of the population and should not be included in estimates of nonresponse. Assuming the probability that a unit met suitability criteria was the same whether a landowner responded to inquiry or not, true nonresponse during landowner inquiry can be estimated by multiplying inquiry nonresponse by the suitability rate observed in the inquiry response population (Table 9). These estimates illustrate that the actual rate of nonresponse was likely lower than the inquiry nonresponse rate.

Table 9. Estimated nonresponse introduced during landowner inquiry in the 2017 Implementation Study.

Ownership class	Area	Suitability rate	Inquiry nonresponse rate	Estimated inquiry nonresponse
OTH	EO	83%	25%	21%
OTH	NWO	100%	20%	20%
OTH	SWO	57%	14%	8%
PI	EO	77%	7%	5%
PI	NWO	77%	9%	7%
PI	SWO	86%	5%	4%
PNI	EO	60%	16%	10%
PNI	NWO	40%	32%	13%
PNI	SWO	28%	31%	9%

7. “The Audit must include oversampling initially to draw replacement samples, and there must be a valid protocol for selecting from replacement sites to replace unusable samples.”

To obtain the desired sample size, the ODF drew excess units during the initial sample draw (oversampling). Oversampling was intended to offset nonresponses to inquiry, unsuitable units, and land access refusal, particularly for the PNI ownership class. Commentors were concerned that oversampling did not occur during the initial draw phase and there was not a protocol for selecting replacement sites. We conclude that oversampling was conducted with a protocol for replacing unsuitable units that likely did not result in additional bias. However, neither were explained in the Implementation Study report. Critique 7 is irrelevant to the Implementation Study but oversampling should be explicitly addressed in future reporting.

Study Intent

11. “Need robust monitoring program to estimate direct impacts to aquatic resources, cannot use compliance monitoring to arrive at effectiveness monitoring results.”

This critique addresses two separate concerns: (a) the study should focus on impact to aquatic resources, and (b) the results of the study cannot be used to arrive at effectiveness monitoring conclusions. The first concern relates to the purpose and focus of the Implementation Study rather than the study design, analysis, or reporting. While impacts to aquatic resources may be a vital issue, this is outside of the scope of the study; Critique 11a is irrelevant to the Implementation Study.

The second concern is a critique of reporting methods that suggests that results were used to determine the effectiveness of the FPA rules. The Implementation Study was not designed to evaluate whether rules are achieving their intended goals (e.g., habitat outcomes). Therefore, Critique 11b is irrelevant to the Implementation Study.

STATISTICS AND REPORTING

Statistics

2. “Estimates based on a stratified random sample must take into account the stratification used. It is inappropriate to divide the number of compliant rule applications by the number of total rule application to obtain a point estimate for total compliance rate given the sampling approach.”

Because this study used a stratified approach, the stratification method used must be incorporated into compliance estimates that include multiple strata. Stratification introduces variable weights into the sample, which must be accounted for to appropriately estimate compliance. The variable weight applied to observations within strata is equal to the reciprocal of the probability of the observation being included in the sample (Lohr 2010). For example, if stratum A had 100 units sampled from a population of 1,000 and stratum B had 100 units sampled from a population of

2,000 then the weight of stratum B is twice stratum A. This is because each observation in stratum A represents 10 units (1,000/100) and each observation in stratum B represent 20 units (2,000/100). The method used to calculate compliance rates was to divide the number of compliant rule applications by the total number of rule applications at the desired level (e.g., a single rule, across rules, across strata). This method would be valid within a single stratum (ownership class and Area) but cannot be applied across strata. Therefore, all compliance estimates that include multiple strata are flawed and cannot be used for inference. Critique 2 poses a scientifically defensible argument that affected results, but the magnitude of effect is unquantified.

3. “Applications of the same rules were sampled, in some cases, multiple times in a given harvest unit. Rule applications (and their compliance rates) were likely not independent, making the calculation of a confidence interval from a binomial result difficult or impossible”.

The study design included sampling multiple applications of the same rules. For example, FPA rule 629-625-330-2 had 1,451 applications along roads, resulting in an average of 14.5 applications of the rule per unit. Roads and streams were surveyed at intervals within each unit, resulting in many rules applied multiple times along a single road or stream. This methodology introduces the potential for spatial autocorrelation for multiple applications of the same rule within a unit. Spatial autocorrelation occurs when the observed value of a measured parameter is at least partially related to nearby observations (Sokal and Oden 1978). For instance, if a rule was sampled at ten locations on a road, then the probability of compliance for the rule at an eleventh location along the same road was likely correlated with the ten measured points. If the compliance for rule applications are correlated within a unit, this violates the assumption that all observations are independent⁹ and increases the likelihood of inferential error. Therefore, multiple applications of the same rule within a unit cannot be treated as separate and independent observations in the analysis. In this example, autocorrelation highlights a flaw in study design that manifested in the analysis. Similarly, correlation between the individual harvest operators and rule compliance may have occurred (collinearity). If the harvest operator was more or less likely to be in compliance across multiple rules throughout a unit, then compliance rates at each unit may be a function of operator quality rather than average compliance rates. Since harvest operator was not accounted for, this also violates assumption of independence for each measurement. Correlations related to both harvest operator and multiple rule applications are problematic in the Implementation Study’s analytical approach but could be resolved through appropriate statistical methods. Critique 3 poses a scientifically defensible argument that affected results, but the magnitude of effect is unquantified.

⁹ A common assumption of inferential tests is that the observations in the sample are independent from each other, meaning that the measurements for each rule application are in no way influenced by or related to the measurements of other rule applications.

10. *“Sample size (100 sites) is too small to obtain a reasonable confidence interval.”*

The appropriate sample size is dependent on the purpose of the Implementation Study, and the desired precision of confidence intervals. To provide compliance rates for the nine strata with confidence intervals, 100 samples are not sufficient. This was demonstrated by the inability to produce confidence intervals for all ownership class OTH strata in 2014 and 2016. For example, in 2014 only one sample was collected for the Eastern and Northwest Oregon OTH strata. However, 100 sample units may be sufficient to answer more specific questions, such as compliance for a subset of rules with frequent applications, or overall estimates of compliance (assuming stratification is accounted for). Generally, sample size necessary can be calculated by using power analysis or similar methods described in Cochran (1963). Power analysis requires a priori determination of desired confidence level and precision in results. Critique 10 poses a scientifically defensible argument and the effect on results is unknown; however, sample size is dependent on the intended scope of the Implementation Study and desired precision for compliance estimates.

Reporting

6. *“All estimates should have associated error rates.”*

Error rates are indicators of accuracy and reliability that inform the strength of inference gained from estimates and are commonly expressed using standard error, variance, or confidence intervals (Lohr 2010). Confidence intervals are frequently reported due to the ease of interpretation and direct relationship with other error estimators. Error rates, such as confidence intervals, surrounding rule or unit level compliance estimates were not provided in the 2017 study report. Not including error does not present a fundamental flaw, however the strength of inference cannot be assessed since there is no degree of certainty surrounding compliance estimates. Critique 6 poses a scientifically defensible argument that did not affect results.

8. *“Criteria used to assess contractor data quality list acceptable levels of error for different measurements. This degree of error should be incorporated into estimates.”*

Measurement error is the difference between the recorded value of a parameter and its true value (Lohr 2010), and it is standard statistical practice to report known error in observational studies. If measurement error is assumed to be random, then the average amount of error will approach zero as sample size increases. However, known or predefined allowable error can be accounted for in confidence intervals. Measurement error was not accounted for or reported. Similar to the exclusion of confidence intervals, not including measurement error resulted in an inability to assess the strength of inference. Critique 8 poses a scientifically defensible argument that did not affect results.

9. *“This combination of issues represents misinterpretations of the study protocol. These issues include: Study sites were collected from volunteering landowners, compliance rate = dividing observed non-compliance rules by unobserved number of applicable rules, confusion between observing sediment delivery and reporting compliance rates of rules.”*

This critique represents three separate concerns. The first two arise from a lack of clarity in the Implementation Study methods which led the reader to conclude that (a) landowners volunteered during sample selection, and (b) compliance rates were calculated based on unobserved rule applications. The third concern was that (c) the data collection methods for sediment delivery volume are not adequate to quantify resource impact. The first concern, 9a, is not valid since landowners did not volunteer. Landowner permission is required for site access after site suitability is determined. This is an important distinction, as landowners did not self-select into the sampling pool. Therefore Critique 9a is irrelevant to the Implementation Study. The second concern, 9b, is also irrelevant to the Implementation Study. Compliance rates were calculated by dividing the number observed rule applications in compliance by the total number of observed rule applications. While this method was inappropriate for calculations across strata (Critique 2), unobserved rule applications were not included in calculations. Lastly, critique 9c raises the potential issue of sediment delivery not being directly observed. Instead, contractors looked for signs that sediment delivery had previously occurred and used four categories to estimate the volume of sediment: 0-1 cubic yards, 1-10 cubic yards, 10-100 cubic yards, and >100 cubic yards. We also note that a related critique stating, “sediment delivery cannot reliably be estimated from visual observations” (Mendoza 2018) was submitted. This concern may represent a potential issue with survey methods, and therefore poses a scientifically defensible argument that had an unquantified effect on estimates of resource impact in the 2017 Implementation Study.

OTHER TECHNICAL ISSUES IDENTIFIED

Purpose and Scope

12. *The overall purpose and study methodology in the Audit lack the specificity, resulting in broad questions within a relatively narrow scope.*

It was unclear from ODF (2017) and other supporting documents whether the primary focus of the Implementation Study was to estimate rule or unit level compliance. Similarly, it is unclear whether results were intended to be generalizable within strata, ownership class, Administrative Area, or statewide. Rather than focusing on narrow set of monitoring questions, the study attempted to answer multiple, broad questions that were limited by the sample size and scope of the study design. Consequently, the data and results were not able to reliably address compliance for all the levels summarized (e.g., compliance rates for rules within strata). It is imperative to explicitly define the purpose and all study elements such as the population, strata, sample units, and parameters of interest in the study design. Critique 12 poses a scientifically defensible argument that affected results.

13. Unit level compliance was inappropriately weighted by measurement frequency.

Unit level compliance was primarily a function of the frequency of applications of rules that apply continuously along roads or streams. In the following examples, road applications were both 50% in compliance, but resulted in substantially different overall unit compliance due to sampling frequency. In example 1, a road was sampled 20 times and 10 applications were out of compliance compared to example 2, when the road was sampled 40 times and 20 applications were out of compliance.

- (1) 90 applications in compliance (80 non road applications + 10 road applications) /100 total applications = 90% unit level compliance
- (2) 100 applications in compliance (80 non road applications + 20 road applications) /120 total applications = 83% unit level compliance

Although both examples have the same compliance rate for that same road, the overall compliance was much lower when the frequency of road application increased. We conclude that measurement frequency biased unit compliance. While this critique does not represent a fundamental issue in the study design, it impeded meaningful inference. Therefore, critique 13 poses a scientifically defensible argument but the effect on results is unquantified.

Data Quality Control

14. QA/QC methods and procedure did not adhere to a well-defined protocol, providing opportunity for systematic error in units that were not replicated by ODF.

When contractor errors exceeded data standards, remediation methods were subjectively chosen based on the perceived severity of errors at the unit (Hawksworth 2021). If the ODF did not consider errors significant enough to warrant remeasurement by contractor, the contractor was informed of their error and the ODF used their own measurement data collected at the site during validation. If the error was deemed significant, then the ODF required the contractor to return to the site for remeasurement and resubmission for the unit. When an error was found at the second validation site after a significant error at the first validation site, then the ODF met with the contractor on-site to rectify errors in measurement methods. Therefore, only a maximum of two sites were validated by ODF, regardless of the type or extent of error. This also resulted in the ODF accepting data from the remaining sites in the packet, which were measured by the same contractor prior to the validation surveys. Consequently, if similar errors occurred at those sites, that error remained unresolved and could be a systematic error affecting all sites. We conclude Critique 14 poses a scientifically defensible argument but the effect on results is unquantified.

UTILITY OF PRESENT IMPLEMENTATION STUDY

Our assessment of 2017 Implementation Study critiques illustrates that the scope of inference is limited to observed units within strata (Figure 4), bias exists even within this scope, and the strength of inference is unknown. Since unit suitability was not determined until after samples were both drawn and landowners responded to inquiry requests, the size of the population was unknown. Without population estimates for all strata, each stratum could not be effectively weighted for sample allocation and compliance rates could not be appropriately calculated across strata. The probability of a drawn unit meeting suitability criteria also varied by strata. Consequently, the sample allocation resulted in nonrandom sample selection from the population. Further, nonresponse during landowner inquiry and access refusal led to nonrandom draws within strata and introduced an unquantified magnitude of bias in compliance estimates. Collectively, the magnitude of effect on results is unquantified. Therefore, the reliability of results cannot be determined. We conclude that several elements of the study design have reduced the utility of the 2017 Implementation Study to provide statistically reliable results.

Results of the 2017 Implementation Study can still be used to address agency goals to some degree. We evaluated the utility of the study to achieve agency goals at a “basic” or “high” degree based on performance criteria provided by ODF (Table 10, Table 11) as follows:

1. *Provide data for annual reporting to the Oregon Legislature.*

The 2017 Implementation Study provided compliance rate data that was estimated from a sample of harvest units that were surveyed and measured for compliance but did not account for sources of bias and error. Nevertheless, it addresses this goal at a basic degree according to ODF performance criteria.

2. *Verify implementation of forest practices on private property, for potential use in third-party certification systems, such as the Sustainable Forestry Initiative, American Tree Farm System, and the Forest Stewardship Council.*

The 2017 Implementation Study documents that a methodical approach is in place to measure and estimate compliance. However, ODF performance criteria requires confidence intervals, which cannot be produced with known reliability under the current design; therefore, this goal is not addressed to a basic degree.

3. *Provide an informed and systematic basis for targeted training efforts by both ODF and forest industry to increase compliance with rules.*

The 2017 Implementation Study used a systematic approach to identify rules with relatively low compliance for use in education and outreach, addressing this goal to a basic degree.

4. Improve the public's trust in both ODF, and those it regulates.

The “minimum public standards” criteria (Table 10) are unquantified and cannot be directly assessed. However, submission of critiques after the 2017 Implementation Study report indicated public skepticism toward the results. We determined that many of these critiques identified issues that reduced the utility of the study to provide results with known statistical reliability. The 2017 Implementation Study applied a systematic approach to collect and report compliance rates which, while statistically flawed, attempted to provide a level of effort and rigor comparable to other states. Therefore, this goal is not addressed to a basic degree.

5. Provide data to the Board of Forestry regarding ODF's efforts to administer the FPA.

The 2017 Implementation Study provided compliance rates that accurately reflected field observations but did not account for sources of bias and error, addressing this goal to a basic degree.

6. Provide for efficient use of state resources and corresponding workload in monitoring unit capacity.

Criteria for this goal relate to the ability of the Implementation Study to address goals 1-5 with a “reasonable and responsible allocation of state resources” (Table 10), along with a comparison of effort relative to the 2017 study. While we cannot reasonably compare the 2017 Implementation Study to itself, improvements can be made within ODF's current resources to increase program efficiency and address agency goals.

Table 10. Range of monitoring questions and performance criteria for evaluating ODF goals. Table is adapted from ODF (2021a).

ODF Goal	Monitoring Question (basic)	Monitoring Question (high)
(1) Provide data for annual reporting to the Oregon Legislature.	<ul style="list-style-type: none"> What is the rate of compliance with the FPA? Can be based on stewardship forester (i.e., field staff) inspection reports (not rigorous monitoring); no confidence intervals or stats 	<ul style="list-style-type: none"> On a harvest unit basis, what is the state-wide rate of compliance with the FPA? e.g., Would need 90% of rules complied for a harvest unit to qualify as in compliance; no strata
(2) Verify implementation of forest practices on private property, for potential use in third-party certification systems, such as the Sustainable Forestry Initiative, American Tree Farm System, and the Forest Stewardship Council.*Intent is to inform organizations rather than provide certification to landowners.	<ul style="list-style-type: none"> Can the Implementation Study provide a mechanism for informing third-party systems? What are compliance rates with an “important” subset of rules (e.g., 10-20 water quality-focused rules)? No strata; with confidence intervals 	<ul style="list-style-type: none"> What are the compliance rates with all FPA rules by landowner type? Tight confidence intervals; stratified by landowner type
(3) Provide an informed and systematic basis for targeted training efforts by both ODF and forest industry to increase compliance with rules.	<ul style="list-style-type: none"> Which practices appear to be most often misapplied, and thus would benefit from educational efforts? (This could factor in those practices that appear to be causing the most damage when they are misapplied). 	<ul style="list-style-type: none"> With a high statistical confidence, which practices are the highest priority for educational efforts?
(4) Improve the public’s trust in both ODF, and those it regulates.	<ul style="list-style-type: none"> Does compliance meet minimum public standards (currently unquantified)? Is compliance, at a minimum, similar to that existing in other states? Are compliance monitoring methods, at a minimum, of similar rigor to those used in other states? 	<ul style="list-style-type: none"> Does the compliance rate for rules exceed a public standard, with a 95% CI accurate within +/- x%? How does this rate vary by landowner type and geography? How does this rate differ when looked at on a rule vs. harvest unit basis? Over time, is compliance showing improvement, and is this improvement statistically demonstrable?
(5) Provide data to the Board of Forestry regarding ODF’s efforts to administer the FPA.	<ul style="list-style-type: none"> Generally speaking, does compliance appear Excellent, Good, Fair, or Poor? This could be purely descriptive, with no quantification of potential bias or error, or potential for bias and error quantified with basic statistical analysis 	<ul style="list-style-type: none"> What are the average unit and rule level compliance rates by Ownership class and Admin Area, with measure of statistical uncertainty?

ODF Goal	Monitoring Question (basic)	Monitoring Question (high)
	<ul style="list-style-type: none"> Which rules have relatively high and low compliance rates? (The practical effect is in education.) 	
(6) Provide for efficient use of state resources and corresponding workload in monitoring unit capacity.	<ul style="list-style-type: none"> What is a reasonable and responsible allocation of state resources to meet the aforementioned goals, given available, limited resources? 	<ul style="list-style-type: none"> How should ODF's funding be expanded to achieve the aforementioned goals with a high degree of rigor and confidence?

Table 11. Criteria for ranking agency goals. Table is adapted from ODF (2021a).

Criteria	BASIC	MODERATE	HIGH
Monitoring question	What are the average statewide compliance rates for some FPA rules?	What are average rule level compliance rates by Ownership class or Admin Area?	What are the average unit and rule level compliance rates by Ownership class and Admin Area?
Strata level(s) required	None	Ownership class or Admin Area	Ownership class and Admin Area
Unit-level required (Y/N)	N	N	Y
Rules required (priority)	3-10	>10	All FPA rules
Allowable error *	Potential for bias and error quantified with basic statistical analysis	Bias and error accounted for with statistical analysis	Bias and systematic error mitigated through study design and statistical methods
Confidence level*	Can provide 95% confidence intervals for some rules with adequate sample size or at the most basic level, descriptive statistics without confidence intervals	Provides 95% confidence intervals for >10 rules	Can provides 95% confidence intervals for units and all rules, by ownership class and Admin Area
Required resources and effort	Significantly less than 2017 Implementation Study	Roughly equivalent to 2017 Implementation Study	Significantly more than 2017 Implementation Study

*Error and confidence can be addressed on a continuum.

3. COMPARISON TO OTHER STATES

Many other states assess harvest operation compliance and a comparison to Oregon's program provides useful context. Some states address legislative forest practice rules (i.e., regulatory) while others consider voluntary adherence to BMPs provided by natural resource and conservation agencies (i.e., non-regulatory). Although monitoring programs differ between states, they are commonly centered on water quality to address pollution concerns and emphasize timber harvesting, riparian areas, road construction and maintenance, drainage, and stream crossings. Reforestation is also a common emphasis; however, this aspect of compliance monitoring is not included in the Implementation Study, nor in this review.

Compliance monitoring programs are variable and that is largely attributed to differences in each program's focus (Table 12). These differences shape the study design, including which rules or BMPs are assessed (Table 13, Table 14) and which site selection and analytical approaches are used (Table 15). To compare with Oregon's monitoring program, we outline various study design components of compliance monitoring programs most similar to Oregon (i.e., from the regulatory states within the range of listed salmonids) including Alaska, Idaho, Washington, and California. For additional reference, we also provide similar information for four non-regulatory states, Maine, Minnesota, Montana, and Virginia. Comparable to Oregon, most states' monitoring programs primarily evaluate compliance for a subset of rule categories (Table 13, Table 14). In general, the program focus of each state is to assess compliance with water quality and aquatic habitat rules (Table 12, Table 13).

Table 12. Program focus, impetus, scoring, field survey personnel type, and number of full-time personnel (FTE) across non-federal acres, compared to Oregon.

State	General Program Focus	Program Impetus	Scoring	Survey Personnel	FTE ¹⁰ and non-federal acres (x1000)
Oregon	Monitor compliance with timber harvest, forest roads, and surface water protection rules	Directed by the Oregon Legislature in 2011 (HB-5023)	Quantitative	Contractor	1.12 FTE 11,823 acres
Alaska	Assess proper implementation of rules designed to protect fish habitat and water quality	Required by the Alaska Forest Resources Practices Act	Qualitative	Agency	2.0 FTE 63,804 acres
Idaho	Assess compliance with water quality rules	To monitor implementation of the U.S. Clean Water Act beginning in 1984	Quantitative	Multi-Agency	2.0 FTE 5,179
Washington	Evaluate rules pertaining to riparian and wetland areas and road construction and maintenance	Mandated by Forest Practices Board in response to forest practices rule changes in 2001	Quantitative	Multi-Agency	2.0 FTE 11,672 acres
California	Post-harvest outcomes and effectiveness of EX-EM Forest Practice Rules	Required by California Senate Bill 901 passed in 2018	Qualitative	Multi-Agency	3.0 FTE 13,378 acres
<i>Voluntary BMPs for Non-Regulatory States</i>					
Maine	Assess use and effectiveness of voluntary BMPs based on water protection principles	As part of a mandate to monitor and report on the effectiveness of BMPs across the state	Quantitative	Agency	17.0 FTE 17,355 acres
Minnesota	Assess effectiveness of management guidelines for water quality, wildlife, soil, cultural resources, biodiversity, visual quality, and forest resources	Required under the Sustainable Forest Resources Act	Quantitative	Agency-Trained Contractor	0.8 FTE 23,128 acres
Montana	Assess BMP use and effectiveness in soil and water protection Assess effectiveness of the Streamside Management Zone law and rules for water quality protection	Directed by the Montana Legislature in 1990	Qualitative	Multi-Agency	FTE not stated 7,660 acres
Virginia	Monitor compliance with BMPs that will affect water quality through nonpoint source pollution	Not stated	Quantitative	Agency	14 FTE 13,836 acres

¹⁰ Source: National Association of State Foresters 2015 BMP survey. Available at <https://www.stateforesters.org/bmps/>

Table 13. Forest practices rules assessed during compliance monitoring in various states, compared to Oregon. State rules are categorized using Oregon Rule Divisions for relative comparison.

State	Forest Roads	Harvest Operat.	Riparian Mgmt	Wetlands	Operat. Near Surface Waters	Post-Harvest Operat.	Reforest.	Chemical	General, Administ.
<i>Oregon Rule Divisions¹</i>	<i>629-625^a</i>	<i>629-630^a</i>	<i>629-640^a</i>	<i>629-645^a 629-655^a</i>	<i>629-660^a</i>	<i>629-615</i>	<i>629-610</i>	<i>629-620</i>	<i>629-605</i>
Oregon	x	x	x	x	x				
Alaska	x	x	x		x				x
Idaho	x	x				x	x	x	x
Washington	x		x	x					
California^{2,3}	x	x			x				x
<i>Voluntary BMPs for Non-Regulatory States</i>									
Maine		x			x			x	
Minnesota³	x		x	x	x				
Montana	x	x	x			x		x	
Virginia²	x	x		x		x	x	x	x

¹Since the Implementation Study, some listed Rule Divisions have been amended and Division numbers redesignated.

^a Rule division assessed in the 2013-2017 Implementation Study.

Additional non-Oregon rules assessed: ²Wildfire prevention and control; ³Endangered, threatened, and special concern species presence.

Table 14. Forest practices rules and BMPs by Oregon Rule Division.

Rule Division	BMP
General, Administrative	Submittal of Written Plans
	Compliance
	Notifications
	Permitting
	Planning
Riparian Management	Riparian buffer retention
	Water quality protections
Harvest Operations	Timber harvest
	Yarding, skid trails
	Log landings
Post-Harvest Operations	Treatment of slash
Forest Roads	Construction, maintenance, decommissioning Stream crossings; Drainages, bridges, culverts
Wetlands	Soil protections in wetlands
Operations Near Surface Waters	Stream protections related to diversion
	Adding/removing soil and rock
Reforestation	Reforestation, revegetation
Chemical	Chemical storage, use

Table 15. Site selection and sampling methods for eight state forestry monitoring programs compared to Oregon.

State	# Sites # Years	Sampling Method	Operation Completion Known Prior to Site Selection	Sites Drawn, Selected*	Landowner Non-response, Access Refusal	Site Suitability Criteria
Oregon	500 sites 4 years	Stratified sample <i>Strata</i> : Geographic, Ownership Type	No	Drawn	Yes	Non-federal timber harvest clearcut or thinning operations 2-3 years post-harvest Harvest operations between 5 and 500 acres Commercial harvest, no landownership change
Alaska	59 sites 1 year	Census of all timber harvest operations	Yes	N/A	No	All public and state forestry operations
Idaho	150 sites 4 years	Stratified sample <i>Strata</i> : Geographic, Ownership Type	Yes	Drawn	Yes	State, private, and federal lands Timber sale within previous 2 years At least 5 acres cutting area Minimum 500 ft of fish bearing stream within or bordering unit 10+ sites revisited from previous audit to confirm replanting
Washington	218 sites 2 years	Cluster Sampling	No	Drawn	Yes	FPA/Ns completed operations April - May of current year
California	50 sites 1 year	None	No	Drawn	No	Operations with filed emergency exemption to harvest plan
<i>Voluntary Programs in Non-Regulatory States</i>						
Maine	142 sites 2 years	Stratified sample <i>Strata</i> : Geographic, Ownership Size	No	Drawn	Yes	Recently harvested Within 250 feet of a water body
Minnesota	83 sites 1 year	Stratified sample <i>Strata</i> : Geographic, Ownership Type	Yes	Drawn	Yes	2 years post-harvest Area > 2.5 acres Within 200 feet of an open water body
Montana	42 sites 1 year	Stratified sample <i>Strata</i> : Geographic, Ownership Type	No	Selected	No	Harvest operation >5 acres Sawlog volume specifications Within 200 ft of stream or 1+ crossing of fish stream, Risk matrix assessment
Virginia	240 sites 1 year	Stratified sample <i>Strata</i> : Geographic	Yes	Drawn	Yes	Operations with final inspections two quarters prior to audit

* Drawn sites are chosen randomly from a population of available harvest units. Selected sites are chosen non-randomly based on a ranked score.

The sample selection process is similar across regulatory states. Sites are defined as single harvest units which may be comprised of an entire harvest plan or notification or, just a portion. Sites are randomly drawn from a population of harvest notifications that fit defined suitability criteria, except Alaska where a near census of harvest units is conducted. In Alaska and Idaho harvest completion is known prior to sample selection, resulting in known population sizes for compliance rate calculations. This differs in Oregon, where population sizes are unknown. California uses a different approach whereby notices are drawn from the emergency exemption notices under the EX-EM program due to recent, extreme wildfires. Harvest completion is not known in California prior to sample selection, resulting in an unknown population size. Washington estimates the population size using forest operation completion rates, which are verified after sample selection.

Some states employ hierarchical sampling designs which include stratification, typically by landowner type and/or geographic area, or cluster sampling. Of the regulatory states, Oregon and Idaho employ stratified sampling, Alaska samples nearly all sites, and Washington draws samples separately for a set of forest practice rules that would apply to a specific “prescription type”. In the case of Washington, a random sample is drawn to assess compliance within specific prescription types (e.g., Np streams on the eastside). Random draws are then made separately where rules have been applied for different prescription types. Therefore, Washington’s populations are a selected group of rules rather than harvest units and results are relevant to prescription types.

When landowner participation in compliance monitoring is noncompulsory, there is the potential for nonresponse bias within the sample. In Oregon, Idaho, and Washington, state foresters must request permission from landowners to access harvest units. Access refusal can introduce nonresponse bias into the sample if there are differences in compliance rates between the landowners that do and do not provide permission (Lavrakas 2008). Nonresponse bias is likely not an issue in Alaska and California where agencies have legal authority to access private land and audits are conducted during compulsory regulatory inspections.

Across the regulatory states, analysis of rule compliance is determined using qualitative or quantitative approaches (Table 12). Alaska and California use a qualitative rating system to determine a low to high level of compliance (Table 16). In contrast, Washington uses quantitative metrics, with documented protocols for sampling design, calculation of compliance rates, and associated error. For example, assessments of noncompliance trigger a deviation assessment (i.e., low, moderate, high, indeterminant) to identify the potential cause for noncompliance (i.e., layout, operational, administrative). Oregon uses quantitative and qualitative metrics to calculate percent compliance stratified by landowner type and geographic area, similar to methods used by Idaho.

Table 16. Compliance metrics and reporting methods for forest practice monitoring programs in eight states, compared to Oregon.

State	Compliance Rating	Unit and/or Rule Level Compliance	Site Replication	On-Site Compliance Determination
Oregon	None	Both	10% of all sites	No
Alaska	Compliance Rating: 1 (low) – 5 (high)	Unit	None	Yes
Idaho		Both	Minimum 1 site/year	No
Washington	Low, Moderate, High, Indeterminant	Rule	Not stated	Not stated
California	Acceptable, Sub-standard, Unacceptable	Both	None	Not stated
<i>Voluntary Programs in Non-Regulatory States</i>				
Maine	None	Both	Not stated	No
Minnesota	None	Unit	Not stated	No
Montana	Compliance Rating: 1 (low) – 5 (high)	Both	Not stated	Not stated
Virginia		Both	Not stated	Yes

Of the states evaluated in this review, Washington's compliance assessment for its monitoring program utilizes the most statistically complex approach. It should be noted that California's EX-EM program is part of a larger forest practices monitoring program which was in place prior to the recent wildfires. A statistically rigorous study design was recently developed for California by Steel and Cunningham (2018) that prioritizes sampling harvest units with high erosion risk and stratifies features (e.g., roads by hillslope grade) within each unit to optimize sampling frequency. However, this study design has not been implemented given California's current emphasis on the EX-EM program. Taken together, Washington and California's study design approaches provide useful templates for compliance monitoring within a regulatory framework.

Oregon's compliance monitoring program is designed to meet a set of agency goals that focus on accurately reporting program results, improving public trust, and educating the forest industry on proper implementation of forest practice rules. The monitoring programs in other regulatory states can be compared to Oregon in the context of these goals to provide high level perspective (Table 17). For this comparison, we evaluated the potential for each state's program to achieve ODF's goals at a "basic" or "high" degree based on criteria defined in Table 10 and Table 11. The ability of other state programs to attain each goal were ranked as "likely", "unlikely", or "unknown". Goals 4 and 6 have been given a score of "unknown" for all states due to the subjectivity of improving public trust and efficiently using state resources. Compliance monitoring programs in Alaska and Idaho likely achieve ODF's Goals 1, 2, 3, and 5 at a "high" degree due to the broad scope of forest practices rules they evaluate, a random statewide draw of sites, and coverage of sites across all landowner types and geographic areas. Washington's program likely achieves Goals 1, 2, and 3 to a high degree, but likely achieves Goal 5 to a "basic" degree because compliance rates are not stratified by geographic area. California's program is unlikely to meet goals 1, 2, 3, and 5 at the "basic" degree because their program does not provide a quantitative compliance rate.

Table 17. Comparison of regulatory states' monitoring program's ability to address the ODF's goals. Ranking is based on the capability of sampling methods and not necessarily published results.

ODF agency goal	Alaska	Idaho	Washington	California
1. Provide data for annual reporting to the Oregon Legislature.	Likely to meet agency goal at a high degree	Likely to meet agency goal at a high degree	Likely to meet agency goal at a high degree	Unlikely to meet agency goal at a basic degree
2. Verify implementation of forest practices on private property, for potential use in third-party certification systems, such as the Sustainable Forestry Initiative, American Tree Farm System, and the Forest Stewardship Council.	Likely to meet agency goal at a high degree	Likely to meet agency goal at a high degree	Likely to meet agency goal at a high degree	Unlikely to meet agency goal at a basic degree
3. Provide an informed and systematic basis for targeted training efforts by both ODF and forest industry to increase compliance with rules.	Likely to meet agency goal at a high degree	Likely to meet agency goal at a high degree	Likely to meet agency goal at a high degree	Unlikely to meet agency goal at a basic degree
4. Improve the public's trust in both ODF, and those it regulates.	Unknown whether agency goal can be met	Unknown whether agency goal can be met	Unknown whether agency goal can be met	Unknown whether agency goal can be met
5. Provide data to the Board of Forestry regarding ODF's efforts to administer the FPA.	Likely to meet agency goal at a high degree	Likely to meet agency goal at a high degree	Likely to meet agency goal at a basic degree	Unlikely to meet agency goal at a basic degree
6. Provide for efficient use of state resources and corresponding workload in monitoring unit capacity.	Unknown whether agency goal can be met	Unknown whether agency goal can be met	Unknown whether agency goal can be met	Unknown whether agency goal can be met

4. SOLUTIONS & ALTERNATE APPROACHES TO ANALYSIS

Issues that limited the scope of inference, introduced bias, and did not allow for the strength of inference to be assessed can be remedied through retrospective and prospective solutions. Retrospective solutions can be conducted through a reanalysis of existing data and would mitigate some issues (Critiques 3, 6, and 8) while estimating the potential impact of others (Critiques 1 and 4). However, a reanalysis cannot broaden the scope of inference, determine if or how much bias was introduced, or address fundamental flaws in study design (Figure 4). Addressing all relevant critiques and additional issues identified would require prospective solutions in a modified compliance monitoring program.

RETROSPECTIVE SOLUTIONS

A reanalysis of the Implementation Study data can address some of the critiques and problematic issues in the study and meet some agency goals to a marginal degree (Table 18). Issues that relate to understanding reliability of inference (Critiques 3, 6, and 8) can only be addressed within the current scope of inference. A reanalysis using a binomial random effects model to estimate rule level compliance could provide corresponding confidence intervals for strata and rules (e.g., Bolker et al. 2009). Rules examined would be limited to those with sufficient sample size within the stratum and have applications in at least two harvest units. The model would include a random effects component at the unit level to account for collinearity and autocorrelation resulting from unit characteristics (e.g., harvest operator).

Reanalysis could also quantify the potential impact of nonresponse bias on the sample. A sensitivity analysis can address hypothetical questions about the overall effect of nonresponse on compliance estimates. For example, results from the random effects model could be tested with nonresponse rates and varying levels of bias to quantify the potential effect that inquiry and permission nonresponse had on compliance estimates. Additionally, reanalysis of existing data can provide data summaries for more targeted and efficient outreach and training.

Retrospective solutions cannot increase the scope of inference beyond the current sample. Therefore, conducting a full reanalysis is unlikely to improve the degree to which agency goals are met. Instead, analysis of existing data could provide insight leading to substantial efficiencies in a future, modified monitoring program. Existing data from the 2013-2017 Implementation Study can be leveraged to inform the sample selection process and estimate population size without requiring substantial cost. Previously observed nonresponse and suitability rates can be used to estimate necessary sample size, sample overdraw, population size by strata, and sample allocation to strata, thereby increasing the efficiency of future Implementation Studies.

Table 18. Retrospective solutions from a reanalysis of 2017 Implementation Study data.

Issue Identified	Proposed Solution	Mitigation	Limitations
Population size unknown [Critique 4]	Estimate population size for strata from the number of notifications received and their observed suitability rates	Improves understanding of sample allocation to strata	Suitability rates may differ between response and nonresponse sites
Bias from landowner inquiry nonresponse [Critique 1]	Estimate inquiry nonresponse rate and the potential impact of various levels of bias with a sensitivity analysis	Improves understanding of potential bias and its impact on compliance estimates due to landowner inquiry nonresponse	Compliance rates for nonresponse sites and the actual effect of nonresponse bias are still unknown
Bias from landowner access permission nonresponse [Critique 1]	Estimate the potential impact of various levels of bias with sensitivity analysis	Improves understanding of potential bias and its impact on compliance estimates due to landowner access permission nonresponse	Compliance rates for nonresponse sites and the actual effect of nonresponse bias are still unknown
Collinearity and autocorrelation of compliance within each harvest unit [Critique 3]	Include unit level random effects component in a binomial model for rule compliance	Accounts for factors intrinsic to each harvest unit in compliance estimates, such as harvest operator	Rules examined would be limited to those with sufficient sample size within the stratum and have applications in at least two harvest units
Compliance rate estimates do not have confidence intervals [Critique 6]	Calculate confidence intervals for rule compliance within strata using a binomial model	Compliance rate estimates will include measurements of certainty, assisting in assessment of strength of inference	Given sample size limitations, confidence intervals cannot be calculated for all rules and strata
Compliance rate estimates do not account for measurement error [Critique 8]	Incorporate contractor measurement error for each rule based on observed discrepancies compared to ODF data, at the sites replicated by ODF	Compliance estimates include measurement error, assisting in assessment of strength of inference	Actual measurement error unknown for sites not replicated by ODF, would require significant effort to account for all rules assessed in the study

PROSPECTIVE SOLUTIONS

Modifications to Oregon's current Implementation Study can improve scope of inference, reduce bias, and strengthen results, thereby improving the overall statistical reliability of monitoring results and address agency goals to a higher degree (Table 10). We have proposed a suite of solutions for a future compliance monitoring program that are consistent with the modeling framework and intent of the study. Prospective solutions relate to study design, analysis, and reporting, and form the basis of recommended approaches for a future Implementation Study. Some solutions would require policy changes (e.g., mandating land access to address nonresponse) and are stated for consideration rather than recommendation.

Study design

Solutions pertaining to study design can alleviate issues identified in Groom's (2020) critiques 1, 3, 4, 5, 10, 12, and 14 and broaden the scope of inference to all suitable harvest units in Oregon (Figure 4). These solutions are central to defining monitoring questions, quantifying study design elements, applying stratification methods, addressing nonresponse, optimizing sample size, and reducing the potential for systematic error. Solutions include:

1. Generating a sampling design from which a representative sample can be drawn and used for inference with known reliability. This is achieved by explicitly defining the following elements described by Lohr (2010):
 - Target Population: The complete collection of observations to study and gain inference. This was implied to be all harvest units with notifications that meet suitability criteria.
 - Sampling Frame: A list or similar from which the sample is drawn. This was the FERNS database.
 - Sampled Population: All possible observations that could be chosen for the sample. This was all FERNS notifications which met suitability criteria.
 - Sampling Unit: The unit drawn from the sampling frame from which measurements are taken. This was harvest unit.
 - Observation Unit: An object on which measurements are taken. This was rule applications, as each measurement related to a single application of a rule.
 - Sample: The subset of sampling units that are chosen for measurement. This was the 100 surveyed harvest units.
2. Narrowing the scope of research questions to address agency goals. A series of research questions provide criteria for meeting agency goals to varying degrees (Table 10). A selection of those questions would be refined to develop an appropriate study design. This would provide a more focused study design, thereby providing certainty for compliance

estimates. All six study design elements and all parameters of interest (e.g., rules) would be defined with a high degree of specificity.

3. Quantifying the target population to appropriately allocate samples to strata and estimate compliance. We propose three solutions to accomplish this task:

- The population could be estimated by using 2013-2017 Implementation Study data for suitability rates by strata and applying these rates to future notifications. This method assumes that the suitability rates for units with responsive and nonresponsive landowners are equivalent and that the likelihood of suitability by strata remains constant through time. Suitability rates can be adapted each year after harvest completion data is collected.
- Satellite imagery can be used to ascertain suitability information related to harvest completion. That information can determine suitability rates from which the population can be estimated. Harvest completion (suitability) determination from satellite imagery would occur after the initial harvest notification overdraw to remove incomplete harvests from the sample. This would increase efficiency during landowner inquiry because notifications from unharvested sites would not be contacted. Current satellite imagery with resolution up to 30 meters per pixel can be obtained from the US Geological Survey Landsat program (www.usgs.gov/core-science-systems/nli/landsat) and can be used to reliably detect when clearcuts were completed.
- The FPA notifications system could be modified such that suitability can be determined before sample selection occurs. For example, landowners could be required to submit additional documentation to confirm that harvest occurred. This is a policy-oriented solution with unknown feasibility.

4. Addressing and accounting for landowner nonresponse to inquiry and access refusal by:

- Identifying potential differences in compliance between the response and nonresponse population through surveying a sample of harvest units where the landowner initially did not respond or refused access. This could be achieved by investing extra effort during landowner contact, particularly for the PNI ownership class. This effort would occur after the initial sample selection and landowner contact process for a random subsample of harvest units with inquiry nonresponse and access refusal. Extra effort could take the form of attempting additional contact methods (e.g., email, phone calls, snail mail) and financial or other incentives. Harvest units with landowners that responded or granted permission after extra effort would be surveyed for compliance and considered separate from the response population. Compliance rates would be compared between the response, initial nonresponse, and initial access refusal groups to estimate nonresponse bias and reveal differences between the two types of initial nonrespondents. In addition, compliance data from

initial nonrespondents could be used to inform a statistical nonresponse model (described below).

- Developing a Bayesian nonresponse model to account for nonresponse bias. Nonresponse models are well established and can be adapted for the Implementation Study. Furthermore, utilizing a Bayesian approach, prior knowledge about nonrespondents can be updated with new information (i.e., nonresponse rates and compliance data from initial nonrespondents) to estimate the influence of nonresponse on results. The model also estimates the probability that nonresponse is adequately accounted for. Specifically, if the model indicates that nonresponse is accounted for, then nonresponse is considered ‘ignorable’ (Lohr 2010). This is accomplished using a model with uncertainty about ignorability (Nandram and Choi 2002). Model inputs may include compliance rates, initial response, and landowner demographic data. Compliance rates for initial nonrespondents surveyed after extra effort will also be used, if available. Additionally, ownership class will be included as a parameter to account for patterns in nonresponse since there was evidence that response probability depended upon ownership strata. Indeed, nonresponse occurred most frequently for the PNI ownership class during the 2013-2017 Implementation Study. Other demographic parameters such as Area or acres harvested may also be used to further stratify the sample, if necessary. Observations will be weighted so that each stratum accurately represents its proportion of the population of suitable harvest units. A constant probability of response will be assumed for each stratum. The model will provide the probability that nonresponse is ignorable for each stratum (e.g., ownership and Area). If not ignorable for some strata, a sensitivity analysis that quantifies theoretical levels of nonresponse bias on compliance will be used to provide bounds for the impact of nonresponse.
- Using remote sensing technology such as satellite imagery to estimate compliance for a subset of rules in harvest units with access concerns. Current satellite imagery with resolution up to 0.5 meters per pixel can be purchased directly from ArcGIS Online or from sources such as Maxar (www.maxar.com). Imagery with this level of detail could be used to evaluate compliance for FPA rules with features visible via satellite, spectral imagery, or GIS layers, such as written plans when operating near WOS (629-605-170-1a, 629-630-700-3.2), minimizing road widths (629-625-310-3), installing cross ditches (629-630-150-8) and skid trails near WOS (629-630-800-8). The accuracy of satellite imagery to determine compliance will be evaluated through ground truthing with field observations. Imagery costs are highly variable and depend on the desired resolution, geographic distribution of harvest units, and the quantity of images. Therefore, implementation of this solution may be beyond current resources available to the program (quoted to start at approximately \$1,000 per site for 2-3 meter resolution).
- Mandating land access for compliance monitoring surveys through the Oregon Legislature. This would directly address the issue of nonresponse in the current study design. However, it is unlikely that this solution would entirely eliminate nonresponse. The feasibility of this policy solution is beyond the scope of our recommendations.

5. Reducing potential for systematic error with standardized training and QA/QC protocols.
 - QA/QC methods can build on the protocol developed for the 2013-2017 Implementation Study reports by stipulating that repeated errors in survey data will trigger an evaluation for systematic error. Protocols will be precisely followed to effectively reduce the potential for error.
6. Increasing scope of inference by including large harvests (greater than 500 acres) with a sub-sampling protocol. Large harvest units can be equally sectioned and randomly sub-sampled. During the 2013 sample selection process, a 4,000-acre harvest unit was non-randomly dropped due to logistics and cost.
7. Applying within-unit stratification for roads and streams to mitigate autocorrelation and increase sampling efficiency.
 - Surveying a random sample of roads and streams within each unit will substantially reduce the number of measurements in each harvest unit compared to the 2013-2017 Implementation Study. Once the sample of harvest units is defined, road and stream survey segments can be determined prior to data collection using satellite imagery and GIS layers. Roads and streams within units will be divided into segments of similar length (e.g., 150 meters). Segments will form road and stream populations within each unit, stratified by common characteristics. For within-unit road stratification, we propose an approach adapted from Steel and Cunningham (2018) that allocates road segments into three strata (Figure 5): (1) roads with no watercourse crossings, (2) roads on hillslopes <50% with watercourse crossings and (3), roads on hillslopes >50% with watercourse crossings. Strata can be modified to reflect criteria that meet the ODF's needs, such as proximity of roads to waters of the state. Further, slope criteria can reflect any numeric value of interest. For example, 60% and 40% were used for hillslopes on non-granitic and granitic soils, respectively, for the Rule Division 629 road rules in the 2017 Implementation Study (ODF 2017). Once road sections are categorized into strata, one road segment per strata can be randomly drawn and measured. In Figure 5, one of the seven segments without water crossings and the single segment with a water crossing on a hillslope <50% would be surveyed. If road sections for a given harvest unit only contain one or two of the three categories, the missing strata can be omitted. In addition, the total population of road segments by strata will be calculated to appropriately weight and calculate rule compliance across strata. This method of within-unit stratification for roads would greatly increase survey efficiency (agency goal 6). For example, FPA rule 629-625-330-2 (not directing flow to unconsolidated hillslopes with road fill) had 1,451 applications in 2017, whereas within-unit stratification would result in a maximum of 300 surveyed road segments. Furthermore, within-unit stratification will reduce autocorrelation and provide photo documentation for education and training purposes.

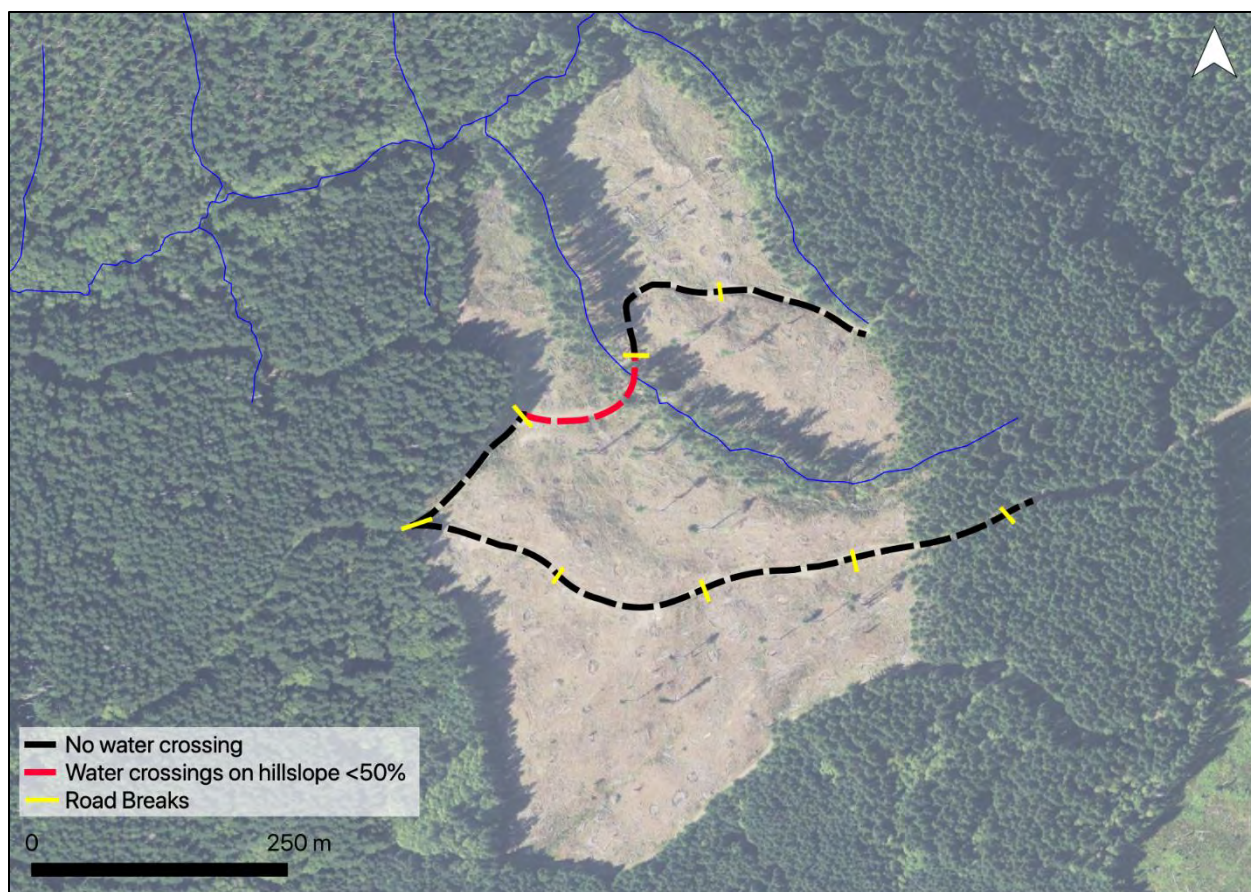


Figure 5. Example of within-unit road stratification. The road within the harvest boundary has been equally sectioned into eight segments. In this scenario, the red road segment and one of the seven black road segments would be randomly drawn and surveyed for compliance.

- A similar method could be applied to stratify and randomly sample for stream-related rules. Streams within the harvest boundary can be segmented by stream type, size, and use based on stream typing data from harvest notifications, written plans, and GIS stream layers. From this, a random segment can be sampled within each stream type strata.
8. Conducting a power analysis or other sample size calculation to estimate the required sample size of rules and harvest units. This requires developing focused monitoring questions and defining the desired level of confidence in results. This can optionally be informed by:
- Using data collected from the 2013-2017 Implementation Study to form ‘informative priors’ for a Bayesian statistical approach. Bayesian methods can potentially reduce the sample size necessary to obtain desired confidence in results.

Statistics and reporting

Statistical analysis and reporting solutions can alleviate or account for issues identified regarding within unit correlations, unit level compliance estimates, strata level compliance estimates, measurement error, and confidence intervals (Critiques 2, 3, 6, 8, and 13) and include:

1. Accounting for collinearity of compliance within harvest units by including a unit level random effects component in a binomial model for rule compliance. The random effects parameter accounts for unit characteristics such as harvest operator on compliance estimates. This method can only be applied for rules and strata with sufficient sample size and include rule applications in at least two harvest units.
2. Analyzing and reporting compliance at the rule level to avoid bias toward the most frequently applied rules. Unit level compliance estimates were a function of the rules assessed and rule application frequency.
3. Accounting for the weights of each strata when estimating and reporting compliance across strata. This is possible with appropriate estimates of population size by strata gained through study design solutions.
4. Controlling measurement error through site replication protocols and including error in rule level estimates based on an analysis of discrepancies between measurements at replicated sites.
5. Calculating confidence intervals using a binomial model for rule compliance, thereby providing estimates of certainty for all compliance estimates to assess the strength of inference. This method can only be applied for rules and strata with sufficient sample size.

Together, prospective solutions can improve elements of the study design, analysis, and reporting while allowing core processes of these components to remain mostly intact. These improvements can provide substantial benefit to efficiently address agency goals to a higher degree and are the basis of process changes recommended for all proposed future approaches.

5. RECOMMENDATIONS

After completing an independent review of the 2017 Implementation Study, reviewing monitoring programs in other states, and assessing critiques, we have developed three options using a range of prospective solutions. Two study design options represent “basic” and “high” levels of effort specified by the ODF to meet each of their agency goals (Table 10). An additional option is provided which reflects an intermediate level of effort. Proposed options assume that the ODF must continue to request permission to enter private property and collect data and that the ODF will not have information on completed harvests prior to sample selection (ODF 2021a). All options are intended to work within the ODF’s Private Forests Division infrastructure, including field protocols, FERNS database, and methods of landowner contact and compliance determination.

Eight process changes are common to all proposed options. Process changes address critiques of the compliance monitoring program related to nonresponse bias, autocorrelation, and collinearity as well as increase program efficiency. These changes will require minimal effort while providing substantial benefit by allowing for reliable compliance estimates, increasing the scope of inference, and leveraging the 2013-2017 Implementation Study data. Process changes will require frontend effort (i.e., prior to field data collection) and include estimating site suitability, the number of units in the population, and sample sizes. Process changes are also aimed at improving efficiency in data collection and addressing agency goals, such as optimizing the sample size required for desired confidence. Proposed options will build upon process changes and represent a range of scope of inference, data collection effort, analysis and reporting detail, utility, and reliability.

Proposed options can provide compliance rates that represent timber harvest on non-federal land in Oregon to inform the Oregon legislature, Board of Forestry, stakeholders, and the public. Options efficiently provide compliance estimates with known confidence in results that can be used for decision-making and educational purposes. Proposed options 1 and 2 examine rule level compliance for a subset of FPA rules. A third option is forwarded, which examines all FPA rules to provide statewide estimates of rule and unit level compliance. However, legal determination of unit level compliance requires an inspection by a Forest Practices Forester and is beyond the scope of the current Implementation Study program.

Process changes

Proposed process changes relate to study design, data collection methods, and analysis, and are specifically aimed at improving efficiency, meeting performance criteria for agency goals, and addressing critiques. Process changes that are recommended for all options are detailed in *Prospective Solutions*. Process changes are:

1. *Explicitly define all sampling elements. Page 46*
2. *Narrow research questions to address agency goals. Page 46*
3. *Quantify the population. Page 47*
4. *Account for nonresponse bias. Page 47*
5. *Reduce potential for systematic error with standardized training and QA/QC protocols. Page 49*
6. *Include large harvests (greater than 500 acres) with a sub-sampling protocol. Page 49*
7. *Apply within-unit stratification for roads and streams to mitigate autocorrelation and increase sampling efficiency. Page 49*
8. *Determine sample size using power analysis or a similar approach. Page 50*

PROPOSED APPROACHES

Three options have been designed for the compliance monitoring program that include the proposed process changes (Table 19). Options were developed based on the current program's intent and budget, the ODF's stated goals, and our assessment of the study design and other technical concerns. In developing options, we recognize that the scope of the Implementation Study does not currently monitor all FPA rules and does not explicitly address or protect cultural resources (i.e., conducting archaeological surveys). Given the intertwined landscape of public, tribal, and private interests, all options are designed to adapt to shifts in resources and monitoring questions.

Table 19. Summary of design components for proposed options.

Study component	Option 1	Option 2	Option 3
Unit or rule compliance	Rule	Rule	Unit and rule
Population	All rule applications in suitable harvest units	All rule applications in suitable harvest units	All suitable harvest units
Harvest unit stratification	None	Ownership class	Ownership class
Clusters	Harvest units	Harvest units	None
FPA rules examined	57 from prior Implementation Study	57 from prior Implementation Study	All applicable
Ability for rule focus to change	Yes	Yes	No, all applicable rules would be evaluated
Field surveyors	Trained contractors or ODF personnel	Trained contractors or ODF personnel	ODF personnel
Summary level supported	Statewide rule level compliance	Statewide rule level compliance and by ownership class	Statewide unit and rule level compliance and by ownership class
Degree agency goals are addressed	Basic	Moderate to High	High

For each option we describe (1) estimated sample sizes, (2) budget estimations and assumptions, (3) key study design components, and (4) the extent to which agency goals are addressed in the context of ODF's performance criteria (Table 10; Table 11). Option 1 provides an approach to address agency goals at a basic level; options 2 and 3 provide incremental increases in utility for addressing agency goals and required resources. For all options, we assumed the same 57 rules would be evaluated as in the 2017 Implementation Study. In the case of options that provide only rule level compliance (options 1 and 2), it was assumed that each harvest unit had an average of one rule application per rule assessed. With this assumption, the desired confidence in results can be achieved for rules with an average of at least one application per unit.

Estimated Sample Sizes

For each option, we calculated the target sample sizes required to reach desired confidence in results (95% confidence interval width) using methods described by Cochran (1963) over a range of assumed compliance rates (50%, 80%, 85%, and 90%). As sample size increases, so does confidence in results, which is represented by a decrease in confidence interval width (Figure 6). For example, if compliance is 90%, a 95% confidence interval width of $\pm 10\%$ would provide 95% confidence that actual compliance is between 80% and 100%. Furthermore, Figure 6 illustrates that the sample size necessary to reach a specified confidence interval width decreases as the rate of compliance increases beyond 50%. The sample sizes described in study design options assume an average of 85% compliance.

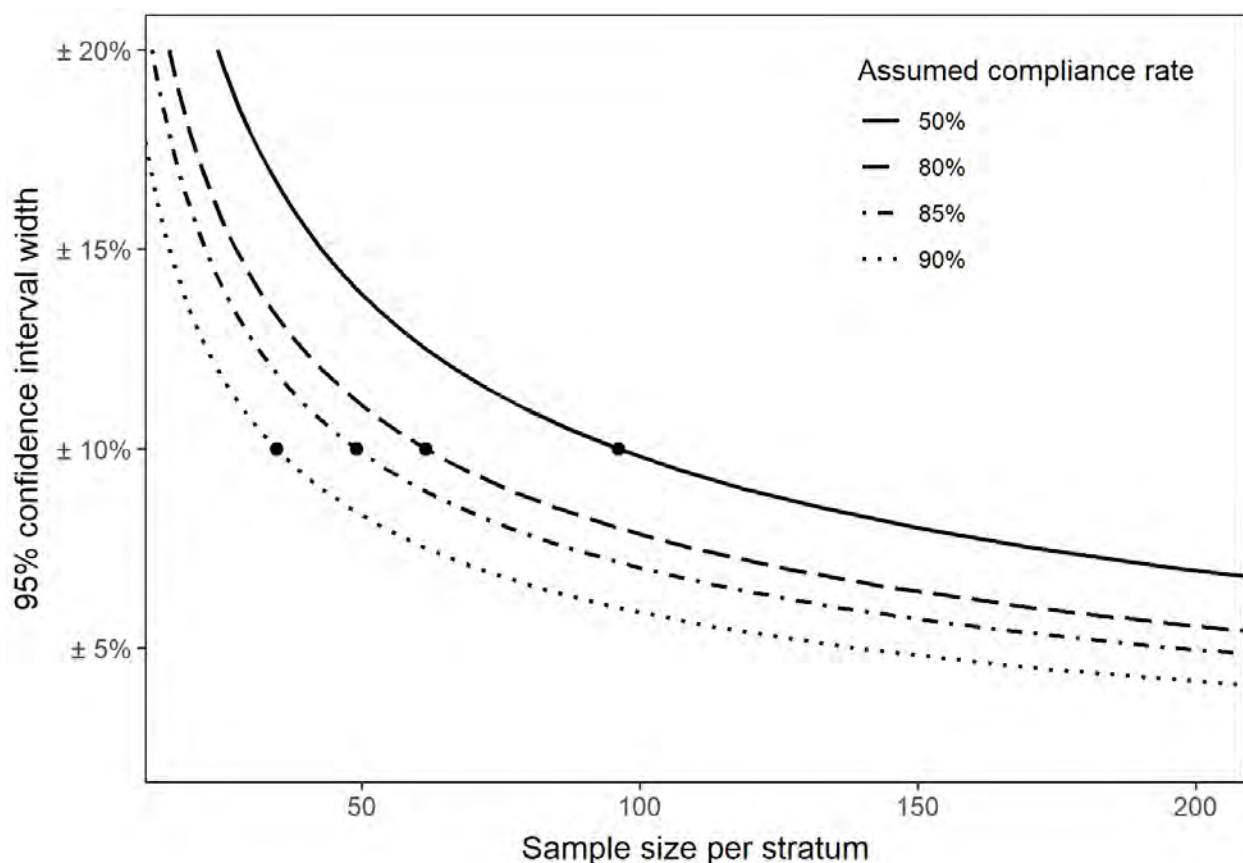


Figure 6. Sample sizes and their corresponding 95% confidence interval width given assumed compliance rates. Points represent the sample size required to reach a 95% confidence interval width of $\pm 10\%$ under 50%, 80%, 85%, and 90% compliance rates. Sample size requirements were calculated with equations from Cochran (1963).

Budget Estimation

For each option, an itemized budget was estimated (Table 20) based on resource information provided in ODF (2021b). Budgets range from \$227,000 less than the 2017 Implementation Study to roughly \$157,000 more than the study. Implementation of each option includes fixed costs and variable costs. Fixed costs, which apply equally for all options, are associated with process changes that address bias and critiques of the 2017 study as well as program efficiencies. Variable costs relate to the sample size and complexity of the design. Costs were developed with the following assumptions:

- 1) Fixed costs include decision-making (e.g., study design elements, rules assessed, confidence interval width), power analyses for sample size determination, analysis of 2013-2017 study data to inform sampling, database developmental changes, and development of executables for data analyses (i.e., writing R scripts). We estimate \$45,000 for decision-making and associated study design revisions, \$45,000 for database and executable development, and \$10,000 for analysis of existing data. Fixed costs can be considered a one-time cost, however, prospective updates to study design may incur additional costs.
- 2) Sample selection includes drawing units, contacting landowners, determining suitability, and obtaining land access permission. ODF employee resources from the 2017 Implementation Study were estimated as two months of one Full Time Employee (FTE) for every 100 harvest units (ODF 2020).
- 3) The cost of contractor field surveys was reported to be approximately \$200,000 per year. The annual cost equated to approximately \$2,000 per harvest unit in 2017 (100 units surveyed). Cost per harvest unit may increase with smaller sample sizes due to overhead costs (e.g., contract management).
- 4) The inclusion of within-unit stratification is estimated to reduce the total number of rule applications surveyed per unit by approximately 45% compared to the 2017 study. To estimate the data collection cost per harvest unit, we estimated that 20% of the \$2,000 (\$400) is fixed due to survey logistics (e.g., transit to sites, equipment, etc.). The cost of within-unit stratification was estimated at \$100 per unit, however this process could be automated to further reduce costs. Cost per harvest unit surveyed was then calculated as:

$$2,000 \times 0.2 + [2,000 \times 0.8 \times (1 - 0.45)] + 100 \approx \$1,377 \text{ per site.}$$

- 5) For unit level compliance (Option 3), not all FPA rules will be applicable for each harvest unit surveyed, so the cost of data collection within each harvest unit was doubled:

$$2,000 \times 0.2 + [2,000 \times 0.8 \times (1 - 0.45)] \times 2 + 100 = \$2,260 \text{ per site.}$$

- 6) Reporting was estimated as an annual cost of \$15,000 – \$20,000 with exception of Option 3, which requires additional reporting components for unit and rule level compliance. Reporting costs do not include analytical development, which are covered within *Process changes*.

It should be noted that the ODF FTEs were not included in estimates. However, the ODF currently has approximately 1.5 FTE to conduct compliance monitoring (ODF 2021b). Using public salary data (<https://gov.oregonlive.com/salaries/>), we estimated that average salary for ODF employees on the project (NRS 1-4) is approximately \$75,000 per year. After accounting for average state government employer benefit costs (Bureau of Labor Statistics 2021), we estimated 1 FTE = \$121,160. Therefore, the ODF has approximately \$181,700 of employee resources that can be dedicated to compliance monitoring. While the ODF FTE has been converted to dollars for budget presentation purposes, FTE and contractor costs may not be equivalent or directly interchangeable.

Table 20. Cost range for proposed options study components. Dollar figures are expressed in 1,000s, with 1 ODF FTE approximately equal to \$121,000.

Study Component	Option 1		Option 2		Option 3		2017 study
	±10%	±12.5%	±10%	±12.5%	±10%	±12.5%	-
95% CI width							-
Harvest unit sample size	49	31	140	90	140	90	100
<i>Process changes*</i>	-	-	-	-	-	-	-
Decision-making and design	\$45k	\$45k	\$45k	\$45k	\$45k	\$45k	-
Database and executables	\$45k	\$45k	\$45k	\$45k	\$45k	\$45k	-
Analysis of existing data	\$10k	\$10k	\$10k	\$10k	\$10k	\$10k	-
<i>Annual costs</i>	-	-	-	-	-	-	-
Sample selection	\$8 – 12k	\$5 – 7.5k	\$22.5 – 34k	\$15 – 22k	\$22.5 – 34k	\$15 – 22k	-
Data collection and QA/QC	\$54 – 81k	\$34 – 51k	\$155 – 231k	\$100 – 149k	\$253 – 380k	\$163 – 244k	\$200k
Analysis and reporting	\$15 – 20k	\$15 – 20k	\$15 – 20k	\$15 – 20k	\$20 – 25k	\$20 – 25k	-
First year total before FTE	\$177 – 213k	\$154 – 178.5k	\$292.5 – 385k	\$230 – 289k	\$395.5 – 539k	\$298 – 391k	≈382k

*One-time cost.

Option 1 – Statewide rule level compliance

Option 1 provides statewide rule level compliance estimates and addresses agency goals at a “basic” level (Table 19). The population is defined as all rule applications in suitable harvest units and each surveyed harvest unit will serve as a cluster of rule applications. The sample of harvest units will be obtained by filtering the FERNS database using suitability criteria (except harvest completion). A simple random sample (Lohr 2010) of harvest units will be drawn from the population and surveyed to estimate rule compliance. The random draw of harvest notifications will include an overdraw (i.e., the random draw will be greater than the number of actual harvest units to be surveyed). The number of notifications required for overdraw can be determined using nonresponse and suitability rates from the 2013-2017 Implementation Study.

Once harvest units are drawn, completion of clearcut operations can be ascertained through current satellite imagery. Then, the process for initial landowner contact and request for permission will follow methods similar to the 2017 study. After the initial contact, a random subset of all landowners who did not respond or refused access will be drawn for extra effort (Process Change 4). Prior to field data collection, roads and streams will be segmented and then stratified following the proposed within-unit stratification methods (Process Change 7; Figure 5). Harvest units in the sample will be surveyed by either ODF personnel or trained contractors to determine compliance for the subset of rules.

After data collection, compliance rates will be compared between surveyed harvest units with responsive and initially nonresponsive landowners to examine the potential influence of nonresponse bias. Compliance data from these initial nonrespondents will be used in a nonresponse model to quantify and account for nonresponse bias (Process Change 4). Mean rule level compliance rates and their associated confidence intervals can be calculated using a binomial model with unit level random effects for rules with sufficient sample size.

Sample sizes will vary based on the desired confidence interval width. For a 95% confidence interval width of $\pm 10\%$, 49 harvest units are recommended (Figure 6). For a confidence interval width of $\pm 12.5\%$, we recommend a sample of 31 harvest units. After converting ODF FTE to dollars and including process changes, these sample size options correspond to first year cost ranges of \$177,000 – \$213,000 and \$154,500 – \$178,500, respectively (Table 20). Costs will be reduced by approximately \$100,000 in subsequent years if study design remains the same.

Option 2 – Rule level compliance by ownership class

Building upon Option 1, Option 2 adds stratification of harvest units so that the scope of inference includes all examined rule applications for suitable harvests by ownership class (Table 19). Consequently, finer scale inference is possible with Option 2 compared to Option 1. As with Option 1, the population is defined as all rule applications in suitable harvest units and each harvest unit serves as a cluster of rule applications. Harvest units will be randomly drawn from the FERNS database after filtering for suitability criteria (except harvest completion) and stratifying by ownership class. The number of harvest units drawn in each stratum will be

proportional to the number of acres notified for harvest, divided by observed response and suitability rates from the 2013-2017 Implementation Study. Since the population is rule applications, allocation is conducted by acreage among strata. We assume that the total population of rule applications is more strongly correlated with the number of harvested acres than the number of harvest units.

Once harvest units are drawn, completion of clearcut operations can be ascertained using current satellite imagery. Then, the process for contacting landowners and obtaining permission follows methods similar to the 2017 study. After the initial contact, a random subset of landowners who did not respond or refused access will be drawn for extra effort (Process Change 4). Prior to field data collection, roads and streams will be segmented and then stratified following the proposed within-unit stratification methods (Process Change 7; Figure 5). Harvest units in the sample will be surveyed by either ODF personnel or trained contractors to determine compliance for the rules assessed.

Following data collection, compliance rates will be compared between harvest units with responsive and initially nonresponsive landowners to examine the potential influence of nonresponse bias. Compliance data from these initial nonrespondents will be used in a nonresponse model to quantify and account for nonresponse bias (Process Change 4). Mean rule level compliance rates and associated confidence intervals will be calculated using a binomial model with unit level random effects for rules with sufficient sample size.

This option has more flexibility for addressing agency goals than Option 1. Rules assessed and stratification methods can be altered at the ODF's discretion. If the primary focus (i.e., types of rules assessed) or available resources shift, the study design is adaptable. For example, stratification by Area could be included in the study design to enhance the resolution of results and provide more targeted outreach and training. However, the harvest unit sample size required to add Area strata for the same confidence in results as ownership class alone would approximately increase by a factor of three.

Sample size estimates for Option 2 were calculated such that $\pm 10\%$ and $\pm 12.5\%$ confidence interval widths can be obtained for both the PI and PNI ownership classes. The proportion of samples in each stratum was estimated using FERNS notification data from the 2017 study (PI = 54%; PNI = 35%; OTH = 11%). Since most samples will be selected from the PI ownership class, results from this stratum will have the narrowest confidence interval widths. For 95% confidence interval widths of $\pm 10\%$ and $\pm 12.5\%$, the estimated number of samples required are 140 and 90, respectively (Figure 6). After converting ODF FTE to dollars and including process changes, these sample sizes correspond to first year cost ranges of \$292,500 – \$385,000 and \$230,000 – \$289,000, respectively (Table 20). Costs will be reduced by approximately \$100,000 in subsequent years if study design remains the same.

Option 3 – Unit and rule level compliance by ownership class

Option 3 provides compliance estimates at the harvest unit and rule level and addresses agency goals to the highest degree (Table 19). Unit compliance is determined by compliance with all applicable FPA rules, rather than a subset, thereby necessitating that field surveys are performed by ODF personnel qualified to conduct a comprehensive unit audit. As in Option 2, a random overdraw of harvest units will be conducted using FERNs database notifications stratified by ownership class and filtered for suitability (except harvest completion). The number of harvest units drawn in each stratum will be proportional to the number of acres notified for harvest and divided by observed response and suitability rates from the 2013-2017 Implementation Study.

Once harvest units are drawn, completion of clearcut operations can be ascertained using current satellite imagery to confirm suitability. Then, the process for contacting landowners and obtaining permission will follow methods similar to the 2017 study. After the initial contact, a random subset of landowners who did not respond or refused access will be drawn for extra effort (Process Change 4). Prior to field data collection, roads and streams will be segmented and stratified according to the proposed within-unit stratification methods (Process Change 7; Figure 5). Following data collection, compliance rates will be compared between harvest units with responsive and initially nonresponsive landowners to examine the potential influence of nonresponse bias. Compliance data from these initial nonrespondents will be used in a nonresponse model to quantify and account for nonresponse bias (Process Change 4). Unit level compliance can be calculated along with associated confidence intervals using a generalized linear model. Rule level compliance rates and their associated confidence intervals can be calculated using a binomial model with unit level random effects for rules with sufficient sample size.

This option maintains similar flexibility to Option 2 for modifying stratification methods. Compared to options 1 and 2, Option 3 evaluates all applicable FPA rules within surveyed harvest units. This option can provide unit level compliance rates, however, does not determine legal compliance. The evaluation of all applicable FPA rules was assumed to approximately double the data collection effort required in each unit.

To provide unit level compliance, the estimated sample size required for 95% confidence interval widths of $\pm 10\%$ and $\pm 12.5\%$ are 140 and 90, respectively. After converting ODF FTE to dollars and including process changes, these sample sizes correspond to first year cost ranges of \$395,500 – \$539,000 and \$298,000 – \$391,000, respectively (Table 20). Costs will be reduced by approximately \$100,000 in subsequent years if study design remains the same.

Utility of Options to Address Agency Goals

Implementing recommended process changes in conjunction with any of the proposed options can address ODF goals and critiques to the 2017 study (critiques 1, 2, 3, 4, 6, 10, 12, 13, 14). Each option was designed to provide incremental increases in addressing agency goals, with options 1, 2, and 3 representing basic, moderate, and high standards, respectively. Using ODF

performance and design criteria (Table 10; Table 11), we detail the degree to which these options address each goal:

1. *Provide data for annual reporting to the Oregon Legislature.*

- Process changes account for and quantify bias and error, improving statistical reliability.
- Options 1 and 2 can provide rule level compliance and associated confidence intervals, and account for bias, addressing design and performance criteria at or above a basic level.
- Option 3 can provide unit and rule level compliance results, thereby addressing this goal to a high degree.

2. *Verify implementation of forest practices on private property, for potential use in third-party certification systems, such as the Sustainable Forestry Initiative, American Tree Farm System, and the Forest Stewardship Council.*

- Process changes allow larger harvest units to be included, providing an increased scope of inference, reduced bias, and confidence intervals.
- Option 1 can provide compliance rates for a subset of rules and corresponding confidence intervals, fulfilling the basic performance criteria.
- Option 2 includes ownership class strata to address this goal to a moderate degree.
- Option 3 examines all FPA rules by ownership class, addressing this goal to a high degree.

3. *Provide an informed and systematic basis for targeted training efforts by both ODF and forest industry to increase compliance with rules.*

- Process changes allow for all options to identify rules having low compliance with stated statistical reliability and reduce the influence of nonresponse bias.
- Option 1 examines a subset of 57 FPA rules and corresponding confidence intervals, addressing the performance and design criteria at a basic degree.
- Option 2 examines a subset of 57 FPA rules by ownership class, providing results at a finer scale so that education and outreach can be targeted by rule and landowner type addressing this goal to a moderate degree.
- Option 3 examines all FPA rules, addressing this goal to a high degree.

4. *Improve the public's trust in both ODF, and those it regulates.*

It is important to note that the “minimum public standard” (Table 10) is unquantified, so the utility of each option to reach this performance criteria cannot be determined in this review. However, process changes and options account for critiques of the 2017 study, which may improve public trust.

- Process changes provide a level of rigor that is comparable to other states with regulatory BMP programs (e.g., California and Washington) and address the relevant critiques that ODF received on the 2017 Implementation Study. With process changes, results can be compared across monitoring years to determine if compliance is increasing through time.
- Option 1 can provide rule level compliance rates and confidence intervals with similar rigor to other regulatory programs, addressing this goal to a basic degree.
- Option 2 adds the ability to compare rule compliance by landowner type, addressing this goal to a moderate degree.
- Option 3 provides the utility to compare compliance rates at the unit and rule level, addressing this goal at a moderate to high degree.

5. *Provide data to the Board of Forestry regarding ODF's efforts to administer the FPA.*

- Process changes account for and quantify bias and error, improving statistical reliability.
- Option 1 can provide rule level compliance rates and corresponding confidence intervals, addressing this goal to a basic degree.
- Option 2 adds the ability to compare rule compliance by landowner type, addressing this goal to a moderate degree.
- By examining unit and rule level compliance, Option 3 can address this goal at a moderate to high degree.

6. *Provide for efficient use of state resources and corresponding workload in monitoring unit capacity.*

The performance and design criteria for this goal relate to the overall cost of the program.

- Process changes reduce the cost of each surveyed unit.
- Option 1 provides a study design requiring fewer resources than the current program while addressing other goals at basic to moderate degrees.
- Option 2 requires similar resources to the 2017 study, addressing this goal to a moderate degree.
- Option 3 represents an expansion of resources to include unit level compliance and increases the utility of the program to fulfill agency goals to a high degree.

FINAL RECOMMENDATION

After completing a comprehensive review of the Implementation Study, we conclude that a full reanalysis of 2017 study data likely will not be an efficient use of resources and is therefore not recommended. While potential bias and error could be quantified in a reanalysis, results could not be used to gain inference beyond the sample. Given this limitation, it is unlikely that a reanalysis would improve the utility of the Implementation Study for addressing agency goals.

Prospective solutions will efficiently provide results that directly address the ODF's goals. The proposed process changes and options represent a range of effort and utility for future compliance monitoring to address agency goals. However, the ODF has stated that available resources are assumed to remain static (ODF 2021a). Therefore, we propose Option 2, which maximizes the utility of results to address agency goals and is within ODF's available resources. Including process changes, the estimated cost ranges for the first year of Option 2 are near ODF's current maximum monitoring resources (1.5 FTE; 125k/year for contractors). Once process changes have been implemented in the first monitoring year, the cost of subsequent years will be reduced by approximately \$100,000 if the study design does not substantially change. This approach efficiently addresses agency goals by:

1. Accounting for bias and error to produce reliable compliance estimates and associated confidence intervals for a subset of FPA rules.
2. Stratifying by ownership class to provide finer scale reporting and more targeted outreach and training than Option 1.
3. Providing results that can be compared across years to identify trends in rule compliance.
4. Leveraging 2013-2017 Implementation Study data to inform the sample selection process and estimate population size.
5. Allowing flexibility for study design changes (i.e., modifying which rules are assessed to align with a new policy focus or increasing sample size for tighter confidence intervals) by examining compliance rates by rule.
6. Determine ideal sample sizes and measurement frequencies, providing known confidence in results and reducing bias while minimizing survey cost.

Reporting recommendations

Option 2 provides a scope of inference that includes rule level compliance by ownership class and statewide. Any results that are used for inference should remain within this scope and Implementation Study reports should reflect reporting best practices. Study design, survey, and analytical methods should be documented such that the study could be repeated using only methods stated and cited in the report. If results are used for comparison across rules, ownership classes, or years, then measurements of certainty, such as confidence intervals, should be reported (Kramer et al. 2019). Any assumptions related to compliance estimation should be clearly stated to provide transparency and support for study design considerations. For example, if extra effort to contact nonresponsive landowners did not reveal any nonresponse bias, then an

assumption for reported compliance rates could be: “Compliance rates for suitable harvest units with nonresponsive landowners were assumed to be the same as responsive landowners”.

If results are intended to be reported but not used for inference, such as with a reanalysis of 2017 study data, results should be framed appropriately. Results could be presented in a descriptive format and re-summarized within the scope of inference to quantify the potential effect that biases (nonresponse and systematic error) may have had on compliance results.

Other cost considerations

The ODF may be able to reduce the overall cost of Option 2 by using contractors for different aspects of the study. Contracting was mandated in the 2011 legislative budget note, though how contractors are used is at ODF’s discretion. Instead of using contractors to collect field data, they could be used for facets of the study such as design, analysis, and reporting.

Conversely, if monitoring resources available to ODF are significantly increased in subsequent years, the program scope can be expanded. Specifically, an additional layer of stratification by Area could be added to Option 2. With this additional stratification, compliance results could be reported and compared by Area and ownership class. This would approximately triple the cost of sample selection and data collection (Table 20), increase reporting costs by \$5,000 per year, and incur a one-time development cost for the study design, analysis, and database (approximately \$50,000).

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APPENDIX A: SUPPLEMENTARY TABLES

Table A- 1. List of Forest Practices Act rules that were assessed during the 2013 – 2017 Forest Practices Implementation Study.

Rule Number	Description
629-605-170-1a	Written plan if operating within 100 feet of streams and lakes
629-625-100-2b	Written plan if using machinery in Type F or D streams
629-625-100-2c	Written plan if building a road in an RMA
629-625-310-2	Road design – End Haul Waste Material
629-625-310-3	Road Design – Minimize Width
629-625-310-4	Road Design – Design cut and fill slopes to minimize landslide risk
629-625-310-5	Stabilize stream crossing fills to prevent fill failure and damage to Waters of the State
629-625-320-1b	Written plan if stream crossing fill exceeds 15'
629-625-320-1c	Construct stream crossing structures to prevent erosion of fill and channel
629-625-330-2	Do not concentrate drainage water onto landslide-prone areas or steep erodible hillslopes
629-625-330-3	Do not divert water from stream channels to roadside ditches
629-625-330-4	Install drainage structures above stream crossings to reduce sediment delivery to streams
629-625-330-5	Provide drainage when roads cross springs, seeps, wet areas
629-330-6	Provide a drainage system to minimize gully erosion on road
629-625-410	Do not place excess construction materials where they may enter waters of the state
629-625-420-1	On new roads, clear channels and ditches of slash and road construction debris
629-625-420-2	Provide effective cross drainage on all new roads
629-625-420-5	Remove berms on edges of roads or provide effective drainage through berms
629-625-430-2	Written plan if using machinery in Type F or D streams
629-625-430-5	Construct sediment barriers on temporary crossings
629-625-440-1	Stabilize exposed, unstable material through seeding
629-625-440-3	Do not incorporate large amounts of organics in fills
629-625-500-2	Do not locate quarry sites in channels
629-625-500-3	Prevent quarry-related waste from entering WOS
629-625-500-4	Stabilize active quarry surfaces to prevent erosion/landslides

Rule Number	Description
629-625-500-5	Stabilize inactive quarry surfaces to prevent erosion/landslides, dispose of petroleum-related waste, and ensure other waste does not enter WOS
629-625-600-2	Maintain active and inactive roads with a stable surface and an effective drainage system
629-625-600-3	Maintain drainage structures to diminish likelihood of clogging and washouts
629-625-600-5	Apply road oil, surface stabilizers in a manner that prevents entry to waters of state
629-630-150-7	Do not locate skid trails straight up/down steep, erodible slopes >100' unless effective drainage is provided
629-630-150-8	Install cross ditches on skid trails on steep, erodible slopes
629-630-200-3	Written plan if building landings within an RMA
629-630-200-4	Do not incorporate large amounts of organics in landing fills
629-630-300-2	Construct water diversions in skid trails to keep sediment from entering WOS
629-630-300-4	Maintain effective drainage on landings during and after use
629-630-400-1	Place harvest-related waste material where it won't enter waters of the state
629-630-400-3	Remove petroleum waste from forest
629-630-400-4	Dispose of metal so that waste material does not enter WOS
629-630-600-3b	Do not allow slash to accumulate in waters where they impair water quality or increase likelihood of mass debris movement
629-630-600-3c	Place slash above high-water levels
629-630-700-3.2	Written plan if operating within 100 feet of streams and lakes
629-630-700-4	In certain WOS types, swing yarded material free of ground in aquatic areas and riparian areas
629-630-800-2	Do not operate ground-based equipment in stream channels
629-630-800-4a	Construct temporary crossings so they pass flows and minimize erosion/ sedimentation
629-630-800-4e	Remove temporary stream crossings
629-630-800-6	After yarding, construct sediment barriers on stream crossing approaches
629-630-800-8	Minimize skid-trail-related soil exposure within RMAs, and do not locate skid trails within 35 feet of F and D streams
629-640-100-2b	Retain all trees within 20 feet of high-water level on Type F streams
629-640-200-2b	Along D, and L-M N streams, retain all trees within 20 feet of high-water level
629-645-030-1	Protect soil from disturbance in significant wetlands and their RMAs
629-655-000-2a	Protect soil from disturbance in non-significant wetlands >1/4 acres
629-655-000-3	Protect soil and vegetation along small wetlands, springs, and seeps

Rule Number	Description
629-660-040-1	Do not divert water from streams
629-660-040-2	Do not add soil or rock to any streams, or remove soil or rock from these streams
629-625-320-2a	Construct stream crossing structures to pass 50-year peak flow
629-630-800-4c	Provide a written plan for temporary crossing fills exceeding 8 feet in height
629-640-200-6	Retain understory vegetation within 20 feet of certain small N streams

Oregon Department of Forestry response plan for recommendations from Mount Hood Environmental

Background

Following the release of the 2017 Implementation Study report, concerns were raised regarding the study design, analysis, and reporting of results of the 2013-2017 work. These concerns were summarized into eleven critiques by Groom Analytics (see September 2020 Board materials). To assess the 2013-2017 Implementation Study and validity of critiques, ODF hired Mount Hood Environmental (MHE) to review and provide recommendations for the future of the program. Their review confirmed the same issues identified in several critiques assessed by Groom Analytics and identified and assessed three additional issues.

