



BNR Study Session Eastside SHC: Action Alternatives & Multi-objective Optimization

A Presentation to the Board of Natural Resources

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Agenda

- Part 1: Review topics from past study sessions – laws and policies, operating environment, SEPA and EIS
- Part 2: Alternatives development process overview
- Part 3: Open discussion on ideas from Board members
- Part 4: Multi-objective optimization
- Part 5: Upcoming engagement on alternatives



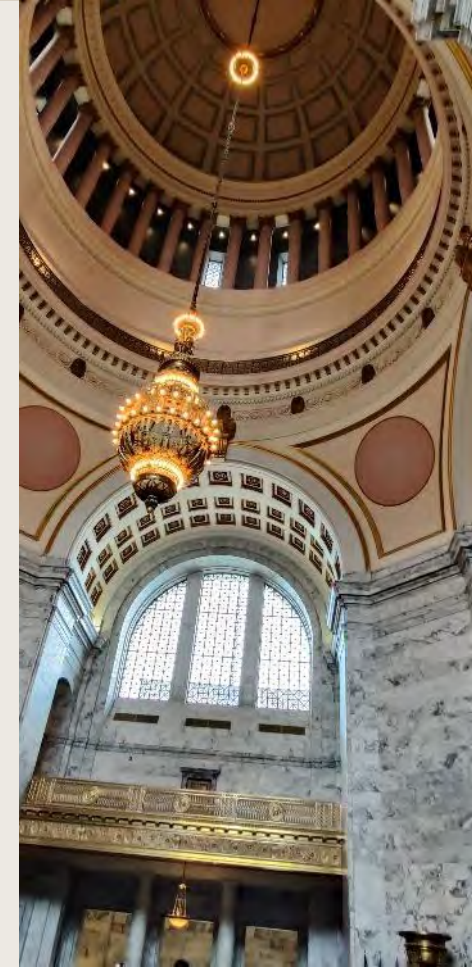
Part 1

Review: Laws and Policies, Operating Environment, SEPA, and EIS



Definitions in Statutes

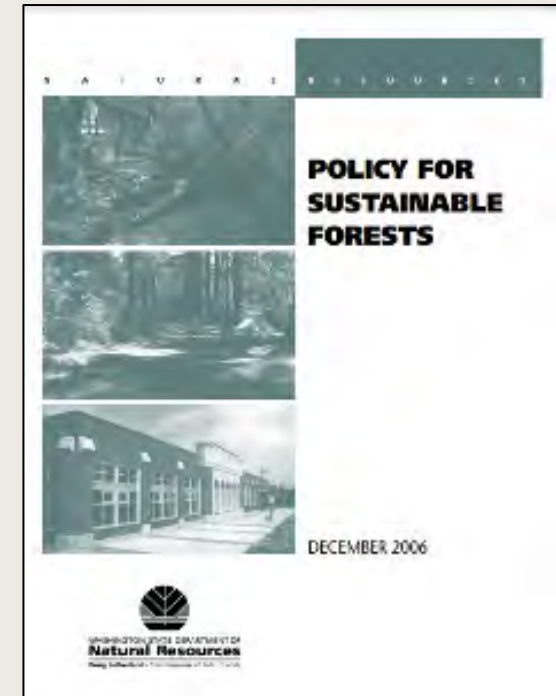
- [RCW 79.10.300\(5\)](#) defines the “sustainable harvest level” as “the **volume of timber** scheduled for sale from state-owned lands during a **planning decade** as **calculated** by the department and approved by the board.”
- [RCW 79.10.310](#) defines “sustained yield plans” as “management of the forest to provide **harvesting on a continuing basis** without major prolonged curtailment or cessation of harvest.”



Direction from the Policy for Sustainable Forests (PSF)

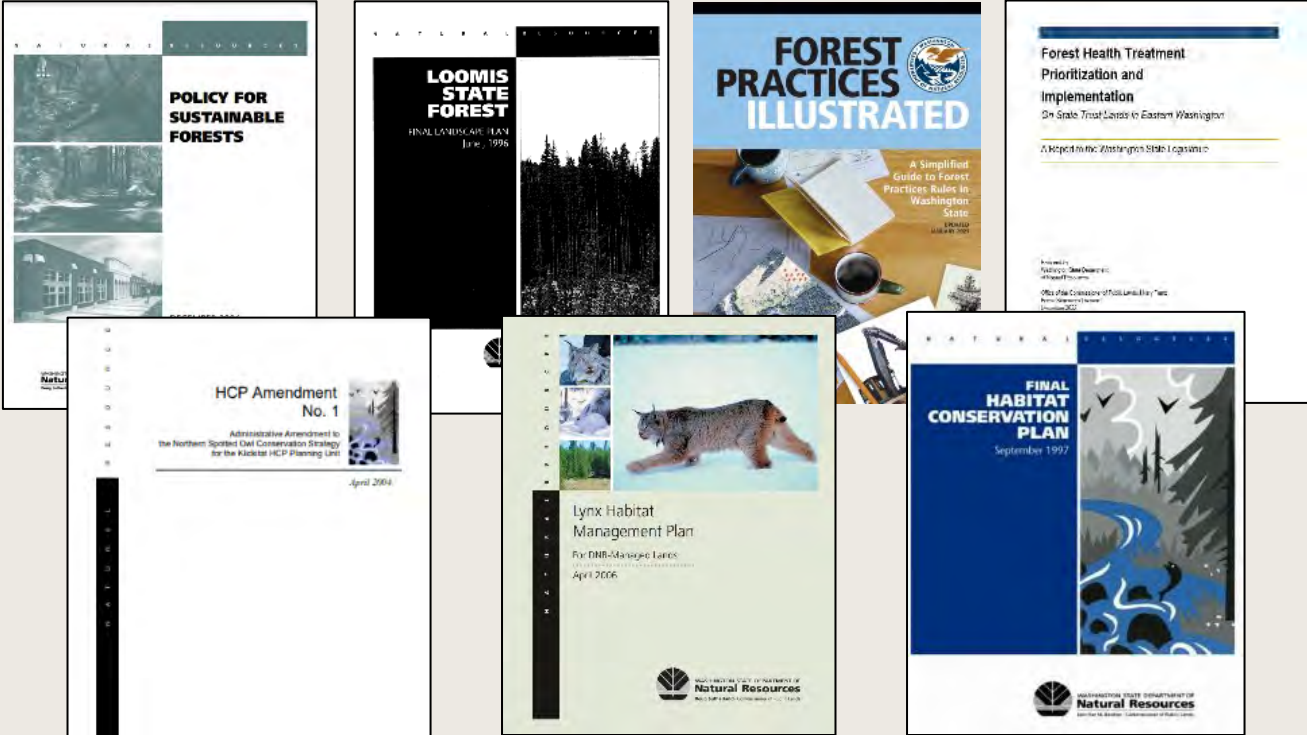
Defines “sustainability”

- “...a **separate** long-term decadal sustainable harvest level for each of several distinct sustainable harvest units.”
- “...mean annual timber volume for any decade **should not vary** up or down **more than 25 percent** from the level of the preceding decade...”
- “...**optimize the economic value** of forest stands and timber production over time, in calculating the sustainable harvest level...”



