Alternative Forest Management Plan “Building Blocks”
Deliverables and Timeline

Month/Year                  Deliverable                                                                                                                   
July 21-25                   Science panel week. Initial draft report in hand at the end of the week.                                      
July 25, 2014               BOF receives updates on process, science review, public outreach and engagement.                               
Early August 2014           Draft science team report produced for Department.                                                                                    
August 2014                 ODF project team uses information from science team review to begin formulation of draft plan.                         
September 3, 2014           BOF receives updates on process, science review, public outreach and engagement.                                                                 
September 4, 2014           Subcommittee check-in meeting and science team report available to the public.                                                   
Mid-September 2014          ODF provide opportunity for Stakeholder Group members to meet with ODF and review information from science team review. 
September 29, 2014          BOF Subcommittee reviews all products, including final stakeholder group and science team report, with department and formulates recommendation to full board on new plan. 
October 2014                Public outreach electronic survey to solicit input on executive summary of draft FMP.                                                   
November 5, 2014            BOF makes policy decision on new FMP (executive summary) and initiates drafting of the FMP for rule making process. 
February 2015               Science Review of fully drafted plan                                                                                                       
February 2015               BOF Subcommittee review fully drafted plan and formulates recommendation to full board to initiate rulemaking process.   
March 2015                  BOF review fully drafted plan and initiates rulemaking process.                                                                                          
March-May 2015              Public hearings (timeframe dependent on February BOF meeting).                                                                                   
June 2015                   BOF Subcommittee review final plan and formulates recommendation to full board to finalize.                                                        
July 2015                   BOF Finalize and approve new forest management plan.                                                                                               

*Dates are subject to change if unanticipated delays occur in the timeline.
<table>
<thead>
<tr>
<th>Component</th>
<th>Skills/Topics from Bio/Social (or simplify, please)</th>
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<tbody>
<tr>
<td><strong>Forestry</strong></td>
<td>(vegetation communities, economic aspects)</td>
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<tr>
<td><strong>Aquatic</strong></td>
<td>ecosystems, connectivity, water quality, pollution</td>
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<tr>
<td><strong>Wildlife</strong></td>
<td>habitats, species diversity, conservation, impacts</td>
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<tr>
<td><strong>Soil</strong></td>
<td>structure, fertility, sustainability, management</td>
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<tr>
<td><strong>Air</strong></td>
<td>quality, emissions, climate change, monitoring</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>quantity, pollution, treatment, conservation</td>
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<tr>
<th>Stream Ecology</th>
<th>Sherry Johnson</th>
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<td>Stream ecology, habitat, species diversity, aquatic systems, water quality, pollution</td>
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<tr>
<th>Wildlife Biology</th>
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<td>Animal behavior, distribution and function, conservation, habitat, ecosystem function, community resilience</td>
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<tr>
<th>Forestry Management</th>
<th>Bill Poulson</th>
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<td>Forest management, habitat, species diversity, aquatic systems, water quality, pollution</td>
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<tr>
<th>Silviculture</th>
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<tr>
<th>Sociology</th>
<th>Vicky Straight</th>
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<td>Social dimensions of forest management, community involvement in social forestry, social equity, and development, community vulnerability, wood production vs. community benefits, ecosystem services, and social science, integrated forest management, forest assessment, carbon assessment, market models, harvest, product output, timber markets, timber assessment, market models</td>
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<tr>
<th>Economics</th>
<th>Richard Hayes</th>
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<td>Forest products, timber markets, carbon assessment, market models, harvest, product output, timber markets, timber assessment, market models</td>
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# Board of Forestry Subcommittee

## Alternative Forest Management Plan for Northwest Oregon

**MEETING AGENDA: JULY 2, 2014**

<table>
<thead>
<tr>
<th><strong>TOPIC</strong></th>
<th>Board of Forestry Subcommittee on Alternative Forest Management Plans for Northwest State Forests</th>
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</table>
| **SUBCOMMITTEE GOALS TO BE COVERED TODAY** | 1. Overview of Science Assessment Process  
2. Review Science Questions and Focal Points  
3. Next Steps in the Science Review  
4. Update on Second Science Review |
| **MEETING DATE & TIME** | Date: July 2, 2014  
Time: 9:00 am – 10:00 am |
| **MEETING LOCATION** | Location: Santiam Room, ODF Headquarters Office,  
2600 State St. Salem, Oregon 97310 |
| **SUBCOMMITTEE MEMBERS** | Sybil Ackerman-Munson, Mike Rose, Gary Springer, Tom Imeson, and Doug Decker (ex officio) |
| **ODF STAFF LEADS** | Liz Dent, Brian Pew, Josh Barnard, Jeff Brandt |

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 twenty-four hours prior to the meeting via telephone 503-945-7200 or fax 503-945-7212. Use of all tobacco products in State-owned buildings and on adjacent grounds is prohibited.
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Outcome/Deliverable</th>
<th>Lead</th>
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<tbody>
<tr>
<td>9:00</td>
<td>Meeting introductions</td>
<td>Meeting Overview</td>
<td>Tom Imeson</td>
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<tr>
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<td><strong>Goal #1: Overview of Science Assessment Process</strong></td>
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<tr>
<td>9:05</td>
<td>Team Members</td>
<td>Subcommittee understands the Science Panel configuration.</td>
<td>Jeff Brandt, Josh Barnard, and Brian Pew</td>
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<tr>
<td>9:15</td>
<td>Terms of Reference</td>
<td>Subcommittee understands the Terms of Reference for the Science Panel.</td>
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<td><strong>Goal #2: Review Science Questions and Focal Points</strong></td>
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<tr>
<td>9:25</td>
<td>Review of science questions and focal points</td>
<td>Subcommittee understands the science questions and focal points.</td>
<td>Jeff Brandt, Josh Barnard, and Brian Pew</td>
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<td>9:35</td>
<td>Subcommittee discusses science questions and focal points</td>
<td>Input on science questions and focal points.</td>
<td>Tom Imeson</td>
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<td><strong>Goal #3: Next Steps in the Science Review</strong></td>
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<td>9:45</td>
<td>Science Review Next Steps</td>
<td>Subcommittee understands next steps in the science review process.</td>
<td>Jeff Brandt, Josh Barnard, and Brian Pew</td>
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<td><strong>Goal #4: Update on a Second Science Review</strong></td>
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<tr>
<td>9:50</td>
<td>Update on a Second Science Review</td>
<td>Subcommittee receives an update on a second science review.</td>
<td>Jeff Brandt, Josh Barnard, and Brian Pew</td>
</tr>
<tr>
<td>9:55</td>
<td>Meeting wrap-up and next steps</td>
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Focal issues to be addressed by the ODF Science Panel

Prepared for the Subcommittee of the Board of Forestry
Alex Hall, Don Robinson and George Stankey

The purpose of this memo is to inform the Board of Forestry of the focal issues that the Science Panel intends to address in their assessment of the proposed alternative approaches for forest management. Selected excerpts from the Terms of Reference (which provides more details) are included to provide context for the objectives and approach of the Science Panel. Interested Board members are welcome to read the complete Terms of Reference document.

1 Objectives of the Science Panel
The overall goal of the Science Panel is to provide an independent, expert-based evaluation of the performance of each of the five strategic alternatives proposed by the Stakeholder Team.

Consistent with that overall goal, the objectives of the Science Panel are to:

- Provide a value-neutral evaluation of the alternatives
- Base assertions and assessments on evidence (defensible science and support in the literature)
- Provide quantitative assessments where possible (e.g., existing analyses), and qualitative where not
- Evaluate the alternatives against objectives/criteria that reflect the core management values of ODF
- Explicitly define key questions and uncertainties associated with each alternative
- Acknowledge the potential influence of uncertainties on the conclusions

The panelists' analyses and insights will include consideration of the components of each strategic alternative. These components have been defined and grouped in a variety of ways, including the recent collation of existing strategies developed by ODF (see Appendix A); of which some elements might be considered as starting points for the development of a Subcommittee proposal to the full board for a revised management plan. That said, the Panel is not charged with deciding which alternative management option(s) or components are implemented, nor of making a definitive recommendation of a "best" alternative.

2 Structure of the Evaluation of Alternatives
The Panel’s evaluation is organized around a framework:

- overarching “key question” (with two explicit dimensions to consider)
  - six major topic areas
    - select set of focal issues within each broad topic area

2.1 The key question of the Panel:
How does each of the proposed alternative management approaches perform against the "Greatest Permanent Value" goal relative to the status quo management?