This document outlines our response to the recommendations from MHE.

ODF implementation plan of MHE recommendations

2013-2017 Implementation Monitoring

ODF will implement MHE's recommendations for using data from the previous effort to inform the sample selection process and estimate population size as detailed in the table below. However, MHE recommended against re-analyzing the data from 2013-2017, and ODF will follow this recommendation. The remainder of this document focuses on our implementation of their recommendations in future studies.

Prospective solutions

MHE recommended focusing on appropriate changes to study design, analysis, and reporting for future efforts (Chapter 5 of the statistical review (page 52)):

Proposed process changes relate to study design, data collection methods, and analysis, and are specifically aimed at improving efficiency, meeting performance criteria for agency goals, and addressing critiques. Process changes that are recommended for all options are detailed in Prospective Solutions. Process changes are:

1. *Explicitly define all sampling elements.*
2. *Narrow research questions to address agency goals.*
3. *Quantify the population.*
4. *Account for nonresponse bias.*
5. *Reduce potential for systematic error with standardized training and QA/QC protocols.*
6. *Include large harvests (greater than 500 acres) with a sub-sampling protocol.*
7. *Apply within-unit stratification for roads and streams to mitigate autocorrelation and increase sampling efficiency.*
8. *Determine sample size using power analysis or a similar approach.*

MHE recommended that these changes be incorporated in an overall rule-based design, examining a subset of FPA rules, that stratifies by ownership class (Option 2, page 53). MHE recommended that each rule should be considered the analysis unit, rather than a hybrid rule/harvest unit approach that was used in 2013-17. The rule-based design approach works well with ODF objectives, and ODF intends to incorporate it in future efforts.

In summary, ODF will implement all eight of these recommendations, in the manner that most closely represents their recommended option #2 (p. 58, Attachment 2). The specifics of ODF's response are detailed in Appendix 1. Note that we will solicit third party review of all future study protocols to ensure that we properly implement MHE's recommendations.

Appendix 1. ODF responses to MHE recommendations.

Issue	MHE Recommendation	ODF response
Implicit and unclear definition of sampling elements affected reliability of inference.	1. Explicitly define all sampling elements.	Sampling elements will be described more clearly in future efforts. Almost all elements are easily and concretely described, as was done in the MHE report. The element requiring further definition is quantification of the sample population meeting suitability criteria. As per discussion in the MHE document, sampling will be performed based on number of notified units, rather than acreage included in the notifications.
Some monitoring questions were listed that were not susceptible to statistical analysis. This led to confusion.	2. Narrow research questions to address agency goals.	We will define research questions explicitly as those that address agency goals (p. 11, Attachment 2) and are amenable to statistical analysis. We will continue to address other questions that contribute to our understanding of forest practices as they are applied on the ground and be careful to distinguish these from our monitoring questions.
True population not known, because an unknown number of notifications were duplicates, did not take place, or were otherwise unsuitable. This technically makes it impossible to draw a truly random sample and can result in misallocation of sample/analysis among strata.	3. Quantify the target population	We will quantify the target population in future efforts, likely using one or both methods suggested by MHE: remote sensing and 2013-2017 data. We are still determining the best approach for using these methods. Thinning operations are difficult to reliably detect using remote sensing. The number of notified thinning operations that took place may be estimated using proportions observed in 2013-2017 data.
Large number of nonrespondents and refusal of access potentially introduced an unknown amount of bias, reducing confidence in reported results.	4. Account for bias from nonresponse and refusal of access.	In future projects, ODF will conduct a sensitivity analysis of the potential effects of nonresponse and refusal of access on results, incorporating suggestions from MHE. ODF will also search for appropriate means to conduct extra effort for those who initially refuse access while at the same time respecting their private property.
Measurement error potentially reduces confidence in results.	5. Reduce potential for systematic error with standardized training and QA/QC protocols	All personnel who collect field data will undergo rigorous training on field methods in a consistent and coordinated manner. ODF will strengthen QA/QC protocols for these field methods and obtain 3 rd -party review of both the training and the QA/QC protocols.
Inference is limited to harvests less than 500 acres because larger operations were not surveyed.	6. Include large harvests (>500 acres) with a sub-sampling protocol.	Forest Practices rules limit clearcuts to 120 acres, so this recommendation is not applicable to rules that focus solely on clearcuts. This recommendation mostly applies to large thinning operations, with a smaller component of salvage operations and other operations with a Plan for Alternate Practice. We will include this solution where feasible.

Issue	MHE Recommendation	ODF response
Repeated measurements at a site resulted in issues of autocorrelation, collinearity, and pseudo replication.	7. Apply within-unit stratification for roads and streams to mitigate autocorrelation and increase sampling efficiency.	We will develop a methodology for within-unit stratification for projects that require segmentation of linear features such as roads and streams. The Steel and Cunningham document mentioned by MHE provides a useful template for doing this work.
Sample size may not be optimal for assessing some rules. In some cases, it may not be adequate to obtain desired width of confidence intervals. In others, reliance upon binomial approximations may incur a larger sample size (and cost) than necessary.	8. Determine sample size using power analysis or a similar approach.	We will use 2013-2017 data to inform future sample size, particularly when we develop projects that examine rules assessed with those data. We will do a power analysis to better understand the statistical power of a range of sample sizes that will improve assessment of compliance. We will assess necessary sample size using binomial approaches.

Agenda Item No.:	4
Work Plan:	Private Forests
Topic:	Board Updates
Presentation Title:	2021 Forest Health Report
Date of Presentation:	November 3, 2021
Contact Information:	Christine Buhl, Forest Entomologist, Private Forests Wyatt Williams, Invasive Species Specialist, Private Forests Gabriela Ritokova, Forest Pathologist, Private Forests Adam Coble, Forest Health and Monitoring Manager, Private Forests

SUMMARY

This agenda item provides an overview of the Oregon Department of Forestry (ODF) Forest Health work on major insect, disease, and other damaging agents affecting Oregon forests in 2021, as required by Oregon Revised Statute (ORS) 527.335.

CONTEXT

The Board of Forestry's (Board) 2011 Forestry Program for Oregon defines a healthy, vital forest landscape as one that maintains its functions, diversity, and resiliency within the context of natural and human disturbances and is capable of providing people with the array of values, uses, and products desired now and in the future. The Board supports protecting and improving the health and resiliency of Oregon's dynamic forest ecosystems, watersheds, and airsheds (Goal F). The Board's objectives for Goal F include promoting resilient forest landscape conditions and management practices that will lead to reductions in adverse impacts from forest insects and diseases (Objective F.7). The Board's guiding principles and philosophies include a commitment to continuous learning, evaluating and appropriately adjusting forest management policies and programs based upon ongoing monitoring, assessment, and research (Value Statement 11).

BACKGROUND

Topics included in the 2021 Forest Health Report: review of the Forest Health program, impact and response to COVID-19 interruptions of aerial survey program and other monitoring projects, impacts of abiotic stress events (heatwave, drought, storm damage, climate change), and a brief update on current outbreaks.

ANALYSIS

Core business and high-priority Forest Health projects over the last 12 months include:

- **Annual aerial detection surveys for insects and disease:** The annual statewide aerial survey was interrupted by COVID-19, but a new method that uses aerial imagery, "Scan and Sketch," was developed to collect data on forest damage in high priority areas. Aerial survey from the air resumed in 2021 with a focus on high priority areas. The "Scan and Sketch" method was not used in 2021 because imagery was not available for 2021. The Forest Health program plans to utilize the "Scan and Sketch" method in the future as supplemental data or as an eventual replacement for aerial detection surveys.

- **Abiotic stressors:** As climate change progresses, we continue to see the impacts on our landscape from chronic droughts and acute storm events. Wildfire perimeters and areas affected by 2020 winter storms and 2021 heatwave are being monitored for direct tree mortality and subsequent insect attack. Dieback in historical ranges of less drought-tolerant species such as western redcedar are being mapped and studied to provide guidance for establishing more climate change-adapted stands.
- **Biotic stressors:**
 - **Insects:** The majority of tree damage and mortality from insects and disease as detected by “Scan and Sketch”, aerial and ground surveys is from bark beetles attacking mostly Douglas-fir, true fir and pines – often as a result of pre-existing drought stress or poor site conditions. Douglas-fir tussock moth outbreaks are persisting at different stages of their short outbreak cycle in a few areas in NE Oregon and balsam woolly adelgid continues its spread unchecked, particularly in true fir at higher elevations of NE Oregon.
 - **Diseases:** ODF has been working with partners on detecting, delimiting and treating an expanding Sudden oak death (SOD) infestation in the northern extent of the disease occurrence in Oregon, near Port Orford. Over 300 acres have been surveyed and over 180 samples have been taken since June. Test results indicate the majority of the infections have been the relatively new North American 2 (NA2) variant of the disease, and over 500 acres have been slated for treatments of the disease. ODF received \$1.7 million from the State General Fund for SOD detection and treatments in HB 2663.
- **Non-established invasive species:**
 - **Exotic gypsy moth monitoring:** Statewide trapping in 2020 indicated small populations of exotic gypsy moth on forestlands near Rainier, OR, and on Sauvie Island. In 2021, ODF assisted Department of Agriculture (ODA) with landowner outreach and technical assistance in delimitation trapping to determine the extent of the Rainier population.
 - **Emerald ash borer/Oregon ash:** The invasive pest, emerald ash borer, still remains undetected in Oregon since ODF surveys commenced in 2013 despite the insect spreading to over 35 states. Native Oregon ash seed is being collected across western Oregon in an effort to create a genetic repository and to test for resistance to the exotic pest.
- **Worked with landowners, cooperators, and other agencies to provide technical assistance, support, and education**
- **Annual and other reports, publications:** 2020 Annual Forest Health Highlights, fact sheets and technical documents (see Attachments)
- **Attendance at local, state and national forest health meetings and conferences**
- **Wildfire:** unit personnel have also been involved in various other duties as assigned, including ODF Incident Management Team deployments and other fire assignments.

RECOMMENDATION

This agenda item is informational only.

ATTACHMENTS

- (1) 2020 Forest Health Highlights
- (2) Why is my Tree Dying: Western redcedar



United States Department of Agriculture

Forest Health Highlights in Oregon - 2020



Forest Service August 2020

Pacific Northwest Region
Forest Health Protection



Oregon Department of Forestry
Forest Health Program

AGENDA ITEM 4
Attachment 1
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FOREST HEALTH HIGHLIGHTS IN OREGON - 2020

Joint publication contributors:



Christine Buhl
Wyatt Williams
Danny Norlander



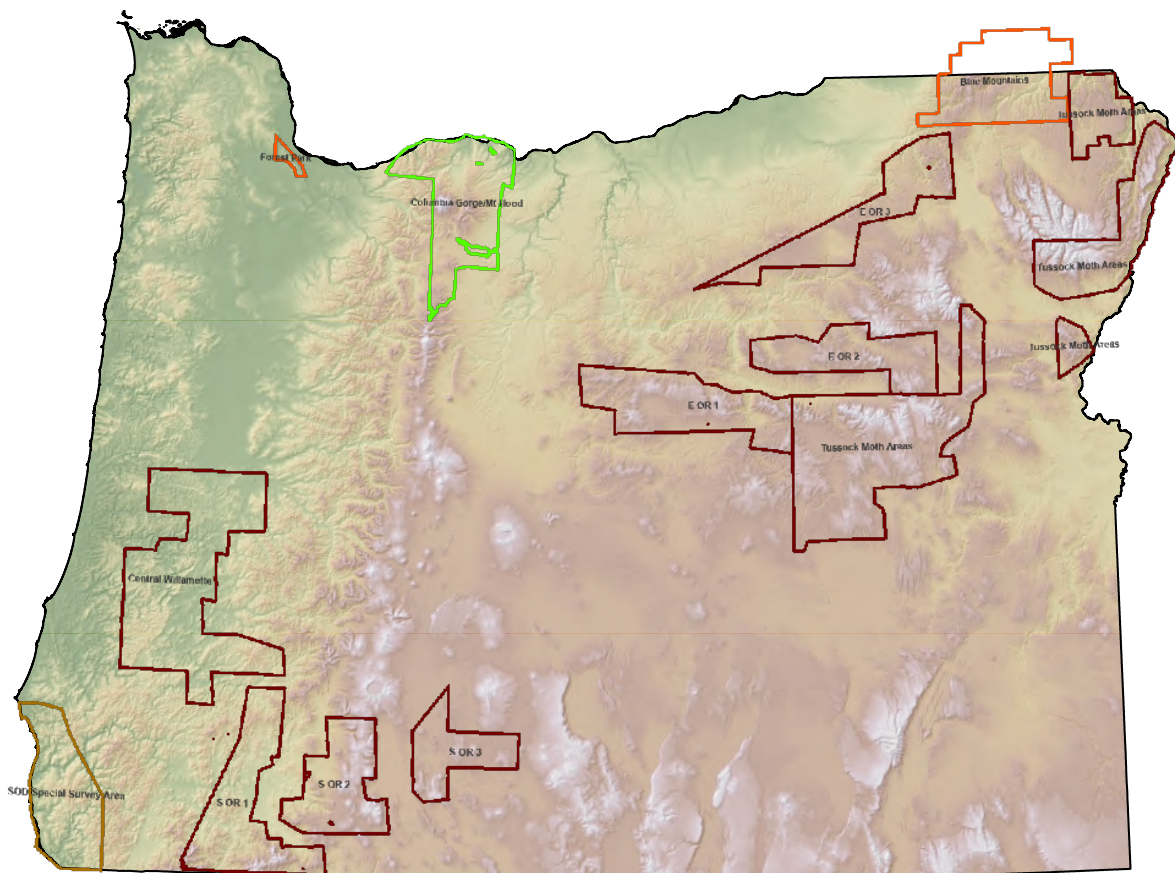
Oregon State
University

Gabi Ritokova
Stephen Calkins



Karen Ripley
Sarah Navarro
Zack Heath
Ben Smith
Justin Hof

Cooperative Aerial Survey: 2020 target areas



Map above: COVID-19 safety precautions limited surveys and field investigations during 2020. The above outlined areas were identified as high priority based on known abiotic stress, or insect and/or disease activity. Data were collected for these high priority areas using Scan and Sketch, our new alternative surveillance strategy (pg. 8) as opposed to regular aerial observation.

Front cover: 2020 Wildfire season: Holiday Farm active fire in Lane County (Marcus Kauffman, ODF), Beachie Creek fire burned area in Marion County (Wyatt Williams, ODF) and evidence of bark beetle attack in living fire-damaged pine (Christine Buhl, ODF).

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LANDOWNER RESOURCES

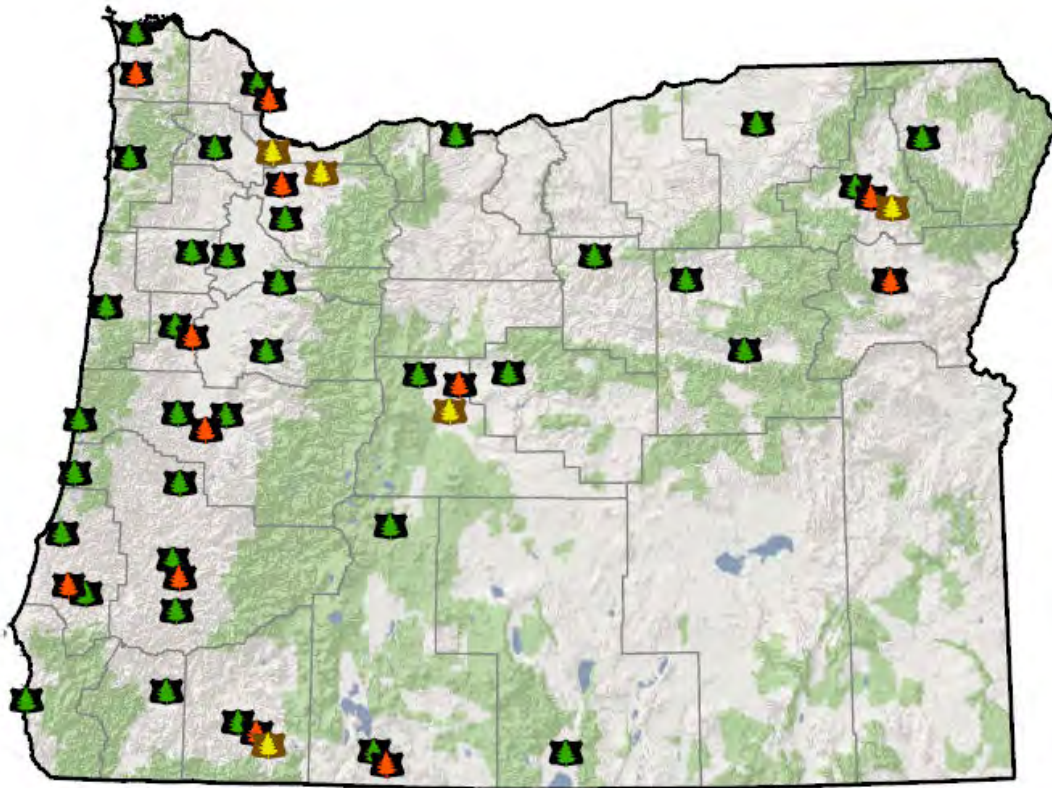


Figure 1. Map of ODF (black badge with green tree), USFS (brown badge with yellow tree), and OSU (black badge with orange tree) unit offices.



OREGON DEPARTMENT OF FORESTRY (ODF) RESOURCES:

Connect with your local ODF stewardship forester to get stand management guidance, diagnose and troubleshoot issues and learn about incentive programs: <https://tinyurl.com/ODF-forester>

Connect with the ODF Forest Health team to diagnose and manage abiotic stressors, insects, diseases, weeds and other invasive species. Visit the ODF Forest Health website for fact sheets and training videos: <https://tinyurl.com/odf-foresthealth>



USDA FOREST SERVICE (USFS) RESOURCES:

(Federal agencies and Tribes only) Connect with USFS Forest Health Protection specialists to diagnose and manage abiotic stressors, insects, diseases, weeds and other invasive species: <https://www.fs.usda.gov/goto/r6/foresthealth>



OREGON STATE UNIVERSITY (OSU) FORESTRY EXTENSION SERVICE RESOURCES:

Connect with your local OSU Forestry Extension agent to get stand management guidance and to diagnose and troubleshoot forest health issues: <https://tinyurl.com/OSU-forester>

FORESTRY IN OREGON

Forestry has a long and storied history in the Pacific Northwest, especially in Oregon, which at 30 million acres is second only to Alaska in total acreage of forestlands. This number has remained unchanged since 1953. Almost 50% of Oregon is forestland. These forests take many forms, from the family forest that is handed down across generations, to large tracts of productive industrial land, to untouched wilderness. Oregon offers a diversity of forests ranging from mossy, rain-drenched coastal ecosystems to arid ecosystems of central Oregon to reliably snow-covered high elevations along the Cascades and northeast ranges (Fig. 2).



Figure 2. Diversity of Oregon forests (Christine Buhl, ODF).

Oregon's forests cover approximately 30 million acres and consist of federal (60%), private (35%), state (3%), tribal (1%), and other public (1%) ownerships.

Oregon strives to ensure that timber production does not come at a cost to our natural resources and was first to create laws regulating forest practices. The Forest Practices Act (OAR 629, Est. 1971) guides private landowners on how best to manage their forestlands to preserve ecosystem functioning and sustainability while utilizing this renewable resource. There are also certification processes (Sustainability Forestry Initiative, American Tree Farm System, Forest Stewardship Council) in place to help consumers identify products grown and harvested under specific standards.

In recent years Oregon forests have been pushed to the limit due to climate change, but they also offer the opportunity of carbon capture. Fallout from climate change includes shrinking tree species ranges, increased wildfire intensity, and accumulation of stressed and pest-susceptible trees. We can't slow climate change overnight but we can mitigate its toll on our forests by promoting their resilience, which starts with improving forest health:

- Know the genetic lineage of your seed source. Do you have Douglas-fir from a dry or wet site?
- Stay within your seed zone as much as possible. It may be okay to go outside of seed zones slightly if necessary (east-west 1-2 zones, north-south 1 zone, from down slope (but not up)). Updated seed zone maps: [http://www.forestseedlingnetwork.com/resources/seed-zone-maps/oregon-maps/seed-zone-post-options-\(species-dependent\)/new-zones.aspx](http://www.forestseedlingnetwork.com/resources/seed-zone-maps/oregon-maps/seed-zone-post-options-(species-dependent)/new-zones.aspx)
- Plant species/cultivars in the right microclimate (soil type, soil moisture range, sun exposure, etc.).
- Plan stand density that can tolerate climate change and extreme weather events. Discuss spacing with ODF, OSU or other forestry consultants to account for a warming climate, inconsistent precipitation, and realistic pre-commercial thinning and harvest timelines.
- Manage fuels. Reducing intensive wildfire risk prevents fire-damage and beetle-susceptible trees.
- Know what major insects and diseases occur on your tree species (pg. 34) and how to prevent or mitigate them through improving tree health.

2020: YEAR IN REVIEW

2020 was a hard year for forestry, COVID-19 presented challenges that reduced in-office availability, group gatherings, and delayed or canceled some field and survey projects that could not be conducted solo or safely in groups. Despite this we accommodated by:

- 1) Moving from in-person to virtual meetings and trainings, some of which were recorded and will be available for viewing in perpetuity.
- 2) Shifting away from aerial survey to utilizing new tools such as evaluation of satellite imagery and use of imagery analysis software, which will better prepare us for inevitable evolution into more technologically advanced methods for collecting these data.
- 3) Collaborating across agencies to assist with in-kind labor to ensure that monitoring efforts continued for 2020/21.

Other challenges in 2020 included a record wildfire season and budget cuts, which put further strain on our ecological and economic resources. Although the sudden wildfire occurrence near the end of the season tested our resources, it also pulled us together to determine what we can do better to prevent catastrophic wildfire and how to recover from it.

Lastly, 2020 reminded us that to take this opportunity to evaluate the inequity of resource access and distribution for some underserved populations and communities.



Figure 3. Holiday Farm fire destruction (Jason Pettigrew, ODF).

FOREST HEALTH SUMMARY

Insects, diseases and abiotic disturbance agents cause significant tree mortality, growth loss, and damage in Oregon forests each year. Many of these insects and diseases are native and are always present on the landscape but only become a problem when populations increase, often due to a buildup of trees stressed by some other primary stressor. In recent years a primary stress on trees has been hot droughts, which weaken trees and make them less tolerant or resistant to insects and diseases.

Normally, native insects and diseases can play a critical role in maintaining healthy, functioning forests by weeding out unhealthy trees, contributing to decomposition and nutrient cycling, and creating openings that enhance forest diversity and wildlife habitat.

A healthy forest is never totally free of insects, diseases, and other disturbances.

Western Oregon is characterized by high rainfall and dense coniferous forests along the Pacific coastline, the Coast Range, and western slopes of the Cascade Range. Eastern Oregon largely consists of lower density, semi-arid forests and higher elevation desert. Oregon forests are primarily dominated by conifers such as Douglas-fir, true firs, western redcedar, western hemlock, lodgepole and ponderosa pine, among others. The most abundant hardwoods are bigleaf maple, red alder, Oregon white oak, and black cottonwood.

This report highlights major agents of damage or mortality in Oregon forests over the past year and provides updates on chronic issues. Much of this information is typically obtained from aerial surveys but due to COVID-19 restrictions these surveys were conducted for a smaller portion of the state and consisted of analysis of high-resolution imagery (Scan and Sketch) as opposed to visual observations from a plane.

Because of this change in our methods we cannot fairly compare 2020 data with that from previous years. Instead we rely on our ground reports, trapping and other monitoring programs to bring you a summary of forest health topics that were important in 2020 and may guide management in 2021.

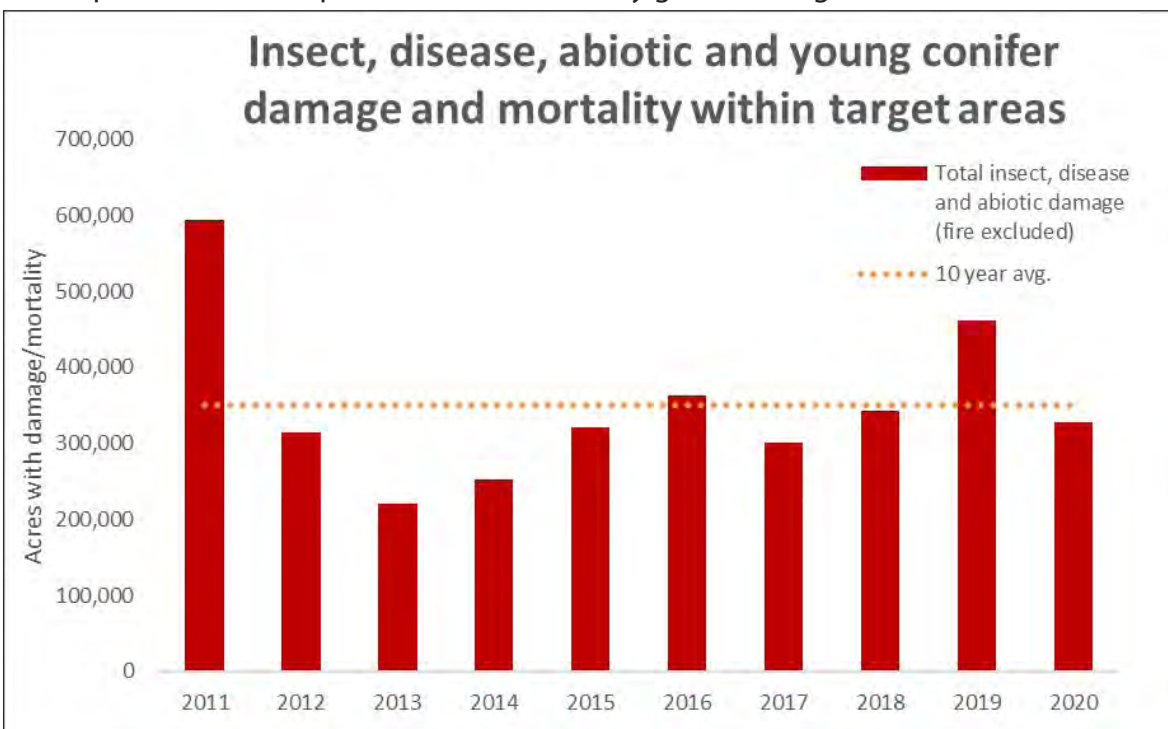


Figure 4. Tree damage and mortality were collected across 11,200,000 acres via Scan and Sketch (pg. 8). The table above shows 2011-2019 ADS-collected data "trimmed" to the same acreage footprint as the 2020 Scan and Sketch-collected data to produce a rough comparison for trend analysis. Note the metric is acres "with" not "of" damage because undamaged trees are often intermixed within a mosaic of damaged and dead trees.

Comparisons of survey data collected each year but trimmed down to the same footprint areas mapped in 2020 (Figs. 4 and 6), resulted in a 30% decrease in acres with damage in 2020 relative to 2019. Additionally, damage in 2020 was just below the 10-year average for damage within these areas. The caveat to making this comparison is that data were collected using a different survey method in 2020 than what was used in previous years. Another caveat in looking at the 2020 data is that the coverage area is reduced from the typical coverage area of all forested portions of the state, meaning that concentrated areas of damage in non-surveyed parts of the state could have been missed in 2020. However we also rely on ground reports which helps to fill in this knowledge gap. Ground reports come from our ODF and USFS Forest Health staff as well as foresters from both agencies and OSU who have unit offices and coverage areas throughout the state (pg. 1). We also rely on ground reports from public and private landowners and land managers, and other members of the general public. Site visits can provide more information to form a narrative around what is happening on the landscape.

Damage trends from a combination of aerial surveys (Fig. 5) and site visits on the ground indicate that drought stress is one of the main causes of tree dieback and decline. And often the final blow is from bark beetles that opportunistically take out stressed trees. At normal population levels, bark beetles can often help remove struggling trees to allow healthier trees to dominate. Landscape-level stress conditions from hot droughts produce a pulse of susceptible trees to feed these insects and may result in a population outbreak that allows beetles to spill over into healthier trees and overwhelm their defenses. Another widespread stressor that sets the stage for tree damage and mortality is root disease which can go unchecked for years because it is hard to verify from aerial surveys; instead relying on intensive ground surveys.

In recent years the highest levels of tree mortality have been detected in true fir which is growing in areas that either have unchecked root disease or are becoming marginal due to hot droughts. Often these true fir are finished off by fir engraver beetles but the initial cause of root disease or poor site quality under drought conditions is what needs to be addressed in management. True fir, particularly at hard to access higher elevations, is also under threat from balsam woolly adelgid. This invasive insect went unchecked for many years due to our inability to find an efficacious control and has since established in the west making eradication unfeasible.

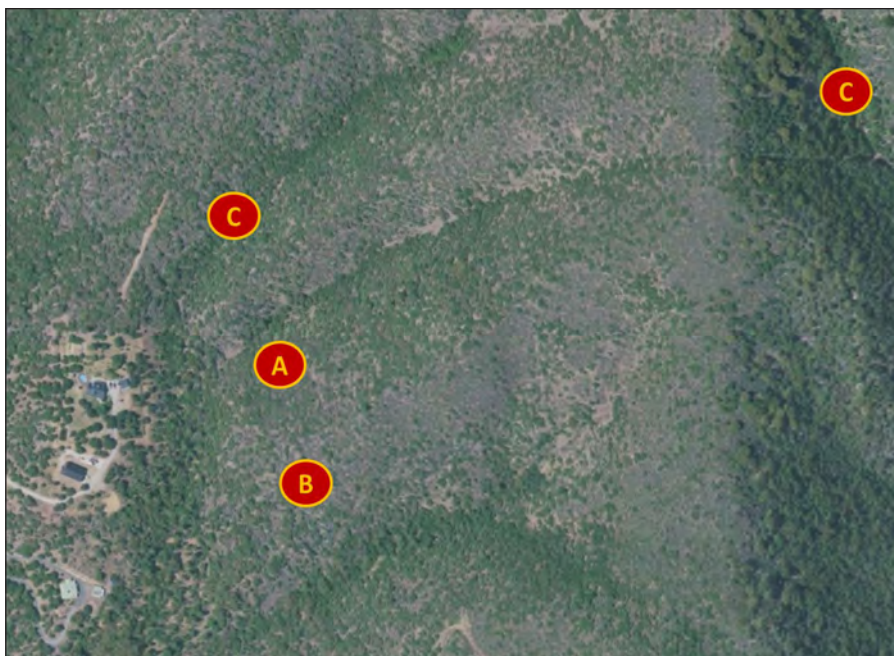
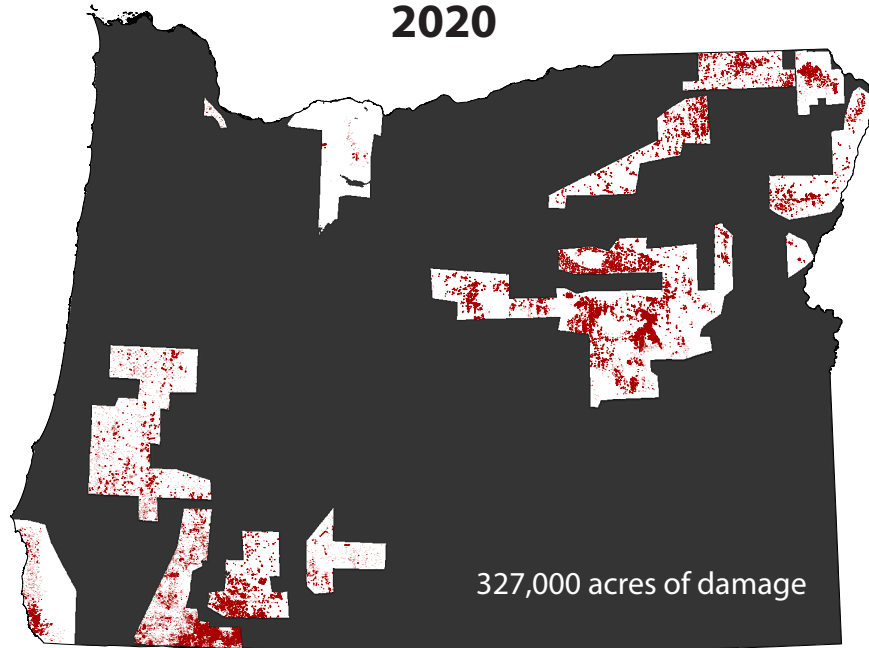


Figure 5. Aerial imagery showing patterns driven by topography that influence tree resilience: A) north-facing aspects yield more healthy trees versus B) more sun-exposed south-facing aspects, and C) moist and shaded draws can improve growth of some species. Various other topographic features and soil types affect how much moisture is received and retained and shape the micro climate of a site.

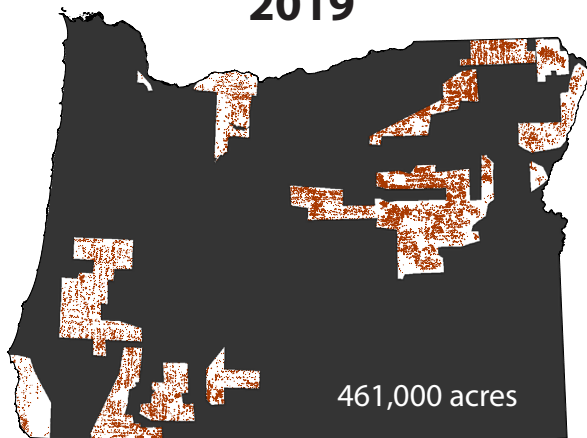
Douglas-fir is perhaps the second most at-risk tree due to our widespread planting of this essential timber crop species in areas that can no longer support it, due to persistent hot droughts. From the Willamette Valley through the southwest part of the state, this species is struggling in areas where it historically thrived. Many of our tree species are predisposed to abiotic stress that must be addressed by re-evaluating where we are putting them on the landscape to assure that their needs are met by future conditions.

FOREST DAMAGE AND MORTALITY MAPS

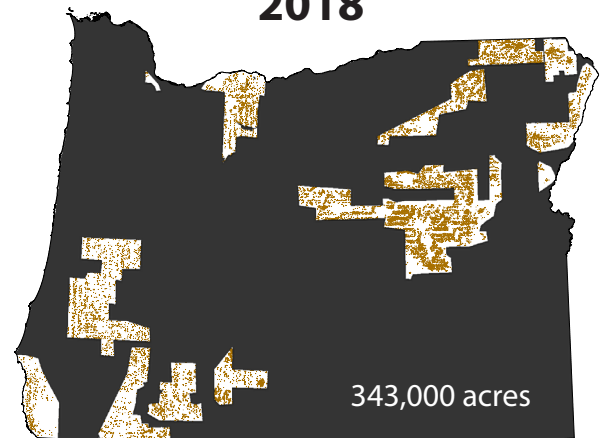
2020



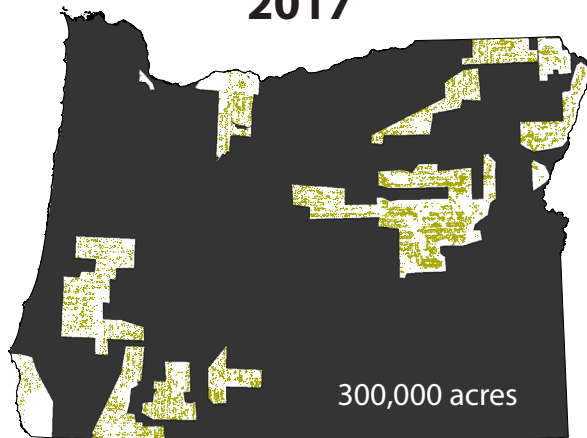
2019



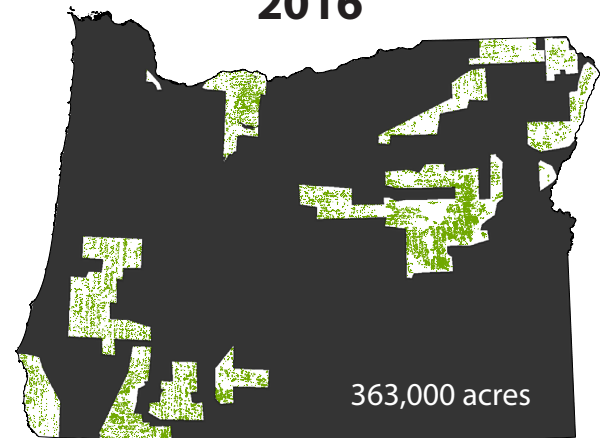
2018



2017



2016



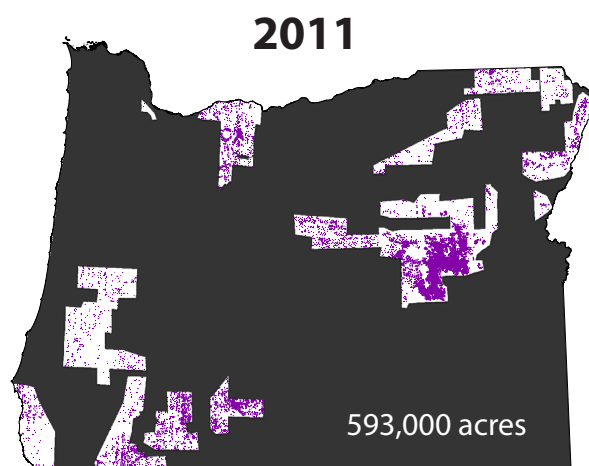
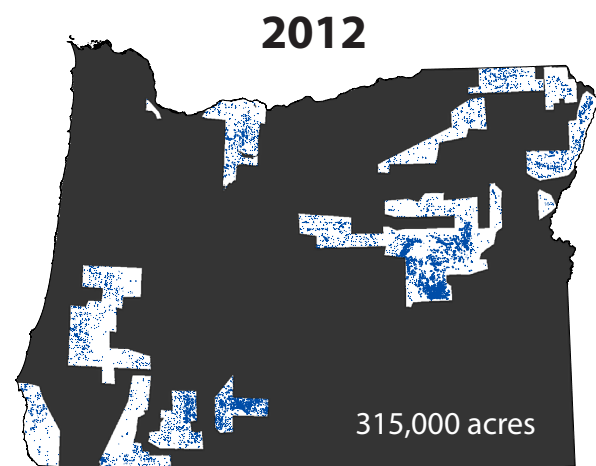
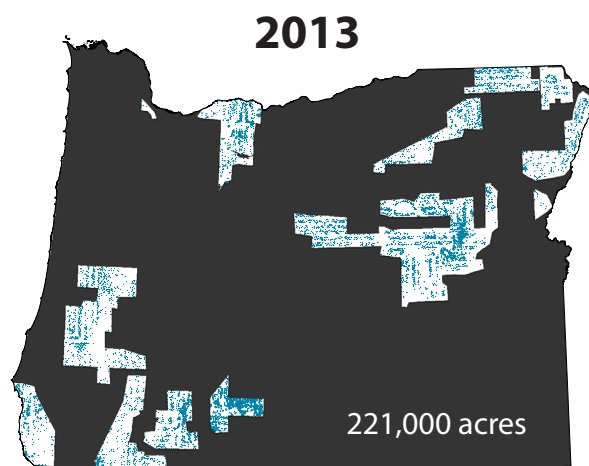
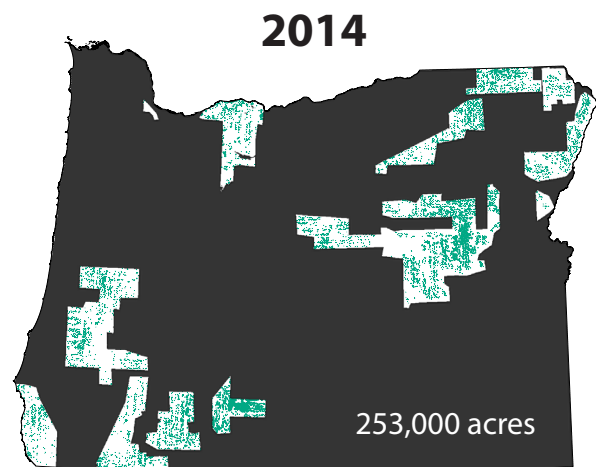
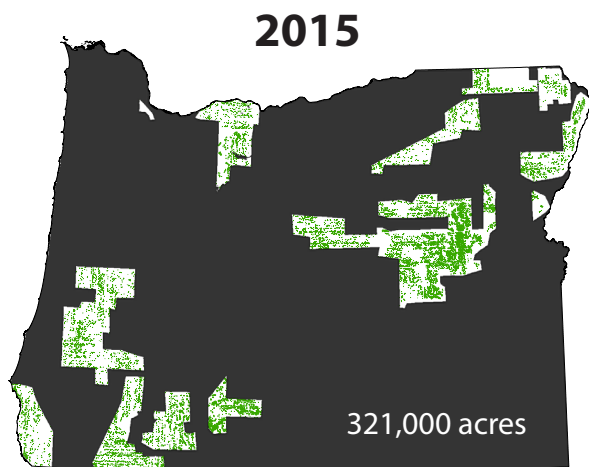


Figure 6. 10-year damage trend from aerial survey program "clipped" to 2020 target areas for comparison. Note, 2020 data were collected using the "scan and sketch" method which involves identification of damage via aerial imagery on the computer versus 2011-2019 data which were collected via visual observation of damage from airplane flights. Because of these differences in data collection methods, 2020 data should not be used as a direct comparison with previous years although 2020 observations are useful to locate and estimate current year damage.

SURVEYS, MONITORING AND OTHER PROJECTS

The Oregon (and Washington) forest aerial survey program began in 1947 and is the oldest in the country. This survey is conducted by ODF and USFS Forest Health staff and consists of a general survey that covers all forested parts of Oregon each year (about 28 million acres), as well as annual or periodic special surveys targeting specific agents such as sudden oak death, Swiss needle cast, Pandora moth, oak looper, gorse, etc. In total, the agencies survey 35 million to 41 million acres in a given year. Some years this intensive effort must be adjusted from the statewide wall to wall coverage model due to budget deficits and other unforeseen circumstances such as COVID-19. Regular aerial surveys flown in small planes were canceled in 2020 to protect the health and safety of survey staff. An alternative data collection method called "Scan and Sketch" was developed. With this method a surveyor visually scans high resolution orthoimagery and marks areas of damage using the same Digital Mobile Sketch Mapping (DMSM) tablets that are used in survey planes. Developing and conducting this method took time so we adjusted the area mapped from statewide to smaller priority areas across the state (Fig. 7). We used damage detection software (LandTrendr and Forwarn), historical and current ground knowledge of damage hot spots to determine priority areas for Scan and Sketch. LandTrendr and Forwarn detect damage based on light reflectance of vegetation. They can't detect smaller changes and therefore can't yet be used to fully automate damage detection but are useful for identifying large problem areas. Orthoimagery used for Scan and Sketch was obtained from both WorldView satellite and National Agriculture Imagery Program (NAIP) with acquisition dates between July and October 2020.

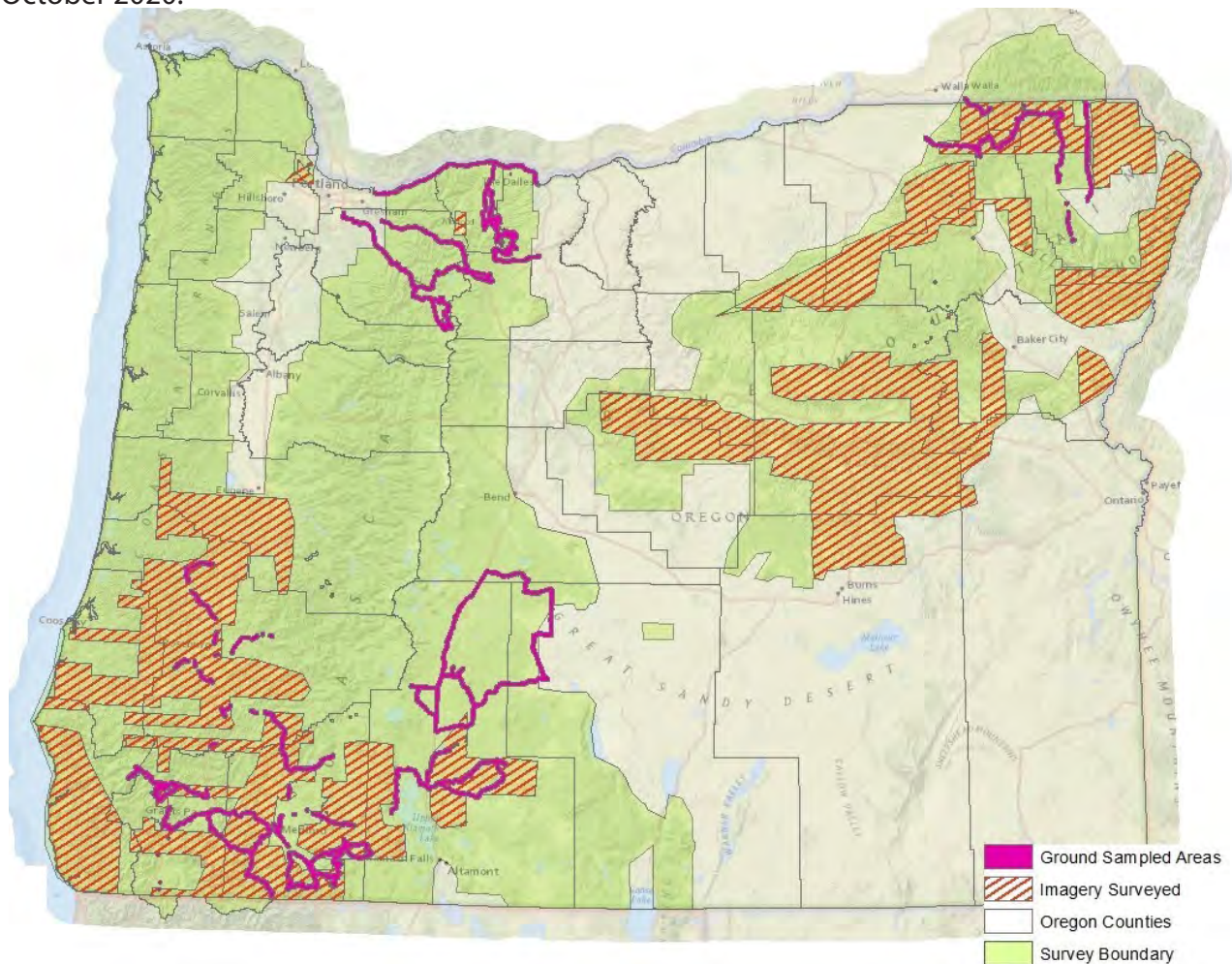


Figure 7. Map of areas surveyed for insect, disease and abiotic damage in 2020 via Scan and Sketch and ground surveys.

During Scan and Sketch, imagery is viewed in 1 mile swaths and manually scrolled through systematically on the tablet and damage is marked for single trees (points) or larger acreages (polygons) (Fig. 8). Surveyors are not in a moving plane so they can spend more time analyzing imagery and can also revisit imagery as needed. This allows a higher level of accuracy for placing on the map where damage is located and the area that it covers. It also allows for closer inspection of symptoms for more accurate agent identification, although that also depends on the resolution of the imagery. This method can also be conducted from any location at any time, which reduces travel expenses and can be started and stopped at any time to fit with staff schedules.

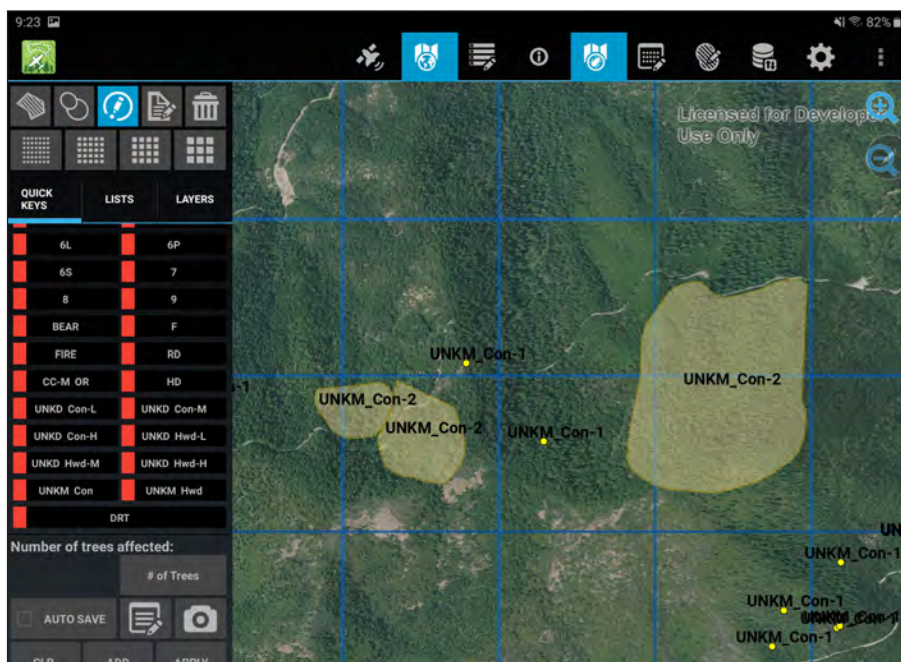


Figure 8. Screenshot of tablet view showing: tools for marking damage areas and designating agents on the left, blue lines indicating 1 mile swaths, points and polygons of damage drawn over imagery.

Difficulties with this method are that the imagery must be of high quality, collected when symptoms are present (spring to early fall), and can be expensive or unavailable for the whole state each year. Additionally, Scan and Sketch can take a long time depending on how long it takes to determine the causal agents. This is greatly dependent on the resolution of the imagery because it is a static, 1-dimensional view of the damage. The same issue is encountered in a plane due to the angle of the sun, clouds, etc. although planes can make circles to give the surveyor a view of damage from a different perspective.



Figure 9. Imagery quality in terms of lighting and resolution are important for determining tree type and agent. Red trees are easier to find in the image to the left versus the right.

agents couldn't be determined areas were marked as "unknown damage". For most of these areas surveyors are familiar with the primary agents at work, although questionable signatures marked as "unknown" are followed up on for site visits.

Accurate agent identification was difficult for the 2020 Scan and Sketch effort due to low imagery resolution (Fig. 9). Damage agents were assigned when host and symptoms were visibly clear or could be estimated based on ground knowledge or previous year data for the area. If

SURVEYS, MONITORING AND OTHER PROJECTS

Every 3 years the National Agricultural Imagery Program (NAIP) acquires aerial photography of the continental U.S. during “the agricultural growing season”, which varies by state. A goal of NAIP is to provide digital orthoimagery to the government and public within one year of its acquisition. Fortunately, NAIP imagery is free, is of sufficient resolution and quality to depict forest damage, and Oregon was scheduled for NAIP acquisition during 2020. ODF also acquired other high-resolution imagery to complement the NAIP imagery to conduct the special sudden oak death (SOD) survey in southwest Oregon. A new SOD detection was found using the NAIP imagery which was a testament to the ability of Scan and Sketch to pick up even small areas of damage.

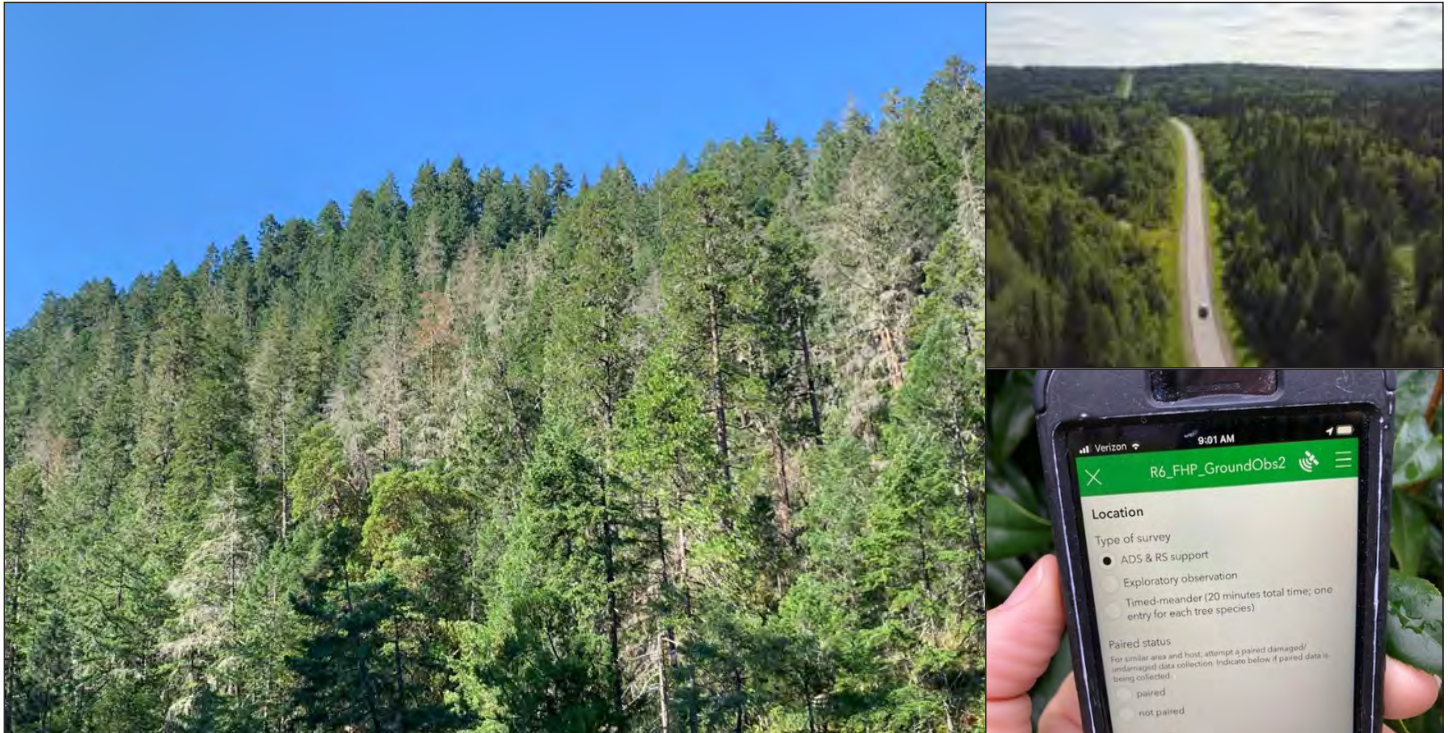


Figure 10. Roadside survey in southern Oregon where several dead Douglas-fir were identified among healthier Douglas-fir and ponderosa pine as well as skeletons of trees that died in previous years (left; Christine Buhl, ODF), often seeing trees from the road was difficult due to inability to get closer or see out over the tree line. Damage from ground surveys was logged into DMSM or Survey123 (right bottom; Karen Ripley, USFS) when possible.

In addition to Scan and Sketch, ground or “dashboard” surveys were conducted from roadsides and logged into DMSM or Survey123 (Fig. 10). These ground surveys covered about 766, 000 acres, but don’t include acres assessed for technical assistance visits, other monitoring projects, and targeted ground checks. Aside from providing metrics, ground surveys provide narratives of what is happening on the ground to improve current, local knowledge of conditions to better advise landowners and managers.

Although we hope to resume aerial surveys in 2021, the Scan and Sketch method will remain a valuable tool for moving our survey program into the 21st century.

Aerial survey raw data and maps:

<https://www.fs.usda.gov/detail/r6/forest-grasslandhealth/insects-diseases/?cid=stelprd3791643>

Western redcedar dieback monitoring

From Oregon through western Canada, western redcedar (*Thuja plicata*) has been dying in areas where it should be thriving, such as along streams and within closed canopies. The cause for this sometimes sudden and expanding dieback is currently unknown. Insects and diseases known to attack western redcedar are typically secondary, meaning that they are not direct tree killers but are opportunistic pests and can only attack dead and dying redcedar. Redcedar can even tolerate endemic levels of bark beetles and stem rots for many years. These known pests are not always found in dieback pockets nor have novel pests been observed.

The predominant theory for this sudden mortality is that these trees are being impacted by a changing climate that includes increasing average temperatures and drought stress in the form of reduced and inconsistent precipitation. Even shaded sites along streams are at risk due to higher than usual average temperatures and reduced stream flow. Western redcedar is sensitive to slight changes in climate and, in some areas, may be crossing the lower limits of where they can thrive, which may eventually result in a range shift.

In 2020 a new USFS-funded monitoring project began in Oregon and Washington to map the distribution of western redcedar dieback and determine the cause(s) of dieback. Preliminary data are being collected by ODF, Washington Department of Natural Resources, USFS, and various natural resource agencies. Additional funding is being sought for further investigation (e.g., soil sampling, tree ring analysis, tree water use efficiency, etc.) by researchers at multiple universities in both states. Agencies in Alaska, Idaho and Canada are also part of this collaborative.

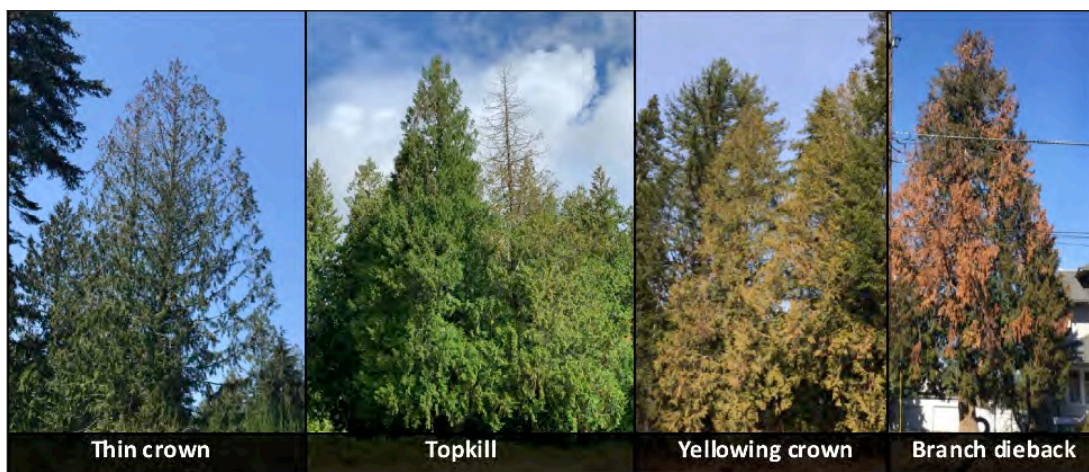


Figure 11. Western redcedar dieback symptoms (Christine Buhl, ODF).

Symptoms of western redcedar dieback (Fig. 11) are hard to see during aerial surveys so we also rely on ground reports of potential sites. Report locations containing multiple western redcedar trees exhibiting dieback symptoms to:

(Oregon) Christine Buhl, ODF Entomologist, christine.j.buhl@oregon.gov

(Washington) Melissa Fischer, WADNR Entomologist, melissa.fischer@dnr.wa.gov

(Washington) Betsy Goodrich, USFS R6 Pathologist, anne.goodrich@usda.gov

Fact sheet: <https://www.oregon.gov/odf/Documents/forestbenefits/TreeDeclinesRedcedar.pdf>

GIS Dashboard: <https://tinyurl.com/WRCDashboard>

Storymap: <https://tinyurl.com/WRCStorymap>

SURVEYS, MONITORING AND OTHER PROJECTS

Hazard Tree

Pathologists with ODF and the USFS evaluate tree hazards and provide trainings on an annual basis to ensure that trees at risk of failure, due to root and stem rots or other defects, are removed to protect those working and recreating in the woods. ODF annually assesses state forest lands for hazards in recreation areas and assists Oregon Parks and Recreation Department with hazard tree training to ensure that state parks have trained staff available to identify hazard trees.

Bark beetle landowner incentives cost share program

Each year, federal funds are allocated for bark beetle prevention and mitigation treatments such as thinning, pine slash management, and anti-aggregation pheromone application. Some of these funds are applied on federal lands and others are allocated to ODF for non-federal landowners at a 1:1 match. In 2020 1,950 acres were treated on federal lands and another 236 acres were treated on non-federal lands across 11 private ownerships. This cost share may also be applied for removal of living trees that were recently damaged by wildfire to prevent infestation by bark beetles. More info: <https://www.oregon.gov/odf/AboutODF/Pages/GrantsIncentives.aspx>

Douglas-fir tussock moth trapping

This ongoing monitoring trap system (est. 1979; Fig. 12) detects increases in moth numbers and can predict building outbreaks or determine status of current outbreaks in eastern Oregon. More on Douglas-fir Tussock Moth (DFTM) on page 24.



Figure 12. DFTM trap (Christine Buhl, ODF).

Exotic Woodborer Monitoring

During 2016-2018, a special survey for exotic, invasive woodborers across 12 sites along the Columbia River corridor was conducted cooperatively by the Oregon Departments of Forestry and Agriculture. A new record for North America, the exotic ambrosia beetle (*Xyleborus monographus*), also known as the Mediterranean Oak Borer, was detected in an ODF trap at Chinook Landing Marine Park, Multnomah County, in June 2018. In its native range of Europe, this exotic beetle is known to cause injury to white oaks. Also beginning in 2018, forest health professionals in California have reported *X. monographus* attacking and killing valley oaks (*Quercus lobata*) and blue oaks (*Q. douglasii*) in Napa, Sonoma and Sacramento counties. ODF Forest Health assisted the Oregon Department of Agriculture in delimiting trapping in 2019 for *Xyleborus monographus* in the vicinity of Chinook Landing Marine Park near the city of Troutdale. The 2019 trapping effort at Chinook Landing Marine Park did not yield any *X. monographus*. Additional ODA trapping in 2020 (16 sites around Chinook Landing and 12 sites at wineries - suggested by the association with wine country in California) did not catch any additional *X. monographus* beetles.

Oregon Forest Pest Detector program

Since 2013, the USDA-funded Oregon Forest Pest Detector (OFPD) program, coordinated and led by Oregon State University Extension Forestry, has trained arborists, landscapers, park workers and other professionals to identify the early signs and symptoms of priority invasive forest insects (<http://pestdetector.forestry.oregonstate.edu>). Using a combination of online presentations, face-to-face seminars and field training courses, over 500 professionals have been trained as "First Detectors" of emerald ash borer, Asian longhorned beetles and other exotic forest insects. The OFPD works with the Oregon Invasive Species Council to utilize the Oregon Invasive Species Online Hotline reporting system (<https://oregoninvasiveshotline.org>) to log a report and picture of potential invasive species while in the field. The overall goal is to detect key forest invaders early in their invasion when eradication is still feasible. Due to statewide closures of campgrounds and state offices and other complications surrounding COVID-19, as well as the 2020 Oregon fire season, the OFPD was put on pause until 2021.

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Forest Pollinator Projects

Over 600 species of native, wild bees occur in Oregon, many of which can be found in forests (Fig. 13). There are many interagency efforts to increase our understanding and enhance and conserve habitat for native, wild bees and other pollinators on forest landscapes:

New publication with guidance on enhancing forest bee habitat: <https://woodlandfishandwildlife.com/publications/insect/forest-bee-pollinators>

New rule in Forest Practices Act, Wildlife food plots (ORS 527.678), that allows a small portion of timberland to be allocated toward habitat enhancement for wildlife without rezoning (<https://www.oregonlaws.org/ors/527.678>). Look for pollinator-specific guidance from ODF soon.



Figure 13. Pollinator forage in southern Oregon forest understory (Christine Buhl, ODF).

A silver lining for forests damaged by intensive wildfire, is that wildfire replicates an early seral forest stage which is attractive to forest bees. Opening the canopy increases light exposure to germinate forage plants and increase thermal environments, and burning clears ground debris to expose soil for ground-nesting bees. Consider opportunities during post-wildfire reforestation to also provide pollinator habitat (flowering plants, and exposed soil and stem and wood cavities for nesting).

The Oregon Bee Project (OSU, ODA, ODF) maintains the Oregon Bee Atlas, a voluntary wild bee monitoring program that collects data on bee presence, abundance and diversity across the state. Many private forest landowners are involved in this effort. More information: <https://www.oregonbeeproject.org/bee-atlas>

Learn more about forest pollinator topics and become a Woodland Pollinator Steward through OSU Extension's new program: <https://extension.oregonstate.edu/pollinator-steward#:~:text=The%20OSU%20Pollinator%20Steward%20Program,or%20creating%20new%20pollinator%20habitat>

House Bill 2531 was passed in 2021, and formally includes Departments of Forestry, Fish and Wildlife and Transportation in pollinator protection efforts conducted by OSU and ODA. This multi-agency program (Oregon Bee Project est. 2015) works to enhance bee health and habitat through outreach, pesticide training, research and landowner projects. ODF voluntarily joined this effort in 2016.

Forest Health education

OSU Tree School courses moved to an online format this year with the help of Oregon Forest Resources Institute. All courses and materials can now be viewed for free at any time: <https://extension.oregonstate.edu/tree-school/tree-school-online-class-guide>

Forest health-specific courses include:

Forest insect pests: <https://tinyurl.com/TreeSchool-insectpests>

Forest bees: <https://tinyurl.com/TreeSchool-bees>

Forest diseases: <https://tinyurl.com/TreeSchool-diseases>

ABIOTIC AGENTS

Climate and weather are often primary contributors to tree health and forest conditions. Events that stress trees reduce growth and decrease their ability to defend themselves or rebound from insects, diseases and additional stressors. Healthy trees are able to defend themselves from insects and disease with pitch and compartmentalization, which are forms of mechanical and chemical defenses. Attacking insects get stuck in or drowned by pitch, or are repelled by the chemical compounds it contains. Similarly, pitch is a defense against some fungi by sealing wounds that can be entry points for spores, compartmentalizing diseases to prevent their spread among tissues, or reducing virulence by containing antimicrobial chemicals.

HEALTHY TREES = RESILIENT TREES

Climate change One of the major reoccurring stressors in Oregon forests has been ongoing drought (Fig. 14) as a result of climate change. Oregon has a diversity of forest ecosystems due to variations in latitude, elevation, topography, and proximity to the ocean and mountains (rain shadow effects). All these factors play a role in determining the impacts of altered temperatures and precipitation (rain and snow) levels. Additionally, soil and ground cover type, local water use and watershed dynamics can place different pressures on water storage capacities. Tree stocking levels influence the competition among trees for the availability of water resources. Some tree species have strategies to tolerate drought better than others.

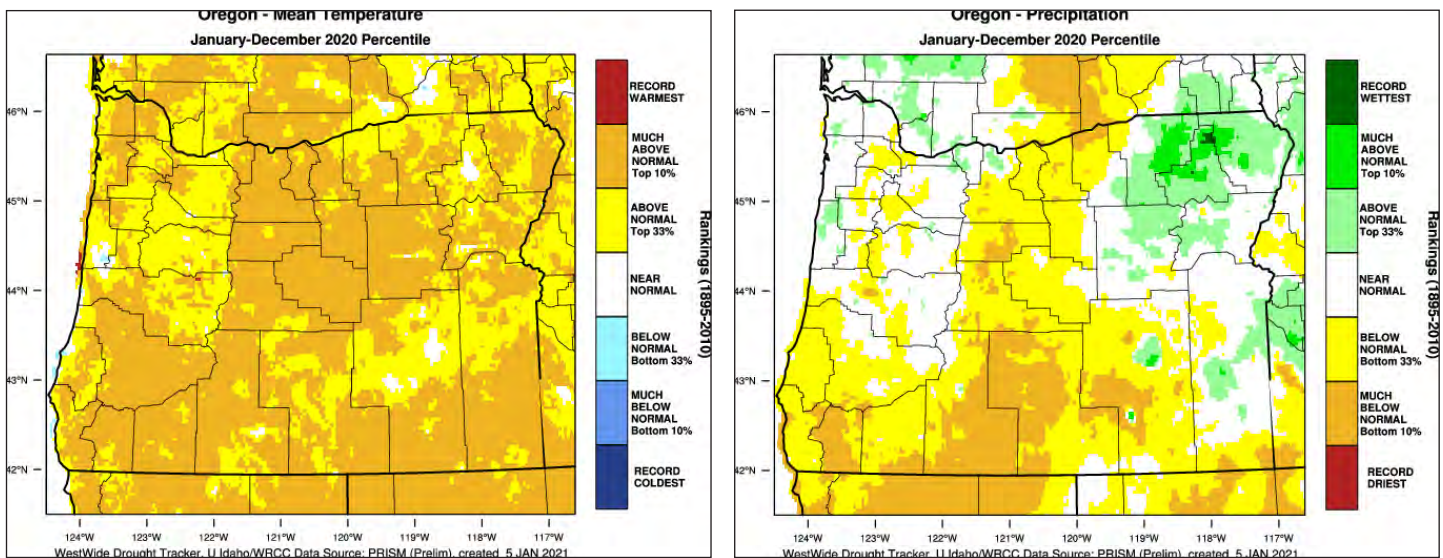


Figure 14. Average temperature and precipitation levels from January-December 2020, relative to the average normal based on 115 years spanning from 1895 to 2010 (Western Regional Climate Center).

There are many climate change models for the Pacific Northwest and most echo the same prediction: warmer average temperatures resulting in warmer winters and longer summers; more erratic precipitation events; and winter precipitation in the form of rain rather than snow. The fact that we are experiencing a change is not unprecedented. Earth experiences naturally alternating periods of cooling and warming and we are currently in a warmer phase. However, the rate that change has been occurring is extreme. Temperatures have already risen an average of 1.0 – 2.0°F along the west coast over the last 60 years and are predicted to increase by an average of 5.0°F by the 2050's and 8.2°F by the 2080's (Fig. 15). In relation to forestry, many of these climate change projections predict change well within the span of a stand rotation or two. Therefore management decisions such as species mix and densities must be made in anticipation of these projections.

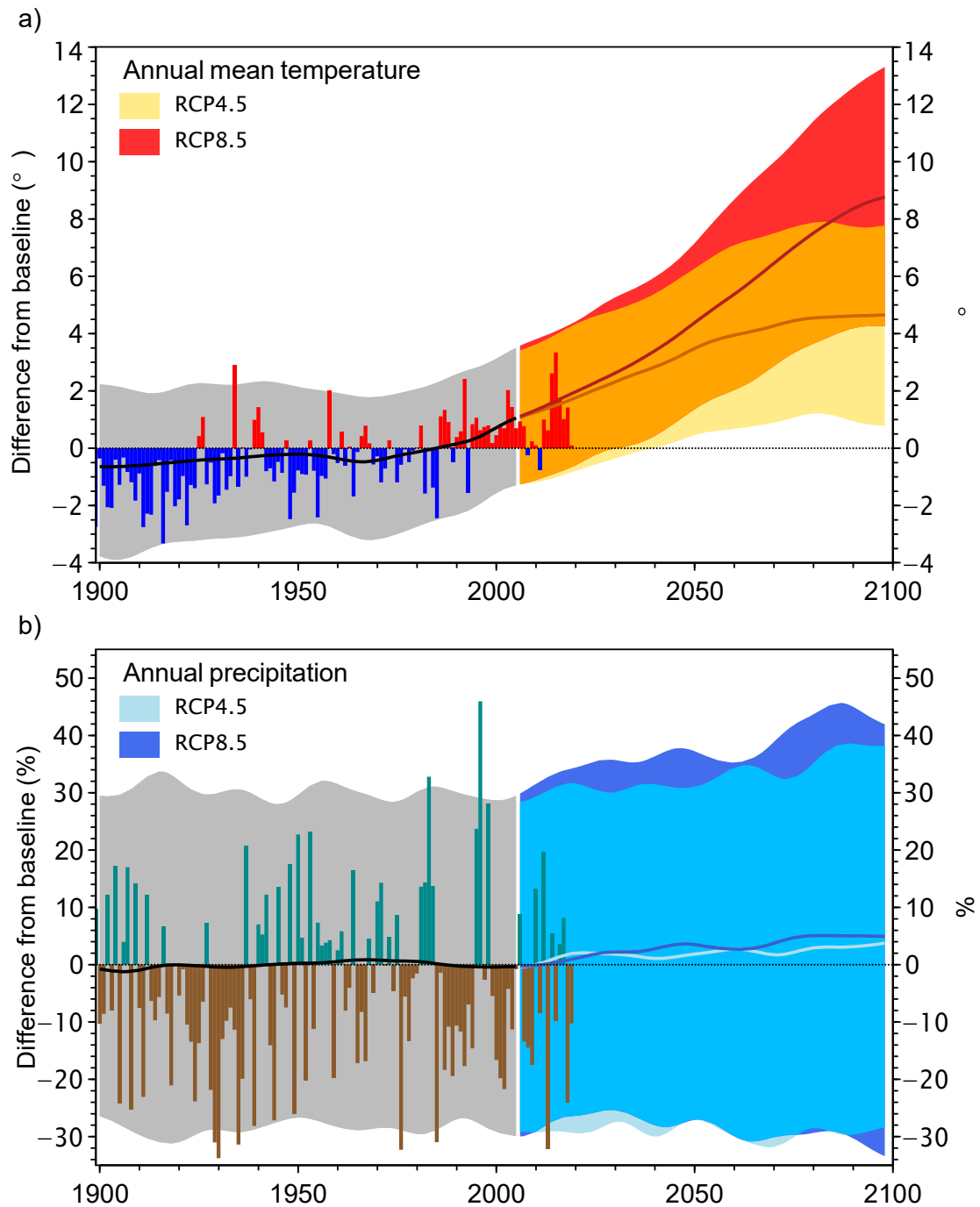


Figure 15. Observed, simulated and projected changes in Oregon's mean annual (a) temperature (°F) and (b) precipitation relative to 1970-1999 baseline. Colored bars are the observed values (right axes) for 1900-2019 from the National Centers for Environmental Information, and how much they differ from the baseline (left axes). Solid lines are mean values of simulations from 35 climate models for the 1900-2005 period which were based on observed values (black lines) and the 2006-2099 period for two future scenarios (colored lines; RCP 4.5 is less and RCP 8.5 is more extreme). Shaded areas indicate the range in annual temperature and precipitation for all models (Dalton, M., and E. Fleishman, editors. 2021. *Fifth Oregon Climate Assessment*. Oregon Climate Change Research Institute, Oregon State University, Corvallis, Oregon. <https://blogs.oregonstate.edu/ocri/oregon-climate-assessments>).

ABIOTIC AGENTS

Drought

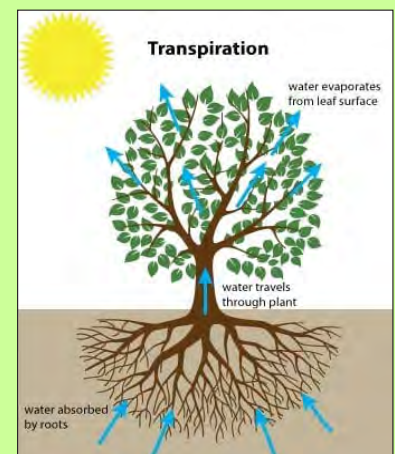
Droughts should not be simply defined by high temperature or low precipitation records. Timing and duration of these events must be taken into account to properly evaluate their impacts on trees. Damage and mortality (Fig. 16) may not occur in trees for years after drought events and repeated droughts compound the stress even if there are “good” years between drought events.

How to manage for future drought stress:

- Plant: native species, seed sources local to your region, and species adapted to the various conditions and micro-climates (soils, aspect, sun or wind exposure, etc.) at your site. Pay attention to which species are doing well and where. Do not continue to replant with species that are struggling to survive or don't naturally regenerate.
- Maintain: thin trees early and leave enough space between trees to handle future droughts. Reduce competition from other competing plants especially grasses and invasive species. Do not fertilize during droughts because increased growth increases moisture requirements.
- Prevent and control: be aware of the major insects and diseases that occur in your tree species and in your region (pg. 34). Follow management guidance. Remove weak, injured or extremely stressed trees.

How do trees respond to drought?

To understand how drought affects trees and how they respond, one must understand some basic biological processes. Trees are actively pulling in water through roots and transporting it through a bundled network of straws (vascular tissues) to leaves that release moisture into the air via small holes (stomata). A common misconception is that roots are pushing moisture up throughout the tree. In reality this process is driven by the pull of moisture from leaves into the atmosphere. Dry or windy conditions result in lower atmospheric moisture which results in a greater pull of moisture from leaves to maintain water balance between leaves and the air. When stomata open they let in CO₂ which, when combined with sunlight and water, allows trees to make food during photosynthesis. When stomata close, as a mechanism of drought-tolerance to reduce water loss, starvation occurs due to the halt of photosynthesis.



During periods of low water availability, roots may die back, or grow closer to the surface in search for moisture, exposing them to compaction near the surface. Replacement of root tissues takes time, so even if moisture levels increase, there may not be enough root tissue biomass present to absorb enough of it. When soil moisture levels are low or roots are not present to obtain it, moisture continues to be lost through leaves. The upward pull through vascular tissues can create so much pressure that air pockets form and tubes within the tissues break. It takes time for these tissues to be rebuilt as the tree grows, so trees are left with reduced ability to translocate available moisture. Trees can withstand mild or infrequent droughts through a variety of moisture conserving techniques (premature leaf drop, stomatal closure, etc.), but prolonged or repeated droughts often result in mortality, sometimes years later.



Figure 16. Symptoms of drought: flagging (dying branches), thinning crown and stress cones, asymmetrical crown (from uneven foliage then twig and branch loss), topkill (note the progression of mortality) (Christine Buhl, ODF).

Climate change and drought resources:

- Keep up to date by subscribing to Oregon Water Resources Department's monthly drought summary email: <https://tinyurl.com/drought-report>
- Oregon Climate Change Assessment (comes out every two years): <https://blogs.oregonstate.edu/occric/oregon-climate-assessments>
- Information video on drought in forests: <https://youtu.be/wHZ1G5wH4r8>
- Help track the spread and intensity of drought by reporting drought impacts you observe through the National Drought Mitigation Center survey: https://go.unl.edu/cmor_drought

Storms

At the start of 2021, a late winter storm event occurred across much of the state, which caused strong winds, snow and ice to break and topple trees (Fig. 17). Blowdown of large-diameter Douglas-fir will invite infestation from Douglas-fir beetle in April 2021 and branch breakage and other damage to pine will invite Ips bark beetles. Following storms, landowners are advised to remove downed large Douglas-fir and/or apply MCH repellent; and remove and burn/chip 3-8" diameter pine material before April. ODF's bark beetle 1:1 cost share program can be used to cover costs of MCH or to remove, burn or chip damaged material to prevent bark beetle outbreaks.



Figure 17. Blowdown near Lyons, OR (Wyatt Williams, ODF).

Storm damage management: https://www.oregon.gov/odf/Documents/forestbenefits/Storms_2017.pdf
 Cost share: <https://www.oregon.gov/odf/AboutODF/Pages/GrantsIncentives.aspx>

ABIOTIC AGENTS

Wildfire

The 2020 fire season started off slowly and ended severely with many losing not only their forested stands but also their homes and towns. Ongoing droughts in southwest Oregon and a sudden wind event that swept the Willamette Valley in early September resulted in large and intense wildfires. The fallout from these fires included multiple days of hazardous air quality thick enough to block out the sun (Fig. 18), hillsides left bare and at risk for landslides, hanging trees creating hazards near structures and roads, and further loss of livelihood and shelter during a time people have already been tested by impacts of COVID-19. The number of fires in 2020 was *just* below the 10-year average although the amount of acres burned was about 40% higher (Fig. 19). 2020 served a notice that climate change and fuel buildup can no longer be ignored and warrant appropriate action to reduce risks wherever possible.

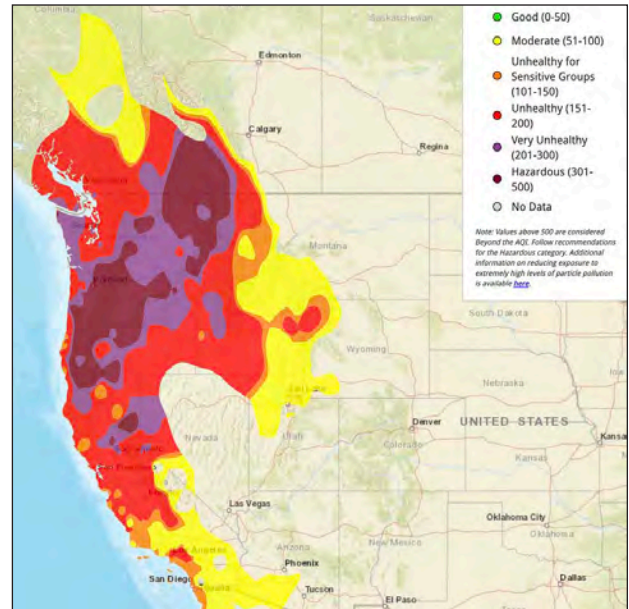


Figure 18. September 2020 air quality map following wildfires that ignited or expanded due to the 2020 Labor Day wind event (NOAA).