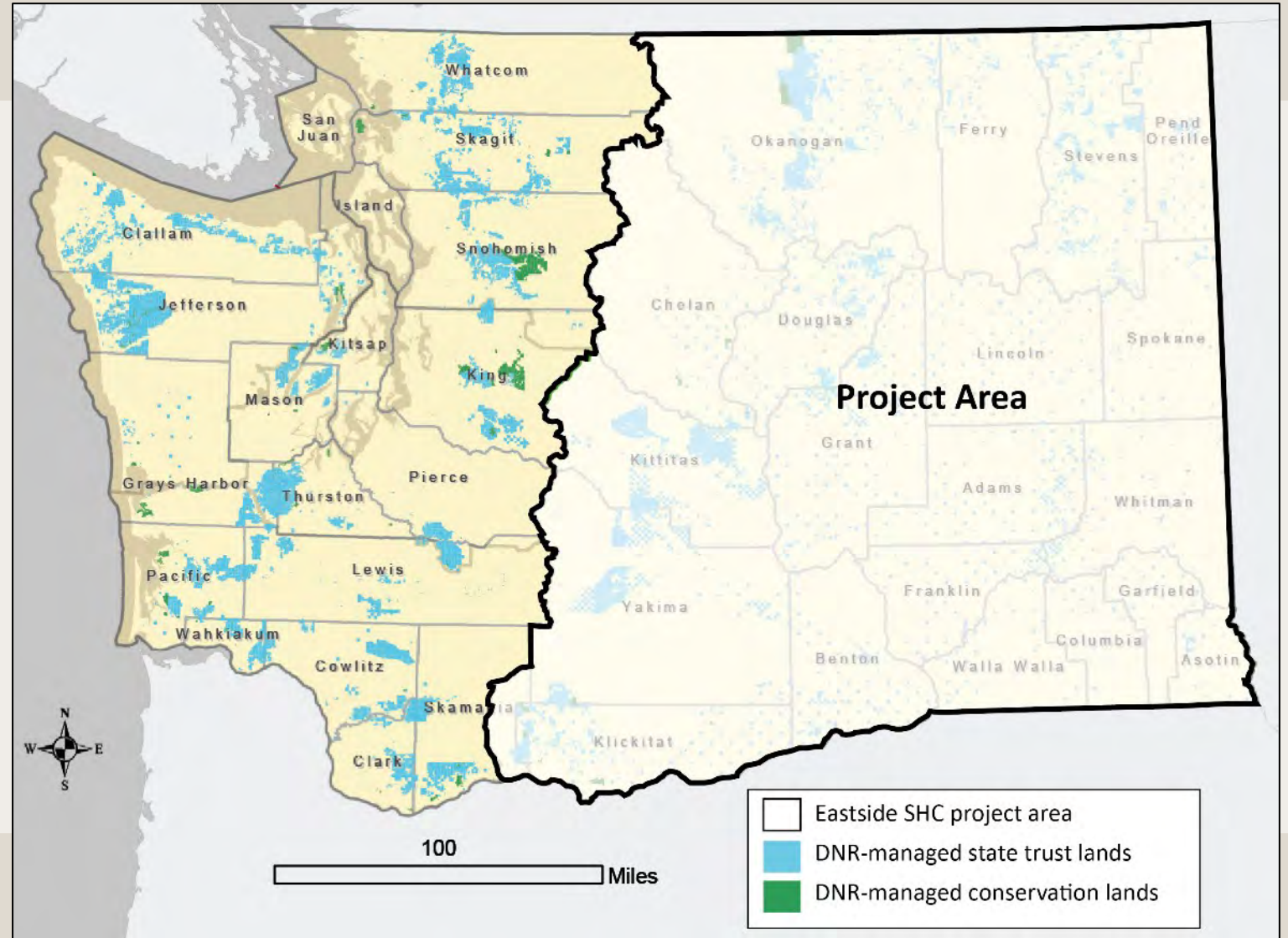
Laws, Policies, and Plans

Dictate DNR's current operating environment in eastern Washington. These are **requirements**.



The Operating Environment in Maps

Management guidance depends on location.



