

Prioritizing for dual benefits of forest health and wildfire response

Integrating the requirements of HB 1784 into the Forest Health Assessment and Treatment Framework

Forest Health and Resiliency Division
Washington State Dept. of Natural Resources



WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES

Wildfire Advisory Committee
March 18, 2021

Agenda

1. Forest Health Assessment and Treatment Framework
2. HB 1784 Pilot Project: Prioritizing for dual benefit
3. Dual Benefit Prioritization
4. Applications for forest health and fire operations

Forest Health Science and Planning Team

- Ana Barros, Fire Scientist
- Derek Churchill, Forest Health Scientist
- Aleksandar Dozic, GIS Analyst
- Chuck Hersey, Forest Health Planning Section Manager
- Garrett Meigs, Forest Health Scientist
- Amy Ramsey, Forest Health Planner
- Annie Smith, Forest Health Scientist
- Andrew Spaeth, Forest Health Planner

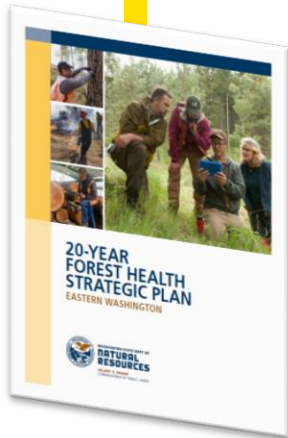


*Forest Health
Assessment and
Treatment Framework*

Legislative context

RCW 76.06
Main forest health law for
the state of
Washington

2017

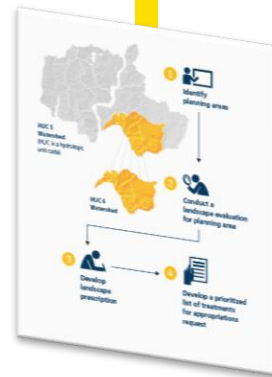


SB 5546

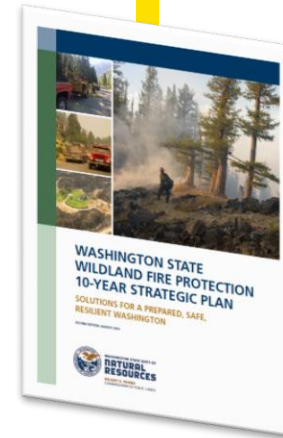
Forest health landscape
evaluations across all
lands for priority planning
areas

RCW 76.06.200

Forest Health Assessment
and Treatment Framework



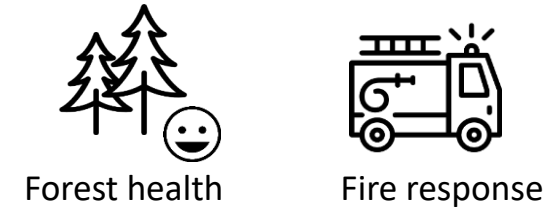
2019



HB 1784

Dual benefit: forest
health and fire response

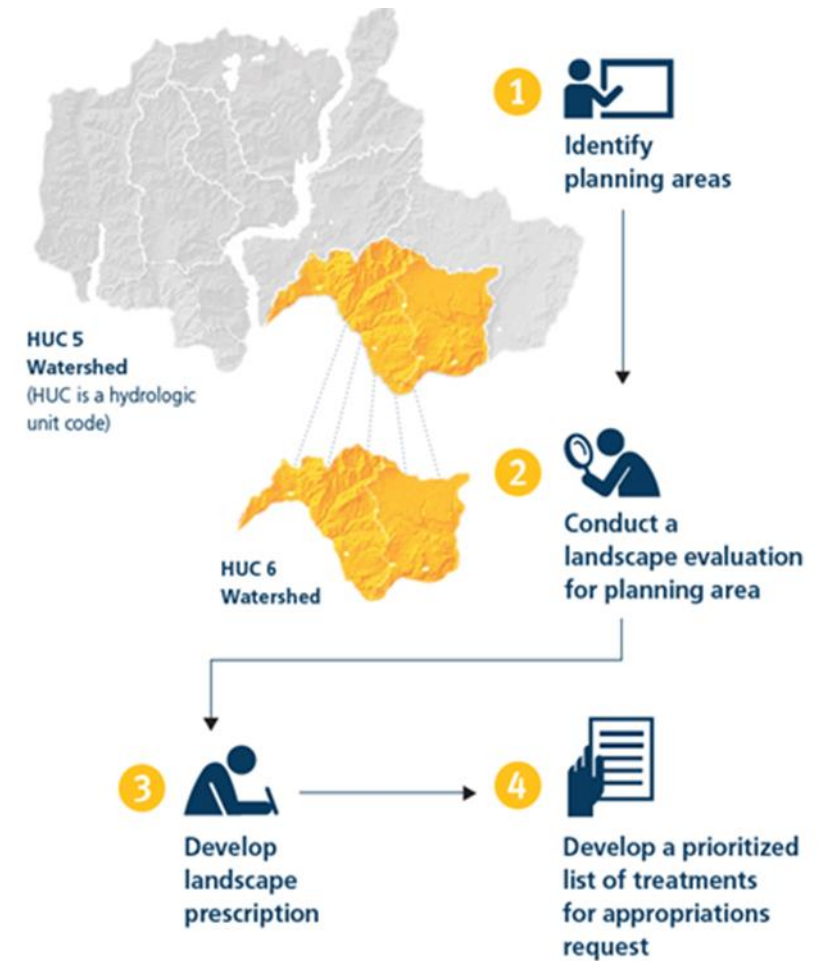
PODs as a
strategy for safe
and effective fire
response



Forest health assessment

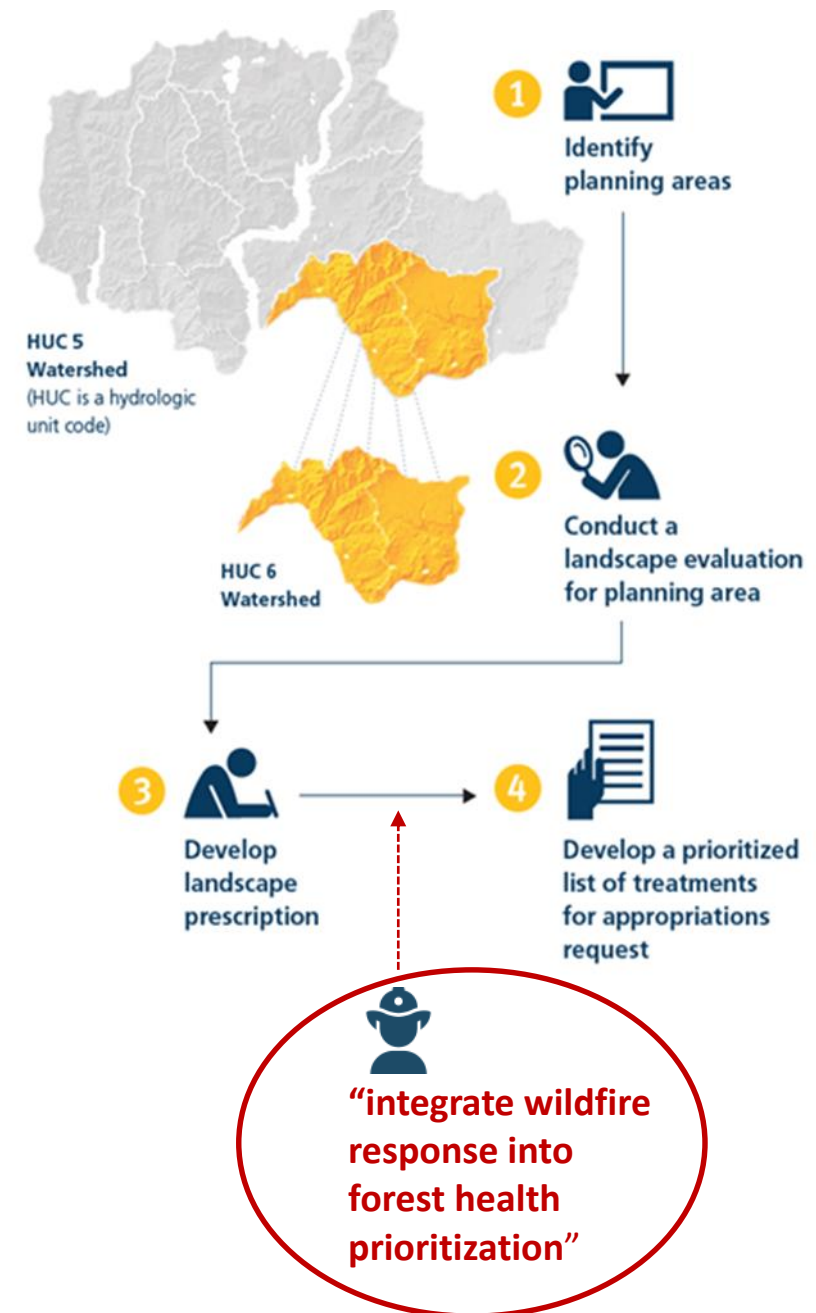
Assess a minimum of 200,000 acres/biennium across all lands.