2020 statistics:

- 16 Federal Emergency Management Agency (FEMA) fires were declared in Oregon, relative to another busy fire season in 2018 when only 6 FEMA fires were declared in Oregon
- 89 of the fires met “large fire” criteria (at least 100 ac timber and 300 ac in grass or brush)
- Approximately 15 million board feet were lost to wildfire, or enough to build about 1 million houses
- As of October 2020 fire-fighting costs totaled \$339,643,601
- During the peak of wildfire season over 9,250 fire fighters were at work putting out fires in Oregon and Washington
- ODF Protection still managed to keep 95% of fires at 10 acres or less (a statistic maintained since 2004 despite drought and heavy lightning years such as 2013 and 2018)

Wildfire recovery resources:

To assist with post-fire salvage and recovery efforts, the USFS produced a guidance document to determine the probability of tree mortality from fire injury. This document is a thorough culmination of many studies conducted locally over many years: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd814664.pdf

ODF also produced a shorter summary of this document: <https://www.oregon.gov/odf/Documents/forestbenefits/post-fire-tree-mortality.pdf>

- ODF “Help After Wildfire”: <https://www.oregon.gov/odf/fire/Pages/afterafire.aspx>
- OSU Extension Fire Program info: <https://extension.oregonstate.edu/fire-program>
- OSU Extension wildfire webinars: <https://extension.oregonstate.edu/fire-program/online-webinar-guide>
- Oregon Statewide Wildfire Response & Recovery: <https://wildfire.oregon.gov>
- Make your home Firewise: <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA>
- Reduce risk of wildfire starts: <https://keeporegongreen.org>

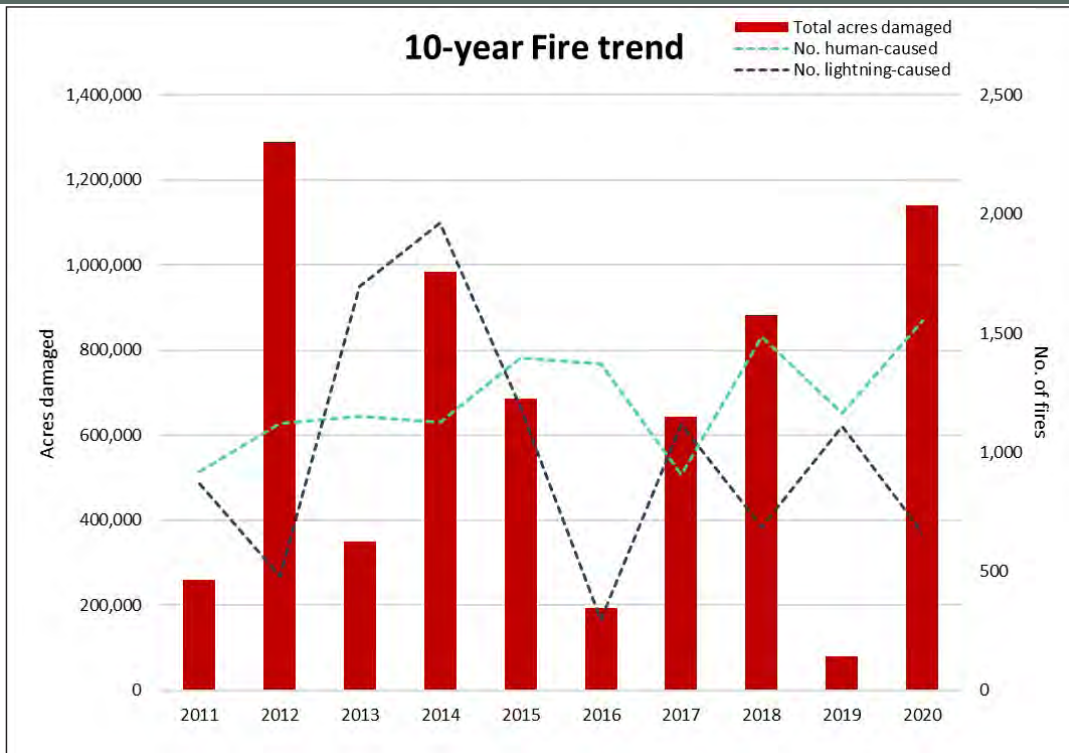


Figure 19. 10-year trends, across all ownerships, in annual number of acres damaged by fires, and number of fire starts from human (green) versus lightning (blue) causes.



Figure 20. Less severe fire damage in thinned forest (top left Beachie Creek; Mike Cafferata, ODF), Patrick Stephenson, ODF, scouting (top right; Jordan Grimes, ODF), Rocky Top in Santiam State Forest (bottom left; David Capasso, ODF), smoke (bottom right; Tyler Ramos, ODF), Holiday Farm crew (center; Marcus Kauffman, ODF).

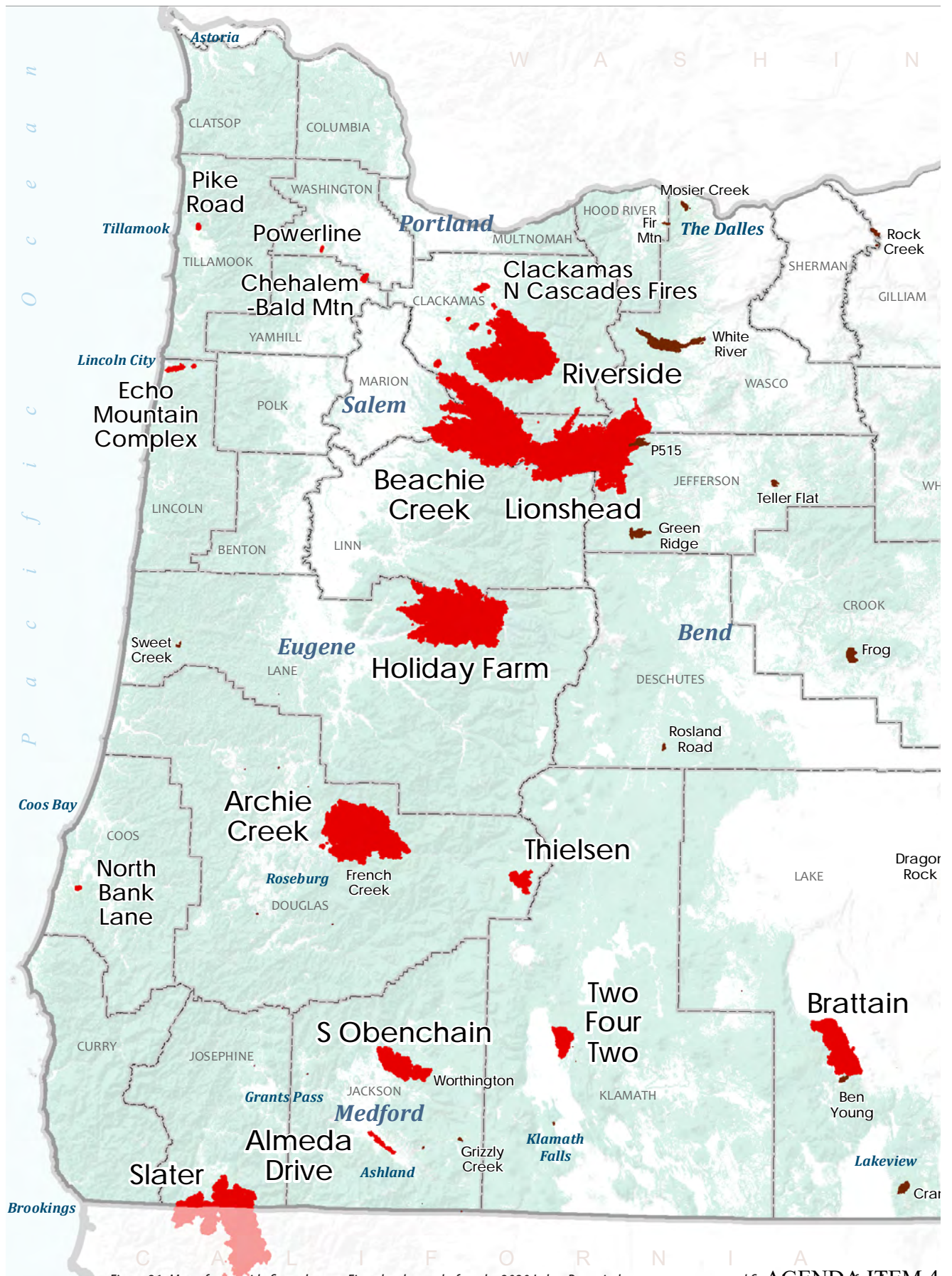
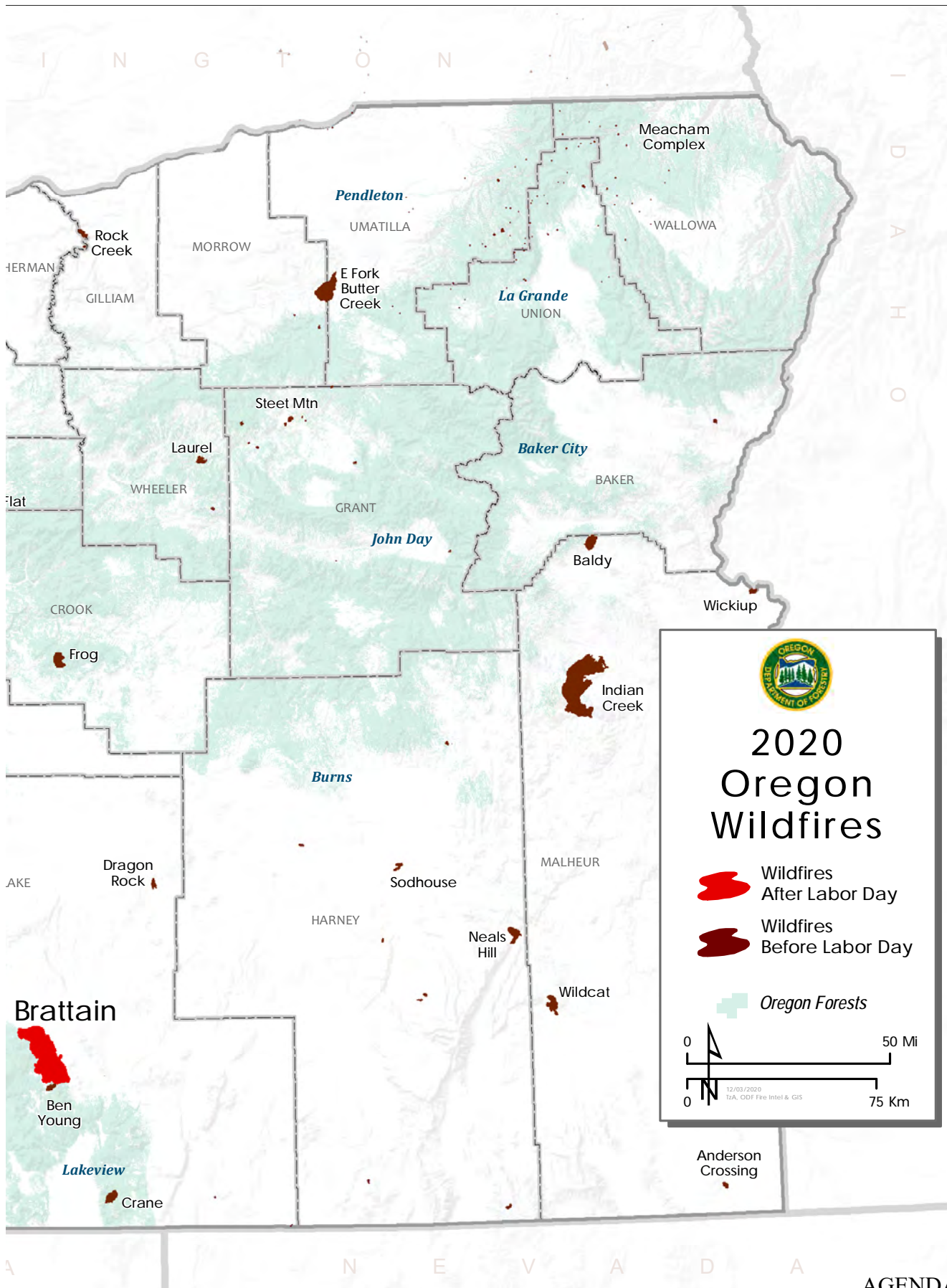


Figure 21. Map of statewide fire polygons. Fires that began before the 2020 Labor Day wind event are maroon and fires that started after the event are red.



FOREST INSECTS

Healthy trees are defended trees. Tree defenses include mechanical and chemical defenses in foliage and wood that prevent infestation, mitigate damage or kill insects. In order for trees to produce these defenses they must have their growth requirements met, sparing additional resources that producing defenses require. Droughts in particular especially impact defenses because trees require moisture for products such as sap which is a mechanical barrier that traps insects and also contains chemicals that are repellant or toxic to insects and fungal pathogens they may vector.

BARK BEETLES

Storms in 2019 caused major damage and blowdown of trees in the lower Willamette Valley. Blowdown of large-diameter (>12 inch) Douglas-fir trees is particularly attractive to **Douglas-fir beetle** (*Dendroctonus pseudotsugae*) which can infest blowdown the first April after the storm and build up to infest adjacent standing trees the second



Figure 22. Brown frass indicates bark beetle attack (left) and MCH pouch (right) (Christine Buhl, ODF).

April. Outreach efforts to spread awareness to landowners about removal and/or application of inexpensive MCH (repellency pheromone) were increased (Fig. 22). Reports from treatment areas voiced success, noted by the absence of initial attack symptoms in blowdown in April 2020. Standing Douglas-fir trees in 2019 blowdown areas should be monitored for signs of infestation in April 2021. *More info:* <https://www.oregon.gov/odf/Documents/forestbenefits/Douglas-fir-beetle.pdf> and https://www.oregon.gov/odf/Documents/forestbenefits/MCH_2016.pdf

Fir engraver (*Scolytus ventralis*) continues to kill true fir growing in sites with increased drought stress or unmanaged root disease (Fig. 23) such as along Fremont-Winema and Ochoco National Forests and the Blue Mountains. *More info:* <https://www.oregon.gov/odf/Documents/forestbenefits/FirEngraverBeetle.pdf>



Figure 23. True fir finished off by fir engraver (ODF).

Ips bark beetles (*Ips pini* and *I. paraconfusus*) also continue to be a problem in stands of young, overstocked pine or wherever fresh pine slash has not been chipped or burned to prevent infestation. Note, verbenone (repellency pheromone) is not effective for Ips beetles for it has only shown some effectiveness for preventing mountain pine beetle in pure lodgepole pine stands. *More info:* <https://www.oregon.gov/odf/Documents/forestbenefits/ips.pdf>

Some areas in eastern Oregon are still experiencing pockets of **western pine beetle** (*D. brevicornis*) outbreaks in ponderosa pine and **mountain pine beetle** (*D. ponderosae*) has remained quiet except for some pockets such as around Mt. McLoughlin in south central Oregon. *More info:* <https://www.oregon.gov/odf/Documents/forestbenefits/MountainPineBeetle.pdf> and <https://www.oregon.gov/odf/Documents/forestbenefits/Western%20Pine%20Beetle.pdf>

WOODBORERS

There is a significant risk of **emerald ash borer** (EAB; *Agilus planipennis*) to Oregon's riparian forests (Fig. 24). EAB has not yet been detected in Oregon or in other western states. In Oregon, a native and susceptible ash (*Fraxinus latiofolia*), grows widely across the western part of the state in riparian areas, in habitats occupied by threatened and endangered species and other rare species. Rapid mortality of this native tree caused by EAB is expected to cause changes in riparian plant communities, increase stream temperatures and alter food webs. Oregon ash is also grown by some tree farmers as a specialty niche crop for forest products or for conservation and restoration efforts. Pockets of ash often occur in areas unsuitable for our other native tree species and the loss of these stands would reduce the ecological and aesthetic value of these areas. If patterns follow eastern states, EAB will likely decimate this small but important market, as well as wild ash stands within approximately 10 years. Moreover, rapid ash mortality in Oregon's cities and urban forests will cause significant economic strain on local governments and property owners.



Multiple state and federal agencies have been surveying the state for EAB since 2008 and have not yet found evidence that EAB is in Oregon (Fig. 24). In 2020, due to complications surrounding COVID-19, no statewide survey was conducted.

In 2018, ODF Forest Health received funding from the USFS to collect and store seeds of Oregon ash for preventative efforts before the arrival of EAB to the state. The seeds will be stored in freezers for genetic conservation (USDA Seed Lab, Fort Collins) and resistance research (USFS Dorena Genetic Resource Center). In 2019, approximately 350,000 seeds were collected from over 100 mother trees across 12 populations in western Oregon. Because of the record-setting 2020 fire season and the impact on agency resources, ODF plans for collecting and storing another 600,000 seeds from an additional 200 mother trees were delayed until September-October of 2021, when seeds are mature.



Figure 24. Feeding galleries from emerald ash borer under the bark of green ash (top), and emerald ash borer traps (bottom) (Wyatt Williams, ODF).

For more on the risk and mitigation of EAB, visit Oregon's EAB Readiness and Response Plan: <https://www.OregonEAB.info>

FOREST INSECTS

DEFOLIATORS

Our current **Douglas-fir tussock moth** (*Orgyia pseudotsugata*) outbreak in NE Oregon began in 2018 and began its decline in 2019 (Fig. 25). Outbreaks from this insect typically last 2-3 years before virus and natural enemies catch up to them. Because outbreak initiation was staggered among populations, some areas are closer to outbreak collapse than others. Ground reports indicated the most significant defoliation near Halfway although annual monitoring traps indicate a second year of population decline in nearby Wallowa-Whitman National Forest. *More info:* <https://www.oregon.gov/odf/Documents/forestbenefits/douglas-fir-tussock-moth.pdf>

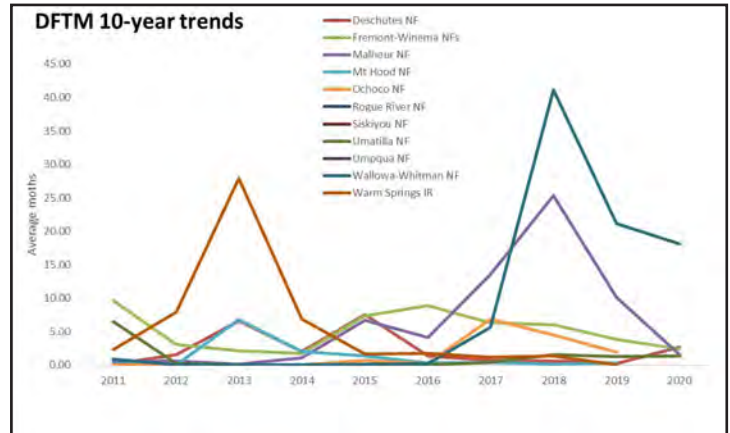


Figure 25. Defoliation from Douglas-fir tussock moth in eastern Oregon (left; Mike Johnson, USFS) and 10 year trap catch trends (right).

Trees defoliated by **Pandora moth** (*Coloradia Pandora*) in 2018 (feeding occurs in even years) in central Oregon are reported to be rebounding in 2020. Pandora outbreaks often collapse within 8 years; this outbreak is in year 6 and is showing signs of decline. Defoliation from other pine-infesting needleminers and sawflies was also reduced in 2019 damage footprints. *More info:* https://www.oregon.gov/odf/Documents/forestbenefits/Pandora_2017.pdf

Gypsy moth is an exotic defoliating insect that feeds on several hundred species of trees and shrubs, including conifers. If it were to establish in the western U.S., it has the potential to dramatically change forest management and ecology, and likely increase aerial pesticide use and timber harvest costs. European gypsy moth (EGM; *Lymantria dispar dispar*) is established in the eastern U.S. and is regularly detected in Oregon; Asian gypsy moth (AGM; *Lymantria dispar asiatica*) is not established in the U.S. but is occasionally detected in western states from overseas imports. All detections of both types of gypsy moth have been successfully eradicated in Oregon since monitoring began in the 1970s. Today, there are no established populations of gypsy moth in Oregon due to our effective early detection and rapid response system.

Since the 1970s ODA has been the agency responsible for surveying the state for gypsy moth, deploying approximately 15,000 traps annually. In the last several years, state funding for this large trapping program has been generated from the Oregon Lottery. In 2020, lottery fund revenues were significantly reduced due to measures taken to protect the public from COVID-19 (e.g. mandatory closures and restrictions of bars and restaurants). Therefore, ODA requested in-kind assistance from other agencies, including ODF, OSU, and Oregon Parks and Recreation.

In total, 25 ODF Stewardship Foresters, Forest Officers and other staff from Private Forests, State Forests and Protection divisions all contributed in placing 223 gypsy moth traps to monitor Eastern and Southern Oregon forests. ODA reported that external cooperators, like ODF, placed a total of 4,826 traps out of a

statewide total of 21,463. Two European gypsy moths and one Asian gypsy moth were reported from the 2020 trapping season. None of the gypsy moths in 2020 were found in ODF traps. *More info:* <https://www.oregon.gov/odf/Documents/forestbenefits/ODF%20Gypsy%20moth%20fact%20sheet%20Feb%202016.pdf>

Damage in Oregon white oak is often observed along the Columbia River Gorge and in some parts of the Willamette Valley. This damage is typically from a complex of **oak-feeding leaf miners, galls**, etc. Sometimes gall insect infestations are compounded by damage from squirrels digging for grubs. Hot droughts can even become taxing on drought-tolerant species such as oak and result in early seasonal leaf drop. Because white oak drops its leaves each year and buds are not affected, even severe damage does not typically result in tree mortality. *More info:* https://www.oregon.gov/odf/Documents/forestbenefits/Oak_galls_2017.pdf

SAP-SUCKING INSECTS

The 2019 outbreak of the exotic but established **spruce aphid** (*Elatobium abietinum*) seems to have collapsed in 2020. Heavy outbreak areas were revisited and few aphids were found and noticeable defoliation was not observed in Sitka stands along the coast. It is likely that heavy rains in winter 2019 and catch up by natural enemies led to the collapse of this recent outbreak. Outreach efforts (presentations and articles) raised awareness that a tree heavily defoliated from spruce aphid can still bounce back and it is best to ride it out rather than to cut it. Data collection plots and a Survey123 form were created during the 2019 outbreak and will be used for future monitoring. *More info:* https://www.oregon.gov/odf/Documents/forestbenefits/Spruce_aphid_2017.pdf

EXOTIC PEST ALERT

Asian giant hornet aka “murder hornet” (*Vespa mandarinia*) is an exotic species that has not yet been found in Oregon. It was first reported in northern Washington in 2019 and again in 2020, and has been found in Canada in previous years. This insect is often mistaken for many other species that are found in Oregon such as cicada killers (Sphecidae), sawflies, bald-faced hornets and yellow jackets (Fig. 26). A feature that stands out in this insect is its size since it may reach 1.25 - 2 inches long. It also has a large yellow head. There is concern around this insect establishing due to its aggression toward honey bees. Additionally this insect creates large underground nests and due to its size and nest populations it can become a human health hazard.

If you think you have found Asian giant hornet please report it to the Oregon Department of Agriculture: plant-entomologists@oda.state.or.us or 503-986-4636

More info:

Online identification form: <https://oda.direct/InsectID>
<https://www.oregon.gov/odf/Documents/forestbenefits/asian-giant-hornet-1.pdf>
<https://www.oregon.gov/odf/Documents/forestbenefits/asian-giant-hornet-2.pdf>

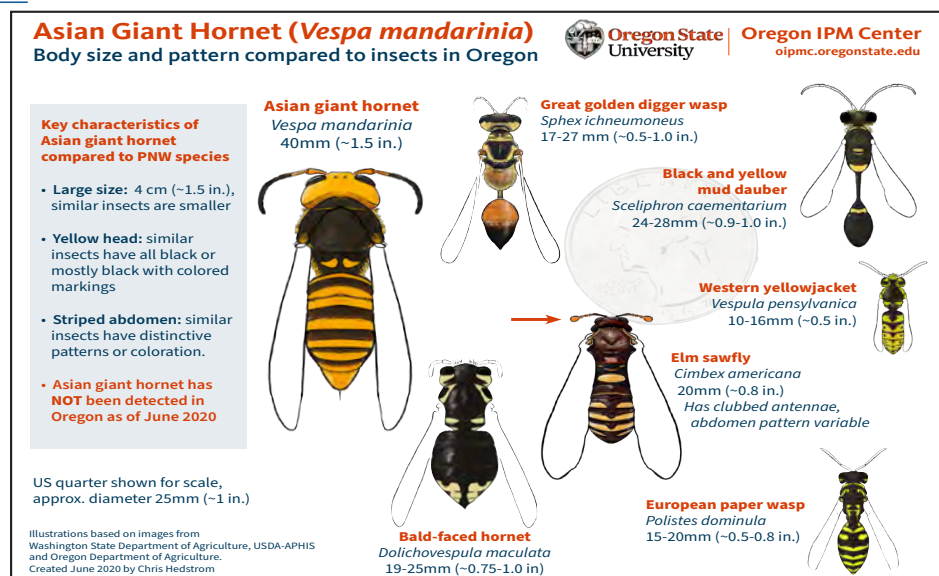


Figure 26. Asian giant hornet and look-alikes (Oregon State University publication EM 9297).

FOREST DISEASES

Sudden oak death (SOD), caused by the non-native invasive pathogen *Phytophthora ramorum*, is lethal to tanoak (*Notholithocarpus densiflorus*) and threatens this species throughout its range in Oregon. The disease was first discovered in coastal southwest Oregon forests in July 2001. Since then an interagency team continues to slow the spread of the pathogen through a program of early detection and treatments of infected and nearby host plants. Treatments include cutting and burning infected and potentially exposed host material. Spread of *P. ramorum* is managed through the designation of a SOD Generally Infested Area (GIA) and SOD quarantine area under the authorities of the Oregon Department of Agriculture (ORS 603-052-1230) and the USDA Animal Plant Health Inspection Service (7 CFR 301-92). These state and federal quarantines regulate the intrastate and interstate movement of host plant material outside of the quarantine area. Oregon regulations require infested sites on state and private lands to undergo eradication treatment. In late 2020, ODA expanded the GIA boundary to encompass areas within the SOD quarantine areas where the infestations were not treated from 2018 and 2019 due to reduced priority from resource constraints (Fig. 30).



Figure 27. Tanoak stem with girdling canker lesions (ODF).

P. ramorum spreads during rainy periods when spores produced on infected leaves or twigs are released into the air and are either washed downward or transported in air currents. The disease can be spread by humans transporting infected plants or infested soil. *P. ramorum* can kill highly susceptible tree species such as tanoak, coast live oak, and California black oak by causing canker lesions on the main stem (Fig. 27). Tanoak is by far the most susceptible species in Oregon, and the disease seriously threatens the future of tanoak. In order to monitor disease spread and detect new infestations, Oregon's SOD Program relies on multiple monitoring methods throughout the year, such as aerial surveys, ground based transects, and stream monitoring. With regional aerial surveys cancelled for 2020 due to COVID-19 safety concerns, SOD foresters at ODF and USDA Forest Service visually scanned 220,000 acres of high-resolution aerial imagery to detect dead tanoak trees (Fig. 28).

Since 2015, ODF has been aggressively treating all known EU1 infestations with large buffers of 300 - 600 feet. In Europe, the EU1 lineage kills or damages several conifer tree species and is considered more aggressive than the North American lineage (NA1). In 2020, ODF, USFS, and Bureau of Land Management completed treatments on 30 acres and over 700 acres of tanoak remain to be burned. To date, eradication treatments have been completed on more than 7,400 acres at an estimated cost of over \$30 million. Outside of Oregon, *P. ramorum* is known to occur in forests only in California (16 counties) and two European countries. The origin of the pathogen is unknown.

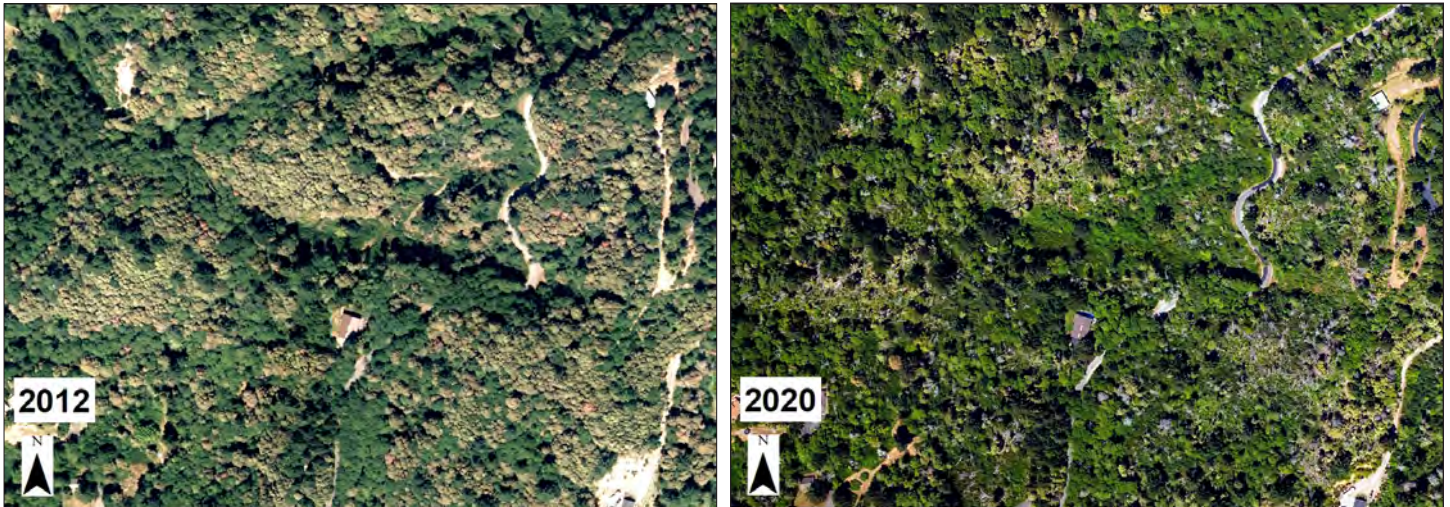


Figure 28. Aerial photography showing the disease progression of sudden oak death from 2012 (left) to 2020 (right) (ODF, (right) from within the Generally Infested Area.

In 2019, ODF, USFS, and OSU staff planted several thousand tanoak seedlings grown from acorns collected from the southern Oregon coast marking the first out-planting to monitor for genetic resistance to *P. ramorum*. ODF staff collected tanoak acorns in 2016-2018 from tanoak trees both exposed to the disease, within the SOD GIA, and from areas free of disease, such as along the Rogue River. The acorns were sorted by family and grown at the Dorena Genetic Resource Center until ready for field and OSU lab testing. Monitoring of the out-planting continued in 2020; visual observations identified about 10% mortality among tanoak seedlings throughout the planting and visible SOD symptoms in about 20% of the seedlings (Fig. 29). Oregon's SOD Program is interested in finding potentially resistant tanoak trees in SOD infested areas and encourages local landowners to identify those trees using the TreeSnap App: <https://treesnap.org>

More info:

<https://www.oregon.gov/oda/programs/PlantHealth/Pages/SODProgram.aspx>
<https://catalog.extension.oregonstate.edu/em9216>
https://www.aphis.usda.gov/plant_health/plant_pest_info/pram
<https://www.suddenoakdeath.org>



Figure 29. ODF SOD Foresters participated in the 2020 International Year of Plant Health communication campaign with Beastie the Bug (<https://beastiebug.eppo.int/>) (Casara Nichols, ODF). They used the campaign to highlight the ongoing Tanoak Field Resistance Trial in Curry County.

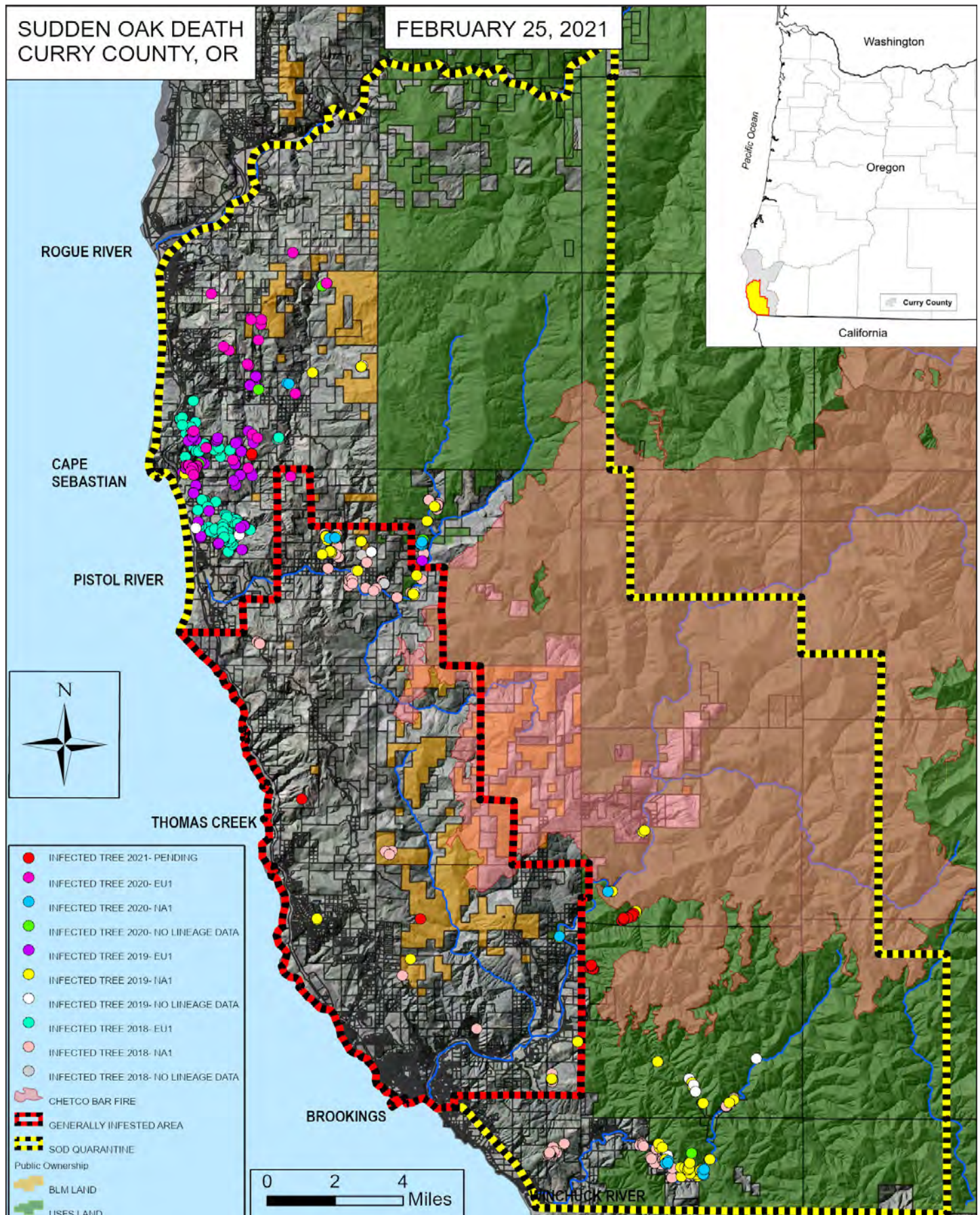


Figure 30. Map of SOD infection area (red) and quarantine area (yellow). EU1 and NA1 are two different lineages of *P. ramorum*. In Europe, the EU1 lineage kills or damages conifer tree species and is considered more aggressive than the NA1 lineage.

Port-Orford-cedar root disease, caused by the non-native pathogen *Phytophthora lateralis*, was first identified in the Port-Orford-cedar forests of southwestern Oregon in 1952 (Fig. 31). Since then this soil- and water-borne pathogen has been spread to many areas throughout the range of Port-Orford-cedar in southwest Oregon and northern California. In recent years, the ODF-USFS statewide aerial survey has mapped approximately 4,000 acres of Port-Orford cedar mortality per year (Fig. 32).

Disease management emphasizes excluding the pathogen from areas where it does not yet occur and minimizing its spread in already infested areas. This is accomplished through road closures, limiting wet-weather access into stands with Port-Orford-cedar, washing equipment, sanitizing roadsides, and treating water used for fire-fighting and road maintenance (Fig. 32). Seed from disease-resistant Port-Orford-cedar is now being produced through a cooperative program between the USDA Forest Service, Bureau of Land Management, and Oregon State University. Planting resistant seedlings greatly improves opportunities for restoring this important tree species. Resistant Port-Orford-cedar seed is available to interested small woodland owners in Oregon through the ODF Seed Orchard: <https://www.oregon.gov/odf/working/Pages/seed.aspx>



Figure 31. Dead, cinnamon-colored bark indicative of Port-Orford-cedar root disease infection (Alan Kanaskie, ODF).

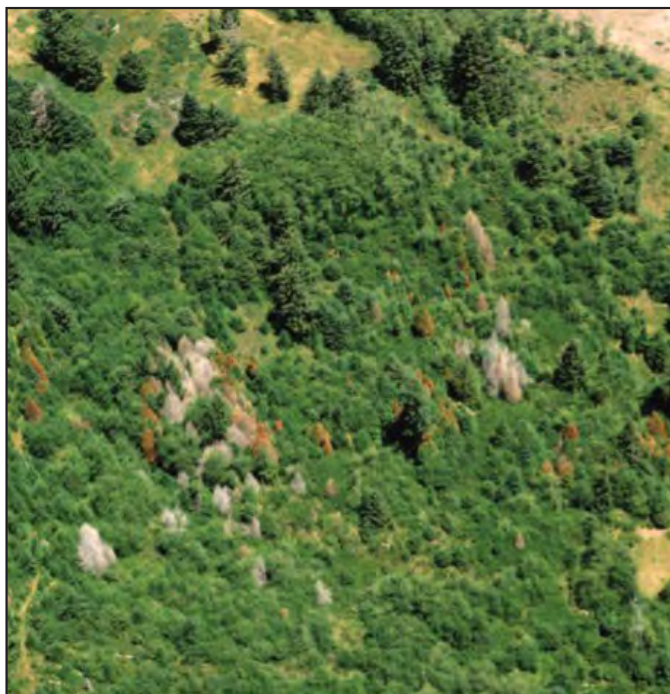


Figure 32. Port-Orford-cedar root disease observed during aerial surveys (left; Michael McWilliams, USFS) and management sign (right) (Alan Kanaskie, ODF).

FOREST DISEASES

Swiss needle cast (SNC), a foliar disease affecting Douglas-fir in the Pacific Northwest, is caused by the native fungus *Nothophaeocryptopus gaeumannii*. The fungus is common where its only host, Douglas-fir, is grown. It has become particularly damaging to Douglas-fir forests on the western slopes of the Oregon Coast Range. The host-pathogen interaction is unique, because both the fungus and the host tree are native in the Pacific Northwest (PNW), where the disease originated.

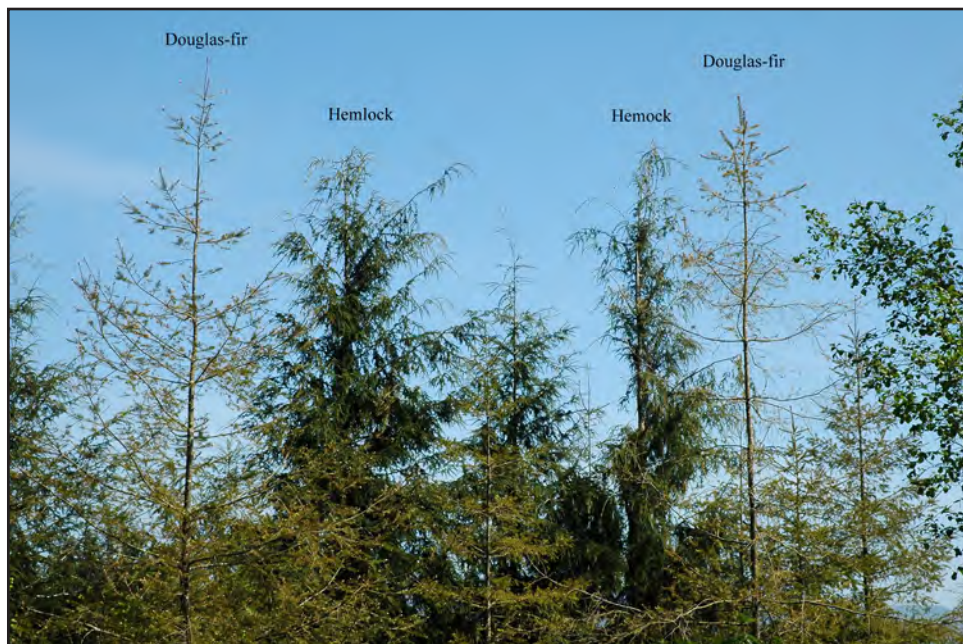
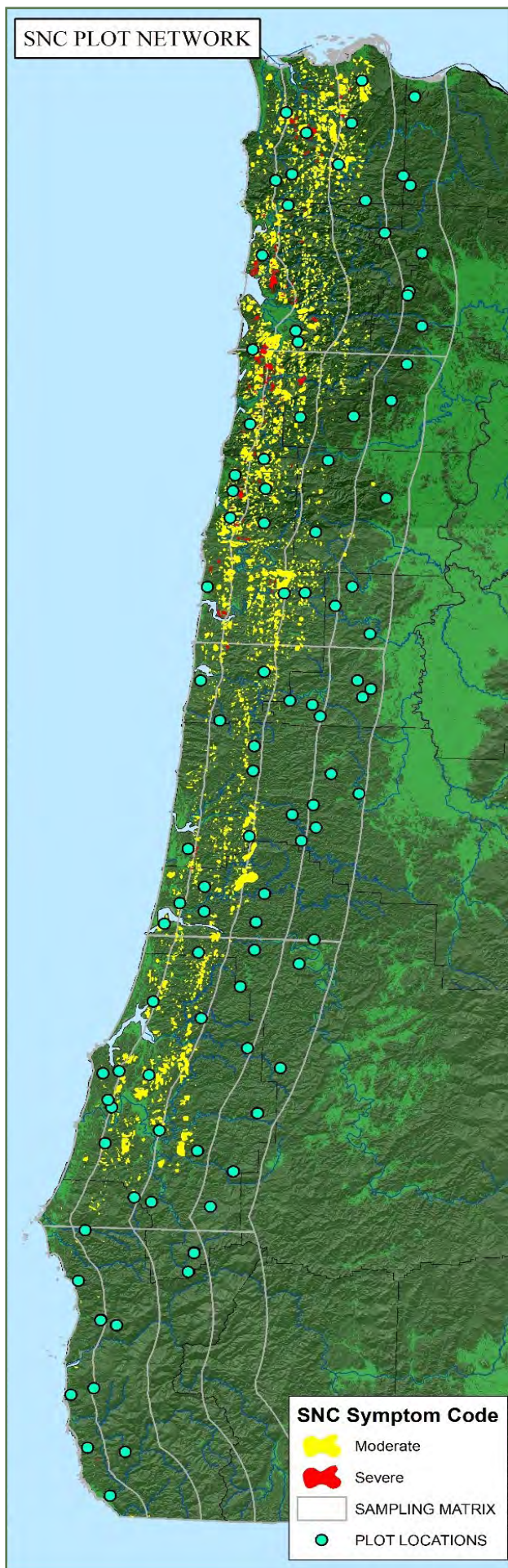


Figure 33. SNC causes foliage loss and sparse yellow crowns in Douglas-fir in Oregon's Coast Range. Low foliage retention can reduce tree volume growth by more than 50%. Western hemlock is unaffected (Alan Kanaskie, ODF).

Trees affected by SNC exhibit chlorotic foliage in the late spring and cast needles prematurely, resulting in sparse crowns. Disease severity and growth impacts are assessed using the number of years of retained foliage. Uninfected trees generally have a minimum of 3 years of retained foliage, and trees with severe infections may retain needles for less than 2 years (Fig. 33). SNC rarely kills trees but reduces diameter and height growth due to foliage loss. Previous analyses (1998-2008) have shown cubic volume growth losses exceeding 50% when only 1 year of foliage remains on the tree. Growth loss due to SNC in 10-70 year old Douglas-fir in the Oregon Coast Range is estimated at more than 190 million board feet per year. SNC also negatively alters wood properties and value, hinders the development of stand structure and wildlife habitat, and limits stand management options.

Over a 3-year period, starting in 2013, the SNC Cooperative (SNCC) at OSU established a 106-plot research network in 10-25 year old Douglas-fir stands (Fig. 34). The plots are distributed from the Oregon-California border to southwest Washington and 35 miles inland. The SNCC will collect data from these plots for at least 10 years. The first five-year period of plot re-measurement has been completed and has provided information about disease severity, growth loss and its geographic distribution on 102 surviving plots throughout the Coast Range. Analysis of these new data showed that the maximum cubic volume growth losses during the 2013-2020 period was ~35%. The lower maximum growth losses (relative to the 1998-2008 period) are thought to be due to a decrease in under-performing stands in the dataset/population because heavily infected stands have been harvested, particularly in coastal zones.

A special SNC aerial survey (Fig. 35) is conducted by ODF and USFS every other year (survey was annual until 2018). It was canceled in 2020 and 2021 due to COVID-19 restrictions but is planned to resume in spring 2022: <https://www.arcgis.com/apps/MapJournal/index.html?appid=da5cda5003d24544b9231dbb8edf82fb>



More information:

The SNCC has produced a silvicultural guide to assist land managers in decision making within SNC infected stands:
http://sncc.forestry.oregonstate.edu/sites/default/files/SilvGuide_July2020.pdf

SNCC guide to decision-making in SNC-infected stands:
http://sncc.forestry.oregonstate.edu/sites/default/files/SilvGuide_July2020.pdf

<https://www.oregon.gov/odf/documents/forestbenefits/swissneedlecast.pdf>
<http://sncc.forestry.oregonstate.edu>



Figure 34. Map (left) of SNC plot locations and SNC damage observed in Douglas-fir during the 2018 SNC aerial survey (left). The next aerial survey will take place in late spring of 2022.

Figure 35. During recent SNC aerial surveys, observers have noted that SNC infected Douglas-fir stands appear more brown with thin crowns (above top) compared to previous years when symptomatic stands appeared more yellow in color (above bottom) (ODF).

FOREST DISEASES

Western hemlock dwarf mistletoe (*Arceuthobium tsugense* ssp. *tsugense*) is a native, arboreal parasite, infecting western hemlock (Fig. 36) throughout its range, and several other conifers in western Oregon. Infection occurs in the boles and branches and predisposes trees to drought-related stress and reductions in height and diameter growth. Severe infections lead to top kill or whole tree death (Fig. 37). Branch infections cause swelling at the point of infection and a massive proliferation of branchlets and twigs, resulting in a witches' broom. Management historically focused on eradication to minimize merchantable timber losses. However, the unique forest structures produced by infections are important for many bird and arboreal mammals; witches' brooms can serve as nesting platforms, forage, and cover.



Figure 36. Western hemlock dwarf mistletoe (left) with female visibly ready to eject seeds (right) (Stephen Calkins, OSU).

In 2019, researchers from OSU climbed 16 mature and old age western hemlocks at the H.J. Andrews Experimental Forest, near Blue River, Oregon, to investigate the effects of dwarf mistletoe infection severity on the growth and structure of infected trees. Infection severity of selected trees ranged between uninfected and all branches infected. Trees were measured for occurrence of all dwarf mistletoe infections, mistletoe-caused deformities, branch and crown structural metrics, and sapwood area. Results suggest that shifts in crown structure and branch deformation, foliage amount, and foliage distal to infection, reflected a likely reduction of capacity for tree growth that coincided with a hypothesized increase in resource demand by dwarf mistletoe plants as infection severity intensified. *More info:* Calkins et al. 2020 <https://doi.org/10.1111/efp.12664>



Figure 37. Old growth forest at OSU's H.J. Andrews Experimental Forest infected by hemlock dwarf mistletoe (Katie Nicolato).

EXOTIC INVASIVE PLANTS

ODF has been a cooperator in the development of new control strategies for **Japanese knotweed** (*Fallopia japonica*), a noxious weed that grows rapidly and chokes out native plants along rivers and streams in northwest and southern Oregon (Fig. 39). In 2020, ODF Forest Health and ODF State Forests assisted Oregon State University researchers and Oregon Department of Agriculture locate sites on the Nehalem River for release of a new biological control agent, the knotweed psyllid (*Aphalara itadori*) (Fig. 38). The knotweed psyllid is an insect from Japan that feeds solely on knotweed. This insect was tested for several years in a quarantine facility at Oregon State University, and in 2020 was deemed safe for open field releases by the USDA. Included in the field sites selected by OSU researchers



Figure 38. Knotweed psyllid (inset; CABI) and damage to knotweed (main; Joel Price, ODA)

were a site on Tillamook State Forest and another on nearby private land. At both of these sites, the insects successfully established and produced a second generation. Introduction of this biocontrol agent shows promise for the development of a sustainable, eco-friendly control tactic for this damaging weed.

ODF supports safe and proven biological control as part of a comprehensive Integrated Pest Management (IPM) program. This is especially important for Japanese knotweed, which is extremely difficult to control with chemical pesticides. Biological control also significantly reduces the amount of chemical pesticides being applied near streams and rivers.

Japanese knotweed is one of the species on the state's official noxious weed list, a list comprising over 130 species of exotic pest plants deemed a "menace to the public". Over 30 of the weeds on this list occur in Oregon's forests. Two of these pest plants, Himalayan blackberry and Scotch broom, cost Oregon's forestland owners and farmers an estimated \$80 million dollars annually. Oregon Department of Agriculture administers the noxious weed list, and has a robust program focusing on early detection and rapid response, as well as sound IPM strategies. ODF Forest Health supports and cooperates with the ODA Noxious weed program.

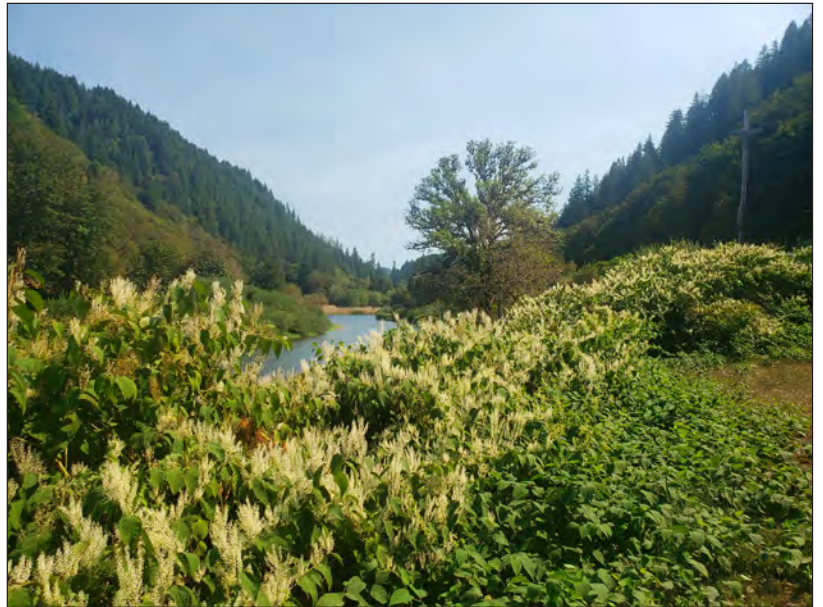








Figure 39. Japanese knotweed along Siuslaw River near Mapleton (Wyatt Williams, ODF).

More info on noxious weeds in Oregon: <https://www.oregon.gov/oda/programs/weeds/oregonnoxiousweeds/pages/aboutoregonweeds.aspx>

IMPORTANT INSECT AND DISEASE PESTS





	DOUGLAS-FIR	TRUE FIR	PINE
INSECTS	 <ul style="list-style-type: none"> • Douglas-fir beetle • Douglas-fir tussock moth • Western spruce budworm • Flatheaded fir borer • Cooley spruce gall adelgid* • Douglas-fir pole & engraver beetles* 	 <ul style="list-style-type: none"> • Douglas-fir tussock moth • Western spruce budworm • Fir engraver beetle • Balsam woolly adelgid 	 <ul style="list-style-type: none"> • Ips beetles (pine engraver & California five-spined) • Mountain pine beetle • Western pine beetle (ponderosa only) • Pine butterfly • Black pineleaf scale • Sequoia pitch moth*
DISEASES	<ul style="list-style-type: none"> • Laminated root rot • Blackstain root disease • Armillaria root disease • Swiss needle cast • Rhabdocline needle cast • Douglas-fir dwarf mistletoe • Heart and stem decays 	<ul style="list-style-type: none"> • Annosus root disease • Interior needle blight • Fir needle rust • Fir broom rust • Heart and stem decays 	<ul style="list-style-type: none"> • White pine blister rust (5-needle pines) • Diplodia tip blight • Dothistroma needle blight • Western gall rust • Blackstain root disease • Armillaria root disease • Pine dwarf mistletoe





	TANOAK	WHITE OAK	MAPLE
INSECTS	<ul style="list-style-type: none"> • Gypsy moth 	<ul style="list-style-type: none"> • Gypsy moth • Oak looper* • Gall-making wasps & flies* • Leaf miners* 	<ul style="list-style-type: none"> • Asian longhorned beetle • Gypsy moth • Various defoliators* 
DISEASES	<ul style="list-style-type: none"> • Sudden oak death (<i>Phytophthora ramorum</i>) • Armillaria root disease 	<ul style="list-style-type: none"> • Armillaria root disease • Inonotus trunk rot 	<ul style="list-style-type: none"> • Tar spot • Ganoderma trunk rot • Armillaria root disease

* Secondary or aesthetic pests that are not typically tree-killers

BOLD: non-native, exotic insects and diseases

IN NATIVE OREGON TREES

HEMLOCK	SPRUCE	'CEDARS'	LARCH
 <ul style="list-style-type: none"> • Western hemlock looper 	 <ul style="list-style-type: none"> • Spruce beetle • Spruce aphid • Cooley spruce gall adelgid* 	 <ul style="list-style-type: none"> • Cedar bark beetles* • Amethyst borer* • Western cedar borer* 	 <ul style="list-style-type: none"> • Larch casebearer
<ul style="list-style-type: none"> • Annosus root disease • Hemlock dwarf mistletoe • Hemlock needle rust • Heart and stem decays 	<ul style="list-style-type: none"> • Spruce broom rust • Heart and stem decays 	<ul style="list-style-type: none"> • Port-Orford-cedar root disease (POC only) • Cedar leaf blight (western redcedar only) 	<ul style="list-style-type: none"> • Larch needle cast • Larch needle blight • Larch dwarf mistletoe

ALDER	ASH	POPLAR	MADRONE
<ul style="list-style-type: none"> • Gypsy moth • Western tent caterpillar* • Alder flea beetle* 	<ul style="list-style-type: none"> • Emerald ash borer • Gypsy moth 	<ul style="list-style-type: none"> • Gypsy moth • Satin moth* • Webworm* 	<ul style="list-style-type: none"> • Gypsy moth 
<ul style="list-style-type: none"> • Armillaria root disease • Nectria canker • Alder collar rot • Heart and stem decays 		<ul style="list-style-type: none"> • Heart and stem decays 	<ul style="list-style-type: none"> • Madrone leaf blight • Madrone branch dieback • Madrone stem cankers

Don't know your tree? ID here:

Oregon tree ID: https://oregonstate.edu/trees/name_common.html

FOREST HEALTH CONTACTS

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2600 State Street, Salem, OR 97310

<https://tinyurl.com/odf-foresthealth>

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Deschutes National Forest, 63095 Deschutes Market Road, Bend, OR 97701

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USDA Forest Service – Blue Mountains Service Center

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Why is my Tree Dying?

Western redcedar (*Thuja plicata*)

April 2019



Common cause(s): not determined, but possibly a combination of factors including changing climate

Symptoms: top dieback, flagging, crown thinning, yellowing, whole-tree mortality

Summary

Top-dieback, branch mortality, crown thinning and whole-tree mortality in all ages of western redcedar has been observed recently at lower elevations in the Willamette Valley and beyond. Although it is common to see 'spiked' or dead tops in older western redcedar, usually there are living lateral branches and a functional crown. No single factor has been identified in these more recent die offs, but a combination of poor or unsustainable growing conditions may be to blame. Redcedar may simply be growing in areas or within microclimates outside of their preferred range or areas that are no longer sustainable for long-term growth under current climate conditions.



Climate change and drought events increase the intensity and duration of high temperatures as well as the amount, frequency and/or consistency of precipitation. Trees have adjustable pores (stomata) in their leaves, which open for gas exchange during photosynthesis. Opening these pores causes water vapor loss. The rate of loss depends on vapor pressure deficit which is the difference between moisture levels in the air currently and when the air is saturated. When it's hot and dry this deficit increases and causes tension in the water columns, in vascular tissues, that extend from the leaves to the roots (like the tension you get from sucking on a straw). Low moisture availability further increases this tension. The water columns may eventually break (air gets introduced into the straws) after repeated or severe droughts and this reduces the ability for a tree to transport water to its leaves.

Common pests

Several secondary insects and diseases are known to infest dead or dying western redcedar, although none are typically implicated as primary causes of tree mortality. These common secondary insects include cedar bark beetles (*Phloeosinus* spp.), western cedar borers (*Trachykele blondeli*), Amethyst cedar borers (*Semanotus amethystinus*), as well as flathead cedar borers (*Chrysobothris nixa*) which are more often pests of ornamental arborvitae. Rarely do these insect infestations result in tree mortality. Diseases of redcedar are often opportunistic root and butt rot pathogens that degrade wood once the tree has died. Common diseases include pencil rot (*Postia sericeomollis*), red ring rot (*Phellinus pini*), yellow ring rot (*Coniferporia weirii*), armillaria root disease (*Armillaria* spp.) and cedar leaf blight (*Didymascella thujina*). Note, damage from squirrels, porcupines and bears can also cause flagging and topkill due to bark stripping activity.





Why is my Tree Dying?

Western redcedar (*Thuja plicata*)

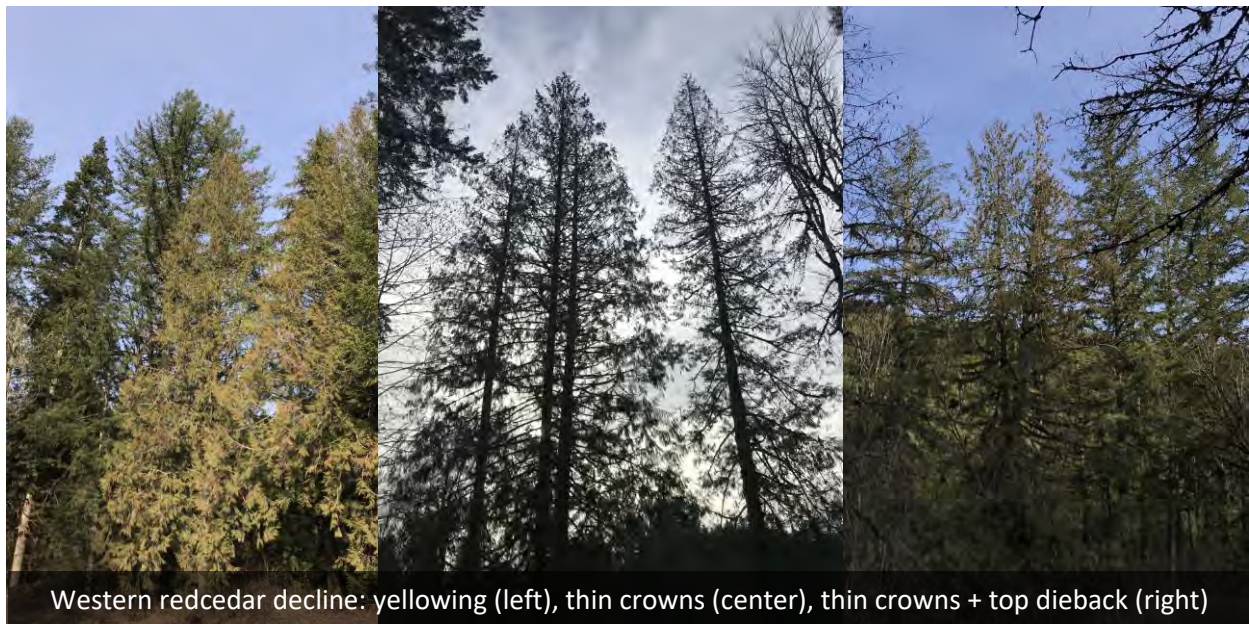
April 2019

Why am I seeing this now?

Changing climate may be repeatedly stressing trees and/or altering the suitability of some habitats to support western redcedar. Most of Oregon has been in a drought since 2012, and climate predictions indicate a continuation in trends toward higher temperatures and inconsistent precipitation.

Where should I grow western redcedar?

Western redcedar is very shade tolerant. Trees can thrive in sunny locations with sufficient moisture, but they are more at risk during hotter droughts. This species requires moist conditions and thrives in coastal fog belts and moist inland areas up to about 4000 feet elevation. It tolerates most types of soils and outcompetes many other species in wet soils. Western redcedar is shallow rooted and may not do well in soil crowded by roots of other plants (including trees) that are competing for water. Alternate species for redcedar include incense cedar, sequoia, bigleaf maple in generally dry sites and western white pine, maple, alder, ash or cottonwood at wetter sites that do not dry out in the summer.



Western redcedar decline: yellowing (left), thin crowns (center), thin crowns + top dieback (right)

STAFF REPORT

Agenda Item No.:	5
Work Plan:	State Forests
Topic:	Performance Measure Update
Presentation Title:	2021 Board of Forestry State Forests Metrics Update
Date of Presentation:	November 3, 2021
Contacts:	Mike Wilson, State Forests Deputy Division Chief (503) 945-7374 Michael.Wilson@Oregon.gov Tyson Wepprich, State Forests Adaptive Management Specialist (503) 945-7381 Tyson.M.Wepprich@Oregon.gov

SUMMARY

The purpose of this agenda item is to provide updates on a subset of State Forests Performance Measures (PM) and additional metrics including carbon sequestration in live trees on State Forest Lands. The last formal report to the Board on the performance measures was November 14th, 2013. Since that time the Division has been engaged in several high-level planning efforts and other priority projects and has not had the capacity to report on the performance measures. While there were 9 performance measures in 2013, because of data limitations, we are only reporting on components (italicized in the list below) of 6 of these. Performance measures are useful for the Board as a mechanism to evaluate if management on state forestlands is achieving greatest permanent value (GPV) or to inform policy discussions and decisions related to the management of State Forests. This agenda item also presents future plans for monitoring and adaptive management and how improvements in data collection may change performance measures.

BACKGROUND AND ANALYSIS

The development of performance measures began in 2006. In 2007 the Board adopted nine performance measures. Over the years the Board continued to adapt performance measures to improve utility, better address Board questions, and improve flow and clarity. The Board has received PM reports and revised performance measures as follows:

- June 2007: PM Report #1 with nine measures and 33 metrics.
- November 2007: Targets established for Tillamook and Clatsop State Forests
- November 2008: PM Report #2; Board recognized possible improvements.
- January 2010: Board updated the performance measures.
- November 2011: PM Report #3 with Board recommended improvements.
- July 2012: the Board approved changes including a new performance measure addressing financial viability, reorganization, and context for community wellbeing.
- November 2013: PM Report #4 with above recommended improvements to nine performance measures, listed below:
 1. Financial sustainability of forest management (*costs, revenue, revenue forecast*)
 2. Net return on asset value
 3. Forest health (area affected by invasive species, pests, disease, and fire)
 4. Water quality (hydrologically connected roads, *fish passage barriers*)
 5. Quantity of habitat (*stand structure type*, legacy components such as leave trees, snags, and downed wood)
 6. Community support (*direct and indirect financial contributions*)

7. Local and state government support (*direct and indirect financial contributions*)
 8. Recreation (*availability, quality, and public use*)
 9. Public support of management
- November 3rd, 2021: PM Update (this report) with information on select performance measures and carbon sequestration.

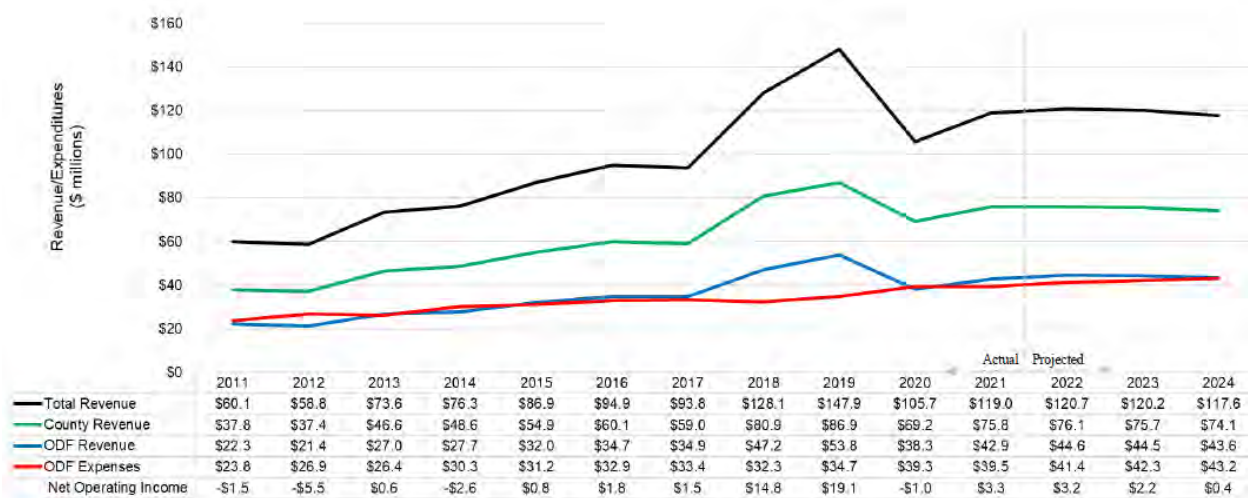
Some data needed to support performance measures are included in annual reporting while others require additional investments in monitoring and analysis. The Board is currently engaged on several fronts in the development of forest management policies such as the draft Forest Management Plan, draft Habitat Conservation Plan (HCP), and the draft Climate Change and Carbon Plan. Concurrently the Division has undertaken strategic planning for the State Forests Recreation, Education, and Interpretation programs. Research and monitoring associated with these policy and planning efforts will need to be integrated into a refreshed set of performance measures so the Board can determine if the policies are achieving the desired outcomes.

2020 Select Performance Measures

Financial Sustainability

How well revenues support forest management (current and future) is a measure of financial sustainability. Evaluation of the costs and revenues associated with State Forests management, as well as the projected future revenues and costs (Figure 1) provides an assessment of financial sustainability, now and into the near-term. Overall, the Division's share of the revenues has exceeded its management costs (i.e., positive net operating income) and the positive balance is maintained in the Forest Development Operating Fund (FDF), which had a fiscal year (FY) ending balance of \$49.7 million. Revenues are projected to exceed costs for FY 22 to 24, indicating the Division is expected to be financially solvent in the near-term. The FDF provides stability to the Division during timber market fluctuations. The Division maintains a prudent FDF balance of 6 to 12 months of operating expenses.

Figure 1: Board of Forestry financial metrics for FY 11-21 (actual) and FY 22-24 (Projected). Prepared by the Asset Management Unit for the FY22 Revenue Projection



Forest Inventory

Forest structure: The current Northwest Oregon State Forest Management Plan (FMP) is based on a concept called “structure based management” which establishes a classification of forest stands into five structures based on thresholds of tree size, tree height, stand diversity, snags, and downed wood. The stand classifications represent a series of successional stages that occur over time after a stand disturbance. These classes are Regeneration, Closed Single Canopy, Understory, Layered, and Older Forest Structure. Together, Layered and Older Forest Structure, are referred to as Complex Structure. The FMP establishes a Desired Future Condition target of 30-50% of the forest landscape to be in complex forest condition. The percent of forest in Complex Structure in Northwest Oregon is a key performance measure submitted each year by ODF to the Oregon Legislature. In 2020, 11.2% of forests in Northwest Oregon was in complex structure. The amount of complex structure varies from 8.3% to 17.2% for the three North Coast districts. (Table 1).

Table 1. Layered (LYR), Older Forest Structure (OFS), and Complex (LYR + OFS) forest structure in North Coast districts for 2021 Key Performance Measure #10 reported to Oregon Legislature.

Metric	Astoria	Forest Grove	Tillamook	North Coast
LYR acres	19,313	11,165	14,613	45,091
(% total)	(14.1%)	(9.7%)	(5.8%)	(9.0%)
OFS acres	4,168	678	6,174	11,020
(% total)	(3.1%)	(0.6%)	(2.5%)	(2.2%)
Complex structure acres	23,481	11,843	20,787	56,111
(% total)	(17.2%)	(10.3%)	(8.3%)	(11.2%)

Changes in forest structure occur slowly and management activities are shaping the forests towards the desired future conditions (Table 2). Forests continue to have more Closed Single Canopy and Understory stands than the desired conditions established in the FMP. The reported drop in Complex Structure between 2017-2018 is due to a change in simulated stand growth with different assumptions about mortality rates. Model assumptions affect reported forest structure both through “grow-forward” simulations of stands without recent surveys and through imputation of unmeasured stands’ biometrics from similar surveyed stands.

Table 2. Key Performance Measure #10, percent of area in Complex Structure in North Coast districts, from 2015 to 2021 reported to Oregon Legislature. Note that modeling methods changed between 2017 and 2018, accounting for the drop in reported numbers.

District	2015	2016	2017	2018	2019	2020	2021
Astoria	29.5	30.1	27.0	14.4	15.2	16.1	17.2
Forest Grove	19.7	18.1	16.1	10.3	9.2	9.0	10.3
Tillamook	9.5	9.4	10.3	8.0	7.9	8.0	8.3
All	17.3	17.0	16.2	10.3	10.2	10.4	11.2

Carbon storage: Carbon storage is not a current performance measure, but the Board is developing climate change and carbon policies and directed the Division to incorporate those policies into policies and operations. One expectation is to adopt strategies associated with carbon storage. Monitoring data are needed to show relationships between management and carbon storage. We provide estimates of carbon stored in live trees and in harvested wood products in this report. These estimates are provided to support current discussions on the role State Forests has in mitigation and adaptation to climate change. The Division’s planned inventory upgrades (see below) will provide more robust estimates of aboveground carbon stored in forests.

Long-term trends in aboveground carbon were estimated with OSU Landscape Ecology, Modeling, Mapping, & Analysis (LEMMA) products to provide an independent dataset. Previous estimates of carbon from Forest Inventory and Analysis (FIA) and the Forest Ecosystem Carbon Report did not separate Board of Forestry (BOF)/Common School Forest Lands (CSFL) land from state land outside of ODF management (ODOT, OPRD, etc.). LEMMA estimates are spatially explicit and include forest metrics at a 30x30-meter grid resolution based on Gradient Nearest Neighbor models linking FIA ground measurements, environmental variables, and remote sensing from Landsat. LEMMA trend estimates were summarized for the Oregon Coast Range region by ownership and State Forest district for 1987-2017 (Figure 2). State Forests on average store 50% more carbon per acre than forests with private industrial ownership. Federal forests store 37% more carbon per acre than State Forests (Table 3). State Forest districts vary in the average carbon per acre in live trees and the recent trend in live tree carbon storage (Table 3, Figure 2).

Figure 2: Trends in average carbon stored in live trees (DBH > 2.5cm) in forestland within the Oregon Coast Range region estimated by LEMMA subdivided by ownership and State Forest district. Y-axis scale is the same in the two graphs, with metric and US measurement units displayed.

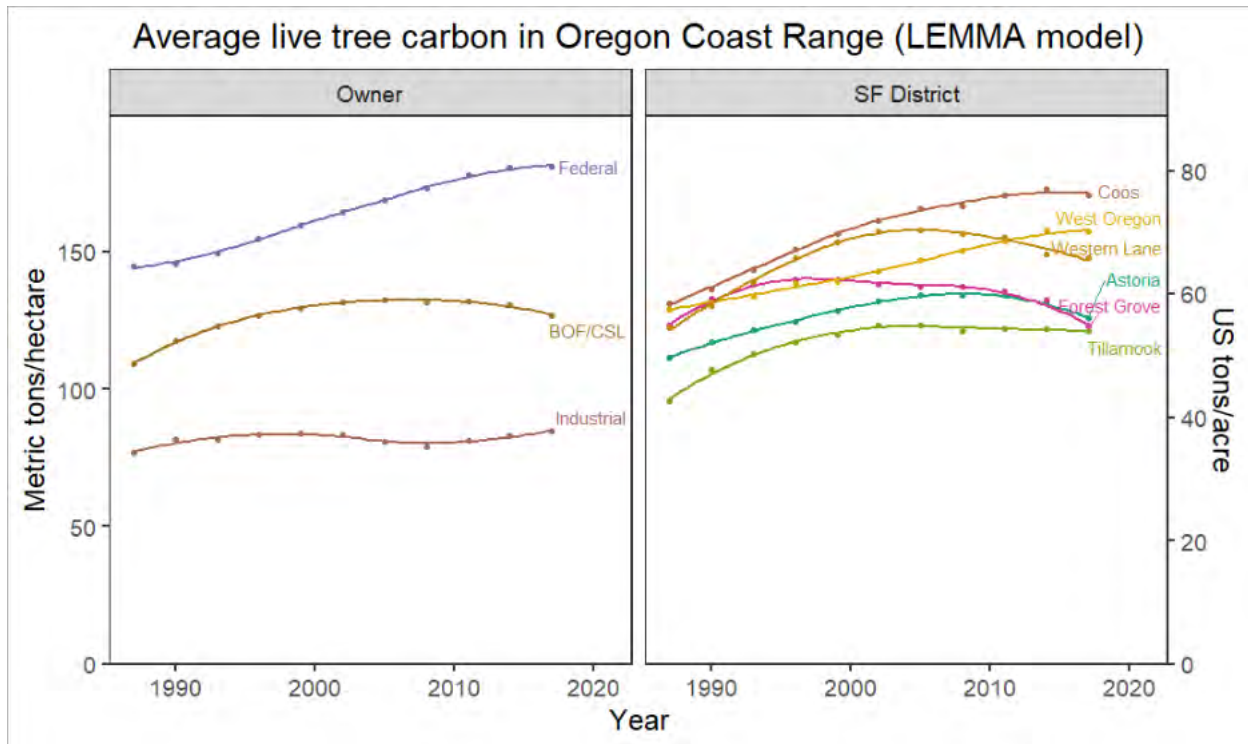


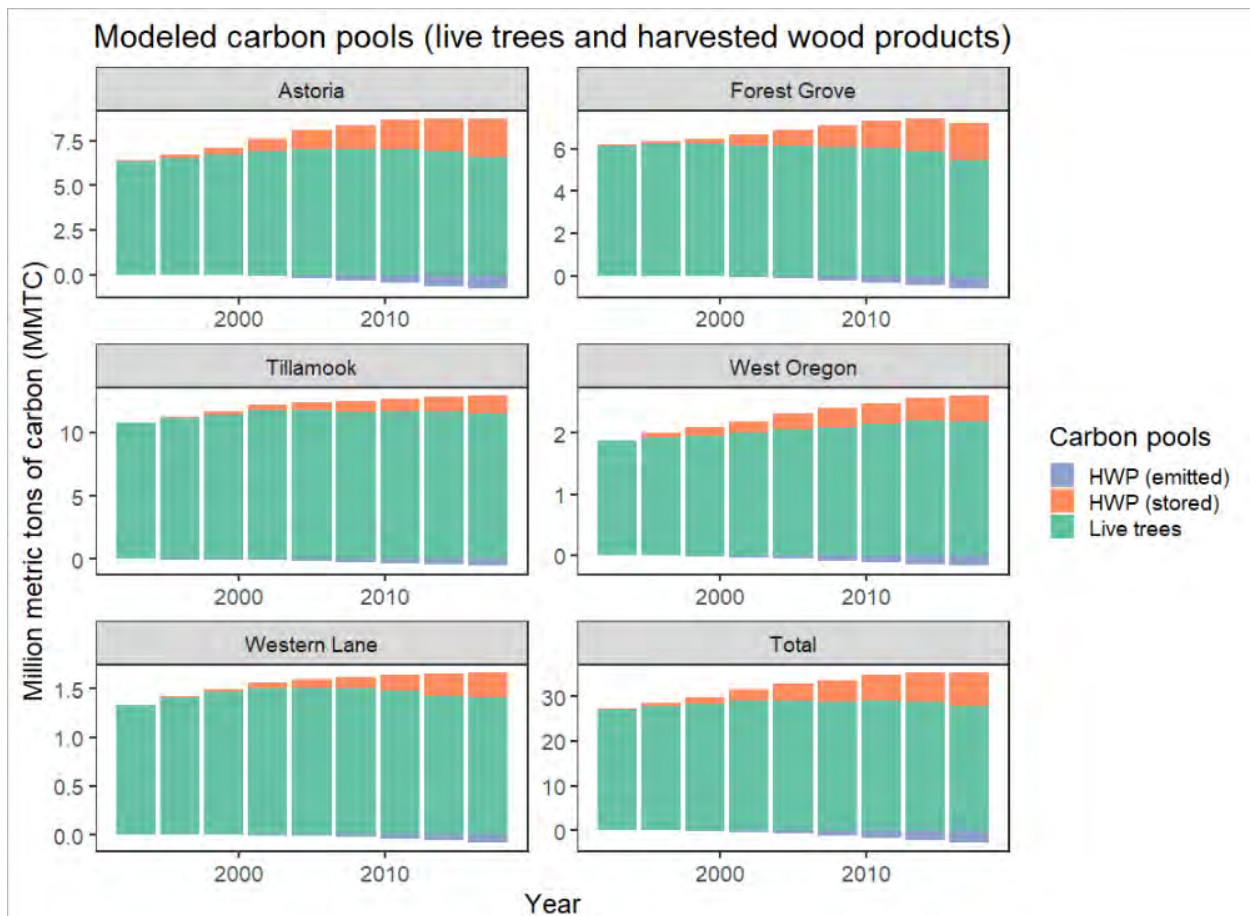
Table 3. Average carbon stored in live trees (US tons/acre) in forestland within the Oregon Coast Range region estimated by LEMMA in 2017 divided by ownership, State Forest district, and State Forest Landscape Design class.

By ownership	Average US tons/acre
Federal	80.7
Private (industrial)	37.7
BOF/CSFL	56.5
By State Forest district	
Astoria	56.1
Coos	76.1

Forest Grove	54.7
Tillamook	53.9
West Oregon	70.1
Western Lane	65.9
By Landscape Design (Desired Future Condition)	
General	52.5
Layered	59.3
Older Forest Structure	66.7

State Forests has scale data available to track the annual contribution of harvested wood products to carbon storage. Many county partners and stakeholders have emphasized the importance of including this component for accurate carbon accounting. The estimated long-term contribution of harvested wood products is sensitive to model assumptions about product longevity, emissions during harvests, and substitution multipliers from wood replacing nonrenewable resources. We do not include a full analysis including these factors. We plot trends for carbon stored in and emitted from harvested wood products in addition to live trees (Figure 3). Cumulative harvested wood products pools were modeled following Morgan et al. (2021). Live tree pools were estimated from LEMMA as described above.

Figure 3. Trends in carbon pools stored in live trees and harvested wood products (HWP) from State Forests within the Oregon Coast Range region. Results are shown from every third year, but pools are cumulative. Note different scales on the y-axes for each District.



Our current inventory underestimates the contribution of younger stands to carbon storage (Figure 4). The distribution of carbon storage by acre in the North Coast districts is similar, with Tillamook shifted lower corresponding with its lower reported average carbon storage (Figure 5).

Figure 4: Comparison of Stand Level Inventory (x-axis) versus LEMMA (y-axis) estimates of average carbon stored (tons/acre) summarized by stand shows that SLI does not account for carbon accurately on stands with recent harvests.

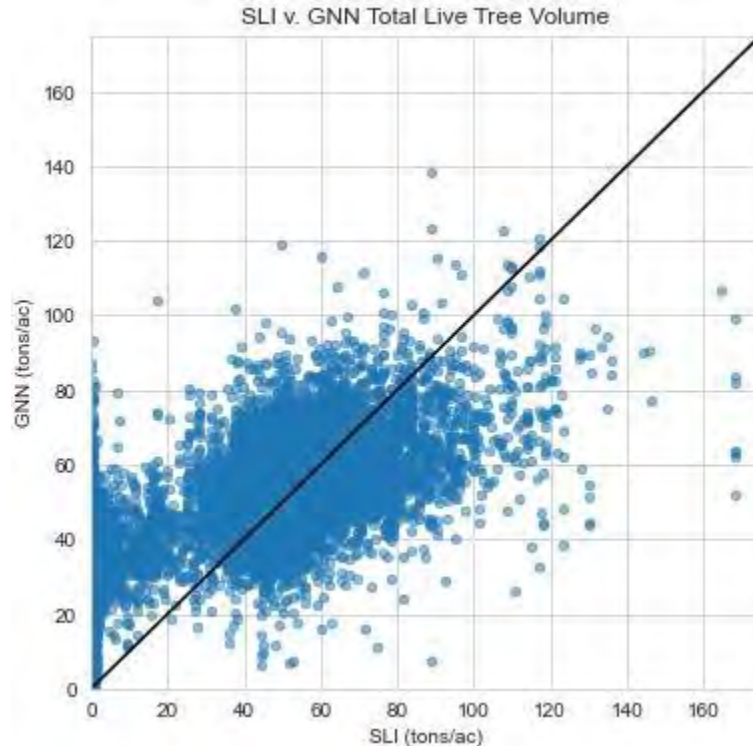
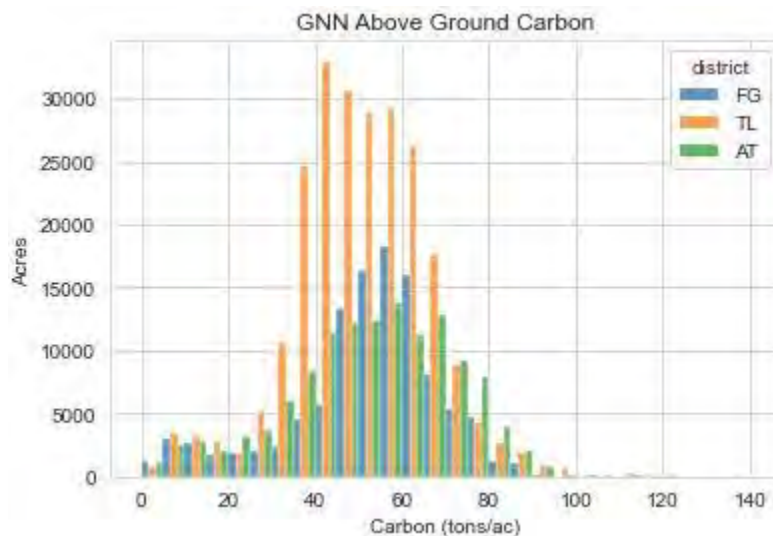


Figure 5. Distribution of LEMMA estimates of average carbon stored in live trees (tons/acre) on stands in State Forest districts in the North Coast.