Two critical dimensions of this question are of explicit interest to ODF: (1) the financial viability of each alternative and (2) the conservation outcomes of each alternative. Throughout the evaluation process, the Panel shall continue to consider these dimensions of the overarching questions:
• How likely is it that the proposed alternative management approach will increase financial viability relative to the status quo management? What are the opportunities to improve financial viability?
• How likely is it that the proposed alternative management approach will increase conservation outcomes as compared to the status quo management? What are the opportunities to improve conservation outcomes?

Overall, the Panel will evaluate the available evidence on the relative performance of five stakeholder-defined alternatives within six major topic areas (see Section 3). Each Panel member will lead the assessment within one major topic area, contribute to the development of other areas, collaboratively work on cross-cutting issues, and jointly contribute to review and synthesis of the overall findings.

2.2 Evaluation Approach

2.2.1 Methodology for Assessment of Alternatives
The Science Panel’s assessment will be predominantly qualitative, based on literature review, professional experience and expertise, and existing quantitative analyses where available. The primary outcome of the Science Panel will be to evaluate the weight of the available evidence to provide the best summation on the state of knowledge with regard to each issue. Within that state of knowledge, there will be uncertainty, gaps, variability and unknowns. The task of the Science Panel will be to determine what conclusions can be made (and what conclusions cannot be made) based on the available evidence and to report on the level of confidence in those conclusions based on the current science.

When evaluating each alternative in terms of the focal issues within a particular major topic area, the panel is asked to consider the following question:

1) What is your rationale and evidence?
   a) Relevant mechanisms
   b) Support in the literature and other research (strength, agreement)
   c) Overall confidence
2) What are the critical uncertainties affecting your assessment?
3) Are there likely to be strong regional differences in this assessment?
4) Recommendations
   a) How could the analysis of this alternative be improved (data, analyses, better definition/specification)
   b) How could the alternative be adjusted to improve its performance?

2.2.2 Addressing Uncertainties
Uncertainties, knowledge gaps (both in terms of what is known and what can be known), alternative interpretations of similar facts and data, and divergence in scientific opinion will occur – therefore it is important that the Panel’s answers to the above questions are explained clearly, with well-documented rationales provided.

There will be uncertainties both in the existing scientific knowledge base as well as uncertainties in the extent to which all aspects of it can be directly applied to the context and geography of the Oregon State Forests. It should be expected that even the “best science” will have conflicting results as a consequence of different methodologies, different research questions, and different case studies with varying confounding factors. Panelists will strive to describe the range of realistic results and the apparent
reasons for that range, therefore informing policy-makers of the “space” within which their decisions will be placed. These uncertainties emphasize the importance of recommendations from the Science Panel regarding ongoing monitoring and evaluation and the types of questions that are most critical to the long-term implementation of any given policy.

3 Major Topic Areas and Focal Issues

Within the six-member Science Panel, each panelist is leading the analysis for one of six major topic areas.

<table>
<thead>
<tr>
<th>Major Topic Area</th>
<th>Science Panel Lead</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic outcomes</td>
<td>Richard Haynes</td>
<td>USDA Forest Service (retired)</td>
</tr>
<tr>
<td>Aquatic systems</td>
<td>Sherri Johnson</td>
<td>USDA Forest Service, Oregon State University</td>
</tr>
<tr>
<td>Terrestrial wildlife</td>
<td>Matthew Betts</td>
<td>Oregon State University</td>
</tr>
<tr>
<td>Plant communities</td>
<td>Klaus Puettmann</td>
<td>Oregon State University</td>
</tr>
<tr>
<td>Terrestrial abiotic environment</td>
<td>Bill Bourgeois</td>
<td>New Directions Resource Management</td>
</tr>
<tr>
<td>Social outcomes</td>
<td>Vicky Sturtevant</td>
<td>Southern Oregon University</td>
</tr>
</tbody>
</table>

Each of the summaries below has been provided by the topic area lead. The Science Panel invites the Subcommittee to provide comments so that priorities and gaps can be clarified and identified in a timely fashion.

3.1 Economic Outcomes

*Measure of Increases in Financial Viability: Sufficient revenue to fully implement approved forest management plans and provide the desired balance of environmental, social, and economic benefits. This is measured in terms of revenue vs. operating costs and will result in a sufficient FDF balance to cover cash flow cycles.*

1. Can we generalize the probable impacts on timber harvests of the various stakeholder proposals using information from the NW Forest Plan (i.e., Table I-1, page I-8 Final Plan)

2. What are different ways to understand the difference between even timber flows and even revenue flows
   a) The role of contract lengths and uncut volume under contract
   b) Estimates of past gross revenues to illustrate whether harvest quantities or prices are more variable
   c) What is the role of “money illusion” in setting expectations for revenue flows from ODF sales

3. Inferences for stumpage prices
   a) Not all MBF are equally valuable (log mix differences associated with the alternatives)
   b) Will ODF experience the ecosystem management penalty on stumpage prices

4. Inferences for opportunity costs associated with conservation areas; need to pose the question if benefits are worth at least the opportunity costs (the EU approach).

5. ODF contributions to economic prosperity at different scales (need to work with Vicki).

6. Quick review of how changes in logging systems to meet ecosystem management goals, has the potential to reduce stumpage prices.
7. How the decision discussion might change if it was reframed (in an economic context) as seeking greater compatibility rather than tradeoffs among goals
8. How might we make relative risks explicit in the problem framing

Measures of Increased Conservation Outcomes: Increases in conservation can be described in terms of the (a) acres being protected for conservation, (b) the functionality of those acres, and/or (c) how those conservation areas will grow over time either in terms of size or functionality. For the conservation analysis benefits are focused on aquatic and terrestrial wildlife.

3.2 Aquatic systems
In terms of aquatic systems, Greatest Permanent Value includes but is not limited to:

- Productive aquatic systems that provide high quality water onsite and to downstream communities
- Adequate availability of properly functioning aquatic habitats for salmonids and other native fish
- Diverse riparian ecosystems that protect water quality, provide high quality detrital and invertebrate contributions to stream food webs and structural material for habitats.

As part of the discussion of proposed alternative management approaches, the analysis will evaluate the potential conservation outcomes of alternatives, compared to the status quo management. We acknowledge that there will be uncertainties both in the existing scientific knowledge base as well as uncertainties in the extent to which all aspects of it can be directly applied to the context and geography of the Oregon State Forests. We expect to discuss the tradeoffs among alternatives because even the "best science" will have conflicting results as a consequence of different methodologies, different research questions, and different case studies with varying confounding factors. Topics to be evaluated from the literature with discussion of potential responses and tradeoffs associated with the proposed alternatives include:

Riparian Functions: Varies by stream type. In general riparian areas provide large wood recruitment to streams, shade, nutrient inputs, cool/humid microclimates. These functions in turn create high quality aquatic habitat for fish and amphibians.

- Maintaining Cool Stream temperature
- Potential for inputs of large wood from (?) disturbances (both stream adjacent and upslope)
- Abundances and diversity of aquatic invertebrates, which serve as food resources for vertebrates
- Other water quality responses including nutrients

Instream Conditions
- Changes in availability and quality of habitat for salmonids and other native vertebrates

Watershed Functions
- Prevent fine sediment delivery to streams from roads
- Changes in water quantity associated with harvest levels-effects on aquatic biota
- Trends in these resources over time
3.3 Terrestrial wildlife

Given the time available for research and the unavailability of scenario planning for all proposals, it is highly unlikely that we are going to be able to provide quantitative information for terrestrial conservation, but we can provide degrees of risk for a series of indicators for each strategy. Below, I have provided some commonly used indicators for the maintenance of forest wildlife/biodiversity that have roots in ecological theory, as well as existing standards (e.g., Montreal Process; FSC). I have attempted to tailor these to the Oregon Coast Range and list preliminary data sources.