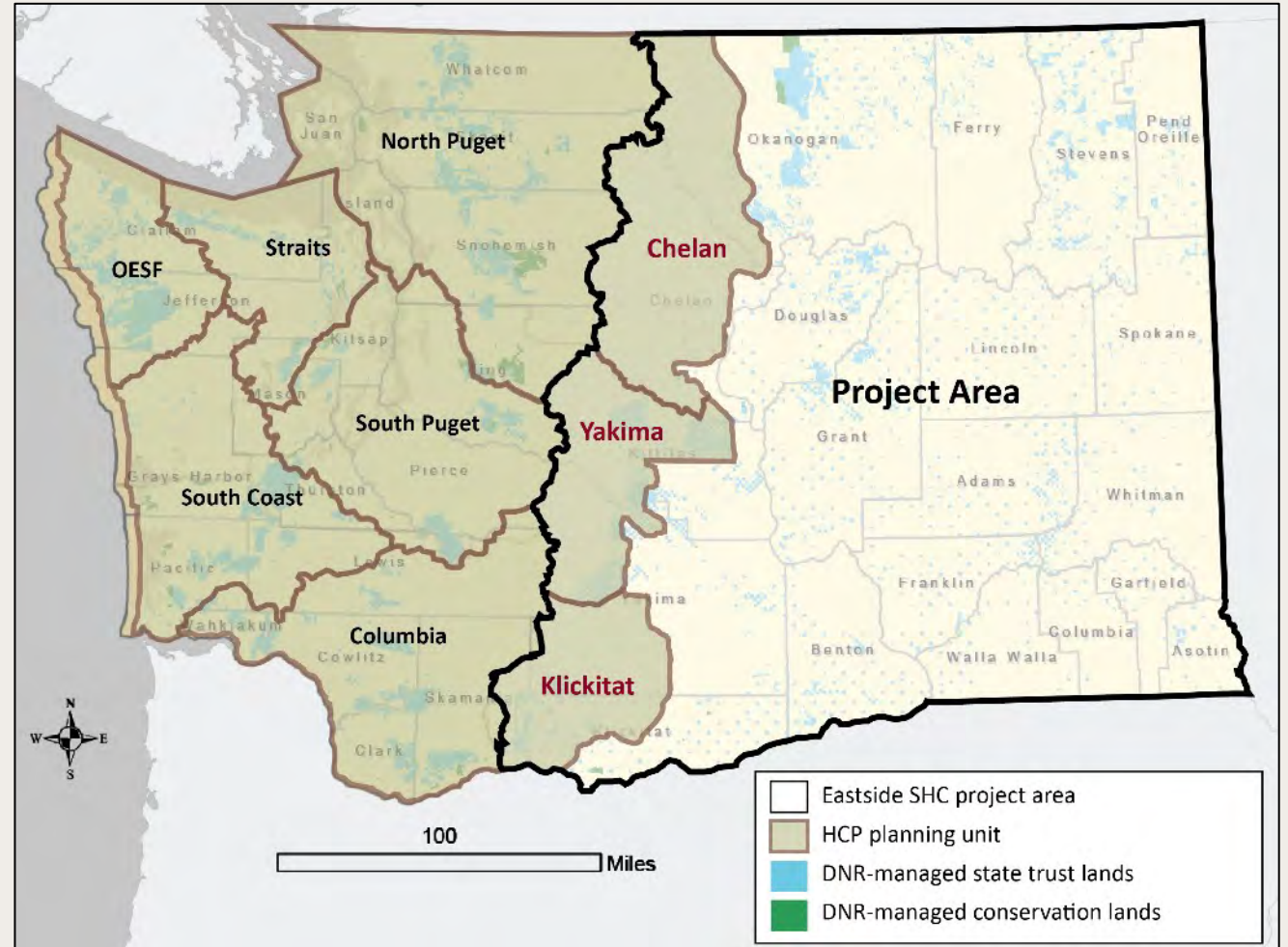
Policy for Sustainable Forests

- The *Policy for Sustainable Forests* (PSF) covers all forested state trust lands, including the project area.
- The PSF includes policies for wildlife habitat, visual impacts, silviculture, and more.



Northern Spotted Owl Management

- Portions of the project area within the range of the northern spotted owl are managed under the HCP: the **Chelan**, **Yakima**, and **Klickitat** HCP planning units.
- For these units, the HCP includes restrictions for northern spotted owl habitat and habitat for other federally listed species.



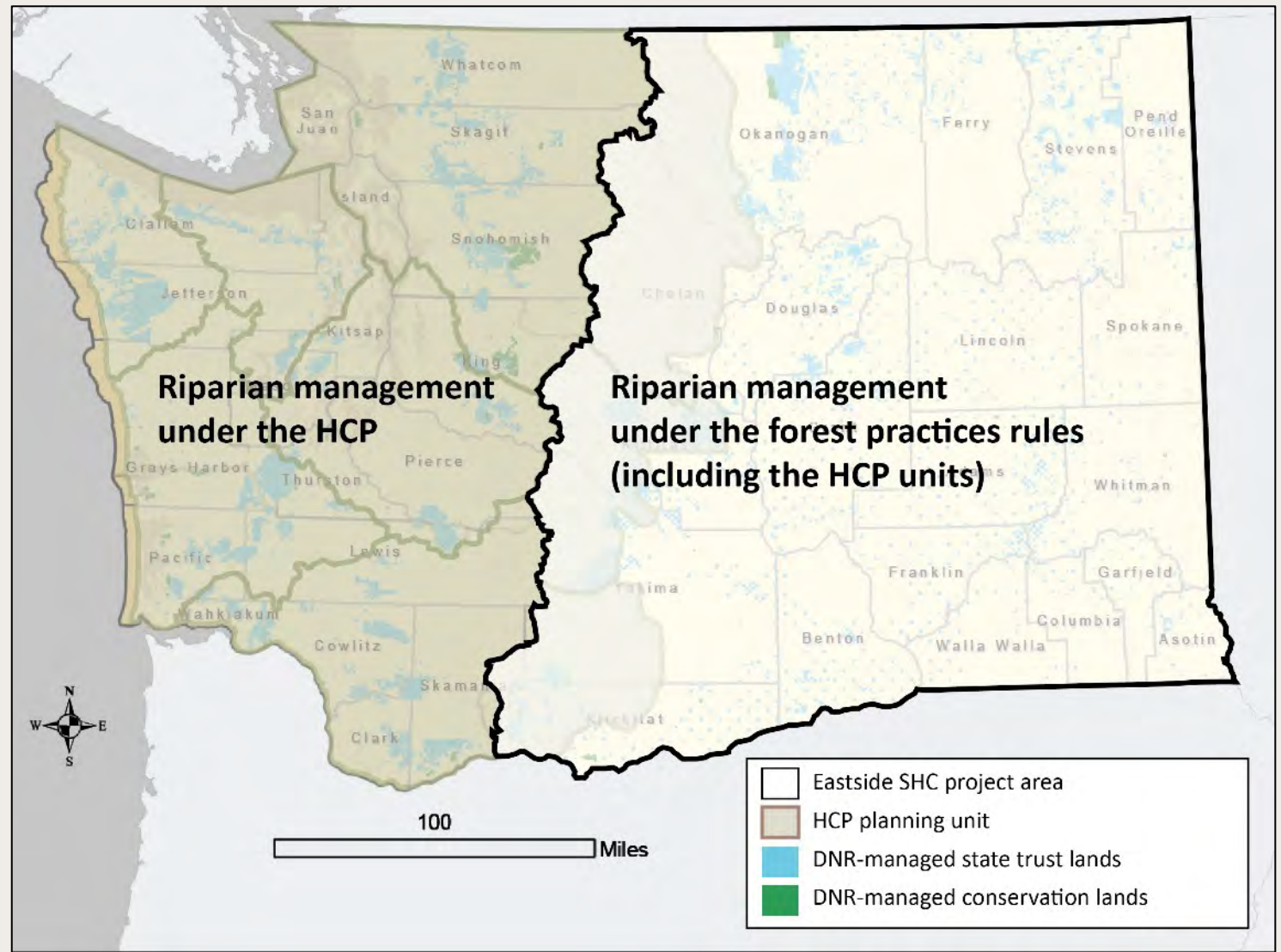
Klickitat Amendment

- The Klickitat HCP Planning Unit is subject to the 2004 *HCP Amendment No. 1*.
- The amendment alters the HCP northern spotted owl conservation strategy for this HCP unit *only*.
- All other HCP requirements are the same as in other eastside HCP units.



Riparian Management

- The HCP includes a riparian conservation strategy for western Washington HCP units but not for eastside HCP units.
- Therefore, riparian management for the entire project area falls under the forest practices rules.