Planned monitoring updates: The Division's Forest inventory system, Stand Level Inventory has been in place since 2000. SLI was designed to provide key information pertaining to stand structure for management decisions. However, trends estimated from SLI are unreliable as new surveys, new imputations (i.e., stand metrics used for missing data), and harvests change the underlying

data with each annual update. SLI also does not track important metrics, such as the contribution of younger stands, leave trees, and riparian buffers to carbon storage.

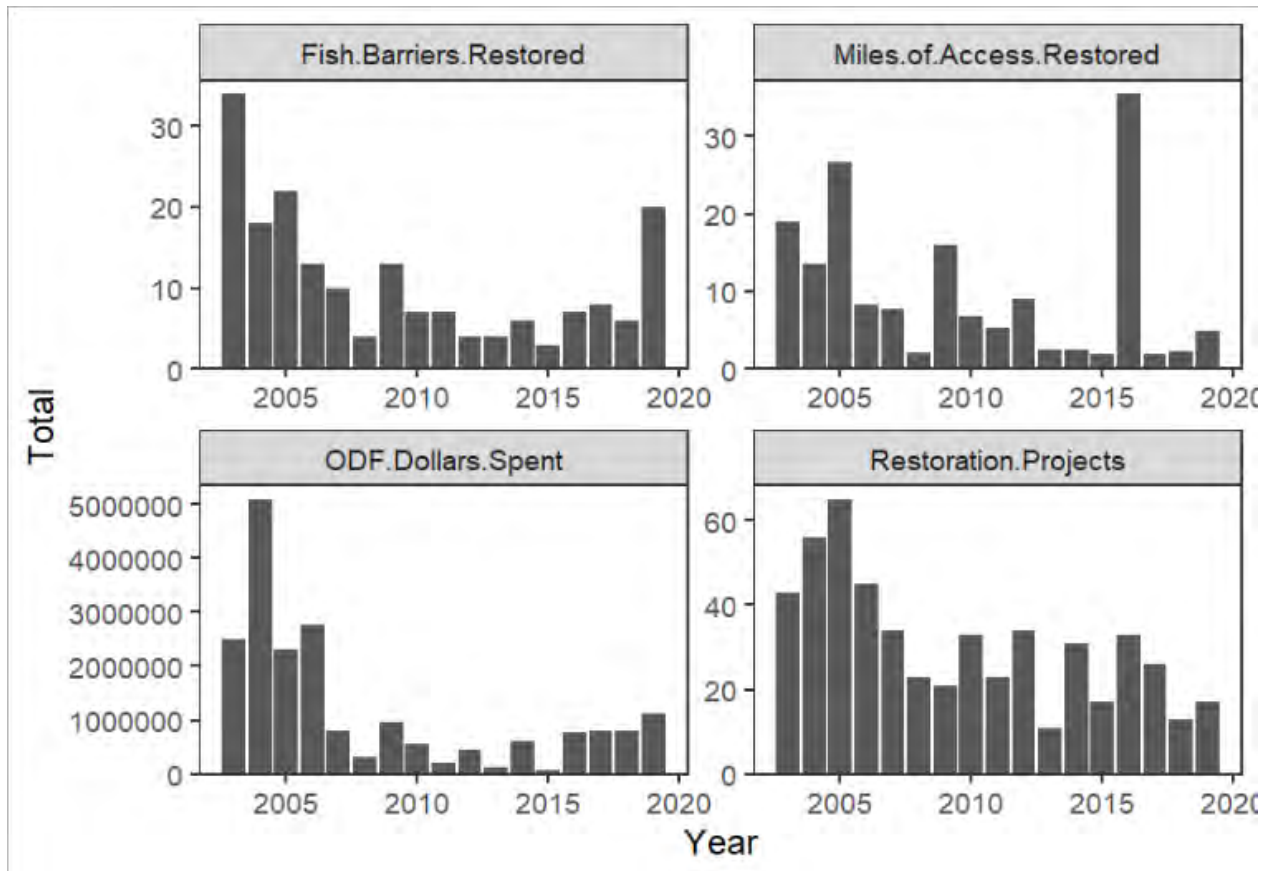
The Division is currently developing a new inventory system to replace SLI based on advances in technology and inventory methods. Starting in 2020 the Division entered into a cooperative agreement with the United States Forest Service Pacific Northwest Research Station and Region 6 to collect densified (three times the typical density) FIA plots across State Forests ownership. Ten percent of the densified plots will be remeasured annually consistent with the FIA national grid. In tandem, Lidar (light detection and ranging) data was collected across the North Coast forest lands. Lidar, coupled with FIA data, will provide a basis for the new wall-to-wall forest inventory system where statistical models from ground plots and remote sensing data can make spatially precise (20x20-meter) estimates of forest attributes. The new system is in active development and will roll-out over the next year to provide more accurate information on forest growth, change, carbon, and other forest biometrics over time. Moving from a stand-based inventory to one that can provide finer-scale estimates of forest biometrics will enable analysis at more meaningful scales for harvest operations, habitat modeling, and carbon accounting.

Aquatic and Riparian

The 2013 aquatic performance measure reported on hydrologic connectivity of the road network and barriers to fish passage. It was based on road and watershed surveys conducted in the 2000s. At that time, surveys by watershed documented that on average 15% of roads (range = 8.7-19.8%) were connected to streams and approximately 4.7% of stream crossings (range = 3.5-9.7%) did not provide adequate fish passage.

Restoration projects: State Forests tracks the implementation of restoration projects through reporting to the Oregon Watershed Enhancement Board. From these data, State Forests had a larger program pre-Recession with spending averaging \$3.2 million annually from 2003-2006 compared to an annual average of \$584,000 from 2007-2019 (range \$87,000-\$1.1 million). The annual number of projects and number of fish barriers restored generally tracks this decline (Figure 6). The decline may not only be attributed to spending levels; the benefits of restoration projects, such as miles of access restored for fish, may accumulate more slowly after the most immediate opportunities were completed at the beginning of the reporting period. Over the last 10 years of reporting (2010-2019), State Forests has averaged 23.8 restoration projects, 7.2 fish barriers restored, 5.4 instream wood projects, 10.1 miles treated, and 296 trees donated annually.

Figure 6: ODF State Forests annual aquatic restoration activities reported to the Oregon Watershed Enhancement Board across all districts.



Planned monitoring updates: In general, State Forests has tracked implementation of projects but not the effectiveness of restoration on the desired outcomes in aquatic and riparian systems. If adopted, the draft HCP expands both the implementation and effectiveness monitoring in service to the covered aquatic species. As an example of current monitoring, the resource support unit has started monitoring riparian forests in the Santiam State Forest with experimental treatments to track post-fire vegetation changes. Across sites with different burn severity, we are measuring the response of forest structure, downed wood, tree seedlings, and native and nonnative understory plants. Treatments include underplanting with tree seedlings, planting native riparian shrubs, and no management. Results will enable adaptive management of riparian buffers when the goals after stand-replacing disturbances may include long-term delivery of wood into streams for fish habitat and reestablishing canopy cover to lower water temperatures and inhibit invasive plants.

Social Measures

Volume by county: Timber harvest levels on Board of Forestry lands ranged from 236,035 to 315,224 thousand board feet annually (reported by fiscal year; FY) in 2016-20 (Table 4). There is annual fluctuation of harvest levels at the district level based on a variety of factors such as market conditions and threatened and endangered species surveys. Volume harvested by county is reported in the Council of Forest Trust Land Counties annual report.

Table 4. Timber volume harvest (in thousand board feet) by county over five years reported in the FY 2021 CFTLC Annual Report.

County	2016	2017	2018	2019	2020
Benton	1,210	7,139	3,590	4,699	4,058
Clackamas	104	3,019	3,225	805	2,124
Clatsop	89,503	103,963	113,528	62,896	89,826
Columbia	5,642	4,615	2,887	7,968	619
Coos	2	0	0	0	0
Douglas	2,440	2,846	3,196	727	1,913
Josephine	17	266	982	663	68
Klamath	5,947	9,560	15,130	11,233	4,721
Lane	357	14,757	11,919	15,727	17,229
Lincoln	7,208	4,544	13,662	6,842	5,708
Linn	8,042	14,285	14,948	16,733	3,811
Marion	6,286	7,829	5,096	16,547	1,728
Polk	0	0	0	0	2,578
Tillamook	79,074	80,237	86,216	100,292	84,635
Washington	30,204	11,362	40,846	52,073	19,328
Total	236,035	264,421	315,224	297,202	238,345

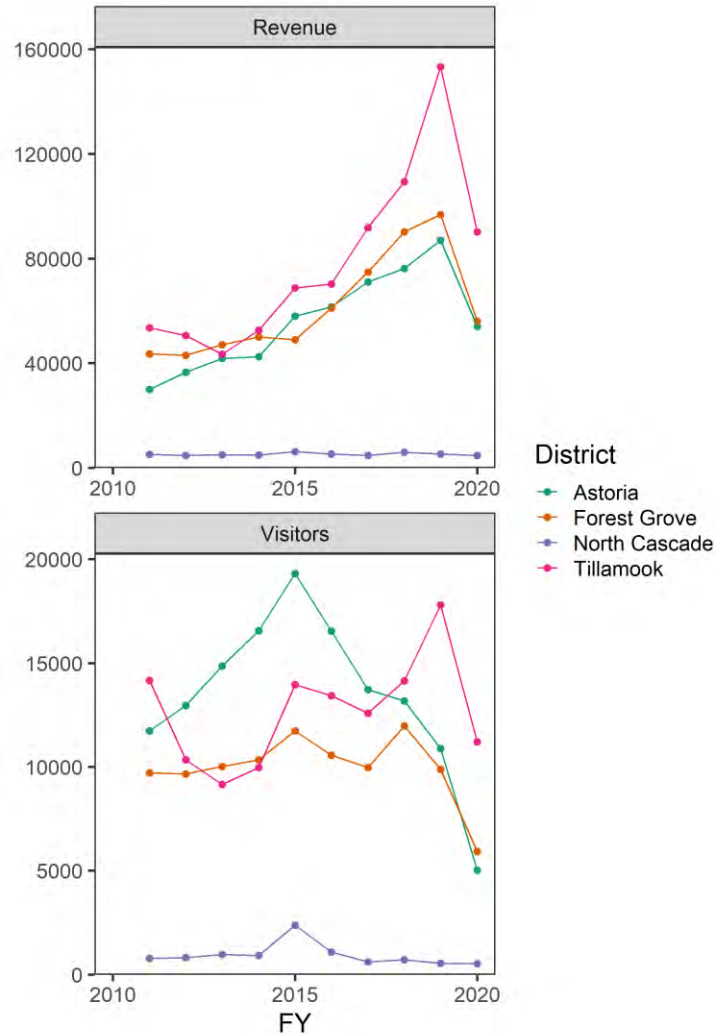
County payments: Annual direct revenue transfers to counties ranged from \$58,991,928 to \$86,909,447 between 2016-2020 (Table 5). The 5-year average of \$71,220,909 is about 22% above the 10-year average of \$58,140,495 unadjusted for inflation. Direct transfers by county are reported in the Council of Forest Trust Land Counties annual report.

Table 5. County revenue distribution from Board of Forestry lands over 5 years reported in the FY 2021 CFTLC Annual Report.

County	2016	2017	2018	2019	2020	5-year Avg	10-year Avg
Benton	\$312,326	\$1,968,994	\$750,958	\$1,657,137	\$1,307,952	\$1,199,473	\$767,975
Clackamas	\$64	\$549,755	\$618,091	\$407,008	\$707,198	\$456,423	\$491,587
Clatsop	\$24,742,787	\$22,917,872	\$32,267,665	\$19,648,613	\$22,721,180	\$24,459,623	\$19,120,245
Columbia	\$1,695,005	\$1,353,273	\$970,033	\$2,847,908	\$376,759	\$1,448,596	\$832,663
Coos	\$0	\$0	\$54	\$0	\$35,878	\$7,186	\$32,132
Douglas	\$632,281	\$440,158	\$791,755	\$224,770	\$269,661	\$471,725	\$330,835
Josephine	\$2,315	\$34,391	\$42,279	\$501,547	\$4,479	\$117,002	\$61,515
Klamath	\$1,004,754	\$673,174	\$2,494,103	\$1,598,383	\$1,147,919	\$1,383,667	\$1,388,379
Lane	\$348,971	\$3,441,408	\$4,510,877	\$4,858,633	\$5,574,416	\$3,746,861	\$3,223,293
Lincoln	\$1,692,088	\$1,180,473	\$4,081,104	\$1,853,335	\$1,503,690	\$2,062,138	\$1,593,377
Linn	\$2,231,016	\$4,479,228	\$3,989,617	\$5,862,207	\$3,289,057	\$3,970,225	\$3,318,421
Marion	\$647,555	\$2,759,790	\$1,145,705	\$8,580,099	\$539,281	\$2,734,486	\$1,944,003
Polk	\$63	\$2,342	\$72,031	\$22,493	\$632,096	\$145,805	\$156,492
Tillamook	\$17,728,557	\$15,470,474	\$17,336,819	\$24,743,274	\$22,230,409	\$19,501,907	\$15,536,989
Washington	\$9,069,513	\$3,720,597	\$11,820,105	\$14,104,040	\$8,864,702	\$9,515,791	\$9,342,588
Total	\$60,107,296	\$58,991,928	\$80,891,196	\$86,909,447	\$69,204,677	\$71,220,909	\$58,140,495

Recreation, Education, and Interpretation (REI): The recreation program is growing in number of users of camping facilities, excluding pandemic-impacted FY 2020 (Figure 7). Camping averaged 41,000 visitors and \$249,000 revenue per year for FY 2015-19, compared to 35,700 visitors and \$139,000 revenue per year for FY 2011-14. The number of recreational trail users is unknown but assumed to be growing similarly.

Figure 7. Camping revenue and number of registered visitors by fiscal year in four districts.



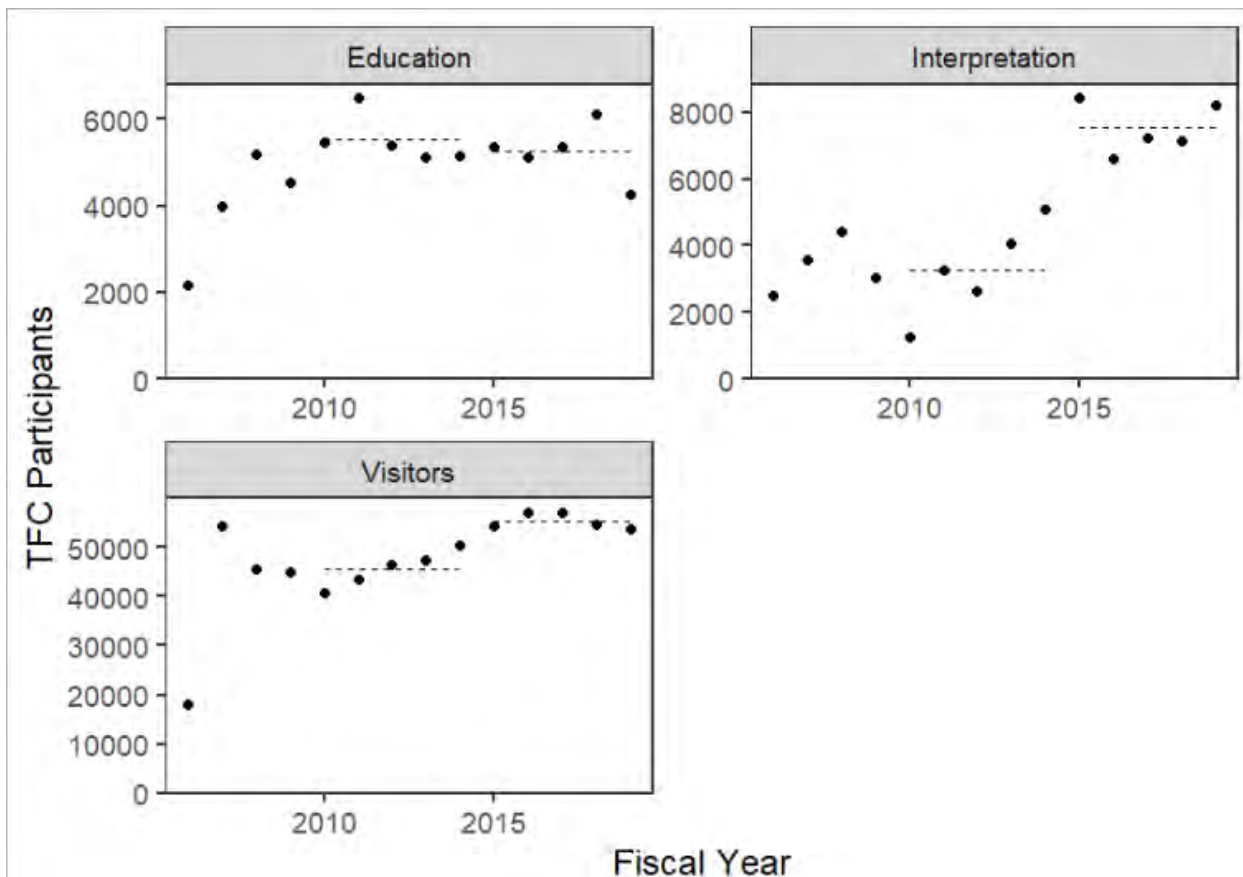
Miles of new trail construction, included in annual reports, intends to measure how districts improve recreation infrastructure during implementation plan time periods (Table 6). However, total trail mileage is not expected to grow each year and may decrease if maintenance or decommissioning of trails may bring greater improvement (e.g., safety or connectivity) to a trail network.

Table 6. Recreation trail construction miles by district and implementation plan timeframe.

	Astoria		Forest Grove		Tillamook		North Cascade		West Oregon		Total
	2003-2010	2011-2020	2003-2010	2011-2020	2003-2008	2009-2020	2003-2010	2011-2020	2003-2011	2012-2020	
OHV Trail Construction	8	11.2	7.6	31.2	4.3	20.1	21	0	0	0	103.4
Non-Motorized Trail Construction	11.5	0	20.15	5.83	9.2	1.3	15.7	2	2.25	0	67.93
Total	19.5	11.2	27.75	37.03	13.5	21.4	36.7	2	2.25	0	171.33

Education and Interpretation programming is growing at the Tillamook Forest Center (Figure 8). The number of visitors to the TFC grew from an annual average of 46,000 from FY 2010-14 to 55,000 from FY 2015-19. The number of participants in interpretive programs grew from an annual average of 3,270 in FY 2010-14 to 7,500 in FY 2015-19. The number of participants in education remained stable at an annual average of 5,520 in FY 2010-14 and 5,240 in FY 2015-19.

Figure 8. Tillamook Forest Center annual number of education program participants, interpretation program participants, and visitors with dashed lines showing 5-year averages for comparison. Pandemic-impacted years (FY2020-21) not included.



The REI program is developing a visitor use data and survey methodology as a next step for monitoring visitor use levels. These data will inform future recreation resource decisions, and additionally provide important information for future adaptive management strategies. A pilot project on visitor use at the Black Rock Mountain biking trail network on the West Oregon District is under development with University of Washington and Oregon State University researchers.

References

Morgan TA, Donahue TS, Dillon T, Yost A, Groom J. 2021. Oregon Harvested Wood Products Carbon Inventory 1906 – 2018. Technical Report completed by Bureau of Business and Economic Research, Univ. of MT. for Oregon Department of Forestry. Report available at: <https://www.oregon.gov/odf/forestbenefits/Documents/oregon-harvested-wood-products-carbon-inventory-report.pdf>

RECOMMENDATION

Information only.

STAFF REPORT

Agenda Item No.:	6
Topic:	Forest Trust Land Advisory Committee
Presentation Title:	FTLAC Testimony to the Board of Forestry
Date of Presentation:	November 3, 2021
Contact Information:	David Yamamoto, Tillamook County Commissioner John Sweet, Coos County Commissioner

On behalf of the Forest Trust Land Advisory Committee (FTLAC), comments and additional information provided on State Forest Lands business.

STAFF REPORT

Agenda Item No.:	7
Work Plan:	State Forests Work Plan
Topic:	State Forests Management
Presentation Title:	State Forests Draft HCP and FMP Overview
Date of Presentation:	November 3, 2021
Contact Information:	Liz Dent, State Forests Division Chief (503) 945-7351 Liz.F.Dent@Oregon.gov Cindy Kolomechuk, HCP Project Lead (503) 945-7731 Cindy.Kolomechuk@Oregon.gov Kate Skinner, Tillamook District Forester (503) 815-7001 Kate.J.Skinner@Oregon.gov

CONTEXT

In October 2020, the Board of Forestry (Board) directed the State Forests Division (Division) to finalize development of an Administrative Draft Western Oregon State Forests Habitat Conservation Plan (draft HCP) and begin the National Environmental Policy Act (NEPA) process. The Board also directed the Division to develop a draft Western Oregon State Forests Management Plan (draft FMP), that would use the draft HCP as its mechanism for compliance with the federal Endangered Species Act (ESA). The draft FMP is needed to articulate the complete integrated forest management approach for state forest lands.

In November 2017, the Board approved a 3-phase approach to explore the possibility of a Western Oregon HCP:

- Phase 1: HCP Initiation/Scoping (*Timeline: Nov. 2017 - Nov. 2018*)
- Phase 2: Strategy Development (*Timeline: Nov. 2018 - March 2020*)
- Phase 3: National Environmental Policy Act (NEPA) analysis and consultation (*Timeline: March. 2020 - Feb. 2023*)

The Division presented the deliverables of Phase 1 for Board consideration in November 2018, which included a business case analysis designed to evaluate potential financial implications resulting from an HCP as compared to the current FMP. The results provided a *relative* evaluation of potential outcomes if the Division continues to manage without an HCP as compared to with an HCP. Based on this work, the Board directed the Division to move into Phase 2: Strategy Development and Stakeholder Engagement.

Since November 2018, the Division collaborated with our state and federal sister agencies as well as our county partners, Tribes, interested stakeholders and members of the public to develop the draft HCP. The Division also completed a draft take-avoidance FMP for Board consideration in April 2020. Development of a draft take-avoidance FMP has been paused indefinitely.

In October 2020, the Division presented the draft HCP to the Board for the decision on whether to move the HCP to Phase 3: NEPA Analysis. At this time, the Board unanimously voted to direct staff to move to Phase 3: NEPA Analysis and

consultation. Specifically, the Board directed staff to complete the [draft Western Oregon State Forests HCP](#) and complete the NEPA process.

The Division was awarded three \$1 million (\$750,000 federal, \$250,000 match) USFWS Technical Assistance grants to support the work completed on the HCP to date. The most recent grant, awarded September 2021, will be used to support the NEPA process. It is anticipated that the NEPA process and the draft FMP will be complete in winter 2022. In spring 2023, the Division will bring the fully vetted HCP and draft FMP to the Board for consideration and decision (see *Working Project Timelines*; Attachment 1). While the Board and Division continue to work on these overarching forest management policies, the Division will continue operating under the current Forest Management Plan.

BACKGROUND AND ANALYSIS

All landowners must comply with the ESA. Currently the Division complies with the ESA through a process called take-avoidance. State forest lands are managed in alignment with the current Forest Management Plan (FMP). Habitat is evaluated operation-by-operation and we conduct costly surveys for listed species. If a listed species is detected, operations plans are either modified or may have to be dropped. Without an HCP, management activities are subject to new listings or changed federal conservation standards – placing additional uncertainties for future management activities.

An HCP is a programmatic ESA compliance tool involving an agreement between the Department of Forestry, the United States Fish and Wildlife Service (USFWS) and NOAA Fisheries that provides a holistic approach to complying with the Federal Endangered Species Act. The HCP establishes long-term commitments (70-year) to conservation and provides long-term assurances that forest management will continue, under a set of agreed upon conservation measures throughout the life of the HCP.

The draft HCP covers 639,489 acres of state forestlands west of the Cascades. The majority of these lands (96% or 613,734 acres) are owned by the Board, and the remaining 4% (25,755 acres) are Common School Forest Lands (CSFL) owned by the State Land Board. The draft HCP does not include the CSFL in the Elliott State Forest.

WESTERN OREGON HCP UPDATE

Since our last update to the Board in June 2021, the Division has completed an internal operational review of the draft HCP. This review resulted in language clarifications as well as some modifications to the draft HCP. The Scoping Team and Steering Committee have reviewed and agreed upon the operational edits. The substantive changes can be found in Chapter 3: Covered Activities and Chapter 4: Conservation Strategy, which are described below. The complete list of edits is provided in the *Summary of Key Draft HCP Changes from March 2021* (Attachment 2).

Chapter 3 – Covered Activities

1. Removed herbicide application as a covered activity.
 - a. ODF is continually improving its management practices to minimize impacts to fish and wildlife, water quality, and public safety—including the use and application of herbicides.
 - b. ODF anticipates future improvements in both application strategies and safer, more effective chemicals becoming available for activities such as young stand management and controlling invasive species.
 - c. ODF will rely on other planning processes, including the Forest Management Plan, Implementation Plans and Annual Operations Plans, to facilitate adjustments to herbicide use, as safer and more effective chemicals and technological advancements become available.
 - d. As ODF continues working on forest management policies there will be continued opportunities for input from our Forest Trust Land Advisory Committee (FTLAC) partners, Tribes, and the public.
 - e. ODF will continue to evaluate herbicide use and remains open to amending the HCP to include herbicide application at a future date.
2. Updated information on roads, including a provision to clarify that vacating existing roads will only occur when it is ecological beneficial to do so.
3. Describe landings and water drafting as road-related activities, rather than stand-alone activities.
4. Updated information on quarries, borrow sites, and stockpiles to reflect activities more accurately in the field.
5. Updated description of water drafting.
6. Continued coordination with ODF staff and federal agencies on standards for implementing recreation infrastructure.

Chapter 4 – Conservation Strategy

1. Conservation Action 8 – Management Outside Habitat Conservation Areas (HCAs)
 - a. Standardize the definition of dispersal habitat for Northern Spotted Owls across the document.
 - b. Updated leave tree, snag, and downed wood standards to provide clarity during implementation.
2. Conservation Action 10 – Operational Restrictions
 - a. Clarified requirements for aquatic restoration activities in designated occupied marbled murrelet habitat.
 - b. Clarified and narrowed scope of requirements for trash management.
 - c. Clarified requirements for seasonal restrictions, inside and outside of HCAs, for northern spotted owl, marbled murrelet, and red tree vole.
 - d. Added standards and metrics for water drafting to minimize effects on stream flow and temperature.
 - e. Revised standards for trash management to focus them on designated occupied marbled murrelet habitat.

NEPA UPDATE

ODF continues to support NOAA Fisheries and the USFWS (the Services) to complete the NEPA process. As the applicant, ODF has hired a third-party consultant (ICF) to lead the technical project work, complete required analyses, and engage the public. Part 1: Public Scoping is complete. The Services are in the process of completing Part 2: development of the draft Environmental Impact Statement (EIS) and stakeholder engagement. It is anticipated that the draft EIS will be available in February 2022 (*Working Project Timelines*; Attachment 1). Once the draft EIS is complete, the NEPA team will continue to Part 3: Final EIS. A summary of these tasks is provided below. ODF remains engaged as the applicant to assist as necessary and will provide regular updates to the Board throughout the process.

NEPA Part 1: Scoping - Complete

Public Scoping is a process for determining the scope of issues for analysis in an EIS. The Scoping process includes identifying the purpose and need, alternatives to the proposed action (which is the Western Oregon State Forests Draft HCP), and the environmental resource topics needed to be analyzed in the EIS.

NOAA issued a notice of intent (NOI) to prepare an EIS on March 6th, 2021, which launched the Public Scoping Process. This period typically lasts 30 days, but ODF requested and was granted a two-week extension to ensure that the public had an opportunity to review the HCP and provide informed feedback. Public input informs potential alternative actions, relevant data and information to consider, and issues to analyze in the EIS. Ultimately, the lead agency (NOAA Fisheries) determines the scope of the EIS including which alternatives will be analyzed and which are dismissed; which resource issues will be analyzed and which environmental resource topics are dismissed; and any connected actions that will be considered. The scoping process culminates with clearly defined alternatives and a detailed scope of issues to be analyzed in the EIS. At this point any additional analyses or data can be developed to support the EIS analyses. The information obtained during scoping will be used to inform the scope of work for the draft EIS.

NEPA Part 2: Draft EIS - Current

The draft EIS will describe the Proposed Action (draft HCP), no-action alternative (baseline for comparison) and any action alternatives developed from the Public Scoping process. For each of the environmental resources analyzed, the draft EIS will describe the existing conditions for the resource and potential impacts of the proposed action and alternatives on that resource. The Administrative Draft EIS will be reviewed by the Services (and potentially in part by others as determined by NOAA Fisheries).

The Notice of Availability of the draft EIS and draft HCP will be published in the *Federal Register*, which will launch the public review and comment period (45-60 days). It is anticipated that this review period will begin in February 2022. At this time, ODF will submit Incidental Take Permit Applications to NOAA Fisheries and the USFWS for consideration. One or more public meetings will be held during this period and comments will be accepted on the draft EIS and the draft HCP.

The Services and ODF will review and provide responses to all public comment. ODF and the Services will also discuss any potential modifications to the Proposed Action, based on comments received. ODF will present a summary of public comments to the Board in April 2022, including any potential recommendations to modify the Proposed Action. Changes to the Proposed Action will require Board approval.

NEPA Part 3: Final EIS- May- December 2022

The EIS will be updated to reflect any potential changes to the Proposed Action, as directed by the Board of Forestry, and in consultation with the Services. The final EIS will include a description of the public review and comment period and a summary of updates between draft and final EIS. The final EIS will go through the same internal reviews as the draft EIS. The Notice of Availability of the final EIS and final HCP will be published in the *Federal Register*. This launches a 30-day waiting period during which comments may be submitted on the final EIS. These comments will be reviewed by the Services, but no response is required. The agency decision document (Record of Decision) will be published after this 30-day period and prior to the permit decision. At the close of the project, ICF will provide all the project files to NOAA to inform the Administrative Record.

DRAFT WESTERN OREGON STATE FORESTS MANAGEMENT PLAN UPDATE

The draft FMP is being developed concurrent with the NEPA process. Since the June 2021 Board of Forestry meeting informational update, the project team has focused on the draft FMP Guiding Principles, goals, solidifying the overall planning framework, and preparing for modeling to support the development of an outcomes analysis. More information on each of these components is provided below.

Guiding Principles

A set of guiding principles were adopted by the Board in 2018 as part of an earlier process to revise the FMP ([draft revised FMP](#)). The draft revised FMP in its entirety, was not approved by the Board, but was entered into the [record in April 2019](#).

Guiding principles outline important values that guide the development of the FMP. As part of this current process to develop a draft FMP, the Division conducted a comprehensive review of the guiding principles and recognized the need to update the language in principles 2, 3, 4 and 9, as well as the supporting narratives for several of the principles. These updates are shown in *Guiding Principle Revisions* (Attachment 3).

FMP Planning Framework

The Division's planning framework establishes relationships between the draft FMP and other agency-level planning and interagency planning efforts. The diagram below captures and describes the planning framework for the draft FMP and related State Forests planning levels.

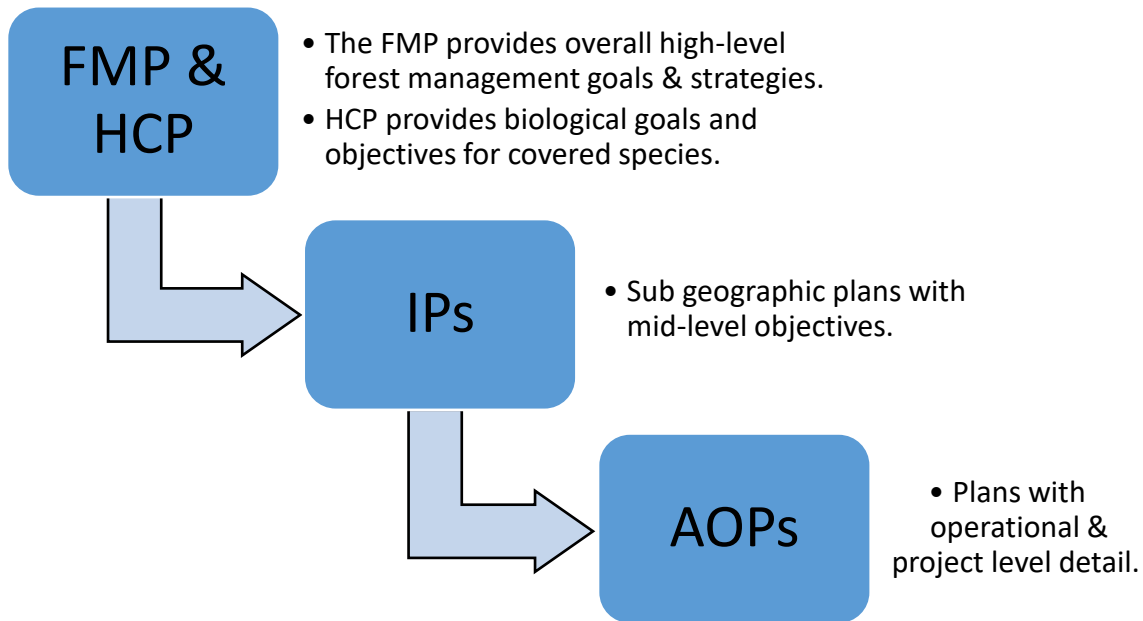


Figure 1. Hierarchy of the three types of plans used for the management of State Forests.

FMPs provide the overarching management direction for State Forests and are formally adopted into Oregon Administrative Rule (OAR) by the Board of Forestry to codify that management direction meets Greatest Permanent Value. FMPs contain resource assessments, resource goals, strategies for achieving those goals, and guidelines for asset management, implementation and adaptive management.

Implementation Plans cover a longer timeframe (10 year) and larger spatial scale (district or multiple district) than Annual Operations Plans. Implementation Plans characterize physical and biological landscape conditions, annual harvest objectives, reforestation targets, human uses, and considerations for threatened and endangered species. Implementation Plans describe mid-term expectations for forest conditions associated management activities and expected outcomes. Implementation and Operation Plans characterize protection and management for forest resources, identify district monitoring projects, and describe public engagement. Annual Operation Plans describe specific activities that will be carried out at smaller spatial (e.g., stand or watershed) and temporal scales (1-3 years) to achieve expected outcomes.

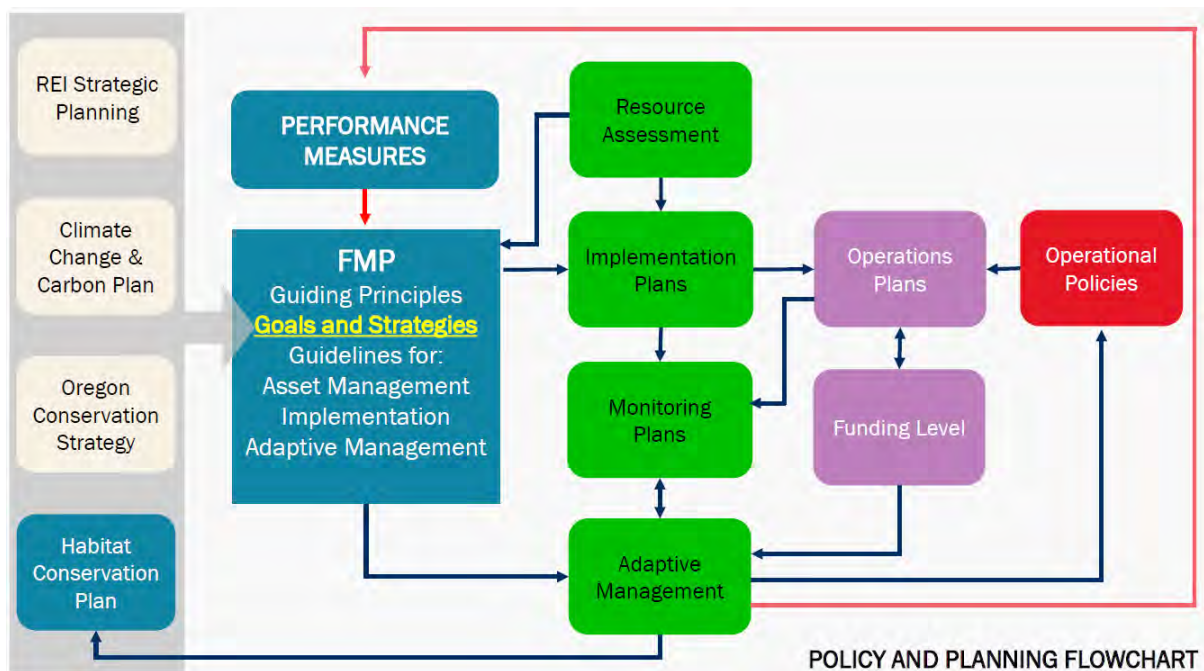


Figure 22. State Forests management policy and planning flowchart.

Figure 2 shows more detail on the interrelationships and feedback loops among the FMP, IP and AOP planning levels, as well as how external plans and processes influence the FMP. Several external plans contribute, to varying degrees, to the breadth of resources addressed, the goals that are set, and the strategies in the draft FMP. Examples of these external influences are displayed in the diagram including the Recreation, Education and Interpretation Program strategic planning, the Climate Change and Carbon Plan, the Oregon Conservation Strategy and the draft HCP.

ODF's Recreation, Education and Interpretation Strategic Planning will form the basis for the program's goals and strategies within the FMP. ODF's Climate Change and Carbon Plan, currently in development, will guide climate-smart forest management to provide forests that contribute to carbon storage and are resilient to the effects of climate change. The Oregon Conservation Strategy (OCS) is Oregon Department of Fish and Wildlife's overarching strategy for conserving native fish and wildlife. It provides information and tools that allow land managers such as ODF to further develop conservation strategies. The FMP strategies that respond to the OCS will be broader than the draft HCP conservation actions in both the assemblages of species addressed and the specificity of the strategies.

The conservation actions articulated in the draft HCP will be the management standards for the covered species in the draft FMP and incorporated into the draft FMP by reference. The conservation actions and standards will be the fundamental underpinning for conservation of covered species and their habitat. The draft HCP will also contribute to conservation of other native fish and wildlife that are associated with similar terrestrial and aquatic habitat as the covered species.

Implementation Plans, Monitoring Plans and the Adaptive Management Plan (green boxes in Figure 2) will all flow from the FMP goals and strategies, and Annual Operations Plans (purple box in Figure 2) will in turn be used to fulfill Implementation Plan objectives.

While the FMP sets certain management standards, primarily associated with resource protection, there are many instances where different management options exist to achieve FMP goals and IP objectives. Operational policies (red box in Figure 2) guide decisions within this range of options by defining specific procedures and best management practices that allow for management flexibility while ensuring sound management and resource protection.

Most importantly, performance measures will be developed in collaboration with the Board that contain specific metrics and targets that will demonstrate progress toward FMP goals. While the performance measures will not be the only metrics monitored under the FMP, they provide the essential “dashboard” for the Board of Forestry and others to track progress and to maintain accountability for management commitments.

FMP Goal Development

Taken together these 22 goals are intentionally broad, establish the overarching aim for securing greatest permanent value, and provide direction for managing the forest. The draft goals were shared internally with staff prior to releasing them for external review and input. The goals were reviewed by leadership and staff from the Division and District Offices, and by our partner agencies including the Department of Environmental Quality (DEQ), Oregon Department of Fish and Wildlife (ODFW) and the Department of State Lands (DSL).

After the internal review the draft goals were shared with the Board of Forestry and the Forest Trust Lands Advisory Committee to kick off the external review process. The team developed an informal public survey to gauge the general level of support for each goal as drafted and to collect written comment. The team received 54 survey responses and over 530 comments on the draft goals. The draft goals, summarized feedback and revision suggestions based on the initial analysis of the comments are provided in *Draft FMP Goals, Feedback Themes and Revisions* (Attachment 4). Not all the necessary goal revisions have been made at the time of this report. The Division will continue to analyze the feedback received and make revisions in the coming weeks. In addition to the feedback summary the team prepared a spreadsheet and combined formal input (*FMP Draft Goal Comments*; Attachment 5 and *Draft FMP Goal Full Formal Written Comments*; Attachment 6) that contain the written comments received during the external review period. The draft goal comments are provided in a protected spreadsheet that can be filtered to areas of interest.

The team conducted several meetings to introduce and discuss the draft goals. These engagements included: a meeting open to the public in August, a joint stakeholder meeting in August, and a special FTLAC meeting in September. Staff also met with the FTLAC in October for a second discussion on draft goals prior to the November Board meeting.

The Forest Trust Lands Advisory Committee (FTLAC) is a statutorily established advisory committee to the Board (ORS 526.156). The Committee meets with Division staff on a

regular basis to receive information with which they form testimony for the Board. Over the past several years, a key focus has been the development of a new FMP.

The most recent focus has been on the draft FMP goals. Revisions were made to the draft goals provided in Attachment 4 based on feedback received at the September 17, 2021 FTLAC meeting. The draft goals related to timber production and forest carbon were revised, and a new goal which focuses on community well-being was added. FTLAC also presented portions of a life-cycle analysis from the Consortium for Research on Renewable Industrial Materials (CORRIM) to Division staff that demonstrated carbon benefits based on direct carbon storage in trees and harvested wood products, as well as the offset based on using wood products (e.g., mass timber) in lieu of more carbon intensive products (e.g., concrete and steel). The Division finds these engagements with the Committee to be extremely valuable and we look forward to continued engagement on the goals and future FMP content.

At their October 8, 2021 meeting, FTLAC continued to discuss the draft FMP goals. Members expressed deep concern over the draft goals, a sentiment that they aren't being heard, and that the current policy work of the Board and the Division threatens to steadily reduce both revenue for critical services and timber volume that supports forest sector jobs that these forests contribute to rural communities and counties. The Committee Chair prepared and presented a detailed review and input on the draft goals and shared the presentation with the Division (Attachment 7). Overarching feedback regarding the draft goals include but is not limited to:

- Make sure to always frame up the goals and our work in terms of securing greatest permanent value (GPV).
- There are too many goals. Drop goals if they don't have a linkage with resources identified in the GPV rule.
- Language in the draft goals should precisely reflect the language used in the GPV rule.

FMP Modeling

The Division will conduct additional modeling to produce more refined outcomes for the draft FMP within the context of the draft HCP. Modeling previously conducted for the draft HCP will continue to be used to support the NEPA process and HCP policy decision. It is important to note that NEPA analyses will not consider the complete set of FMP strategies or the same resolution around management outside of draft HCAs and RCAs. Draft FMP modeling will provide greater clarity for outcomes including, but not limited to: the flow of timber and revenue over time; the development of forest structure across the landscape and coarse filter habitat for native species not covered by the draft HCP; carbon sequestration and storage on state forest lands and in harvested wood products. Staff will develop a robust set of outcomes based on Board feedback on the draft FMP goals, especially considering metrics that the Board believes will serve as performance measures for goal achievement. Many goals (e.g., cultural goals, recreation and education goals) will not lend themselves to modeling outcomes; however, Board feedback on applicable metrics will still be of value in the development of performance measures for those goals.

Upcoming Work

The Division is now focused on FMP strategy development. The team will follow the same workflow and engagement process used for the goals, which is designed to ensure our county partners, stakeholders and the public have an early and active role in the development on the draft FMP. Staff will continue to develop and review strategies and expect to engage with stakeholders in October and with the county partners in December before bringing final draft strategies to the Board in March. Having a robust process for engagement does expand the amount of time needed to develop the plans but the team feels strongly that the benefits of this collaborative drafting approach are far-reaching.

Public and Stakeholder Engagement

In April and May 2021, Kearns & West conducted interviews with a cross-section of stakeholders to understand best practices and lessons learned from the past engagement process, as well as key concerns and suggestions heading into the FMP and IP development process. These stakeholder interviews provided an opportunity to better understand stakeholders' key interests, concerns, and perspectives as they relate to the FMP and IPs as well as understand how stakeholders prefer to be engaged throughout the process. Input from these interviews was used to develop the public and stakeholder engagement goals, and to shape the overall public and stakeholder engagement process.

The public and stakeholder engagement goals are to:

1. Fully inform county partners, Tribes, stakeholders, and the general public throughout the FMP and IP development process;
2. Provide county partners, Tribes, stakeholders, and the public with opportunities to engage and offer input at multiple levels throughout the process;
3. Better understand what Oregonians care about when it comes to forest management;
4. Ensure sister state agencies are engaged as an integral part of the process and are supportive of the HCP and FMP outcomes;
5. Provide clear expectations for how county partner, stakeholder, and public input will be used and integrated into the FMP and IP documents; and
6. Align engagement and outreach opportunities with related processes such as the HCP NEPA Process, Recreation, Education, and Interpretation (REI) Program Strategic Planning, Climate Change and Carbon Plan, and other ODF processes.

Meetings Open to the Public

To date, the Division has conducted two meetings open to the public and one Joint Stakeholder Meeting. The first meeting in May 2021 included an overview of the State Forest planning levels and how they integrate with the draft HCP, an introduction to the project, the working timelines, the vision for the public engagement process and a question-and-answer period to discuss topics of most interest to participants.

In August, the team held a meeting open to the public to introduce the draft FMP goals and to provide information on how to provide written comment. The team also covered the high-level project timeline and upcoming engagement opportunities. This was followed by the Joint Stakeholder meeting dedicated to discussing the draft goals. The team opened the meeting by providing context on the State Forest Planning Rule, the Greatest Permanent

Value Rule and then proceeded to discuss the draft goals the stakeholder group felt were most important to cover in the meeting. These meetings were very productive and provided the team with meaningful and actionable feedback to consider in the draft goal revision process.

All meetings were held via webinar due to COVID-19 concerns and safety precautions. The videos and meeting summaries for the meetings open to the public in May and August are available on the [FMP Website](#). The comments and feedback from the Joint Stakeholder meeting are included in the *FMP Goal Comments* (Attachment 5).

ODF notification methods to inform stakeholders and the public about the meetings included:

- Email distributions to interested parties;
- Posts on ODF social media including Facebook and Twitter;
- Meeting notice via FlashAlert;
- Posts on the ODF news site; and
- Posts on the Western Oregon FMP and IP Project Page.

RECOMMENDATION

Information only.

NEXT STEPS

Over the next several months, the Division will:

- Continue working with NOAA Fisheries and the USFWS to complete the NEPA process;
- Continue engaging with our state and federal sister agencies, as well as, the county partners, Tribes, interested stakeholders and members of the public on the HCP and draft FMP and IP development projects.

ATTACHMENTS

1. FMP and Related Planning Efforts Working Project Schedules
2. Summary of Key Draft HCP Changes from March 2021
3. FMP Guiding Principle Revisions
4. Draft FMP Goals, Feedback Themes and Revisions
5. FMP Draft Goal Comments
6. Draft FMP Goal Full Formal Written Comments
7. FTLAC Presentation October 2021

FMP and Related Planning Efforts Working Project Schedules

(last revised 10-4-2021)

Climate Change & Carbon Plan				BOF Pre-decision Workshop	Finalize	BOF Decision															
Habitat Conservation Plan										Finalize HCP											BOF Decision to Adopt HCP
NEPA Analysis	Complete Draft EIS								Public Comment	Draft EIS Summary to BOF	Complete Final EIS							Record of Decision			
FMP Content	Drafting										Draft Due										
FMP Modeling	Model Preparation					Calbration	Scenarios	Draft Outcomes Report													
FMP Rulemaking															Request to Enter Rulemaking	30 Day Public Comment	Incorporate Input				
FMP Public Engagement			8/10 Goal Intro & 8/18 Draft FMP Goal		10/12, 10/20, 10/22 Draft FMP Strategies		TBD		TBD		TBD		TBD		TBD		TBD		TBD		
FTLAC Engagment			8/27 - CCCP & FMP	9/17 - Draft Goals	10/8 - Draft Goals		12/3 - Draft Strategies		TBD		TBD		TBD		TBD		TBD		TBD		
BOF Plan	FMP Update		BOF Member Check-ins	<div>Draft Staff Report</div>		Guiding Principles, Draft FMP Goals & Engagement		<div>Draft Staff Report</div>		FMP Strategies, Engagement Update	<div>Draft Staff Report</div>		FMP Modeling Outcomes Analysis, Draft FMP, Engagement Update	<div>Draft Staff Report</div>		Final Draft FMP, IP Framework, IP Modeling, Engagement Update			<div>Draft Staff Report</div>		BOF Decision to Adopt FMP
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
	2021							2022											2023		

Western Oregon State Forests HCP

Summary of Key Draft HCP Changes from March 2021

The Oregon Department of Forestry (ODF) completed the administrative draft of the Western Oregon State Forests Habitat Conservation Plan (HCP) in March 2021. The completion of the administrative draft HCP allowed NOAA Fisheries and the U.S. Fish and Wildlife Service to begin the environmental review under the National Environmental Policy Act (NEPA). Since the completion of the administrative draft HCP ODF has completed an internal review process, which invited district staff to review the HCP to confirm the feasibility of implementation, should the HCP be approved. ODF has also continued to work with the Scoping Team to refine and clarify language in the HCP. There were some notable changes that resulted from the internal review and additional work with the Scoping Team. Those changes will be incorporated into Public Draft HCP, which will be released for public review during the NEPA process. The notable changes to the HCP between March 2021 and Sept. 2021 are as follows:

Chapter 1 – Introduction

- Updated species status tables.
- Added clarifying language on ODF's responsibilities when operating off ODF lands, in locations where access is governed by easements.

Chapter 2 – Environmental Setting

- Minor updates to add clarity and consistency of covered species information across the document.

Chapter 3 – Covered Activities

- Removed herbicide application as a covered activity.
- Updated information on roads, including a provision to clarify that vacating existing roads will only occur when it is ecological beneficial to do so.
- Describe landings and water drafting as road-related activities, rather than stand-alone activities.
- Updated information on quarries, borrow sites, and stockpiles to reflect activities more accurately in the field.
- Updated description of water drafting.
- Continued coordination with ODF staff and federal agencies on standards for implementing recreation infrastructure.

Chapter 4 – Conservation Strategy

- Conservation Action 8 – Management Outside HCAs
 - Standardize the definition of dispersal habitat for NSO across the document.
 - Updated leave tree, snag, and downed wood standards to provide clarity during implementation.
- Conservation Action 10 – Operational Restrictions
 - Clarified requirements for aquatic restoration activities in designated occupied marbled murrelet habitat.
 - Clarified and narrowed scope of requirements for trash management.

- Clarified requirements for seasonal restrictions, inside and outside of HCAs, for northern spotted owl, marbled murrelet, and red tree vole.
- Added standards and metrics for water drafting to minimize effects on stream flow and temperature.
- Revised standards for trash management to focus them on designated occupied marbled murrelet habitat.
- Clarified fuels management allowances in HCAs to protect long-term habitat objectives.

Chapter 5 – Effects Analysis

- Minor edits for clarity and consistency.

Chapter 6 – Monitoring and Adaptive Management

- Minor edits for clarity and consistency.

Chapter 7 - Assurances

- Minor edits for clarity and consistency.

Chapter 8 - Implementation

- Minor edits for clarity and consistency.

Chapter 9 – Cost and Funding

- Minor edits for clarity and consistency.

Chapter 10 – Alternatives to Take

- Minor edits for clarity and consistency.

Appendix I – Unstable Slopes Evaluation

- Updated for clarity and consistency, including revisions to figures.

Guiding Principles

The Oregon Department of Forestry is tasked with developing a vision for how Board of Forestry forests attain greatest permanent value (GPV) for the citizens of the state, as defined in statute and rule. Achieving GPV means providing a full range of social, economic and environmental benefits, and achieving a balance between short-term and long-term economic returns. The guiding principles presented here describe the rules, goals, and responsibilities that guide the planning process in order to achieve the described vision of the forest.

Greatest Permanent Value

The GPV Rule (OAR 629-035-0020) provides a management focus for the State Forester to maintain BOFL as forest lands and actively manage them in a sound environmental manner to provide sustainable timber harvest and revenues to the state, counties, and local taxing districts. This management focus is not exclusive of other forest resources, but must be pursued within a broader management context that:

- results in a high probability of maintaining and restoring properly functioning aquatic habitats for salmonids, and other native fish and aquatic life.
- protects, maintains, and enhances native wildlife habitats.
- protects soil, air, and water.
- provides outdoor recreation [and educational](#) opportunities.

The GPV Rule also requires that management practices must:

- pursue compatibility of forest uses over time.
- integrate and achieve a variety of forest resource management goals.
- achieve, over time, site-specific goals for forest resources, using the process as set forth in OAR 629-035-0030 through 629-035-0070.
- consider the landscape context.
- be based on the best science available.
- incorporate an adaptive management approach that applies new management practices and techniques as new scientific information and results of monitoring become available.

GPV means healthy, productive, and sustainable forest ecosystems that, over time and across the landscape, provide a full range of social, economic, and environmental benefits to the people of Oregon (ORS 530.050).

Guiding Principles

The Forest Management Planning rule (OAR 629-035-0030) identifies required elements for FMPs. Among these are “guiding principles that include legal mandates and Board of Forestry policies.” Taken together, and at the direction of the Board of Forestry, the guiding principles shall direct the development of the management plan including goals, strategies and measurable outcomes.

Principle 1

The Forest Management Plan will be grounded in the management mandates for Board of Forestry lands as expressed in the Greatest Permanent Value (GPV), Forest Management Planning OARs.

OAR Chapter 629, Division 35, Management of State Forest Lands, provides the foundation for the development of the FMP for BOF. Division 35 includes definitions, findings and principles associated with acquired lands, language defining GPV, and direction for the development of FMPs.

- The resources and values articulated in the OARs:
 - Sustainable and predictable timber harvest and revenues
 - Properly functioning aquatic habitats
 - Protection, maintenance, and enhancement of native wildlife habitats
 - Protection of soil, air, and water
 - Provision of outdoor recreation activities
 - Consideration of landscape effect
 - Protection from fire, disease, insects, and pests
 - Also mentioned: protection against floods and erosion, protection of water supplies, grazing, forage, and browse for domestic livestock, forest administrative sites, and mining leases and contracts
- The OARs direct that the FMP will include ~~the following~~ strategies that:
 - Contribute to biological diversity of forest stand types and structures at the landscape level and over time.
 - Apply silvicultural techniques that provide a variety of forest conditions and resources.
 - Conserve and maintain genetic diversity of forest tree species.
 - Manage forest conditions to result in a high probability of maintaining and restoring properly functioning aquatic habitats.
 - Protect, maintain, and enhance native wildlife habitats.
 - Recognize that forests are dynamic.
 - Provide for healthy forests by using an integrated pest management approach and utilizing appropriate genetic sources of seed.
 - Maintain or enhance forest soil productivity.
 - Maintain and enhance forest productivity by producing sustainable levels of timber.
 - Apply management strategies that enhance timber yield and value while contributing to the diversity of habitats for native fish and wildlife.
- The state forests are actively managed:
 - The rules require active management of state forests defined as “applying practices over time and across the landscape to achieve site-specific forest resource goals using an integrated, science-based approach that promotes the compatibility of most forest uses and resources over time and across the landscape.” This includes deliberate passive management as well as the active application of silvicultural prescriptions and other activities, in accordance with the future objectives and current characteristics of forest stands.

- The plans are to use an integrated management approach and pursue compatibility of uses over time and space:
 - Compatible means “capable of existing or operating together in harmony.” Integrated management means “bringing together knowledge of various disciplines (forestry, fisheries, [outdoor recreation](#), wildlife, and water) to understand and promote land management actions that consider effects and benefits to all.”
- The plans consider landscape context:
 - The rules direct that “landscape context” be considered. Landscape is defined as “a broad geographic area that may cover many acres and more than one ownership, and may include a watershed or sub-watershed areas.” Plans must contain “a description and assessment of the resources within the planning area and consideration of surrounding ownership in order to provide a landscape context.”
- The counties have a recognizable interest:
 - The rules include a Board finding that “the counties in which these forest lands are located have a protected and recognizable interest in receiving revenues from these forest lands; however, the Board and the State Forester are not required to manage these forest lands to maximize revenues, exclude all non-revenue producing uses on these forest lands, or to produce revenue from every acre of these forests lands.”
- The plans incorporate an adaptive management approach:
 - The rules direct that plans be based on the best science available, use monitoring and research to generate new information, and an adaptive management approach. Adaptive management means “the process of implementing plans in a scientifically based, systematically structured approach that tests and monitors assumptions and predictions in management plans and uses the resulting information to improve the plans or management practices used to implement them.”

Principle 2

State forests will be managed, conserved, and restored to provide overall [climate resilient](#) biological diversity of state forest lands, including the variety of habitats for native fish and wildlife and accompanying ecological processes. The GPV and Forest Management Planning rules are the Board's expression of providing conservation.

The GPV and Forest Planning rules include many attributes that are directly tied to providing conservation on Board of Forestry lands. These references include, but are not limited to, providing and restoring properly functioning aquatic systems; protecting, maintaining, and enhancing native wildlife habitats; contributing to biological diversity of forest stand types and structures at the landscape level and over time; and conserving and maintaining genetic diversity of forest tree species.

Principle 3

The plan will provide [sufficient](#) revenue to ensure ~~financial viability and sustain the values that support ODF's ability to manage, conserve and invest in the forest in order to provide~~ GPV.

The FMP will provide sufficient revenue to support the stewardship of these forest lands and achieve the blend of economic, social, and environmental benefits that comprise GPV. Financial viability is achieved over the long term through continued protection and management of the forest asset and over the short term with operational tools that ensure cash flow is available to the Division for sound management of state forests.

In the current business model, 98% of revenue is derived from timber sales and all BOF expenditures and revenues are managed in the Forest Development Fund. Expanding and diversifying revenue streams to support public benefits can increase long-term financial stability. ~~Services are prioritized based on funding availability, through tools including fiscal and biennial budgets, fiscal year operating plans, timber marketing, and AOPs. While revenues are cyclical,~~ Financial viability is achieved over the long term with business strategies that align anticipated funding availability with services that are prioritized by GPV. Several tools are used, including a business plan, business improvements, and financial metrics to assess future investments, revenue projections, IPs, the FMP, and risk management.

Principle 4

The plan will provide for a range of social benefits for all Oregonians, including direct and indirect financial contributions to local and state governments, ecosystem services, opportunities for public access and recreational use, support for diverse local employment opportunities, and ~~a process for participating in the forest management planning and implementation process~~ the inclusion of Oregonians and their broad range of perspectives.

State forest lands support multiple social benefits on a variety of scales and seeks to contribute to community well-being for all Oregonians. They provide ecosystem services including clean air, clean water, shade, carbon sequestration and storage, and wildlife habitat that enhance the quality of life for all Oregonians and draw visitors. Active forest management provides revenue for counties, social services and education. It builds communities by supporting family-wage jobs and contributing to local, regional and state economies. The Division provides lasting and diverse outdoor recreational, interpretive, and educational experiences that inspire visitors to enjoy, respect, and connect with Oregon's state forests.

Principle 5

The plan will recognize that investments in forest and watershed restoration are necessary to achieve desired outcomes that align with the GPV policy direction for BOF.

Restoration efforts are ~~considered when an area has been heavily altered to a non-desirable condition. This condition may have arisen for a variety of reasons, including incomplete knowledge in previous management, unintended resource interactions, or even natural disturbance events with footprints that conflict with desirable outcomes given management goals. In these cases, restoration activities will be considered in an effort to move the resource to a more desired state, as articulated through management goals considered in order to rehabilitate degraded forest lands. with the goal of restoring properly functioning ecological conditions and the ability of the forest to produce the benefits required under GPV.~~ Degraded conditions may exist because of past management practices or natural disturbances such as fire, windstorm, floods, and outbreaks of insect or pathogens. Much of the state forest land managed by

ODF has experienced significant degradation in the past, and although they are now reforested, additional challenges remain where forests are underproductive or aquatic systems lack key components. Restoration efforts are carried out with the goal of restoring properly functioning ecological conditions and the ability of the forest to produce the benefits required under GPV.

Forest Restoration

~~When the state acquired the northwest Oregon state forest lands, some lands had a legacy of repeated, large-scale wildfires, and other lands had been extensively logged. Oregonians approved bonds to implement a massive restoration project, planting primarily Douglas-fir. Many stands were planted with Douglas-fir that is now known to be off-site (i.e. not genetically adapted to local conditions). A large portion of reforested lands (e.g. 46% of Tillamook district) are affected by Swiss needle cast (SNC), a native fungus that affects the growth and vitality of forest stands. The combination of single species (Douglas-fir) stands and off-site seed is thought to increase the susceptibility of the stands to SNC. A long-term forest health strategy in the SNC zone is to actively manage stands to reduce the amount and proportion of Douglas fir and increase the amount of native species not susceptible to SNC. In addition, seed sources adapted to local conditions will be used. Along with SNC, other stands would benefit from restoration treatment (e.g. large areas of compromised and aging alder stands).~~

Sole reliance on natural regeneration in the wake of large-scale disturbance events (e.g. ice storms, wind events, floods, fires) can lead to extended periods of under-productive forest conditions and susceptibility to insects and disease. ~~These stands often require~~ More immediate action ~~may be required in~~ to restore accelerate a return to resilient and productive forest conditions to ensure a balance of GPV outcomes in a reasonable timeframe.

The FMP will recognize these restoration needs and develop goals and strategies that seek creative funding mechanisms to implement them. ~~The r~~Restoration efforts will contribute to diverse, healthy forest landscapes that allow for natural disturbance at different scales within the context of a working forest that will be resilient in the face of climate change, fire, or other disturbance events and stressors. Monitoring and adaptive management are important components of the restoration efforts.

Watershed Health

For over 20 years, Oregon has made a concerted effort to conserve and improve rivers and watersheds throughout the state, with the direct involvement of local communities. ODF's management plans and activities have been an important part of those efforts. The plan will continue to support the Oregon Watershed Enhancement Board (OWEB) mission to "help protect and restore healthy watersheds and natural habitats that support thriving communities and strong economies" and emphasize a continuing commitment to restoration activities. It will also recognize the vital contribution that these forests can make to the success of large-scale regional efforts like the Oregon Plan for Salmon and Watersheds.

Principle 6

The FMP will be developed and implemented at a scale and pace that provide the appropriate geographic and temporal blend of economic, social, and environmental outcomes.

The geographic scale of plan strategy and implementation will have an effect on the spatial distribution of plan outcomes. Likewise, the temporal pace of strategy implementation and investments will have an effect on the distribution of environmental, social, and economic outcomes over time. These dynamics will be considered in creating and implementing a plan that provides the most appropriate blend of spatial and temporal outcomes.

The plan will not individually optimize environmental, social, or economic outcomes, at each geographic scale, or for every time period, but will strive for the most geographically and temporally appropriate blend of environmental, social, and economic outcomes.

Principle 7

The plan will provide varying levels of economic, environmental, and social outcomes over time as fiscal conditions change. While this approach will result in short-term trade-offs among specific goals, over the long term, GPV will be achieved.

Different GPV outcomes may be emphasized at different time periods, depending on fiscal conditions. For example, when fiscal conditions are favorable, ~~higher-increased~~ investments may be made in aquatic and watershed restoration efforts, and to promote forest stand development, for both commercial (stand investment) and habitat goals. Fluctuating timber market conditions may favor more or less timber harvest during specific time periods, but, over the long term, the plan will provide a predictable and sustainable flow of timber. Protection of native fish and wildlife habitats will be maintained consistent with the strategies established in ~~the this plan and the~~ Western Oregon HCP. Services associated with non-revenue-generating activities may fluctuate based on competing priorities and budgetary constraints.

While the level of service provided for any given GPV outcome will vary, actions necessary to assure compliance with the Western Oregon HCP and proper forest stewardship will be a high priority. Specific decisions will be made in a deliberative and thoughtful process that achieves GPV over the long term and considers future consequences.

Principle 8

The plan will comply with other state and federal laws and rules.

In addition to the management mandates specific to BOF, the FMP will address compliance with other state and federal laws and rules including, but not limited to: the state and federal ESAs; the federal Clean Water Act; the Oregon FPA; Oregon Fish Passage Laws; and cultural resource protection administered by the State Historic Preservation Office and coordinated with Indian tribes and the State Police. ~~Protection and contribution to the recovery of listed species can utilize a range of approaches such as take avoidance with a combination of conservation, protection, and restoration strategies. The plan could be coupled with programmatic ESA compliance agreements such as Habitat Conservation Plans, Candidate~~

Principle 9

Diverse input from Oregonians and a variety of interested parties will be a high priority throughout planning processes, and ODF will actively seek input from Oregon's federally recognized Tribes on the management of their ancestral lands.

Understanding, acceptance, and support from stakeholder groups contributes to long-term success in managing State Forests. The Division is committed to open, equitable, and transparent stakeholder engagement processes. Additionally, counties within which BOFL is managed have a statutorily established relationship with the Board through the Forest Trust Lands Advisory Committee (FTLAC). The Division provides accurate and timely information to ensure FTLAC has the information they need to advise the BOF and the State Forester.

ODF recognizes the importance and value of reaching out to Oregon's federally recognized Tribes on issues related to managing Oregon's state forests. We will pursue opportunities to meet with Tribal chairs, councils and directors to listen and learn from the Tribes, seek opportunities for input and collaboration, and build relationships.

Principle 10

The FMP will achieve goals through cooperative efforts with other agencies and units of local government, user groups, or organizations.

Management objectives can often be achieved more effectively and efficiently through collaboration with others. Consultation and communication with other agencies and entities, including counties, will be important to identify areas where ODF's efforts intersect with other state initiatives. These include, but are not limited to: The Oregon Plan for Salmon and Watersheds (OWEB); the Oregon Conservation Strategy (ODFW); the Oregon State Parks and Recreation's (OPRD) Statewide Comprehensive Outdoor Recreation Plan (SCORP); Federal and State sister agencies; and the State Historic Preservation Office's cultural and archaeological programs (OPRD).

Principle 11

The FMP will be implemented to adapt to climate change and mitigate its impacts on the management of state forest lands. The FMP will also contribute to climate change mitigation and sequester carbon.

Future changes in temperature, precipitation, and hydrologic processes may alter the distribution of climate conditions, as well as the frequency of disturbances, including insects, disease, wildfire, and drought. Within the context of the Division's overarching adaptive management framework, the plan will ~~implement~~ contain forest management strategies ~~directed that maintain and restore~~ at ecological processes and functional characteristics ~~to determine the potential to~~ that promote resilient forest conditions. ~~State forest lands~~ Forest stands and wood products derived from active management contribute to carbon sequestration, a factor in mitigating global climate change. A focus on strategies that adapt to changing conditions will ensure the Division is able to provide GPV over the long term.

DRAFT

Forest Management Plan Draft Goals and Feedback Summary

September 24, 2021



Goal Type	Goal Language, Feedback Summary & Revisions
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***Please note goals are not in any particular or priority order**

Forest Health	Ensure healthy, sustainable, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals to benefit all Oregonians.
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General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
83.02% 44	13.21% 7	1.89% 1	1.89% 1	0.00% 0	53

Key feedback themes: 37 comments received. Forest Health is not a forest resource but more of an overarching lens or priority for the plan (along with Climate Change and Wildfire). Protecting drinking water and water sources is important. Discontinue clear cutting and grow older forests. Too much weight is given to economic goals versus environmental and social goals. Goal language is optimistic and vague. How will the agency measure forest health? More emphasis on rural communities impacted by State Forest management decisions. Goal is a restatement of GPV. Forest health should include post-fire management, restoration and address Swiss Needle Cast.

Suggested revision based on feedback: None at time of report. Continued analysis and consideration needed.

Climate Change	Lead by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals.
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General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
64.81% 35	18.52% 10	0.00% 0	12.96% 7	3.70% 2	54

Key feedback themes: 48 comments received. Reference to climate change not being a forest resource but an overarching lens or priority for the plan. Goal type should be changed. Grow older forests and avoid clearcutting. Include climate justice, carbon storage, sequestration and climate resilience. Emphasize mitigation and adaptation. Definitions and clarity needed for the climate-smart forestry and climate adaptation terms. Evaluate leakage in goal impact analysis – if harvest is diverted will it move somewhere else with less regulations? Acknowledge carbon emissions from wildfire. Consider equity and most vulnerable communities. A desire to emphasize things that are outside of agency authority. Recognize carbon storage in wood products.

Suggested revision based on feedback: None at time of report. Continued analysis and consideration needed.

Forest Management Plan Draft Goals and Feedback Summary

September 24, 2021



Wildlife

Maintain, protect, and enhance functional and resilient systems and landscapes that provide the variety and quality of habitat types and features necessary for long-term persistence of native wildlife species.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
77.36% 41	18.87% 10	1.89% 1	1.89% 1	0.00% 0	53

Key feedback themes: 37 comments received. References to “must have old growth” and “resemble conditions predating colonial contact”; reference to wanting “ALL native wildlife species” at the end of the goal. Reductions in clearcutting is a common theme. There was a comment about the order of the goals and questioning if they are in priority order. Comment on tradeoffs for one type of habitat vs. another is more of a strategy on how we manage that. Some comments seemed to indicate that the goal was not transparent enough and used hard to pin down jargon (maintain, protect, enhance) without any commitments or decision-making process outlined (measurable outcomes again). Several comments were more specific to strategies than goals.

Suggested revision based on feedback: None at time of report. Continued analysis and consideration needed.

Aquatics and Riparian

Maintain, protect, and restore dynamic, resilient, and functioning aquatic habitats that support the life history needs of a full range of aquatic and riparian-dependent fish and wildlife species.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
81.13% 43	13.21% 7	3.77% 2	0.00% 0	1.89% 1	53

Key feedback themes: 2 comments received. Word choice suggestions. Too many descriptive words and adding water quality and quantity to the aquatic and riparian habitat goal.

Suggested revision based on feedback: Word choice consistency with drinking water goal. Add water quality and quantity for habitat.

Protect, restore, and maintain dynamic, resilient, and functioning aquatic habitats, including high water quality and healthy stream flows, that support the life history needs of a full range of aquatic and riparian-dependent fish and wildlife species.

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Aquatics and Riparian

Maintain and protect forest drinking water sources that provide high quality drinking water for private and public domestic use.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
81.13% 43	15.09% 8	1.89% 1	1.89% 1	0.00% 0	53

Key feedback themes: 45 comments received. Significant support to change resource type to "Drinking Water" and add water quantity to goal. Word choice suggestions in many directions. Several strategy suggestions and impassioned statements.

Suggested revision based on feedback: Change goal type to "Drinking Water". Add 'quantity'. Consider language suggestion around "within ODF's control" to recognize other drivers. Consider word choice, make consistent with ODF-DEQ Clean Water Act language, "protect, restore, maintain".

Protect, restore, and maintain forest drinking water sources that provide high quality drinking water and predictable water quantity for private and domestic use.

Pollinators and Invertebrates

Provide suitable habitats across the landscape that contribute to maintaining or enhancing native, sensitive, and endangered pollinator and invertebrate populations.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
76.47% 39	15.69% 8	5.88% 3	0.00% 0	1.96% 1	51

Key feedback themes: 16 comments received. Most common theme was reducing pesticide use, which could be addressed in strategies. Other goal feedback was to include the soil food web, lumping this goal into wildlife, or simplifying goal language.

Suggested revision based on feedback: None at time of report. Continued analysis and consideration needed.

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Plants Maintain understory vegetation representing a diversity of native vegetation associations and seral stages across the landscape including sensitive and endangered plant populations.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
78.85% 41	19.23% 10	1.92% 1	0.00% 0	0.00% 0	52

Key feedback themes: 20 comments received. Multiple respondents support reducing or eliminating the use of herbicides. Several respondents suggested that this goal acknowledge differences in early seral community composition and concomitant effects ecosystem function resulting from distinct perturbations. Several respondents suggested a paradigm shift in silvicultural management to achieve the goal. One respondent requested invasive species be addressed. Two respondents suggested considering the effects of understory vegetation as ladder fuels in the context of fire risk.

Suggested revision based on feedback: Potentially add the word “restore” - larger conversation on restoration.

Timber Production Provide sustainable and predictable production of forest products that generate revenues and jobs for benefit of the state, counties, local taxing districts and communities.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
30.19% 16	37.74% 20	11.32% 6	20.75% 11	0.00% 0	53

Key feedback themes: 3 comments received. Confusion between Common School Lands and Board of Forestry lands. Out of Scope but common was how to manage the lands overall: more harvest/less harvest/carbon sequestration, etc. Are the goals about maximizing revenue or volume and those should be separated. FTLAC suggested more emphasis on Timber Production benefits, highlighting the importance of public services provided (with revenue) and rural community wellbeing.

Suggested revision based on feedback: Remove the goal specific to CSFL to reduce confusion. Provide a revenue goal that highlights public services. Add goal focused on economic opportunity and providing timber for forest products. Add a community wellbeing goal.

Provide revenue that supports public services in rural communities provided by the state, schools, counties, and special districts.

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Timber Production

Manage Common School Forest Lands to secure the greatest permanent value to the people of the State of Oregon and generate long-term revenues to the Common School Fund.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
32.69% 17	30.77% 16	13.46% 7	21.15% 11	1.92% 1	52

Key feedback themes: 36 comments received. Several references to Greatest Permanent Value and confusion about the differences in rule. Some comments out of scope that "Schools should not be dependent upon timber revenue" and "the Oregon legislature must make changes." Harvest should not be at the expense of other social and environmental benefits. Make it clear that "predictable production" refers to the harvest and sale of timber.

Suggested revision based on feedback: Remove goal specific to Common School Forest Lands to reduce confusion. Draft goal with revenue and services emphasis and a goal focused on economic opportunity and making timber available for forest products.

Provide a sustainable and predictable supply of timber that provides economic opportunity, jobs, and the availability of forest products.

Forest Carbon Contribute to Oregon's carbon stores within State Forest lands.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
59.26% 32	20.37% 11	5.56% 3	11.11% 6	3.70% 2	54

Key feedback themes: 44 comments received. There was a divide in comments between storing more carbon in forest vs storing more carbon in wood products. Old growth and keeping trees longer. Wording is weak on intent – how will the agency contribute? Suggest using the word "increase carbon stores". Use habitat conservation areas (HCAs) and Riparian Conservation Areas to support carbon storage. Combine with the Climate Change goal. **FTLAC suggested broadening language to highlight storing carbon in State Forest Lands and in harvested wood products, and the effects of substitution of wood products for materials.**

Suggested revision based on feedback: Highlight carbon storage in the forest and in harvested wood products.

Contribute to carbon sequestration and storage both within State Forest lands and in harvested wood products.

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Air Quality Maintain and protect healthy air quality standards.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
75.47% 40	15.09% 8	0.00% 0	1.89% 1	7.55% 4	53

Key feedback themes: Feedback focused heavily on slash burning and effects of wildfires. Additionally, some feedback given was related to the use of pesticides and carbon sequestration.

Suggested revision based on feedback: None at time of report. Continued analysis and consideration needed.

Soil Maintain, protect, and enhance soils.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
81.13% 43	16.98% 9	1.89% 1	0.00% 0	0.00% 0	53

Key feedback themes: 28 comments received. Clearcutting is damaging to soils. Consider the value of soil in carbon storage. Unclear what enhancing soil means. Wording suggestions that include adding "productivity and ecosystem function". The goal is too vague.

Suggested revision based on feedback:

Maintain natural soil processes, protect soils from damage and increase soil carbon.

Wildfire Mitigate the risk of wildland fire effects on forest production, wildlife habitat and landscape function and supporting wildfire resilience of local communities.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
71.15% 37	17.31% 9	5.77% 3	5.77% 3	0.00% 0	52

Key feedback themes: 38 comments received. Conflicting views on how older stand contribute to or mitigate fire risk. Community protection and resilience. Manage for diversity

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and stand density. Consider fire use in management. Reduce risk vs. mitigate. Include drinking water.

Suggested revision based on feedback:

Reduce risk of catastrophic wildland fires to communities, forest production, wildlife habitat and aquatic systems, and manage forests to enhance community and landscape resilience.

Recreation, Education, and Interpretation Provide high-quality forest recreation, interpretation, and education opportunities to create meaningful and enjoyable experiences which foster appreciation and understanding of forests and contribute to community health, forest stewardship, and economic wellbeing.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
59.62% 31	34.62% 18	3.85% 2	1.92% 1	0.00% 0	52

Key feedback themes: Define or remove high quality, many of the Interpretation and Education comments are included in IE strategy and related to specific education topics already covered in program.

Suggested revision based on feedback: Consider adding a deeper Interpretation and Education strategy to foster understanding of the holistic range of content and balance of values. Consider removing "high quality" from goal.

Recreation, Education, and Interpretation Manage REI infrastructure and recreational use in an environmentally sustainable manner that seeks to minimize adverse impacts to natural resources and forest ecosystems.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
66.04% 35	28.30% 15	3.77% 2	1.89% 1	0.00% 0	53

Key feedback themes: 19 comments received. Noted conflict of forest management versus recreation values, many strategy related comments that need to be revisited in strategy development. Several strategy related comments on wildfire. Suggestion to avoid using the REI acronym because it is connected to the outdoor apparel and equipment store.

Suggested revision based on feedback: Remove REI acronym and spell out.

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Manage Recreation, Education and Interpretation infrastructure and recreational use in an environmentally sustainable manner that seeks to minimize adverse impacts to natural resources and forest ecosystems.

Transportation System Manage the transportation system to facilitate the anticipated activities in a manner which provides for resource protection, transportation efficiency, safety, and sound fiscal management.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
46.15% 24	32.69% 17	11.54% 6	1.92% 1	7.69% 4	52

Key feedback themes: 27 comments received. Concern that roads are still a major source of sediment and that the solution is to vacate roads/reduce road density. While others were adamant that we should not be vacating roads. Some comments were out of scope, such as stopping hazard tree removal along highways and only allowing clean transportation on our road network. Some comments referenced not knowing what the transportation system was or its relevance.

Suggested revision based on feedback: None at time of report. Continued analysis and consideration needed.

Scenic Manage forests in ways that value scenery and forested settings that are visually appealing.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
48.08% 25	30.77% 16	13.46% 7	5.77% 3	1.92% 1	52

Key feedback themes: 27 comments received. Old growth is visually appealing while harvests are not. The goal is highly subjective and open to broad interpretation. Goal does not acknowledge working forest context or the range of scenic values attributable to all seral stages.

Suggested revision based on feedback:

Manage forests in ways that value scenery and a range of forested settings.

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Mining, Agriculture, Administrative Sites and Grazing Permit mining, agricultural use, administrative sites and grazing when resource use is compatible with other forest resource goals.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
13.21% 7	35.85% 19	16.98% 9	33.96% 18	0.00% 0	53

Key feedback themes: 18 comments received. Several comments that these uses and/or activities are not compatible with healthy and sustainable forest ecosystems. Uses should not be grouped in one goal. A few supported these activities for the potential economic and social benefits.

Suggested revision based on feedback: None at time of report. Continued analysis and consideration needed.

Special Forest Products Provide opportunities to obtain special forest products.

General level of support as drafted (from survey):

STRONGLY SUPPORT	SOMEWHAT SUPPORT	SOMEWHAT OPPOSE	STRONGLY OPPOSE	DON'T KNOW/NOT SURE	TOTAL
13.21% 7	58.49% 31	7.55% 4	3.77% 2	16.98% 9	53

Key feedback themes: 18 comments received. Goal language is vague and general. Need to define special forest products to increase understanding.

Suggested revision based on feedback:

Provide opportunities for the public to sustainably harvest a wide array of special forest products for recreational, personal, and commercial use (including but not limited to firewood, salal, moss, mushrooms, etc.).

Cultural The cultural goals are still *under development in coordination with the federally recognized Tribes*.

General level of support as drafted (from survey): Not Applicable

Key feedback themes: 17 comments received. Engage the Tribes in development. Recognize and address the diversity of communities of people.

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Suggested revision based on feedback: Define culture. Address overlap with Education and Interpretation goals and strategies.

New Goals (drafted by team in response to feedback)

Community Wellbeing	Establish strong relationships and mutual trust with all communities of place and communities of interest who have connections with Oregon State Forests.
Forest Restoration	Increase forest resilience through restoration by assisting in the recovery of ecosystem function across the landscape in areas that have been degraded or damaged due to biotic or abiotic factors.

Other Goal Suggestions (from stakeholders and the public)

Chemical Spray	"ODF should develop specific goal language seeking to reduce reliance on chemical spray use in its forestry practices on state public forest land, especially aerial spray (as measured against the 2021 status quo)."
Collaboration and Coordination	"Collaborate and coordinate with other state, tribal, and federal agencies to maximize expertise and capacity."
Social Justice	"Ensure forest management planning and implementation fully evaluates and redresses environmental justice impacts, facilitates meaningful involvement of impacted communities, and prioritizes distribution of benefits and minimization of burdens to historically underserved communities—including BIPOC, rural, low-income, and forest labor communities."
Mature and Old Growth Forest	"Identify priority management areas for mature and old growth forest characteristics."
Rural Communities	"Rural, forest-dependent communities are vibrant and resilient and able to benefit from active forest management."
Wood Products	"Oregon's forests continue to enable local production of sustainable and renewable wood products for housing, paper supplies and other pressing societal needs."