1. Stand-scale Wildlife Habitat
   a) Density of retained snags. Data sources: existing and proposed practices. Stand-level inventories? Data certainty: high
   b) Density of legacy trees. Data sources: existing and proposed practices. Stand-level inventories. Data certainty: moderate
   d) Stand-level vegetation diversity (including non-conifer vegetation [forage], structure and composition). Data sources: Previous scientific studies on ODF ground (e.g., Cahall et al. 2013, Jenkins et al. 2013). Data certainty: high
   e) Intensity of herbicide use (i.e., number & type of applications) Data certainty: high

2. Landscape-scale Wildlife Habitat
   a) Landscape-scale age-class structure. Data sources: ODF forest inventory, information on average rotation ages, data on historical range of variation (HRV) for Oregon Coast Range (e.g., Wimberly et al. 2000, Spies and Johnson 2007), age-class projections under various scenarios. Data certainty: moderate
   b) Percentage of the landscape in various age-classes and compositional types that are historically common, but are negatively influenced by intensive forest management.
      i. Mature/ Old Growth forest
      ii. Complex early seral forest
      iii. vernal pools
      iv. small non-forest openings
      Data sources: current and projected forest inventory, HRV references, studies on wildlife thresholds (e.g., Betts et al. 2010, Ellis and Betts 2011). Data certainty: moderate
   c) Landscape pattern/ degree of fragmentation. Data sources: spatial forest inventory (e.g., GNN), expected landscape pattern (qualitatively estimated) under various scenarios, previous research on landscape pattern and wildlife in the Coast Range (McGarigal and McComb 1995). Data certainty: high-moderate
   d) Percent High conservation value forest (HCVF). Date sources: ODF inventory. Data certainty: unknown
   e) Habitat amount/ likely population trajectories for T&E species. Data sources:
      http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp, scientific literature on habitat associations on T&E species – particularly those negatively

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2 https://ca.fsc.org/regional-fm-standards.201.htm
influenced by forest management (e.g., marbled murrelet, spotted owl, Pacific fisher). Data certainty: high-moderate
f) Percent of landscape in intensive plantation management. Data sources: literature on species negatively influenced by intensive management (Betts et al. 2013), data on proportion of landscape in intensive management. Data certainty: moderate
g) Percent of landscape in representative protected areas (age class, forest type). Data certainty: high

Other considerations

The considerations below are part of an effective landscape-scale terrestrial wildlife plan, but relate more to the financial resources available than management treatments themselves.

- Wildlife/biodiversity monitoring. Will resources be available to conduct true adaptive management where species and ecosystem responses to forest management plans are monitored?
- Wildlife/biodiversity inventory. Will resources be available to determine locations of HCVF?

3.4 Plant communities

1. Impact of management on trees
   a. Overstory/established tree development (measured as density, growth)
      i. Tree growth and mortality: Models are pretty good for even-aged, evenly spaced Douglas-fir (ODF has data on performance from MBG 2004)
      ii. More uncertainty about performance
         1. of other species (probably ok for hemlock, red alder)
         2. in diverse structured forests, e.g., adjacent to gaps, in understories
         3. with insect and disease occurrence (some info on SNC)
         4. in terms of wood quality in diverse-structure forests, e.g., adjacent to gaps
      iii. Impact of management on above-ground carbon stocks can be fairly well documented (using volume information from inventories or growth models to calculate carbon stocks). There is high/more uncertainty about impact of management on below-ground carbon stocks.
   b. Tree regeneration (measured as density, growth)
      i. Seedling establishment and early growth in plantation is pretty well documented (and successful) for Douglas-fir
      ii. Limited information about growth performance of Douglas-fir (and hemlock) in understory settings
      iii. More uncertainty about performance (both after clearcutting and in understory settings) of
         1. other species
         2. natural regeneration (all species)

2. Impact of management choices on understory vegetation
   a. Amount (typically measured as plant cover)
      i. Good information about the amount of vegetation during the regeneration phase in intensively managed plantations
      ii. Good information about the general relationship between overstory density and total understory vegetation (including impact of thinning).
iii. Some information is available about forage for large mammals (deer, elk), mainly as cover estimates for shrubs and herbs in both settings.

iv. Limited information about invasive (exotic species)

v. Limited information about bryophytes and lichens

b. Diversity (measured as species diversity)

i. Some general information about the overall species diversity in plantations and understory settings.

ii. Some information about species groups, such as early and late successional species.

iii. Very limited information about species of concerns

c. Function (support of ecosystem processes, tough to measure, often presence assumes contribution)

i. Some information about basic relationship between overstory density and flowering, fruit production, as examples of contributions to food web; see also 1.a.iii (carbon storage) and 2.a.iii (forage production), wildlife habitat (M. Betts) and riparian protection (S. Johnson)

3. Impact of management on variability (spatial, time)

a. Good information about spatial variability among stands (age class distribution, species, structural groupings)

b. Less information about spatial variability within stands

4. Impact of management on disturbances (measured as mortality or amount salvage logged)

a. Good information about potential wind damage (total height and height/diameter ratio)

b. Insects: Interpretation mostly limited to extend of selected plant species and thus to acreage with susceptible species/sizes.

c. Diseases: most information about SNC and laminated root rot, little about others, acreage with susceptible species/sizes.

d. Fire: good information about fuel loading and fire potential (e.g., FVS fuel extension)

5. Special considerations, impact of management on vegetation as part of:

a. spotted owl and marbled murrelet habitat (in conjunction with M. Betts), good information about species habitat needs.

b. riparian areas (in conjunction with S. Johnson), good information about development of riparian vegetation

c. snags and downed wood. Good information about self-thinning/natural mortality in even-aged stands through mortality functions in growth models. High uncertainty/variability after disturbances.

3.5 Terrestrial abiotic environment

Given the lack of geographic continuity of the ODF managed lands, a foundation for evaluation of the Forest Management Plans (FMP) has to be identified. I believe this could be the Montreal Process Criteria and Indicators. It is internationally accepted, includes Criteria and Indicators for the social, economic and environmental requirements of the GPV and thus provides credibility for the BOF when answering questions from critics, which are to be expected regardless of the management plan adopted. It is also consistent with the vision, goals, principles and Oregon Sustainable Forest Management indicators identified in current FMPs.

The preferred approach to developing a management plan is evaluating the achievement of the vision, goals and targets using a spatially explicit strategic plan for the management area relative to the desired balancing of the maintenance of ecological integrity with socio-economics. Given this is not possible
due to the geographic discontinuity of the ODF managed lands and the lack of funding to do the 
scenario building, the modeling has to be based on what is available, primarily forest economics, and the 
qualitative evaluation with an emphasis on professional experience and available science. However, 
using the existing Structure-based Management (SBM) concept is a realistic approach, provided it is 
understood that this may not achieve the desired habitat goals across landscapes with a matrix of land 
owners, unless there is agreement with these organizations to work collaboratively in achieving the 
habitat goals.

Regardless of the management plan adopted by the BOF, risks to the forest values will occur. The 
challenge is to recognize these risks and make the social choice to minimize their occurrence while 
moving towards the balancing of the ecological and human well-being. These constraints make it 
essential that the FMP include a significant component of tactical implementation planning on each 
management block before the guidelines or operational constraints are applied in operational plans. 
Without this component, there is a high probability for failure to achieve the social, economic and 
environmental intent of the GPV. Assuming this requirement will be adopted by the BOF, the following 
focal topics will be used in assessing the 5 Alternative Plans relative to producing the basis for building 
an acceptable FMP to meet the GPV objectives and the best option for revenue from ODF forest lands.

The terrestrial abiotic environment topics for evaluation of the Alternative Plans will be:

1. **Soil conservation**
   a) Soil productivity
      i. Forest management – thinning, fertilization, vegetation management
   b) Soil erosion
      i. Forest management related soil disturbance
      ii. Riparian management related to stream bank and riparian area soil disturbance
   c) Terrain stability
      i. Terrain assessment and planning

2. **Water conservation**
   a) Riparian management
      i. Soil conservation within riparian management areas
   b) Watershed management
      i. Seral stage distribution affecting water yield

3. **Carbon management**
   a) Forest related carbon sequestration
      i. Carbon storage within forest stands over time
   b) Forest fiber utilization
      i. Carbon management through full utilization of economic forest fiber
      ii. Carbon management through encouraging wood products manufacturing issues

1. The FMP will reflect the social decision by the BOF regarding the priorities and associated risks 
to balancing the economic, social and environmental outputs from the ODF forest managed land 
base. This should be the outcome of the evaluation of scenarios (Alternate Plans) leading up to 
the approved FMP. Without the willingness of the BOF to clearly articulate this, the public will 
be uncertain as to what is expected and it will provide critics an opportunity to negatively 
impact the public acceptance.