1. Identify planning areas
2. Conduct landscape evaluations
3. Develop landscape treatment targets
4. Prioritize treatment needs

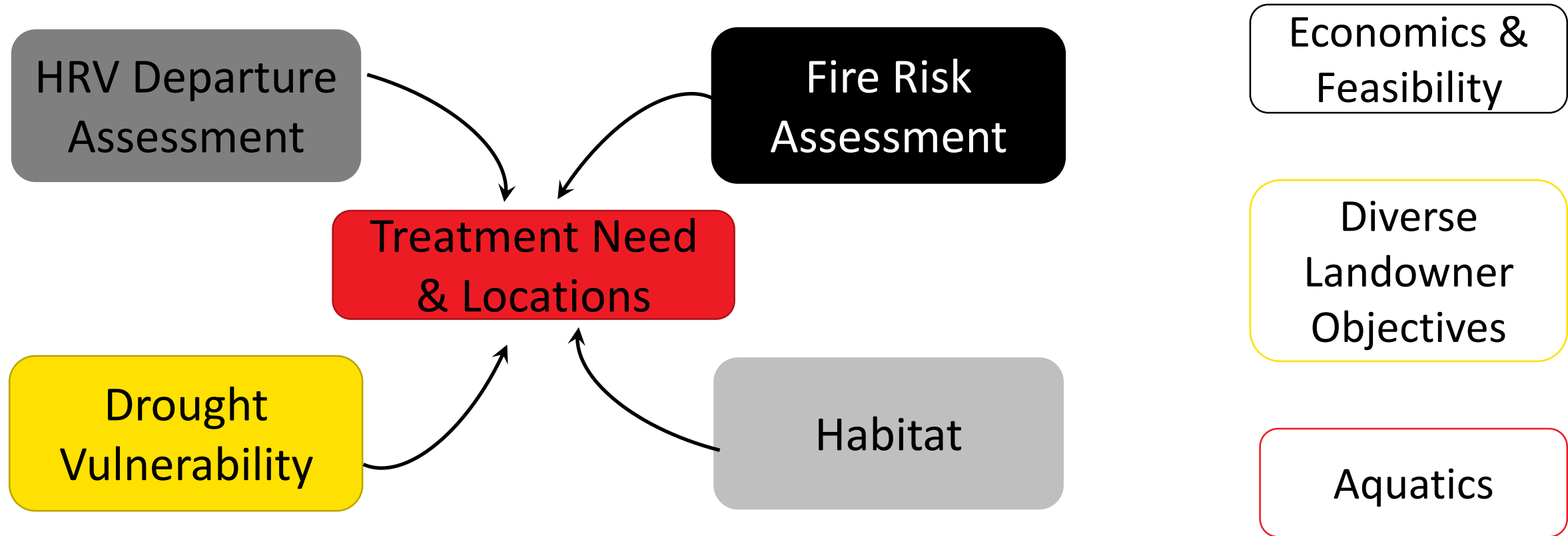


Forest health assessment

1. Identify planning areas
2. Conduct landscape evaluations
3. Develop landscape treatment targets
4. Prioritize treatments needs **with dual benefit**



Landscape evaluations



Landscape evaluations

1. Identify ownership types and management objectives
2. Map vegetation and forest types
3. Map current forest structure and species composition
4. Assess departure of forest structure
5. Assess wildfire risk
6. Analyze drought vulnerability
7. Map habitat for focal species
8. Evaluate aquatic functions
9. Estimate treatment targets
10. Evaluate operational feasibility and economics
11. Map dense forest, large tree sustainability

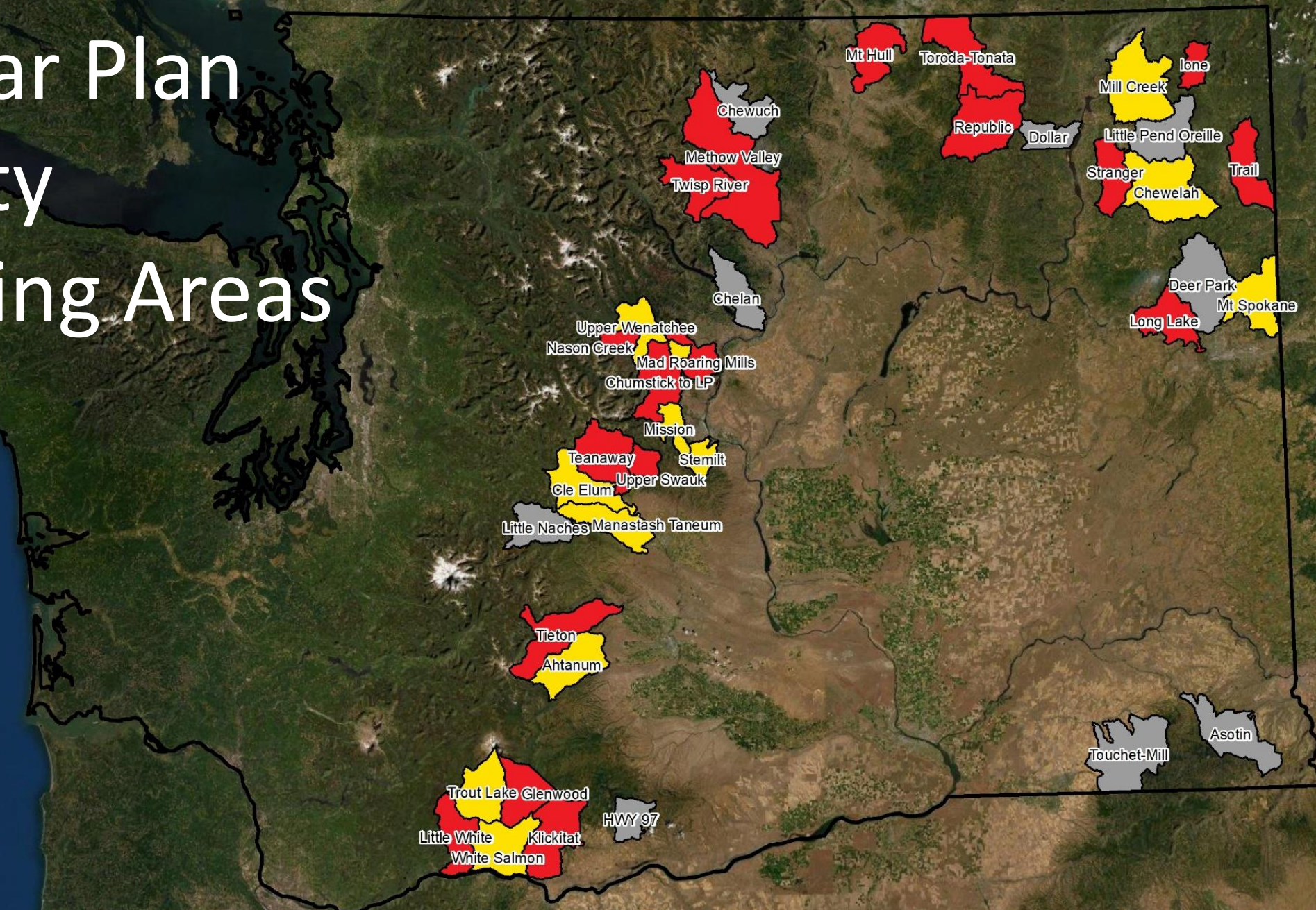
12. Prioritize landscape treatments

13. Prioritize wildfire response benefit

14. Prioritize for dual benefit using the PODs framework

20-Year Plan Priority Planning Areas

Plan year
2018
2020
2022



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Landscape evaluations

12 planning areas Completed in **2018**

18 planning areas Completed in **2020**

(**8** with the full 14-step dual benefit process)