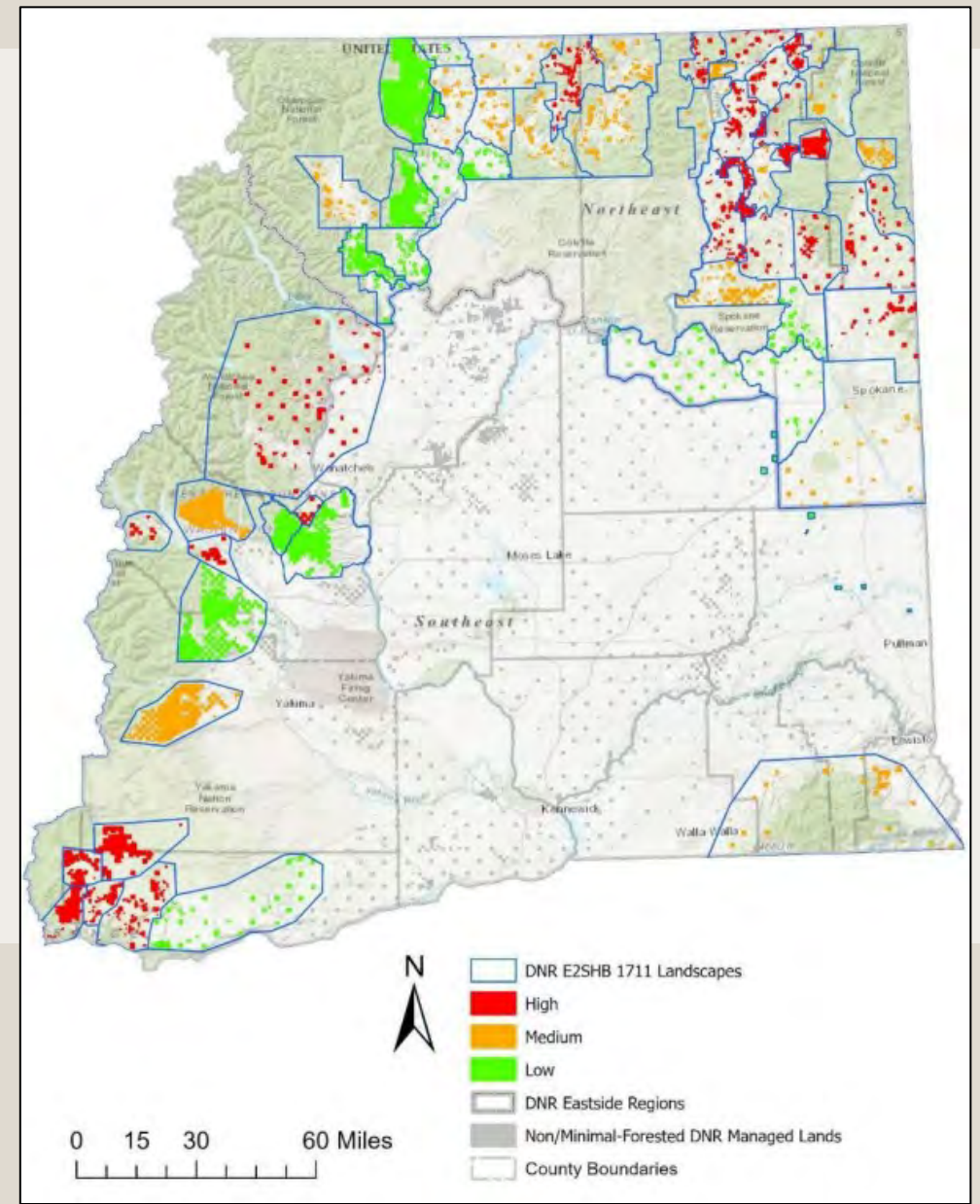


Forest Health

- Eastside landscapes are assessed and prioritized for forest health treatments through the *Forest Health Treatment Prioritization and Implementation on State Trust Lands in Eastern Washington* report, required by ES2HB 1711.
- In even-numbered years, DNR reports progress to the Washington State Legislature and updates the prioritization.
- The *20-Year Forest Health Strategic Plan for Eastern Washington* report provides prioritization and planning for forest health treatments across all land ownerships.

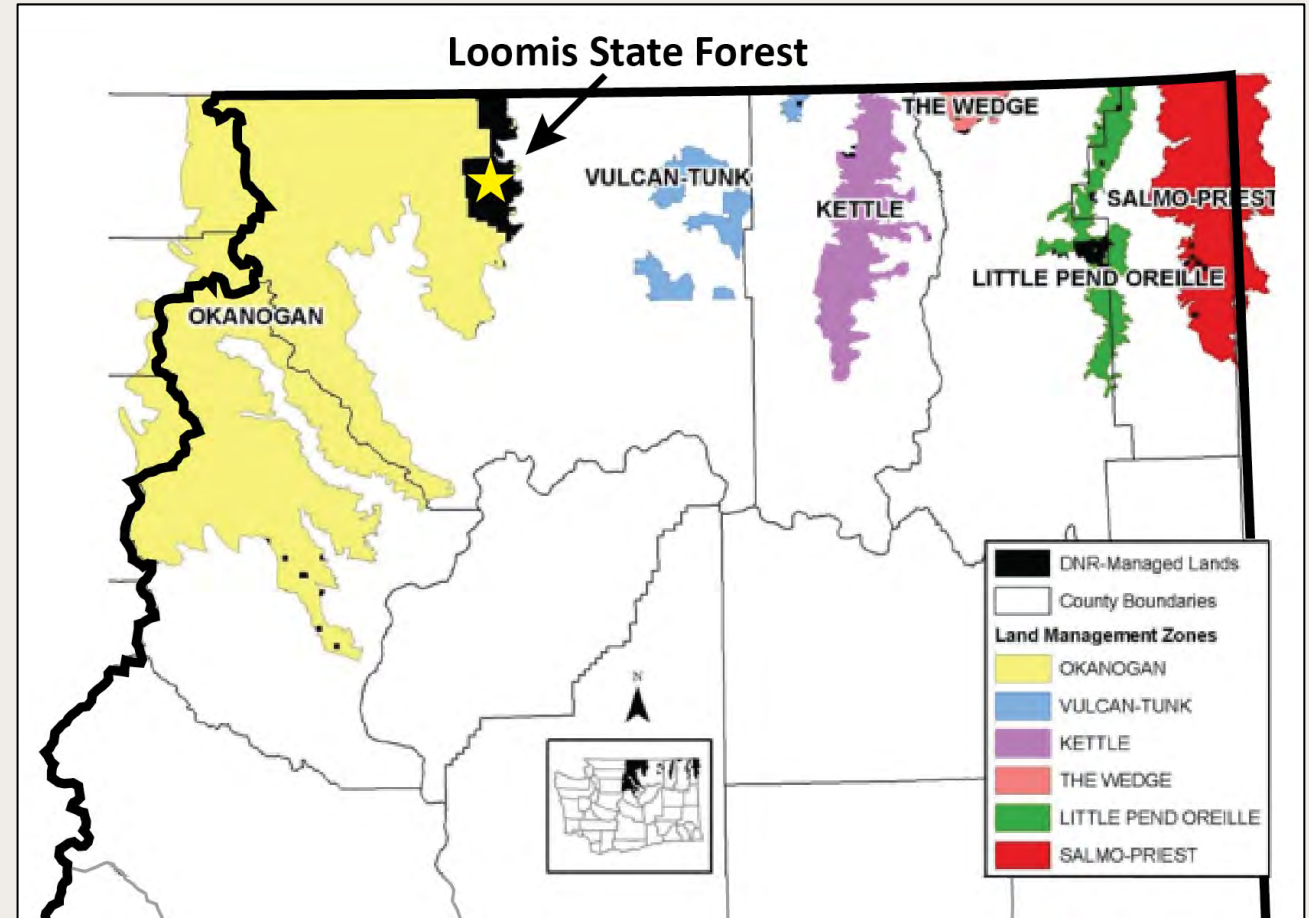
High, Medium, and Low Priority Landscapes for Forest Health Treatments on State Trust Lands (2022-2024)

Source: 2024 legislative report,
Forest Health Treatment Prioritization and Implementation



Loomis State Forest and Lynx Habitat Management Plan

- Loomis State Forest is managed under its own management plan.
- Certain areas in northwest Washington are also subject to the restrictions of the *Lynx Habitat Management Plan*.