Name	Affiliation	Goal Heading & Number	Level of Support (from survey)	Comment
Amanda Astor	Associated Oregon Loggers	Air Quality	Somewhat Support	The air quality goal is very minimal. If the Department is simply going to follow DEQ air quality standards, smoke intrusion levels, etc. then there really is no need to include a specified FMP Goal on it. If the Department intends to go above and beyond in some way, then they should make that far clearer. AOL does not support a goal that would institute new requirements above and beyond the laws already in place.
Anonymous	Tillamook	Air Quality	Strongly Support	Slash burning is an arcane and barbaric practice. Slash burning and agricultural field burning should have ceased decades ago in the name of public health and protection of wildlife.
Anonymous	Unknown	Air Quality	Strongly Support	Need to explain the role of Oregon's forests in air quality. Link to fire?
Anonymous	Unknown	Air Quality	Somewhat Support	balance with the use of prescribed fire as an important tool in meeting all these other goals.
Anonymous	Unknown	Air Quality	Strongly Support	This means managing forests to reduce catastrophic wildfires. If you do that, the healthy forests will keep the air quality clean.
Anonymous	Unknown	Air Quality	Somewhat Support	Air quality standards must be updated to allow for more managed fires (controlled or prescribed burning).
Anonymous	Unknown	Air Quality		Preferred language: Healthy air quality and reduced incidence of fire-related risks to public health. Comments: This is a good example of a goal being too vague. Would
B Bond Starker	Starker	Air Quality	Strongly Support	Allow prescribed burning when conditions permit
Betsy	Unkown	Air Quality	Strongly Support	As stated above, the timber industry needs to wait until trees are 40-50 at least before cutting so that the trees can emit oxygen and absorb the carbon.
Betsy McMahon	NCCWP	Air Quality	Strongly Support	Trees support healthy air quality — trees that are over thirty years old do it best.
Brett Brownscombe	Wild Salmon Center / Conservation	Air Quality	Somewhat Support	fairly vague (how will it be measured?)
Greg Stratton	Private citizen and Forester	Air Quality	Strongly Support	This can most directly be done by not allowing wildfires to burn as a management practice.
Jerry Lackner	previous tree farmer before burned out	Air Quality	Strongly Support	climate change again. i'm smoked in again now and for the past 4 days because those advocates LET IT BURN again--referring to the Bull of the Woods complex.
Jesse Clark	Tillamook	Air Quality	Strongly Support	This included giving communities PROPER (not a vague date range) notice for when application of herbicides will occur. Our communities deserve better than getting surprises when they could have willingly acted to protect themselves, their property, and their families. Don't you agree? Also immediately cease all slash burning and find ecological ways to utilize the extra slash.
Joseph E Youren	ASLC	Air Quality	Strongly Support	Current forest practices do not align with this goal.
Julia DeGraw	OLCV	Air Quality	Strongly Support	This is crucial to ensuring better air quality which is a public health issue.
Kate Jackson	individual	Air Quality	Don't Know/Not Sure	healthy forests have healthy air; not sure how this would be accomplished as a goal.
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Air Quality		Recommended revision: "Maintain and protect healthy air quality standards and support public health." Explanation: Air toxics and particulate matter produced by forest operations such as slash burning contribute to poor air quality in general which in turn impacts public health and livability, especially for rural communities. Further, the combustion of woody biomass for energy production emits pollutants that jeopardize public health, and biomass power plants are often located near environmental justice communities, further burdening underserved and underresourced populations. ODF should aim to fully evaluate and minimize the negative health impacts associated with forest management practices that degrade air quality and disproportionately impact vulnerable communities in Oregon.
Mary Hill	Great Old Broads for Wild	Air Quality	Strongly Support	Controlled burns? The air quality in OR has been awful since 2021. I've lived here since 1985.
Mary McGaughey	Biologist. TNC. Sierra Club	Air Quality	Strongly Support	Yes! Our trees, plants, soil help make our air clean & healthy.
Mike Brinkley	South Willamette Forest Collaborative	Air Quality	Strongly Support	One very obvious solution: eliminate pesticides.

Nick Cady	Cascadia Wildlands	Air Quality	Somewhat Support	ODF should be given leeway to conduct prescribed burns following forest management activities, especially thinnings.
Peter Karnig	independent	Air Quality	Strongly Support	I strongly support this goal. Do this NOW.
Trygve Steen, Ph.D.	NCCWP	Air Quality	Strongly Support	Slash burning is a major air quality issue, and its amount needs to be minimize by all means possible. This includes managing ODF forests on longer rotations.
Woody Jackson		Air Quality	Don't Know/Not Sure	Allow natural fire to occur. Extinguish manmade fire.
Laura Wilkeson	Hampton Lumber	Air Quality		Maintain and protect Healthy air quality standards and reduced incidence of fire-related risks to public health. <ul style="list-style-type: none"> ▪ This is a good example of a goal being too vague. Would help to list current air quality standards. ▪ Again, managing forests to mitigate risk of fire should be the focus of maintaining air quality standards.
Brett Brownscomb	Wild Salmon Center	Aquatics & Riparian (G1)		We request that this goal language be clarified to include the following additional language (in blue): "Maintain, protect, and restore dynamic, resilient, and functioning aquatic habitats that support the life history needs of a full range of aquatic and riparian-dependent fish and wildlife species, as well as high water quality and healthy stream flows."
Laura Wilkeson	Hampton Lumber	Aquatics & Riparian (G1)		Maintain, protect, and restore dynamic, Resilient, and functioning aquatic habitats that support the life history needs of a full range of aquatic and riparian-dependent fish and wildlife species. <ul style="list-style-type: none"> ▪ Another example of being too descriptive. ▪ Does ODF have a list of needed aquatic or riparian restoration projects? o Maintain and protect High quality forest drinking water sources that provide high-quality drinking water for private and public domestic use. ▪ Note current drinking water protection laws.
Amanda Astor	Associated Oregon Loggers	Aquatics & Riparian (G2)	Somewhat Support	A) Similar to AOL's comments on Wildlife, this goal is far too convoluted... We suggest something more like this, "Maintain existing aquatic habitat and restore damaged aquatic habitat to ensure functionality such that it supports the life history needs of aquatic and riparian-dependent fish and wildlife species and is resilient to changing forest conditions." B) During the Joint Stakeholder Meeting we discussed pulling this goal out as a "Drinking Water" goal. I remember hearing concerns about quantity being included as well. AOL would support this change.
Anonymous	Unknown	Aquatics & Riparian (G2)	Strongly Support	an ecologically sound, healthy forest is necessary to protect drinking water.
Anonymous	Tillamook	Aquatics & Riparian (G2)	Strongly Support	The use of pesticides must be reduced enormously. Pesticides must not be used until it is proven beyond any doubt that they do not travel through the soil profile or by other means and the same should be required of any compounds produced by the degradation of these chemicals.
Anonymous	Unknown	Aquatics & Riparian (G2)	Strongly Support	Protect drinking water quality AND quantity. To meet these goals, there must be less cutting along non-fish bearing streams - both seasonal and year round. All streams and wetlands need riparian buffers. No aerial herbicide spraying. Limited or no truck and backpack spraying. Drinking water streams and springs must have as much protection as salmon bearing streams (right now they have less).
Anonymous	Unknown	Aquatics & Riparian (G2)	Somewhat Support	Currently two Aquatic and Riparian Goals. Change second to title of Drinking water watershed—protect forest drinking water quality AND QUANTITY.
Anonymous	Unknown	Aquatics & Riparian (G2)	Strongly Support	incorporating beaver-based restoration, prioritizing beaver coexistence, and promoting beaver where it makes sense is a strategy that can be incorporated towards meeting this goal.
Anonymous	Unknown	Aquatics & Riparian (G2)	Somewhat Support	Yes, we need clean drinking water. But my support for this depends on what you mean. Communities should not depend on surface water, even surface water from forests. Our Forest Practice Act protects water quality now.
Anonymous	Unknown	Aquatics & Riparian (G2)	Strongly Support	Quit spaying the regen forest with broad leaf killer.
Anonymous	Unknown	Aquatics & Riparian (G2)	Strongly Support	These should be the priority goals and all else should support these two goals.
B Bond Starker	Starker	Aquatics & Riparian (G2)	Strongly Support	Maximize value given these constraints
Betsy	Unkown	Aquatics & Riparian (G2)	Strongly Support	The streams are now under attack because of the clearcutting on steep hillsides which allows soil to run into a stream and threaten the drinking water, as well ask allowing spawning to occur.

Betsy Herbert	North Coast Communities for Watershed Protection	Aquatics & Riparian (G2)	Strongly Support	Replace "that provide high quality drinking water" with "through application of science-based best management practices designed to protect drinking water sources in forested watersheds"
Betsy McMahon	NCCWP	Aquatics & Riparian (G2)	Strongly Support	Water sources are being ruined by the timber industry which is destroying the streams which provide water for humans and all animals.
Brett Brownscomb	Wild Salmon Center	Aquatics & Riparian (G2)		We appreciate that the draft goals document recognizes the importance of drinking water, and instead of couching this under "Aquatic / Riparian" as a resource type, ODF should include "Drinking Water" as its own resource value / category. This would correspond to the reality that this issue connects to public health, the Clean Water Act, domestic / residential quality of life, and broader public values than what is reflected by the terms "Aquatic / Riparian". In addition, instead of the way it currently reads, this goal should be modified as follows to be more specific (measurable) and better express the intended outcome (modified language in blue): "Maintain and protect forest drinking water sources that from impacts under ODF's control that could impair their ability to provide high quality drinking water for private and public domestic use. Demonstrate an approach to forest management, including harvest rotations, roads, and chemical spray use, that is more protective within source geographies for drinking water than what would otherwise be applied on timber production lands."
Brett Brownscombe	Wild Salmon Center / Conservation	Aquatics & Riparian (G2)	Somewhat Support	Good to have a goal on drinking water but needs more specificity (will provide more detail separately). The other Aquatic / Riparian goal needs more specificity (integration of HCP and non-HCP distinctions) including a reference to in stream flow and water quality.
Darlene Chirman	Unkown	Aquatics & Riparian (G2)	Strongly Support	Suggest two separate goals, the second labeled Drinking water goal.
David Harrison	Marion	Aquatics & Riparian (G2)	Strongly Support	Clean water and healthy fish and wildlife populations are essential components of our identity as Oregonians.
Greg Stratton	Private citizen and Forester	Aquatics & Riparian (G2)	Somewhat Support	Our current FPA rules maintain and provide riparian habitat and drinking waters.
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Aquatics & Riparian (G2)	Strongly Support	I would encourage a focus on the quantity of drinking water along with the quality.
Jay Haladay	Friends of Hug Point, Rural coast property owner	Aquatics & Riparian (G2)	Strongly Support	I am pleased that this has been included. As a rural Oregon coast resident, we are not supported by a water district and get all of our drinking water from state granted water rights that have their origin in state forests. We need to find a way to put economic values on these forest uses to truly understand the importance of these benefits Oregon's forests provide.
Jean-Paul Zagarola	Bonneville Environmental Foundation	Aquatics & Riparian (G2)	Strongly Support	This should also be included: incorporating beaver-based restoration, prioritizing beaver coexistence, and promoting beaver where it makes sense is a strategy that can be incorporated towards meeting this goal.
Jerry Lackner	previous tree farmer before burned out	Aquatics & Riparian (G2)	Strongly Support	how many trillion dollars have they spent trying to save the salmon over the last 30 years and still point their fingers at the loggers.and now the new era of geniuses want to spenf another half billion dollars to put a tower in Detroit dam to save a few thousand salmon that aren't even native because they couldn't get over Oregon City falls 150 years ago before they had a fish ladder there and how did they survive the cold water in the santiam river before the dam?? yes we need good clean water. how do those folks who want to LET IT BURN and grow back naturally expect to keep the ash out of our streams or do they not consider ash a water contaminate.
Jesse Clark	Tillamook	Aquatics & Riparian (G2)	Strongly Support	Currently, drinking water sources get less protection than fish-bearing streams. Clean, clear drinking water is a universal human right and right now Oregon does nothing to ensure that right beyond enforce insufficient stream buffers. Oregonians shouldn't have to trade their drinking watershed safety for logging profits they won't see a dime of.
Joint Stakeholder	Unkown	Aquatics & Riparian (G2)		I strongly support the idea of making drinking water a resource.
Joint Stakeholder	Unkown	Aquatics & Riparian (G2)		I'm concerned that timber cutting will destroy our source of water and pesticides may poison our water; the drinking water goals is very important.
Joint Stakeholder	Unkown	Aquatics & Riparian (G2)		Is there a reason for using "maintain, protect, and enhance" for wildlife, but "maintain and protect" for drinking water?

Joint Stakeholder	Unknown	Aquatics & Riparian (G2)		I support changing the drinking water goal's resource type to water.
Joint Stakeholder	Unknown	Aquatics & Riparian (G2)		Suggest removing "full range" from the second goal.
Joint Stakeholder	Unknown	Aquatics & Riparian (G2)		Suggest including water quantity in additional to water quality.
Joseph E Youren	ASLC	Aquatics & Riparian (G2)	Strongly Support	High water temperatures, sediment loads and low summer flows threaten aquatic and human species.
Julia DeGraw	OLCV	Aquatics & Riparian (G2)	Strongly Support	This is crucial. There should be no logging near riparian areas, and absolutely no clear cutting on slopes, or anywhere for that matter.
Kate Jackson	individual	Aquatics & Riparian (G2)	Strongly Support	that full range should include beavers, not only are they native but they improve both water quantity and water quality and support other parts of the ecosystem, like fish
Laura Wilkeson	Hampton Lumber	Aquatics & Riparian (G2)		Preferred language: Resilient aquatic habitats that support the aquatic and riparian-dependent fish and wildlife species. Comments: [] Another example of being too descriptive. Does ODF have a list of needed aquatic or riparian restoration projects? Preferred language: High quality forest drinking water sources. Comment: Note current drinking water protection laws.
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Aquatics & Riparian (G2)		Recommended revision: "Maintain and protect forest drinking water source quality and quantity to provide reliable, high quality drinking water for private and public domestic use." Explanation: Please rename the second "Aquatics & Riparian" goal to "Drinking Water and Healthy Watersheds." Please also recognize the need for water quantity considerations in forest management, as the availability and accessibility of Oregon's water resources will continue to decline as the climate changes. Forest management practices place the quality of Oregon's drinking water resources at risk, in turn jeopardizing community health and well-being and displacing the burden of water treatment costs on local entities or individual residents. This goal should reflect the broad needs of the Department to responsibly manage Oregon's forested watersheds.
Mary McGaughey	Biologist. TNC. Sierra Club	Aquatics & Riparian (G2)	Strongly Support	Help restore HEALTHY fresh water to wetlands, tributaries, rivers, lakes. Help restore our oceans to their healthy pH, salts, mineral, bio profile balance! Cheers to NOAA!
Maysa Miller	NCCWP	Aquatics & Riparian (G2)	Strongly Support	FOREST DRINKING WATER NEEDS TO BE ADDRESSED AS ITS OWN GOAL
Mike Brinkley	South Willamette Forest Collaborative	Aquatics & Riparian (G2)	Strongly Support	See the above comments. Clear cut logging on steep slopes, cutting in the riparian corridor washes sediment into streams that provide drinking water. Preserve the forest. It filters the water. ESPECIALLY stop areal spraying of pesticides in watersheds that provide drinking water. The recent proposed reforms on areal spraying are a start but are totally inadequate and need to be revised to protect people and wildlife from this devastating practice.
Mike McKibbin	Unknown	Aquatics & Riparian (G2)	Somewhat Support	Our current FPA does this. Managed forest provide dynamic, resilient and functioning riparian areas and healthy drinking water.
Mike Totey	Oregon Hunters Associati	Aquatics & Riparian (G2)	Somewhat Support	If you accomplish the first goal, the second would be inherent.
Peter Karnig	independent	Aquatics & Riparian (G2)	Strongly Support	I strongly support the first part of the goal as proposed and for the second section, I would suggest adding the following: "excluding industrial usage".
Roger Neugebauer	Full time Oregon resident	Aquatics & Riparian (G2)	Strongly Support	Happy to see drinking water for humans included in the goals. To me as a resident of Oregon depending on a forest for drinking water, this is a high priority!
Ron Buyers	Tillamook	Aquatics & Riparian (G2)		I was glad to see drinking water listed under Aquatic, but there was no way to know its rank or level of importance as compared to other goals.
Scott Gray	Stimson Lumber	Aquatics & Riparian (G2)	Strongly Oppose	The forests do not need to provide high quality drinking water, they need to provide water that is treatable results in high quality drinking water. Municipalities should be drinking directly out of the forest streams

Trygve Steen, Ph.D.	NCCWP	Aquatics & Riparian (G2)	Strongly Support	<p>Strongly support both with modifications !!! FOREST DRINKING WATER NEEDS TO BE ADDRESSED AS ITS OWN GOAL, ideally following present goal number 3 in your list. This goal should simply be called Drinking Water. Drinking water also needs to include an added sentence - - Manage forest watersheds to maximize a more even flow of water in streams, so that summer flows are maintained.</p> <p>For the actual "Aquatic and Riparian" goal, an edit is needed. See the following all caps for needed changes: "Maintain, protect, and restore dynamic, resilient, and functioning RIPARIAN AS WELL AS aquatic habitats" Note, present minimal, legal riparian buffer widths are totally inadequate to provide needed protection of riparian areas that appropriately protect forest waters.</p>
Woody Jackson	Unknown	Aquatics & Riparian (G2)	Strongly Support	No herbicides.
Amanda Astor	Associated Oregon Loggers	Climate Change	Strongly Oppose	<p>AOL believes that this goal should be recategorized as an overarching priority for which each resource goal should strive to achieve. For instance, ODF could provide a preamble that says something to the effect of, "The Oregon Department of Forestry strives to achieve Greatest Permanent Value by managing the state's forestlands to ensure healthy, sustainable, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals to benefit all Oregonians. The Department focuses on utilizing sustainable management strategies where there is never more biomass harvested or lost to mortality than is grown on state lands in perpetuity. Treatments on forested lands work to enhance productivity and minimize risk of catastrophic disturbance such as insect and disease outbreak, wildfire and drought stress to attain forest health, economic and carbon co-benefits. When forests are healthy and resilient, damage from such disturbances is minimized. The vibrant forest products sector that results, ensures there is adequate capacity to restore the forests from what damage does occur and helps protect the forests from future damage by providing fire fighters, road maintenance, hazard reduction and resilience treatments into the future. When forests are healthy and production is high, the Department is leading by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals." Each specific Resource Type Goal should then be measured against its ability to archive the overarching priorities of the Department to create healthy and productive forests, climate change co-benefits and resiliency against disturbance.</p>
Anonymous	Unknown	Climate Change	Somewhat Support	<p>I fully support climate action - mitigating impacts by growing older trees (and requiring the agency to be carbon neutral in its activities) and preparing for impacts now baked in. I am not sure what "achievement of forest resource goals" means in this context. This section needs to be very clear and detailed. ODF activities must be climate neutral or even negative (to not contribute to the problems) within 10 years. We need to protect ALL old growth remaining and as much older forest as possible to restore old growth as quickly as possible. And we need to prepare for impacts - pest outbreaks, increased wind storms (blow down) and fire, flooding, drought killing understory and trees (species shifts) and reducing drinking water and aquatic habitat quantity, non native invasive plants taking over, sea level rise and erosion.</p>
Anonymous	Unknown	Climate Change	Somewhat Support	<p>Please consider revising the Climate Change Goal: Include quantification of INCREASE in carbon sequestration and storage. Evaluate and decrease carbon emissions from logging operations by changing logging practices.</p>
Anonymous	Unknown	Climate Change	Strongly Support	<p>incorporating beaver-based restoration, prioritizing beaver coexistence, and promoting beaver where it makes sense is a strategy that can be incorporated towards meeting this goal.</p>
Anonymous	Unknown	Climate Change	Don't Know/Not Sure	<p>I do not know what will be proposed as being climate-smart. It sounds good, but my support depends on how it is implemented.</p>
Anonymous	Unknown	Climate Change	Strongly Oppose	<p>The CO2 level in the world is 409 ppm. The CO2 alarm in the space station goes off at 5,000 ppm. US submarines alarms go off at 7,000 ppm. If the CO2 falls below 180 ppm all plants die. If all plants die then all animals will die. Don't believe me, go look it up!</p>

Betsy	Unkown	Climate Change	Strongly Support	By cutting trees at a 20 year old age, we are ruining what is meant for trees to provide the oxygen and absorb the carbon from the atmosphere. Small trees suck up huge amounts of water and by cutting trees at an early age, we are not allowing them to reach an age (usually 40-50) where they will actually emit oxygen and soak up carbon.
Betsy Herbert	North Coast Communities for Watershed Protection	Climate Change	Strongly Support	I would add the words "science based" before "climate-smart forest management"
Brett Brownscombe	Wild Salmon Center / Conservation	Climate Change	Somewhat Support	Saying somethings in the FMP goals re. climate change is important but this could be titled Climate Resilience (Climate Change is not a goal) and made more specific. Will provide more detail in comments.
Darlene Chirman		Climate Change	Somewhat Support	Please revise the climate change goal to include quantification and INCREASE carbon sequestration and storage. Also monitor and decrease carbon emissions from logging by changed logging practices.
Greg Stratton	Private citizen and Forester	Climate Change	Strongly Oppose	Though there is climate change, mankind's impact is highly politicized and overstated.
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Climate Change	Somewhat Support	This statement is written such that forest resource goals, namely continued logging practices, are elevated above the climate adaptation and mitigation goals. We should be re-envisioning the role of Oregon's forests, and the department that oversees state forest lands, with the recognition that healthy, intact and mature forests provide the best resiliency and mitigation to climate change. If ODF and the State of Oregon want to lead by example, prioritizing forest health as a path to climate adaptation is an approach that is backed up by forest climate science.
Jerry Lackner	previous tree farmer before burned out	Climate Change	Strongly Support	I'm tired of hearing the hypocrit liars who keep letting our forests burn use those words after they are the ones who have shut down all forest health management over the past 30 years with their lawsuits creating the ladder fuels that fuel those fires making them too dangerous to fight. they obviously don't know what carbon sequestration is and is the only way to remove the carbon the keep pumping into the atmosphere with their fires and don't realize or care that it will take 15 to 50 years for those forests to grow back enough to sequesture the same level of carbon as they were before they burned. but by then a new group of geniuses who are smarter than I will be in command with new ideas to experiment with once they figure out how to line their pockets with cash like the current geniuses who are trying to convince us that solar and wind power are going to save the universe. neither one removes one ounce of carbon from the atmosphere, so how do they help mitigate climate change????? Those geniuses and their lawyers with their lawsuits have burned and reburned 200 to 300 million acres over the last 30 years which are still struggling to grow back if they haven't reburned multiple times since then. how many tons of carbon could those hundreds of millions of acres of forests be sequestering annually if they were healthy? if those acres averaged 250 healthy trees per acre, they would be sequestering approx. 6.25 tons carbon per acre annually X 200million=125,000,000,000 tons annually.. would that help mitigate climate change???Duuuuuh???? but those liars haven't figured out to get that those forest trees into their bank account yet so it will never happen and they continue to LET IT BURN like they did the beachy creek fire that burned our property and 700 homes and the Bull of The Woods complex that is coming this way again right now after they LET IT BURN for two weeks with no boots on the ground or any tankers in the sky. How long will it be before the Elliot Forest burns with OSU's controlled burn genius advocates at the reins. more tunnel visioned geniuses who have never grown a forest in their life and only know how to burn them like the indians did 1000 years ago. indians never used wood except to keep warm. They never had dhovels, water tankers or air
Kate Jackson	individual	Climate Change	Strongly Support	fire resilience will be key to forest resilience with increasing temps and drought. fire resilience does not come from regen harvests, a false name for old-style timber harvests.

Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Climate Change		Recommended revision: "Lead by example in demonstrating climate-smart forest management that supports climate justice, carbon storage and sequestration, and climate resilience." Explanation: Environmental and climate justice objectives should be a central component of any climate change goal. Because communities on the frontlines of the climate crisis have historically been excluded from decision-making processes, ODF must prioritize and empower these communities as valuable and equal decision-making partners in generating durable, creative and equitable policies to promote environmental justice and respond effectively to climate change. ³ These benefits are also quantifiable and should show improved value to Oregonians. Further, managers should focus efforts on the restoration and maintenance of essential ecosystem functions as opposed to simply managing natural resources. Stating "achievement of forest resource goals" lacks clear direction. Essential ecosystem functions include: <ul style="list-style-type: none"> • Carbon storage and sequestration (e.g. promoting old growth forest characteristics), • Water quality and quantity (e.g. preventing soil erosion and avoiding tree plantations), • Soil productivity (e.g. ensure burned vegetation remains on the landscape), and • Biodiversity (e.g. preserving habitat for at risk plants and wildlife).
Mary Hill	Great Old Broads for Wild	Climate Change	Strongly Support	Include quantification of INCREASE in carbon sequestration and storage. Evaluate and decrease carbon emissions from logging operations by changing logging practices.
Mary McGaughey	Biologist. TNC. Sierra Club	Climate Change	Strongly Support	Ovestory & understory mitigation, with plant species that will support the environment while the climate changes.
Mike Brinkley	South Willamette Forest Collaborative	Climate Change	Strongly Support	Preserve ALL old growth trees and their habitat. they capture the most carbon.
Mike McKibbin		Climate Change	Strongly Oppose	What is climate-smart forest management. This sounds like a good way to justify a reduction in forest harvest and therefore negatively impact local communities who depend on timber sales for funding.
Roger Neugebauer	Full time Oregon resident	Climate Change	Strongly Support	Clear cutting old growth forests supports the speeding up of climate change, While ODF can't change the world, it can as noted lead by example,
Scott Gray	Stimson Lumber	Climate Change	Strongly Oppose	As written, this only covers part of the need. It does not include the need to examine the effects of this goal - i.e. carbon leakage, effect of removing productive land from availability for harvest, increase in non-renewable alternatives to wood products.
Anonymous	Tillamook	Climate Change	Strongly Support	Due to climate warming and historic atmospheric CO2 levels, the great North West rain forests are more important than ever before intact. Lumber production should be the lowest priority and carbon sequestration should be the highest priority.
Anonymous	Unknown	Climate Change	Somewhat Support	ODF's forests are at high risk of loss to catastrophic wildfire. What does the FMP do to offset stochastic impacts, e.g. increasing periodic timber harvest to divert carbon into long-term structural pools rather than risking carbon emissions from wildfire?
Betsy McMahon	NCCWP	Climate Change	Strongly Support	We need a very healthy forest system to support our life- air, water, land.

Brett Brownscomb	Wild Salmon Center	Climate Change		For purposes of the FMP goals document specifically, we support the current goal language with the following modifications in blue: "Lead by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals through resilience strategies tied to refugia or at risk species, healthy and abundant water supply for fish and human communities, and flood risk." But we feel this language could exist under a distinct goal under the resource issue / category of "Climate Resilience". And, while this goal would be distinct from the separate climate change-related goal of "Forest Carbon", we feel it is important that these two FMP goals exist in order to provide a place for the FMP to translate Climate Change and Carbon Plan (CCCP) next steps on state public lands.
Greg Jacob	Sierra Club/SFAC	Climate Change	Strongly Support	Maintain old growth reserves and expand upon them. Avoid clearcutting of aged stands because of their value in sequestering carbon and providing habitat for wildlife.
Jay Haladay	Friends of Hug Point, Rural coast property owner	Climate Change	Strongly Support	Someone needs to start, and Oregon might be a good place.
Jesse Clark	Tillamook	Climate Change	Strongly Support	This is vague because 'forest resource' goals are often put in front of climate goals. Forest resource industries will not stand a chance in the future unless we sequester more carbon in larger trees now, while continuing commercial thinning harvest on a continual basis.
Joint Stakeholder	Unknown	Climate Change		change "lead by example" to "experiment"
Joint Stakeholder	Unknown	Climate Change		climate-smart forest management can mean a variety of different things
Joint Stakeholder	Unknown	Climate Change		Explain what is meant by climate adaptation - do you mean adapt per the climate or how things change overtime?
Joint Stakeholder	Unknown	Climate Change		The primary component of climate smart forestry is carbon sequestration and carbon storage. Designating the HCAs and the RCAs as carbon reserves and managing them for that purpose, in addition to supporting the covered species, is the way to achieve this.
Joint Stakeholder	Unknown	Climate Change		Sequestration is exceptionally important. ODF should adopt an experimental paradigm, monitor sequestration, and demonstrate climate adaptive forest processes and species compositions as they may change overtime.
Joint Stakeholder	Unknown	Climate Change		It needs to include a definition of climate smart forestry, carbon sorting wood products coming from timber sales, and reducing the risk for wildfire through active management.
Joint Stakeholder	Unknown	Climate Change		Using "climate resiliency" in the goal is critical if ODF is to achieve sustainable forest management.
Joint Stakeholder	Unknown	Climate Change		Should there be separate climate change and carbon goals? Are these goals needed or can climate change be addressed through other goals?
Joint Stakeholder	Unknown	Climate Change		I support having two separate climate change goals for climate and carbon. The purpose of these goals is to prioritize how ODF will manage the forest. This should be a priority because our forest can be a powerful climate solution. Forest carbon specifically is one of the best tools the state has to address this threat.
Joint Stakeholder	Unknown	Climate Change		I agree that it's important to have climate change and carbon goals. Looking at species and genotypes that might be more vibrant in future climates are different from carbon sequestration and storage.
Joint Stakeholder	Unknown	Climate Change		I am also in support of a separate climate change goal. For resiliency, we should also be thinking about equity and considering that the most vulnerable communities will be impacted by climate change and that the forest has natural solutions to climate change.
Joint Stakeholder	Unknown	Climate Change		ODF also need to look at the chances of leakage. If land is set aside and harvest is diverted, will harvest take place somewhere with less environmental regulations? If it's not transferred, what are the overall impacts to the world climate budget? Carbon is a worldwide product. What we do here has impacts other places and that needs to be part of the conversation and analysis.
Joint Stakeholder	Unknown	Climate Change		I agree that Oregon, and state forests specifically, should be recognized for providing green, renewable building materials that help to address climate change.
Joint Stakeholder	Unknown	Climate Change		Climate change is NOT a resource type.

Joseph E Youren	ASLC	Climate Change	Strongly Support	Emphasis on mitigation and adaptation.
Laura Wilkeson	Hampton Lumber	Climate Change		Lead-by-example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals. Improved carbon sequestration through reduced wildfire risk and production of renewable building materials. <ul style="list-style-type: none"> • The title of this goal, "climate change", is not a resource type. Should be renamed, removed, or worked in another goal. • "Climate-smart forest management" has not been defined or widely accepted. It should be renamed "active forest management" or removed. • Carbon storage in wood products should be recognized as a key to fighting climate change. • "Achievement of forest resource
Laura Wilkeson	Hampton Lumber	Climate Change		The title of this goal, "climate change", is not a resource type. Should be renamed, removed, or worked in another goal. "Climate-smart forest management" has not been
Mike Totey	Oregon Hunters Association	Climate Change	Don't Know/Not Sure	I'm not sure the science and policy are mature enough to even know what "climate-smart" is. How about just doing the right thing for the right reason with the best available science.
Peter Karnig	independent	Climate Change	Strongly Support	One of the most effective ways to store carbon is to grow and maintain old forests and Oregon is one of the best places to do just that. In addition to that it will become a major source of revenue for the future Timber industry.
Trygve Steen, Ph.D.	NCCWP	Climate Change	Strongly Support	Best available science supports a critical need for Oregon's forests to function for climate mitigation by sequestering and storing more carbon dioxide. Both sequestration and storage need more clear emphasis in this goal. Demonstrating climate smart management means moving toward longer rotations and forests at least 80 years old. This goal represents an important PLACE FOR NEEDED LEADERSHIP for ODF. Goal number 9 with its emphasis on carbon dioxide sequestration and storage should be
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Cultural		Recommended Tribal Consultation Goal: "Recognize and seek input from Oregon's Tribes and Indigenous communities as the original stewards of the land. Work to incorporate traditional ecological knowledge, management practices, and climate mitigation and adaptation efforts."
Anonymous	Unkown	Cultural		Consult regularly with recognized AND unrecognized tribes (eg Clatsop-Nehalem CTs). Invite traditional harvest on state lands. Partner with tribes on management. Invite tribes to share Traditional Ecological Knowledge (TEK) and integrate into management.
Anonymous	Unkown	Cultural		Suggest you put some thought into this. For example, a 20-year-old garbage dump area is not a cultural resource that should require protection.
Anonymous	Unkown	Cultural		Maintain, protect, and restore dynamic, resilient, and functioning habitats important to Tribes and others who utilize the forest for cultural, spiritual, or other purposes.
Betsy	Unkown	Cultural		Not sure what you mean by "cultural goals." If you mean that we should enjoy our Oregon forests, that is a benefit. However, now that they are being cut down, the beautiful forests exist no longer.
Betsy McMahon	NCCWP	Cultural	Skipped	Not exactly sure what you mean by "cultural goals."

Brett Brownscombe	Wild Salmon Center / Conservation	Cultural		Should relate to
Darlene Chirman	Unkown	Cultural		Share the cultural history of Oregon forests, beginning with indigenous forest management and uses.
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Cultural		While much of these comments are a path forward, we should still seek to understand the human histories of those who lived in Oregon since time immemorial, including both Native Americans and the Western settlers and immigrants who followed. They operated in rugged landscapes with a very different set of morals and values than those of today, and their stories deserve to be told and understood by those who visit and love Oregon.
John Barnes		Cultural		YOU HAVE GOT TO BE KIDDING! THE AGENCY HAS BEEN DEALING WITH CULTURAL RESOURCE ISSUES FOR YEARS, ESPECIALLY RELATED TO NATIVE AMERICAN INTERESTS. AND YOU STILL DON'T HAVE SPECIFIC GOALS ON THIS TOPIC! UNBELIEVABLE...
Julia DeGraw	OLCV	Cultural		Please consult/partner closely with Oregon's tribes on this issue.
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Cultural		Suggested goal: "Acknowledge and share the rich, diverse cultural history of Oregon's forests." Explanation: Native peoples inhabited Oregon for thousands of years before European settlers arrived. ⁵ Individuals from a wide variety of cultures contributed to Oregon's rich forestry history, including African American, Japanese and Greek timber workers. ⁶ ODF should work to share the origins of the land it manages, highlight important cultural sites, and honor the wide array of cultural contributions that have influenced Oregon's state forests.
Mary McGaughey	Biologist. TNC. Sierra Club	Cultural		Ancestral humans 'grew up' in the forests. The forests nurtured, taught us how to live. We took that nurture, that knowledge, left the forest, made our own communities. We have forgotten, forsaken, lost our forest nurture. The forest is our spiritual, our cultural foundation. We must return to the forest to save humanity. We must save the forest to save humanity.
Nick Cady	Cascadia Wildlands	Cultural	Skipped	Survey for and protect cultural sites.
Peter Karnig	independent	Cultural	Strongly Support	I strongly support this goal. The Timber industry has a lot to learn from our indigenous peoples in Oregon. Insights from indigenous peoples need to be incorporated into forest, wildlife, and fish management by the Oregon Department of Forestry. These insights also need to be communicated in the educational efforts of ODF.
Roger Neugebauer	Full time Oregon resident	Cultural		Bounteous forests are such a major part of the Oregon experience. Forests need to remain a part of life for all Oregonians
Trygve Steen, Ph.D.	NCCWP	Cultural	Strongly Support	Strongly Support. Insights available from indigenous peoples need to be incorporated into forest, wildlife, and fish management by the Oregon Department of Forestry. These insights also need to be communicated in the interpretive and educational actions by ODF.
Amanda Astor	Associated Oregon Loggers	Forest Carbon	Strongly Oppose	At the Joint Stakeholder Meeting, it was discussed that the forest carbon goal should be represented in terms of net carbon benefits such that all carbon pools, positive fluxes and negative fluxes were considered, NOT just carbon storage in aboveground biomass. This goal should reflect those conversations. We need to recognize the positive benefits that durable wood products provide, the biogenic emissions from wildfire and mortality along with a slew of other factors.
Anonymous	Unknown	Forest Carbon	Somewhat Support	This is VERY weak considering the opportunity we have to mitigate climate change by protecting Oregon's old growth and restoring older forests for carbon sequestration.
Anonymous	Unknown	Forest Carbon	Somewhat Support	Please revise the Forest Carbon Goal: Increase Oregon's net carbon sequestration and storage in State Forests lands in the near-term.
Anonymous	Unknown	Forest Carbon	Somewhat Oppose	Forests store carbon by their very nature - it is what they do. It is how trees grow. You need to look at the bigger picture, such as storing carbon offsite in homes and allowing new trees to grow and store more carbon. Catastrophic wildfires destroy any carbon stores you think you have on your land.

Anonymous	Unknown	Forest Carbon	Strongly Oppose	Dimensional wood products have carbon storage which is not talked about by the environmental groups.
Anonymous	Unknown	Forest Carbon	Somewhat Oppose	Solve for reduced net carbon emissions and net carbon sequestration. Not symbolic, performative measures. This is a scientific challenge not an identity project.
Anonymous	Unknown	Forest Carbon	Somewhat Support	Storing carbon... ecosystems are dynamic. If there is a fire and burns up the carbon store... then what? Do you replace it?
B Bond Starker	Starker	Forest Carbon	Strongly Support	No extra ordinary measures
Ben Dair Rothfuss	Sustainable Northwest	Forest Carbon	Somewhat Oppose	This goal is vaguely worded and unclear how management decisions will affect outcomes
Betsy		Forest Carbon	Strongly Support	'=As previously stated, the young trees which are cut at 25 years old, do not contribute to providing oxygen to the atmosphere. It's only after age of 40 that they give back the oxygen.
Brett Brownscombe	Wild Salmon Center / Conservation	Forest Carbon	Somewhat Support	Concept is fine but this is too vague.
Darlene Chirman		Forest Carbon	Somewhat Support	Revise to "INCREASE carbon sequestration and stores within State Forest Lands". The value of carbon stores in forest products is a small percentage (~20%); store in forests.
Greg Stratton	Private citizen and Forester	Forest Carbon	Strongly Oppose	A politicized fad. Well managed timberlands provide carbon storage through lumber and other wood product production.
Jerry Lackner	previous tree farmer before burned out	Forest Carbon	Somewhat Support	advocates can get out there and cut those ladder fuels they have created and get them on the ground where they don't cause the hazards. after all, their parents are the ones who put those no machinery in the wilderness areas policies in place so get them out there with saw and axes.
Joint Stakeholder	Unkown	Forest Carbon		Can you explain why "contribute to carbon stores" was used rather than "contribute to carbon sequestration"?
Joint Stakeholder	Unkown	Forest Carbon		Is the intent to "increase" or "contribute" to carbon stores?
Joint Stakeholder	Unkown	Forest Carbon		If you're already contributing to carbon stores, is this a goal? Suggest including the benefit of carbon stored in wood products. If strategies for this goal are similar to the Climate Change and Carbon Plan, that may be an issue moving forward.
Joint Stakeholder	Unkown	Forest Carbon		Increasing carbon storage in forests will be an important component of addressing climate change. By focusing on HCAs and RCAs, these areas will provide carbon storage and protection for endangered species.
Joint Stakeholder	Unkown	Forest Carbon		Recommend removing "Oregon's" because this is a national and global issue. The term "within" is also very limiting, suggest using "sequestration and storage achieved by or produced by State Forest land".
Joint Stakeholder	Unkown	Forest Carbon		Recommend maintaining the possibility that state lands is a way to leverage sequestered wood products that replace other products. Recommend looking for opportunities to incorporate climate change into additional goals. For example, carbon sequestration and climate change could be included in the timber production goals.
Joint Stakeholder	Unkown	Forest Carbon		Recommend broadening the focus of this goal beyond storing carbon to increasing carbon sequestration and carbon stores within state forests. Also recommend adding a goal to reduce biogenic carbon emissions from fire, mortality, and decomposition.
Joint Stakeholder	Unkown	Forest Carbon		Suggest modifying the goal to increase net carbon sequestration. Encourage ODF to take on a leadership role in climate smart forestry and improve policy and carbon stores on the landscape.
Joint Stakeholder	Unkown	Forest Carbon		Oregon's lands are required to be manufactured in the state. Suggest highlighting this as a contributor to jobs and carbon sequestration.
Joint Stakeholder	Unkown	Forest Carbon		As a state agency, there is a need and responsibility to take on a leadership role and encourage private forests to shift how they're operating as well.
Julia DeGraw	OLCV	Forest Carbon	Strongly Support	Not quite sure what this phrasing means. If you mean we need to value and encourage more carbon storage on State Forest lands, then I strongly support.
Kate Jackson	individual	Forest Carbon	Somewhat Support	not sure this can be done reliably, with the pressures from the timber industry and of climate change exacerbated fires. we are seeing fire seasons that evaporate years of carbon storage in a flash and seem to be leading to complete change in what grows back: shrub not trees?

		Forest Carbon	Strongly Support	Increase Oregon's neg carbon sequestration and storage in State Forests lands in the near-term
Mary Hill	Great Old Broads for Wild			
Mary McGaughey	Biologist. TNC. Sierra Club	Forest Carbon	Strongly Support	Research, explore, find the best, most efficient, safe methods to sequester atmospheric carbon. Let Nature help. For all Climate Change mitigation look to Nature for HELP. We arrogant humans have, for too long, forgotten & ignored Nature! Ask Nature to help!
Mike Brinkley	South Willamette Forest Collaborative	Forest Carbon	Strongly Support	Leave the old growth!
Scott Gray	Stimson Lumber	Forest Carbon	Strongly Oppose	Carbon storage is only part of the solution. Need to add carbon sequestration. This is a bit long but could be edited. The goal should be "manage state forestland to optimize fore carbon storage and sequestration. Optimization shall include total storage and sequestration as well as carbon stored in wood protection and the potential negative impacts of reduction harvest resulting in carbon leakage and use of other non-renewable alternatives.
Woody Jackson		Forest Carbon	Strongly Support	Carbon storage and sequestration is the name of the game.
Anonymous	Tillamook	Forest Carbon	Strongly Support	If this had been part of the plan in earnest decades ago, we would need to be so reactive now. Make it a first priority of the plan.
Anonymous	Unknown	Forest Carbon	Somewhat Support	If "contribute" has a comprehensive and risk-averse meaning, then would support. Carbon stores are not solely in trees. Harvested wood products are an important component, as are forest soils. Soil carbon can be effectively stored over a range of rotation lengths; wood products can store more carbon over time than forests lost to catastrophic wildfire. It is unclear from the 8/10 public meeting that "carbon stores" in the FMP context mean either of these, and would appear that live trees are the main focus, without regard to risk.
Brett Brownscomb	Wild Salmon Center	Forest Carbon		Combine this goal with the existing climate smart forestry goal and state: "Ensure state forest lands are a net-positive carbon storage contributor and increase the amount of carbon these lands contribute to Oregon's sequestered carbon stores (relative to 2021 levels) through the adoption of climate smart forestry or other measures."; AND This goal should be tied to the recognition that opportunities to translate carbon sequestration into a revenue source may grow, and therefore ODF should add a clause to this goal stating "... and seek to translate sequestered carbon to a revenue source."
Greg Jacob	Sierra Club/SFAC	Forest Carbon	Strongly Support	Critical we do that.
Jesse Clark	Tillamook	Forest Carbon	Strongly Support	Yes please, and start 20 years ago!
Joseph E Youren	ASLC	Forest Carbon	Strongly Support	State Forest lands are Oregon's ONLY carbon store. Long-lived wood products do not sequester enough carbon for a long enough period of time to offset the carbon emissions that go along with their production.
Laura Wilkeson	Hampton Lumber	Forest Carbon		Contribute to Oregon's carbon stores within State Forest lands-State forests continue to contribute to carbon sequestration through active management and creation of sustainable wood products. <ul style="list-style-type: none"> ▪ This is incredibly vague. The state is already contributing to carbon sequestration by growing more volume than harvested every year. There is concern that the prescriptions that will come from this goal will limit timber harvest and delivery of wood fiber even further. ▪ What about carbon that is stored within wood products created from state forests? ▪ State forests should be actively managed to mitigate risk of wildfire, which emit a substantial amount of carbon into the atmosphere every year and acutely threaten rural communities.

Laura Wilkeson	Hampton Lumber	Forest Carbon		<p>Preferred language: State forests continue to contribute to carbon sequestration through active management and creation of sustainable wood products.</p> <p>Comments:</p> <p>This is incredibly vague. The state is already contributing to carbon sequestration by growing more volume than harvested every year. There is concern that the prescriptions that will come from this goal will limit timber harvest and delivery of wood fiber even further.</p> <p>What about carbon that is stored within wood products created from state forests?</p> <p>State forests should be actively managed to mitigate risk of wildfire, which emit a substantial amount of carbon into the atmosphere every year and acutely threaten rural communities</p>
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Forest Carbon		<p>Recommended revision: "Increase Oregon's net carbon sequestration and storage within State Forest lands in the near-term." Explanation: One of the most significant climate actions the state of Oregon can take is to protect existing carbon stores and increase carbon sequestration in its forests. ODF has a unique and important opportunity to play a leadership role in developing the policies and practices of climate-smart forestry, and our state forests can act as a model for natural climate solutions on private forests, federal forests, and forests across the country. This goal should be focused on storing carbon on the landscape as opposed to wood products. While wood products remain a critical part of numerous U.S. industries, when it comes to measuring significant long-term climate and carbon benefits, the science is clear that the net value of wood products is quite limited. Logging in U.S. forests is one of the largest sources of emissions, emitting 617 million tons of CO2 annually (Harris et al 2016). The total carbon impact of logging in the U.S. is even higher, since logging causes substantial reductions in carbon accumulation and storage potential in forests due to soil compaction and nutrient removal. These combined impacts can often reduce forest carbon storage potential by 30 percent or more (Elliot et al. 1996, Walmsley et al. 2009). And while living trees do pull carbon from the atmosphere and store it, wood products do not offer the same climate benefits. Half of harvested carbon is emitted to the atmosphere soon after logging (Harmon 2019). Advocates for using wood products as primary climate solutions state that the released carbon is eventually re-sequestered by the forest's regrowth; however, this stance does not account for the long time lag between the immediate short-term of release of carbon emissions from logging and combustion of the wood products, and the long-delayed tree regrowth and recapture of carbon in the ecosystem. The carbon stocks of forests are a result of two factors: carbon capture by biomass growth and the duration of carbon in biomass.4 It can take 100 to 350 years to restore carbon in western forests</p>
Mike Totey	Oregon Hunters Associati	Forest Carbon	Strongly Support	You're already doing it.....but I understand the political pressure behind this.
Nick Cady	Cascadia Wildlands	Forest Carbon	Strongly Support	Achieve this goal by protecting old forest.
Peter Karnig	independent	Forest Carbon	Strongly Support	I strongly support this goal. Do this NOW.
Trygve Steen, Ph.D.	NCCWP	Forest Carbon	Strongly Support	This goal needs to follow goal 2, climate change. Given the severe impacts of Climate Change, Oregon's forests need to prioritize sequestration of carbon dioxide and storage of carbon in living trees and organic components of forest soil. Logging trees and producing wood products does not store carbon as effectively as a living forest ecosystem. In fact the timber industry is a major net source of carbon dioxide in Oregon.
Anonymous	Tillamook	Forest Health	Strongly Support	Because of global warming and the disturbing rate of extinction of species, the FMP must include elements for carbon sequestration and habitat protections that override the economic goals.
Anonymous	Unknown	Forest Health	Somewhat Support	Would prioritize protecting water sources and mitigating effects of climate change through carbon trapping.
Betsy McMahon	NCCWP	Forest Health	Strongly Support	The vast clearcutting by the timber industry is destroying the forests — not only the trees, but the watersheds and wildlife.

Brett Brownscomb	Wild Salmon Center	Forest Health		<p>"Forest Health" should either be (a) eliminated from the goals because many of the other existing goals directly cover the attributes subsumed by this term (e.g., plants, soils, wildlife, aquatic / riparian, carbon, wildfire), or (b) be expressed as a goal related simply to the health of the forest, rather than expressed as a means of achieving environmental, social, and economic goals. If (b) is the chosen course, then we suggest cutting the existing "environmental, social, and economic" language (it is already part of the overarching GPV directive) and merging what is currently stated within the language for the "Forest Health", "Climate Change" and "Wildfire" goals under one header ("Climate Resilience, Forest Health and Wildfire"). Some rationale for this is that wildfire and climate resilience are directly related and captured within the concept of forest health. In addition, we believe "Climate Change" should be covered not just within the goal context but rather as an overarching lens (see below).</p>
David Harrison	Marion	Forest Health	Strongly Support	All Oregonians benefit from healthy forests that support healthy wildlife populations and supply clean water for drinking and recreation.
Greg Jacob	Sierra Club/SFAC	Forest Health	Strongly Support	Many top climate scientists, foresters, and ecologists warn us that in order to overcome the climate crisis, we must do move beyond fossil fuel consumption, and increase protection of our forests, to reduce carbon emissions from logging and to facilitate increased drawdown and sequestration of excess atmospheric carbon.
Jay Haladay	Friends of Hug Point, Rural coast property owner	Forest Health	Strongly Support	Oregon has been blessed with timber and water, but we have not done a good job of managing these important resources. We were spoiled and didn't make important and hard decisions about these resources. This plan can be a start to do so.
Jesse Clark	Tillamook	Forest Health	Strongly Support	If managed in an ecological fashion rather than with an industry-first mentality, forest ecosystems will have a shot at producing all of the goals listed above.
Joseph E Youren	ASLC	Forest Health	Strongly Support	The keyword here is, "ecosystem." We as humans need resilient forests for the survival of our own species
Laura Wilkeson	Hampton Lumber	Forest Health		<p>Preferred language: Healthy, sustainable, productive, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals.</p> <p>Comments: This should include thinning overstocked stands, insect/disease treatments, and salvage harvesting after wildfire and other disturbances.</p> <p>There should be an emphasis on the Oregonians – primarily located rural communities – most impacted by state forest management decisions.</p>
Mike Totey	Oregon Hunters Associati	Forest Health	Somewhat Support	Very broad statement. If we could accomplish all of this effectively, this would really be the only "goal" you would need.
Peter Karnig	independent	Forest Health	Strongly Support	Watersheds up and down the our coast are being destroyed by current logging practices. This must stop. The only way to protect our Drinking water is GROWING OLDER FORESTS. By doing this, we will also be helping our coastal fisheries and mitigating the effects of GLOBAL WARMING.
Trygve Steen, Ph.D.	NCCWP	Forest Health	Strongly Support	Fine goal, PLEASE recognize this really requires a change in management by growing older forests, more than 80 years old at a minimum in watersheds providing drinking water and ideally across much of the landscape. Current short rotation plantation focused management clearly violates this goal and threatens water supplies critical for coastal economies and individual health. Older forest watershed protections will also protect salmon and other important biodiversity.

Amanda Astor	Associated Oregon Loggers	Forest Health	Strongly Oppose	AOL believes that this goal should be recategorized as an overarching priority for which each resource goal should strive to achieve. For instance, ODF could provide a preamble that says something to the effect of, "The Oregon Department of Forestry strives to achieve Greatest Permanent Value by managing the state's forestlands to ensure healthy, sustainable, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals to benefit all Oregonians. The Department focuses on utilizing sustainable management strategies where there is never more biomass harvested or lost to mortality than is grown on state lands in perpetuity. Treatments on forested lands work to enhance productivity and minimize risk of catastrophic disturbance such as insect and disease outbreak, wildfire and drought stress to attain forest health, economic and carbon co-benefits. When forests are healthy and resilient, damage from such disturbances is minimized. The vibrant forest products sector that results, ensures there is adequate capacity to restore the forests from what damage does occur and helps protect the forests from future damage by providing fire fighters, road maintenance, hazard reduction and resilience treatments into the future. When forests are healthy and production is high, the Department is leading by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals." Each specific Resource Type Goal should then be measured against its ability to archive the overarching priorities of the Department to create healthy and productive forests, climate change co-benefits and resiliency against disturbance.
Anonymous	Unknown	Forest Health	Strongly Support	Please don't cut the old growth trees
Anonymous	Unknown	Forest Health	Strongly Support	Not easy to do.
Anonymous	Unknown	Forest Health	Strongly Support	This goal and all 17 goals listed here are all encompassing and difficult to rate / compare.
Anonymous	Unknown	Forest Health	Strongly Support	Forests must be healthy to meet all goals and reduce fire hazards.
Anonymous	Unknown	Forest Health	Somewhat Support	I do support the HCP.
Anonymous	Unknown	Forest Health	Strongly Support	This is optimistic and vague. How will you measure this?
B Bond Starker	Starker	Forest Health	Strongly Support	Maximize value across generations
Betsy	Unkown	Forest Health	Strongly Support	We must regulate the huge clearcutting that is ruining our forests, wildlife, watersheds.
Betsy Herbert	North Coast Communities for Watershed Protection	Forest Health	Strongly Support	I would replace the words "over time" with the words "from now and continuing into the future" so that delay in acting on the goal is avoided.
Brett Brownscombe	Wild Salmon Center / Conservation	Forest Health	Somewhat Oppose	Nothing offensive in this per se, but it just seems too vague. And, it's already related to a lot of other resource issues / goals (so maybe redundant).
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Forest Health	Somewhat Support	To the extent the triple bottom line is weighed in favor of economic goals vs the environmental and social goals, it detracts from my ability to strongly support this initiative. Economic goals have generally been implemented in opposition to ODF lands serving as healthy, sustainable and resilient ecosystems.
Joint Stakeholder	Unkown	Forest Health		Should this be a goal or an overarching principle for the FMP? If a goal is too high-level, conflicting strategies may meet or achieve the same goal.
Joint Stakeholder	Unkown	Forest Health		Why didn't ODF include a goal to address Swiss needle cast in Tillamook? This is important for carbon sequestration, timber production, and wildlife.
Joint Stakeholder	Unkown	Forest Health		Suggest listing more general goals at the top and listing related goals close to one another. It would be valuable to understand how goals will be prioritized.
Joint Stakeholder	Unkown	Forest Health		Forest health is also related to post-fire management and restoration.
Kate Jackson	individual	Forest Health	Strongly Support	forest health is higher priority than timber production, overharvest under FPA has been degrading natural habitats for a century, so timber production should not be the top 'economic' goal.

Laura Wilkeson	Hampton Lumber	Forest Health		Ensure Healthy, sustainable, productive, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals to benefit all Oregonians. • This should include thinning overstocked stands, insect/disease treatments, and salvage harvesting after wildfire and other disturbances. • There should be an emphasis on the Oregonians – primarily located rural communities – most impacted by state forest management decisions.
Mary Hill	Great Old Broads for Wild	Forest Health	Strongly Support	In favor of controlled burns in forests.
Mary McGaughey	Biologist. TNC. Sierra Club	Forest Health	Strongly Support	Spell out in specific detail how these great goals will be implemented. Report the success of implementation. Ongoing auditing.
Mike Brinkley	South Willamette Forest Collaborative	Forest Health	Strongly Support	Discontinue clear-cutting in ALL State forests, increase riparian setbacks on fish bearing streams to 200 ft, establish riparian setbacks on non fish bearing feeder streams, even part time streams, as they contribute to the watershed. Logging to the edge of these ephemeral streams creates sediment to be washed down into the main streams.
Mike McKibbin		Forest Health	Strongly Support	I strongly support this statement but i would recommend changing the order the words environmental and economic.
Roger Neugebauer	Full time Oregon resident	Forest Health	Strongly Support	Maintaining forest health is critically important to support safe drinking water, to protect wildlife (including endangered species) and to help slow down climate change,
Woody Jackson		Forest Health	Somewhat Support	Production of clean clear water as top priority. All silvicultural treatments based upon
Anonymous	Unknown	Mining, Agriculture, Admin Sites & Grazing	Strongly Support	These uses can be high-value, and may enable ODF to pursue more activities improving forest resilience.
Anonymous	Tillamook	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	Mining activities are almost always damaging to the environment and wildlife habitat. Agriculture, such as grazing, is also generally a negative impact.
Anonymous	Unknown	Mining, Agriculture, Admin Sites & Grazing	Somewhat Support	Ok when compatible with other resource goals.

Anonymous	Unknown	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	Stop permitting mining. Period. Agricultural use should be on non-forested lands. And administrative sites should be minimized.
Betsy Herbert	North Coast Communities for Watershed Protection	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	Let's not compromise the natural ecosystem services provided by state forests with these other extractive resources.
Betsy McMahon	NCCWP	Mining, Agriculture, Admin Sites & Grazing	Somewhat Oppose	This is case-specific. Difficult to lump these all together.
David Harrison	Marion	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	Mining, agricultural use, and grazing are inherently incompatible with maintaining forest health, wildlife habitat, and water quality.
Greg Jacob	Sierra Club/SFAC	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	Mining is not compatible with healthy and sustainable forest ecosystems.

Jerry Lackner	previous tree farmer before burned out	Mining, Agriculture, Admin Sites & Grazing	Somewhat Support	grazing will help keep fuel load low
Jesse Clark	Tillamook	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	Mines already hammer our landscape and di irreparable damage to the landscape, so mineral extraction should be kept to a bare minimum whenever possible
Julia DeGraw	OLCV	Mining, Agriculture, Admin Sites & Grazing	Strongly Support	I strongly support if this leads to significantly curtailing and limiting grazing, ag, and mining. Mining isn't compatible, and grazing seldom is, especially in riparian areas.
Kate Jackson	individual	Mining, Agriculture, Admin Sites & Grazing	Somewhat Oppose	without assurance that these practices will be more sustainable and not leave damage for the public sector to pay to cleanup or restore, these should decrease over time. admin sites sound like ranger and non-profit activities that would benefit from living in the area, so that could be a positive if well done.
Laura Wilkeson	Hampton Lumber	Mining, Agriculture, Admin Sites & Grazing		Permit Mining, agriculture use, administrative sites and grazing when are sustained resource use is compatible with other forest resource goals. <ul style="list-style-type: none"> • Rock sources on state lands are vital to road infrastructure. The more rock sources available via mining, the more revenue will go to the state and counties from timber sales. • How will ODF determine if permitting these activities are "compatible with other forest resource goals"?
Mary Hill	Great Old Broads for Wild	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	Let's keep the forest lands for forest. Thanks!
Mary McGaughey	Biologist. TNC. Sierra Club	Mining, Agriculture, Admin Sites & Grazing	Somewhat Support	As long as we Give Back. As long as we do notTake. No greedy wanton Taking. No profiteering!. Respect that Forest resources are a shared Gift.
Mike Brinkley	South Willamette Forest Collaborative	Mining, Agriculture, Admin Sites & Grazing	Somewhat Oppose	Mining is rarely compatible with forest resource goals. Grazing should be strictly managed to prevent destruction of natural landscapes.
Peter Karnig	independent	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	The activities mentioned are incompatible with forest and stream health and quality drinking water for Oregon.
Trygve Steen, Ph.D.	NCCWP	Mining, Agriculture, Admin Sites & Grazing	Strongly Oppose	An appropriate focus on forest and stream ecosystem protection requires elimination of this goal. The activities mentioned are incompatible with forest and stream health, as
Brett Brownscomb	Wild Salmon Center	Other - Chemical Spray		The draft goals document does not address this issue. While chemical spray relates to other issues and values / goals, we feel it is important enough to be distinctly addressed, and that it doesn't fit neatly into "Air Quality", "Wildlife", "Aquatic / Riparian", "Timber Production", or any of the other existing distinct goal categories. ODF should develop specific goal language seeking to reduce reliance on chemical spray use in its forestry practices on state public forest land, especially aerial spray (as measured against the 2021 status quo). Subsequent work at the FMP strategy level could further address how, or which geographies, practices, situations or conditions are in need of most attention or restriction, but without a goal statement to which to tier, we are concerned this issue and related strategies will go unaddressed. A goal and subsequent strategies / actions to reduce chemical spray reliance would have benefits for biodiversity, public and watershed health, and financial viability through reduced costs.
Ron Buyers	Tillamook	Other - Chemical Spray		In that vein, I'd like to see how much effort and resources are assigned to replacing pesticide applications. How much of a priority it is to eliminate pesticide usage near drinking water sources and areas where people reside and recreate? How much money will be spent on this goal?
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Other - Collaboration and Coordination		Recommended Collaboration and Coordination Goal: "Collaborate and coordinate with other state, tribal, and federal agencies to maximize expertise and capacity."

Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Other - Environmental Justice		Recommended Environmental Justice Goal: "Ensure forest management planning and implementation fully evaluates and redresses environmental justice impacts, facilitates meaningful involvement of impacted communities, and prioritizes distribution of benefits and minimization of burdens to historically underserved communities—including BIPOC, rural, low-income, and forest labor communities."
Brett Brownscomb	Wild Salmon Center	Other - Goal Structure		Some issues or values currently expressed in the document either as a "resource type" or within goal statements are actually overarching directives or lenses through which the FMP goals should be assessed. This includes "Climate Change" and legal mandates, namely GPV and Common School Fund obligations. ODF should articulate this as an overarching framework to the FMP and its goals as opposed to trying to cover these things within the actual goal statements. (see below for more)
Brett Brownscomb	Wild Salmon Center	Other - Goal Structure		Instead of using "Resource Type" as an organizing frame for the goals, this should be changed to "Resource Issue" or "Value". This would more clearly accurately organize the goals according to what they represent (e.g., Forest Health and Climate Change are not resource types).
Joint Stakeholder	Unknown	Other - Goal Structure		Are the goals for individual resources ODF manages or are they for the overall management of Oregon's forests?
Ron Buyers	Tillamook	Other - Goal Structure		I trust you will eventually prioritize goals and strategies so we can comment. In that process, please assign budget amounts to each goal so we can see how ODF goals and strategies are reflected in its spending. This demonstrates priority setting as well, and is especially important when public money is about to be spent.
Ron Buyers	Tillamook	Other - Goal Structure		There were 20 FMP goals listed, some with subcategories. I was glad to see drinking water listed under Aquatic, but there was no way to know its rank or level of importance as compared to other goals. That's true for the other topics as well. In some cases, it appears the goals are in conflict with one another other, and can undermine effectiveness. How will that be resolved?
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Other - Mature and Old Growth Forest		Recommended Mature and Old Growth Forest Goal: "Identify priority management areas for mature and old growth forest characteristics." Very little old growth forest remains in Oregon's state forests. In addition to timber production, the agency has a responsibility to protect and restore wildlife habitat, watersheds, and outdoor recreation access. Managers should strive to identify priority areas for protecting and managing state forest for mature and old growth forest characteristics. This forest type supports numerous other ODF objectives, including increased carbon storage and sequestration.
Laura Wilkeson	Hampton Lumber	Other - Rural Communities		Rural, forest-dependent communities are vibrant and resilient and able to benefit from active forest management. ▪ Increasing and improving the health and vitality of rural communities should be a goal for ODF and specifically listed in the FMP. Communities that surround state forests can either benefit from or be put at higher risk because of how resources are managed.

Laura Wilkeson	Hampton Lumber	Other - Wood Products		<p>Oregon's forests continue to enable local production of sustainable and renewable wood products for housing, paper supplies and other pressing societal needs.</p> <ul style="list-style-type: none"> • Wood products should be recognized by the state for their importance as a renewable and sustainable resource. Oregon is the number one softwood lumber producer in the country and that achievement should be celebrated. • The production of wood products benefits all Oregonians, but especially rural communities that surround state forests. The direct and indirect economic activity provided by logging and sawmill operations go far beyond just employment opportunities. • Wood products are part of the solution to climate change. Over half the weight of lumber is stored carbon. As the global population grows, so does the need for housing and infrastructure. Wood products are the most climate-friendly answer to those needs.
Anonymous	Unknown	Plants	Strongly Support	Include banning pesticides which might impact other species including humans.
Anonymous	Tillamook	Plants	Strongly Support	This is a key component of forest resiliency with regard to fire, disease and so much more.
Anonymous	Unknown	Plants	Strongly Support	Maintain AND restore
Anonymous	Unknown	Plants	Somewhat Oppose	If you maintain a variety of seral stages, you will maintain a variety of vegetation. Be careful about allowing too much understory vegetation that create fire ladders and contribute to catastrophic wildfires.
Betsy	Unkown	Plants		Native plant life is now being ruined with the current forest practices of using toxic chemicals on understory vegetation. It is horrendous.
Betsy McMahon	NCCWP	Plants	Strongly Support	This is totally being ruined by the vast pesticide spraying! No plant can survive with the present chemical applications.
Jerry Lackner	previous tree farmer before burned out	Plants	Somewhat Support	how did this native vegetation survive 300 years ago without any management?
Jesse Clark	Tillamook	Plants	Strongly Support	Yes!
Joseph E Youren	ASLC	Plants	Strongly Support	Do not substitute "clear cuts" for early seral stage. Clear cuts are deforestation.
Kate Jackson	individual	Plants	Strongly Support	this implies a different kind of timber production, one that fits with natural system diversity
Laura Wilkeson	Hampton Lumber	Plants		<p>Maintain - Understory vegetation represents a diversity of native vegetation associations and seral stages across the landscape including sensitive and endangered plant populations.</p> <ul style="list-style-type: none"> • Will this be different than the current FMP landscape goals? What about fire risk from increased fuel loads in overstocked stands?
Laura Wilkeson	Hampton Lumber	Plants		<p>Comments:</p> <p>Will this be different than the current FMP landscape goals?</p> <p>What about fire risk from increased fuel loads in overstocked stands?</p>
Mary Hill	Great Old Broads for Wild	Plants	Somewhat Support	Inventory sensitive and endangered plant populations before controlled burns.
Mary McGaughey	Biologist. TNC. Sierra Club	Plants	Strongly Support	Restore Nature's healthy NATIVE, NATURAL plant COMMUNITIES that biologically balance all of Nature's environments, ecologies.
Maysa Miller	NCCWP	Plants	Strongly Support	Significant need to implement as an alternative to present emphasis on young plantations and production of timber. Please include size limits to timber production as well as the elimination of clear cutting management practices. Aerial spraying as is still being done is fundamentally incompatible with this goal.
Mike Brinkley	South Willamette Forest Collaborative	Plants	Strongly Support	I am in favor of the creation of early seral habitat where appropriate. This can be done by selective regeneration harvest in plantations. It can also be done by removing encroaching trees in historic meadows. I am in favor of selective harvest in natural stands for the purpose of restoring historic landscapes that have been altered by many years of fire prevention.
Mike Totey	Oregon Hunters Associati	Plants	Strongly Support	Assuming invasive spp. will be covered in strategies or forest health.
Nick Cady	Cascadia Wildlands	Plants	Strongly Support	Recognize that naturally fire-created complex early-seral habitat has more benefits than early seral habitat created artificially through logging.
Peter Karnig	independent	Plants	Strongly Support	I strongly support this goal as proposed.

Woody Jackson		Plants	Somewhat Support	Achieved by natural process rather logging
Anonymous	Tillamook	Pollinator & Invertebrate	Strongly Support	Many chemicals have been shown to negatively impact pollinators years and decades after being used widely in systems. Assume that any chemicals not proven to be safe for pollinators are hazardous.
Anonymous	Unknown	Pollinator & Invertebrate	Somewhat Support	Do these species need to be called out specifically. Wouldn't they be covered under goal 4
Anonymous	Unknown	Pollinator & Invertebrate	Somewhat Support	Use Integrated Pest Management. Get rid of, phase out the toxic poisons/pesticides, chemical fertilizers to re-build healthy profile soils. Without healthy soil all of Earth's life is DEAD!
Ben Dair Rothfuss	Sustainable Northwest	Pollinator & Invertebrate	Strongly Support	Again, by ruining the habitat and the plant life around forests, pollinators and invertebrates are in danger.
Betsy McMahon	NCCWP	Pollinator & Invertebrate	Strongly Support	The bee population has finished drastically - mainly due to chemicals. The spraying of pesticides everywhere is killing all species of wildlife on land and in water.
Darlene Chirman		Pollinator & Invertebrate	Strongly Support	No logging except by saw, ax, and horse/oxen.
Greg Jacob	Sierra Club/SFAC	Pollinator & Invertebrate	Strongly Support	Again, cut back severely on aerial spraying and avoid neonicotinoids.
Jesse Clark	Tillamook	Pollinator & Invertebrate	Strongly Support	Most pollinators are killed or permanently harmed by the application of herbicides on regeneration clear cuts. Lessening the use of these chemicals wherever possible is one of the low-hanging fruits in terms of promoting pollinator health.
Joseph E Youren	ASLC	Pollinator & Invertebrate	Strongly Support	Continue emphasis on what ODF calls: "a light touch in chemical applications"
Laura Wilkeson	Hampton Lumber	Pollinator & Invertebrate		<p>Pollinators and Invertebrates</p> <p>o Provide suitable habitats across the landscape that contribute to maintaining or enhancing Healthy native, sensitive, and endangered pollinator and invertebrate populations.</p> <ul style="list-style-type: none"> There are private sector projects – like Hampton's pollinator experiment – that the state should consider the benefits of.
Laura Wilkeson	Hampton Lumber	Pollinator & Invertebrate		<p>Preferred language: Healthy native pollinator and invertebrate populations.</p> <p>Comment: □</p> <p>There are private sector projects – like Hampton's pollinator experiment – that the state should consider the benefits of.</p>
Mike Totey	Oregon Hunters Association	Pollinator & Invertebrate	Somewhat Oppose	Why are we calling out specific groups/populations. Goals should be broad enough to cover these in other places.
Nick Cady	Cascadia Wildlands	Pollinator & Invertebrate	Strongly Support	Pollinators and invertebrates strongly favor complex early seral habitat, ODF should channel this goal in management directives that prevent post-fire logging.
Peter Karnig	independent	Pollinator & Invertebrate	Strongly Support	I strongly support this goal as proposed and would like to add the following "and invertebrate species especially those essential for the soil food web.
Trygve Steen, Ph.D.	NCCWP	Pollinator & Invertebrate	Strongly Support	This goal needs to end with the following " . . . and invertebrate populations, including those essential for the soil food web." This addition is very significant, because growth of forest trees is fundamentally dependent on a functioning soil food web.
Woody Jackson		Pollinator & Invertebrate	Strongly Support	Depends on what you mean here. We need pollinators and invertebrates, but do not know what projects would be proposed or what the tradeoffs would be.
Anonymous	Unknown	Recreation, Education & Interpretation (G1)	Somewhat Oppose	Recreation in state forests includes motorized vehicles and allows campfires and other ignition sources. Given the extreme and accelerating risk from catastrophic wildfire, recreation should be de-emphasized on ODF lands--it is too much of a risk.
Jay Haladay	Friends of Hug Point, Rural coast property owner	Recreation, Education & Interpretation (G1)	Strongly Support	Our ability to use our forests is what makes Oregon unique.
Joint Stakeholder	Unkown	Recreation, Education & Interpretation (G1)		Recommend removing the acronym when discussing recreation.
Joint Stakeholder	Unkown	Recreation, Education & Interpretation (G1)		Suggest adding language about increasing or exploring recreation opportunities (trails), especially outside of Portland and Salem.

Joint Stakeholder	Unkown	Recreation, Education & Interpretation (G1)		Logging and recreation infrastructure should be balanced.
Joint Stakeholder	Unkown	Recreation, Education & Interpretation (G1)		Advocating for State Forests to be inclusive, with access for folks that haven't traditionally felt safe or welcome in these spaces.
Joint Stakeholder	Unkown	Recreation, Education & Interpretation (G1)		Recreation and harvesting, or timber management, are not mutually exclusive. There are many services the timber industry provides that support recreation. Conflicts may occur from active operations and safety concerns. Recommend addressing safety concerns and recreation's impacts through strategies.
Joint Stakeholder	Unkown	Recreation, Education & Interpretation (G1)		This goal is amorphous and "provide high quality forest recreation" is difficult to measure. However, I understand that strategies will provide more detail.
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Recreation, Education & Interpretation (G1)		Recommended revision: "Provide high-quality forest recreation, interpretation, and education opportunities to create safe, accessible, meaningful, and enjoyable experiences that foster appreciation and understanding of forest ecosystems and contribute to community health, forest stewardship, and economic well-being." Explanation: State forest lands provide vital, affordable recreation opportunities for Oregon but especially low-income and BIPOC residents. ODF must ensure that these opportunities are widely accessible by providing sufficient access points and pathways as well as information and services in multiple languages and formats. Work to make Oregon's forests places that are safe and enjoyable for historically underserved communities, including BIPOC communities who have experienced displacement from and discrimination in outdoor spaces. Work directly with impacted communities and disability and racial justice advocates to determine what is needed to make these spaces the source of meaningful and enjoyable experiences.
Amanda Astor	Associated Oregon Loggers	Recreation, Education & Interpretation (G2)	Somewhat Support	A) Please more clearly identify what "high-quality" means as used in this goal. AOL also believes this is a great opportunity for the Department to help educate the public about the forest sector that allows forest management activities to occur, forest products to be supplied to home improvement stores and fires to be put out. It would be a missed opportunity to only teach people about forests and not the entire systems that allows them to persist in healthy forms. Simply including the phrase, community economic wellbeing is not strong enough. There is really misunderstanding out there, and the Department should take pride in informing the public about the entire forest sector. B) The Department should also include a statement about reducing conflict between user groups.
Anonymous	Unknown	Recreation, Education & Interpretation (G2)	Strongly Support	Acknowledge the role of the native communities in maintaining healthy forests.
Anonymous	Tillamook	Recreation, Education & Interpretation (G2)	Strongly Support	Minimize or reduce the current foot print that camp sites in riparian zones now have. Maximize the education of users through high quality interpretive displays.
Anonymous	Unknown	Recreation, Education & Interpretation (G2)	Strongly Support	Important to note the importance of inviting REI participation by under represented people of color communities.
Anonymous	Unknown	Recreation, Education & Interpretation (G2)	Strongly Support	People benefit from recreation, but recreation must be compatible with other goals, and people can't be out in the forests when fire hazards are too high.
Anonymous	Unknown	Recreation, Education & Interpretation (G2)	Somewhat Support	High-quality recreation - what does that mean? It means different things to different people. High-quality to me means limited to no infrastructure and few people.
Greg Stratton	Private citizen and Forester	Recreation, Education & Interpretation (G2)	Strongly Oppose	Again we have 60% of the state managed by federal managers, Statelands were intended for and need to continue to focus on Timber production.
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Recreation, Education & Interpretation (G2)	Somewhat Support	"Adverse impacts to natural resources" implies a conflict between recreation and logging. While recreation is less extractive and impactful than logging, it still carries an impact, and recreation infrastructure should be measured against the impacts it has to the broader ecosystem, especially in riparian habitats.
Jerry Lackner	previous tree farmer before burned out	Recreation, Education & Interpretation (G2)	Somewhat Support	What % of the population are really concerned Only a few with motee mouthe and large megaphones telling partial truths

Jesse Clark	Tillamook	Recreation, Education & Interpretation (G2)	Strongly Support	Provide interpretive kiosks that explain how the forest once functioned and how the forest has been permanently altered by European settlement and logging practices which have removed large wood from the river systems, a key component of fish habitat and reducing water turbidity and a component that will never be able to be restored.
Joseph E Youren	ASLC	Recreation, Education & Interpretation (G2)	Strongly Support	Its a sad shame that this is an afterthought.
Julia DeGraw	OLCV	Recreation, Education & Interpretation (G2)	Strongly Support	The timber industry should have no influence in REI, as they are extremely biased against habitat and scientifically sound forest management.
Kate Jackson	individual	Recreation, Education & Interpretation (G2)	Strongly Support	recreation over clear cut harvest, no matter how much smaller the clear-cuts now used.
Mary McGaughey	Biologist. TNC. Sierra Club	Recreation, Education & Interpretation (G2)	Strongly Support	Teach our young children the biology of our forests. How forest biology weaves together the beautifully complicated web of life. Humans are an integral part of that web, that balance of Nature.
Mike Totey	Oregon Hunters Associati	Recreation, Education & Interpretation (G2)	Strongly Support	Just change it to RIE instead of REI and hopefully that will alleviate all the confusion around what outdoor gear store you're advertising for.
Priscilla Macy	Oregon Outfitters & Guides Association, ED	Recreation, Education & Interpretation (G2)	Strongly Support	Continue to work with prominent recreation groups - for example, Oregon Outfitters & Guides Association, Trail groups, American Whitewater...whichever are most relevant for the landscape, and the activities within that landscape.
Roger Rocka	City of Astoria	Recreation, Education & Interpretation (G2)	Strongly Support	Recognition of the role the forests played and techniques of management before the arrival of Europeans.
Scott Gray	Stimson Lumber	Recreation, Education & Interpretation (G2)	Somewhat Support	add in "forest management" to natural resources and forest ecosystems.
Trygve Steen, Ph.D.	NCCWP	Recreation, Education & Interpretation (G2)	Somewhat Support	The components of this goal title need to be in a different order. I would suggest Recreation, Interpretation, and Education, as you order these features in your description. This would avoid the likely confusion with REI, Recreational Equipment, Inc. Note also, tree plantations are not a desirable location for recreational activities. Clearly, RIE management needs to be sustainable and needs to minimize adverse impacts on other goals, especially production of quality drinking water (which includes keeping human and pet waste out of forest waters). . Interpretation and education need to emphasize the environmental importance of old forests as an alternative to short rotation plantation forestry.
Amanda Astor	Associated Oregon Loggers	Scenic	Somewhat Oppose	Again, the Department has developed a goal that can be interpreted in far too many ways. The Department should be striving to have all types of forests be appealing to the public because they understand why the forest looks a certain way. Perhaps the Department should use language such as, "Manage forests in ways that value diverse scenery and forested settings that are visually varied where every seral class is respected for its value to the ecosystem and unique features on the landscape are celebrated."
Anonymous	Unknown	Scenic	Strongly Support	Weak wording. Add streams, rivers, wetlands - not just forests.
Anonymous	Unknown	Scenic	Somewhat Support	seems the lowest priority of all of these.
Anonymous	Unknown	Scenic	Somewhat Oppose	This doesn't mean setting vast areas aside for someone's viewing. Also, some consider clearcuts to be unsightly, but clearcuts support a lot of young seral species and promote trees like our native Douglas-fir.
Anonymous	Unknown	Scenic	Somewhat Oppose	This goal should be pursued in some areas/corridors but not as broadly as implied here. We should not validate the idea that a clearcut is an aesthetic abomination. It's a working forest and we should set expectations about the variety of scenes that will produce. I like a tall, rich corn field better than a stubble field, but I expect I will see the latter, at times.
Anonymous	Unknown	Scenic	Somewhat Oppose	You could stop clearcutting. That would go a long way to meeting this goal.
B Bond Starker	Starker	Scenic	Strongly Support	in the context of active forest harvest management
Betsy	Unkown	Scenic	Strongly Support	The forests are becoming very ugly with the huge swaths of clearcutting.
Betsy Herbert	North Coast Communities for Watershed Protection	Scenic	Somewhat Support	The visual impact of intensive forest management can be staggering, reducing tourism, degrading the human spiritual connection with forests, and recreational use.
Betsy McMahon	NCCWP	Scenic	Strongly Support	Today's forests are becoming uglier by the day with the vast clearcutting destroying the beauty and the health of what used to be Oregon's forests.
Brett Brownscombe	Wild Salmon Center / Conservation	Scenic	Somewhat Oppose	too vague
Darlene Chirman		Scenic	Somewhat Support	Ecosystem function more important than visual appearance.