9 planning areas To be analyzed by December 2022

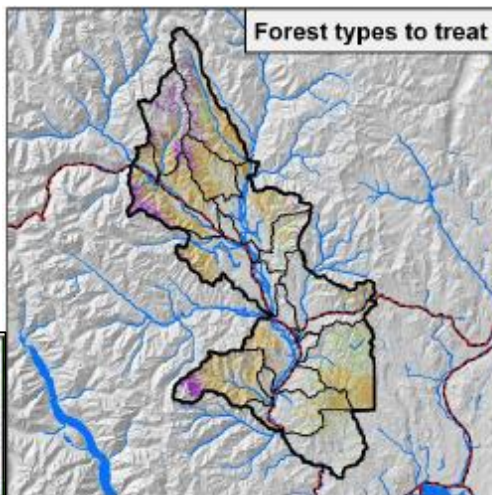
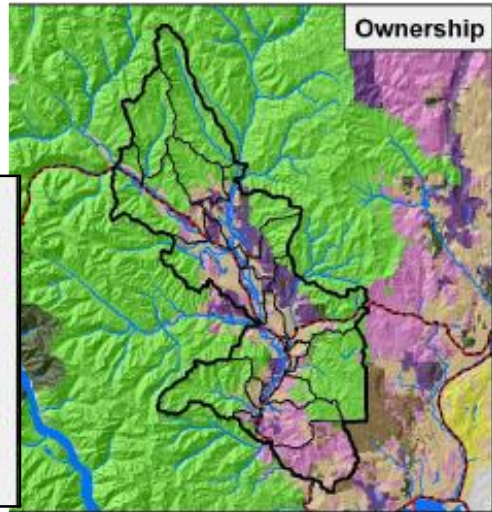
(**31** for dual benefit)

3.4 million acres assessed for forest health need and

1 million acres for dual benefit

Treatment need (e.g. Methow Valley)

Treat 27-41% of forested acres
Range of treatment types



Forest conditions to treat		Treatment need (acres)	Current acres by major landowner*				
Type	Size class		USFS	Private	DNR-Trust	WDFW	Other Fed.
Dry Dense	Medium-Large	32,000 - 47,500	61,427	6,925	2,588	1,764	640
Moist + Cold Dense	Medium-Large	1,500 - 3,000	7,749	70	15	11	0
Dry + Moist Open	Medium-Large	16,000 - 24,500	24,460	3,613	3,163	1,064	267
Total		49,500 - 75,000	<i>*These are current acres, not targets</i>				

Anticipated treatment type	Noncommercial thin plus fuels treatment. May be fire only (prescribed or managed wildfire).
	Commercial thin plus fuels treatment if access exists. May be noncommercial, fire only (prescribed or managed wildfire), or regeneration treatment.
	Maintenance treatment: prescribed fire, managed wildfire, or mechanical fuels treatment. Target range corresponds to 50-75% of dry open and 25-50% of moist open forests.

Assessed forest health treatment need for 2018 and 2020 planning areas (30 planning areas)

Treatment need across
30 planning areas:

807,720 acres

to

1,162,620 acres

Planning Area Totals (Year)	Forest Structure Class (acres)		
	Small Dense ¹	Medium-Large Dense ²	Medium-Large Open ³
2018 Structure Class Total	9,500 - 16,500	238,200 - 338,400	32,500 - 65,200
2018 Total	298,220 - 438,120 acres		
2020 Structure Class Total	17,750 - 30,900	378,500 - 516,100	113,250 - 177,500
2020 Total	509,500 - 724,500 acres		
Grand Total (2018 and 2020 areas)	807,720 - 1,162,620 acres		
Anticipated Treatment Type	¹ Noncommercial thin plus fuels treatment. May be fire only (prescribed or managed wildfire).		
	² Commercial thin plus fuels treatment if access exists. May be regeneration treatment or fire only (prescribed or managed wildfire).		
	³ Maintenance treatment: prescribed fire, managed wildfire, or mechanical fuels treatment. Target range corresponds to 50-75% of dry open and 25-50% of moist open forests.		
Notes	2018 Total includes acres from planned USDA Forest Service treatments in the Tillicum and Mission Maintenance planning areas that are not in the Structure Class Total.		

Legislative report

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

TWISP RIVER PLANNING AREA LANDSCAPE EVALUATION SUMMARY (2020)

Total Acres	Forested Acres	Treatment Goal (Acres)
111,918	82,349	26,000 - 36,500

Planning area Geography

- Twisp River
- Sub-watersheds
- 2018 Crescent Fire
- Highways
- Streams
- Main roads

Fire risk

- Extreme
- Very High
- High
- Moderate
- Low
- Beneficial

Twisp River Planning Area Highlights

- Land ownership is 91% Okanogan Wenatchee National Forest, 5% private, 2% DNR, and 2% WDFW. USFS management allocation is split between Matrix, Late Successional Reserve, and Wilderness areas.
- 45% of the planning area is dry forest, 25% is cold forest, 3% is moist forest, 19% is shrub-steppe, and 8% is other.
- Fire risk is very high across much of the planning area (Fig. 2), but large patches of open canopy forest exist where wildfires will be beneficial by consuming fuels. Burn probability is among the highest in eastern Washington.
- Treating 32-44% of forested acres is recommended to move the landscape into a resilient condition using a combination of mechanical, prescribe fire, and managed wildfire treatments. The Okanogan-Wenatchee National Forest is currently planning a large restoration project in this area.
- Priority areas for potential treatments that maximize forest health and wildfire response benefit include high priority of mechanical, prescribe fire, and managed wildfire treatments in the north-central portion north of Little Bridge Creek and moderate priority locations throughout the Buttermilk Creek sub-watershed.
- In 2018, the Crescent Mountain Fire burned ~52,000 acres (32,000 acres within the planning area). The fire did some good restoration work, however there is still a need for thinning and fuel reduction treatments in some low- and moderate-severity areas as well as a need to monitor and possibly plant trees in some high-severity areas.

CONTACT
 Amy Ramsey
 Forest Health Strategic Plan Coordinator
 360-902-1694
 amy.ramsey@dnr.wa.gov

LEARN MORE
 This landscape evaluation was completed in 2020. More details about DNR's priority planning areas are available at: <https://www.dnr.wa.gov/ForestHealthPlan>
 Data products are available at: <https://bit.ly/ForestHealthData>

tolerant species will support forest persistence in the future.

Wildfire habitat
 Habitat for dry forest, large tree, open canopy (e.g. White Headed Woodpecker) is within patches in the planning area, but habitat is fragmented and patch sizes are too small. Similarly, habitats that depend on moist, closed canopy large trees (e.g. Northern Spotted Owl) is fragmented and within desired ranges for most of the planning area. Management of open tree forest can be expanded in high fire and moderate fire risk areas, while large tree, closed canopy forest can be expanded in more sustainable locations for cold forest, large tree, closed canopy (e.g. American Marten) in within desired ranges for moist forest, but overly abundant in the western sub-watershed.

Economic development
 The Twisp River planning area provides a wide range of recreational and tourism opportunities. The area is a significant amount of forest land that will limit what is commercially viable. North-facing slopes and higher elevation areas are more productive.

Future 2041-2070
 Future climate is projected to be warmer and drier. Low levels are associated with a warmer, drier future climate.

current acres by major landowner*

Private	DNR-Trustlands	DFW
0	0	0
868	159	0
488	64	28
170	22	0

current acres, not targets

be fire only (prescribed or managed wildfire).

may be noncommercial, fire only (prescribed or managed wildfire).

aged wildfire, or mechanical fuels treatment, and 25-50% of moist open forests.