2. The social decision to focus current FMPs on timber production to generate revenue while trying 
to provide the needs for fish, wildlife and other values does not necessarily achieve the desired
goals of the non-timber resources. However, this was a social choice made by ODF and BOF. This resulted in a timber management approach with the non-timber forest resources included as constraints on extraction of timber. This approach is out of step with the ecological management focus where timber becomes an output of the FMP, not an input. This is not the most desirable for those stakeholders who are focused on the non-timber resources and leaves the BOF and ODF vulnerable to criticism as being out of step with balancing ecological integrity and socio-economics.

3. There is a lack of overall ODF targets and District targets for each of the FMP goals. Without these coupled with the application of active forest management and a monitoring program to show progress, the BOF puts itself in a vulnerable position to address criticisms. In some instances the desired outcomes are identified in the FMPs, which is welcomed. This appears to be a results orientated approach which is good, but without the targets and monitoring, the public and BOF cannot justifiably support the implementation of the FMP. The analytical process of balancing these targets would be very useful to the ODF and BOF in arriving at a balanced FMP, even though it is probably going to be based on SBM and not spatially explicit strategic level scenarios involving habitats and timber.

4. The nature of the situation outlined above and the lack of specific information provided in the Alternative Plans limits the specificity of the analysis. Consequently, the comments on the Plans and a possible integrated Plan will be restricted to qualitative assessments and guidance to the ODF in conducting their analysis.

5. Overall air quality assessment and management is not within the expertise on the panel. As it relates to forest management, carbon sequestration is the most important aspect. If the BOF wants more in the area of air quality (e.g., smoke management) it has to be obtained outside the current panel.

6. The ODF cannot commit to managing for the habitat needs across the landscape due to the ownership mosaic that exists in some places. Therefore, the ODF should assess their contribution for each critical habitat type based on the amount of it that exists within their management area compared to the region. This would provide an ODF target regarding their contribution to the overall habitat protection.

3.6 Social outcomes

Oregon Administrative Rules (Division 35, Management of State Lands) list resources and land designations that suggest the following social benefits:

- Recreation: hiking and mountain biking; camping, etc.
- Non-timber forest products: firewood mushrooms, floral, etc.
- Forest resources which contribute to the forest industry and community vitality
- Public access for economic benefit: grazing leases, mining contracts, transmission easements
- Public access for cultural, historic, and esthetic benefit: hunting, fishing, wildlife and plant viewing, scenery
- Ecosystem services: protection against floods, landslides, and wildfire; clean air and water; fish and wildlife habitat
- Monitoring, research and demonstration areas that increase public and scientific understanding and capacity for stewardship

Using information specifically derived from studies and/or existing inventories of Oregon State Forests, or in their absence, from studies and experiences elsewhere, we will attempt to assess how the
following social uses and benefits will be affected by the proposed alternatives. As appropriate, we will work with other Science Panelists in our assessment.

1. Public uses of forests – Including recreation and uses such as collecting forest products
2. Economic benefits – How State Forests contribute to forest community stability. Other economic benefits such as mining, grazing and energy transmission will be considered, when appropriate
3. Ecosystem benefits - How the social benefits associated with the provision of ecosystem services, such as wildlife habitat and watershed stability, would be affected
4. Public engagement and stewardship – The nature and extent of public understanding of forest management in the region and opportunities for building public confidence and engagement in forest management through processes such as advisory committees, public involvement, and public review
5. Institutional landscape – A description of the larger context within which State Forests exist, including both public and private forest jurisdictions, laws, and policies

Ongoing social change – How ongoing social changes, such as population growth, distribution, composition, ethnicity, and aging might change uses and expectations of State Forests and the subsequent acceptability of alternative management approaches
Appendix A

Potential Plan Components and Alternative Revenue Sources/Funding Strategies Related to FMP

Discussion Document prepared by ODF

The Stakeholder Group formulated 5 potential alternatives to the current forest management plan. All of these plans have been forwarded to the Science Team for review. In addition, the Subcommittee of the Board of Forestry, suggested that ODF dissect the Stakeholder Group Proposals into individual components and that the individual components also undergo the science review. For example current FMP riparian strategy, FPA riparian strategy, and WA DNR HCP riparian strategy are each a component of different Stakeholder Group proposals—any one of which could be a part of the new plan. This process provides a granular level understanding of Stakeholder ideas that have been proposed to increase financial viability and increase conservation outcomes. This has been referred to as the “Building blocks” process. A science review of each of these components will provide scientific underpinnings for Board decision making.

During the May 2014 Subcommittee meeting the Subcommittee members reviewed and approved the “building blocks process” and components list (below). The following list of “plan components” reflects work to date and is organized around key strategies which are needed to implement a future forest management plan. The components were derived from Stakeholder Group plan proposals; ODF, ODFW, USFWS input; and State Forest Advisory Committee. The forest management planning rule states that any plan for State Forests must be “based on the best available science”. Therefore, the science team will evaluate each of the Stakeholder Group full proposals as well, to the extent possible, each of the individual components. Following the science review, a draft plan summary will be assembled by the Subcommittee for consideration by the full Board. This draft summary will be based on the components list generated through the Alternative Forest Management Plan process, Stakeholder Group proposals, Forest Trust Land Advisory Committee policy advice for the Board, review of options and components from an implementation perspective by State Forest Advisory Committee, ongoing public outreach, and the Science Review findings.

Forest Management Strategies

- Structure Based Management: no change to current management
- Modified Structure Based Management
- All operable upland acres managed on a 40 year rotation
- Land allocation approach – 60 Year Rotation
- Framework for Catastrophic Restoration
- Manage Across Boundaries
- Ecological Forestry-Franklin & Johnson
Landscape Management Strategies (Legacy structures/Wildlife/Conservation Strategies)

- Current FMP Green Tree Retention, Down-wood, and Snags
- FPA Green Tree Retention
- Modified Green Tree Retention
  - 4-8 TPA (2 trees must be largest trees in stand)
  - 16''+
  - Average across sale ok, does not need to be distributed across every acre but good dispersion throughout sale would be best.
- WDNR Green Tree Retention

Aquatic and Riparian Strategies (Protection/Enhancement/Conservation Strategies)

- Current FMP Riparian Strategy
- FPA Riparian Strategy
- Washington DNR Riparian Strategy
- USFS Northwest Forest Plan Riparian Strategy
- Steep Slope Strategy: Prohibit harvest on slopes 70% and over
- Current FMP Slope Stability/Debris Flow
- Legacy Road/Hydrologic Disconnection Strategy: (Assess and decommission legacy roads, establish 10% goal for hydrologic connectivity)

T&E/Species of Concern Strategies

- Current Marbled Murrelet Management Areas
- Current Owl Circles
- Terrestrial Anchors
- Aquatic Anchors
- Habitat Conservation Plan (HCP)
- Safe Harbor

Strategies for Specific Resources

- Conservation Fund
- Stream enhancement/fish passage
- Upland Rehab/Enhancement fund/strategy
- Big game habitat management
- Current State Forests Road BMP

Strategies for Recreation

- Recreation best management practices to protect water quality
Alternative Revenue Sources/Funding Strategies Related to FMP (NOT reviewed by Science Team)

- Recreation Fees
- General Funds from Legislature
- Change Revenue Formula: (More to ODF/Counties less to General Fund)
- County Revenue Distribution: Pooled Concept
- Sale of scattered tracts
- Land exchanges that benefit conservation
<table>
<thead>
<tr>
<th>Broad Area</th>
<th>Panelist</th>
<th>Skills/Topics from Bios (apologies for over-simplifications!)</th>
<th>GPV Component:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>Vicky Sturtevant</td>
<td>Social dimensions of forest management. Community involvement in social assessment, monitoring, planning, stewardship.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interactions and gap influences. Stand structure influence on habitat/microclimate.</td>
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<td></td>
<td></td>
<td>emerging forest resources sector. Community resiliency.</td>
<td></td>
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<tr>
<td>Ecology</td>
<td>Sherri Johnson</td>
<td>Stream food webs, stream temperature, stream nutrients, hydrology, and ecosystem functions responding to forest-stream interactions.</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

X = potential lead  
O = potential contributor  
? = unknown (but plausible)
ODF Science Panel: Terms of Reference

This document provides the Terms of Reference for the Science Panel, including the goals and objectives, the overall approach, guiding principles for panel members, instructions and a structured set of analytical questions we would like the panel to answer, a schedule, and description of the outputs.