Greg Jacob	Sierra Club/SFAC	Scenic	Somewhat Support	Manage forests in ways that value scenery and forested settings that are visually appealing. (Check this SBL)
Greg Stratton	Private citizen and Forester	Scenic	Strongly Oppose	Statelands should be working forests with beauty being in the eyes of the beholder.
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Scenic	Somewhat Oppose	A visually appealing forest means something different to everyone. Let's focus on sound science that promotes healthy, functioning ecosystems, and let the beauty be something everyone must discover for themselves.
Jerry Lackner	previous tree farmer before burned out	Scenic	Somewhat Support	what % of users get out of their cars and actually see more than a few hundred yards off the roads
Jesse Clark	Tillamook	Scenic	Strongly Support	This means more than an "emerald curtain" on the highway. Forests should look like forests, not plantations.
Kate Jackson	individual	Scenic	Don't Know/Not Sure	sustainable and healthy ecosystems are far more visually appealing than forests as agricultural crop
Laura Wilkeson	Hampton Lumber	Scenic		Manage forests in ways that value Key scenery-scenic and forested settings that are visually appealing maintained. <ul style="list-style-type: none"> This is very subjective. How would ODF quantify "scenery" and "visually appealing"? ODF should not go above and beyond current state highway and waterway laws.
Laura Wilkeson	Hampton Lumber	Scenic		Preferred language: Key scenic forest settings are maintained. Comments: This is very subjective. How would ODF quantify "scenery" and "visually appealing"? ODF should not go above and beyond current state highway and waterway laws.
Mary Hill	Great Old Broads for Wild	Scenic	Strongly Support	Yes. What happened to the scenic corridors that were legislated? in the 1990's? Drive to the coast is terrible. Maybe these are national forests?
Mary McGaughey	Biologist. TNC. Sierra Club	Scenic	Strongly Support	Nature's native plant communities will provide the scenic beauty, naturally. Ask Nature.
Nick Cady	Cascadia Wildlands	Scenic	Strongly Support	Specific designations should protect areas for scenic values and prohibit areas from logging activities that degrade these views.
Peter Karnig	independent	Scenic	Strongly Support	I strongly support this goal. Old growth forests should be our goal for the future of the planet. This goal implicitly supports management of older forests which in turn support all three components of Greatest Permanent Value: Environmental, Social and Economic.
Scott Gray	Stimson Lumber	Scenic	Strongly Oppose	Beauty is in the eyes of the beholder. Some like an landscape of a forest with scattered snags and dead trees, others like the look of managed forests with mitigations measures showing management and nature can coexist. Remove this goal is probably simplest. It is not needed.
Trygve Steen, Ph.D.	NCCWP	Scenic	Strongly Support	Really important, this goal implicitly supports management for older forests, which are more visually appealing than the bare soil of clearcuts and the resulting plantations.
Joint Stakeholder	Unkown	Scenic		Interested in the strategies for scenic goals and concerned about tradeoffs associated with these.
Amanda Astor	Associated Oregon Loggers	Soil	Somewhat Oppose	With this goal being so broad, there is far too much left up for grabs. The goal should say something about following the state's BMPs according to the Oregon Forest Practices Act. In addition, it is unclear what enhancing soils means other than fertilization.
Anonymous	Tillamook	Soil	Strongly Support	Forest soils naturally enhance themselves over time so long as they are not bulldozed, clearcut, sprayed and compacted
Anonymous	Unknown	Soil	Somewhat Support	What kind of soils? Need to explain somewhere why this is important.
Anonymous	Unknown	Soil	Somewhat Support	This is simply common sense. I do not what you mean by enhancing soils. Soils are protected in forest operations now, at least those on private industrial lands are.
Anonymous	Unknown	Soil	Strongly Support	Eliminate landslide risk by addressing poorly placed or poorly maintained roads.
B Bond Starker	Starker	Soil	Strongly Support	Within the context of active management

Betsy	Unkown	Soil	Strongly Support	Applying toxic chemicals after clearcutting definitely harms the soils.
Brett Brownscombe	Wild Salmon Center / Conservation	Soil	Somewhat Support	same--vagueness
Darlene Chirman		Soil	Strongly Support	Minimize soil disturbance after wildfires to promote natural regeneration.
Greg Jacob	Sierra Club/SFAC	Soil	Strongly Support	Clear cutting is harmful to soils.
Jesse Clark	Tillamook	Soil	Strongly Support	Clearcutting as a practice deimates soil health. Move toward diverse forest stand structure and keep the soil regenerating for generations to come. Or, destroy the soil and no more trees will effectively take root.
Joint Stakeholder	Unkown	Soil		What's the difference between "restore" and "enhance"?
Joint Stakeholder	Unkown	Soil		Suggest adding the words productivity and ecosystem function to the goal to encompasses erosion and water quality issues.
Joint Stakeholder	Unkown	Soil		Provide clarity that the goal is addressing the productivity of soil, or quality, rather than quantity. If you want to expand the goal, add protections related to erosion and landslides, sensitive soils, and landscapes.
Joint Stakeholder	Unkown	Soil		When applying the goal to IPs or AOPs, consider when soil might be vulnerable (eg. after a fire) and take a site specific look at the impacts of logging.
Joint Stakeholder	Unkown	Soil		Does the goal preclude you from encouraging some landslides into the streams where it would provide benefits to aquatic resources?
Joint Stakeholder	Unkown	Soil		Recommend recognizing the importance of organic content and the organic horizon in soil including how they support the soil food web, provide even flow of nutrients to the forest ecosystem, and keeps the nutrients out of the water.
Julia DeGraw	OLCV	Soil	Strongly Support	This will also help with carbon sequestration!
Kate Jackson	individual	Soil	Strongly Support	we have under-estimated the relevance of soil to ecosystem health. alter tree harvest methods and quantity goals to re-center on soil health. helps with carbon storage and water quality too
Laura Wilkeson	Hampton Lumber	Soil		Maintain, protect, and enhance Forest soils are healthy and productive. <ul style="list-style-type: none"> ▪ Another example of a goal being too vague. ▪ Should account for carbon stored beneath the surface. ▪ Restore and replant stands after wildfire or other disturbances.
Laura Wilkeson	Hampton Lumber	Soil		Preferred language: Forest soils are healthy and productive. Comments: Another example of a goal being too vague. Should account for carbon stored beneath the surface. Restore and replant stands after wildfire or other disturbances
Mary McGaughey	Biologist. TNC, Sierra Club	Soil	Strongly Support	Soil is Nature's support for all Life foundation. Without soil Life is dead!
Mike Brinkley	South Willamette Forest Collaborative	Soil	Strongly Support	Pesticides! They destroy the microrizomes on the soil.
Mike Totey	Oregon Hunters Associati	Soil	Strongly Support	Assuming strategies will cover how you intend to enhance soils.
Nick Cady	Cascadia Wildlands	Soil	Strongly Support	This should consider the type of yarding, post-fire logging, and slope angles. Also ODF should consider the value of soil in carbon storage.
Peter Karnig	independent	Soil	Strongly Support	I strongly support this goal. Do this NOW.
Trygve Steen, Ph.D.	NCCWP	Soil	Strongly Support	Need to state this goal as - Maintain, protect, and enhance soils, including prioritizing carbon storage in soil. The higher organic content of soil in an older forest is fundamental for forest health by maintaining a thick O Horizon which is also important for carbon sequestration. Healthy forest soil also is essential for watersheds to produce quality drinking water in the best possible quantity during Oregon's long dry summers, which are likely to get more severe with climate change.
Woody Jackson		Soil	Strongly Support	No soil compaction and disturbance from silvicultural treatments.

Amanda Astor	Associated Oregon Loggers	Special Forest Products	Somewhat Support	Again... too broad... Try, "Provide the public with ample opportunities to obtain special forest products in sustainable manners."
Anonymous	Unkown	Special Forest Products	Somewhat Support	Vague. Add "as practical" and "when not conflicting with higher priority goals".
Anonymous	Unkown	Special Forest Products	Somewhat Support	Providing some special forest products might be ok. I am not certain what type you have in mind. This should be a secondary goal, not a major one.
Anonymous	Unkown	Special Forest Products	Somewhat Oppose	Maintain, protect, and restore dynamic, resilient, and functioning habitats that support the sustainable extraction of special forest products.
B Bond Starker	Starker	Special Forest Products	Somewhat Support	where it doesn't interfere with active management
Brett Brownscombe	Wild Salmon Center / Conservation	Special Forest Products	Somewhat Support	too vague
Darlene Chirman	Unkown	Special Forest Products	Somewhat Support	To extent compatible with ecosystem function.
Jerry Lackner	previous tree farmer before burned out	Special Forest Products	Don't Know/Not Sure	not a priority
Kate Jackson	individual	Special Forest Products	Somewhat Support	all depends what this means: hunting elk? mushroom harvest? biochar?
Mary McGaughey	Biologist. TNC. Sierra Club	Special Forest Products	Strongly Support	Forests nurture humans. Forests gratefully share their resource with us. As long as we respect their Gift. As long as we Give Back. As long as we do not Take!
Anonymous	Tillamook	Special Forest Products	Don't Know/Not Sure	This is too vague of a question to answer or comment on.
Betsy McMahon	NCCWP	Special Forest Products	Don't Know/Not Sure	What for example??
David Harrison	Marion	Special Forest Products	Don't Know/Not Sure	I'm not quite sure what is intended by this question.
Jesse Clark	Tillamook	Special Forest Products	Strongly Oppose	This question does not define what constitutes a "special forest product". If this is mushroom hunting etc, then yes! If we're talking about opportunities for industry to make more cross-laminated-timber products, the answer is no.
Mary Hill	Great Old Broads for Wild	Special Forest Products	Don't Know/Not Sure	Don't know what this refers to. Please provide more info next year. Thanks!
Mike Totey	Oregon Hunters Associati	Special Forest Products	Somewhat Support	Need some thought on this. Do you have a adequate inventory of those species?
Peter Karnig	independent	Special Forest Products	Strongly Oppose	I oppose this goal. More detail is needed before new product areas are supported.
Trygve Steen, Ph.D.	NCCWP	Special Forest Products	Somewhat Support	More detail would be essential, including the following: Provide opportunities to obtain
Brett Brownscomb	Wild Salmon Center	Timber Production		"Timber Production" has 2 stated goals. The second one states: "Manage Common School Forest Lands to secure the greatest permanent value to the people of the State of Oregon and generate long-term revenues to the Common School Fund." This is essentially a restatement of GPV, not a timber goal. This language should be eliminated. Instead, the FMP should contain a timber-related goal, and a distinct revenue-related goal (see below). While timber and revenue are often conflated, the concepts and values are distinct, and just as there are other forest products than timber, there are other forms of revenue than harvest.
Brett Brownscomb	Wild Salmon Center	Timber Production		Revenue would be better covered as a stand-alone goal (or perhaps stated as a "Revenue and Cost Management" goal). This is not to say revenue couldn't or shouldn't be mentioned within a timber production goal, but the FMP and its goals should not treat revenue simply as a timber production issue. Revenue production and distribution to counties, local taxing districts, and the Common School Fund could be recognized here, but again, these represent more overarching obligations and directives than a goal. As a goal statement, ODF should advance goal language that sets an aspirational intention to both diversify revenue sources as well as advance equitable distribution of revenue. For example: "Revenue and Cost Management: As compared to the 2021 status quo, diversify revenue sources additional to timber harvest in order to better support public values on state forest lands, and ensure distribution of revenue equitably addresses both agency costs tied to providing public values on state forest lands as well as the benefits received by revenue beneficiaries at the county, school, and taxing district level." SEE FULL WRITE UP FOR MORE INFORMATION ON THIS SUGGESTION.

Laura Wilkeson	Hampton Lumber	Timber Production		<p>Provide Sustainable and predictable production of forest products timber harvest sales that meet the agency's legal obligations to the Forest Trust Land Counties and generate revenues and jobs economic opportunity for benefit of the state, counties, local taxing districts and rural communities.</p> <ul style="list-style-type: none"> • Forest products should mean timber harvests and wood fiber delivered to local mills. <p>Manage Common School Forest Lands to secure the greatest permanent value to the people of the State of Oregon and generate stable, long-term revenues to for the Common School Fund.</p> <ul style="list-style-type: none"> • The use of GPV in this context is confusing since Common School Fund lands are managed under a different statute.
Joint Stakeholder	Unkown	Timber Production (G1)		For the first goal, social benefits include education, health care, and public safety in addition to jobs.
Joint Stakeholder	Unkown	Timber Production (G1)		Maintain, protect, and enhance could be used for the sale and harvest of timber as well.
Joint Stakeholder	Unkown	Timber Production (G1)		If the term products is used, leave it in special forest products goal rather than timber production.
Amanda Astor	Associated Oregon Loggers	Timber Production (G2)	Somewhat Support	<p>A) AOL believes that the language of, "Provide sustainable and predictable production of forest products" is not strong enough. A sustainable and predictable level of timber production that is low, would achieve this goal, but not actually meet the intent of the goal. First the Department needs to identify the intent. If the intent is to ensure stable markets and sustained production levels with maintained wood products infrastructure at current levels, then this goal does not achieve that intent. If the Department wants to keep this language, then perhaps it should decouple the revenue generating volume goal from the forestry jobs and workforce development goal. AOL believe a workforce goal could be to, "Maintain or enhance forest contracting capacity on state lands to support a flourishing small business community and diverse workforce opportunities." Forest production is not a 1:1 for forest contracting jobs. There should absolutely be a timber volume and production goal, but also a capacity goal. B) It is unclear why Common School Forest Lands are specifically called out to provide revenue according the greatest permanent value, but Board of Forestry lands are not. It is unclear why greatest permanent value would be interpreted differently on Common School Lands compared to Board of Forestry Lands.</p>
Anonymous	Unknown	Timber Production (G2)	Strongly Oppose	Our schools should not be dependent upon the rape of the environment for funding. Sound, non-extraction based forest practices should not be compromised due to industry interests.
Anonymous	Tillamook	Timber Production (G2)	Strongly Oppose	Managing forests for timber production has led to all of the problems we now face with our forests today. Private companies operating tree farms and plantations must no longer be allowed to operate under this business model in the NW temperate rainforests. They must modify, immediately, their practices to mimic natural forests and stop clearcutting and spraying.
Anonymous	Unknown	Timber Production (G2)	Somewhat Oppose	Please leave the trees to sequester carbon
Anonymous	Unknown	Timber Production (G2)	Somewhat Support	Are there other ways to generate revenues and jobs that also benefit state, counties and local taxing districts? Can the state and ODF be creative about financial structures and incentives that achieve this vast and ambitious list of goals and provide revenues and jobs? Incentive payments for carbon storage? Other financial mechanisms apart from strictly harvest-based financial structures?
Anonymous	Unknown	Timber Production (G2)	Strongly Support	Much of Oregon's forests are supposed to do this by contract.
Anonymous	Unknown	Timber Production (G2)	Somewhat Support	Greatest permanent value may be drinking water or healthy riparian. This is too vague.
B Bond Starker	Starker	Timber Production (G2)	Strongly Support	Apply this to ODF lands as well
Betsy	Unkown	Timber Production (G2)	Somewhat Support	The timber industry is getting very, very rich with the huge clearcutting, plus the fact that the severance tax in the past 25-30 years has been reduced to nearly nothing. The payment to the Common School Fund is nothing when you think of the millions of dollars that are being given to the pockets of board members of the huge corporations connected with the timber industry.

Betsy Herbert	North Coast Communities for Watershed Protection	Timber Production (G2)	Somewhat Oppose	State forests should not compromise the natural ecosystem service provided by forests to pay for schools. Schools should be guaranteed funding from other sources.
Betsy McMahon	NCCWP	Timber Production (G2)	Skipped	The tax that the timber industry used to pay has been drastically reduced to nearly nothing compared to what it was twenty to thirty years ago. This must be changed!
Brett Brownscombe	Wild Salmon Center / Conservation	Timber Production (G2)	Strongly Oppose	The second timber goal is essentially a restatement of GPV (doesn't add much value to say this as a goal given that it's an obligation already). Also, it's not a timber goal but rather a revenue goal. This language should be linked to a broader distinct goal for
David Harrison	Marion	Timber Production (G2)	Somewhat Support	I support timber production and revenue generation for schools, but not at the expense of protecting endangered species and maintaining critical wildlife habitat. To me,
Greg Jacob	Sierra Club/SFAC	Timber Production (G2)	Strongly Oppose	Schools should not be dependent upon timber revenue. An outdated policy. Oregon legislature must make changes.
Greg Stratton	Private citizen and Forester	Timber Production (G2)	Somewhat Support	Manage common school lands for the maximum timber production. There are tens of thousands of acres of mismanaged lands and wilderness already under federal management. Our common school lands have a clear purpose, timber production.
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Timber Production (G2)	Strongly Oppose	The ability to generate jobs, revenues, and school funding from outdated and increasingly unjustifiable logging projects in state-managed forests has never been a successful endeavor. Climate change will exacerbate that effort even further. It's time the state look to invest in traditionally timber-dependent counties with new systems and revenue streams to support those who need it and build a truly sustainable path forward. It shouldn't be the burden of ODF to have to manage this process.
Jay Haladay	Friends of Hug Point, Rural coast property owner	Timber Production (G2)	Somewhat Oppose	More jobs have been lost in timber production through automating the timber harvesting process than restricting timber harvests. Counties need to find new sources of revenue and timber firms need to find new business models that adjust to new realities.
Jerry Lackner	previous tree farmer before burned out	Timber Production (G2)	Strongly Support	all way more important thsn letting it go natural and burn again and again
Jesse Clark	Tillamook	Timber Production (G2)	Somewhat Oppose	Greatest permanent value is making sure our forests are part of the climate solution, not part of the climate crisis, which our forestlands already are given their total carbon footprint alone.
Joint Stakeholder	Unkown	Timber Production (G2)		It's not clear that greatest permanent value means something different for BOF lands versus Common School Lands.
Joint Stakeholder	Unkown	Timber Production (G2)		Make it clear that "predictable production" refers to the harvest and sale of timber.
Julia DeGraw	OLCV	Timber Production (G2)	Somewhat Oppose	We need to find ways to fund schools and services in rural communities without relying on logging. It is egregious that we pit forest protections against funding for schools, rural communities benefit from resilient healthy forests, and we have to find a better way to fund public services in rural areas. Due to mechanization there are very few jobs in forestry any more, we have to stop insisting that there's enough jobs in forestry to address rural Oregon's lack of adequate jobs.

Kate Jackson	individual	Timber Production (G2)	Somewhat Support	common school fund lands can be managed differently than private timber lands, under a more holistic system that respects whole ecosystem function. timber dependent counties need to find replacement revenues, either from state or federal tax code changes to give them new authorities.
Laura Wilkeson	Hampton Lumber	Timber Production (G2)		Preferred language: Sustainable and predictable timber harvest sales that meet the agency's legal obligations to the Forest Trust Land Counties and generate revenue and economic opportunity for counties, local taxing districts and rural communities. Comment: Forest products should mean timber harvests and wood fiber delivered to local mills. Preferred language: Common School Forest Lands and generate stable, long-term revenues for the Common School Fund. Comment: The use of GPV in this context is confusing since Common School Fund lands are managed under a different statute.
		Timber Production (G2)		I've been lobbying for less logging since I moved to OR in 1985. Please find a new source of Common School Fund revenues besides logging. This is very outdated :)
Mary Hill	Great Old Broads for Wild		Strongly Oppose	
Mary McGaughey	Biologist. TNC. Sierra Club	Timber Production (G2)	Strongly Support	Yes! Smart sustainable management so the \$'s are perpetually there for the children's education. Nature can care for our children, beautifully. Partner with Nature for our kids.
Mike Brinkley	South Willamette Forest Collaborative	Timber Production (G2)	Strongly Oppose	The practice of using timber harvest tax as the method of supporting schools is terrible policy. This creates a permanent incentive to log as much as possible to support rural communities. Tying timber extraction to support of rural communities is a no-win. It worked when timber harvest was completely unsustainable in the 20th century, but when reasonable sustainability laws were established, the money became inadequate. Rural communities are used to extremely low taxes and now are unwilling to take themselves to support their schools. School funding must be severed from timber harvest.
Mike McKibbin		Timber Production (G2)	Strongly Support	This is very important and should be at the top of the list of FMP Goals.
Mike Totey	Oregon Hunters Associati	Timber Production (G2)	Somewhat Support	Did DSL change their charge for Common School Lands? The GPV rule was specific to BOF Lands.
Nick Cady	Cascadia Wildlands	Timber Production (G2)	Strongly Support	The Supreme Court recently held that the greatest permanent value does not mean greatest profit, the goals of the FMP should explicitly recognize this.
Peter Karnig	Independent	Timber Production (G2)	Strongly Oppose	I strongly oppose part one. The timber industry is already doing this and has also managed to avoid paying their fair share of taxes to rural counties around the state. I strongly oppose part two. The timber industry should pay it's fair share of State and County taxes.
Ralph Saperstein	Boise Cascade AOL	Timber Production (G2)	Strongly Oppose	Common School forest lands are to be managed for revenue for the CSF. They are not to be managed for Greatest Permanent Value. ODF made this up!!!
Roger Rocka	City of Astoria	Timber Production (G2)	Strongly Support	Greatest permanent value has to include clean water, healthy habitat for fish and wildlife, old growth, carbon sequestration, recreation and the like. The focus can't primarily be on timber harvest. ODF needs to be supported by the state general fund, not timber sales.
Scott Gray	Stimson Lumber	Timber Production (G2)	Somewhat Support	add to the goal, "and provide valuable, renewable forest products that benefit society.:

Trygve Steen, Ph.D.	NCCWP	Timber Production (G2)	Somewhat Support	<p>Given the modest fraction of total forest lands continued in the State Forests, the first of these goal needs to have a low priority. Appropriate attention to the PUBLIC TRUST involved in their stewardship of State owned forestlands, requires that ODF prioritize older forests, high level biodiversity protections, and protection of drinking water as a counterbalance to the huge acreage managed by private industry in its highly experimental short rotation tree plantations.</p> <p>I support Greatest Permanent Value for Common School Forest Lands, which means long rotations to grow older trees (more than 80 years old). This will better protect the capacity to generate long term revenues for the Common School Fund. Young plantations burn too easily and are a total loss.</p>
Woody Jackson		Timber Production (G2)	Strongly Oppose	Stop funding by commercial logging
Amanda Astor	Associated Oregon Loggers	Transportation System	Somewhat Support	AOL believe this goal should read, "Manage the transportation system to facilitate anticipated forest management activities efficiently and effectively where sound fiscal management is utilized, sensitive resources are protected and public safety is maintained."
Anonymous	Tillamook	Transportation System	Strongly Support	Reduce and vacate roadways whenever possible. Forest roads are a significant contributor to siltation in streams and landslides. Adopt modern methodologies for draining roadways that do not simply move water to the nearest stream as quickly as possible but take advantage of the nearby soils to store, filter and release water.
Anonymous	Unknown	Transportation System	Somewhat Support	Is this about roads? Add goal to manage roads to protect drinking water and aquatic water quality. Remove and decommission roads and remove or upgrade infrastructure as possible to meet that goal. Also, what about roads to provide fire resiliency?
Anonymous	Unknown	Transportation System	Strongly Support	Budget and plan for beaver coexistence when considering transportation and infrastructure.
Anonymous	Unknown	Transportation System	Somewhat Support	This is just common sense and should be built into every goal, every operation, every management plan.
Anonymous	Unknown	Transportation System	Somewhat Oppose	Identify roads and trails. Minimize road and trail network. Fund the maintenance of the remaining network.
Betsy Herbert	North Coast Communities for Watershed Protection	Transportation System	Somewhat Support	Road networks must be kept to a minimum (less than 3 mi/sq. mile of watershed) to avoid degrading hydrologic function
Brett Brownscomb	Wild Salmon Center	Transportation System		<p>The current draft goal language should be modified (additions in blue): "Manage the transportation system to (a) facilitate the anticipated activities as well as (b) reduce the amount of hydrologically connected roads, fish passage barriers, as well as landslide or sediment risks, doing both (a) and (b) in a manner which provides for resource protection, restoration, transportation efficiency, safety, and sound fiscal management."</p> <p>This would reflect a goal that could support strategies focused not just on facilitating activity but addressing issues of needed scale, sustainability, and impacts. Similarly, while the Transportation System is relevant to more than just water quality and fish habitat, ODF should ensure any FMP goal language for the transportation system is in keeping with performance measures for state forest lands. ODF's Performance Measure 4 ("Forest road risks to water quality and fish habitat") states,</p> <p>"Reduce the miles of hydrologically connected roads to less than 15 percent of the road network within the next ten years, and maintain or improve that level of reduction for the following ten years. Reduce the number of road crossings that are barriers to fish passage to less-than 2 percent within the next ten years, and maintain or improve that level of reduction for the subsequent ten years."</p> <p>The above language is clear and specific enough to measure over time. FMP goal language should be the same, especially where performance measures language is already in place. We suggest incorporating this type of measurable language (or updated language based on prevailing management science since 2013) into the suggested FMP goal language above.</p>
Brett Brownscombe	Wild Salmon Center / Conservation	Transportation System	Strongly Oppose	this is crafted with the premise of "facilitating anticipated activities" but leaves out the other side of addressing a transportation system that is already unsustainable (road network, hydro connections, impacts to natural resource values).

Darlene Chirman		Transportation System	Somewhat Support	Forest road system is extensive; evaluate roads for decommissioning and seasonal closure at times of high fire risk. Especially in conservation areas.
David Harrison	Marion	Transportation System	Strongly Support	Our transportation system should not prioritize automobiles over all other modes of transit.
Greg Stratton	Private citizen and Forester	Transportation System	Strongly Support	This does not mean decommissioned road systems.
Jay Haladay	Friends of Hug Point, Rural coast property owner	Transportation System	Don't Know/Not Sure	Not sure where this fits
Jerry Lackner	previous tree farmer before burned out	Transportation System	Somewhat Support	I'm sure all those roads the USFS ripped up and blocked off 20 years ago are greatly hindering the fire fighting
Jesse Clark	Tillamook	Transportation System	Somewhat Oppose	Roads can be very damaging to stream health and water quality, so decommissioning roads and removing deadbeat culverts will help the situation.
Joseph E Youren	ASLC	Transportation System	Don't Know/Not Sure	I have no idea what this means to ODF
Julia DeGraw	OLCV	Transportation System	Strongly Support	Need to address major problems with the "hazard tree removal" programs in Oregon, which seem to be an excuse for heavy logging along Oregon's highways.
Kate Jackson	individual	Transportation System	Somewhat Oppose	this is complicated, providing road access means road maintenance costs no one has been willing to pay for. but limits heavy equipment access for fire fighting. favor ecosystem restoration over higher motorized transportation access.
Laura Wilkeson	Hampton Lumber	Transportation System		Preferred language: Transportation systems ensure resource protection, efficiency, safety, and sound fiscal management. Comments: "Resource protection" should be considered a well maintained and accessible road system for fire suppression activities. "Safety" should include roadside harvest of danger trees after wildfire or disturbances. "Sound fiscal management" should be uniform across the districts. Road projects within timber sales should be reasonable and flexible. The connectivity of roads is important for reduced harvest and hauling costs.
Mary McGaughey	Biologist. TNC. Sierra Club	Transportation System	Strongly Support	Only clean transportation allowed in the forest. NO toxic pollution!
Maysa Miller	NCCWP	Transportation System	Somewhat Oppose	The devil is in the details for this goal. Forest roads are a major source of water degrading materials, including not only silt and soils but also hydrocarbon oils and fuels. Therefore, the resource protection aspect of this goal needs more explicit detail.
Mike Brinkley	South Willamette Forest Collaborative	Transportation System	Strongly Support	Close and decommission logging roads in state forests that are no longer useful.
Mike Totey	Oregon Hunters Association	Transportation System	Strongly Support	Looking forward to seeing the strategies for this.
Nick Cady	Cascadia Wildlands	Transportation System	Somewhat Support	ODF should be focused on reducing road density on its forests to reduce overall maintenance costs and ecological connectivity.
Peter Karnig	Independent	Transportation System	Somewhat Oppose	I somewhat oppose this goal. Forest roads are a major source water pollution. The resource protection aspect of this goal must be more fully resolved in order to mitigate further destruction of our valuable natural resources.
Trygve Steen, Ph.D.	NCCWP	Transportation System	Somewhat Oppose	The devil is in the details for this goal. Forest roads are a major source of water degrading materials, including not only silt and soils but also hydrocarbon fuels. Therefore, the resource protection aspect of this goal needs more explicit detail.
Laura Wilkeson	Hampton Lumber	Transportation System		Manage the Transportation systems to facilitate the anticipated activities in a manner which provides for ensure resource protection, transportation efficiency, safety, and sound fiscal management. <ul style="list-style-type: none"> ▪ "Resource protection" should be considered a well maintained and accessible road system for fire suppression activities. ▪ "Safety" should include roadside harvest of danger trees after wildfire or disturbances. ▪ "Sound fiscal management" should be uniform across the districts. Road projects within timber sales should be reasonable and flexible. The connectivity of roads is important for reduced harvest and hauling costs.

Amanda Astor	Associated Oregon Loggers	Wildfire	Strongly Oppose	AOL believes that this goal should be recategorized as an overarching priority for which each resource goal should strive to achieve. For instance, ODF could provide a preamble that says something to the effect of, "The Oregon Department of Forestry strives to achieve Greatest Permanent Value by managing the state's forestlands to ensure healthy, sustainable, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals to benefit all Oregonians. The Department focuses on utilizing sustainable management strategies where there is never more biomass harvested or lost to mortality than is grown on state lands in perpetuity. Treatments on forested lands work to enhance productivity and minimize risk of catastrophic disturbance such as insect and disease outbreak, wildfire and drought stress to attain forest health, economic and carbon co-benefits. When forests are healthy and resilient, damage from such disturbances is minimized. The vibrant forest products sector that results, ensures there is adequate capacity to restore the forests from what damage does occur and helps protect the forests from future damage by providing fire fighters, road maintenance, hazard reduction and resilience treatments into the future. When forests are healthy and production is high, the Department is leading by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals." Each specific Resource Type Goal should then be measured against its ability to archive the overarching priorities of the Department to create healthy and productive forests, climate change co-benefits and resiliency against disturbance.
Anonymous	Unknown	Wildfire	Strongly Support	Long-rotation approaches, such as advocated by OSU's ecological forestry, expose forests to accumulating risk from wildfire loss. Will the FMP offset the high loss risk from e.g. HCP areas by reducing rotation lengths on productive acres?
Anonymous	Tillamook	Wildfire	Strongly Support	The forests have been managed by humans with fire since before the arrival of Europeans. Communities must be protected from burning primarily to prevent the release of incredible amounts of toxic gases when homes filled with PVC and other products burn. Forest lands must not be rezoned for residential or commercial uses.
Anonymous	Unknown	Wildfire	Somewhat Support	Would prioritize forest fire science and use of fire as a healthy part of the ecosystem while protecting communities. Would minimize extraction as a priority.
Anonymous	Unknown	Wildfire	Strongly Support	Add risk to drinking water
Anonymous	Unknown	Wildfire	Somewhat Support	Please revise to emphasize protection of communities from wildland fire.
Anonymous	Unknown	Wildfire	Strongly Support	incorporating beaver-based restoration, prioritizing beaver coexistence, and promoting beaver where it makes sense is a strategy that can be incorporated towards meeting this goal.
Anonymous	Unknown	Wildfire	Strongly Support	We must manage forests wisely to reduce wildfire hazards and catastrophic fires.
Anonymous	Unknown	Wildfire	Somewhat Oppose	Fire is a natural part of the ecosystem. Using fire as part of management is important. This appears to be too focused on suppression without addressing ecological impacts.
Betsy Herbert	North Coast Communities for Watershed Protection	Wildfire	Strongly Support	Add the words "drinking water" before "forest production"
Brett Brownscombe	Wild Salmon Center / Conservation	Wildfire	Somewhat Support	Could be tied into an overall Forest Health and resilience goal.
Darlene Chirman		Wildfire	Somewhat Support	Please revise the Wildfire goal to focus on protection of communities from wildfire, and mitigate long-term impacts of more frequent and severe wildfire on ecosystem function, wildlife habitat and watershed health.
Greg Jacob	Sierra Club/SFAC	Wildfire	Somewhat Support	Recognize that fire has always been part of the forest ecosystem. Under current "fire prevention" practices, trees and understory are removed, thereby creating hotter, windier, and drier conditions compared to a forest left alone. Unlogged forests of varying strands, especially older trees, provide high canopy cover, wind breaks, and a cooler and shadier microclimate. Damage to developed areas is more effectively managed by zoning that prevents building in wildland areas, including grants to develop community plans, update wildfire hazard maps, and improve emergency response.
Greg Stratton	Private citizen and Forester	Wildfire	Strongly Support	Always push for direct attack on wildfires, followed by salvage of burned areas.

Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Wildfire	Strongly Oppose	ODF should work with leading fire ecologists to better understand the historical and changing fire return intervals in the forests it manages. This would be a simpler first step that would cut through the noise of how fear of fire is being used to justify unhealthy and unsustainable logging practices. Mitigating the risks of fire on forest production is a way of simply saying a burned tree is one that didn't get harvested by a logger. More importantly, thinning and logging trees located miles away from communities hasn't demonstrated an impact on keeping those communities safe from wildfire. Instead, ODF should prioritize education on how to protect homes and structures in the Wildland-Urban Interface and promote FireWise communities that are prepared for the possibility of fires.
Jesse Clark	Tillamook	Wildfire	Strongly Support	The best strategy for this is to allow for diverse forest structure and moving away from overstocked stands, paired with selective thinning practices used successfully by indigenous peoples for thousands of years to great success. Forests with diverse stand structure are magnitudes more resilient to wildfire. Salvage logging further disrupts natural regrowth and soil regeneration.
Julia DeGraw	OLCV	Wildfire	Somewhat Support	We need to acknowledge that we have the power to protect local communities, but that we cannot mitigate wildfire across the entire landscape in our state. We should focus limited resources regarding wildfire, on community resilience and preparedness. We should not be managing for forest lands for "production," Oregon's forests are not and should not be managed as tree farms.
Kate Jackson	individual	Wildfire	Strongly Support	this will investment in the cost to reduce fire severity risk, and not produce as much wood product for sale. this work should be paid for as insurance against more severe fire disaster costs.
Lauren Anderson (See paper for full signatures)	Oregon Wild, Beyond Toxics, Metro Climate Action Team, Oregon League of Conservation Voters, 350 PDX, Environmental Caucus Democratic Party of Oregon, Cascade-Volcanoes Great Old Broads	Wildfire		Recommended revision: "Protect communities from wildland fire and mitigate the longterm impacts of more frequent and severe wildland fire on ecosystem function, vulnerable wildlife habitat, and watershed health."Explanation: Wildfire defense efforts should be focused in and around the communities most at risk, including in low income communities and other vulnerable groups. Extensive wildland thinning efforts are ineffective, expensive and time consuming. Instead, the agency should focus on collaborative efforts with vulnerable communities to create defensible space around homesand communities and ensure adequate emergency planning. The national Firewise program represents a model for this work that ODF should strive to emulate.
Mary McGaughey	Biologist. TNC. Sierra Club	Wildfire	Strongly Support	Upgrade forest fire/wildfire management strategies to support the forest's ability to manage its own 'fire is an important TOOL' in protecting themselves against wildfires. Listen to Nature's own mitigation/protective strategies. Work as Natures partner.
Mike Brinkley	South Willamette Forest Collaborative	Wildfire	Strongly Support	I support strategic thinning for fire resilience, especially in plantations that are overgrown with too many trees. Thinning is acceptable in natural forests as long as old growth is completely preserved. I support controlled burning where possible in all forests. This removes fuel and restores a more natural landscape.
Nick Cady	Cascadia Wildlands	Wildfire	Strongly Oppose	Fire is going to drive management of our forest lands moving forward, but the goal should not be to mitigate fire risk to forest production, but conduct forest production in a way that mitigates fire risk to our communities.
Peter Karnig	independent	Wildfire	Strongly Support	The current increase in destructive Wildfire is caused to a large extent by the shorter grow cycles that have been adopted by the industry. Wild land fire effects on forest production are more severe when young plantations burn and it results in a total loss of timber as well as habitat.
Priscilla Macy	Oregon Outfitters & Guides Association, ED	Wildfire	Strongly Support	suggestion: and to address impacts to recreation, find balanced solutions for opening areas post fire - for example, we are seeing more concentrated use in certain areas, because there are limited areas to recreate when closures post-fire is prolonged. ex(not ODF land) Clackamas closures, impacting water recreation and outdoor recreation businesses - general users may head to North Santiam when they used to recreate on the Upper Clackamas.
Scott Gray	Stimson Lumber	Wildfire	Somewhat Oppose	Should modify statement somewhat to be more focused on wildfire resilient forests, not just resilient communities.

Trygve Steen, Ph.D.	NCCWP	Wildfire	Strongly Support	This very important goal requires management to move toward forests that are at least 80 years old. "Wild-land fire effects on forest production" are severe when young plantations burn, thus producing a total loss of timber, as well as habitat, and landscape function.
Woody Jackson		Wildfire	Somewhat Oppose	Defensible space and hardening must occur on site rather forests.
Joint Stakeholder	Unknown	Wildfire		A high level recommendation is to prioritize this list and focus first on community protection, public health, safety, and equity.
Joint Stakeholder	Unknown	Wildfire		Forest health, climate change, and wildfire are outliers on this list. They are priorities rather than resource types. Are these three items something that should be included in a preamble or introduction in how ODF is looking at the entire forest management plan?
Joint Stakeholder	Unknown	Wildfire		We shouldn't be focused on protecting forest production from fire, but managing the forest in a way that protects our communities and other resources.
Joint Stakeholder	Unknown	Wildfire		Wildfire could be a subcategory of climate change. Managing the forest to create a resilient forest system that can persist. In terms of an equity or community issue, I might not live right next to the forest, but many families were impacted because our air was terrible for weeks. The more we can do to manage our forest and sequester carbon in a way that protects it and stores it is a win.
Joint Stakeholder	Unknown	Wildfire		This is more of a strategy, but when forests burn, post fire logging is a much bigger problem for the forest than the fire itself. Manage the fires and forests to protect people and communities.
Joint Stakeholder	Unknown	Wildfire		Why was the word "mitigate" used instead of "minimize"? Mitigation should happen after the damage.
Joint Stakeholder	Unknown	Wildfire		This goal calls for prioritizing older forests on the landscape and I like the goal because an old forest is a premier way of mitigating the risks of forest effects.
Joint Stakeholder	Unknown	Wildfire		Fire can be a management tool to support or achieve some other goals as well. Fire isn't mentioned in other goals so the goal could recognize that it's a management tool.
Laura Wilkeson	Hampton Lumber	Wildfire		Wildfire resilient communities and reduced incidence of catastrophic wildfire Mitigate the risk of wildland fire and associated impacts effects on forest timber harvest production, wildlife habitat, and landscape function, and to support wildfire-resilience of local communities: <ul style="list-style-type: none"> ▪ Risk mitigation must include active management, including harvest, thinning, and other silviculture practices like prescribed fire. ▪ Forest production should mean harvest and wood fiber volume. ▪ The state should work with individual local communities to identify what their needs are given not all communities are alike.
Laura Wilkeson	Hampton Lumber	Wildfire		Preferred language: Wildfire resilient communities and reduced incidence of catastrophic wildfire and associated impacts timber harvest, wildlife habitat, and landscape function. Comments: Risk mitigation must include active management, including harvest, thinning, and other silviculture practices like prescribed fire. Forest production should mean harvest and wood fiber volume. The state should work with individual local communities to identify what their needs are given not all communities are alike.
Mary Hill	Great Old Broads for Wild	Wildfire	Strongly Support	In favor of controlled burns
Amanda Astor	Associated Oregon Loggers	Wildlife	Somewhat Support	We cannot in all cases, have our cake and eat it too. In some cases, ODF will need to prioritize maintaining over enhancing wildlife habitat. In other cases, ODF will need to prioritize habitat quality over habitat variety. It is not clear from this goal what ODF truly wants to do and how the Department will prioritize its decisions on the ground. The Department should think strategically about how to clearly identify its wildlife goal in order to transparently communicate with the public what the expectation of the plan is.
Anonymous	Tillamook	Wildlife	Strongly Support	Maintain and improve robust riparian zones. Minimize clearcuts, especially on steep slopes as these negatively impact wildlife habitat and increase siltation in streams reducing water quality for humans and wildlife.
Anonymous	Unknown	Wildlife	Strongly Support	especially the endangered species

Anonymous	Unknown	Wildlife	Strongly Support	incorporating beaver-based restoration, prioritizing beaver coexistence, and promoting beaver where it makes sense is a strategy that can be incorporated towards meeting this goal.
Anonymous	Unknown	Wildlife	Somewhat Support	This means supporting management that maintains habitat for young-seral species as well as those dependent on old growth. And we need to allow natural changes to occur. For example, barred owls are coming here on their own and we should not try to prevent them from intermixing with spotted owls.
Anonymous	Unknown	Wildlife	Strongly Support	Good. How will this be measured?
Betsy	Unknown	Wildlife	Strongly Support	Our wildlife habitat is now under siege through the vast clearcutting which completely damages the environment for all wildlife to survive.
Betsy McMahon	NCCWP	Wildlife	Strongly Support	Wildlife in the forests that are being clearcutting are being destroyed. The animal and vegetable life is under attack by the rampant clearcuts and the spraying of pesticides.
Brett Brownscomb	Wild Salmon Center	Wildlife		Modify the draft goal language for "Wildlife" (additions in blue): "Maintain, protect, and enhance functional and resilient systems and landscapes that provide the variety and quality of habitat types and features necessary for long-term persistence of native wildlife species through FMP commitments advanced in concert with a Habitat Conservation Plan / Incidental Take Permit as well as other strategies relevant to sensitive wildlife and other species not directly connected to Endangered Species Act compliance."
Brett Brownscomb	Wild Salmon Center	Wildlife		Add an additional "Wildlife" goal stating: "Promote and contribute to the recovery and delisting of state forest-relevant species under the Endangered Species Act (ESA) during the life of this FMP, and prevent the need for future ESA listings on state forest lands." The latter clause recognizes that ODF alone does not control the habitat or population trajectories of all species, but that within ODF's jurisdictional boundaries, it could take positive approaches that prevent the applicability of future potential ESA listings and regulatory restrictions on ODF-managed lands.
Brett Brownscombe	Wild Salmon Center / Conservation	Wildlife	Somewhat Oppose	Needs to be made more specific and more connected to HCP / non-HCP management distinctions. Also, add a separate goal or clause re. preventing future ESA listings and recovering species.
Darlene Chirman		Wildlife	Strongly Support	Include early seral forests for wildlife by allowing natural recovery of burned forests, without post-fire logging, especially in mature and complex forests.
David Harrison	Marion	Wildlife	Strongly Support	Forests should be managed to support healthy ecosystems rather than as monocultures that only support timber production.
Greg Jacob	Sierra Club/SFAC	Wildlife	Strongly Support	Must have old growth forests, and not industrial tree farms and aerial herbicide spraying if wildlife is to thrive.
Greg Stratton	Private citizen and Forester	Wildlife	Strongly Oppose	Our working forests should be managed for timber production. With 60% of the state mismanaged by federal mandates, we have ample wilderness and diversity in our forests.
Jared Kennedy	Private citizen who loves hiking, fishing and foraging in the Tillamook and Clatsop State Forests.	Wildlife	Strongly Support	Protecting wildlife, especially in the face of climate change, requires a focus on diverse and intact ecosystems. Monitoring the health of native and endemic species is one way to determine forest health, and a marvelous framework to inform management practices.
Jay Haladay	Friends of Hug Point, Rural coast property owner	Wildlife	Strongly Support	Humans can make choices on how we manage forest resources. Wildlife don't have the capacity to do so. We need to honor our responsibility and do the right thing by the other living creatures using the forests.

Jerry Lackner	previous tree farmer before burned out	Wildlife	Somewhat Support	wildlife will go where the food is and the deer and elk have moved to the outskirts of the national forests or starve. and brought the predators with them. how many spotted owles are living in the beachy creek burn scars now. they should be easy to count the next 40 years while the native vegetation strunniges to survive in the shade of the dead old growth.
Jesse Clark	Tillamook	Wildlife	Strongly Support	Long term persistence, with healthy populations that more closely resemble conditions predating colonial contact.
Joint Stakeholder	Unknown	Wildlife		Calling out native species is important, especially imperiled species.
Joint Stakeholder	Unknown	Wildlife		It's difficult to oppose any of these goals. Our suggestions about how to change them is how they might trade off and play out all together is what really matters. What are the tradeoff decisions between these goals?
Joint Stakeholder	Unknown	Wildlife		It would be hard to improve habitat for all native species when there may be tradeoffs in what you do for one species versus another.
Joint Stakeholder	Unknown	Wildlife		Spell out what it means to protect endangered species.
Joint Stakeholder	Unknown	Wildlife		There is too much here. Maintain and enhance habitat types for wildlife species. Reduce the jargon.
Joint Stakeholder	Unknown	Wildlife		Maintain, protect, and enhance is something we went through before. It's difficult to distinguish between what these imply.
Kate Jackson	individual	Wildlife	Strongly Support	forest ecosystems have underground component we have not understood and continue to neglect under current forest timber practices. reduce herbicide use. more and better paid employment less mechanical harvesting
Laura Wilkeson	Hampton Lumber	Wildlife		Maintain, protect, and enhance functional and resilient systems and landscapes that provide the variety and quality of habitat types and features necessary for Long-term persistence of native wildlife species. • Good example of a goal being too descriptive if the intention is to stay high level. • Note current state and federal species protection laws.
Laura Wilkeson	Hampton Lumber	Wildlife		Preferred language: Long-term persistence of native wildlife species. Comments: Good example of a goal being too descriptive if the intention is to stay high level. □ Note current state and federal species protection laws.
Mary McGaughey	Biologist. TNC. Sierra Club	Wildlife	Strongly Support	AGAIN! Listen to Nature's management strategies. Work WITH Nature as a supportive, not invasive, partner.
Maysa Miller	NCCWP	Wildlife	Somewhat Support	This Wildlife goal needs to come after a goal 4. Drinking Water. Drinking water needs to be more clearly identified as an important goal of forest management that appears higher in this list, rather than be buried in the Aquatic and Riparian category.
Mike Brinkley	South Willamette Forest Collaborative	Wildlife	Strongly Support	Preserve habitat for all endangered species. This includes the living spaces for spotted owls, marbled murrelets and martens. Also, establish protections for beavers in all state forests. They improve the watersheds for aquatic organisms, especially provide rearing habitat for endangered salmonids. I ask for a total ban on beaver harvest in state forests.
Mike Totey	Oregon Hunters Associati	Wildlife	Strongly Support	We will be particularly interested in the strategies for this. We are assuming ODF is referring to ALL native wildlife species, not just late seral species.
Nick Cady	Cascadia Wildlands	Wildlife	Strongly Support	ODF should protect existing functioning habitat and focus management solely on restoration.

Peter Karnig	independent	Wildlife	Strongly Support	I strongly support this goal as proposed.
Priscilla Macy	Oregon Outfitters & Guides Association, ED	Wildlife	Strongly Support	suggestion: and collaborate with recreation groups to ensure balanced approaches to conservation, without impact to existing recreation, when possible. Example: wood placement in streams - consult with American Whitewater and Oregon Guides & Outfitters to ensure no threats to public safety when introducing new hazards to streams. This comment also applies to #5.
Trygve Steen, Ph.D.	NCCWP	Wildlife	Somewhat Support	This Wildlife goal needs to come after a goal 4. Drinking Water. Drinking water needs to be more clearly identified as an important goal of forest management that appears higher in this list, rather than be buried in the Aquatic and Riparian category. Other than the above, this goal is reasonable and well stated.
Woody Jackson		Wildlife	Strongly Support	Allow nature such as fire and insect to create openings for early serial.



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September 8, 2021

Via Email: Sarah.B.Lathrop@oregon.gov

Oregon Department of Forestry
2600 State Street
Salem, OR 97310

RE: Draft Forest Management Plan Goals

Dear Board of Forestry Chair Kelly and Acting State Forester Hirsch:

Thank you for the opportunity to provide comments the draft goals for the companion Western Oregon State Forest Management Plan (FMP). While it is premature for the Oregon Department of Forestry (ODF) to be developing a companion FMP to a habitat conservation plan (HCP) that has not been finalized or approved by the Board of Forestry (BOF), we recognize the importance of setting goals in the process of developing a long-term management plan. Since the draft HCP is so heavily focused on the environmental aspect of Greatest Permanent Value (GPV), we hope ODF will use the FMP to balance out the missing social and economic components.

General Comments and Concerns

The planning rule for FMP development directs ODF to draft resource assessments, guiding principles, goals, strategies, and various guidelines. Only the draft goals and a timeline for developing the strategies have been released so far. Will the other items be updated and available for public comment? Flexibility and collaboration throughout the FMP development process will be crucial to updating sections and editing details in all chapters of the FMP before it is presented to the Board of Forestry (BOF).

Goals should be broad and reflective of the desired state, and there seems to be a mix of objectives and strategies in the way some of these goals are drafted. If the intention is to keep goals at a high level, then the goals should be consistent in detail. As noted below, some of these goals do not provide enough information while others could be refined. Many of them could be combined into the same goal (for example, combine climate change and forest carbon or include soil and plants as part of forest health) to simplify the list and justify the importance of each goal.

The goals should also reference current laws and administrative rules to avoid any confusion. There are state and federal laws that protect species, drinking water, and natural resources. Those should be noted in the concurrent goals. Also, if there is a ranking system to the goals, it needs to be noted and explained. If ODF plans to rank them by priority, please explain the reasoning why

one goal is more important than the other. If they are equal in importance, it would be better to list them alphabetically.

Additionally, there are omissions in the list of goals that ODF should include:

- **Wood Products**

- *Oregon's forests continue to enable local production of sustainable and renewable wood products for housing, paper supplies and other pressing societal needs.*
 - Wood products should be recognized by the state for their importance as a renewable and sustainable resource. Oregon is the number one softwood lumber producer in the country and that achievement should be celebrated.
 - The production of wood products benefits all Oregonians, but especially rural communities that surround state forests. The direct and indirect economic activity provided by logging and sawmill operations go far beyond just employment opportunities.
 - Wood products are part of the solution to climate change. Over half the weight of lumber is stored carbon. As the global population grows, so does the need for housing and infrastructure. Wood products are the most climate-friendly answer to those needs.

- **Rural Communities**

- *Rural, forest-dependent communities are vibrant and resilient and able to benefit from active forest management.*
 - Increasing and improving the health and vitality of rural communities should be a goal for ODF and specifically listed in the FMP. Communities that surround state forests can either benefit from or be put at higher risk because of how resources are managed.

Comments on Specific Goals

Draft goals are listed below with suggested edits (in ~~strike through~~ and **red**), comments, and questions.

- **Forest Health**

- ~~Ensure~~ **Healthy**, sustainable, **productive**, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals ~~to benefit all Oregonians.~~
 - This should include thinning overstocked stands, insect/disease treatments, and salvage harvesting after wildfire and other disturbances.
 - There should be an emphasis on the Oregonians – primarily located rural communities – most impacted by state forest management decisions.

- **Climate Change**

- ~~Lead by example in demonstrating climate smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals.~~
Improved carbon sequestration through reduced wildfire risk and production of renewable building materials.

- The title of this goal, “climate change”, is not a resource type. Should be renamed, removed, or worked in another goal.
- “Climate-smart forest management” has not been defined or widely accepted. It should be renamed “active forest management” or removed.
- Carbon storage in wood products should be recognized as a key to fighting climate change.
- “Achievement of forest resource goals” is redundant. All of these goals should be working towards that.

- **Wildfire**

- *Wildfire resilient communities and reduced incidence of catastrophic wildfire*
~~Mitigate the risk of wildland fire and associated impacts effects on forest timber harvest production, wildlife habitat, and landscape function, and to support wildfire resilience of local communities.~~

- Risk mitigation must include active management, including harvest, thinning, and other silviculture practices like prescribed fire.
- Forest production should mean harvest and wood fiber volume.
- The state should work with individual local communities to identify what their needs are given not all communities are alike.

- **Wildlife**

- ~~Maintain, protect, and enhance functional and resilient systems and landscapes that provide the variety and quality of habitat types and features necessary for~~
Long-term persistence of native wildlife species.

- Good example of a goal being too descriptive if the intention is to stay high level.
- Note current state and federal species protection laws.

- **Aquatics & Riparian**

- ~~Maintain, protect, and restore dynamic, Resilient, and functioning aquatic habitats that support the life history needs of a full range of aquatic and riparian-dependent fish and wildlife species.~~

- Another example of being too descriptive.
- Does ODF have a list of needed aquatic or riparian restoration projects?

- ~~Maintain and protect High quality forest drinking water sources that provide high quality drinking water for private and public domestic use.~~

- Note current drinking water protection laws.

- **Pollinators and Invertebrates**

- ~~Provide suitable habitats across the landscape that contribute to maintaining or enhancing~~ *Healthy* ~~native, sensitive, and endangered pollinator and invertebrate populations.~~
 - There are private sector projects – like Hampton’s pollinator experiment – that the state should consider the benefits of.

- **Plants**

- ~~Maintain~~ *Understory vegetation represents a diversity of native vegetation associations and seral stages across the landscape including sensitive and endangered plant populations.*
 - Will this be different than the current FMP landscape goals? What about fire risk from increased fuel loads in overstocked stands?

- **Timber Production**

- ~~Provide~~ *Sustainable and predictable production of forest products timber harvest sales that meet the agency’s legal obligations to the Forest Trust Land Counties and generate revenues and jobs economic opportunity for benefit of the state, counties, local taxing districts and rural communities.*
 - Forest products should mean timber harvests and wood fiber delivered to local mills.
- ~~Manage Common School Forest Lands to secure the greatest permanent value to the people of the State of Oregon and generate stable, long-term revenues to~~ *for the Common School Fund.*
 - The use of GPV in this context is confusing since Common School Fund lands are managed under a different statute.

- **Forest Carbon**

- ~~Contribute to Oregon’s carbon stores within State Forest lands~~ *State forests continue to contribute to carbon sequestration through active management and creation of sustainable wood products.*
 - This is incredibly vague. The state is already contributing to carbon sequestration by growing more volume than harvested every year. There is concern that the prescriptions that will come from this goal will limit timber harvest and delivery of wood fiber even further.
 - What about carbon that is stored within wood products created from state forests?
 - State forests should be actively managed to mitigate risk of wildfire, which emit a substantial amount of carbon into the atmosphere every year and acutely threaten rural communities.

- **Air Quality**
 - ~~Maintain and protect~~ *Healthy air quality standards and reduced incidence of fire-related risks to public health.*
 - This is a good example of a goal being too vague. Would help to list current air quality standards.
 - Again, managing forests to mitigate risk of fire should be the focus of maintaining air quality standards.
- **Soil**
 - ~~Maintain, protect, and enhance~~ *Forest soils are healthy and productive.*
 - Another example of a goal being too vague.
 - Should account for carbon stored beneath the surface.
 - Restore and replant stands after wildfire or other disturbances.
- **Transportation System**
 - ~~Manage the~~ *Transportation systems to facilitate the anticipated activities in a manner which provides for ensure resource protection, transportation efficiency, safety, and sound fiscal management.*
 - “Resource protection” should be considered a well maintained and accessible road system for fire suppression activities.
 - “Safety” should include roadside harvest of danger trees after wildfire or disturbances.
 - “Sound fiscal management” should be uniform across the districts. Road projects within timber sales should be reasonable and flexible. The connectivity of roads is important for reduced harvest and hauling costs.
- **Scenic**
 - ~~Manage forests in ways that value~~ *Key scenery scenic and forested settings that are visually appealing maintained.*
 - This is very subjective. How would ODF quantify “scenery” and “visually appealing”?
 - ODF should not go above and beyond current state highway and waterway laws.
- **Mining, Agriculture, Administrative Sites and Grazing**
 - ~~Permit~~ *Mining, agriculture use, administrative sites and grazing when are sustained resource use is compatible with other forest resource goals.*
 - Rock sources on state lands are vital to road infrastructure. The more rock sources available via mining, the more revenue will go to the state and counties from timber sales.
 - How will ODF determine if permitting these activities are “compatible with other forest resource goals”?

Again, we appreciate the opportunity to provide comments and engage with ODF staff and the BOF as the companion FMP is developed. We look forward to seeing how these goals are adjusted as the process moves forward.

Sincerely,

A handwritten signature in black ink, appearing to read "Laura Wilkeson", with a long horizontal flourish extending to the right.

Laura Wilkeson
State Forest Policy Director
Hampton Lumber

September 07, 2021

Sarah Lathrop
Project Lead, Western Oregon Forest Management Plan
Oregon Department of Forestry
2600 State Street
Salem, Oregon 97310

Re.: Comments on ODF Draft Goals document--Forest Management Plan Revision

Dear Ms. Lathrop and State Forest Division FMP Team:

The undersigned organizations submit these initial comments on the Oregon Department of Forestry's (ODF) draft goals for a revised Forest Management Plan (FMP) for the state's publicly owned forests in western Oregon. Thank you for the public meetings on this subject to date, as well as the information provided both at those meetings and on ODF's project website, including the draft goals document dated August 4, 2021.

ODF has been working on a revision of its FMP for western Oregon state public forests for nearly a decade with little to show for the effort, despite considerable investment of time and money by ODF staff and stakeholders. The extensive effort to date on the FMP has also failed to address the underlying problem of a state forest business model in need of reform. Currently ODF's revenue is undiversified (revenue is almost entirely reliant upon sale of trees for timber) and unsustainable (ODF retains an insufficient portion of that revenue in light of increasing demands and costs tied to attaining public values on public lands).

Unfortunately, over the recent past, ODF has shown little interest in using FMP-related processes to increase conservation commitments. ODF's FMP-related efforts have skewed towards serving timber harvest interests¹ and maximizing the agency's management discretion. ODF has recently advanced arguments that illustrate our concerns.

In court arguments over salvage logging on state lands, ODF recognized that its FMP should contain a description of the desired future condition for the forest (or sub-geographies of the state forest landscape) and then describe management activities needed to move the forest toward that condition. However, the agency then goes on to argue that this does not mean an FMP should be read to prohibit certain actions or to limit ODF to undertaking only actions needed to attain those conditions. Further, as to implementing FMP direction (through Implementation Plans or Annual Operating Plans), the agency claims those more specific

¹ In April 2010, the Board revised and adopted the current FMP, which included a decision at that time to reduce its goal for complex, old forest conditions from 40-60% to 30-50% of the landscape. ODF later exacerbated this reduction by deciding it would operate on the low end of this conservation range / high end of the harvest range in order to promote harvest revenue. In addition, ODF then revised the Astoria District plan to open complex forest areas (higher value habitat) to harvest while designating protections in areas that include trash heaps and open fields. Moreover, the state forest program has, for several years, focused on "high value" harvests even as the Forest Development Fund substantially exceeded performance measure targets.

documents are unenforceable because they are not final agency actions under the state Administrative Procedures Act.² This creates a very circular and insular situation. In other words, ODF seems to be arguing that it has or should have near-complete discretion.

Further, in the same legal brief, ODF acknowledges that while an FMP must be based on the best available science, it contends the Implementation Plans that detail how an FMP will be advanced are not beholden to that science standard, nor do they need to demonstrate whether or how they are consistent with the FMP's science.³ This argument seems to mean that, for those wanting to hold the agency accountable to science, law, or management direction, the FMP is place where those commitments must exist (while also knowing ODF may later try to wiggle around any FMP language by arguing the agency should be entitled to wide flexibility and discretion in any interpretation of it--see above). It contends IP's and their language are completely a matter of ODF's discretionary policy choices.

Given this past history and context, it is difficult for us to trust or confidently invest time in an FMP process (or related IP and AOP efforts) if the agency is going to later minimize or shift away from the content and meaning of those documents with interpretations favoring maximum discretion. To be clear, we do not want an endless FMP revision process or to turn ODF foresters into automatons with no discretion, but we do want an agency that we can trust. To that end, it is important to have meaningful FMP commitments that can be tracked with oversight and that cannot later be obfuscated or diluted through contentions of agency discretion that takes advantage of vague language or flexibility framing.

Accordingly, we view this FMP revision effort fundamentally as an opportunity for ODF to increase accountability. The FMP must contain meaningful and measurable commitments that are tracked and delivered upon, where management discretion is constrained to that achievement, and where proper oversight exists to ensure accountability. And while goals are inherently aspirational, this approach should start with the FMP goals. Overall, the draft goals need to be revised with an eye towards greater specificity, measurability, and accountability.

² In the case of Cascadia Wildlands et al. v. Nancy Hirsch, Oregon Department of Forestry (Case No. 21CF14589, in the Circuit Court for the County of Multnomah), pp. 12-13 of ODF's Motion to Dismiss argues for broad agency discretion as to whether or what binding commitments an FMP makes, stating, "The FMP simply requires that IPs include a description of what management activities, as a whole, need to be taken—that is, are necessary—to move a forest toward the desired future condition. It certainly **does not prohibit** specific management actions from being taken by ODF, **nor does** the text contain anything that would suggest that only "necessary" actions may be taken. The FMP requires ODF to describe what management actions will be necessary to reach the desired future condition – which ODF did in the Revised IP, see Cady Decl., Ex. B at 12-14—and **nothing more.**" (emphasis added)

Further, once an FMP is distilled to a finer scale (in timing and geography) and more detailed direction or actions through an Implementation Plan or Annual Operations Plan, ODF also argues for seemingly unfettered discretion, stating on p.8 of its motion that the content of those documents is not enforceable: "Because these documents are not APA orders, they are not subject to judicial review under ORS 183.484."

³ Pp. 15-17 of ODF's Motion to Dismiss states, "Second, Petitioners' claim that ODF's IPs must include citations or otherwise identify scientific sources to establish that they are supported by the "best available science" is based upon a misreading of the applicable administrative rule, which pertains to FMPs, not to IPs." ... "The IPs and AOPs that implement the FMP are, necessarily, based on best available science because they flow from the FMP, but there simply is no requirement that the IP cite to scientific studies to demonstrate it." ... "The post-fire harvest strategy outlined in the Revised IP is simply not subject to substantial evidence review because it is plainly a discretionary policy decision."

GPV Connection and Clarification:

As an initial matter, the draft goals document's preamble speaks to achieving economic, environmental, and social goals on the public state forest lands managed by ODF, as do the Greatest Permanent Value (GPV) directives. We do not take exception to this, but in preamble language and in all FMP framing or introductory language, we would like to see ODF make a more explicit connection to the link between the FMP (and related goals, strategies, etc.) and GPV. Specifically, the FMP documents should state clearly (as was done during the August 10 public meeting presentation) that:

- (a) the FMP is the document that is incorporated into Oregon law as an administrative rule,
- (b) the FMP is what binds the ODF's implementation of related plans (including any future potential Habitat Conservation Plan; Climate Change and Carbon Plan; Recreation, Education, and Information / REI Plan) and achievement of objectives related to habitat, water quality, carbon, recreation and other values including timber, and
- (c) the FMP in turn represents ODF's approach to satisfying its GPV statutory and rule mandates on state forest lands.

If (a)-(c) are not also ODF's view, we would like to see ODF articulate its view as part of further development of the goals document (in preamble language or otherwise) for carrying forward into FMP development, as the broader point here is to ensure the public understands how the FMP relates to ODF's legal mandates, public values, and other planning efforts.

Overarching Comments:

We recognize that FMP goals are important in setting overarching direction and priorities for attention. That said, we also recognize that goal statements can not and need not do everything. Much critical work lies ahead in the development of strategies and commitments ODF will make to achieve the FMP's goals, and we look forward to getting into that effort rather than staying bogged down in a goals discussion. But the goals document needs revision. Goals should be distinct and measurable enough to ensure the agency, its overseers, and the public can assess accountability through quantifiable or measurable strategies advanced as policy commitments to achieve the goals. And, since there is tension between advancement of certain goals, and since not every goal can be a priority for achievement on every acre, the FMP should recognize this explicitly and anticipate tradeoff conversations during strategy development.

We suggest that these four overarching structural changes be made to the draft goals document, as elaborated upon in more detail in the comment sections further below:

1. Instead of using "Resource Type" as an organizing frame for the goals, this should be changed to "Resource Issue" or "Value". This would more clearly accurately organize the goals according to what they represent (e.g., Forest Health and Climate Change are not resource types).
2. Some goals should be consolidated, while others should be added or supplemented to clarify the distinct values they would individually advance. (see below)
3. Some goal language should be modified and revised (see specifics below).
4. Some issues or values currently expressed in the document either as a "resource type" or within goal statements are actually overarching directives or lenses through which the FMP goals should be assessed. This includes "Climate Change" and legal mandates, namely GPV and Common School Fund obligations. ODF should articulate this as an overarching framework to the FMP and its goals as opposed to trying to cover these things within the actual goal statements. (see below for more)

For Consolidation or Subtraction:

- “Forest Health” should either be (a) eliminated from the goals because many of the other existing goals directly cover the attributes subsumed by this term (e.g., plants, soils, wildlife, aquatic / riparian, carbon, wildfire), or (b) be expressed as a goal related simply to the health of the forest, rather than expressed as a means of achieving environmental, social, and economic goals. If (b) is the chosen course, then we suggest cutting the existing “environmental, social, and economic” language (it is already part of the overarching GPV directive) and merging what is currently stated within the language for the “Forest Health”, “Climate Change” and “Wildfire” goals under one header (“Climate Resilience, Forest Health and Wildfire”). Some rationale for this is that wildfire and climate resilience are directly related and captured within the concept of forest health. In addition, we believe “Climate Change” should be covered not just within the goal context but rather as an overarching lens (see below).
- “Timber Production” has 2 stated goals. The second one states: *“Manage Common School Forest Lands to secure the greatest permanent value to the people of the State of Oregon and generate long-term revenues to the Common School Fund.”* This is essentially a restatement of GPV, not a timber goal. This language should be eliminated. Instead, the FMP should contain a timber-related goal, and a distinct revenue-related goal (see below). While timber and revenue are often conflated, the concepts and values are distinct, and just as there are other forest products than timber, there are other forms of revenue than harvest.

For Addition or Restatement:

Revenue would be better covered as a stand-alone goal (or perhaps stated as a “Revenue and Cost Management” goal). This is not to say revenue couldn’t or shouldn’t be mentioned within a timber production goal, but the FMP and its goals should not treat revenue simply as a timber production issue. Revenue production and distribution to counties, local taxing districts, and the Common School Fund could be recognized here, but again, these represent more overarching obligations and directives than a goal. As a goal statement, ODF should advance goal language that sets an aspirational intention to both diversify revenue sources as well as advance equitable distribution of revenue. For example: *“Revenue and Cost Management: As compared to the 2021 status quo, diversify revenue sources additional to timber harvest in order to better support public values on state forest lands, and ensure distribution of revenue equitably addresses both agency costs tied to providing public values on state forest lands as well as the benefits received by revenue beneficiaries at the county, school, and taxing district level.”*

- This first clause (diversify) would recognize that revenue, while not at the same volume as timber harvest, does already come from other sources (special forest products, cell towers, permits) but it would also importantly set an intention to try and capture revenue from sources like carbon sequestration. This could add revenue that would in turn be distributed to current beneficiaries (ODF, counties, local taxing districts).
- The second clause (equitable distribution) would recognize that ODF needs to first cover the costs of responsible state forest management that satisfies GPV. If it is locked into deriving revenue from timber harvest only or distributing revenue to counties according to a formula that makes coverage of state forest management costs unsustainable, then this is not an equitable situation.

- For example, if ODF cannot afford to maintain its road system so as to avert harm to water quality or habitat, or if it cannot afford to provide or responsibly manage recreational use from growing public users that have been underserved or underrepresented by a state forest program focused on timber production, then this is not equitable. Either new revenue sources are needed (and all should help in achieving them) or ODF should adjust revenue distribution in order to cover its true operational costs.
- Similarly, pursuing an HCP and Incidental Take Permit will result in a land allocation that does not balance conservation acres and timber production areas equitably across the landscape. Under the status quo approach to revenue and cost management, this will likely result in timber revenue going disproportionately to some counties and conservation objectives served disproportionately by other counties. Similarly, as evidenced by the wildfires affecting the Santiam, costs and revenue related to post-fire management are not equitably shared. Revenue from salvage logging (an unplanned, short-lived source of revenue) is not shared across unaffected / un-burned counties even though ODF's management resources are diverted away from those counties in order to address the post-fire management situation in the burned county(ies). ODF should aspire (through a goal) towards a more equitable situation, even if achievement of that equity is not wholly within its control.

HCP Nexus:

We are encouraged to see ODF clearly state, up front in the draft goals document, that, *"The FMP is being developed alongside a draft HCP that will form the basis for many of the strategies."* The relationship between the FMP and HCP should be recognized and clarified throughout the FMP development process. Given that the HCP relates specifically to wildlife, habitat, and compliance with the Endangered Species Act (as opposed to other public values and ODF legal mandates), and given that the draft HCP is not complete and may change over time, we would like to see the following clarified as part of further FMP development:

- Modify the draft goal language for "Wildlife" (additions in blue): *"Maintain, protect, and enhance functional and resilient systems and landscapes that provide the variety and quality of habitat types and features necessary for long-term persistence of native wildlife species through FMP commitments advanced in concert with a Habitat Conservation Plan / Incidental Take Permit as well as other strategies relevant to sensitive wildlife and other species not directly connected to Endangered Species Act compliance."*
- Add the same additional language to the end of the "Aquatics / Riparian" goal.
- We view this additional language as relevant to FMP goals rather than strategies because we believe the strategies section of the FMP should mirror the conservation strategies set forth in any HCP plus advance other strategies relevant to non-ESA species. Related to this point, even though ODF has stated this intention in public meetings, we would like to see the FMP goals document and process clarify that ODF intends to directly align and carry over verbatim the conservation strategies and actions from its draft HCP into the strategies tied to the FMP.

- Add an additional “Wildlife” goal stating: *“Promote and contribute to the recovery and delisting of state forest-relevant species under the Endangered Species Act (ESA) during the life of this FMP, and prevent the need for future ESA listings on state forest lands.”* The latter clause recognizes that ODF alone does not control the habitat or population trajectories of all species, but that within ODF’s jurisdictional boundaries, it could take positive approaches that prevent the applicability of future potential ESA listings and regulatory restrictions on ODF-managed lands.
- We request that ODF clarify, in consultation with ODFW, Tribes, and other wildlife professionals, what other strategies need to be developed beyond those that exist in a draft HCP. In other words, what species or habitats need strategies developed for them in the FMP that would not be covered by the umbrella of the draft HCP’s strategies and actions. This is something that can occur on a different timeline than the goals process, but we raise it here to point out that the FMP’s wildlife goals and subsequent provisions should be more comprehensive than just the connection to an HCP / ESA compliance.
- Finally, development of both the HCP and FMP is ongoing on parallel tracks and timelines, with a final decision to be made by the Board on both in winter 2023 as well as separate distinct Board and public engagement points prior to that. That said, it is possible that these plans could deviate. ODF and the Board should clarify what it means for the FMP if the draft HCP does not move to adoption, or if its content gets modified through the ongoing federal process and/or Board engagement points. Incorporation of the conservation strategies set forth in the HCP into the FMP (regardless of the HCP’s outcome) would provide confidence that the FMP will advance meaningful conservation commitments. Related to this, ODF should clarify how the FMP process (which involves entry into rulemaking) will be nimble enough to shift and reflect any HCP changes without having to start over, or without the public missing an opportunity to engage in light of any changes. This may be mostly a matter of timing and sequencing, but it is important.

Climate Change:

As touched upon above, we regard climate change not as a resource type but rather an overarching challenge that should apply as both a goal and a lens for other goals. Climate change will affect all of the other resource types / issues / values expressed in the FMP draft goals document. From “Timber Production” to “Wildfire” to “Wildlife” or “Recreation”, the reality is climate change will affect everything. For this reason, ODF and the Board should re-evaluate both its GPV obligation and its translation into FMP goals and strategies using the lens of climate change. . Last time the Board and ODF considered GPV rule language, we requested inclusion of climate change within the revised GPV language.⁴ This did not occur, but alas, the reality of climate change is even more present and prevalent today. In light of this, the Board and ODF should review and assess both the GPV rule language as well as the various FMP resource issues / values as to (a) how they will be impacted by climate change and (b) how they will impact (through ODF’s management pursuant to GPV and FMP goals language) factors tied to climate change (i.e., resilience, adaptation).

For purposes of the FMP goals document specifically, we support the current goal language with the following modifications in blue: *“Lead by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals through resilience strategies tied to refugia or at risk species, healthy and*

⁴ This GPV review occurred during Chair Blackwell’s tenure (2008-2012).

abundant water supply for fish and human communities, and flood risk.” But we feel this language could exist under a distinct goal under the resource issue / category of “Climate Resilience”. And, while this goal would be distinct from the separate climate change-related goal of “Forest Carbon”, we feel it is important that these two FMP goals exist in order to provide a place for the FMP to translate Climate Change and Carbon Plan (CCCP) next steps on state public lands.

Aquatic / Riparian:

We request that this goal language be clarified to include the following additional language (in blue): *“Maintain, protect, and restore dynamic, resilient, and functioning aquatic habitats that support the life history needs of a full range of aquatic and riparian-dependent fish and wildlife species, as well as high water quality and healthy stream flows.”*

While the attributes called out in this additional language may be implicit in the existing language, we believe that water quality and flow are important enough to aquatic system goals that they deserve explicit mention here (and related strategies as the FMP is further developed). While ODF may have very limited control over water withdrawals from rivers or streams associated with the state forest landscape, forest practices and the types of forestry used have considerable influence over the timing and quantity of water availability instream.

Drinking Water:

We appreciate that the draft goals document recognizes the importance of drinking water, and instead of couching this under “Aquatic / Riparian” as a resource type, ODF should include “Drinking Water” as its own resource value / category. This would correspond to the reality that this issue connects to public health, the Clean Water Act, domestic / residential quality of life, and broader public values than what is reflected by the terms “Aquatic / Riparian”.

In addition, instead of the way it currently reads, this goal should be modified as follows to be more specific (measurable) and better express the intended outcome (modified language in blue): *“Maintain and protect forest drinking water sources that from impacts under ODF’s control that could impair their ability to provide high quality drinking water for private and public domestic use. Demonstrate an approach to forest management, including harvest rotations, roads, and chemical spray use, that is more protective within source geographies for drinking water than what would otherwise be applied on timber production lands.”*

Forest Carbon:

We are encouraged to see a goal on this, but it means very little to simply state, *“Contribute to Oregon’s carbon stores within State Forest lands.”* We understand that goal statements are intentionally high-level, but state forest lands are already contributing to the state’s sequestered carbon. Does ODF intend that state forest management be a net-positive carbon storage contributor, meaning that after carbon debits / impacts (tree removal, logging-related fuel impacts, transportation impacts, slash pile burning, etc.) are subtracted out, that state forests are still sequestering carbon? This could get very complicated but would be a positive step towards a more measurable and meaningful goal. Regardless, a goal for forest carbon should be more meaningful than the draft language. Two suggestions on this:

1. Combine this goal with the existing climate smart forestry goal and state: *“Ensure state forest lands are a net-positive carbon storage contributor and increase the amount of carbon these lands contribute to Oregon’s sequestered carbon stores (relative to 2021 levels) through the adoption of climate smart forestry or other measures.”*; AND
2. This goal should be tied to the recognition that opportunities to translate carbon sequestration into a revenue source may grow, and therefore ODF should add a clause to this goal stating *“... and seek to translate sequestered carbon to a revenue source.”*

Chemical Spray:

The draft goals document does not address this issue. While chemical spray relates to other issues and values / goals, we feel it is important enough to be distinctly addressed, and that it doesn’t fit neatly into “Air Quality”, “Wildlife”, “Aquatic / Riparian”, “Timber Production”, or any of the other existing distinct goal categories. ODF should develop specific goal language seeking to reduce reliance on chemical spray use in its forestry practices on state public forest land, especially aerial spray (as measured against the 2021 status quo). Subsequent work at the FMP strategy level could further address how, or which geographies, practices, situations or conditions are in need of most attention or restriction, but without a goal statement to which to tier, we are concerned this issue and related strategies will go unaddressed. A goal and subsequent strategies / actions to reduce chemical spray reliance would have benefits for biodiversity, public and watershed health, and financial viability through reduced costs.

Transportation System:

The current draft goal language should be modified (additions in blue): *“Manage the transportation system to (a) facilitate the anticipated activities as well as (b) reduce the amount of hydrologically connected roads, fish passage barriers, as well as landslide or sediment risks, doing both (a) and (b) in a manner which provides for resource protection, restoration, transportation efficiency, safety, and sound fiscal management.”* This would reflect a goal that could support strategies focused not just on facilitating activity but addressing issues of needed scale, sustainability, and impacts. Similarly, while the Transportation System is relevant to more than just water quality and fish habitat, ODF should ensure any FMP goal language for the transportation system is in keeping with performance measures for state forest lands. ODF’s Performance Measure 4 (“Forest road risks to water quality and fish habitat”) states, *“Reduce the miles of hydrologically connected roads to less than 15 percent of the road network within the next ten years, and maintain or improve that level of reduction for the following ten years. Reduce the number of road crossings that are barriers to fish passage to less-than 2 percent within the next ten years, and maintain or improve that level of reduction for the subsequent ten years.”*⁵

The above language is clear and specific enough to measure over time. FMP goal language should be the same, especially where performance measures language is already in place. We suggest incorporating this type of measurable language (or updated language based on prevailing management science since 2013) into the suggested FMP goal language above.

⁵ Performance Measure 4, p.3 of ODF’s “State Forest Performance Measures Report: A set of performance measures, indicators and accomplishments to help the Board of Forestry manage state forest lands.” (Nov. 2013). <https://digital.osl.state.or.us/islandora/object/osl%3A33946/datastream/OBJ/view>

Thank you for your consideration of these comments and we look forward to working with you on next steps.

Sincerely,

Brett Brownscombe and Bob Van Dyk, Wild Salmon Center	Bob Sallinger, Portland Audubon
Chirs Hager and Ian Ferguson, Association of Northwest Steelheaders	Ashley Short, Tualatin Riverkeepers
Josie Koehne, Oregon League of Women Voters	Sean Stevens and Lauren Anderson, Oregon Wild
Josh Laughlin and Rebecca White, Cascadia Wildlands	Nancy Webster and Trygve Steen, North Coast Communities for Watershed Protection
Michael Manzulli, Oregon Coast Alliance	Joseph Youren, Audubon Society (Salem and Lincoln City Chapters)

C:
Nancy Hirsch, Acting State Forester
Liz Dent, State Forest Division Director
Mike Wilson, Deputy Director--State Forest Division
Board of Forestry Members

To: Sarah Lathrop, Operations Project Leader, State Forests Division
Oregon Board of Forestry
From: Forest Policy Sub-Table, Oregon Climate Action Plan (OCAP) Coalition
Re: Draft Goals, Western Oregon State Forest Management Plan
Date: 9/8/21

Dear Ms. Lathrop, Chair Kelly and Members of the Board,

We are writing to offer public feedback on the draft goals¹ for the Western Oregon State Forest Management Plan. Our organizations represent environmental interests across the state. One of our top priorities is to ensure that our forests optimize carbon storage and sequestration and storage to mitigate the future impacts of climate change, while ensuring our forests also maintain ecosystem function and climate resilience for people and wildlife.

The need to address the threat of climate change should be clearly recognized throughout the Western Oregon State Forest Management Plan. As provided in ORS 530.050 (Management of lands acquired), “greatest permanent value” means healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon. Climate change is now a threat to all aspects of Oregon’s social, economic and environmental systems, and accounting for and addressing this threat will be an integral part of achieving the greatest permanent value for Oregon’s state forests.

The following recommendations outline our priorities for revisions of the Draft Goals for Western Oregon State Forest Management Plan:

1) Please add an Environmental Justice Goal

Environmental and climate change equity and justice considerations should have a separate goal in this document. While equity and justice should be woven into all of ODF’s work, it is helpful to recognize this as its own goal as well. Clean water, clean air, access to nature, and just economic transition are all part of this framework. The agency’s planning must fully account for and work to redress disparate impacts of forest management practices to historically underrepresented and underserved groups, prioritizing attention and resources to the most overburdened groups. ODF should ensure these groups have meaningful and continuous

¹ Oregon Department of Forestry. Forest Management Plan Draft Goals. August 4, 2021
<https://www.oregon.gov/odf/board/Documents/fmp-hcp/20210810-western-oregon-state-forests-fmp-hcp-draft-goals.pdf>

opportunities to engage with and inform the agency’s planning efforts and the programs and practices that follow.

Recommended Environmental Justice Goal: “Ensure forest management planning and implementation fully evaluates and redresses environmental justice impacts, facilitates meaningful involvement of impacted communities, and prioritizes distribution of benefits and minimization of burdens to historically underserved communities—including BIPOC, rural, low-income, and forest labor communities.”

2) Please add a Collaboration and Coordination Goal

ODF should work closely with other state, tribal, and federal agencies to access additional expertise and capacity as it strives to modernize Oregon’s forestry practices. The Agency should incorporate tribal climate mitigation and adaptation practices that can support increased carbon storage and sequestration in Oregon’s forests and seek to build bridges between Western (conventional) and Indigenous practices, including through use of prescribed fire where ecologically appropriate. Oregon’s decision-makers must recognize and respect that traditional ecological knowledge systems have been carried by Native American and other indigenous peoples for countless generations and must invite leaders holding this knowledge to participate in planning sustainable land management practices.²

Further, the ODF should collaborate more closely with other state agencies on policy development, monitoring and enforcement, and research, especially with the DEQ, ODFW and OWEB on matters related to biodiversity conservation and clean water.

Recommended Collaboration and Coordination Goal: “Collaborate and coordinate with other state, tribal, and federal agencies to maximize expertise and capacity.”

Recommended Tribal Consultation Goal: “Recognize and seek input from Oregon’s Tribes and Indigenous communities as the original stewards of the land. Work to incorporate traditional ecological knowledge, management practices, and climate mitigation and adaptation efforts.”

3) Please add a Mature and Old Growth Forest Goal

Very little old growth forest remains in Oregon’s state forests. In addition to timber production, the agency has a responsibility to protect and restore wildlife habitat, watersheds, and outdoor

² Senate Concurrent Resolution 17, an Environmental Justice Framework for Oregon, 2021, <https://olis.oregonlegislature.gov/liz/2021R1/Downloads/MeasureDocument/SCR17>.

recreation access. Managers should strive to identify priority areas for protecting and managing state forest for mature and old growth forest characteristics. This forest type supports numerous other ODF objectives, including increased carbon storage and sequestration.

Recommended Mature and Old Growth Forest Goal: “Identify priority management areas for mature and old growth forest characteristics.”

4) Please revise the Climate Change Goal

Draft: “Lead by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals.”

Recommended revision: “Lead by example in demonstrating climate-smart forest management that supports climate justice, carbon storage and sequestration, and climate resilience.”

Explanation: Environmental and climate justice objectives should be a central component of any climate change goal. Because communities on the frontlines of the climate crisis have historically been excluded from decision-making processes, ODF must prioritize and empower these communities as valuable and equal decision-making partners in generating durable, creative and equitable policies to promote environmental justice and respond effectively to climate change.³ These benefits are also quantifiable and should show improved value to Oregonians.

Further, managers should focus efforts on the restoration and maintenance of essential ecosystem functions as opposed to simply managing natural resources. Stating “achievement of forest resource goals” lacks clear direction. Essential ecosystem functions include:

- Carbon storage and sequestration (e.g. promoting old growth forest characteristics),
- Water quality and quantity (e.g. preventing soil erosion and avoiding tree plantations),
- Soil productivity (e.g. ensure burned vegetation remains on the landscape), and
- Biodiversity (e.g. preserving habitat for at risk plants and wildlife).

5) Please revise the Forest Carbon Goal

Draft: “Contribute to Oregon’s carbon stores within state forest lands.”

Recommended revision: “Increase Oregon’s net carbon sequestration and storage within State Forest lands in the near-term.”

³ Senate Concurrent Resolution 17, an Environmental Justice Framework for Oregon, 2021, <https://olis.oregonlegislature.gov/liz/2021R1/Downloads/MeasureDocument/SCR17>.

Explanation: One of the most significant climate actions the state of Oregon can take is to protect existing carbon stores and increase carbon sequestration in its forests. ODF has a unique and important opportunity to play a leadership role in developing the policies and practices of climate-smart forestry, and our state forests can act as a model for natural climate solutions on private forests, federal forests, and forests across the country.

This goal should be focused on storing carbon on the landscape as opposed to wood products. While wood products remain a critical part of numerous U.S. industries, when it comes to measuring significant long-term climate and carbon benefits, the science is clear that the net value of wood products is quite limited. Logging in U.S. forests is one of the largest sources of emissions, emitting 617 million tons of CO₂ annually (Harris et al 2016). The total carbon impact of logging in the U.S. is even higher, since logging causes substantial reductions in carbon accumulation and storage potential in forests due to soil compaction and nutrient removal. These combined impacts can often reduce forest carbon storage potential by 30 percent or more (Elliot et al. 1996, Walmsley et al. 2009). And while living trees do pull carbon from the atmosphere and store it, wood products do not offer the same climate benefits. Half of harvested carbon is emitted to the atmosphere soon after logging (Harmon 2019).

Advocates for using wood products as primary climate solutions state that the released carbon is eventually re-sequestered by the forest's regrowth; however, this stance does not account for the long time lag between the immediate short-term of release of carbon emissions from logging and combustion of the wood products, and the long-delayed tree regrowth and recapture of carbon in the ecosystem. The carbon stocks of forests are a result of two factors: carbon capture by biomass growth and the duration of carbon in biomass.⁴ It can take 100 to 350 years to restore carbon in western forests that have been logged by clearcutting. Therefore, the longevity of trees in the forest matters a great deal in terms of maximizing carbon benefits. While the goals should strive to improve on current harvest practices and maximize carbon sequestration in long-lived wood products, this strategy is not a substitute for protecting critical carbon sinks on the landscape.