Ownership

Current land ownership is shown in Figure 5. Potential future land ownership is shown in Figure 6.

high end of treatment need).

current acres by major landowner*

current acres, not targets

be fire only (prescribed or managed wildfire).

may be noncommercial, fire only (prescribed or managed wildfire).

aged wildfire, or mechanical fuels treatment, and 25-50% of moist open forests.

amount of high-severity fire in the 2018 Crescent Mountain Fire increased the amount of early open (stand initiation) desired ranges in the Upper and Middle Twisp sub-watersheds by 4,000-8,000 acres. Where future fire is desired, natural regeneration should be encouraged, and where necessary, we recommend planting added where necessary. We recommend planting ponderosa pine and western larch on sites that have shifted to dry forest and where seed sources for these species are limited.

Fire transmission

Fire transmission to homes shows where fires are most likely to originate. It is based on simulated fire perimeters given contemporary conditions of fuels, topography, and wind.

Large dense forest sustainability

Large dense forest sustainability is shown in Figure 7. It is based on a combination of mechanical density reduction (commercial or non-commercial), prescribed fire, piling & burning, etc.

Managed wildfire: Areas that are allowed to burn under safe conditions to achieve management goals but can be suppressed if conditions change.

next 15 years, an estimated 3,750-6,000 acres of open forests on dry and moist sites will need to be managed, or mechanical methods in open conditions by reducing surface fuels and fuels. This does not include areas within the Crescent Mountain Fire area where additional fuel and green tree reduction. Specific approaches will depend on objectives and time since treatment.

Locations for dense forest with large trees
 Sustainable locations for dense forest with large trees are shown in Figure 8. Sustainable locations include the valley floor and middle Twisp River, draws, lower slopes and elevation areas in the Buttermilk sub-watershed. Less sustainable locations represent opportunities for a large tree, open forest structure that is needed.

Vegetation types

- Cold forest:** Upper elevation mixed conifer forests with high severity fires every 80-300+ years.
- Dry forest:** Ponderosa pine and Douglas-fir dominated forests that historically had surface fires every 5-25 years.
- Moist forest:** Forests that historically had mixed severity fires every 30-100 years and were composed of fire resistant (western larch, Douglas-fir) and fire intolerant (grand fir) trees.
- Woodland/Steppe:** Grass and shrub lands that may have oak woodlands or $\leq 10\%$ conifer cover.

Forest structure

- Large tree:** Overstory diameter > 20 inches.
- Medium tree:** Overstory diameter 10-20 inches.
- Small tree:** Overstory diameter < 10 inches.
- Dense canopy:** Greater than 40% tree canopy.
- Open canopy:** Less than 40% tree canopy.

Fuels: Shrubs, grasses, small trees, litter, duff, and dead wood.

Forest treatments: some combination of mechanical density reduction (commercial or non-commercial), prescribed fire, piling & burning, etc.

Managed wildfire: Areas that are allowed to burn under safe conditions to achieve management goals but can be suppressed if conditions change.

Twisp River planning area, wildfire response benefit is shown in Figure 9. It is based on simulated fire perimeters given contemporary conditions of fuels, topography, and wind.

Wildfire response benefit

Wildfire response benefit is shown in Figure 9. It is based on simulated fire perimeters given contemporary conditions of fuels, topography, and wind.

Priority ranking

Priority ranking is shown in Figure 10. It is based on a combination of wildfire response benefit and landscape treatment priority (Landscape Treatment Priority (LTP)).

Pod (interior) PCL (boundary)

Pod (interior) and PCL (boundary) are shown in Figure 11. They are based on a combination of wildfire response benefit and landscape treatment priority.

Twisp River planning area, wildfire response benefit is shown in Figure 9. It is based on simulated fire perimeters given contemporary conditions of fuels, topography, and wind.

Wildfire response benefit

Wildfire response benefit is shown in Figure 9. It is based on simulated fire perimeters given contemporary conditions of fuels, topography, and wind.

Priority ranking

Priority ranking is shown in Figure 10. It is based on a combination of wildfire response benefit and landscape treatment priority (Landscape Treatment Priority (LTP)).

Pod (interior) PCL (boundary)

Pod (interior) and PCL (boundary) are shown in Figure 11. They are based on a combination of wildfire response benefit and landscape treatment priority.

Twisp River planning area, wildfire response benefit is shown in Figure 9. It is based on simulated fire perimeters given contemporary conditions of fuels, topography, and wind.

Wildfire response benefit

Wildfire response benefit is shown in Figure 9. It is based on simulated fire perimeters given contemporary conditions of fuels, topography, and wind.

Priority ranking

Priority ranking is shown in Figure 10. It is based on a combination of wildfire response benefit and landscape treatment priority (Landscape Treatment Priority (LTP)).

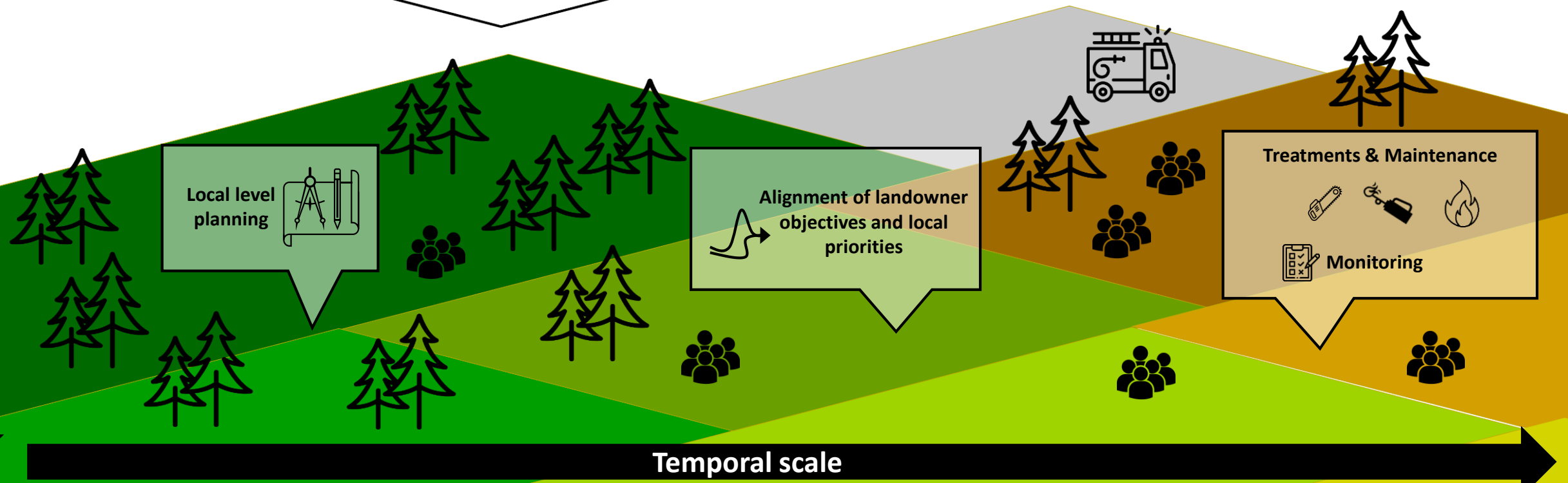
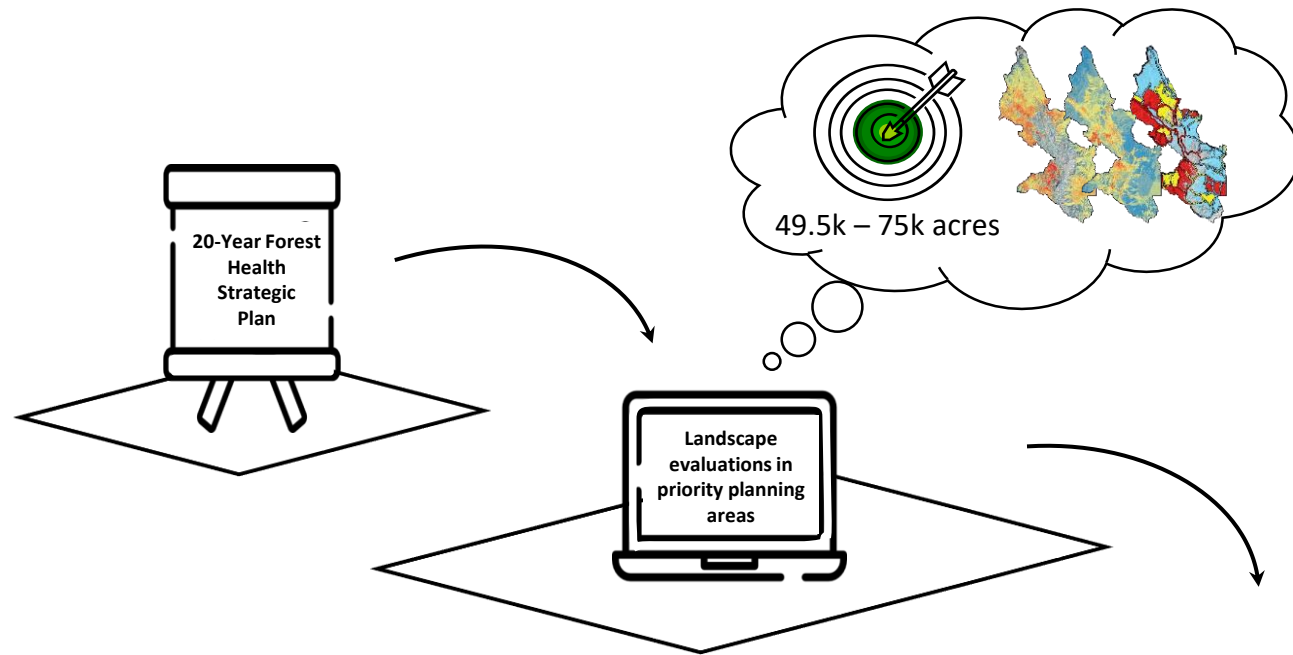
Pod (interior) PCL (boundary)