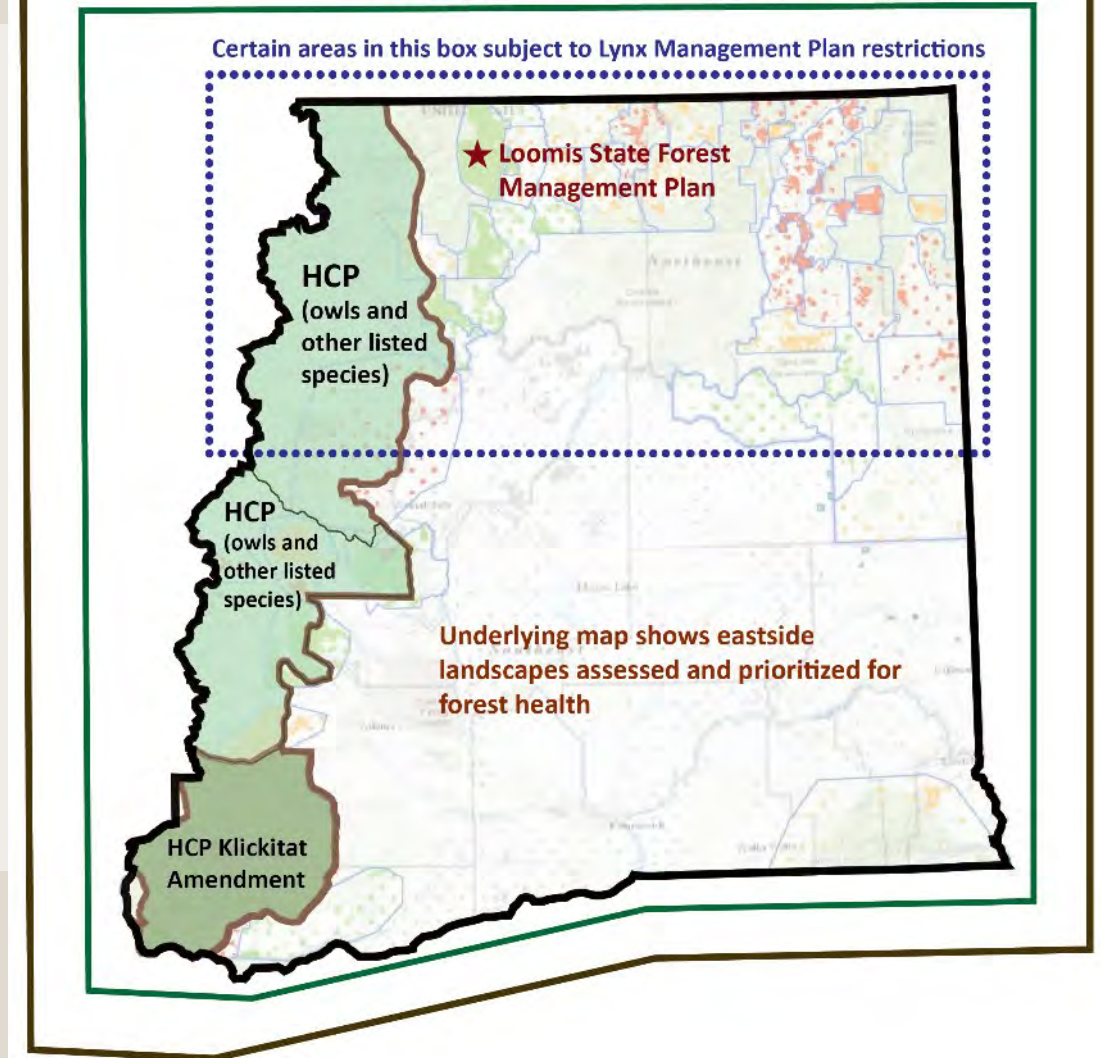


Lynx Management Zones in Washington

Source: 2006 Lynx Management Plan

Operating Environment: Putting it all Together

Forest practices rules for riparian management



State Environmental Policy Act (SEPA)

Per SEPA ([Chapter 43.21C RCW](#)), DNR must consider the environmental impacts of decisions before taking action.

- Determine whether an EIS is required through a threshold determination process.
- If the agency reasonably believes that a proposal may have a significant adverse environmental impact, then it must prepare an environmental impact statement.
- Involve Tribes, the public, and other agencies and interested parties through notice and comment opportunities.



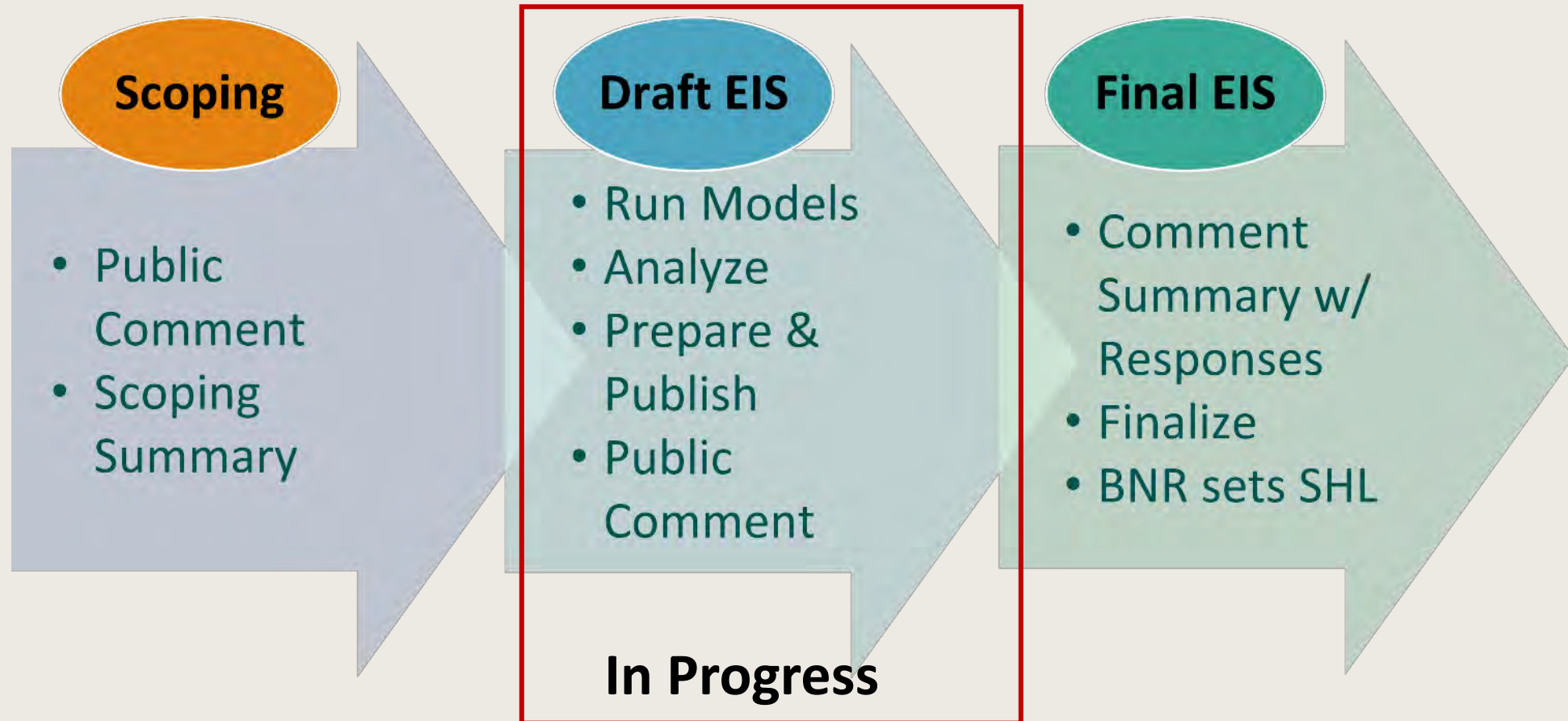
Environmental Impact Statement (EIS)