6) Please revise the Wildfire Goal

Draft: "Mitigate the risk of wildland fire effects on forest production, wildlife habitat, landscape function and to support wildfire resilience of local communities."

⁴ Köhl M., Neupane P.R., Lotfiomran N. 2017. The impact of tree age on biomass growth and carbon accumulation capacity: A retrospective analysis using tree ring data of three tropical tree species grown in natural forests of Suriname. PLoS ONE 12(8): e0181187. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0181187>

Recommended revision: “Protect communities from wildland fire and mitigate the long-term impacts of more frequent and severe wildland fire on ecosystem function, vulnerable wildlife habitat, and watershed health.”

Explanation: Wildfire defense efforts should be focused in and around the communities most at risk, including in low income communities and other vulnerable groups. Extensive wildland thinning efforts are ineffective, expensive and time consuming. Instead, the agency should focus on collaborative efforts with vulnerable communities to create defensible space around homes and communities and ensure adequate emergency planning. The national Firewise program represents a model for this work that ODF should strive to emulate.

7) Please revise the Recreation, Education, and Interpretation Goal

Draft: “Provide high-quality forest recreation, interpretation, and education opportunities to create meaningful and enjoyable experiences which foster appreciation and understanding of forests and contribute to community health, forest stewardship, and economic well being.”

Recommended revision: “Provide high-quality forest recreation, interpretation, and education opportunities to create [safe, accessible](#), meaningful, and enjoyable experiences [that](#) foster appreciation and understanding of forest [ecosystems](#) and contribute to community health, forest stewardship, and economic [well-being](#).”

Explanation: State forest lands provide vital, affordable recreation opportunities for Oregon but especially low-income and BIPOC residents. ODF must ensure that these opportunities are widely accessible by providing sufficient access points and pathways as well as information and services in multiple languages and formats. Work to make Oregon’s forests places that are safe and enjoyable for historically underserved communities, including BIPOC communities who have experienced displacement from and discrimination in outdoor spaces. Work directly with impacted communities and disability and racial justice advocates to determine what is needed to make these spaces the source of meaningful and enjoyable experiences.

8) Please revise the Aquatics & Riparian Goal

Draft: “Maintain and protect forest drinking water sources that provide high quality drinking water for private and public domestic use.”

Recommended revision: “Maintain and protect forest drinking water [source quality and quantity to provide reliable](#), high quality drinking water for private and public domestic use.”

Explanation: Please rename the second “Aquatics & Riparian” goal to “Drinking Water and Healthy Watersheds.” Please also recognize the need for water quantity considerations in forest management, as the availability and accessibility of Oregon’s water resources will continue to decline as the climate changes. Forest management practices place the quality of Oregon’s drinking water resources at risk, in turn jeopardizing community health and well-being and displacing the burden of water treatment costs on local entities or individual residents. This goal should reflect the broad needs of the Department to responsibly manage Oregon’s forested watersheds.

9) Please revise the Air Quality Goal

Draft: “Maintain and protect healthy air quality standards.”

Recommended revision: “Maintain and protect healthy air quality standards **and support public health.**”

Explanation: Air toxics and particulate matter produced by forest operations such as slash burning contribute to poor air quality in general which in turn impacts public health and livability, especially for rural communities. Further, the combustion of woody biomass for energy production emits pollutants that jeopardize public health, and biomass power plants are often located near environmental justice communities, further burdening underserved and under-resourced populations. ODF should aim to fully evaluate and minimize the negative health impacts associated with forest management practices that degrade air quality and disproportionately impact vulnerable communities in Oregon.

10) Please consider the following for the Cultural Goal

Draft: *under development – written comments welcome

Suggested goal: “Acknowledge and share the rich, diverse cultural history of Oregon’s forests.”

Explanation: Native peoples inhabited Oregon for thousands of years before European settlers arrived.⁵ Individuals from a wide variety of cultures contributed to Oregon’s rich forestry history, including African American, Japanese and Greek timber workers.⁶ ODF should work to share the origins of the land it manages, highlight important cultural sites, and honor the wide array of cultural contributions that have influenced Oregon’s state forests.

⁵ See, e.g., A Lower Columbia Chinook Historical Timeline, Department of History at Portland State University, 2017, available at <http://publichistorypdx.org/projects/chinook/lower-columbia-chinook-historical-timeline/> (outlining events significant to Chinook history and cultural change).

⁶ See Gwen Trice, “Maxville.” January 29, 2021. <https://www.oregonencyclopedia.org/articles/maxville/#.YSfZMY5Kg2x>.

We appreciate your consideration of these recommendations, and we respectfully request that you take an ambitious approach to environmental justice and climate action. The impacts of climate change are already severe, and we look to the Department of Forestry to lead on climate action to the fullest extent of your authority.

Sincerely,

Lauren Anderson
Forest and Climate Policy Coordinator
Oregon Wild

Grace Brahler
Oregon Climate Action Plan & Policy Manager
Beyond Toxics

Rand Schenck
Forestry Lead
Metro Climate Action Team

Julia DeGraw
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Felice Kelly, PhD
Forest Defense Team Co-Lead
350PDX

Catherine Thomasson
Chair
Environmental Caucus Democratic Party of Oregon

Darlene Chirman
Member
Cascade-Volcanoes Great Old Broads

To: Oregon Board of Forestry
Oregon Department of Forestry
Re: Prioritize Oregon's forests as a critical climate solution
Date: 9/8/21

Dear Chair Kelly, Members of the Board, and Oregon Department of Forestry Staff,

We, the undersigned, call on the Oregon Department of Forestry (ODF) and the Oregon Board of Forestry to prioritize Oregon's forests as a critical climate solution. Oregon's temperate rainforests represent some of the most carbon-rich landscapes in the world and ODF has a critical role to play in demonstrating what ambitious, visionary climate-smart forest policy looks like for the temperate rainforest regions in the United States and beyond.

We greatly appreciate ODF and the Board for prioritizing natural climate solutions and environmental justice within the Climate Change and Carbon Plan, the Western Forest Management Plan, and other agency planning documents. These plans represent a critical first step for the agency as it strives to modernize its practices and implement climate-smart forest management.

These solutions should include putting a halt to clear-cutting and promoting longer logging rotations, bigger riparian buffers, more green tree retention, and strong protections for mature and old-growth forests. These actions will help Oregon reduce the future impacts of climate change by sequestering more carbon in its forests, and will also help counter the impacts the state is already experiencing, such as heatwaves, drought, flooding, and more severe wildfires.

Protecting carbon-rich temperate forests in Oregon represents one of the most important near-term climate solutions we have at our disposal. These ancient giants store and continue to absorb vast amounts of carbon in addition to providing clean drinking water, critical wildlife habitat, and world-class recreational opportunities. Researchers from Oregon State University concluded that protecting western forests with high and medium carbon-storing abilities would be the equivalent of halting eight years of burning fossil fuels across the same region.

We applaud the steps ODF has begun to take towards making Oregon a leader in natural climate solutions, and we ask the agency to take the boldest and visionary actions possible to counter the climate crisis we face today.

Sincerely,

Harry Freiberg	Brookings	OR
John Miner	Oak Grove	OR
Lon Otterby	Marcola	OR
Danika Esden-Tempski	Eugene	OR
Fran Recht	Depoe Bay	OR
Annette Gebb	Florence	OR
Hillary Tiefer	Portland	OR
Jabrila Via	Noti	OR
Mary Anne Ericson	Portland	OR
Monica Dostal	Eugene	OR
Erika Kane	Hubbard	OR
Michael Ryan	Portland	OR
Charles Ciecko	Gresham	OR
David Steele	Portland	OR
Camille Hall	Corvallis	OR
Carolyn Wright	The Dalles	OR
Joseph Jannuzzi	Portland	OR
Wendy Holzman	Bend	OR
Don Jacobson	Portland	OR
Sarah Deumling	Rickreall	OR
Ted LaPage	Corvallis	OR
Diana Talcott	Portland	OR
Karen Moore	Glide	OR
Marilyn Stinnett	Sherwood	OR
Bruce Ronning	Bend	OR
Lawrence Nagel	Ashland	OR
David Brewer	Springfield	OR
Leah Passell	Portland	OR
Kathleen Curlee	Salem	OR
John Burns	Ashland	OR
Christine Ferris	Salem	OR
leslie shenkin	Eugene	OR
Toni Rubin	Portland	OR
linda farmer	Eugene	OR

Charles McGinnis	Portland	OR
Steve Aydelott	Bend	OR
Rick Robertson	Eugene	OR
Ann Hollyfield	Seal Rock	OR
Mitch Williams	Brightwood	OR
Linda Nelson	Portland	OR
Chandra LeGue	Eugene	OR
Lynn Herring	Lake Oswego	OR
Clifford Anderson	Sacramento	CA
Todd Peres	Portland	OR
Dennis Dougherty	Novato	CA
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Casey Cunningham	Portland	OR
Stephanie Christensen	Portland	OR
Susan Hay	Portland	OR
Marissa Athens	Corvallis	OR
Lois Dickinson	West Linn	OR
Eva Lazarus	Portland	OR
Deborah Honthamer	Portland	OR
Jesse Buss	Oregon City	OR
Richard Viola	Portland	OR
John Nuffer	Nashville	TN
Nancy Weil	Arch Cape	OR
David Tvedt	Eugene	OR
Karon Johnson	Bend	OR
Adam Crane	Portland	OR
MayaLisa Holzman	Bend	OR
Darla Sadler	Bend	OR
Susan Geer	La Grande	OR
Michael Price	San Francisco	CA
Gordon Baker	Prescott	AZ
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Nikki Dennis	Portland	OR
Lina Van Brunt	Eugene	OR

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Paul Daly	Eugene	OR
Charles Blanchard	Eugene	OR
Kyenne Williams	Portland	OR
Nancy Brown	Forest Grove	OR
John Andersen	Elmira	OR
Renee Espenel	Portland	OR
Michael Noack	Waldport	OR
Mika Gentili-Lloyd	Hillsboro	OR
Diane Monico	Nehalem	OR
Anthony Mooney	Tigard	OR
Ellen Weeks	Portland	OR
Debra Kaye	Portland	OR
Diane Craig	Beaverton	OR
Suzanne Kindland	Cannon Beach	OR
Debbie Schlenoff	Eugene	OR
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Elizabeth Laskey	Portland	OR
charles patton	Eugene	OR
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Joy Brandt	Portland	OR
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Rick Ray	Troutdale	OR
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Margaret Stephens	Salem	OR
Joanne Walters	Portland	OR
Lynn Cardiff	Salem	OR
Marie Wakefield	Newport	OR
Larry Olson	Portland	OR
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Sheila Christensen	Hillsboro	OR
Wally Sykes	Joseph	OR
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David Funk	Eugene	OR
Philip Simon	San Rafael	CA
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Carolyn Eckel	Portland	OR
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Terry Ciecko	Gresham	OR
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Kay Hagen	Ashland	OR
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Karen Black	Williams	OR
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Leia Peison	Copley	OH
Barbara Wharton	Portland	OR
KB Mercer	Portland	OR
Christine Whaley	North Bend	OR
Gloria Jacobs	Tigard	OR
Hope Stanton	Nehalem	OR
Barbara Greenwood	Walnut Creek	CA
John Nettleton	Portland	OR
Mary Shabbott	Punta Gorda	FL
Andrew Campanella	Philomath	OR
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Cathy Thomas	Richmond	VA
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Janis Millu	Franklin	PA
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dorinda kelley	Portland	OR
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Rosalie Sable	Medford	OR
Robert Brown	Fircrest	WA
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John Livingston	Salem	OR
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Jessica Jern	Wilson	WY
Jessica Eagan	Portland	OR
Craig Zimmerman	Enumclaw	WA
Isabel Cervera	Salisbury	NC
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Amy Rossman	Corvallis	OR
Alisa Ocean	O Brien	OR
George Kuppler	Brookings	OR
Basey Klopp	Bend	OR
Mark Wheeler	Portland	OR
Jordy Albert	York	PA
Chris Washington	New York	NY

Kate Kenner	Guilford	VT
Nelson Baker	Bethesda	OH
Sheri Kuticka	Concord	CA
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Martha Letherwood	Portland	OR
Mark Rogers	Sandy	OR
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Maureen O'Neal	Portland	OR
Kenneth Lapointe	Los Angeles	CA
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Brandi Reynolds	Beaverton	OR
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Jules Moritz	Corvallis	OR
Carol Van Strum	Tidewater	OR
Carol Martin	Portland	OR
Lynn Longan	Medford	OR
Darla Rehmer	Medford	OR
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Judy Radovsky	Corvallis	OR
Lorraine Boose	Eugene	OR
Nancy Sullivan	Dallas	OR
Mark Walker	Creswell	OR
Joni O'Donahue	Lake Oswego	OR
Ginger Hipszky	Colorado Springs	CO
Pamela Driscoll	Dexter	OR
Dogan Ozkan	Fairbanks	AK
Norm Young	Jacksonville	OR
Susana Gladwin	Seaside	OR
Richard Harrington	Oregon City	OR
Jerri Berg	San Antonio	TX
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Madalyn Hamlin	Lebanon	OR
Amber Davidson	Columbia	SC

Patricia Nazzaro	Union	KY
Asmodeus Hru	Riverside	CA
Michelle Bienick	Grants Pass	OR
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CAROL COLLINS	Dover	DE
Kathleen Roche	Bend	OR
Ted Chudy	Eugene	OR
Robert Spencer	Springfield	OR
Anna Jasiukiewicz	Ostrów Wlkp	AK
Oscar Mace	Foster City	CA
Steph Spencer	Bend	OR
Lenore Reeves	Mokena	IL
Rob Seltzer	Malibu	CA
bruce bauer	Medford	OR
Karen Pecsok	West Plains	MO
David Steiner	Spray	OR
Emil Gerth	Portland	OR
Fiona Stefanik	Portland	OR
Don Crownover	Keizer	OR
Ken Stern	Eugene	OR
Eric Halperin	Gearhart	OR
Dana Mozer	Portland	OR
Chris Drumright	Murfreesboro	TN
Reed Coleman	Portland	OR
James Mulcare	Clarkston	WA
Jack Duggan	Jacksonville	OR
Harriet Sheridan	Seaside	OR
Francis Moran	Springfield	OR
Sandra Woodall	San Antonio	TX
Steve Sheehy	Klamath Falls	OR
Joseph Youren	Salem	OR
Ariel Jimenez	Oregon City	OR
Siamak Fooladi	Eugene	OR
Michael Friedmann	Bronx	NY

Elizabeth Watts	Boynton Beach	FL
Ralph Thomas	Ashland	OR
Sheila Loayza	Wayland	MA
Ann Lamer	Corvallis	OR
cave man	New York	NY
Dorothy Benson	Eugene	OR
Dylan McCoy	McKenzie Bridge	OR
Cynthia Cannon	Springfield	OR
John Noland	Coos Bay	OR
Caden DeLoach	Coldwater	MI
Leela Devi	Corvallis	OR
Lawrence Yox	Waldport	OR
Carol Scherer	Eugene	OR
Jennifer Nitz	Missoula	MT
Masayo Kaneko	Portland	OR
Rebecca Haas	Portland	OR
Colin Kelly	Portland	OR
James Thomas	Redmond	OR
Sandi Aden	Lincoln	NE
Debbie Williams	Sun City	CA
Don Kuhns	Corvallis	OR
Caroline Sévilla	Boling	TX
Mary Baumgardner	West Linn	OR
Michelle West	Lake Oswego	OR
Melissa Gentry	Molalla	OR
Beth Levin	Portland	OR
Dan Ankrom	Bend	OR
Kevin Goldsmith	Portland	OR
Scott Crockett	Florence	OR
Allison Millionis	Portland	OR
Deborah Dahlgren	East Hartford	CT
Deborah Voves	Anchorage	AK
Matt Stern	Williams	OR
Susan Anderson	Boston	MA

Paul Kalka	Binghamton	NY
Joann Koch	Lebanon	CT
Kristen Swanson	Springfield	OR
John D'Avolio	Portland	OR
Richard Martin	Corvallis	OR
Kim Zwicker	Lynn	MA
Jennifer Dehart	Happy Valley	OR
Marty Bostic	Los Angeles	CA
joann butkus	Chicago	IL
kim davis	Salem	OR
Annette Buchanan	Ashland	OR
Kelly O'Hanley	Portland	OR
Linda Pauly	Eugene	OR
Angeni Tapscott	Silverton	OR
JL Angell	Rescue	CA
Lyn du Mont	Golden	CO
Cynthia Wahlenmaier	O'Brien	OR
Joanne M James	Portland	OR
Judy Miller-Lyons	Highland Mills	NY
Susan Bolgiano	Halfway	OR
Erik Geiger	Portland	OR
Maynard Freemole	Corvallis	OR
DIANA KEKULE	Depoe Bay	OR
Sallie Robbins-Druian	Palm Springs	CA
Camilo Marquez	Portland	OR
Teresa Mueller	Eugene	OR
Deborah Clark	Shedd	OR
Ronna Friend	Eugene	OR
Hayden Marsh	Portland	OR
Dana Weintraub	Beaverton	OR
Leslie Grush	Portland	OR
Melissa Turnbull	Salem	OR
Catherine Thomasson	Gresham	OR
Lloyd Vivola	Portland	OR

Monica Delzeit	Lake Oswego	OR
Sara Bremer	Jefferson	OR
Jennifer Finley	Bend	OR
Ann Nowicki	Eugene	OR
Alexis Martin	Tigard	OR
Adele Thompson	Portland	OR
Kendra Hanson	Portland	OR
Frances Recca	Netcong	NJ
Michael Siegle PhD	Santa Fe	NM
Deborah Rossum	Sedona	AZ
Stacey Gunderson	Clackamas	OR
Jody Caicco	Vancouver	WA
Sylvia Tyree	Lexington	KY
Sean Hanna	Portland	OR
Melissa Rehder	Portland	OR
Paula Feldmeier	Salem	OR
Francis Mangels	Mount Shasta	CA
Edward Necker	Eugene	OR
Jacqueline Brandt	Corvallis	OR
alexi lovechio	Ashland	OR
Teal Horsman	Bend	OR
Linda Perrine	Beaverton	OR
Ellen Yarnell	Portland	OR
Bernardo Alayza Mujica	Sioux City	IA
Morrigan Black	Brazoria	TX
Thomas Fawell	Portland	OR
Shannon Hunter	Portland	OR
Dwight Ferris	Salem	OR
Brad Nahill	Portland	OR
Linda Gordon	Eugene	OR
mark koenigsberg	Portland	OR
CAROLYN FOLAND	Salem	OR
Sue Hartford	Hood River	OR
Gwen Stone	Myrtle Creek	OR

Kaye Waite	Eugene	OR
Mary Sharon Moore	Eugene	OR
cathyelizabeth levin	Bayonne	NJ
Barbara Vick	Gresham	OR
Dan Liberthson	San Francisco	CA
dameon hansen	Idaho Falls	ID
Daniel Jaffee	Portland	OR
Nicole WYDRA	Springfield	OR
Dick Merrill	Bandon	OR
Jim Hemmingsen	Eugene	OR
William O'Brien	Beaverton	OR
Nora Auston	Portland	OR
Josh Laughtland	Portland	OR
Robert Cochran	Portland	OR
Laurie Lakin	Bend	OR
Neel Patel	San Francisco	CA
Virgil Morris	Brownsville	OR
Jessica Greenleaf	Hillsboro	OR
Justus Peacock-Broyles	Portland	OR
Kellen Dunn	Manhattan Beach	CA
Mike Higgins	Halfway	OR
Grendel Tirado	Adrian	MI
Jasmine Saavedra	Philomath	OR
Mike Poremba	Gold Hill	OR
Alain Gauthier	Portland	OR
Dana Robinson	Portland	OR
Steve Smack	Portland	OR
Cathy Lewis-Dougherty	Lake Oswego	OR
Hugh Cochran	Eugene	OR
Stephen Fuller-Rowell	Eugene	OR
Michael Burmester	Happy Valley	OR
Kristin Koptiuch	Rockaway Beach	OR
Andrea Heid	Aurora	OR
Rebecca Gordon	Keizer	OR

Nell Tedrow	Gladstone	OR
Priscilla Calleros	Bend	OR
Laura Anderson	Eugene	OR
Judy Bowman	Lincoln City	OR
Melinda Essig	Portland	OR
Deryl Yunck	Salem	OR
Kathleen Key	Seaside	OR
Alberta Mayo	Portland	OR
cherie bynum	Eugene	OR
Melissa McDowell	Crescent City	CA
liz howell	Portland	OR
bob nisbet	Portland	OR
Nadia Gardner	Arch Cape	OR
Liana Palmer	Los Gatos	CA
Darlene Chirman	Portland	OR
Victoria Koch	Eugene	OR
Lora Denman	Gresham	OR
Dana Greenblatt	Ashland	OR
mike doherty	Port Angeles	WA
Cheri Hill	Gleneden Beach	OR
Jane Marsh	Eugene	OR
Judy Henderson	Portland	OR
Jeff Freeman	Sherwood	OR
Kevin Simpson	Port Orford	OR
Cindy Stein	Thousand Oaks	CA
Brandie Deal	Bothell	WA
Liza Baer	Ashland	OR
barbara nelson	Hood River	OR
James Milling	Hood River	OR
William DeBrule	Portland	OR
Lucas Black	Portland	OR
Carla Hervert	Eugene	OR
Susan Gere	Portland	OR
Kim Kelly	Eugene	OR

James Neu	Eugene	OR
Ann Blaker	Portland	OR
Elliott Moffett	Kamiah	ID
Britt Crea	Meridian	ID
Matthew Fisher	Seal Rock	OR
Milton and Shirley Nelson	Florence	OR
Patricia Hathaway	Eugene	OR
Roberta Boyden	Coburg	OR
Jon Wood	Portland	OR
David DeLeon	Portland	OR
Rhonda Lawrence	Grants Pass	OR
Steven Bruckner	Portland	OR
Katy Kolker	Portland	OR
Tara Ohta	Portland	OR
Lauren Anderson	Portland	OR
Jennifer Normoyle	Hillsborough	CA
nancy webster	Rockaway Beach	OR
Steven Pringle	Eugene	OR
gm whiting	Joseph	OR
Regan Fisher	Portland	OR
Martin Fisher	Portland	OR
Alyssa Roth-Fortune	Lebanon	OR
Sandra Less	Milwaukie	OR
Mary Bosch	Lake Oswego	OR
Bob McKinney	Corvallis	OR
Thomas Brown	Eugene	OR
Chuck Gehling	Hood River	OR
marci cutler	Eugene	OR
Saelon Renkes	Eugene	OR
Kurin Williams	Portland	OR
Ann Cahill-Makowsky	Bordentown	NJ
Ron Eberle	Lake Oswego	OR
Donna Steadman	Tigard	OR
Claudia Bowman	Oakland	CA

Kim Beeler	Lake Oswego	OR
Maia Hixon	Portland	OR
Janet Weil	Portland	OR
Lisa Neste	High Point	NC
Jaymi Heimbuch	Newport	OR
Susan VonBergen	Bend	OR
Kyla Yeoman	Portland	OR
Terry Tedesco	Tucson	AZ
Lilith Gist	Coos Bay	OR
Josh Pelleg	Omer	NC
Alan Linville	Louisville	KY
Thomas Stibolt	Portland	OR
Judy Ringenson	Portland	OR
Michael LeClair	Morgan Hill	CA
Suzanne Zarling	Portland	OR
Rachel Bosworth	Molalla	OR
Kris Ebbe	Corvallis	OR
Elizabeth Fox	Toledo	OR
Emily Hayden	Keizer	OR
Matt Stevenson	Portland	OR
Frank Huebsch	Bend	OR
Richard Scott	Portland	OR
kelsey madison	Portland	OR
Megan Wallin	Portland	OR
Carl Bybee	Eugene	OR
Margaret Heilman	Lake Oswego	OR
Randall Wayne	Eugene	OR
Mark Tunno	Chiloquin	OR
Linda Ferland	Claremont	NH
Joanne Deyoe	Saratoga Springs	NY
Kelly Hughes	Bend	OR
Robert Herald	Portland	OR
Jason Powers	Portland	OR
Lucile W. Brook	Nehalem	OR

Peter Sergienko	Portland	OR
Alicia Liang	Portland	OR
Dustin Kearns	Portland	OR
Miranda Haw	Hillsboro	OR
Claire Couch	Corvallis	OR
Adam Sammons	Portland	OR
kent Sugnet	Portland	OR
Gerson Robboy	Portland	OR
Brooke BrandSmith	Portland	OR
Tom Curtin	Portland	OR
Judith Arcana	Portland	OR
Tia Ja	San Jose	CA
William Wilson	Portland	OR
Helenl Henry	Portland	OR
Maggie Stock	Tigard	OR
Phil Miotto	Portland	OR
Frank Rouse	Colton	OR
Merri Whipps	Portland	OR
Pedro Tai	Mount Hood Parkdale	OR
Jean Wyman	Portland	OR
Tobias Boyd	Portland	OR
Sue Ward-McCurdy	Portland	OR
Marjorie Nafziger	Portland	OR
Randall Webb	Portland	OR
Darci Budlong	Portland	OR
Michael Wilson	Portland	OR
Jane Carlsen	Portland	OR
Beverly White	Portland	OR
James Unger	Troutdale	OR
Teresa DeLorenzo	Astoria	OR
Stephen Funk	Portland	OR
Michael Carter	Portland	OR
claud gilbert	Portland	OR
Kalama Reuter	White Salmon	WA

Amy Cairns	Oregon City	OR
Jeanette LeTourneux	Applegate	OR
John Felsner	Portland	OR
Matthew Kaminker	Portland	OR
Matthew Barmann	Hood River	OR
Shirley Crenshaw	Saint Louis	MO
Marvin Fickle	Eugene	OR
Craig Mackie	Camp Sherman	OR
DiannaSue Johnston	Salem	OR
Carol Race	Juneau	AK
Mickie Harshman	Tigard	OR
Matt Oliphant	Bend	OR
Eileen Jennis-Sauppe	Eureka	CA
Anne P	Apalachicola	FL
Dawn Lutsky	Pottsville	PA
John Brennan	Hammond Ranch	CA
Gina Ness	Eureka	CA
Christy Loew	Portland	OR
William Slattery	Eugene	OR
Jana Demartini-Svoboda	Portland	OR
Daveed Fleischer	Portland	OR
AnnMarie Sardineer	Trafford	PA
Pat Bognar	Portland	OR
David Rogers	Chiloquin	OR
Michael Dean	North Bend	OR
Meghan Bowman	Bend	OR
Curt Stevens	Portland	OR
CW Webb	La Grande	OR
Rebecca Rottman	Portland	OR
Joanne Borges	Salem	OR
John Torrey	Portland	OR
Vicki Jorgenson	Salem	OR
Laura Davies	Lake Oswego	OR
Cynthia Kurtz	Bay City	OR

Herb Fyfield	Portland	OR
Danielle Caruso	Bend	OR
Kim DeLay	Lebanon	OR
Marna Porath	Amity	OR
Steve Bear	Port Townsend	WA
Ann Robinson	Gladstone	OR
Barbara Wright	Eugene	OR
Mary Ellen Tenney	Corvallis	OR
Milo Mecham	Eugene	OR
Jim Babson	Lowell	OR
RONALD ATWOOD	Portland	OR
Scott Massinger	Portland	OR
Caroline Marks	Bend	OR
Betsy Herbert	Corvallis	OR
Alexis West	Tillamook	OR
Pradeep Sivakumar	Hillsboro	OR
kelly lanspa	Portland	OR
Janice Mancuso	Portland	OR
Hollie Oakes-Miller	Salem	OR
Philip Ratcliff	Salem	OR
David Collier	Portland	OR
Mick Smith	Ashland	OR
Bill Deutschman	Klamath Falls	OR
Ken Humke	Portland	OR
Susan Garelik	Portland	OR
James Newcomer	Lake Oswego	OR
Roger Dorband	Astoria	OR
kathy chaney	Pendleton	OR
Jane Perkins	Loveland	CO
Karin Poida	Portland	OR
THOMAS MEEK	Salem	OR
D S	Corvallis	OR
Danahy Sharonrose	Portland	OR
Heather McMahon Wadia	Beaverton	OR

Liz Perkin	Beaverton	OR
Chris Sheline	Portland	OR
Joe Daunt	Portland	OR
Robert Hayden	Portland	OR
Jim Pruett	Ashland	OR
Raleigh Koritz	Minneapolis	MN
Patricia Watne	Portland	OR
Katie Vaughan	Portland	OR
Sam Yerke	Portland	OR
Heather Ikeler	Portland	OR
Robert Medina	Portland	OR
Deborah Melhase	Bend	OR
Theodore Chu	Nehalem	OR
Deane Rimerman	Olympia	WA
Noelle Teske	Portland	OR
Karen Dichari	Newport	OR
Darcy Rose	Portland	OR
Fred Mallery	Eugene	OR
Sarah watson	Union	OR
Andrew Simrin	Eugene	OR
Jere Rosemeyer	Eugene	OR
Carla Williams Williams	Cottage Grove	OR
Dane Eckweiler	Eugene	OR
Paul Handover	Merlin	OR
Will Lerner	Beaverton	OR
Erik Horeis	Bend	OR
Chris Streight	Portland	OR
S Brainerd	Sisters	OR
Rachel Donheiser	Condon	OR
Richard Robohm	Portland	OR
Ashley Emerson	Portland	OR
Phil Johnson	Portland	OR
Cassie Wilson	Boring	OR
don alexnder	Dexter	OR

James Dame	Happy Valley	OR
Joette Palzer	Ashland	OR
David Eckerdt	Salem	OR
Kati Tomlin	Medford	OR
Jack shorr	Beaverton	OR
Javan Ward	Bend	OR
paul a Seamons	Deer Island	OR
Micaela Gauss	Williams	OR
Shawn Kahl	Eugene	OR
Mel Weaver	Salem	OR
Sandra Maenz	Springfield	OR
Stephen Baker	Sherwood	OR
Mary Cooney	Lake Oswego	OR
Michael Ehrhart	Beaverton	OR
Virginia Wydra	Sisters	OR
Sija Sir	Zagreb	FL
Josef Grosch	Berkeley	CA
Drew Stokes	Portland	OR
Ann Walsh	Flushing	NY
Larisa Zimmerman	Portland	OR
Italo Lenta	Newport	OR
Kathy Muskrat	Cave Junction	OR
Kara Lewis	Portland	OR
Dawn Montgomery	Portland	OR

ODF's Draft FMP Goals and Greatest Permanent Value

FTLAC Meeting
October 8, 2021

Oregon Laws, 1941

provisions of law as the lands given in exchange for the same.

Section 5. 1. The board shall manage the lands acquired pursuant to this act so as to secure the greatest permanent value of such lands to the state, and to that end is empowered and authorized:

(a) To protect said lands from fire, disease and insect pests, to cooperate with the several counties of the state and with persons, firms and corporations owning lands within the state

Oregon Laws, 1941

in such protection and to enter into all agreements necessary or convenient therefor.

(b) To sell forest products from said lands; to make and execute contracts, for periods in no case exceeding 10 years, for the mining and removal of minerals and fossils in said lands.

(c) To permit the use of said lands for grazing, recreation and other purposes when, in the opinion of the board, such use is not detrimental to the purposes of this act.

1997 OAR Rule 629-035-0020

Greatest Permanent Value

- (1) As provided in [ORS 530.050 \(Management of lands acquired\)](#), “greatest permanent value” means healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon. These benefits include, but are not limited to:
- (a) Sustainable and predictable production of forest products that generate revenues for the benefit of the state, counties, and local taxing districts;
 - (b) Properly functioning aquatic habitats for salmonids, and other native fish and aquatic life;
 - (c) Habitats for native wildlife;
 - (d) Productive soil, and clean air and water;
 - (e) Protection against floods and erosion; and
 - (f) Recreation.

1997 OAR Rule 629-035-0020

Greatest Permanent Value

- (2) To secure the greatest permanent value of these lands to the state, the State Forester shall maintain these lands as forest lands and actively manage them in a sound environmental manner to provide sustainable timber harvest and revenues to the state, counties, and local taxing districts. This management focus is not exclusive of other forest resources, but must be pursued within a broader management context that:
- (a) Results in a high probability of maintaining and restoring properly functioning aquatic habitats for salmonids, and other native fish and aquatic life;
 - (b) Protects, maintains, and enhances native wildlife habitats;
 - (c) Protects soil, air, and water; and
 - (d) Provides outdoor recreation opportunities.

1997 OAR Rule 629-035-0020

Greatest Permanent Value

(3) Management practices must:

- (a)** Pursue compatibility of forest uses over time;
- (b)** Integrate and achieve a variety of forest resource management goals;
- (c)** Achieve, over time, site-specific goals for forest resources, using the process as set forth in OAR 629-035-0030 (Forest Management Planning) through 629-035-0070 (Forest Land Exchanges and Acquisitions);
- (d)** Consider the landscape context;
- (e)** Be based on the best science available; and
- (f)** Incorporate an adaptive management approach that applies new management practices and techniques as new scientific information and results of monitoring become available.

1997 OAR Rule 629-035-0020

Greatest Permanent Value

- (4) The State Forester shall manage forest lands as provided in this section by developing and implementing management plans for a given planning area as provided in OAR 629-035-0030 (Forest Management Planning) to 629-035-0100 (Existing Long Range Plans).
- (5) The Board shall review 629-035-0020 (Greatest Permanent Value)(2) (management focus) no less than every ten years in light of current social, economic, scientific, and silvicultural considerations.

Draft goal that is consistent with the GPV rule

Timber Production	Provide sustainable and predictable production of forest products that generate revenues and jobs for benefit of the state, counties, local taxing districts and communities.
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Draft goals that expand the definition of GPV beyond the 1997 rule

Forest Carbon	Contribute to Oregon's carbon stores within State Forest lands.
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Forest carbon is not mentioned in the OAR.

Climate Change	Lead by example in demonstrating climate-smart forest management that supports climate adaptation, mitigation, and the achievement of forest resource goals.
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Climate change is not mentioned in the OAR.

Wildfire	Mitigate the risk of wildland fire effects on forest production, wildlife habitat, landscape function and to support wildfire resilience of local communities.
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Wildfire is not mentioned in the OAR. However, minimizing wildfire damage is consistent with the management focus of sustainable timber and revenue generation.

Mining, Agriculture, Administrative Sites and Grazing	Permit mining, agricultural use, administrative sites and grazing when resource use is compatible with other forest resource goals.
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Leased resources is not mentioned in the OAR. However, this goal seems consistent with revenue generation.

Draft goals that expand the definition of GPV beyond the 1997 rule

Plants	Maintain understory vegetation representing a diversity of native vegetation associations and seral stages across the landscape including sensitive and endangered plant populations.
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Plant direction is not mentioned in the OAR.

Pollinators and Invertebrates	Provide suitable habitats across the landscape that contribute to maintaining or enhancing native, sensitive, and endangered pollinator and invertebrate populations.
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Pollinator and invertebrate is not mentioned in the OAR.

Air Quality	Maintain and protect healthy air quality standards.
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The OAR states “protects soil, air and water.” “Maintain” is not mentioned in the OAR.

Transportation System	Manage the transportation system to facilitate the anticipated activities in a manner which provides for resource protection, transportation efficiency, safety, and sound fiscal management.
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The OAR does not mention the transportation system.

Draft goals that expand the definition of GPV beyond the 1997 rule

Cultural	<i>*under development – written comments welcome</i>
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Culture is not mentioned in the OAR.

Scenic	Manage forests in ways that value scenery and forested settings that are visually appealing.
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Scenic is not mentioned in the OAR.

Recreation, Education, and Interpretation	Provide high-quality forest recreation, interpretation, and education opportunities to create meaningful and enjoyable experiences which foster appreciation and understanding of forests and contribute to community health, forest stewardship, and economic wellbeing.
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The OAR states “Provides outdoor recreation opportunities.” Additional language in the Draft Goals is not reflected in the OAR.

Recreation, Education, and Interpretation	Manage REI infrastructure and recreational use in an environmentally sustainable manner that seeks to minimize adverse impacts to natural resources and forest ecosystems.
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Draft goals that expand the definition of GPV beyond the 1997 rule

Aquatics & Riparian	Maintain, protect, and restore dynamic, resilient, and functioning aquatic habitats that support the life history needs of a full range of aquatic and riparian-dependent fish and wildlife species.
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The OAR states that management results in a high probability of maintaining and restoring properly functioning aquatic habitats for salmonids, and other native fish and aquatic life”

The OAR does not include terms “dynamic” and “resilient”, or consideration of riparian-dependent wildlife. The OAR only refers to aquatic life.

Aquatics & Riparian	Maintain and protect forest drinking water sources that provide high quality drinking water for private and public domestic use.
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The OAR states “protects soil, air and water.” Drinking water source maintenance and protection is not mentioned in the OAR.

Draft goals that expand the definition of GPV beyond the 1997 rule

Soil	Maintain, protect, and enhance soils.
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The OAR states “protects soil, air and water.”
“Maintain” and “enhance” are not mentioned in the OAR.

Forest Health	Ensure healthy, sustainable, and resilient forest ecosystems that over time help achieve environmental, social, and economic goals to benefit all Oregonians.
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The OAR states that the management focus for state lands is sustainable timber and revenue production.
This goal goes further than the OAR.

Wildlife	Maintain, protect, and enhance functional and resilient systems and landscapes that provide the variety and quality of habitat types and features necessary for long-term persistence of native wildlife species.
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The OAR states “protect, maintain, and enhances native wildlife habitats” and does not include other aspects of this Draft Goal.

Draft Goal falls short of the definition of GPV in the 1997 rule

Special Forest Products Provide opportunities to obtain special forest products.

Forest products are mentioned in the OAR. However, they are included in the context of providing “Sustainable and predictable production of forest products that generate revenues for the benefit of the state, counties, and local taxing districts.” Revenue generation is not included in this Draft Goal.

Are there other legal requirements?

- There may be other laws that affect forest management in addition to the GPV rule.
 - If so, ODF has responsibility to identify those requirements and show how the Draft Goals are consistent with the requirements
 - ODF is not required to exceed these requirements especially at the expense of the management focus.

Recommended testimony to BOF

1) ODF has a contractual obligation to provide sustainable harvest and revenue to the counties.

- The primary goal driving management under the FMP should be to provide sustainable timber harvest and revenues to the state, the Counties and the taxing districts. This is the GPV based in the 1941 Act. It is also mostly consistent with the management focus identified in the 1997 GPV administrative rule.
- We should support other management strategies, management actions, management standards and guidelines that are complimentary, accommodative or incidental to this primary goal.
- Other strategies, actions or standards that are in conflict with the primary goal should be accommodated only to the extent required to meet other laws or rules. And ODF needs to make clear what the requirements of those laws or rules are.

Recommended testimony to BOF

2) FTLAC has a statutory responsibility to advise the BOF and the State Forester on matters which affect management of the State Forest Trust Lands.

- It is our duty to notify the BOF that it appears that the Draft Goals offered by ODF stray beyond the GPV defined even in the 1997 administrative rule.
- Before accepting any of the Draft Goals, the BOF should ask ODF to reconcile the language in the Draft Goals with the 1997 Administrative Rule.
- Furthermore, while we understand ODF's desire to keep the public **informed** about its processes and efforts, it is inappropriate for ODF to ask the public to offer goal language in place of that established in law or rule. Same thing goes for priority rankings.

Agenda Item No.:	8
Work Plan:	Climate Change
Presentation Title:	Climate Change and Carbon Plan Final Draft Approval
Date of Presentation:	November 3, 2021
Contact Information:	Ryan Gordon, Interim Partnership and Planning Program Director Danny Norlander, Forest Carbon and Forest Health Policy Analyst 503-945-7395, danny.norlander@oregon.gov

SUMMARY

- In July of 2020, the Governor's office requested the Department draft a climate change plan for the Board to approve. This was a continuation of work completed in accordance with Executive Order 20-04 and public comments received from the Department's EO 20-04 May 2020 report. Department staff drafted and developed the Climate Change and Carbon Plan (Plan) since the request with the Board and agency leadership. With periodic updates to the Board, Department staff have strived to create an equitable and inclusive outreach strategy for public involvement. Final edits have been completed following the Board workshop on the Plan at the September 9, 2021, meeting.
- Today, the Department requests the Board approve the Climate Change and Carbon Plan as the Department's climate change policy and guiding document.

CONTEXT

- Climate change is an existential threat to Oregon's forests, climate impacted and natural resource dependent communities, as well as to the health of global ecosystems and the global economy.
- Natural systems are being impacted by shifts brought about as the world warms. Species are losing adapted connections with their current locations. Weather patterns are changing, increasing averages and extreme events (e.g., June 2021 heatwave).
- Natural climate solutions are identified as a mechanism to reduce greenhouse gases and provide climate change mitigation.
- Executive branch agencies in Oregon have been directed to utilize the full breadth of their authorities to mitigate and adapt to climate change, including ODF.
- The Department was tasked with the development of a climate-smart forestry climate change plan.

BACKGROUND AND ANALYSIS

Climate change threatens Oregon's forest and forest products industry through increased severity and incidence of wildfire, drought, and greater susceptibility to insects and diseases. Climate change is an existential problem that differentially

affects vulnerable populations, including people of color, rural communities, and lower income Oregonians.

Without substantial behavior changes and mitigation efforts to limit global warming to less than 1.5°C (2.7°F) by 2030, the region and the world are likely to experience high levels of ecosystem degradation and species extinctions. Regionally, effects of climate change are already present, as there is a distinct upward trend in size and severity of wildfire in the state since the 1980s, a trend expected to continue in the near and long term. Most recently, these events were prominently experienced in the September 2020 fires and the difficulties in fire containment and record-breaking heat waves in 2021. Even with mitigation efforts across sectors and societies, the impacts of the warming and previous CO2 emissions may be irreversible for decades to centuries.

Beyond the visibility, severity, and high costs (ecological, social, economic) of wildfire, other climate-driven disturbances such as drought, extreme events (ice storms, wind events, extreme heat, etc.), insects, and diseases will become increasingly persistent, damaging, and difficult to manage and mitigate. Additional systemic ecosystem events will be precipitated as well; for example, models indicate increasing stream temperatures, reducing potential habitat for threatened and endangered fish species. Over time, forest managers will face a growing number of issues when looking out over the horizon of a stand rotation and face a growing set of risks and concerns, known and unknown. Crossing climatic thresholds may cause sudden and unexpected shifts in natural systems with a ripple effect throughout the region, nation, and world. Once crossed, these tipping points may lead to ecosystems unable to return to pre-threshold states even with reductions in atmospheric carbon levels. Increasing drought pressure can result in changes to water dynamics. Stream flows will likely be affected, as will drinking water sources, and both may decrease or potentially become more periodic or sporadic. To address these issues, the Department is committed to utilizing national and international climate and carbon science and organizational directives to inform, mitigate, and adapt to our changing world through policy implementation and management decisions.

The changing landscape means the state and the forestry sector will need to work not only on mitigation but on adaptation to a changing climate. A business-as-usual approach will not accomplish the needed adaptations, mitigations, and transformations. Increasing impacts on natural systems will force the human element to adapt in ways that are not fully understood at this time. Efforts to build climate-resilient systems will need to be explored and implemented as the Department works to further increase resiliency efforts. All of this will have to be undertaken with the backdrop of equity and the fact that climate change impacts those least able to adapt and engage first. The trade-offs between action and no action, as well as the impacts on ecosystems and social structures, will need to be considered with changes in policies.

As the Department works to be a regional leader in climate-smart forestry it will work to accomplish eight goals centered on:

- Climate-Smart Forestry in Silviculture
- Fire Management, Response and Fire / Smoke Adapted Communities
- State Forests Management

- Forestlands Climate Resilience and Ecological Function Restoration
- Urban and Community Forests
- Reforestation and Afforestation
- Maintain and Conserve Forests
- Research and monitoring

These goals are supported by more specific actions the Department will work to achieve. The supporting actions are not linked directly to individual goals in most instances but are broad and encompassing multiple goals. This visioning road map will lead the Department in its other planning efforts and provide policy direction when developing work plans, budget decisions, implementation plans, and annual operating plans.

As an adaptive document, the Climate Change and Carbon Plan will be periodically updated to align with accomplishments, environmental changes, and social priorities in the future.

The Department and the Board received numerous public comments throughout the development of the Plan. Working with a third-party facilitator, the Department also conducted small group assessments for the Plan, summarized by the facilitator and provided to the Board. Overall, there were many different viewpoints expressed and Department staff worked to create a document incorporating these voices while still achieving the needed vision to create a climate adaptation, mitigation, and socially aware plan for Oregon forestry.

With the approval of the Climate Change and Carbon Plan, the Department will have a guiding policy document to reference and utilize in planning processes and throughout all business practices. Realization of this may require further investment of funds and staff time as well as looking to external partners to achieve the goals.

RECOMMENDATION

The Departments recommends the Board approve the Climate Change and Carbon Plan as currently drafted.

NEXT STEPS

- The Department will work to incorporate the goals and supporting actions in their planning and budgeting processes.
- The Board and Department will undertake a revision of the Forestry Program for Oregon.

ATTACHMENTS

- Final draft of the Climate Change and Carbon Plan

The Oregon Department of Forestry
DRAFT Climate Change and Carbon Plan



2021

Purpose:

Make forestry in Oregon a leader in climate change mitigation and adaptation. The Oregon Department of Forestry will be a leader in promoting climate-smart forest policies and actions that achieve our vision by operationalizing goals, implementing actions, and measuring progress to achieving climate goals.

Vision:

Oregon's Board of Forestry and Department of Forestry are national leaders in climate-smart and socially equitable forest policies that promote climate health, resilient forests and watersheds, community wellbeing, and a viable forest products industry.

Principles:

- Climate change is a serious threat. We have less than a decade to alter behaviors if we want to avoid catastrophic impacts. We must be innovative, creative, and proactive in working toward solutions, not simply react to the results of climate change.
- Black, Indigenous, and People of Color (BIPOC), natural resource dependent communities, and those growing up in intergenerational poverty have been and continue to be some of the most climate-impacted communities. Forest policies will be shaped through the lens of social justice and equity. Actions will prioritize benefits to historically and currently underserved communities as they adapt to a changing climate.
- Oregon's forest sector offers opportunities for significant sequestration and storage both in the forest and in harvested wood products. Forests also provide opportunities to promote clean water and air, while preserving forest resilience in the form of flood control, biodiversity, thermal refugia, etc.
- As changing climates affect forests, incorporation of the best available science and practices will be key to adaptive management and planning across ownership type, size, and goals.

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Definitions

Adaptation:	Long-term, transformative actions implemented to adapt to life in a changed climate.
Carbon Finance:	A market-based mechanism to pay for sequestration and storage of carbon dioxide.
Carbon Offset:	An action or project (such as the planting of trees or extending rotations) that counterbalances the emission of carbon dioxide or other greenhouse gases from anthropogenic sources.
Carbon Storage:	Long-term storage of carbon dioxide in woody biomass, forest soils, harvested wood products, or landfills, among other places that follows the sequestration process of carbon dioxide removal from the atmosphere.
Climate-Informed Silviculture:	<p>Silvicultural systems and prescriptions that specifically take into consideration climate-smart forest principles and practices and works to adapt the forest for climate change and mitigate the amount of greenhouse gases in the atmosphere. Potentially could include the following actions, among others:</p> <ul style="list-style-type: none">• Reforestation using alternative tree species,• Reforestation using alternative planting spacings and densities,• Reforestation using diverse species mix (bet hedging)• Use of, and planning for, longer rotations and silvicultural pathways that balance carbon stored in forests and harvested wood products
Climate Refugia:	Identified areas where ecosystems may be more resilient to the effects of climate change. May include vegetation types, cold water stretches, cold air drainages.
Climate-Smart Forestry:	An extension of sustainable forest management developed to guide active management of forests in ways specific to climate change adaptation and mitigation efforts and to support climate-impacted communities ⁱ .

CO ₂ e:	Carbon dioxide equivalent.
FEER:	Forest Ecosystem Carbon Report
Greatest Permanent Value:	Healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon. See ORS 530.050 and OAR 629-035-0020.
Greenhouse Gas:	Atmospheric gases that trap heat and cause an increase in the temperature of Earth. Examples include carbon dioxide and methane.
HWP:	Harvested Wood Product(s)
IPCC:	Intergovernmental Panel on Climate Change
Mitigation:	Reducing heat-trapping greenhouse gases in the atmosphere by reducing sources (e.g., the burning of fossil fuels for electricity, heat, or transport) of and sequestering these gases.
Natural and Working Lands:	Includes forests, rangelands, farms, urban green spaces, and wetlands.
Partner Agencies:	Government agencies outside of the state of Oregon government. Examples: WA Department of Natural Resources, USDA Forest Service, Natural Resource Conservation Service, among others.
Sequestration:	Enhancing the “sinks” that accumulate and store greenhouse gases such as carbon dioxide (e.g., the oceans, forests, and soil). Forest carbon sequestration takes place through photosynthesis, where the biologic process uses the sun's energy to power chemical reactions that form complex carbon molecules from atmospheric carbon dioxide.
Sibling Agencies:	Government agencies within the executive branch of Oregon state government. Examples: Oregon Department of Agriculture, Oregon Department of Environmental Quality.
Smoke Intrusions:	See the ODF Smoke Management Directive

Climate Change and Carbon Plan Foundations

Problem Statement

Climate change is threatening Oregon's forest and forest products industry through increased severity and incidence of wildfire, drought, and greater susceptibility to insects and diseases. Climate change is an existential problem that differentially affects vulnerable populations, including people of color and lower-income Oregonians.

Without substantial behavior changes and mitigation efforts to limit global warming to less than 1.5°C (2.7°F) by 2030, the region and the world is likely to experience high levels of ecosystem degradation and species extinctionsⁱⁱ. Regionally, effects of climate change are already present, as there is a distinct upward trend in size and severity of wildfire in the state since the 1980s, a trend expected to continue in the near and long termⁱⁱⁱ. Most recently, these events were prominently experienced in the September 2020 fires and the difficulties in fire containment and record-breaking heat waves in 2021. Even with mitigation efforts across sectors and societies, the impacts of the warming and previous CO₂ emissions may be irreversible for decades to centuries^{iv}.

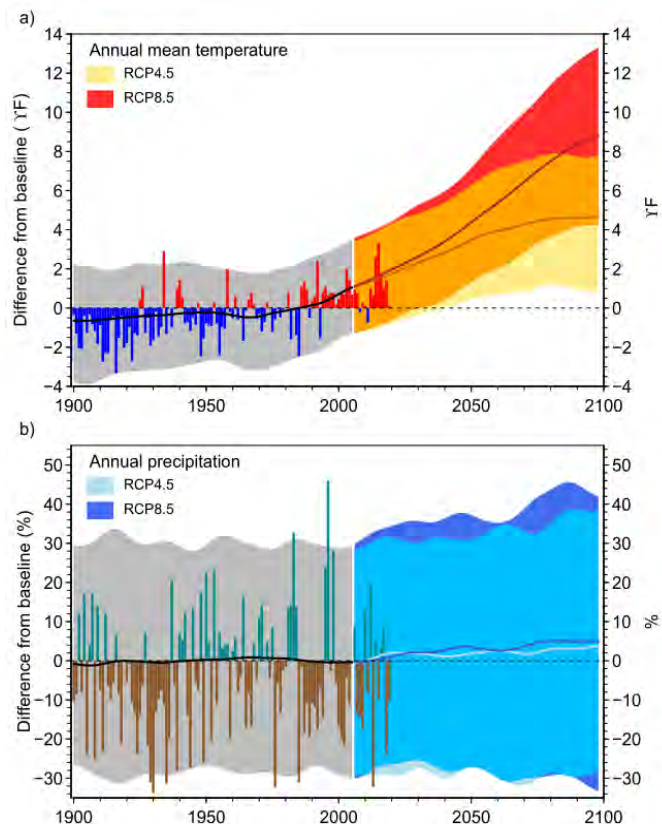


Figure 1: Observed, simulated, and projected changes in Oregon's mean annual (a) temperature and (b) precipitation relative to 1970–1999 (baseline) under RCP 4.5 and RCP 8.5 future scenarios. Colored bars are observed values (1900–2019) from the National Centers for Environmental Information. The thicker solid lines are the mean values of simulations from 35 climate models for the 1900–2005 period, which were based on observed climate forcings (black line), and the 2006–2099 period for the two future scenarios (orange [RCP 4.5] and red [RCP 8.5] lines in the top panel, light blue [RCP 4.5] and darker blue [RCP 8.5] lines in the bottom panel). Shading indicates the range in annual temperatures or precipitation from all models. The mean and range were smoothed to emphasize long-term variability.

Dalton, M., and E. Fleishman, editors. 2021. *Fifth Oregon Climate Assessment*. Oregon Climate Change Research Institute, Oregon State University, Corvallis, Oregon.
<https://blogs.oregonstate.edu/occri/oregon-climate-assessments/>.

Beyond the visibility, severity, and high costs (ecological, social, economic) of wildfire, other climate-driven disturbances, such as drought, extreme events (ice storms, wind events, extreme heat, etc.), insects, and diseases, will become increasingly persistent, damaging, and difficult to manage and mitigate^v (Figure 2). Additional systemic ecosystem events will occur. For example, models indicate increasing stream temperatures, reducing potential habitat for threatened and endangered fish species^{vi}. Over time, forest managers will face a growing number of issues when looking over the horizon of a stand rotation and face a growing set of risks and concerns, known and unknown. Crossing climatic thresholds may cause sudden and unexpected shifts in natural systems with a ripple effect throughout the region, nation, and world. Once crossed, these tipping points may lead to ecosystems unable to return to pre-threshold states even with reductions in atmospheric carbon levels. Increasing drought pressure can result in changes to water dynamics. Stream flows will likely be affected as will drinking water sources; both may decrease or potentially become more periodic or sporadic. To address these issues, the Department is committed to utilizing national and international climate and carbon science and organizational directives to inform, mitigate, and adapt to our changing world through policy implementation and management decisions.

The changing landscape means that the state and the forestry sector will need to work not only on mitigation but on adaptation in a changing climate. A business-as-usual approach will not accomplish the needed adaptations, mitigations, and transformations. Increasing impacts on natural systems will force the human element to adapt in ways that are not fully understood at this time. Efforts to build climate resilient systems will need to be explored and implemented as the Department works to further increase resiliency efforts. All of this will have to be undertaken with an eye toward equity, recognizing that climate change most directly impacts those least able to adapt and engage. The trade-offs between action and no action as well as the impacts on ecosystems and social structures will need to be considered with changes in policies.

In March 2020, Governor Brown signed Executive Order 20-04. This EO highlighted that the state is experiencing an increase in frequency and severity of wildfires that endangers public health and safety and damage rural economies. It also points agencies including ODF to “prepare and plan for the impacts of climate change and to take actions to encourage carbon sequestration and storage.”

In August of 2021, the Intergovernmental Panel on Climate Change released its Physical Science Basis of its sixth assessment report. It states: “it is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.” Additionally, “evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since AR5.” Overall, it paints a grim picture, but there is hope. The report proposes some potential opportunities to reduce greenhouse gases, including on natural and working lands.

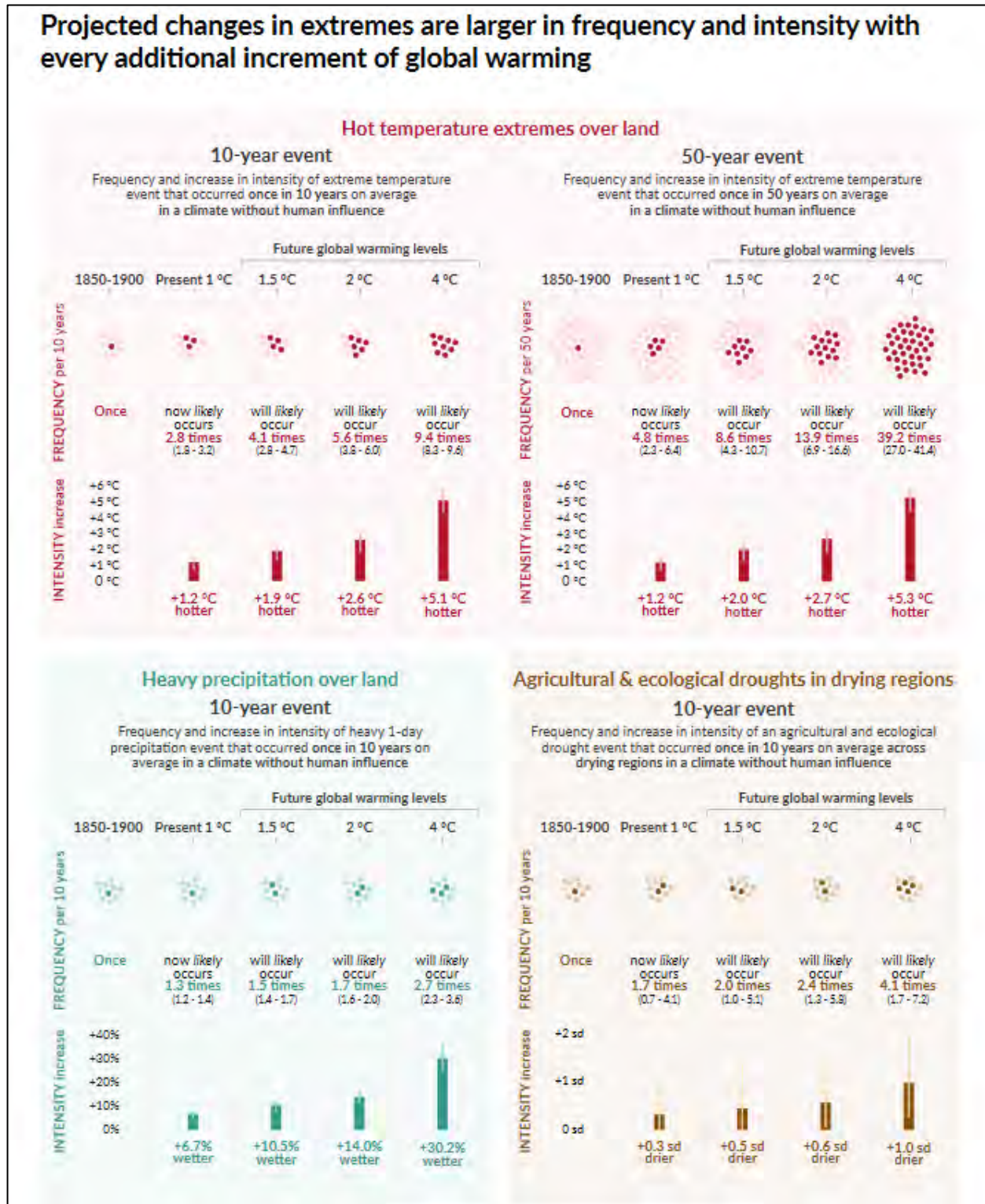


Figure 2: IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

Opportunities

Oregon's forests, from urban centers to far reaching wilderness, as well as its forest products industry, are part of the climate mitigation and adaptation solution. Forests play a significant role in climate mitigation by sequestering and storing carbon and providing biogenic alternatives to carbon-intense materials. Beyond carbon mitigation, urban forests provide essential social and climate change services by mitigating climate change effects, such as heat islands, and actively decreasing energy use.

Oregon has a long history of innovation in forestry, including first-in-the-nation forest protection laws. Climate change consideration is no different. The Oregon Department of Forestry has been engaged in climate change and global warming related work for over 30 years. While this history provides a foundation of support for the Department's increasing focus on climate action, climate change effects are occurring nonetheless as the earth passes climatic thresholds and tipping points. The state's forests are experiencing increasing impacts from heat and drought-induced mortality and from increasing wildfire severity. Recognizing the threats regionally and globally, Oregon's forests and harvested wood products sector have been identified as playing an important role in the mitigation of climate change; however, there is also a need to implement adaptation measures^{vii} to ensure that the state's forests are healthy, productive, and capable of producing mitigation benefits.

Oregon's forests are a source of high quality, clean water. Streams originating in the state's forests provide water for multiple uses and benefits. The Forest Practices Act and its modifications have the aim of perpetuating these benefits and future consideration of rules can account for climate change and its impact on the water resource.

The Department has worked with the Oregon Global Warming Commission (OGWC) to establish a goal for natural working lands (i.e., forests, agriculture, tidal wetlands, etc.) as outlined in Executive Order 20-04. The OGWC recommendation is an additional 5 MMTCO_{2e} can be sequestered on an annual basis by 2030 and an additional 9.5 MMTCO_{2e} annually by 2050. The bulk of this additional sequestration would come from the forest sector. The report and recommendation also highlighted areas for further investment and improvement including inventories and emissions calculations.

The Department has several potential opportunities to address both climate mitigation and adaptation measures in the near term. In the time the Department has been working on climate change issues, it has made significant progress in some areas, but all members of the forest sector need to take additional, bold steps as we enter a critical phase in climate mitigation and adaptation. Some measures are already in place, including working to reduce emissions through building efficiency (Appendix A), retiring inefficient vehicles with electric and fuel-efficient vehicles, allowing and promoting remote work where appropriate, and maintaining healthy and functioning ecosystems. The Department is working to incorporate climate change factors into its high-level planning and to also ensure that climate-impacted communities are included in all planning processes.

Statutory analysis by the Oregon Department of Justice^{viii} indicates that the Board of Forestry has broad authority over all forest policy in the state, including arenas with carbon and climate change implications. Department staff have been working with national workgroups to identify barriers and remedies for these barriers to comprehensive adoption of climate-smart forestry, improve adoption of carbon finance as mitigation tools, and to identify how state forestry agencies can best engage to advance the carbon finance field.

Federal initiatives are increasingly acknowledging and incorporating climate change and may expand the availability of programs and resources that focus on climate and climate-smart forest practices. These opportunities are being assessed as this plan is being developed. Where appropriate the Department will work with partners at all levels to integrate and leverage federal resources into regional work and opportunities. This may include technical assistance, financial assistance or cost share, or in-kind work from all parties involved.

Barriers

While Oregon's forests and forest sector have many opportunities to adapt to and mitigate climate change, there are also barriers that may slow the adoption of climate-smart forestry in the state. These are both human and ecosystem imposed, some have simpler fixes, others are very complex.

Natural barriers to moving to climate-smart forestry include a rapidly changing climate and events causing tree and forest damage and mortality at a speed and magnitude that exceeds management and forest's ability to adapt. With higher emissions scenarios, the proportion of atmospheric CO₂ that working and other resource lands and oceans can sequester decreases (Figure 3), representing a barrier to relying on forests as a long-term solution without additional behavior changes across societies and economies.

Additionally, the wide array of ecotypes that are represented in Oregon entail different forest management strategies and concerns.

Human and social barriers are much broader and include topics like prevention of economic harm to impacted communities, various rules and statutes, and public perceptions. Below is a list (not exhaustive and in no particular order) of potential barriers – both agency specific and general – that may hinder advancement and adoption of climate-smart forest practices.

Potential Barrier:	Resolution or means to address issue:
Limited staffing capacity	Pursue additional positions and capacity through Policy Option Packages, legislative funding
Public perceptions	Provide transparent processes and increase engagement opportunities
Concerns over leakage and substitution effects	Contribute to research, data collection, and improve understanding of leakage dynamics and promote production and utilization that limits leakage
Concerns about the impacts of Measure 49 claims	Change in federal statutes and rules, financial resources
Conflicting statutes (e.g., ORS 526 and ORS 477)	Legislative
Agency and Board requirements under ORS 527.714	Full accounting of costs/benefits including future projections; Legislative revision of statute
Lack of trust in agency leadership and management	Improve communication and transparency
Pressures to produce revenue (internally and externally; county payments)	Extend economic valuation to services, carbon, and alternative production capital
Timber tax system/lack of flexibility to provide tax incentives	Legislative
Lack of valuation of ecosystem services	Additional capacity and resources to contribute and support valuation work
Lack of nursery capacity and supply of future climate appropriate seedlings	Support (financial and other expert) to expand capacity and supply needed seedling diversity, coordination with consulting and extension foresters
Lack of suitable markets for some products	Additional capacity and capital
Lack of authority over some forestland owners/managers (e.g., Federal)	Work within bounds of Shared Stewardship and GNA agreements
Lack of adequate forest workforce to complete actions/achieve goals	Stable capital, education, and partnership with stakeholders

The proportion of CO₂ emissions taken up by land and ocean carbon sinks is smaller in scenarios with higher cumulative CO₂ emissions

Total cumulative CO₂ emissions taken up by land and oceans (colours) and remaining in the atmosphere (grey) under the five illustrative scenarios from 1850 to 2100

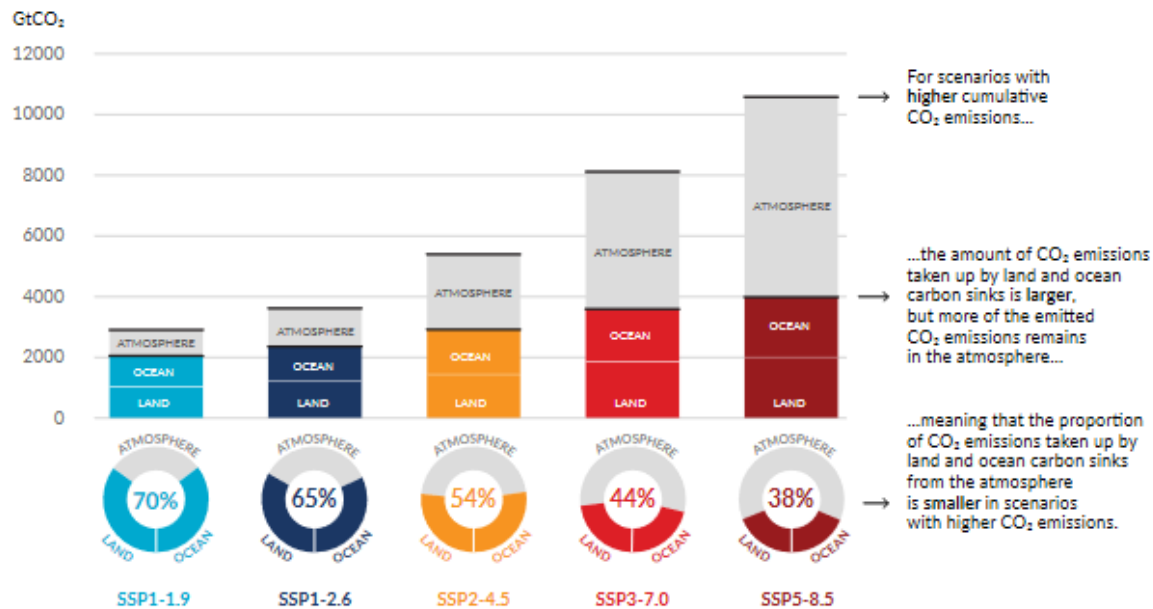


Figure SPM.7: Cumulative anthropogenic CO₂ emissions taken up by land and ocean sinks by 2100 under the five illustrative scenarios.

The cumulative anthropogenic (human-caused) carbon dioxide (CO₂) emissions taken up by the land and ocean sinks under the five illustrative scenarios (SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0 and SSP5-8.5) are simulated from 1850 to 2100 by CMIP6 climate models in the concentration-driven simulations. Land and ocean carbon sinks respond to past, current and future emissions, therefore cumulative sinks from 1850 to 2100 are presented here. During the historical period (1850-2019) the observed land and ocean sink took up 1430 GtCO₂ (59% of the emissions).

The **bar chart** illustrates the projected amount of cumulative anthropogenic CO₂ emissions (GtCO₂) between 1850 and 2100 remaining in the atmosphere (grey part) and taken up by the land and ocean (coloured part) in the year 2100. The **doughnut chart** illustrates the proportion of the cumulative anthropogenic CO₂ emissions taken up by the land and ocean sinks and remaining in the atmosphere in the year 2100. Values in % indicate the proportion of the cumulative anthropogenic CO₂ emissions taken up by the combined land and ocean sinks in the year 2100. The overall anthropogenic carbon emissions are calculated by adding the net global land use emissions from CMIP6 scenario database to the other sectoral emissions calculated from climate model runs with prescribed CO₂ concentrations³³. Land and ocean CO₂ uptake since 1850 is calculated from the net biome productivity on land, corrected for CO₂ losses due to land-use change by adding the land-use change emissions, and net ocean CO₂ flux.

Figure 3: IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

What Is Climate-Smart Forestry?

Climate-smart forestry is engaged forest management that prepares the forest for a changing climate while working to reduce greenhouse gases in the atmosphere and supporting forest-dependent communities^{ix}. Within the Climate Change and Carbon Plan (CCCP), the active management component of climate-smart forestry is anchored in sustainable forest management (SFM) (Figure 4) and is a cornerstone of the Forestry Plan for Oregon, the Board of Forestry's strategic plan (see sidebar). Climate-smart forestry evolved from climate-smart agriculture ideas in the early 2010s and is distinct from climate-smart restoration, though some principles are similar and overlap.

The holistic view of this plan is that there is a need for all types of management, including no management across the forest landscape. As a policy guiding document, this plan looks to promote, establish, and maintain forests across the state that accomplish the three tenets of climate-smart forestry.

Adaptation of forest ecosystems, from wildland to urban, will require active measures and seeks to build resilience to the effects of climate change. Adaptation includes using different tree species or genetics, changes to the structure of the forest stand and landscape, and employing a mix of management approaches (mixed species, uneven ages, different structures) to ensure that forests are able to

Forestry Plan for Oregon 2011: What is sustainable forest management?

It is important that Oregonians agree about what sustainable forest management means and how to evaluate our forests' performance in meeting sustainability goals. In this context, the Board of Forestry defines "sustainable forest management" as meaning:

Forest resources across the landscape are used, developed, and protected at a rate and in a manner that enables people to meet their current environmental, economic, and social needs, and also provides that future generations can meet their own needs [based on Oregon Revised Statute 184.421].

On a statewide basis, sustainable forest management will provide:

- Healthy and diverse forest ecosystems that produce abundant timber and other forest products;
- Habitat to support healthy populations of native plants and animals;
- Productive soil, clean water, clean air, open space, and recreational opportunities;
- Healthy communities that contribute to a healthy state economy; and
- Accountability and trust between all parties, where human well-being and equity are goals of the process as well as outcomes of the decisions.

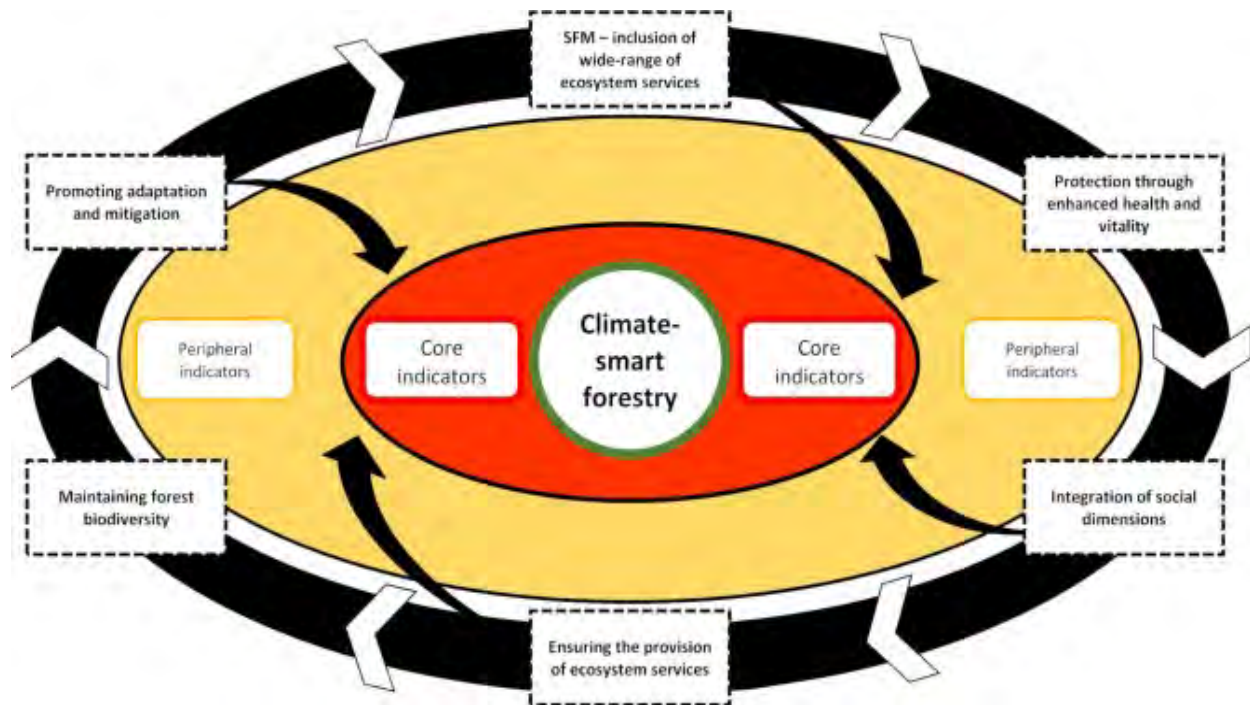


Figure 4: From Euan Bowditch, Giovanni Santopuoli, Franz Binder, Miren del Río, Nicola La Porta, Tatiana Kluvankova, Jerzy Lesinski, Renzo Motta, Maciej Pach, Pietro Panzacchi, Hans Pretzsch, Christian Temperli, Giustino Tonon, Melanie Smith, Violeta Velikova, Andrew Weatherall, Roberto Tognetti, What is Climate-Smart Forestry? A definition from a multinational collaborative process focused on mountain regions of Europe, *Ecosystem Services*, Volume 43, 2020, <https://doi.org/10.1016/j.ecoser.2020.101113>

maintain growth and function at a landscape level. Adaptation means that forest managers are looking forward at future climate rather than relying historic norms and practices. It will require that bold steps are taken to ensure that forests remain forests and do not shift to an alternative vegetation type due to climate induced mortality events, increasing insect and disease pressure, and increasing destructive wildfire season. Successful adaptation will ensure continued mitigation into the future as forests remain healthy and productive.

Along with changes in societal behaviors, forests have an innate ability to provide **mitigation** benefits to the global carbon balance. Natural working lands contain an inherent ability to sequester carbon from the atmosphere. Increasing sequestration will play an important role as societies seek to establish behavioral changes and work to reduce the concentration of carbon dioxide in the air. Forests sequester and store very high levels of carbon in the above-ground biomass and in soils. Leaving trees in place to allow for additional sequestration and storage prior to harvest, will likely provide the greatest mitigation benefit in the forest. Realizing this benefit at a landscape level will require multiple approaches that are yet to be substantially developed or realized across ownerships. Beyond realizing greater sequestration potential, larger timber can yield

greater lumber recover factors in processing^x and a wider array of durable products with long-lived potential, increasing and extending the carbon storage capability of products. Moreover, wood products can continue carbon storage in lower embodied carbon wood products and displace high-carbon cost materials and fuels^{xi}. However, more work supporting and advancing long-lived wood product development and utilization needs to be done to ensure that the harvested fiber is sequestered long-term. For example, increasing the use of longer-lived products like mass timber can help displace high carbon cost materials, but reducing the emissions from the harvest and manufacturing of wood products will need to be addressed, both of which are proportionally reduced through longer lived and larger timber. Reduction of emissions and decarbonization is important as harvested wood products represent an annual net source of CO₂ to the atmosphere when the emissions (with and without energy capture) are included^{xii}. The wood products manufacturing industry should be commended for their reductions in emissions and increase in efficiency over the last 40+ years^{xiii}. While these achievements are positive moves in relation to carbon emissions, additional decarbonization methods and technologies must be explored to meet further mitigation needs.

The **social and economic dimension** of climate-smart forestry will require careful coordination and communication to ensure all voices are heard and incorporated. Natural resource dependent, disproportionately climate impacted, and traditionally underserved communities are important parts of Oregon's culture and economy and are at great risk from climate-change impacts. Ensuring they are included in planning and decision-making and are not left behind as the forest sector works to adjust and transition to a changing environment and landscape is key. The cultural significance of forests (wildland, community, and urban) and forest products, timber and beyond, is highly important. Harvesting traditional foods, recreation, tourism, and wood fiber extraction from the state's forests all support a diverse set of communities including Tribes, natural resource-dependent jobs and people, and those at a disproportionate risk from the effects of climate change. People working to adapt to and mitigate climate change will need to heed these voices.

Urban, municipal, and community forests have multiple benefits for those living and working in towns and cities. Increasing the percentage of urban land covered by tree canopy reduces temperatures, lowers energy use and moderates the climate in areas where the bulk of the state's population lives. Increasing efforts in urban and community areas can have substantial co benefits through the climate-smart lens.

Accountability Measures

Agency Leadership: Department leadership will prioritize climate change in their planning to align with Executive Order 20-04. The statewide executive level and local district leadership levels will be affected by the goals and actions laid out in this plan. They will need to be aware of how the plan interfaces with the multitude of other planning processes and documents, including the agency strategic plan, the forest action plan, annual operating plans, and forest management plans as examples. Executive Order 20-04 states that:

Agency Decisions: To the full extent allowed by law, agencies shall consider and integrate climate change, climate change impacts, and the state's GHG emissions reduction goals into their planning, budgets, investments, and policy making decisions. While carrying out that directive, agencies are directed to:

- (1) Prioritize actions that reduce GHG emissions in a cost-effective manner;*
- (2) Prioritize actions that will help vulnerable populations and impacted communities adapt to climate change impacts; and*
- (3) Consult with the Environmental Justice Task Force when evaluating climate change mitigation and adaptation priorities and actions.*

As such, leadership will work to incorporate this plan into operational and budgetary planning processes. Encouraging and considering opportunities and ideas that are new and bold will be a positive step toward reaching the goals of this plan and of the Executive Order. Additionally, Department leadership will ensure staff have access to trainings and workshops focused on using climate-smart forestry in their day-to-day work.

Through the development and implementation of biennial workplans the Department can lay out its work and highlight how each division or work area can incorporate climate-change vision and implement the actions that are provided in this roadmap document. These workplans are submitted to and approved by the Board of Forestry which will set the policies to be followed in their implementation.

Board Accountability: Like the Department leadership, the board may undertake rule making related to climate change and that process may be impacted by the EO 20-04:

GHG Reduction Goals. *Agencies shall exercise any and all authority and discretion vested in them by law to help facilitate Oregon's achievement of the GHG emissions reduction goals set forth in paragraph 2 of this Executive Order.*

Expedited Agency Processes. *To the full extent allowed by law, agencies shall prioritize and expedite any process and procedures, including but not limited to rulemaking and agency dockets, that could accelerate reductions in GHG emissions.*

Board work plans and Department policy direction should reflect the scope of the problem at hand. Expectations, decorum, and guidance should be in line with the Best Practices laid out by the Governor's Office, and by the Board's own guiding documents.

Staff Level: Staff will be required to implement the operational specifics related to this plan, EO 20-04, and any Board policies and rules established under these. Staff should also be empowered by agency leadership to look for ways to enhance the mitigation and adaptation measures that the Department lays out. As has been stated, this is a moment for bold direction and ideas and contributions can come from all operational facets of Department operations. Not all of these come from the top and staff play a key role in finding solutions.

Public Process

The Department has been directed through multiple avenues to ensure that there is a robust public process for its policy and planning process. Utilization of the tools at hand will be key to making sure that this is done equitably and includes those that have traditionally been at a disadvantage to participate. Executive Order 20-04, 2021 Senate Concurrent Resolution 17, and previous legislative direction all indicate an increased incorporation of traditionally underserved communities, climate-impacted communities, and broad outreach efforts. The Department will utilize best practices for reaching out to these groups and communities in future policy and rule development processes. One tool to look to is the Equity Blueprint contained in the Statewide Climate Adaptation Framework.

Revision Timeline

Like all plans, there is a need for periodic re-assessment and revision. This plan is intended to capture needs at the time of drafting; future updates will be required. It is important that this plan be revisited and updated every five years to ensure that the research and monitoring portions are consistent with current science and climate impacts and projections as well as being able to capture the work that is accomplished.

To achieve adaptive management and the goals in this plan, agency staff will periodically bring progress assessments to the Board. These assessments will inform the revision and public and stakeholder engagement as the Departments works on updating the plan in-line with the timeline.

Climate-Smart Forestry Goals

Climate-Smart Forestry in Silviculture

Goal: Establish a just and equitable transition to climate-informed silviculture and climate-smart forestry that optimizes climate mitigation and adaptation, while maintaining a sustainable flow of wood products to ensure long-term resource benefits and viability of the forest products industry and flow of long-lived forest products.

Many of the Department's environmentally focused programs and projects rely on the use of regulatory programs and voluntary measures to mitigate past degradation and to head off future problems. Climate change offers an opportunity to pursue additional voluntary measures that will benefit forests, the broader environment and ecosystems, citizens of Oregon, the region, and the globe. Encouraging climate-informed forest silviculture practices will help State forests, family forests, small non-industrial ownerships, and industrial forestlands contribute to meeting the challenges of forest climate mitigation and adaptation. Mechanisms to encourage various forest owners to participate in climate-informed and climate-smart forestry will be discussed later in this document, but examples include formal recognition, promotion, and focus on climate-smart forest practices instituted by landowners and managers, economic incentives to increase sequestration through easement tools, and Department support for forest carbon offset and finance programs.

This goal takes the principles used in sustainable forest management and includes forward-looking projections to manage forests in a climate and ecologically sustainable manner. As will be mentioned in later goals, monitoring, research, and reassessment will be a key part of the adaptive nature of climate-informed silviculture.