Pod (interior) and PCL (boundary) are shown in Figure 11. They are based on a combination of wildfire response benefit and landscape treatment priority.

More information:
<https://www.dnr.wa.gov/ForestHealthPlan>

Data: <https://bit.ly/ForestHealthData>

Spatial scale



Temporal scale



HB 1784 Pilot Project:

*Prioritizing for dual
benefit*

HB 1784 Bill Language

Amends RCW 76.06.200 Forest Health Assessment and Treatment Framework

“**Prioritize**, to the maximum extent practicable (...), forest health treatments that are strategically planned to serve **dual benefits** of forest health while providing **geographically planned tools** for wildfire response.”

-- Section 1, subsection (3)(b)

HB 1784 pilot areas

Pilot areas are a subset of Forest Health Priority Planning Areas

Legend

- 2018
- 2020

Methow Valley
Twisp River

Upper Wenatchee
Nason Creek
Chumstick to LP

Teanaway
Cle Elum
Manas-Taneum

HB 1784 Pilot Participation

-Three pilot areas: Cle Elum, Leavenworth and Methow Valley

-Over 150 people participated in the pilot

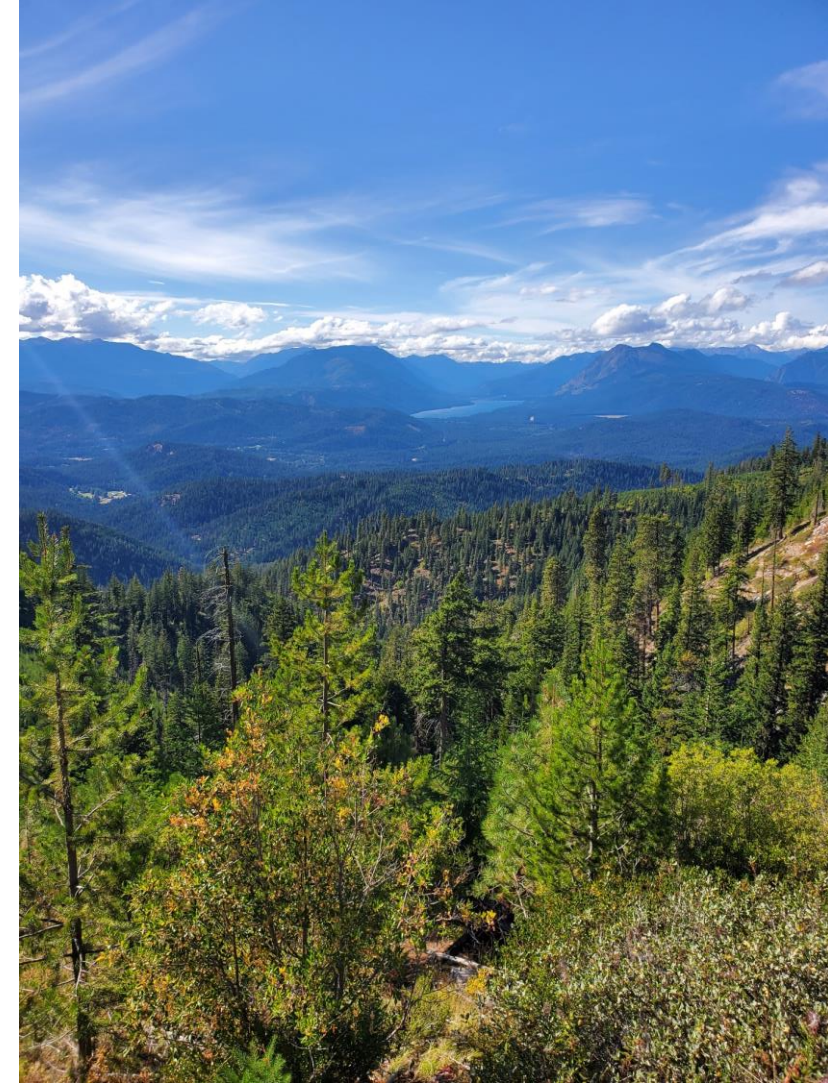
-Technical Team

-US Forest Service, DNR, tribes, fire districts, PUD, universities, conservation districts, fire adapted communities and conservation organizations.