- DNR determined the SHC may have significant adverse impacts to the environment.
- As required by SEPA, DNR issued a **Determination of Significance** and must prepare an EIS.

- Major project component that drives SHC timelines.
- Analyzes possible alternative means of accomplishing the proposal and evaluates the environmental consequences.
- **Individual DNR timber sales will continue to undergo detailed project level SEPA review and comment via SEPA environmental checklists.**



Environmental Impact Statement (EIS)



Non-Project Action Under SEPA

([WAC 197-11-774](#))

- Governs a series of connected actions (i.e., site specific timber sales) that will result in use or modification of the environment.
- Per [WAC 197-11-442](#), the EIS will “discuss impacts and alternatives in the level of detail appropriate to the scope of the non-project proposal and to the level of planning for the proposal.”
- As a strategic planning process the EIS will not be able to assess environmental impacts at the scale of individual projects (i.e., timber sales).
- Most environmental impacts will be discussed at the scale of sustainable harvest units or forest types.

Major EIS Components

Description of the alternatives, including management elements they have in common and management options that make them unique.

Summary of current conditions for the elements of the natural environment analyzed in the EIS; provides a baseline for comparing the environmental impacts of action alternatives.

Analysis of environmental consequences: the impacts (direct, indirect, and cumulative) of each alternative on each element of the environment described in current conditions.

DNR relies on internal subject matter experts and scientists to help draft the EIS

Alternatives: No Action

- Represents current practices and provides a benchmark against which to compare the alternatives.
- Based on DNR's current operating environment in eastern WA; review the [No Action Alternative](#) staff report to better understand this steering committee decision.



Action Alternatives

- Enables DNR to explore different, reasonable ways of achieving the purpose, need, and objectives of the current proposal.
- Help Board members understand the range of potential environmental impacts and inform decision-making.



Direction on Reasonable Alternatives

“Reasonable alternatives shall include actions that could **feasibly attain or approximate a proposal's objectives**, but at a **lower environmental cost** or decreased level of environmental degradation.”

- WAC 197-11-440



Alternatives and Choosing a Harvest Level

Board decision space:

- The Board may choose to adopt a harvest level associated with a specific EIS alternative, or a harvest level within the range of those analyzed in the EIS.
 - Such as a different combination of management options than those analyzed in a specific alternative.
- Adopting harvest levels outside the range of those analyzed would require a revised DEIS (RDEIS).



Scoping

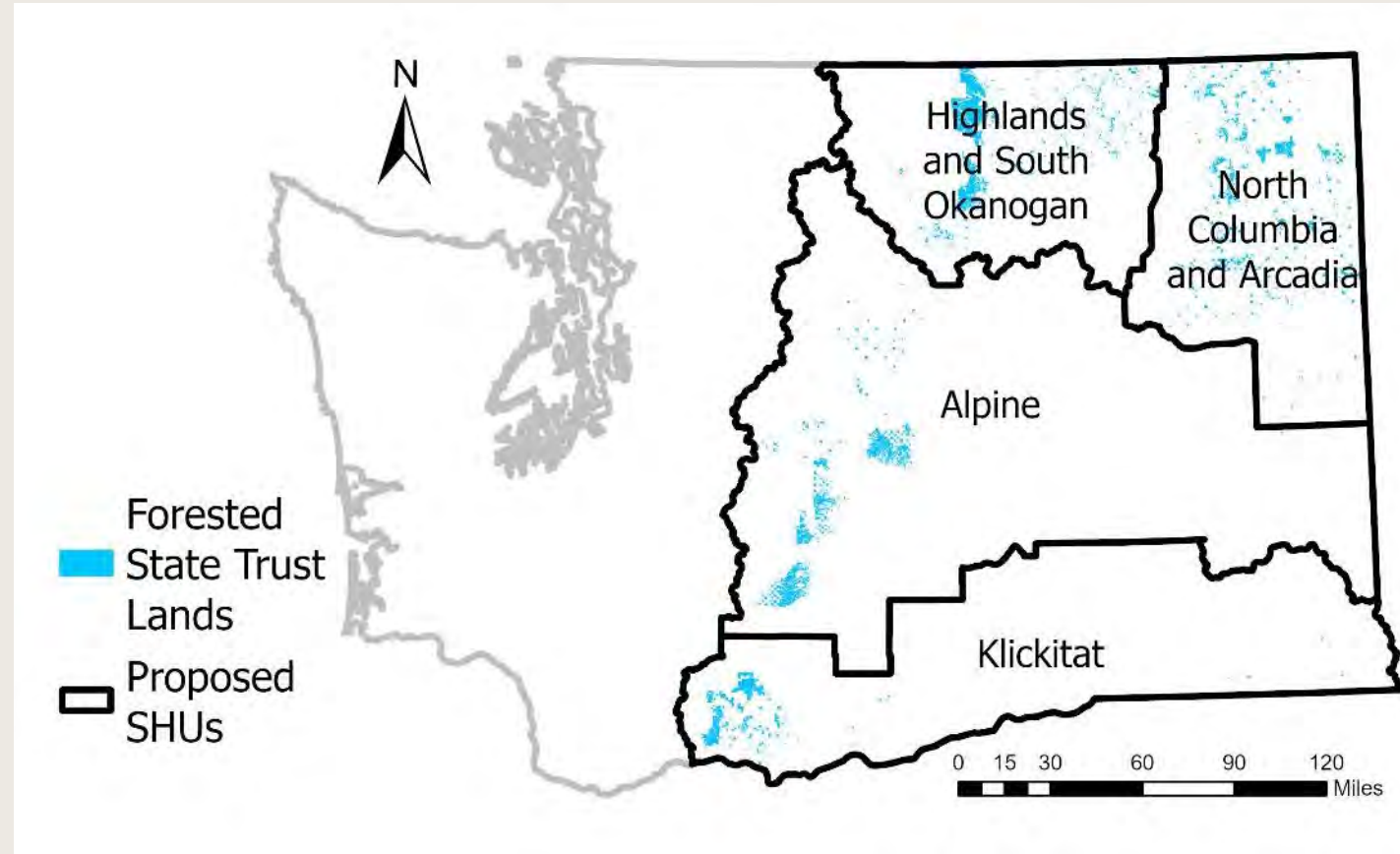
Notice:

Purpose and Need of Proposed Action

- **Purpose:** Recalculate a sustainable harvest level and evaluate potential impacts of rescinding the 1999 procedure (PR 14-004-120) for northern spotted owl habitat in eastern Washington HCP.
- **Need:**
 - Per [RCW 79.10.320](#), periodically adjust the acreages designated for inclusion in the sustained yield management program and calculate a sustainable harvest level.
 - Adhere to statutory and policy requirements for determining and addressing arrearage.
 - Support prioritizing investments on forest health treatments to protect state lands and state forestlands.

ESHC Analysis Area

- DNR's proposal applies to forested DNR-managed trust lands in eastern Washington.
- The [Staff Report: Analysis Area](#) describes lands specifically included and excluded from the EIS analysis area.



Part 2

Alternatives: Development Process Overview



ESHC Decision-Making Process

1. Input from:

- DNR region staff
- DNR subject matter experts
- Technical Advisory Committee
- Tribes
- Public comments from scoping



2. Staff reports:

Developed to provide staff recommendations



3. SHC Steering Committee:

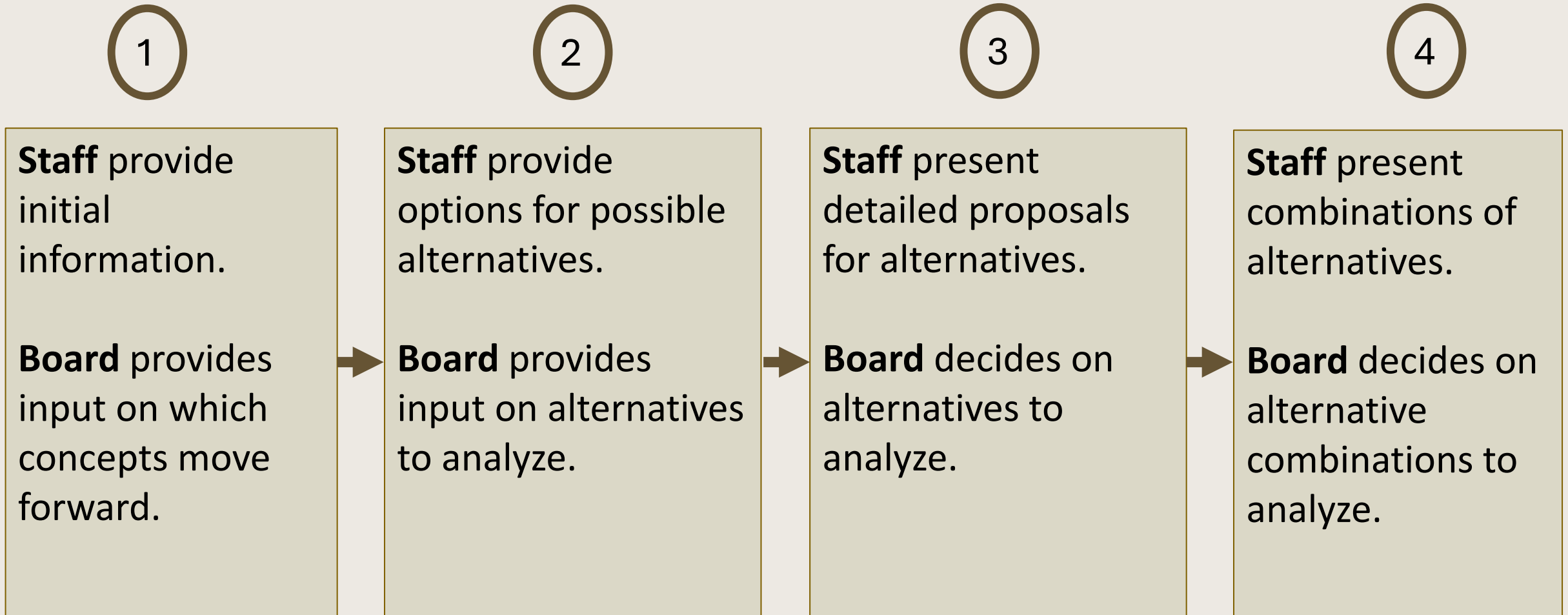
- Deputy Supervisor for State Uplands
- Assistant Deputy Supervisor for State Uplands
- Uplands division managers
- NE & SE region managers