1 Background and Context for this Project

1.1 Management Overview
The State Forests Division of the Oregon Department of Forestry (ODF) manages about 3% of Oregon’s forested lands. Most of the forests managed by ODF (about 700,000 ac) are directly owned by the Board of Forestry (BOF); but additional Common School Forest Lands (CSFL; about 120,000 ac) are owned by the State Land Board and managed under contract by ODF. Most State Forest holdings are concentrated into six State Forests: the Clatsop, Elliott, Gilchrist, Santiam, Sun Pass and Tillamook.

The Mission of the BOF is to “lead Oregon in implementing policies and programs that promote environmentally, economically and socially sustainable management of Oregon’s 28 million acres of public and private forests.” Consistent with this mission, BOF-owned lands are managed to “secure greatest permanent value – defined as 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.” Common School Forest Lands are managed to “obtain the greatest benefit for the people of this state, consistent with the conservation of this resource under sound techniques of land management, maximizing long-term revenue to the Common School Fund, within the context of environmentally sound management.”

Regardless of ownership, there is a need to find a balance between income and the maintenance of sustainable forests: “BOF guidance for managing BOFLs calls for maintaining them as forest lands and actively managing 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 includes other forest resource values such as fish and wildlife habitats, recreation, and protection of soil, air, and water. These concepts of sustainability are consistent with the goals for CSFLs.”

1.2 The Problem
The Board of Forestry has concluded that the Northwest and Southwest Oregon Management Plans for State Forests do not provide sufficient revenue to manage the forests and are searching for ways to improve the financial viability of the Division. In response to the under performance of the current plan and the recent economic downturn, the State Forest Division has reduced expenditures by 30 percent

1 Both quotations: http://www.oregon.gov/ODF/Pages/state_forests/state_forest_management.aspx [Accessed 19-August-2013].
through staff reductions and other cost reduction measures. While this has prevented the division from going broke, it has significantly diminished critical investments in recreation, young stand management, research and monitoring, inventory, and policy planning and support. The staff reductions have created workloads that are unsustainable over time. With the loss of these critical investments and staff capacity the Division is losing its ability to deliver the outputs required in current forest management plans, to maintain and enhance the forests as an environmental, economic and social asset for Oregon, and to protect the forests’ capacity to produce the sustainable benefits Oregonians expect and require, today and into the future.

1.3 The Challenge
To continue to provide sustainable forest management, ODF needs to find ways to increase revenue while also meeting the other ecological and recreational objectives under the mandates of the Board of Forestry. The BOF directed ODF to develop a plan that increases financial viability while also increasing conservation outcomes. To meet this challenging goal, ODF is adopting an exploratory approach coupled with scientific analysis and peer review, two classic methods of scientific inquiry.

2 Overall Approach

2.1 Alternatives Developed by Stakeholder Team
During October, 2013 to February, 2014 ODF convened a Stakeholder Team, charged with eliciting ideas for a variety of management options from the broad group of forest stakeholders, including interests from industry, counties, environmental advocates and others. These ideas were discussed, debated and refined by the Stakeholder Team, with support by contracted analytical assistance. The initial goal of the Stakeholder Team was to agree on a reduced set of management options for independent analysis by the Science Panel. The Stakeholder Team developed a set of five management options but was not able to agree upon how to further reduce the set to be evaluated by the Science Panel. Given the diversity of interests across the Stakeholders, reducing the set of potential alternatives may have been unrealistic goal to start with. Another serious limitation is that most of the Stakeholder-generated alternatives contain a lack of detail and specificity, which will make their evaluation more challenging and sensitive to assumptions about those details.

2.2 Evaluation of Alternatives by Science Panel
ODF has convened a Science Team to evaluate the alternatives put forth by the Stakeholder Team. The Science Team consists of the Science Panel, the group of experienced scientists who will perform the evaluations, and the ESSA Team, contracted to facilitate the work and progress of the Panel. The roles of these two groups are described in greater detail in Sections 9 and 10.

The work of the Science Panel will be to analyze these alternative forest management approaches and, where practical, their component parts, with the ultimate goal of having the analysis contribute to the development of a new plan that will provide increased (or at least stable) revenue while also meeting the other objectives under the mandates of the Board of Forestry and the State Land Board. The science
panel will include expertise in the three principal domains governing forest management: economic, environment and social values.

The analytical results of the Science Panel will be used by ODF for a subsequent fine-filter analysis (e.g., modeling and GIS analyses) of the management options towards finding one on which all stakeholders can agree and financial viability and conservation outcomes are enhanced.

3 Objectives of the Science Panel
The overall goal of the Science Panel is to provide an independent, expert-based evaluation of the performance of each of the strategic alternatives.

Consistent with that overall goal, the objectives of the Science Panel are to:

- Provide a value-neutral evaluation
- Base assertions and assessments on evidence (defensible science and support in the literature)
- Provide quantitative assessments where possible (e.g., existing analyses), and qualitative where not
- Evaluate the alternatives against objectives/criteria that reflect the core management values of ODF (i.e., those embedded in the definition of Greatest Permanent Value\(^2\))
- Work collaboratively with the other members of the Panel
- Be open to new evidence and alternative interpretations of the available evidence
- Explicitly define key questions and uncertainties associated with each alternative
- Acknowledge the potential influence of uncertainties on the conclusions
- Complete the work in a timely manner, to best assist ODF and the BOF
- Strive for consensus on major conclusions of the Panel
- Accurately document where there is disagreement within the Panel

The Science Panel will provide an evaluation based on the available information and scientific literature, assessing what the current state of knowledge is on the scientific topics that can inform decision-making. However, the Panel is not charged with deciding which alternative management option or components are implemented, or of making a definitive recommendation of a “best” alternative. The sole focus of the Panel is to evaluate the weight of evidence from a science perspective. Such an evaluation will inform the decision-making process, but decision-makers must also weigh other considerations that are outside of the scope of this Science Panel.

\(^2\) Greatest Permanent Value is defined in Section 4 “Evaluation of Alternatives”

ESSA
4 Evaluation of Alternatives
This section describes the structure of the approach by which the Science Panel will evaluate the alternative management options, synthesize the relevant evidence and provide insights on the questions being asked.

4.1 The Key Question of the Panel
The overall goal of the Panel is to answer this question:

How does each of the proposed alternative management approaches perform against the "Greatest Permanent Value" goal relative to the status quo management?

Two critical dimensions of this question, which are of explicit interest to ODF, are the financial viability and conservation outcomes of each of the alternatives. Throughout the evaluation process described below, the Panel should continue to consider these dimensions of the overarching question:

- How likely is it that the proposed alternative management approach will increase financial viability relative to the status quo management? What are the opportunities to improve financial viability?
- How likely is it that the proposed alternative management approach will increase conservation outcomes as compared to the status quo management? What are the opportunities to improve conservation outcomes?

4.2 The Greatest Permanent Value
The definition of the Greatest Permanent Value (GPV) is shown below (source: ODF documents).

**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) Recreation

The definition of GPV guided the development of six "major topic areas" around which to organize the Panel's evaluation. The six major topic areas are:

1. Economic outcomes
2. Aquatic systems
3. Terrestrial wildlife
4. Plant communities
5. **Terrestrial abiotic environment**
6. **Social outcomes**

### 4.3 Structure of Overall Panel Evaluation

Overall, the Panel will evaluate the relative performance of five stakeholder-defined alternatives within each of the six major topic areas listed above.

The table below shows a conceptual breakdown of the overall task. Actual assignment of Panel members to sections will depend on expertise of final panel members and appropriate distribution of effort.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Lead</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>Alternative 4</th>
<th>Alternative 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic outcomes</td>
<td>A</td>
<td>Assessment</td>
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<td>Assessment</td>
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<td>Assessment</td>
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<td>Aquatic systems</td>
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<td>Assessment</td>
<td>Assessment</td>
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<tr>
<td>Terrestrial wildlife</td>
<td>C</td>
<td>Assessment</td>
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<td>Assessment</td>
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<tr>
<td>Plant communities</td>
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<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
</tr>
<tr>
<td>Terrestrial abiotic environment</td>
<td>E</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
</tr>
<tr>
<td>Social outcomes</td>
<td>F</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
<td>Assessment</td>
</tr>
</tbody>
</table>

**NOTE:** Assumes 1 economic expert (A), 4 ecology experts (B, C, D, E), and 1 social expert (F).

### Guiding Principles for Designing Structure of the Science Panel Evaluation:

- **EFFICIENCY:** To be most efficient with limited time, each Panel member should focus on a subset of the entire task. This concentrates the efforts of each Panel member but also reduces the complexity of synthesizing/integrating the outputs across numerous members.
- **COVERAGE:** The assignment of focal areas to Panel members should ensure thorough coverage of the entire problem space, though there may be desire to focus additional effort on certain pieces (as directed by ODF).
- **EXPERTISE:** Panel members’ time should be prioritized toward the pieces on which they have the greatest expertise.
- **CONSISTENCY:** The same member(s) should assess a particular objective across all alternatives to ensure that there is consistency in how each alternative is evaluated (i.e., ultimately the differences among Alternatives are of greatest interest).
- **FAIRNESS:** The assignment of Panel members to sections should be done so as to distribute the workload relatively evenly among the group.
• **PEER REVIEW:** Panel members will review, discuss and provide input on the other sections (the Panel will collectively be authors of the whole product, and therefore must review and accept the whole product).