-Four meetings from March 2020 to December 2020

-Three local pilot area meetings in August and September 2020

-DNR Management Team



HB 1784 Pilot Participants

Chief Cody Acord, Okanogan County Fire District 6

Alan Ager, USDA - Forest Service

Michael Barajas, USDA - Forest Service

Ashley Blazina, DNR

Chad Bowman Chelan Public Utility District

Assistant Chief Glenn Brautaset, Chelan County Fire District 3

Nolan Brewer, DNR

Scott Chambers, DNR

Derek Churchill, DNR

Trevor Contreras, DNR

Ben Curtis, USDA - Forest Service

Michelle Day, USDA - Forest Service

Chris Dunn, Oregon State University

Chief Rich Elliott, Kittitas Valley Fire and Rescue

Matt Ellis, USDA - Forest Service

Jason Emsley, DNR

Walter Escobar, DNR

Nancy Farr, Methow Valley Fire Adapted Communities

Chris Furr, USDA - Forest Service

Patrick Haggerty, Cascadia Conservation District

Jake Hardt, DNR

Corina Hayes, Department of Health

Kathryn Heim, Methow Valley Fire Adapted Communities

Paul Hessburg, USDA - Forest Service

Mike Kaputa, Chelan County

Allen Lebovitz, DNR

Mike Liu, Conservation Northwest

Reese Lolley, The Nature Conservancy

Brian Maier, USDA - Forest Service

Austin Marshall, DNR

Daniel Montano, DNR

Chief Phil Mosher, Chelan County Fire District 6

Chief Kelly O'Brien, Chelan County Fire District 3

Jim Passage, Lake Wenatchee Fire Adapted Community

Susan Prichard, University of Washington

Amy Ramsey, DNR

Chad Rissman, Chelan Public Utility District

Jeff Rivera, USDA - Forest Service

Rose Shriner, Washington Resource Conservation & Development Council

Liz Smith, DNR

Andrew Spaeth, DNR

Mike Starkovich, USDA - Forest Service

Cary Stock, USDA - Forest Service

Chief David Walker, Lake Wenatchee Fire and Rescue

Dave Werntz, Conservation Northwest

Management Team

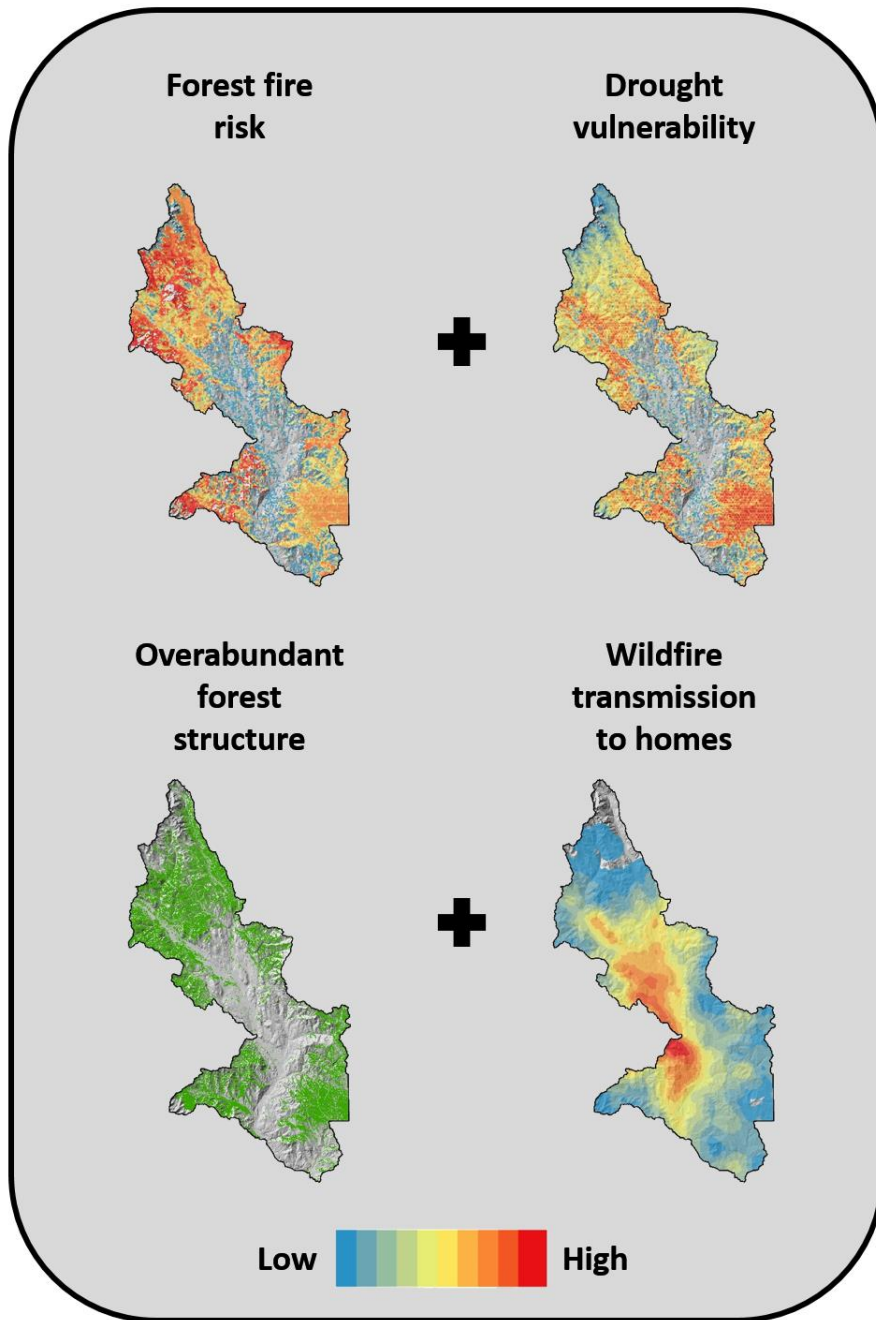
Technical Team

Participants in our local meetings

**Thank
you!**

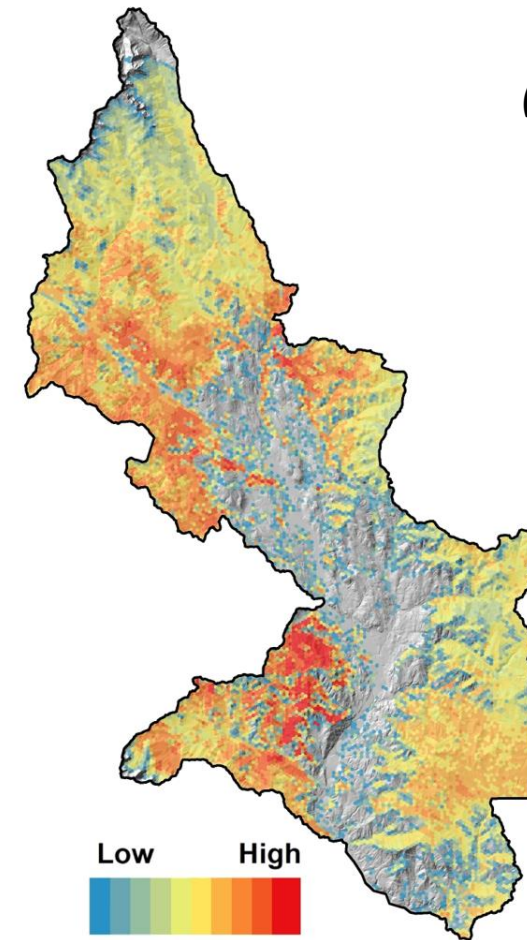


*Dual benefit
prioritization*



=

Landscape Treatment Priority

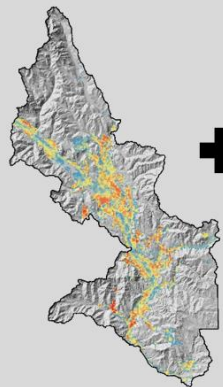


(think forest health)