Climate-Informed Silviculture:

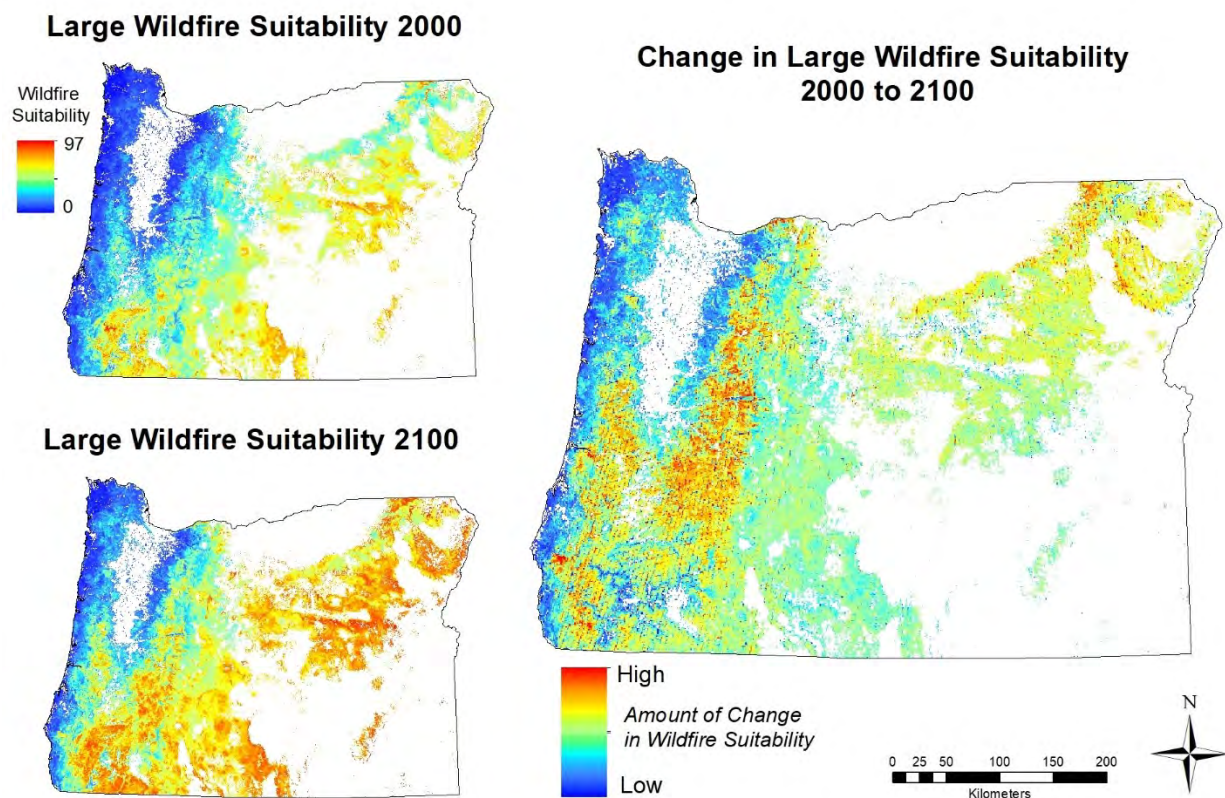
Silvicultural systems and prescriptions that specifically take into consideration climate-smart forest principles and practices and work to adapt the forest for climate change and mitigate the amount of greenhouse gases in the atmosphere. Among others could potentially include:

- Alternative tree species
- Alternative planting spacings and densities
- Planting of multiple species (bet hedging)
- Use and planning for longer rotations

Fire Management, Response and Fire / Smoke-Adapted Communities

Goal: Modernize Oregon's complete and coordinated wildfire protection system to respond to the increased severity of wildfire. Promote fire and smoke-adapted communities in the wildland-urban interface and beyond, to mitigate the impacts of climate-induced increases in wildfire severity.

Rising concentrations of greenhouse gases are resulting in climatic conditions where natural systems and natural working lands are experiencing wildfire severity and extent not observed in the accessible human historic record. The severity and duration of drought conditions has caused extreme reductions in fuel moisture. Coupled with increasing temperatures, this is making forest fuels more receptive to fire. Additionally, large-scale fire suppression over the last century combined with forest changes from management strategies and objectives, have resulted in higher levels of fuel in forests. These issues are present in, and not limited to, managed natural forests and planted



*Figure 5: A predictive model for the environmental suitability for large wildfires was calibrated on fires that occurred during the climate normal of 1971-2000 and then projected into the future based on climate predictions through 2100. The change in large wildfire suitability was derived by subtracting the cell values in the suitability map for 2000 from the map for 2100. Areas in red depict the greatest amount of increase in suitability for large wildfires. Maps of large wildfire suitability were published in Davis, R., Yang, Z., Yost, A., Belongie, C., Cohen, W. 2017. The normal fire environment—modeling environmental suitability for large forest wildfires using past, present, and future climate normals. *Forest Ecology and Management* 390: 173-186*

stands. Taken together these present an increasing risk to the viability and health of forests, dependent and interconnected ecosystems, health, the economy, and built infrastructure throughout Oregon.

Adapting to climate-induced changes in the “normal” fire environment (Figure 5) will be an ongoing challenge for fire organizations. Meeting that challenge will require a well-coordinated effort with emphasis on prevention, adaptation, and recovery across agencies, communities, landowners, industry, and natural systems stakeholders.

Natural resource agencies and stakeholders working together to increase forest resiliency through restoration and resilience activities, such as thinning, prescribed fire, and afforestation with more diverse or alternative species will be essential to adapt and maintain functioning forest ecosystems in a changing fire environment. Altering the managed forest environment to include alternative species and hardwood mixes can have positive outcomes in wildfire risk reduction and suppression activities.

Some forest ecosystems within the state have fire return events that are stand replacing. Various climate scenarios and research^{xiv} indicate an expected increase in these stand-replacing events and a decrease in the return intervals (time between fires) in these systems due to the changes in the environmental conditions. Where ecological function restoration efforts would not be feasible for natural or social reasons, Department work should focus on strengthening community infrastructure resistance to fire through cooperative strategies. These include providing guidance and resources to homeowners for home hardening work, communities working on evacuation and shelter-in-place strategies, and other risk mitigation and adaptation work largely undertaken by partner and sibling agencies. The Department does realize that these strategies can be implemented across the board, but will prioritize actions in those areas where fire and climate resiliency work is not an option.

While much of the work that the Department is committed to occurs in the local fire environment, other communities are indirectly affected, largely by smoke impacts. While there may not be any way to address this issue directly during a wildfire, the Department should continue working with local and sibling agencies (e.g., Oregon Health Authority) to establish ways for these impacted populations to avoid smoke impacts as well as research and monitoring to assess other resource and health effects. Additional restoration burning will produce varying levels of smoke. Current efforts should continue to be used to prevent smoke intrusions.

State Forests Management

Goal: Lead by example and demonstrate climate-smart forest management on State Forests to achieve adaptation, mitigation, and the achievement of forest resource goals.

Greatest Permanent Value

As provided in [ORS 530.050 \(Management of lands acquired\)](#), “greatest permanent value” means healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon. These benefits include, but are not limited to:

- (a) Sustainable and predictable production of forest products that generate revenues for the benefit of the state, counties, and local taxing districts;
- (b) Properly functioning aquatic habitats for salmonids, and other native fish and aquatic life;
- (c) Habitats for native wildlife;
- (d) Productive soil, and clean air and water;
- (e) Protection against floods and erosion; and
- (f) Recreation.

Oregon’s forests, particularly those in the western Cascade Mountains and the Oregon Coast Range, have the potential for some of the highest rates of carbon sequestration and storage in the world. Therefore, Oregon’s forest productivity has potential for significant climate mitigation benefits. Climate-informed management of the lands under the Department’s control can provide broad public benefits and provide a model for others regionally and nationally on how to achieve broad long-term, climate-positive public benefits (including clean water, recreation, fish and wildlife habitat, and carbon storage) while continuing to meaningfully contribute as a carbon positive and viable economic driver to rural and resource-dependent economies. Policies put in place by the Board of Forestry and Department leadership will pave the way for on-the-ground, climate-smart forestry practices.

The Department will lead by example and demonstrate climate-smart forest management on State Forests to achieve adaptation, mitigation, and the achievement of forest

resource goals. This concept will be incorporated into the State Forests Management Plans (FMPs). The draft Western Oregon FMP includes Guiding Principle 11, which states that the FMP “will be implemented to adapt to climate change and mitigate its impacts on the management of state forest lands. The FMP will also contribute to climate-change mitigation and sequester carbon.”

Part of the carbon equation includes using long-lived harvested wood products. Climate-smart forest practices used to manage State Forests will provide a sustainable source of wood fiber. Coupled with this climate-smart focus, the Department will work with its own resources (beyond the State Forests Division) and with partner agencies, organizations, and entities to support and encourage the use of wood as a long-term mechanism for the storage of carbon. This includes using wood fiber in place of more resource-intensive and high carbon cost manufactured products like steel and cement, among others, where it is reasonable and prudent.

Forestlands Climate Resilience and Ecological Function Restoration

Goal: Accelerate the pace, scale, and quality of climate appropriate forest restoration to increase the resilience to increased wildfire, drought, and biotic disturbance severity and incidence. Support implementation of the recommendations of the Governor's Council on Wildfire Response.

A century of fire suppression, climate change, and other factors have created landscape scale forest health issues that threaten to derail the potential of Oregon's forests as a climate-change mitigation tool. With exclusion of fire from natural ecosystems, there has been an increase in overstocked forests prone to fire, damaging insects, and forest diseases (Figure 6). The combined impacts of climate change, including higher temperatures, drought stress, and increasing vapor pressure deficits, result in more susceptibility to insect and disease infestations in individual trees and entire stands. Forests under stress from these pests and pathogens create conditions favorable for the rapid spread of fire and greater challenges for managing fire across the landscape. Site-appropriate fuels reduction and fire risk mitigation work will vary widely across the state. It is important that work to reduce wildland fire risk take into account the historical, current, and future predicted local fire behavior and frequency.

Adding to the issues above are invasive species that are either present or could be introduced. These insects, diseases, and invasive plants all disrupt the natural and managed forests of the state and threaten the viability of native ecosystems due to their impact on species from the specific to the broad. An example of this is the loss of tanoak trees from sudden oak death in southwest Oregon. The removal of this keystone species could result in both ecological and cultural disruption.

Working with Tribes, impacted communities, state and federal agencies and stakeholders, the Department will prioritize landscapes for resilience work and implement projects and programs that will increase the resilience of communities to catastrophic fire and natural resource damage. The Department will largely undertake these prioritization and planning efforts in separate processes where the Legislature has

provided enhanced capacity to do so (e.g., a 20-year Forest Restoration Plan). These other planning efforts will take into account the impacts of future climate change on the ecological and the fire environments and prescribe treatments accordingly.



Figure 6: Hood, Sharon M.; Lutes, Duncan C.; Crotteau, Justin S.; Keyes, Christopher R.; Sala, Anna; Harrington, Michael G.; Munger, Gregory T. 2018. Lick Creek historic photographic series: a century of change in a ponderosa pine forest in western Montana, U.S. Fort Collins, CO: Forest Service Research Data Archive. Updated 04 June 2019. <https://doi.org/10.2737/RDS-2018-0023>

Urban and Community Forests

GOAL: Increase the extent and resilience of urban and community forests to maximize the climate mitigation and health benefits of urban forest canopy.

Urban forests represent different issues than those found in wildland forests. These often impact populations that have historically been discriminated against, marginalized, and underrepresented in decision making that affects them. For example, previous practices of blockbusting, redlining, and discrimination in lending such as exclusion from FHA loans prior to the Fair Housing Act of 1968 (Public Law 90-284 82 Stat 73) led to segregation in metropolitan areas. Under-funding and other discriminatory civic policies left those marginalized communities with substantially fewer trees and less tree canopy. Those discriminatory practices continue to this day to impact human health, property values, and quality of life.

Through climate-aware urban forestry, the Department will work with local jurisdictions and disproportionately impacted communities to address the inequitable impacts of increased extreme heat events on vulnerable human populations, especially lower-income communities and communities of color. This may include working with local governments and community-based organizations to empower local communities to improve the natural ecosystem around them through design and implementation of urban forestry plans and actions.

Urban areas not only experience extreme heat events, but greater impacts from winter storms and extreme rain events due to the altered nature of streams as they flow through towns and cities. The Department will work to enhance the function of existing riparian areas and work with the appropriate level of government to increase riparian function and green infrastructure in urban areas to improve water quality and aquatic habitat.

Reforestation and Afforestation

Goal: Facilitate and encourage the reforestation of areas burned by wildfire and afforestation of low-productivity lands that are understocked or not in forest use.

Our forests face increasingly detrimental temperature, drought, and biotic changes. Climate predictions paint a picture of even more dramatic shifts. One of the most visible and dramatic effects of these changes is the increase in wildfire size and severity. These destructive forces have the potential to roll back climate gains through the re-emission of forest carbon to the atmosphere and cataclysmic disruption to sensitive ecosystems. To help recover the carbon lost in these destructive events, the Department will work to build and integrate internal and external programs to facilitate and

encourage the reforestation of burned lands, where appropriate, and guided by the best available science on species selection and future climate benefits. This includes full use of federal incentive programs through the Department's Federal partner agencies. The Department will use Good Neighbor Authority and Shared Stewardship agreements to work with Federal land managers to achieve the goals of the Department, state and its partners.

There may be instances where the most current knowledge of plant communities and climate envelopes indicate that there should be alternative management on affected lands. This may include the use of alternative, non-traditional tree species, alternative seed sources, or a shift from traditional forest management to a long-term ecologically-sustainable ecosystem. Foresters, the near-forest community, and society in general will need to be provided educational opportunities to see the vision of climate-smart forestry where past forest types may no longer be the most suitable approach. The ODF seed orchard will be a valuable resource for providing seed for appropriate, resilient, and climate-adapted planting stock including seed used for assisted migration.

Recent studies have indicated that planting trees on currently non-forested lands (forestation generally; including reforestation and afforestation) may result in large climate benefits and key mitigation impacts^{xv}. While Oregon's strong land-use laws have largely prevented the conversion of the state's wildland forests, there remains opportunity to plant trees in areas that are currently in a low-productive use and non-forest use. This may include some agricultural lands, lands determined as low productivity forestlands, areas in rural and municipal jurisdictions, and areas where current forest management practices result in low productivity due to either biotic or abiotic factors. Afforesting and managing tree species appropriate to the future-climate in planted stands or toward complex forest structure and habitat can have beneficial results by sequestering and storing carbon on the landscape^{xvi}. Future work will be needed with sibling and partner agencies to identify lands that are available and to follow through on the best carbon management of these lands.

Maintain and Conserve Forests

Goal: Support a strong, but flexible, Land Use Planning System as a cornerstone of maintaining Oregon's forests on private lands.

Since the inception of Oregon's pioneering and nation leading land-use laws, the state has lost less than three percent of existing wildland forest. This retention is significant from both a carbon potential and ecosystem perspective. Beyond limiting the conversion of forestlands, afforestation presents a significant opportunity to advance

forest carbon, ecosystem, and economic values and will be an objective of the Department. The Department will continue to work with its sibling agencies to support and maintain this land-use system through risk identification, technical support, and striving to maintain the current scope of law. Where possible, and in line with previously highlighted efforts, the Department will strive to not only maintain, but increase the amount of forestland protected by these land-use laws.

Conversion of forestlands to other land-use types, especially those outside of the natural working lands spectrum, causes significant and continued emissions from lands that once acted as a net carbon sink. The Department will work closely with its sibling and partner agencies to minimize the loss of these important areas. The issue of conversion has been especially strong for landowners with smaller tracts and parcels and the family forestland owners of the state. Incentivizing keeping these lands as working forests is one of the prime areas to work toward in the near term.

Conservation and resilient restoration of forests is another key area where the Department can work cooperatively with other agencies, nongovernmental organizations, tribes, and private individuals and companies to find ways to conserve valuable forested areas. This will be key as areas of climate refugia become increasingly threatened and are identified for additional protection. Conservation and preservation of these key areas will be important in maintaining healthy habitat for forest-dwelling species, ameliorating the impacts of climate change on forest abiotic factors such as stream temperature, sediment transfer, and water quality.

Research and Monitoring

Goal: Maintain a research and monitoring program to track the status and trends of ecological, economic, and social indicators and the effects of climate change and to track progress related to this plan.

Governments, organizations, scientists, and researchers across the planet are deeply involved in research to understand effects on climate from rising greenhouse gas concentrations in the atmosphere and the effects on forests and other ecosystems. The Department is committed to using this research and understanding to fully implement climate-smart forestry as laid out in this plan. Some of the major questions being explored include:

- To what extent will forest ecosystems change in response to rising atmospheric CO₂?

- What processes in forest ecosystems are sensitive to climate change, and the related physical and chemical changes?
- How will future physical and chemical climate changes influence the structure, function, and productivity of forests and other ecosystems?
- What factors influence whether forests are a net source or sink of carbon relative to the atmosphere?
- What are the implications for forest management and how must forest management activities be altered to sustain forest productivity, health, and diversity?
- What are the most effective practices and policies for increasing carbon sequestration and storage in Oregon's forests in the near-term?
- What are the most effective practices and policies for improving climate resilience in Oregon's forests in the near term?
- What are the risks and benefits of using alternative seed zones or species when considering assisted migration or switching species?

A region's climate is a major controlling factor on the productivity and health of forest ecosystems, the composition of trees and other species, and the dynamics of wildfire. Long-term changes in climate that will continue to occur with rising concentrations of greenhouse gases will continue to affect the health, productivity, and wildfire regimes of Oregon's forest ecosystems. Understanding the impacts of climate change on the benefits we value and expect from Oregon's forests requires a robust, long-term research and monitoring system that provides reliable information reported on a regular basis.

The goal of research and monitoring is to regularly collect information upon which reliable analyses can be conducted. This will help us maintain and improve our ability to track the status and trends of the natural resources under our stewardship, project the dynamics of forests health and function, and assess and adequately respond to anticipated outcomes of our management decisions. Understanding the status and trends of natural resources is fundamental to our ability to adaptively manage them with informed responses to current and future conditions. In essence, the goal of research and monitoring is to collect, analyze and deliver information that is relevant to policy and management operations. Monitoring the effectiveness of actions is essential to inform and adjust management in a changing world. Reliable information and analysis from research and monitoring will be fundamental to our ability to adapt to

climate change, maintain ecosystem resilience, and continue production of ecosystem services.









Monitoring changes and trends in forests and forestry is a long-term prospect that must be supported through time, thus embedding the monitoring process is crucial. While there must be a long-term objective to the monitoring, it is also essential that results are delivered within a reasonable timeframe to support imminent decisions and provide feedback for adjusting methods. Addressing social, environmental as well as economic issues in forests and forestry requires that a large number of relevant variables are included in the monitoring and assessment design relating to biophysical as well as socio-cultural dimensions. Actively providing results to the policy dialogue and the debate on implications and responses is an integral part of the monitoring and assessment process.

The Department has established research and policy relationships with federal, academic, and stakeholder partners and neighboring states to assess and account for forest carbon and impacts of climate change. The Pacific Temperate Forest Memorandum of Understanding^{xvii} (Oregon, California, Washington, and British Columbia) formalizes this relationship and involves active research participation and support around regional forest carbon and climate change. The policy and research efforts vary but relate directly to the relationship between carbon, climate and Oregon's forests and natural working lands.

Supporting the suite of carbon and climate goals referenced in this plan requires that there be robust monitoring followed by adaptation measures where issues are identified. The complexity of the natural and managed systems inherent in 21st century forestry requires that efforts to constantly increase the knowledge base will be needed in the both the near term and the long term.

Supporting Actions

Note on Supporting Actions: Supporting actions are linked to multiple **Goals** (listed above). Depending on the action, impacts can and will extend to several goals, they are not limited to a one-to-one goal relationship. These **supporting actions** will be incorporated into agency planning, which includes documents and processes like Board Work Plans, Forest Management Plan, Implementation Plans, and Annual Operating Plans, among others. Many of these other plans and processes lay out, in short time segments (e.g., biennium), what the Department's work will be. Icons indicate which goal(s) each action is linked to.

	Climate-Smart Forestry in Silviculture
	Fire Management, Response and Fire / Smoke Adapted Communities
	State Forests Management
	Forestlands Climate Resilience and Ecological Function Restoration
	Urban and Community Forests
	Reforestation and Afforestation
	Maintain and Conserve Forests
	Research and Monitoring

Integration of Statewide Climate Plans and Frameworks, Increase Cross Agency Collaboration:

Agencies within Oregon state government have been coordinating and working on a variety of climate change adaptation, mitigation, and related planning processes. This includes, but is not limited to, the Statewide Climate Adaptation Framework, the Natural Hazards Mitigation Plan, and the 100-Year Water Vision. The Department should be informed by and align its policies and operations with these plans and processes that have been collaboratively developed and thoroughly vetted through various agencies and government levels as they provide a clear and readily usable guide or framework for building adaptation and mitigation into the agency. Additionally, the Oregon Global Warming Commission has been directed to develop goals related to climate change and natural and working lands. These goals should be used to guide the Department as it works to implement programs aimed at reducing greenhouse-gas emissions and carbon sequestration projects.

Integrate Climate Change in FPA Rule Revision Processes

Incorporating climate change into rule development and revision – Thorough analysis of the FPA for climate change sufficiency: Through the analysis of existing rules and policies and guided by the robust, reviewed scientific literature, the Department will identify where there are gaps in protection, adaptation, mitigation, resilience, and restoration actions related to climate change that fall under the FPA. This has begun with analysis of the statutory authority the Board has in developing FPA rules and will be continued by an agency analysis of individual rules. Where resource degradation is identified, the board may opt to undertake its rule-making authority to change or enhance the FPA rules.

Climate-Smart Forestry Incentives on Private Forestlands

Incentivizing climate-smart forestry – One leg of the three-legged stool of the Department's interaction with forestland owners and managers is voluntary measures. Through agency identification and facilitation of means to incentivize the adoption of climate-smart forestry practices. Those that choose to participate, will receive assistance (primarily monetary) they need to realize and implement actions on the landscape and in forestland decisions beginning with species selection, diversity, management, and harvest regimes.

Providing public recognition of those that are innovative and impactful in stewardship toward mitigating global warming and adapting to climate change -- Recognition of operators and organizations that innovate and work to implement climate-smart forestry practices, harvest, and utilization in a manner that advances climate aware, climate-smart, and ecosystem conscious outcomes. To date, there has not been specific recognition of forest conservation, innovation, and long-term stewardship in Oregon. The Department will start a yearly recognition program that highlights landowners, organizations, or managers that are innovative and working toward stewardship and/or addressing the impacts of climate change in their practices. For example, this could include actions that support resilience, habitat, carbon storage, sequestration, protection and/or increase of forestlands, or the incorporation of climate justice practices into land management decisions, or other stewardship action on climate change.

Forest Management Plan and State Forests Carbon Storage

Incorporate climate change into the Forest Management Planning (FMP) and Implementation Planning (IP) process – Board of Forestry lands and state lands overseen by the State Forests division are managed under FMPs that provide overall

goals and strategies for management over a long-time horizon, with more specific management objectives for 10-year periods detailed in IPs. Integration of these supporting actions will take place during the development of the draft Western Oregon FMP and associated IP planning processes. In line with Executive Order 20-04, this plan should integrate climate mitigation and adaptation practices including those listed below:

- Implement silvicultural pathways and harvest rotations that increase carbon storage in the forest while maintaining wood fiber flow to the forest products industry^{xviii}. Different tree species, forest types, and ecological zones achieve maximum carbon storage rates at different stand ages. These variations will be accounted for when making silvicultural decisions, including, but not limited to, reforestation and young stand management, mature stand density management, age of final harvest, harvest deferral, and retention of green trees.
- Identify areas particularly susceptible to the deleterious effects of climate change and work to conserve them. This includes climate-sensitive habitats, areas of high conservation value, and areas of cultural significance that may become threatened by climate change. This should be done with input from tribal and community-based organizations.
- Restore areas impacted by insect pests and diseases to productive forests through removal of susceptible species and use of site appropriate species. An example of such areas would be stands in the Coast Range affected by Swiss needle cast, which has greatly slowed or ceased measurable growth of Douglas-fir. These stands should be managed to restore ecosystem services, including carbon sequestration, through use of appropriate alternative species and stand management.
- Identify areas that have high carbon storage potential, especially for those that can provide benefits for threatened and endangered species habitat, water quality, and educational and recreation opportunities for Oregonians. Establish priorities for these areas that include long-term carbon storage.
- Identify areas to increase soil carbon and maintain forest carbon on the site when stands are harvested by maintaining slash post-harvest instead of pile burning, and increase alternatives to burning biomass in the forest. Consider emerging alternatives such as biochar to achieve multiple benefits, including increasing soil carbon and water-holding potential.

Internal Carbon Pricing Process

Many global organizations have begun to integrate an internal carbon price in their decision making. The internal carbon price represents the price of carbon that would result in a change to their business practices. For forestry, it could be a variety of measures from selling carbon offsets to adjusting harvest to capitalize on changing long-lived product ratios. The Department, and specifically the State Forests Division, should work toward setting an internal carbon price for the lands and forests that it manages. Having this information incorporated into future forest management planning and decisions will allow the State Forests Division to implement carbon-smart forestry on Board of Forestry and Common School Fund forestlands throughout the state.

Managing the Fire Environment: (Prescribed Burning, Predefined Incident Objectives, Post-Fire Restoration)

Operationalize Shared Stewardship to accelerate the pace, scale, and quality of Federal Forest Restoration to increase resilience to increased wildfire severity and restore ecological function. Incorporate resource and community severity and risk assessments in directing restoration and resiliency action and investments. Support implementation of the Governor's Council on Wildfire Response recommendations.

Implement a prescribed fire program within the Department and work with outside agencies to gain the needed experience and tools for conducting safe, successful burns in degraded landscapes. Capacity and direction to establish this work was provided by the Legislature in the 2021 legislative session.

Continue and increase landowner assistance and incentives to reduce the impact of wildfires on private forestlands, particularly those in the smaller ownership classes using both State and Federal funds. Financial and some staffing capacity to provide this assistance was provided by the Legislature in the 2021 legislative session through Senate Bill 762.

Work with landowners and managers, large and small, to create resilient landscapes. Work with the same landowners and managers to identify areas that can have alternative priorities for fire suppression. The results would be pre-identified actions that may take place based on the burning environment at the specific time and the anticipated impact the fire would have. The ultimate aim would be appropriately returning fire to natural systems.

Working with state, federal, and nonprofit resources, the agency can work with affected landowners to restore ecosystem function and carbon-sequestering trees to fire-affected areas. While we do not want to lose ground to uncontrolled wildfires, replanting post-fire will help minimize the carbon impact of the fire. This issue, like fire, crosses boundaries and addressing forest restoration is needed across all land ownerships.

As with climate-smart forestry, the agency should work to develop fire-smart management when undertaking projects related to fire mitigation, restoration, or community hardening. These can include, but are not limited to, planting appropriate species, alternative spacing, and adding fire breaks and control points when planning projects.

Community Resilience and Adaptation

Working closely with partner agencies (DLCD, OSFM, OEM, OHA, etc.), the Department has the potential to create a more resilient fire landscape. ODF recognizes that it does not have the statutory authority, guidance, or financial resources to work in the built environment, but more frequently the wildfire and forest environment and the urban and built environment occupy the same locations. This requires increased cooperation across agencies and stakeholders. Pursuing additional cooperative relationships with other agencies will strengthen the Department's ability to implement the goals of this plan and benefit partners as well.

Afforestation of Low Productivity Lands

Consideration of native and culturally significant species can play an important role in afforestation activities. Many of the species that were historically present within respective ranges are expected to be more drought tolerant than the higher elevation conifers that have replaced them. At lower elevations in and around the Willamette Valley, species like Oregon white oak and the Willamette Valley ponderosa pine variant are more drought tolerant and may be better options for reforestation or afforestation where there has recently been drought and heat-induced mortality of other species. Encouraging a mix of species both in the overstory and the understory will play a role in enhancing forest resiliency to climate change in coming decades.

The Department will explore the various resources that are available to support and advance afforestation efforts throughout the state where such actions would be supported. Working closely with the ODF seed orchard and seed bank to identify

proper species and seed zone plantings will also be key, otherwise there is the risk of exacerbating the unwanted biotic and abiotic effects on the afforested areas.

The Department will work closely with industry, particularly the forest nursery industry, to ensure that there is an ample supply of seedling trees for these initiatives and that trees go in the right places for which they are best suited.

There may be a place for the use of genetically improved trees to increase the uptake of carbon by the trees or to ensure that they are resilient in the anticipated climate envelopes that they will be planted in. Genetic improvement of tree species has been taking place for centuries, largely to achieve greater fiber yields and increasing desirable form.

Further use of resilient native species, like the Willamette Valley ponderosa pine variant, will help to lessen the risk of mortality to maladapted species in the lower elevations of western Oregon. Similar examples exist for other ecoregions of the state.

Afforestation of low-productivity lands in the urban environment needs to be done in conjunction with urban planners, the local communities, and organizations that represent climate-impacted communities, especially Black, indigenous, and people of color (BIPOC) communities. It is important to ensure that they have ample input.

Maintenance and Expansion of the Urban Tree Canopy

The Department looks to establish a grant program of \$2 million per year to empower local communities to invest in urban and municipal canopy that meets their needs. This will need long-term legislative support that the Department will work to build in future legislative sessions.

The Department will seek to increase its ability, support its footprint in urban and community spaces by increasing staff and capacity, creating liaison positions to support local communities (beyond the municipal paradigm) and to work with those communities so that the urban tree canopy receives appropriate monitoring, care, and remains healthy, and to facilitate expansion so that the inherent benefits therein can be extended.

Development of Community Forest Management Model

Explore aspects of community forests and operationalize these interests and facets to the extent practical. Support local non-private forest ownership to meet the goals of

interested and engaged communities. Public-private partnerships may provide communities with a greater ability to successfully manage the forests that surround and support them to meet their specific objectives.

Forest Carbon Finance and Markets

While ODF has the statutory authority to implement a forest carbon offset program (ORS 526.780 to 526.789), it has not had the staffing capacity or demand to progress into rulemaking and program development. Principles guiding the establishment of a carbon finance program within the Department will be developed and will largely focus on the areas that the Department has historically succeeded in. These include providing education and technical assistance to partner organizations, landowners, forest managers, the public, and stakeholders. These efforts will focus on the availability of both government-regulated programs (e.g., California market) and non-governmental voluntary carbon markets. Much of this will focus on the need for projects to have accountability, durability, and additionality.

There has been significant growth in the voluntary markets for carbon projects in recent years. Large corporate entities have been providing funding to offset their carbon footprints to a variety of different private and non-governmental organizations. The Department may be able to foster greater use of these programs by supporting and coordinating these interests by bundling, aggregating, or creating a clearinghouse of options for landowners to become involved while facilitating these opportunities.

Additional programs to establish Carbon Easements through financial payments may become available through the Department's Federal partners. In this case, the Department may look to its established relationships with these partners to help landowners be successful in establishing and maintaining these easements. As previously noted, these are not projects that a manager can walk away from. There will need to be some amount of work done to maintain the health and function of these forestlands to maximize their carbon storage potential.

With the direction provided to the Department of Environmental Quality (DEQ) and the Environmental Quality Commission (EQC) by EO 20-04 regarding programs to cap and reduce greenhouse-gas emissions in several sectors, ODF will coordinate with their rulemaking processes regarding any development of forest carbon offsets that are linked to those new programs. The Department will communicate with DEQ and seek inclusion in this program development work over the next 18 months as it relates to

forest carbon. Staffing capacity will likely continue to be an issue for the Department and may provide a barrier to the development of the forest carbon finance program.

Mid-term Timber Harvest Deferral

Recent studies (Graves 2018) have highlighted the carbon benefits of deferring harvest in the mid-term. Working with partners to incentivize landowners to defer harvest voluntarily can lead to greater sequestration and storage over the next 30 to 50 years (e.g., 2050-2070), a period when our natural and working lands will be leaned on heavily until technologies and other sectors can catch up and work to reduce atmospheric carbon. This mechanism would rely on easements, active management for resilient landscapes, and efforts to increase the resiliency of enrolled programs through thinning and appropriate forest management practices.

Monitoring and Research

Past, Present, and Future Forest Carbon Research

The Department has been and continues to be involved with assessing the storage and flux of carbon both in the forest and in post-harvest activities. This work forms the backbone of the forest carbon accounting framework and is cooperatively done across government levels and across state boundaries. These reports and research are intended to be periodically updated with new measurements and monitoring efforts to ensure that there is appropriate accounting.

Examples of these efforts include:

- Forest Carbon Sequestration and Flux – The Department has worked cooperatively with the USDA Forest Service Pacific Northwest Research Station (PNWRS), research institutions, and stakeholders to produce the Forest Ecosystem Carbon Report (FECR) that quantifies the amount of carbon that is currently stored in Oregon's forests. The report is intentionally consistent with forest carbon reporting in California and Washington to facilitate regional analysis and comparison. This methodology has helped establish a baseline for the storage and flux of carbon in forest ecosystems across the Pacific coast region. This approach is a critical aspect to understanding and informing carbon and climate policy within and beyond Oregon. Forest ecosystem carbon reporting in Oregon will be iterative, using ongoing federal Forest Inventory Analysis (FIA) data collection across all forestland ownerships. It will continue to be dynamic and current with updates expected as field plots are remeasured.

- Wood Product Carbon Flux – The Department with the PNWRS and State partners to produce a report on the storage and flux of carbon in harvested wood products (HWP). This report provides estimates of carbon in products currently in use, in landfills, and emitted from burning and decay (by ownership) based on timber harvests in Oregon since 1906. This report was completed in spring 2021 along with an assessment of sawmill energy usage and production in Oregon. The Department included a stakeholder committee during the production of both the Forest Ecosystems Carbon Report and the Harvested Wood Products Carbon Report. This research and reporting provide a vital linkage with the flow of carbon out of forest pools to utilization. Work like the FECR and the HWP is being conducted in a manner comparable to neighboring state partners, providing a necessary mechanism for tracking carbon flows and utilization regionally.
- Scenario Planning and Management Projections – The Department is currently collaborating with the PNWRS, and the other signatories of the Pacific Temperate Forest MOU in a co-production effort to model the benefits and consequences of alternative forest management scenarios for carbon mitigation. There is ongoing, broad-level stakeholder involvement, with outreach to those most impacted. This work is part of a long-term initiative within the PNWRS that includes numerous staff from various natural resource agencies and organizations. With completion of this work, the Department will be able to present projected impacts of various forest management scenarios and the implications for forest carbon. It is anticipated that this work will be completed within the next few years with a variety of intermediate products along the way.

Additional monitoring work that is ongoing or anticipated in the future include:

- Scenario-driven analysis and evaluation of differential outcomes as a function of production and processing transitions related to implementation of climate-smart forestry principles and practices. Potential analyses to consider economic, ecologic, and or social analysis of second-order effects of changes in fiber supply, social and ecosystem service value of forests and long-term resilience benefits as well as the potential of increased losses (beyond wood fiber) to wildfires precipitated by climate change, management, and composition. These analyses will provide value by informing climate and practice driven transitions, accommodate negative externalities, and address other possible unintended

consequences to traditionally disadvantaged communities and communities with high intergenerational poverty issues.

- Accounting of forestry-related carbon impacts. To make management decisions related to reducing emissions, the emissions of the possible actions need to be established. This would include estimates ranging from post-harvest pile burning, broadcast burning for restoration and climate change resilience efforts, the emissions from operations, and fleet emissions including during fire suppression. Having a full accounting, and identifying where there is room for improvement, will help the Department and the sector recognize the areas to focus on. It will also show where there is space to work with sibling agencies to reduce emissions (e.g., DEQ for smoke management or ODOT for transportation).
- Quantify carbon stocks, fluxes and use in Oregon's forest carbon pools using the standards of the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change.
- Continue to produce the Oregon Forest Ecosystem Carbon Inventory Report on a biennial basis.
- Continue to produce the Oregon Harvested Wood Products Carbon Report on a five-year cycle.
- Continue to produce the Forests, Farms, and People: Land Use Change on Non-Federal Land in Oregon on a five-year cycle.
- Continue implementing an urban forestry inventory to quantify the climate benefits of Oregon's urban and community forests.
- Continue to actively participate and implement the Memorandum of Understanding on Pacific Coast Temperate Forests, sharing and exploring advances in forest-related science and data collection to better understand how forests are responding to changes in climatic conditions.
- Monitor effectiveness and implementation of new climate-centered forest practices policies (statutes, rules, and voluntary measures).
- Look at decomposition rates in different management scenarios/methods and disturbance types vs utilization mechanisms.
- Assess regeneration after wildfire for areas impacted at different fire return intervals, severities, and locations to consider the impacts of a changing climate.

Incorporation of Climate Change and Climate Change Impact in Agency Planning Processes 🌲👥🏢

Climate change needs to be a foundational consideration in all agency planning processes. From the top levels (Forestry Plan for Oregon, Agency Strategic Plan, Forest Action Plan) to the day-to-day plans (Annual Operating Plans, Implementation Plans, etc.), climate change should inform the work that is prioritized. Resources should be specifically dedicated to adaptation, mitigation, and resilience work. Leadership and management at all levels of the organization need to work to institutionalize the climate tools at their disposal, from species selection to fire planning, and ensure that their staff are equipped to appropriately implement climate-smart principles and practices throughout the agency.

Encourage Low-Carbon Impact Materials in Oregon 🌲🏠👥🏢🏡🛑📄

Work to encourage use of low-carbon impact materials and processes by working with sibling agencies, through incentives and support within and between other sectors, and by providing carbon-impact accounting for harvested wood products. Having the embedded carbon footprint available to end product users will support using long-lived, low-embodied carbon and allow consumers to make educated and informed decisions about the products that they choose.

Specific actions included in this are:

- Support the continued growth and adoption of mass-timber construction to substitute for high-carbon building, such as concrete and steel.
- Support the development of a wide variety of market-based solutions to support the use of low-value material from active management and increased forest health in face of changing climatic conditions. Market opportunities include:
 - Use of low-value white wood species as feedstock for mass plywood
 - Use of low-value white wood species as feedstock for cross-laminated timber panels to be used in modular mass-timber structures
 - Renewable hydrogen and renewable natural gas manufactured from woody biomass
 - Biochar
 - Export wood pellets as a direct displacement for coal-fired electricity
- Continue to educate, inform, and engage the architectural, engineering and construction community about the carbon and forest sustainability benefits of building with long-lived wood products and mass timber.
 - Maintain and strengthen partnership with the Tall Wood Design Institute

- Support the development of cost effective and permittable mobile biochar technology to decrease carbon emissions and increase carbon sequestration of forest slash.
- Demonstrate the use of low-carbon building materials, mass timber and long-lived wood products across the Department's built environment.
 - Conduct LCA analyses of all future buildings and substantive remodels to ensure lowest possible carbon impact on future construction projects.
- Support a transition to lower transportation and processing emissions from the forestry sector by incentivizing the use of low-carbon fuel alternatives manufactured from low-value woody biomass. Fuel examples include renewable natural gas and renewable hydrogen fuel cells.

Future Work Needs

Below is a selection of the multiple needs for the Department to work on at different time scales (not in any priority rank). These needs are generally administrative or planning related as opposed to the more resource focused Supporting Actions. Work to address many of these needs has already begun and others are in the planning stage or have been identified for further work. The timeline for each varies, but the length of time needed is generally less than the supporting actions listed previously. Overlap does exist between short and long-term needs.

Near Term (begin or complete within one biennium)

- Incorporate diversity, equity, and inclusion goals in decisions made at the agency and Board of Forestry. Including requirements of EO 20-04 and SCR 17 (2021), among others, in decision-making.
- Request Department of Justice assessment of Measure 49 impact on implementation of climate goals.
- To the extent practicable, utilize alternative species or seed zones to adapt to a changing climate envelope and the impacts of that on mitigation efforts.
- Clearly and concisely prioritize landscapes for restoration and resiliency treatments that may include protection of climate refugia (SB 762 and 20-Year Plan).
- Integrate climate change in the complete and coordinated fire response strategy.
- Align budget requests and priorities to cope with a changing climate. Build requests to increase staffing capacity to meet the needs presented with additional climate focus.
- Purchase electric vehicles and install electric charging infrastructure at all ODF locations.
- Incorporate more remote work for personnel where appropriate.
- Wholesale Department Carbon Footprint and Monitoring for facilities and vehicle fleet (see Appendix A and below).

ODF EO 20-04 STRATEGIES	FACILITIES PROGRAM UPDATE (2021)
<p>Reduce building energy and electrical consumption through technological and personal action (e.g., power sensors, shut off lights and computers off when not needed).</p>	<ul style="list-style-type: none"> • <u>Building Modernization</u> → on-going installation and calibration of energy efficient building systems (e.g., lighting, HVAC, envelope, occupancy sensors, etc.). <ul style="list-style-type: none"> ○ Maintenance and repair projects. ○ Capital renewal projects. ○ Utility incentivized upgrades. • <u>Strategic and Sustainable Facilities Investments</u> → the implementation of the department's <u>F</u>acilities <u>O</u>perations and <u>C</u>apital <u>I</u>nvestment <u>A</u>ccount (FOCIA) that focuses on all long-term facilities maintenance and capital renewal needs, including all sustainable building systems. • <u>Capital Construction/Improvement</u> → compliance with new Building Code energy reduction provisions as applicable. • <u>Building Performance and Data Mgmt.</u> → annual building energy consumption monitoring and reporting to the Legislature via the Oregon Dept. of Energy: <ul style="list-style-type: none"> ○ Reporting via the Department of Energy's (Federal) Energy Star "Portfolio Manager" database platform. ○ Includes the tracking of: <ul style="list-style-type: none"> ▪ Estimated <u>G</u>reen <u>H</u>ouse <u>G</u>as (GHG) emissions on energy use of ODF's buildings, as part of the compliance with EO 20-04. ▪ Estimated building <u>E</u>nergy <u>U</u>se <u>I</u>ndex (EUI). • <u>Focused Sustainable Facilities Mgmt.</u> → Salem HQs campus buildings have been enrolled in the <u>E</u>nergy <u>T</u>rust of <u>O</u>regon's (ETO) <u>S</u>trategic <u>E</u>nergy <u>M</u>anagement Program (SEM) for direct building energy performance engagement. • <u>Sustainable Facilities Planning</u> → engaging in master planning efforts as applicable increase facilities efficacy and reducing facilities/ground footprints where feasible. • <u>Facilities Mgmt. Capacity and Enhanced Building Data Mgmt.</u> → staff capacity increase: <ul style="list-style-type: none"> ○ The addition of one Operations/Policy Analyst 3 (OPA3) to assist in the collection and management of facilities performance data. ○ The addition of one Construction Project Manager 2 (CPM2) to assist in the implementation of facilities modernization projects. • <u>ACTION ITEM PLACEHOLDER</u> → Continuation of the periodic Administration Division Newsletter or Facilities Bulletin to message sustainable building occupant behavior (TBD).

Long Term: (continues beyond one biennium)

- Incorporate diversity, equity, and inclusion goals in decisions made at the agency and Board of Forestry.
- Consider using alternative species or seed zones to adapt to a changing climate envelope and the impacts of that on mitigation efforts.
- Clearly and concisely prioritize landscapes for restoration and resiliency treatments that may include protection of climate refugia.
- Consideration of climate change in the complete and coordinated fire response strategy.
- Align budget requests and priorities to cope with a changing climate.

Supplemental Information

Urban and Community Forestry

- Oregon's climate adaptation framework identified Risk #1 Increase in average annual air temperatures and likelihood of extreme heat events. "Heat waves will result in increased deaths and illness among vulnerable human populations. The elderly, infants, chronically ill, low-income communities, and outdoor workers are the main groups threatened by heat waves."
- Vivek Shandas and others of Portland State University have shown that lower-income areas of the Portland Metropolitan area have lower air quality because of lack of urban trees.
- Hoffman and others showed 94% of 108 studied urban areas display consistent city-scale patterns of elevated land surface temperatures in formerly redlined areas relative to their non-redlined neighbors by as much as 7 C, with an average difference of 2.6 C.

[Forestry Plan for Oregon](#)

USFS Climate Adaptation Partnerships

- [Blue Mountains](#)
- [Columbia River Gorge National Scenic Area, Mount Hood National Forest, and Willamette National Forest](#)
- [Oregon Coast](#)
- [South Central Oregon](#)
- [Southwestern Oregon](#)

[IPCC Sixth Assessment Report: The Physical Science Basis](#)

[Oregon Climate Change Research Institute 5th assessment](#)

[Forest Ecosystem Carbon Report](#)

[Harvested Wood Products Report](#) and [Sawmill Energy Report](#)

[Oregon Department of Justice Statutory Authority Analysis on the Board of Forestry's Authorities around Climate Change](#)

[Statewide Climate Adaptation Framework](#)

- [Equity Blueprint](#)

[Natural Hazard Mitigation Plan](#)

[100-Year Water Vision](#)

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Appendix A



Oregon Department of Forestry

Sustainability Report

2018



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Preface

Sustainability is at the core of the Department of Forestry (ODF) and is executed throughout our four primary businesses. ODF provides fire protection for 16 million acres of forestland statewide, manages 800,000 of state-owned forestlands, implements the Forest Practices Act to ensure environmental stewardship while producing wood products on private and county-owned working forests, and partners with federal land managers to increase the pace, scale and quality of restoration on federal lands.

ODF Mission

"To serve the people of Oregon by protecting, managing, and promoting stewardship of Oregon's forests to enhance environmental, economic, and community sustainability."

Policy and direction for ODF is set by the Legislature and Board of Forestry which defines forest sustainability as:

"Forest resources across the landscape are used, developed, and protected at a rate and in a manner that enables people to meet their current environmental, economic, and social needs, and also provides that future generations can meet their own needs [ORS 184.421]."

Sustainability is carried out in ODF's day to day implementation of policies and programs that promote sustainable management of Oregon's public and private forests. This 2018 update to our 2016 Sustainability Plan¹ encompasses both our mission of sustainability in forest management and in the activities and policies that guide the operation of our facilities. In our 2016 Plan, ODF identified four short-term and four long-term goals. The sections below provide an update on each of those goals and include two additional long-term goals.

Short-Term Goals

1. Conduct a Fire Program Review

The 2016 Fire Program Review Committee recommended focusing on three areas in creating a more sustainable fire program: sustainable funding, organizational resources and structure, and reevaluating certain wildfire policies. We have furthered this work by:

- a. In 2017, we developed a policy option package for continued **coordination with rangeland fire protection associations** to protect the Oregon's rangeland and preserve habitat for sensitive species like Sage Grouse. We received funding for a full time position to support coordination with the RFPAs and additional funding for equipment and training for the associations.

¹ ODF 2016 Sustainability Report.

https://www.oregon.gov/das/Facilities/Documents/SustPln_ODF_2016.pdf

- b. ODF's 2019-2021 **Agency Request Budget includes an agency-wide policy option package** asking for additional staff across the agency to more sustainably support our fire protection efforts during fire season while maintaining agency workload.
2. Sustain Water Quality through Forest Practices
- a. The Department recently **began two studies testing the effectiveness of riparian rules** to protect water quality and stream habitat. We will bring the results of these studies to the Oregon BOF for them to assess the sufficiency of these rules.
 - b. The Department just **completed a 5-year contract, monitoring the compliance with Forest Practices Act** rules. Overall compliance rates were high.
3. Increase Water Conservation at ODF Facilities
- a. Facilities staff has begun the second phase of a multi-phased **landscape rehabilitation project to replace non-native species with more drought resilient native species** plants and shrubbery at its Salem HQs. A plan developed by a landscape architect gave direction in achieving balance between sustainability while still maintaining the design spirit of the historical grounds.
 - b. Facilities has **implemented the Department of Energy's Portfolio Manager** to more effectively manage and evaluate ODF's 400+ building/structures portfolio with respect to water consumption in order to meet or exceed the mandated savings as per the Governor's Executive Order 15-09. Challenges still exist during fire season which creates a higher demand on our facilities and resources.
 - c. Facilities is encouraging the **installation of water meters** at numerous field offices that are accessing well water for consumption. Having meters in place where well water is being drawn will help put perspective on actual consumption in lieu of estimated consumption.
 - d. As part of a statewide effort to increase awareness and to garner more support, and to encourage building occupant engagement, the Salem-Facilities Unit has **developed a quarterly newsletter (Appendix B)** to provide useful information on how occupants can contribute and be more sustainable with respect to the use of our buildings and operations, but also give them tips and tools that they can use in their private lives also.
4. Increase Energy Conservation and Sustainable Practices at ODF Facilities
- a. Building on the advice from the Sustainability Board in 2016, (see attached Board plan acceptance letter in Appendix B), the Salem Facilities Unit has **formed an Energy Team** that meets regularly to discuss energy savings strategies, and to develop sustainability related content for the quarterly newsletter that is shared with all ODF staff. The long-term objective is to further expand on this Energy Team by developing an agency Green Team that will represent a more overarching and comprehensive sustainability mission beyond just energy and water conservation.
 - b. **Increasing the use of LEDs and de-lamping** existing fixtures if cost-effective and acceptable payback schedules exist.
 - c. The agency has **completed a master plan/space planning study** to evaluate current Salem Campus HQs and the Fire Cache and Motor Pool operations programming functions and needs. The objective is to implement a more sustainable office layout that not only incorporates more sustainable measures such as reducing the use of task

lighting, it will also enhance occupant health and more efficiently facilitate programming needs.

- d. The Department has **completed a feasibility study on the placement of electric vehicle charging stations** at the Salem Main Campus compound, and at the Tillamook Forest Interpretive Center and adjacent Homestead Wayside. The implementation of charging station infrastructure is expected to begin with the Salem HQ Campus in 2019.
- e. Through a partnership with DAS, the Department was able to complete facility condition assessments of over 300 of its facilities. The objective of this data collection project is to help the Department strategically **plan for deferred maintenance and capital improvement and renewal** projects; including sustainability upgrades such as external and internal lighting upgrades, adding insulation to building perimeter and floor systems and roof assemblies, and upgrading plumbing fixtures to lower gallons per minute flow rates.
- f. The Department was able to secure a policy option package during the 2017 legislative session to **relocate the aging Toledo unit office** to another location. To reduce costs and promote agency partnerships, ODF is pursuing a co-locate project with ODOT to further realize efficiencies.
- g. In 2016 ODF's Facilities Unit has **enrolled in the Energy Trust of Oregon's Strategic Energy Management Program (SEM)** with the Dept. of Corrections, Dept. of Transportation, Oregon Liquor Commission, and the Dept. of Administrative Services to name a few. To date ODF has received \$16,000 in incentive monies, due to the implementation of multiple energy efficiency measures. The Salem-Facilities Energy Team has consistently participated in monthly meetings since 2016 with the SEM group to further enhance technical skillsets.
- h. Staff capacity has been added to the Salem-Facilities unit in 2018-20 to **assist our field offices with energy conservation upgrades** and consultation services with respect to lighting and other energy related building systems.

Long-Term Goals

1. Energy Conservation

- a. Facilities: ODF is in the process of **developing a data-driven building portfolio management system** that will facilitate long-term strategic capital planning for its facilities statewide. Phase I of this data-driven process, which included the physical assessment of the majority of ODF's buildings/structures, has been completed. Phase II consists of the implementation of a building asset portfolio software system that will provide the necessary data to develop a long and short term plan to tackle deferred maintenance, capital improvement and renewal needs, capital construction needs, and building system sustainability upgrades.
- b. Motor Pool: ODF's Central Motor Pool Program is an **active member of the State's Fleet Management Advisory Committee (FMAC)**, where the state owning fleet agencies collaborate and collectively report to DAS and DEQ our efforts in meeting the Governor's goal of converting 20 percent of the State's large fleets to alternative fuel vehicles. DAS compiles all the data and submits the report on behalf of all the agencies.

2. Green Chemistry Initiative

- a. Facilities: ODF ***follows the State's Sustainability Guidelines for consumable products*** that are on the state's Price Agreement Policy for all Janitorial Services.
- b. Motor Pool: As an active member of the FMAC, we have identified the Governor's green chemistry initiative on the committee's work plan and collectively report to DAS our fleet greenhouse gas emissions in response and reporting of the Governor's Executive Order 06-02. The data is used by the Department of Energy for their response to the Energy Information Administration survey and the Energy Policy Act survey regarding alternative and renewable energy. ODF also continues to ***procure equipment that complies with California emission standards.***

3. Forest Management Plan for State Forests

- a. ODF owns and manages state forestland and the Board of Forestry oversees these forests to achieve Greatest Permanent Value which requires the forests to provide a range of economic, environmental and social benefits. In coordination with the Board of Forestry, ODF staff are developing a new management plan for State Forests in west Oregon, that improves financial viability and increase conservation outcomes.

4. Forest Practices Act Rule Policy Review

- a. The Department and the BOF are currently conducting a rule analysis process to ***assess whether specific management guidelines should be developed for the marbled murrelet under the Forest Practices Act.*** The marbled murrelet is a small seabird that nests in old, large trees and is listed as threatened under both the federal and state Endangered Species Acts.
- b. The Department and the BOF also ***initiated an effectiveness monitoring project in the Siskiyou geographic region.*** This project will assess sufficiency of streamside rules to meet desired future conditions, and stream temperature and shade. The assessment is based on scientific literature.

Additional Goals to 2016 Report

5. Landscape Resilience to Reduce Fire Risk

The third recommendation component of the Fire Program Review addresses forest management policies on both public and private land. Forest management practices can impact fuel conditions that dictate the manner in which wildfire burns across the landscape. Forest management policies enable proactive mitigation of wildfire risk. This includes implementing treatments to reduce buildups of hazardous fuels and increase landscape resilience to wildfire. Treatments include harvesting timber and creating policies and public support for increased use of prescribed burning as a management tool.

In the 2017 legislative session, ODF received permanent funding for the **Federal Forest Restoration Program (FFRP)**. The goals of this program are to increase the pace, scale and quality of restoration on federal forests. FFRP uses state funds to engage with and assist local forest collaboratives to reach agreement on the scope and scale of treatments and to partner with the US Forest Service to increase the pace of project-level planning and implementation. ODF is **utilizing the Good Neighbor Authority** as an extension of this work to bring additional capacity to implement restoration projects.



6. Climate and Carbon Policy

ODF is working with the Governor's Office of Carbon Policy on two workgroups to inform the policy discussion to establish a statewide carbon policy and to identify opportunities for climate adaptation investments in natural and working lands. As part of this work, ODF is partnering with the US Forest Service Research Station to produce an **estimate of carbon storage and flux in Oregon's forests and in harvested wood products**.

Internal Practices and Policies

- To increase awareness and encourage occupant engagement, the Facilities Energy Team has developed a quarterly newsletter that focuses on sustainability. The fall 2018 newsletter will mark the fourth edition released to date.
- Salem-Facilities Unit continues to apply sustainable best management practices when engaging in operations and maintenance and capital improvement/renewal projects. These include: motion sensor lighting throughout the buildings, flexible lighting desk lighting options, and exterior offices utilize natural light from large office windows.
- Encourage the utilization of recycled products when they are available for items ranging from copy paper to pens.
- Printers are set to automatically print documents two-sided to conserve paper and most documents are now scanned or emailed, reducing paper use.
- Staff are encouraged to transfer packages to and/or from Salem to our field offices whenever possible to reduce postage costs.
- ODF continues to offer staff sustainable work options including telecommuting, efficiently designed work schedules, and job-sharing where possible. Many employees participate in ride-sharing options. ODF has its own agency policy on telecommuting and is in alignment with the DAS statewide policy.
- ODF has its own agency policy on Equal Employment Opportunity, Affirmative Action and Diversity as well as agency policy on Principles of Conduct and Working Guidelines to continue to educate and encourage upholding the public trust, expectations of professional workplace conduct and workplace safety.

- ODF participates in several outreach efforts including a variety of in-state and out-of-state career fairs.
- ODF is a sponsor of the 2018 Oregon Annual Diversity Conference.
- The Department continues to support minorities, women, emerging small businesses, disabled service veteran owned businesses, and disadvantaged business enterprises in its procurement practices. The majority of our procurements are globally advertised on the ORPIN system, which is an effective means of notifying the Governor's Certification Office for Business Inclusion and Diversity (COBID) contractors of our contracting opportunities.

External Practices and Goals

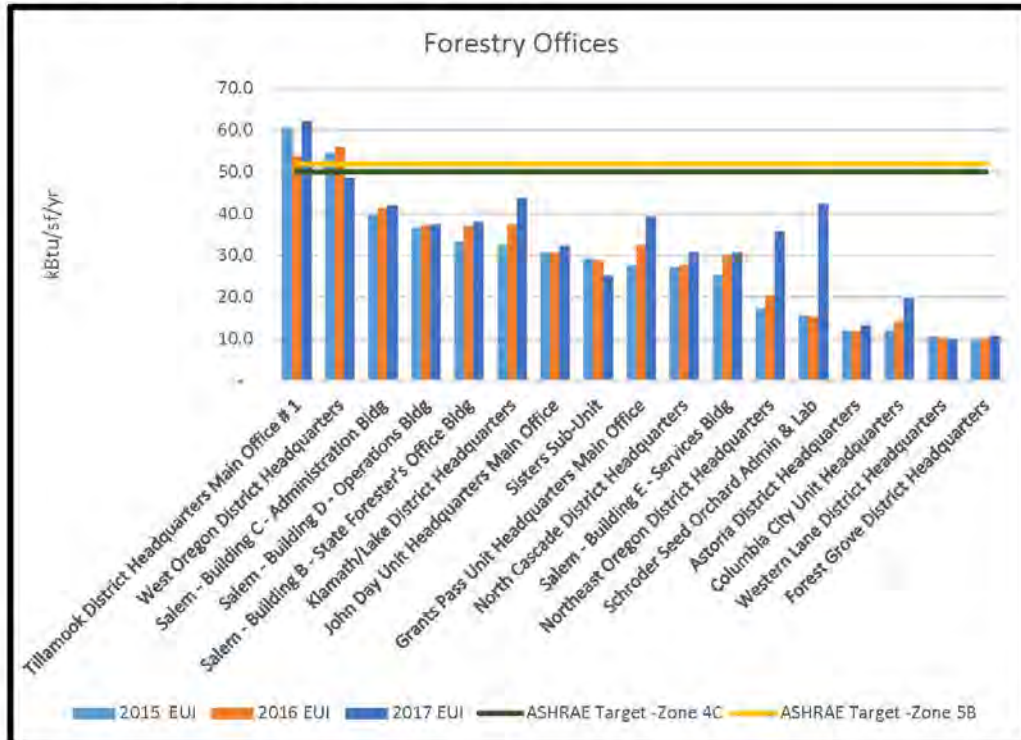
- The Department is working with the Environmental Justice Task Force to integrate Environmental Justice concerns into our agency programs, policy work, and decision making. This involves increasing the engagement of underrepresented communities (minority, lower income, elderly, disabled, etc.) in the areas where the work of the agency could impact their lives. The goal is to assure meaningful participation, equal opportunity for input and equitable outcomes.
- It is the policy of the Department to promote and enhance government-to-government (G2G) relationships with Oregon's tribes during the development and implementation of programs that may affect tribes. Our intent is to strengthen intergovernmental relations, ensure the capacity to address possible concerns, and enhance the exchange of information and resources. We also are seeking to engage a broad group of the Department's staff in an effort to build and retain G2G knowledge and resources for the future. We recently created a G2G Workgroup to facilitate the creation of an environment for continued learning, communication, and for strengthening our implementation of the G2G and cultural resource protection procedures.
- Continue to make improvements on our Electronic Notification Systems for administering the Forest Practices Act.
- Continue to support and promote the use of mobile devices for Stewardship Foresters to conduct both forest practices and industrial fire inspections on their mobile devices while in the field further increases efficiencies in FPA administration.
- Initiated the live stream of Board of Forestry meeting to increase accessibility and reduce unnecessary associated travel.
- Provides employment including many seasonal positions in many rural communities across the state through a program with the Department of Corrections
- The Salem Auto shop continues to utilize recycled oil as its primary heat source reducing energy load across the entire building.
- Wireless Radio Communications program utilizes solar power across the state, where possible to offset the energy load at mountain top communication sites.
- A comprehensive depiction of ODF's equity, diversity and inclusion practices will continue to be documented on ODF's Affirmative Action Plan.
- The Department's mission is to serve the people of Oregon by protecting, managing, and promoting stewardship of Oregon's forests to enhance environmental, economic, and community sustainability. Toward that end, all of our major programs focus on sustaining the full range of values derived from Oregon's forests including protection of 16.2 million acres of

Oregon's forestlands, ensuring proper implementation of forest practices, and managing state owned forestland for a broad range of values.

Appendix A

Resource Conservation – Energy

The information below is a summary of energy consumption data entered reported by the Department. Annual building energy use for 2017 is summarized in the tables and graphs below. The graphs show annual building EUI and compare it to national targets for similar-type high performance buildings. These are denoted by the yellow and green lines. The data tracks each building's energy use (EU), square footage, and EUI.



Energy Consumption (Buildings > 5,000 ft ²)		
2015 Baseline energy use	Total energy use for 2017	Comparison to Baseline
8,299.31 Million BTU ³	9,523.84 Million BTU ³	14.8 % increase in energy use compared to baseline year ^{1,2}
¹ Annual energy use may be affected by various factors including weather variations, changes to operational hours, and occupancy changes, among other factors. The increase in fire during the last three fire seasons have added additional strain to our facilities with respect to increased occupancy and operational hours. ² The overall Forestry Energy Use Index (EUI) for the total energy consumption is low when compared to the typical EUI for similar type buildings in the northwest region, which ranges from 33 to 50 kBtu/ft ² /yr for vehicle shop/repair and government buildings respectively. ODF's aggregate EUI for 2017 is <u>29.3 kBtu/ft²/yr</u> . ³ BTU = British Thermal Unit.		

Resource Conservation – Energy, Continued

National ASHRAE EUI¹ Targets

The table below contains ODF's performance compared against typical regional occupancy EUI¹ targets.

Space Types	ASHRAE EUI targets	
	Western 4C ¹	Eastern 5B ¹
Government office	<u>50</u>	52
Lab	179	187
Hospital/Inpatient Health	135	126
Nursing Home/Assisted Living	84	88
Vehicle shop/Repair	<u>33</u>	35
Vehicle storage/maintenance	14	15
Restaurant/Cafeteria	156	163
Library	61	64
Lodging/Public Services (Prison/Incarceration)	93.2 ²	-
ODF	Year 2000: 32.6 Year 2017: 29.3	N/A
¹ kBTU/ft ² /yr		
² USDOE Portfolio Manager (CBECS, not ASHRAE target)		

Resource Conservation – Water

The information below is a summary of water consumption data reported by ODF to the Oregon State Water Resources Department.

1. The data reported reflects totals for water year cycles spanning from October through September.
 - a. Baseline year begins Oct-2014.
 - b. Water years 2015/16 and 2016/17 are compared to 2014/2015.
2. Data metric totals reflect units in gallons.
3. Data includes essential and non-essential consumption.
4. Further refinement(s) of data is needed to account for the increase in the use of utility resources due to fire events from typical year round business operations - regression analysis.
5. Further investigation is needed to:
 - a. Separate water consumption totals from what are deemed essential facilities such as fire operations buildings and structures, and typical administrative buildings.
 - b. Account for well water consumption, especially guard stations (designated as essential facilities). An increase in fire activity can abnormally skew the data when compared to typical non-essential use. It is important to emphasize that applying a typical FTE to fixture count estimate is not feasible, nor accurate, due to the inability to account for increases in water use directly tied to fire-fighting applications. The installation of meters is being evaluated - typical challenges include cost(s) and FTE capacity. The Dept. is scoping the use of meters to help facilitate accurate readings of consumption.
6. Percentage increase/decrease in consumption for respective water years compared to the 2014/15 baseline year are listed in the following table:

Water Year	2014/15 ¹	2015/16 ¹	2016/17 ¹
Total (Gal)	14,123,984	13,977,250	14,011,126
Water Year	2014/15	2015/16	2016/17
Use Compared to Baseline Water Year 2014/15	0.00%	98.96%	99.20%
Savings Compared to Baseline Water Year 2014/15	0%	-1.04% (savings)	-0.80% (savings)
¹ Water Year = Oct - Sept			

7. Salem-Facilities has implemented the Department of Energy's Portfolio Manager to more effectively manage and evaluate ODF's 400+ building/structures portfolio with respect to water consumption in order to meet or exceed the mandated 15 percent savings as per the Governor's recent Drought Executive Order. Challenges still exist with the higher frequency in fires in recent years, which creates a higher demand on our facilities and resources such as increased use and longer operating hour

The Oregon Department of Forestry Climate Change and Carbon Plan

Transportation

Metric	Reporting Period	Statewide Totals	Agency Totals	Change from Previous Report	Progress Towards Goal	Statewide Goal Met	Agency Goal Met
Gallons of fuel used ¹	Jan-Dec 2017	7,404,423	501,211	-14,493	Alignment with all policy elements: Met/In Process	In process (EO 03-03, 4.a)	No ²
GHG emissions from fuel use (lbs/CO ₂)	Jan-Dec 2017	146,365,317	10,446,254	-443,913	Alignments with all policy elements: Met/In Process	In process (EO 03-03, 4.a & EO 06-02 2.c.iii)	No ²
¹ Includes biodiesel 2%, biodiesel 5%, biodiesel 20%, CNG, Diesel, E85, & E10.							
<p>²The Department has and continues to collaborate with DAS and other owning state agencies represented within the State's Fleet Management Advisory Committee (FMAC) towards meeting the goals as a state. We are committed to purchasing high efficiency Flex Fuel vehicles; however, there are two factors that prevent Forestry from achieving individual agency targets: 1) Infrastructure and Decentralization - Salem DAS is our only source for E85 fuel statewide, the majority of the purchased Flex Fuel Vehicles cannot use E85 due to their remote locations throughout the states, 2) Fire and Forest Management activities are the driving factor of the type of vehicles utilized, mileage, and fuel usage. The 2013, 2014, 2015, 2016 and 2017 fire seasons substantially increased mileage and fuel usage from June thru October. These activities consumed major amounts of fuel and served to rocket the total fuel consumption and GHG outputs.</p> <p>Since 2014, ODF Motor Pool has again been steadily increasing the share of annual new vehicle purchases with Flex Fuel and Bio Diesel capable vehicles in its replacement cycles. These Flex Fuel & Bio Diesel capable motors are also just now declining in option cost to the point they are almost at the level of standard equipment and justifiable to cost. Over the next few years, we anticipate these alternative fuel motors will become virtually standard equipment in our new vehicles and the infrastructure to procure the fuel will be expanded to our primarily rural locations. This will bring us closer and closer to ultimate compliance.</p> <p>Currently, the E-85 (Ethanol) fuel needed for ODF Fleet vehicles capable of burning Ethanol is only available at the Salem DAS Fleet Fuel Island, and Sequential Fuels Retail outlet just south of Eugene on I-5. Very few of our ODF Fleet can get this fuel, so unleaded is the only means of fuel available. As outlets for E-85 increase, ODF Fleet will patronize these fueling locations for E-85.</p> <p>In closing, ODF Fleet is managing its fleet toward the goal of GHG/CO₂ reductions, and will have increasing success as more E85 vehicles truly replace the non E 85 vehicles. Toward this, more outlets for E 85 need to enter the retail market as well. Major Wildland Forest Fires are a variable that cannot be predicted or controlled, but can be understood as to their effect. ODF's primary mission drives our equipment needs and aspect of our Fleet operations into consideration.</p>							

The Oregon Department of Forestry Climate Change and Carbon Plan

Procurement

Report progress and alignment with statewide policies regarding sustainability in procurement and purchasing.

Metric	Reporting Period	Statewide Totals	Agency Totals	Change from Previous Report	Progress Towards Goal	Statewide Goal Met	Agency Goal Met
Sustainable Purchasing: Printer paper	2018	Average % recycled:	% recycled content in purchases: ???	N/A	2020 Goal (100% recycled for paper purchased)	In process (EO 12-15)	In Process
Sustainable custodial supplies#	2018	#Agencies in alignment:	Alignment: Yes	N/A	Alignment with all policy elements: Met/In process	In process (EO 12-15, DAS 107-011-010, D.1 & D.2)	Yes
Green Chemistry*	2018	#Agencies in alignment:	Alignment: Yes	N/A	Alignment with all policy elements: Met/In process	In process (EO 12-15, DAS Policy 107-009-0080 , EO 12-05)	Yes
*The Executive Orders and Policies relating to these metrics contain many elements of which vary in requested level of action ("review", incorporate, establish"). The agency has reviewed these elements and reported on current alignment and success as relevant. Further details on alignment and areas needing further development are detailed in the agency Sustainability Plan.							

Motor and Equipment Pool

The target is:

- No increase in vehicle emissions using the year 2006 baseline thru 2014
- Reduce to 10% below 2006 levels by 2020
- Reduce to 75% below 2006 levels by 2050

We have not met the target. Compared to a 2006 baseline, GHG emissions were 16.5% for 2017. Annual change in GHG emissions has declined in two subsequent years.

Year	Gallons	Total GHG Emissions	Annual Change in Emissions	Annual $\pm\%$ change in Emissions	Emissions compared to 2006 Baseline
2006	505,067	10,454,019		n/a	n/a
2007	507,230	10,541,229	87,210	0.8%	0.8%
2008	510,425	10,608,646	67,417	0.6%	1.5%
2009	474,817	9,892,885	(715,761)	-6.7%	-5.4%
2010	311,761	8,051,833	(1,841,052)	-18.6%	-23.0%
2011	416,571	10,917,611	2,865,778	35.6%	4.4%
2012	446,288	11,683,955	766,344	7.0%	11.8%
2013	482,544	12,631,936	947,981	8.1%	20.8%
2014	508,913	13,325,412	693,476	5.5%	27.5%
2015	564,804	14,787,099	1,461,687	11.0%	41.4%
2016	507,810	13,170,134	(1,616,965)	-10.9%	26.0%
2017	501,211	12,182,004	(988,130)	-7.5%	16.5%
Average				2.3%	

Appendix B

Sustainability Awareness

Agency Quarterly Newsletters:



We would like to introduce to you the 6th edition of the Salem Campus Facilities Newsletter titled the "Fish Bench". One of our goals is to give you an opportunity to look at a peek into our dynamic world of Facilities Management by establishing a platform that will allow us to interact with you beyond the Facilities Help Desk.



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- Chris Stewart - Facilities Director and Project Lead Manager
- Michael Baker - HVAC and General Maintenance
- James Eiland - Facilities Coordinator and General Maintenance
- Michelle Christ - Electrical and General Maintenance
- Earl Hesketh - Institutional, Cultural, Building, Services, and General Maintenance
- Ken Koser - Property-Created Inventory
- Paul Koser - Streetside Planning
- Andy Hall - Developmental Management and Property Creation and all other
- John P. - Administrative Support and Maintenance

Salem Projects

Landscaping
Landscaping has been reduced by over 60% since the Governor's Executive Order on Drought Conditions has been implemented.

Lighting
We are in the beginning stages of a Salem campus landscape rejuvenation project with a focus on more drought-tolerant species.

Greenhouse lighting
One of the major lighting upgrades we've been working on over the last year and a half has been changing out all exterior lighting to LEDs. We've worked with Energy Trust of Oregon to bring the costs of installation down significantly. With the better quality of these fixtures and lower, no-mercury-on-disposal fees, there is no doubt that these improvements have already paid for themselves in energy savings. Our exterior lighting power consumption on campus has gone from 12,540 kWh (\$4,254.82) per year to 13,877 kWh (\$1,234.16), a 70% reduction. That is a cost savings reduction of about \$3000 a year.

Did you know . . .

With a measure of power, Watt-hours are a measure of energy. The easy analogy for power vs. energy (watts vs. watt-hours) is to compare them with speed vs. distance (miles-per-hour vs. miles). Speed is an immediate measure - how fast are you going at a given instant. Distance is the cumulative effect of speed acting over a period of time.

Similarly, watts measure the immediate rate, or speed, at which energy is converted from one form into another. We call that rate power. Watt-hours measure the cumulative effect of power acting over time. We call this cumulative effect energy.

Just like we know that a 60 mph speed maintained for 1 hour will give us a distance traveled of 60 miles, we know that a 60 watt power draw maintained for 1 hour will give us an energy use of 60 watt-hours.

Ask Facilities

We've always wanted to know what Facilities does, or why we do something, now it's time to ask! Submit your questions to the Facilities Help Desk [here](#) and we'll publish the answers in an upcoming Work Bench Newsletter release.

Fun Facts

An oil transporter's fuel mileage is 30 ft. per gallon.
It is physically impossible for pigs to look up at the sky.
Batteries store with their feet.

Turning off your computer at night can save a lot of energy and money!

This is an example of how much energy is being used if you walk away from your computer at the end of the day without turning it off.

A desktop CPU running idle with screen saver consumes about 0.82 kWh

Energy usage for example: 5pm - 9pm, 16 hours (given an eight hour work day) = $0.82 \times 16 = 13.12 \text{ kWh}$

Energy usage over five working days = $13.12 \times 5 = 65.6 \text{ kWh}$

Energy usage over the weekend = $0.82 \times 48 = 39.36 \text{ kWh}$

Our working week energy usage = $65.6 + 39.36 \text{ kWh} = 104.96 \text{ kWh}$

Energy usage over one year = $104.96 \times 52 = 5457.92 \text{ kWh}$

Average energy cost per kWh = 0.09 cents

Annual energy cost for our desktop CPU = $5457.92 \times 0.09 = \$491.21$ per year. That's 1 year's worth of energy!

For a reminder, for those of you on the Salem Campus, if you need assistance from Facilities, please email a note to the Facilities Help Desk system [here](#). This helps us prioritize and keep track of requests so we can help you more quickly and efficiently.



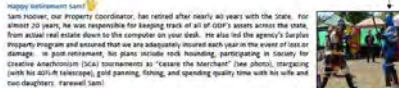
Welcome to our Winter/Spring newsletter. This edition continues the discussion on sustainability - this time we focus on water conservation, recycling, and sustainable landscaping. This is a good time to remind everyone that Governor Brown issued Executive Order 10-09 (click [here](#)) back in 2013 which directed state agencies to plan for resiliency to drought, with a goal of reducing all agency non-residential water consumption by 25 percent on or before December 31, 2020. Similar to energy conservation - building occupancy equipment is a big factor in helping us meet this goal. Also, this year, ODF's new Property Coordinator, has contributed some great information on re-recycling. We hope you find this information useful!

Finally, we are also saying goodbye to two team members, Sam Hoover (retired Property Coordinator) and Michelle Christ (Facilities Energy Technician). Both will be missed. - Your Facilities Property Team

Comings and Goings

Excellent Michael!
Our resident electrical specialist, Michelle Christ, has returned to the private sector to begin her next chapter of her life. She was with us for less than two years, but she completed several energy-saving projects in her short time here that equate to dollars saved perpetually for the Department. These included replacing the parking lot lights with LEDs, and improving the lighting throughout several buildings on the Salem campus. She was also involved in several projects in the field, including communication sign, the Tillamook Forest Center, and a couple of the camps. We will miss her sense of humor and her impressive professional skills and expertise. Good-bye Michelle!

Happy Retirement Sam!
Sam Hoover, our Property Coordinator, has retired after nearly 40 years with the State. For almost 20 years, he was responsible for keeping track of an ODF's assets across the state. From actual real estate down to the computer on your desk, he also led the agency's Facilities Property Program and ensured that we are adequately insured each year in the event of loss or damage. In just retirement, he plans to visit his home, participating in local for Creative Anachronism (CA) tournaments as "Cassius the Merchant" (see photo), traveling (with his 2017 Infiniti), golf playing, fishing, and spending quality time with his wife and two daughters. Farewell Sam!



Wellcome Emily!
Emily Hall has been selected to fill Sam's shoes. She has worked for the agency for several years in many capacities, including office specialist, health services, and engine operator. Most recently, she completed a developmental assignment as a Supply Specialist. I hope at ODF's new Property Coordinator, she will be able to use all her skills and experience to help us meet our sustainability goals. Welcome Emily to the team and her new role!

E-Waste Recycling

Did you know that there are contractors near your office that will pick-up your E-Waste? If you are within 100 miles of one of these addresses, you don't have to bring your old CPUs, laptops, printers, etc. to Salem for processing. If you are outside of the 100-mile radius of any of these locations, you may use a local E-Waste recycling center as long as you document who you did not utilize our contract with Gates Services.

Contractor Locations:
Gates Services
3324 Industrial Way NE
Salem, OR 97303

Sub-contractor Location:
Southern Oregon APCRE
3460 Washington Blvd.
Grants Pass, OR 97526

Sub-contractor Location:
Opportunity Foundation of Central Oregon
823 E. Hwy. 126
Redmond, OR 97756

State Inventory due March 30

Remember folks, your 2018 State Inventory is due by 008 March 30, 2018. Inventory forms were sent out earlier this year. Please return all inventory forms (signed and dated), along with pictures of each item (in an electronic format) to 2800 State St. Salem, OR 97303. Email Emily Hall: Emily.Hall@odf.state.or.us or (503) 949-7345.

How much water does it take to produce our food?

Food	Portion	Gallons of Water
Orange Juice	8 fl.oz.	40
Beef	1 lb.	25
Beef Steak	1 pound	1,732
Chicken	8 ounces	130
Almonds	1 pound	36
Whole Rice	2 cups	25
Wheat Bread	1 slice	11

It appears that the water has an abundance of water, unfortunately, only about 0.3% is accessible to humans - mostly coming from rivers. The remaining 99.7% can be found in oceans, seas, swamps, and floating in the atmosphere.

- ### Earth's Water Distribution
- Ocean water: 96.5%
 - Glaciers and ice caps: 1.74%
 - Groundwater: 0.41%
 - Atmosphere: 0.0001%
 - Lakes (fresh): 0.0001%
 - Soil moisture: 0.0001%
 - Atmosphere: 0.0001%
 - Swamps: 0.0001%
 - Other: 0.0001%

Recycled Chips

The ground crew is taking all the branches from the annual tree-grading here on campus and creating arborvitae chip mulch with them. The use of arborvitae chips as mulch has been shown to have many benefits for urban trees and shrubs. Benefits include moisture retention, temperature moderation, and weed control, when compared to the common mulches used in the Pacific Northwest. Because they are not "uniform" shapes, sticks, or compaction, they can resist compaction and decomposition when compared to other mulches. This is a great way to continue to improve our sustainable landscaping practices here on campus.

Salem Campus Landscape Rejuvenation Project

I would like to shed some light on a new project that Facilities is starting. The Salem campus landscape is 15 years old this year, and it's beginning to show signs of maturity. In some instances, like the beautiful trees that are wonderful things in other, like overcrowded and overgrown hedges and shrubs, not so much. Starting with building 1, and working our way around campus, we are about to begin a landscape rejuvenation project with an emphasis on access to building entrances and exits. We will be planting a wider variety of native, colorful, and drought-tolerant plants, all while keeping within the spirit of the original landscape design. Some areas will hardly be touched, while others will see a radical change. Because of the larger scope of this project, it will be broken down into smaller phases, allowing us to complete the work with our regular crew while still being able to perform our usual duties. This will be an exciting time for our beautiful campus. I can't wait to get my hands dirty! - EARS

Page 64 of 66

Agency Recognition


ODF is recognized in Oregon Business Magazine's October 2018 issue due to its 2-year participation in Energy Trust of Oregon's Strategic Energy Management Program.


These organizations work with Energy Trust of Oregon to engage their staff in getting more from their energy.
They successfully incorporate strategic energy management practices to reduce their operating costs.

We congratulate them for their ongoing commitment to improving energy efficiency.

OREGON ENERGY LEADERS

American Assets Trust • Blue Mountain Community College • Kaiser Permanente • Bend Park & Recreation District
High Desert Museum • Oregon Zoo • Bend-La Pine Schools • Cayusa Technologies • City of Milwaukie
Pendleton Convention Center • Multnomah County • Centennial School District • City of Bend • City of Portland
Crook County School District • Fred Meyer • Legacy Health • Linn County • Columbia Bank • City of Talent
Corvallis School District • Mary's Woods at Marylhurst • Mt. Hood Community College • Medford School District
Multnomah Athletic Club • Adapt • Salesforce • OHSU West Campus • Meals on Wheels People
Salem Health • Oregon Episcopal School • Multnomah Education Service District • Portland General Electric
Oregon Department of Administrative Services • Oregon Convention Center • North Clackamas School District
Confederated Tribes of the Umatilla Indian Reservation • 173rd Fighter Wing, Kingsley Field; Oregon Air National Guard
Oregon Food Bank • Oregon Department of Corrections • Oregon Department of Forestry • Clackamas County
Oregon Department of Transportation • TriMet • Portland Community College • Parkrose School District
Portland Public Schools • Touchmark Living Center • Umpqua Community College • Oregon Shakespeare Festival
Oregon Liquor Control Commission • Goodwill Industries of the Columbia Willamette • Columbia Sportswear Company
City of Gresham • OHSU Tuality Healthcare • Port of Portland • Washington County • Willamette View
Concordia University • Hillsboro School District • Tualatin Hills Park & Recreation District • University of Portland
Wildhorse Resort & Casino • VA Portland Health Care System • NW Natural • Summit Medical Group of Oregon

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 EnergyTrust
of Oregon

2016 Sustainability Plan - Board Acceptance Letter



Oregon
Kate Brown, Governor

Department of Administrative Services
Chief Financial Office
155 Cottage Street NE U10
Salem, OR 97301
PHONE: 503-378-3106
FAX: 503-373-7643

May 16, 2016

Doug Decker, Director
Department of Forestry
2600 State St. NE
Salem, OR 97301

Re: Agency Sustainability Plan Presentation

Dear Director Decker,

On May 13, 2016, your agency's Sustainability Plan was presented to the Oregon Sustainability Board (OSB) by Chris Stewart, Satish Upadhyay, and Peter Daugherty. The OSB was impressed with the presentation and plan. We also appreciated the hospitality for our meeting in your lovely board room and enjoyed meeting members of your executive team at the presentation.

The OSB formally accepts the report, with a suggestion for an expanded role in staff participation: sustainability is obviously rooted in your core mission, and expanded participation by your staff may be an effective addition to your impressive "bricks and mortar" improvements. The OSB recommends looking for opportunities in your practices and internal operations, such as creating a green team and/or adding sustainability into policies.

In addition, the OSB celebrates that Forestry has re-joined the Interagency Sustainability Coordinators Network and has taken an active role with the new plan. We appreciate the good work of Chris Stewart and Satish Upadhyay in bringing the important voice of your agency back to the table for discussion and to share best practices.

The Board appreciates the time and effort that was put into this plan update by your agency and looks forward to your next plan update in 2018.

Sincerely,

John D. Miller, Chair
Oregon Sustainability Board

cc: Chris Stewart, Sustainability Coordinator
Satish Upadhyay, Administrative Services Division Chief
Peter Daugherty, Private Forests Division Chief
OSB Members
Governor Kate Brown

Board Closing Comments, Public Comments, and Meeting Wrap Up