• **RESPONSIBILITY:** Each section of the entire task should have a lead or co-leads to clearly identify who has the responsibility for 1) performing the assessment, 2) documenting the assessment, and 3) making final decisions on how to address/resolve input from the rest of the panel.

• **LENGTH:** The final assessments within each grid cell should be constrained (e.g. 2 page maximum) in order to keep the overall length manageable (additional details can be included in appendices).

### 4.4 Question Structure for Panel

For each section of the overall assessment (i.e., each grid cell from table above), the panel is asked to answer the following overarching question:

**How would Alternative X perform in terms of Major Topic Area Y compared to current, status quo management?**

For example:

*How would the **70/30** alternative perform in terms of **Aquatic Systems**, compared to current, status quo management?*

*or,*

*How would the **FMP 2.1** alternative perform in terms of **Social Outcomes**, compared to current, status quo management?*

1) **What is your rationale and evidence?**
   a. Relevant mechanisms
   b. Support in the literature and other research (strength, agreement)
   c. Overall confidence
2) **What are the critical uncertainties affecting your assessment?**
3) **Are there likely to be strong regional differences in this assessment?**
4) **Recommendations**
   a. How could the analysis of this alternative be improved (data, analyses, better definition/specification)
   b. How could the alternative be adjusted to improve its performance?

In application, the Panel will actually be addressing this question for a select set of focal issues within each major topic area. The aggregate evaluation of those particular focal issues will thus collectively address the question above at the scale of the major topic area.

Uncertainties, knowledge gaps (both in terms of what is known and what can be known), alternative interpretations of similar facts and data, and divergence in scientific opinion will be ubiquitous issues – therefore it is of paramount importance that the Panel's answers to the above questions are clearly explained with well-documented rationales provided.
There will be uncertainties both in the existing scientific knowledge base as well as uncertainties in the extent to which all aspects of it can be directly applied to the context and geography of the Oregon State Forests. It should be expected that even the “best science” will have conflicting results as a consequence of different methodologies, different research questions, and different case studies with varying confounding factors. Panelists must strive to describe the range of realistic results and the apparent reasons for that range, therefore informing policy-makers of the “space” within which their decisions will be placed. These uncertainties emphasize the importance of recommendations from the Science Panel regarding ongoing monitoring and evaluation and the types of questions that are most critical to the long-term implementation of any given policy.

4.4.1 Scope of the Issue Being Evaluated

Temporal scope

The temporal extent of the evaluation is to consider the impacts of alternative management approaches over the next 50 years (medium term). However, in order to accurately assess medium-term impacts, it may be necessary to consider the short-term impacts and the Panel should identify where the short-term impacts are expected to be markedly different than the medium or longer-term impacts. The general temporal resolution is anticipated to be that of decadal changes and impacts. For the task presented to the Panel, understanding the precise impacts in a particular year is not as important as understanding the broad patterns of change over decades.

Spatial scope

The spatial extent of the evaluation is the six Northwestern Oregon districts: Astoria, Tillamook, Forest Grove, West Oregon, Western Lane, and North Cascades. The spatial resolution will be variable depending on the nature of the specific components and objectives being evaluated. Particular issues may be considered at different scales as appropriate, from individual districts, to zones within each district, to watersheds or sub-watersheds, to cutblocks, to riparian buffers. However, for some issues it will also be relevant to consider the broader spatial scope beyond these districts, up to the scale of all Oregon’s forests (i.e., ODF only manages approximately 3% of Oregon’s forest lands). For example, when assessing the potential impacts on rare species, communities, or ecosystems, understanding their abundance or rarity throughout the rest of Oregon’s forests may provide important context.

4.5 Consideration of Sub-objectives / Performance Measures

For the Panel to fully address the questions identified above, additional specificity beyond the high-level definition of GPV and the major topic areas will be necessary. The table below provides examples of additional sub-objectives, outcomes and/or performance metrics that may be helpful for the Panel to consider in their evaluations. The list is neither exhaustive (i.e., there are many other specific issues that are not listed), nor compulsory (i.e., the Panel members are not obligated or expected to address all of these specific issues) – it simply provides some examples of additional specificity.

The Science Panel cannot possibly evaluate each alternative management option at the scale of every attribute listed below. However, the Panel should consider some of these specific issues directly or
Indirectly in their evaluations of the alternatives within each of the major topic areas and/or Panel members may choose to address additional specific elements beyond the examples provided.

<table>
<thead>
<tr>
<th>Economic</th>
<th>Conservation</th>
<th>Social</th>
</tr>
</thead>
</table>
| - Financial sustainability  
- Net return on asset value  
- Sustainable and predictable forest products  
- Revenue  
  - Harvested volume  
  - Harvested quality  
- Revenue to ODF  
- Revenue to Counties  
- Reliability / consistency  
- Diversification of revenue streams  
- Recreation costs and revenues  
- Conservation “fund” or cost of conservation actions  
- Contribution to local economies | - Improved conservation outcomes  
- Water quality goals  
- Native wildlife habitats  
- Properly functioning aquatic habitats  
- Non-game species  
- Game species  
- Species at risk (e.g., Marbled Murrelet, Spotted Owl)  
- High Value Conservation Areas  
- Protected areas / zones  
- Ecosystem Resilience  
- Risk of catastrophic fire  
- Structural diversity  
- Age distribution (affects harvest too)  
- Riparian protection  
- Stream sediment / water quality  
- Landslides / slope stability  
- LWD and recruitment  
- Terrestrial diversity  
  - Animals (mammals, birds, reptiles, amphibians)  
  - Plants  
- Aquatic organisms  
  - Aquatic protection  
  - Aquatic diversity | - Community and government contributions  
- Recreation and education opportunities  
- Broad understanding and acceptance  
- Industry revenue  
- Jobs/employment rate  
- Employment certainty/variability  
- Recreational access  
- Types of recreation (fishing, hunting, ORV, hiking, camping, birding, biking?)  
- Contribution to local communities |

§ Attributes in italics are from the definitions of economic, environmental and social objectives used in the documentation of the final stakeholder meetings.

5 Deliverables

The Science Panel members will have two intermediate, internal deliverables:

1. Initial drafts (e.g., point form) of their assigned section(s) for the other members to review prior to the writing week

2. Final, revised versions of their assigned section(s) for inclusion in the final report following the writing week (deadline TBD)

The external deliverables from the Science Team to ODF are:

3. Final report

§ Delivery of the final report will include an electronic copy and a hard copy.
6 The Science Panel

6.1 Panel Expertise
In order to evaluate each of the alternative management options against each of the aspects of the Greatest Permanent Value, the Science Panel must collectively have extensive experience in the social, economic and ecological dimensions of forest management in the Pacific Northwest and within Oregon in particular. The Science Panel includes six members: one with expertise in the economic domain, one in the social domain, and four in the ecological domain. The heavy weighting of ecological expertise on the Panel reflects several important observations. First, the GPV objective represents a much greater diversity and specificity of ecological attributes than economic or social. Second, such breadth of subjects is similarly reflected in the disciplinary focus of various experts in the ecologic domain of forest management (i.e., forest ecologists, aquatic biologists, and wildlife specialists have complementary areas of specialization). Third, within the proceedings of the Stakeholder Team, it appeared that the diversity of concerns and the levels of uncertainty, disagreement and contention was greatest for the issues regarding ecological implications of different management approaches.

6.2 Panel Selection Process
Science Panel members were selected based on: 1) their expertise and experience in the fields relevant to the project, 2) their interest in participating as a member of the Panel and contributing to the current process, and 3) their availability to commit to the project schedule and deadlines given their existing workloads. Panel members were also selected based on achieving the desired breadth, depth and balance of expertise on the Panel.