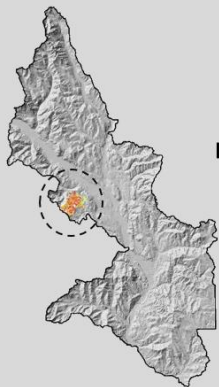
Wildfire risk

Homes and infrastructures



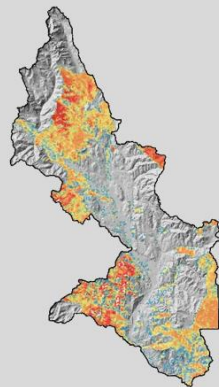
+

Drinking water

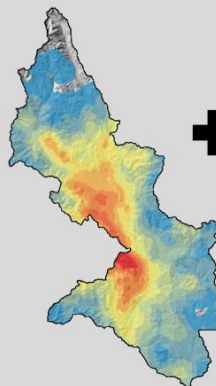


+

Commercially-managed lands

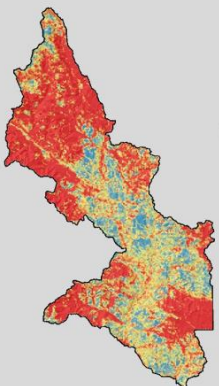


Wildfire transmission to homes



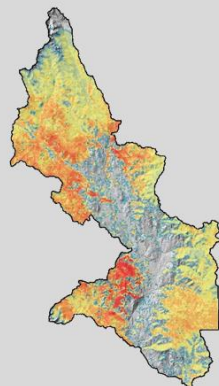
+

Crown fire potential



+

Landscape Treatment Priority

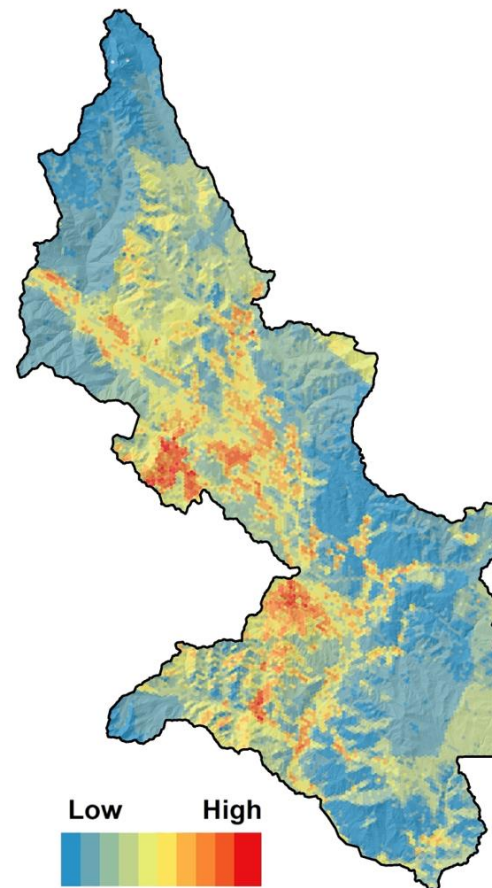


Low High



Wildfire Response Benefit Priority

=



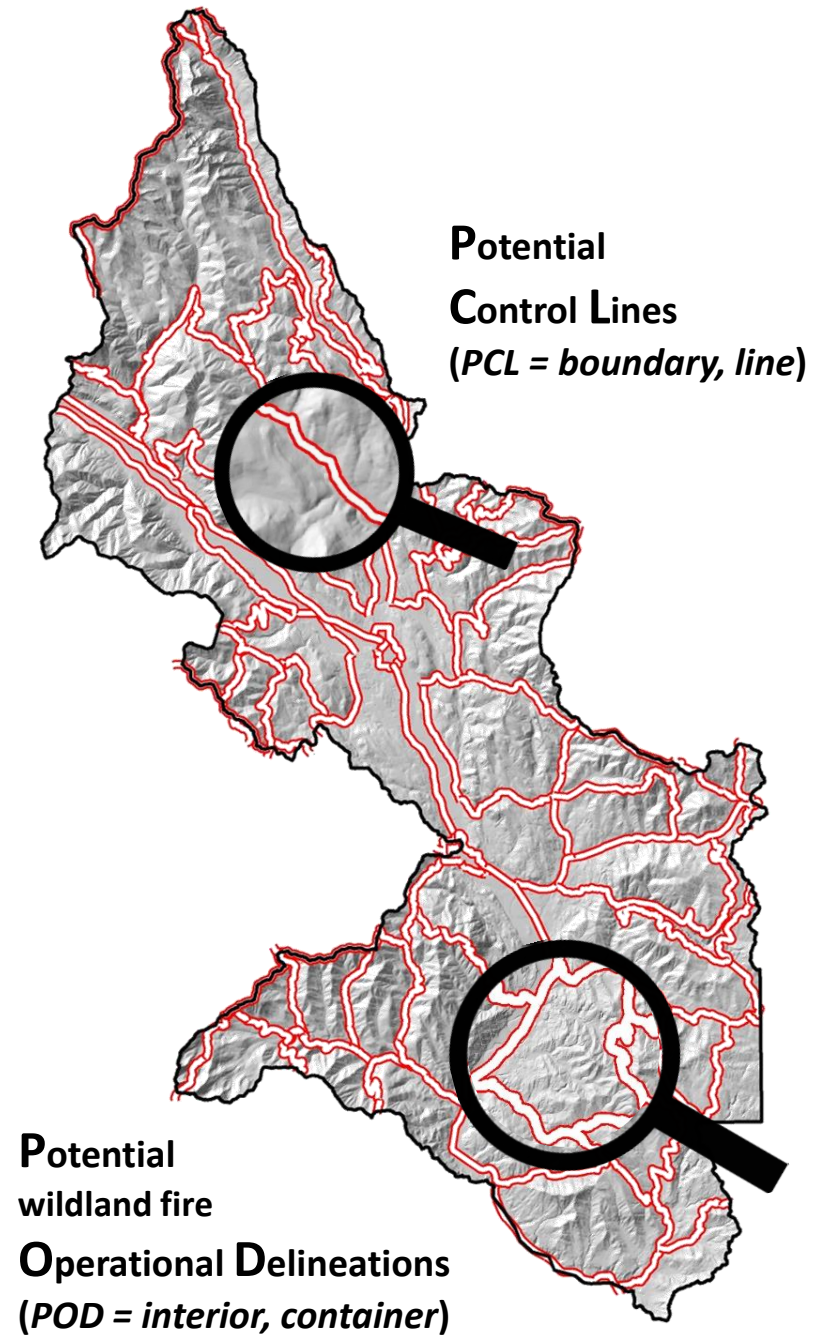
Low High

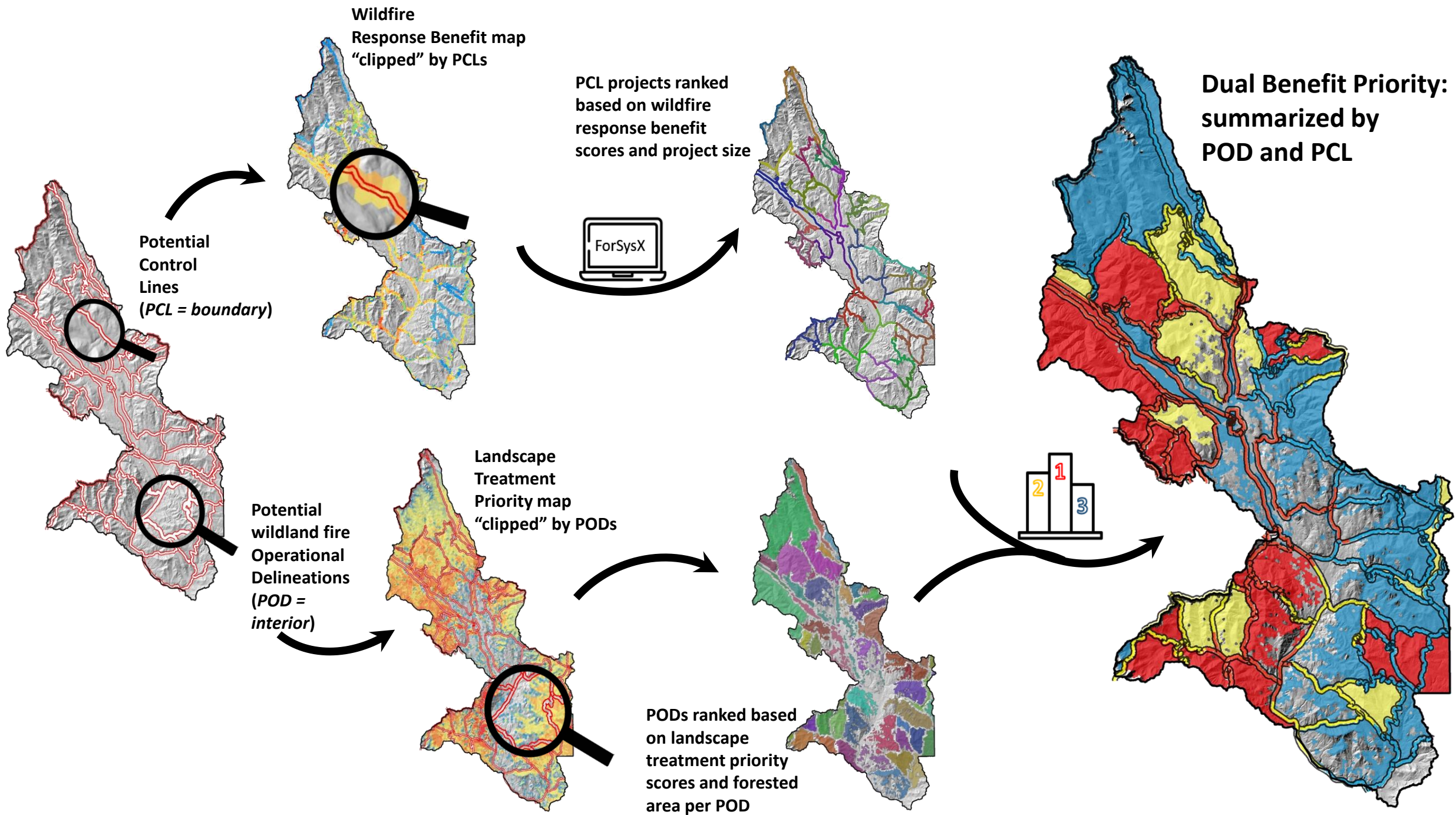
(think fire operations)