4. Board of Natural Resources:

Staff reports will be presented to the BNR with recommendations

Alternatives Development Process



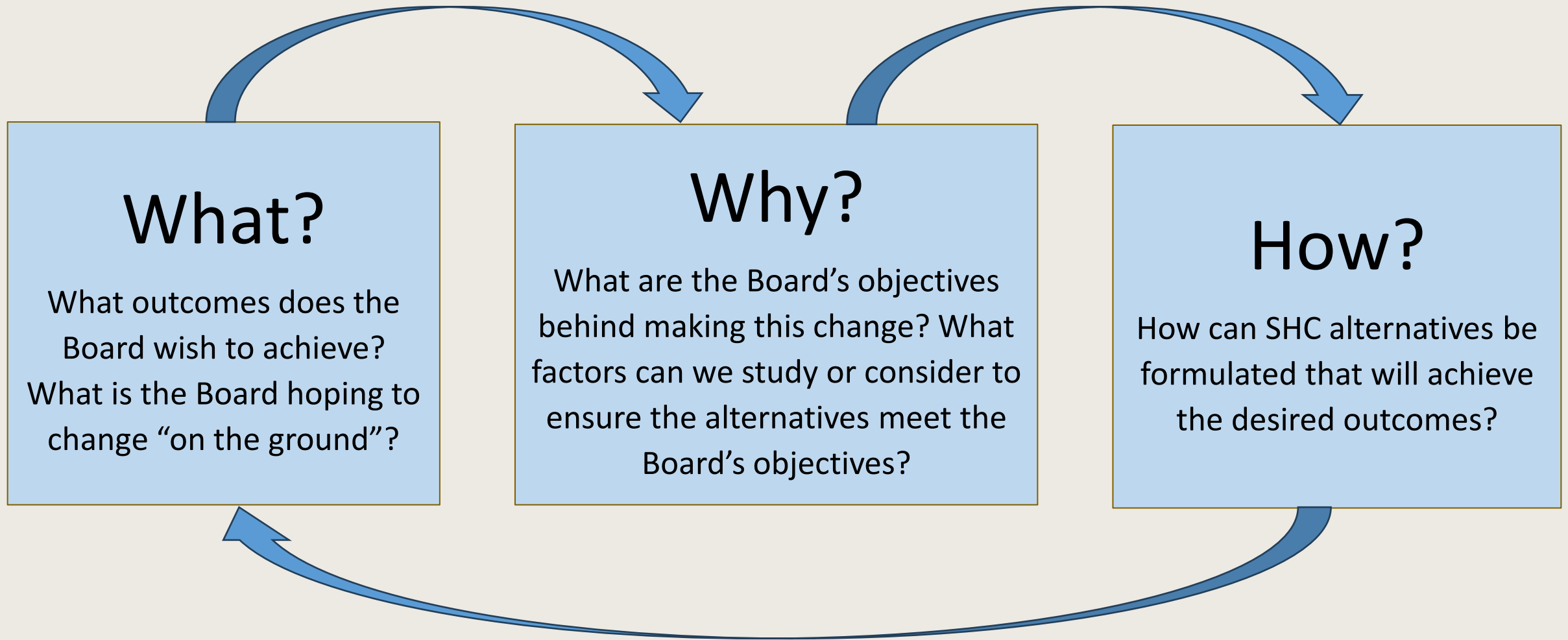
Alternatives Within Project Scope

- **New procedures, Board policies, or other Board decisions** which impact harvest levels, harvest activities, or levels of environmental impacts from harvest on state trust lands.
- **Changes to existing policies or procedures** which impact harvest levels, harvest activities, or levels of environmental impacts from harvest on state trust lands and **meet existing project objectives.**

Alternatives Outside Current Project Scope

- Changes to existing policies or procedures which **do not meet project objectives**.
- Changes to DNR's land plans (HCP, *Lynx Habitat Management Plan*, *Loomis Landscape Management Plan*).
- Changes outside of DNR's current authorizing environment.
- These alternatives would require re-scoping to include in this project.

Alternatives Development



Part 3

Open Discussion



Exploring Eastside Alternatives

- New management options (policies, procedures) for improving forest health or forest resilience on state trust lands.
- Board decisions or policies that impact harvest models:
 - Changes to the harvest flow constraint
 - Varying the model's discount rate
 - Changes to the model's objective function
- Changes to the 1999 northern spotted owl procedure.

Forest Health and Resilience Alternatives

- Agency experts in forest ecology, silviculture, and eastside forest management are developing a range of alternative options for the Board to consider.
- Report will discuss different, feasible ways for DNR to manage for forest health or forest resilience objectives.
- Staff will bring working definitions for forest health and forest resilience to the Board for your input.

Changes to 1999 NSO procedure

- The SHC Steering Committee no longer recommends pursuing changes to this procedure as part of the Eastside SHC project.
- After further study, staff believe the scale of the analysis would be mismatched with the scale of the Eastside SHC analysis.
- Changes to the 1999 northern spotted owl procedure would be more appropriate to pursue in a separate project.

What?

- What outcomes does the Board wish to achieve?
- What is the Board hoping to change “on the ground”?



Why?

- What are the Board's objectives behind making this change?
- What factors can we study or consider to ensure the alternatives meet the Board's objectives?



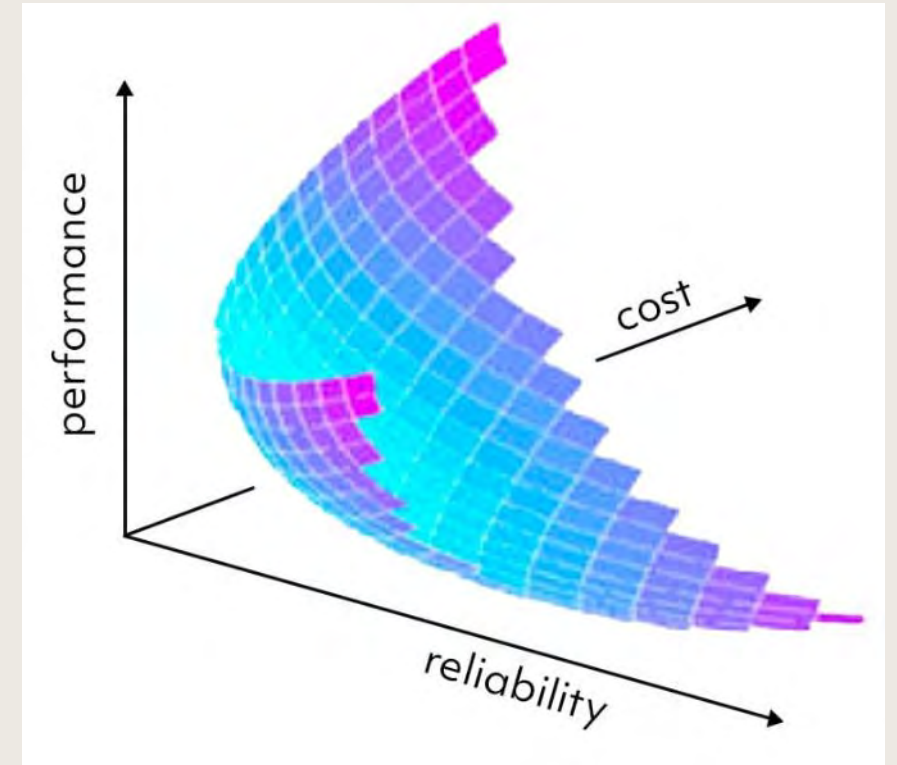
Part 4

Multi-objective Optimization



What is Multi-objective Optimization?

- An approach that identifies sets of solutions between multiple conflicting objectives simultaneously (referred to as a *Pareto-front*).
- This type of approach is used when optimal decisions are taken in the presence of trade-offs between the objectives.
- No unique solution. One solution is chosen out of many, defining the values of each objective by the decision makers.



Tri-Objective Pareto Front

<https://www.energyexemplar.com/multi-objective-decision-optimization>

When is Multi-objective Optimization Used?

- Trade-off analysis when there are finite resources and objectives get weighed *against* each other.
- Potentially useful as an exploratory analysis in determining policy values, goals and desired outcomes.
- If both metrics are defined as economic value – you would be exploring how investing in one versus the other impacts net present value (NPV).

All objectives MUST be explicitly defined.

Part 5

Upcoming Engagement



Suggestions for Engagement

- Individual Board member sessions/briefings on specific topics.
- Board subcommittees.
- Monthly one-pager project briefings on project progress.



BNR Study Sessions for ESHC

- **April 21st, 2026 – Part 1**
 - Action Alternatives and multi-objective optimization
- **May 12, 2026 – 1-3 pm**
 - Action Alternatives and multi-objective optimization
- **June 11, 2026 – 1-3pm**
 - Action Alternatives and multi-objective optimization
- **July 23, 2026 – 1-3pm**
 - Financial Analysis and Metrics

Board Meeting

Staff will:

- Present recommendations on how combinations of alternatives could be analyzed.

Board will:

- Decide on combinations of alternatives to analyze.

Questions?