Additionally, panel members were selected based on their geographical areas of expertise, with the goal to have a balance of both experts from within and outside of Oregon. While it is important for the Panel to have extensive experience within the Oregon context, outside experts may be able to bring creative ideas and different perspectives to the problem at hand. A Panel with a broader and richer knowledge base that is open and willing to learn from each other will produce the strongest, most beneficial outcomes for the overall process.

6.3 Panel Members
The members of the panel are summarized in the table below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Areas of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard Haynes</td>
<td>USFS (retired)</td>
<td>Economics</td>
</tr>
</tbody>
</table>
6.4 Structure of the Panel
The Panel will be chaired by the Science Team Lead.

The six members of the Panel will all have equal status and each will have the responsibility of leading (or co-leading) the development and refinement of particular sections of the evaluation (to be defined during the initiation of the Panel) and joint responsibility for reviewing and discussing the work of the other panel members.

Wherever possible, the Panel will strive toward consensus on assessments, conclusions and recommendations. In the case of minor disagreements and editorial issues, the section lead (or co-leads) will have discretion on how any differences should be resolved in the final revisions. In the case of major disagreements, the issue will be brought back to the entire Panel to review, discuss, and attempt to reconcile opposing views. If not possible the Panel will strive to at least clearly identify the areas of agreement and disagreement. The section lead (or co-leads) will still have final discretion over the main text of the section; however, dissenting members will be provided an opportunity to provide an addendum that documents and justifies, their alternative perspective, so that ODF and the BOF can understand both where and why there are contrasting views.

7 Project Timeline
The project comprises several distinct stages:

7.1 Project Development
The initial stages of the current project included defining the terms of reference (i.e., this document) and establishing the Science Panel as per the description above.

7.2 Science Panel Initiation
The goal of this stage is to get the Science Panel “up and running”, so they are prepared to do their work during the independent work period. The Panel initiation will be in the form of a 2-3 hour conference call. The objectives will include:

- Introduce the panel to each other and to the client representative, and allow panel members to hear first-hand from ODF how decision-makers intend to use their outputs
- Provide Panel members with the necessary background materials from ODF and the Stakeholder Team
- Review the instructions, and answer any questions they may have
- Review the analysis timeline and schedule conference calls
- Assign leads and/or co-leads for each of the sections, as appropriate
• Schedule 1-2 conference calls as check-in points to occur prior to the collaborative writing week

7.3 Independent Work Period
The Panel members will each independently (or with their co-leads) conduct a first draft (e.g., point form) of their analyses for their assigned questions for each management alternative. We expect to hold at least one conference call with the panel part-way into their work on this first draft, as a check-in point and to address any challenges or questions that have arisen.

7.4 Collaborative Writing Week
The panel will convene in Oregon (presumably Salem) for an intensive, 1-week working session to share and discuss their individual analysis results with each other, learn what questions of clarification may still need to be answered, and then refine and integrate their results as appropriate toward a final Science Panel report.

Multiple experts expand the breadth of knowledge and experience, increasing the chance of creative insight, while debate among experts provides critical review of assumptions, tending to remove statements that are inconsistent with existing literature and ecological, social or economic theory. The collaborative writing week is an efficient way to provide the panel with the necessary communication opportunities, both in a formal meeting setting and informally during evening meals, to achieve such benefits of internal peer review. It provides richer results, because reviewers work together, clarifying their areas of agreement and disagreement, and developing questions and conclusions which benefit from the synergies among their collective experiences and perspectives. It also brings greater depth and focus, by including the potential for in-person presentations of draft findings and opportunities for question-and-answers with stakeholders and the ODF.

This task is expected to be 5 days in duration, starting Monday morning (with panel members arriving Sunday evening) and lasting to mid-afternoon Friday (with panel members returning home Friday evening). A more detailed agenda and task process will be developed in advance of the writing week; however, key tasks and components of the week are outlined below.

*Internal sharing and discussion of collective results among the panel*

• Panel members share their findings for each management alternative, highlighting uncertainties and areas where additional input from the rest of the Panel would improve their assessment
• Where Panel members disagree for a given management alternative, these differences will be discussed to see if members can improve their alignment.
• Consensus is not a requirement, but the Panel will ultimately be required to explain and defend divergences in their findings
• For substantial disagreement, the Science Panel will decide whether it will be beneficial to assign a subgroup to further work on resolving divergent opinions and report back to the group on where the individual assessments of a particular topic converge or diverge
• After any attempts to reconcile areas of divergence (i.e., further plenary or subgroup discussions, as deemed appropriate), any outstanding disagreement will be noted for the report, where it will be documented and explained
• The Panel will participate in robust, open discussion and a healthy challenging of each other’s assumptions

Verbal summary to ODF

• Panel members prepare a short verbal summary of the key points from their collective findings to deliver to the ODF project team
• Panel members will engage in dialogue with ODF regarding their comments and critiques

Refinement of the analyses based on feedback

• Panel members debrief on the feedback and questions from ODF, focusing especially on any major concerns
• The Panel review and prioritize feedback from ODF and from within the Panel to determine which issues need to be addressed in their revised assessments
• Additional analyses if/as needed to address gaps and answer questions

Reporting

• Panel members write up their final assessments, starting from the initial draft versions and incorporating additional feedback and refinement, as per the Panel’s prioritization of issues
• Panel members discuss how to best present their collective results in their final report (including panel members writing text explaining any remaining divergence for a given topic)
• The Science Team discuss how to best present introductory and integrative sections (e.g., conclusions and recommendations) in the report and draft those sections
• Panel members complete (to the extent possible) their contributions to the final report
• Recommendations from the panel to the Science-Team Leader regarding the structure and content of the oral presentation to ODF, the BOF, and the Stakeholder Team.

These tasks will be addressed through a mix of plenary, sub-group and individual processes, as appropriate.

7.5 Finalization of Report
Following the collaborative writing week, the Science Panel will work collaboratively with the ESSA team to finalize the report. The Science Panel will be responsible for completing their written sections and providing any additional synthesis as appropriate (and reviewed by the Panel). The ESSA team will be responsible for additional organization, formatting and process description but will not make any changes to the actual content from the Panel without explicit approval.
The final report will facilitate a deep understanding among stakeholders and decision-makers regarding the Panel's methods and conclusions, ideally contributing to well-informed decisions about which management approaches are to be analyzed more rigorously by ODF.

7.6 Preparation and Delivery of Final Presentation
The Science-Team Leader will collaborate with the Stakeholder-Team Facilitator to present the findings of the two respective projects. Together they will deliver an oral presentation for Division staff, the State Forester, the Board of Forestry and Subcommittees, the Stakeholder Leadership Group, and members of the public. The intended outcome will be a broad understanding among stakeholders and decision-makers regarding the Panel's approach and conclusions. This presentation is expected to occur in Salem, Oregon.

8 Logistics
Conference calls:

- Conference calls will be held at intervals of 3 to 4 weeks, as necessary, facilitated by ESSA
- ESSA will schedule conference calls based on input from the Panel, striving for maximum attendance
- ESSA will organize the conference calls (and desktop sharing, as necessary) via GoTo Meeting

Collaborative writing week in Oregon:

- The writing week will occur **July 21 to 25, 2014**, in Salem, OR
- Panel members are expected to arrive Sunday evening and return home Friday evening
- The venue and associated logistics will be organized by ODF
- Details on transportation, accommodation and per diem expenses are included in the Science Panel subcontracts

9 Role of the Panel
The role of the Science Panel DOES include:

- Collaboratively and creatively exploring the problem and associated questions with other Panel members
- Applying both the depth and breadth of their expertise
- Assessing the available evidence with rigorous and structured thinking
- Providing a policy-neutral evaluation of the alternative management options
- Being open to new evidence or alternative interpretations
- Identifying key uncertainties and honestly evaluating the level of confidence in evidence and conclusions
- Attending the collaborative writing week
The role of the Science Panel DOES NOT include:

- Performing new quantitative analyses, simulations or modeling
- Resolving the key uncertainties
- Deciding which alternative management option will be implemented
- Making a definitive recommendation of the “best” alternative management option
- Debating policy issues or negotiating a preferred policy approach

10 Role of the ESSA Team
The overarching role of the ESSA team is to facilitate the work of the Science Panel toward an objective, value-neutral assessment of the alternative management options. The ESSA team will ensure that the work of the Panel adheres to the Terms of Reference and request revisions where there are deviations or content requiring further clarification. A significant advantage of the ESSA team is that it is predominately based in British Columbia with no direct involvement in the implementation of forest management plans in Oregon and with no vested interest in any of the alternatives or their respective outcomes. However, the team is still highly qualified, with extensive experience with forest ecosystems in the Pacific Northwest and with other similar science panels. The roles of individual members of this team are described below.

Science Team Lead and Panel Chair: Chair the Science Panel, lead all project meetings, manage the team and the project, client liaison.

Panel Manager: Support the Chair, manage and support the work of the Panel, participate in all Panel Meetings.

Data Gatherer and Team Support: Undertake collection of data and other informational inputs to the Panel’s work (no travel).

Forest Management Advisor: Help the team understand technical details of the forest management alternatives to be filtered and analyzed.

Expert Science Panel Advisor: Provide expert advice to the Panel Chair as needed (no travel).

11 Interactions with Stakeholders
It is anticipated that there will be minimal direct engagement between the members of the Science Panel and the Stakeholder Group. Therefore no formal schedule or protocol for such interaction has been developed. If the need arises to clarify specific points in the proposed alternatives during the work of the Science Panel, the Science Team Lead will confer with the Stakeholder Team Lead and ODF to assess the benefit and feasibility of direct interaction with stakeholders, and to determine an appropriate process as necessary.
12 Additional Technical Expertise
Panel members are permitted and encouraged to seek additional input on specific technical questions from other experts outside of the Science Panel. Indeed, the strength of their individual networks is an additional value of contracting highly experienced experts. However, when consulting with non-panelists on specific issues, Panel members will strive to keep any broader discussions, conclusions, and/or recommendations confidential prior to release of the final report.

If the Panel requires more substantial advice or input from outside the Panel, it may be possible to subcontract other technical experts for specific, defined tasks. If the need arises, the Science Team Lead and ODF will confer on the issue and determine the benefit and feasibility of such subcontracting.

13 Principles
The following is a list of principles to guide interactions among the Science Team:

- Be hard on the problem, easy on the people
  - Truly endeavor to listen to others’ points of view, and to understand them
  - It’s OK to have strong debate on evidence, methods, literature etc.; it’s not OK to challenge qualifications or competence of the other person
- Separate technical issues from policy issues
  - Distinguish comments based on evidence vs. comments based on values
- Respect time limits in agendas
  - State ideas concisely so that all can participate
  - Take some responsibility for monitoring one another and sticking to the right level of detail (respectfully identify when discussion gets “off track”, into the “weeds” or has reached its “peak”)
- Put recommendations in sequence
- Raise any concerns at the time an issue is discussed. Silence implies acceptance of the group’s agreed direction
  - Technical disagreements should be documented, periodically reviewed, and “checked off” once they are considered to be resolved by the people who had the disagreements.
  - Those who raise issues have the responsibility to state whether or not an issue is resolved to their satisfaction and with key caveats specified
- Respect the peer-review process that has been established (e.g. internal peer review)
  - Internal peer review is good! Multiple experts expand the breadth of knowledge and experience and increase the chance of creative insight. Debate among experts provides critical review of assumptions and tends to remove statements that are inconsistent with existing literature and ecological theory. In general, analysis improves the accuracy of expert opinion.
- Clarify where people agree (i.e., what is generally accepted) to build trust and confidence in tackling technical disputes.
- Where people disagree, clarify the specific nature of the dispute, which could involve:
- Differences in the definitions of terms
- Differences in methods used to compute a performance measure
- Differing assumptions about unknown parameters

- Work to achieve a triage on technical questions:
  - Issues which are well understood
  - Issues which cannot be known
  - Issues which could be resolved with further research, data collection or adaptive management approaches.

- Be open and honest about uncertainties, knowledge gaps and the level of confidence in evidence and conclusions
2015-17 Budget Request

Recreation, Education & Interpretation – Policy Option Package

What this budget request does:

ODF's program for managing state-owned forests is currently funded almost entirely with timber sale dollars. Revenues are insufficient to cover costs of managing these lands for a broad range of benefits, as required by law.

The law requires the State Forests Division to provide a range of social, environmental, and economic benefits for Oregonians. This request for General Fund dollars is targeted towards state forest services and programs that provide public benefits, but do not generate revenue.

This request would provide additional recreation and education opportunities to benefit all Oregonians, and to improve understanding of and engagement with state-owned forests. Recreation, an integral social benefit and a pillar of the State Forest Division's mission, includes campgrounds, hiking trails, equestrian trails and off-road vehicle use, among others. Education and Interpretation is provided in many venues. This request specifically focuses the operational needs related to operations of the Tillamook Forest Center.

The economic downturn precipitated substantial reductions for both budget funding and positions in Oregon Department of Forestry recreation, education, and state forest interpretation programs. This request would efficiently:

- restore capacity to address high-priority maintenance projects deferred since the downturn;
- maintain existing trails and campgrounds;
- increase Tillamook Forest Center interpretation programs;
- help update outmoded Tillamook Forest Center exhibits;
- purchase equipment for recreation maintenance;
- add a coordinator for recreation activities, including collaboration on large efforts such as the Salmonberry Rails and Trails project.

2015-17 Investment

$3.3 million general fund request

Contact

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2015-17 Budget Request

Research & Monitoring – Policy Option Package

What this budget request does:
Issues & Solutions

ODF’s program for managing state-owned forests is currently funded almost entirely with timber sale dollars. Revenues are insufficient to cover costs of managing these lands for a broad range of benefits, as required by law. Financial constraints have forced reductions in recreation, research, thinning and other projects necessary to ensure these forests’ long-term healthy and capacity to provide multiple benefits. This budget request seeks to accomplish Department goals through other financial means.

The State Forest Division is required to provide a range of social, environmental, and ecological benefits for Oregonians. This request for General Fund dollars is targeted towards State Forest Division services and programs that provide public benefits and do not generate revenue.

Ensuring science-based state forest management, this proposal aims to increase research and monitoring to help measure success in forest management.

A well planned, funded, and implemented research and monitoring program provides effective and tested strategies that protect, maintain, and enhance habitat for native fish and wildlife. The proposal also bolsters the State Forests Division’s continued participation in research cooperatives, which conduct multi-agency, watershed-scale research projects across Oregon.

The research and monitoring program has been reduced in recent years due to the economic recession and budget reductions. The program was developed to meet the information and science-based needs of long-term forest management plans. This requires a commitment to sustained information gathering, and feeding this data into the broader decision-making process to continuously improve management.

The proposed package provides resources to support development and implementation of such a research and monitoring program. This would include a framework for prioritizing, developing and monitoring specific projects to ensure effectiveness and success.

2015-17 Investment

$3 million general fund request

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2015-17 Budget Request

South Fork Inmate Camp – Policy Option Package

What this budget request does: Issues & Solutions

ODF’s program for managing state-owned forests is currently funded almost entirely with timber sale dollars. Revenues are insufficient to cover costs of managing these lands for a broad range of benefits, as required by law. Financial constraints have forced reductions in recreation, research, thinning and other projects necessary to ensure these forests’ long-term healthy and capacity to provide multiple benefits. This budget request seeks to accomplish Department goals through other financial means.

The law requires the State Forests Division to provide a range of social, environmental, and economic benefits for Oregonians. This request for General Fund dollars is targeted towards state forest services and programs that provide public benefits, but do not generate revenue.

Using state partnerships to efficiently manage state-owned forests, this proposal suggests a partial funding shift to support the South Fork Inmate Camp located in the Tillamook State Forest. The camp, a partnership with the Oregon Department of Corrections, provides inmates for labor associated with reforestation, firefighting, trail maintenance and other tasks. This would include a change from a 100% timber sale funded model to a 39% ODF Forest Development fund and 61% General Fund model.

Social benefits for communities is one foundation of Greatest Permanent Value – the requirement that state-owned forests provide social, economic, and environmental benefits to Oregonians. The South Fork program provides job training and opportunities for inmates to build skills, while offering meaningful work experiences that contribute to rehabilitation and teaching personal responsibility.

The documented results include reduced recidivism rates by providing marketable work skills that help inmates transition following their release.

The camp will continue its core mission of providing skilled inmate labor and developmental opportunities.

2015-17 Investment

$2.9 million general fund request

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