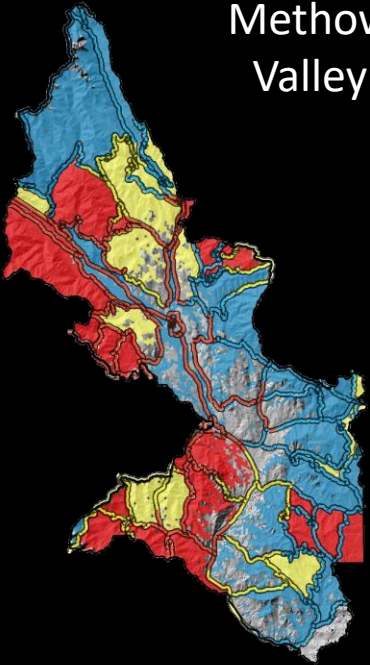
PODs, PCLs, fuelbreaks

- All PCLs are fuelbreaks but not all PCLs will require a fuelbreak treatment
- **Potential, potential, potential**

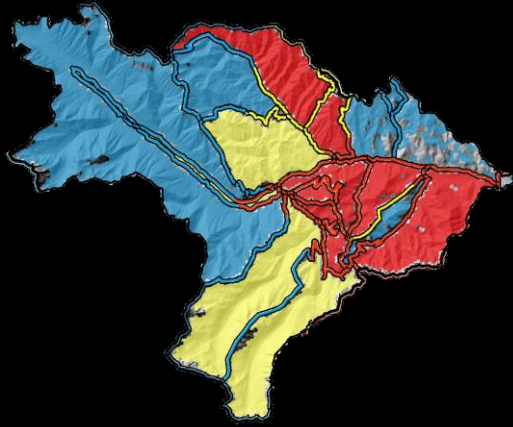




Methow Valley



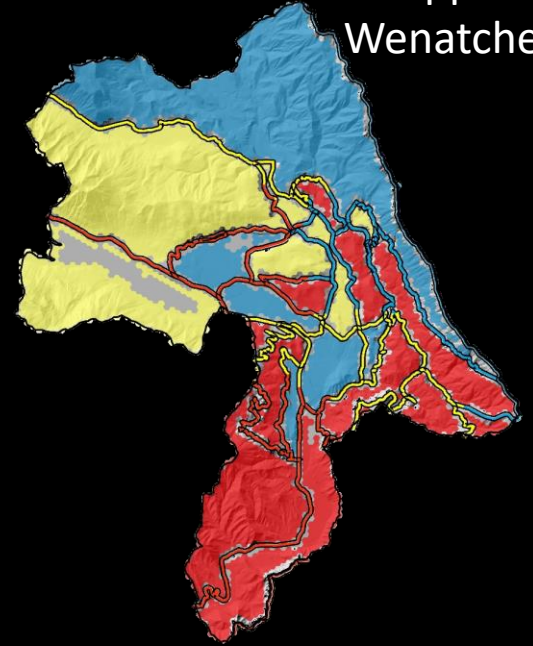
Twisp River



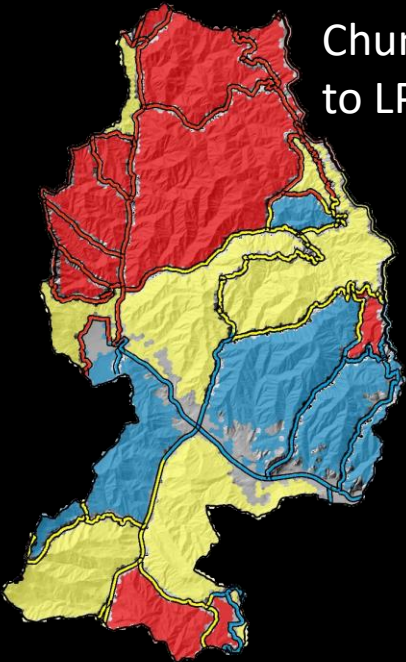
Nason Creek



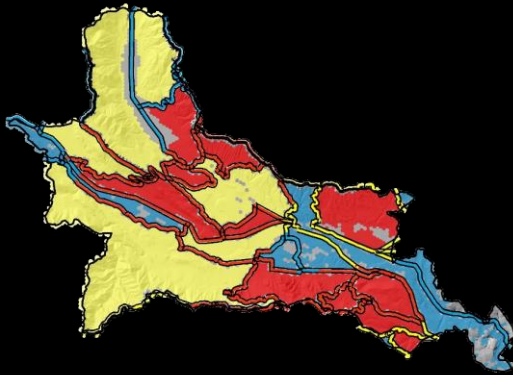
Upper Wenatchee



Chumstick to LP



Cle Elum



Teanaway



Manastash-Taneum



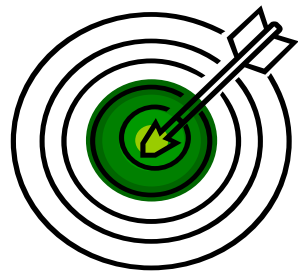


*Applications for forest
health and fire operations*

Essence of dual benefit: Forest health treatments can help support safe and effective fire management operations and in turn fire management operations are critical to helping achieve our forest health goals.

Landscape treatments

Forest health treatment **goals** will primarily be achieved with **large, landscape-level** treatments



49.5k – 75k acres



Recently completed 700-acre forest health treatment on DNR trust lands in the Methow Valley priority planning area. Credit: John Marshall.

Landscape treatments

Landscape-level treatments should intersect with potential control lines wherever possible



Example of a landscape-level treatment melding with a potential control line. Credit: John Marshall

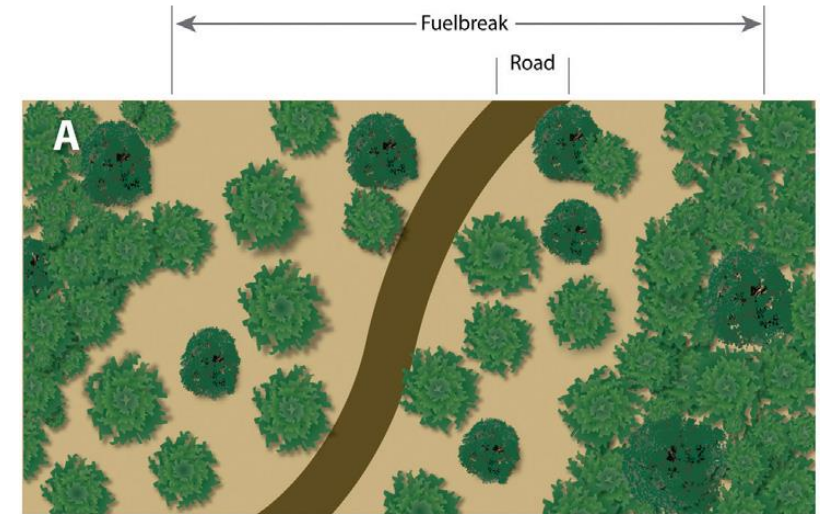


Credit: John Marshall



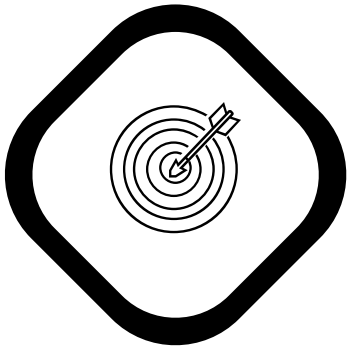
Treatments along PCLs

- Provide safe zones for firefighter engagement
- Provide opportunities for prescribed fire and managed wildfire
- Do not greatly alter fire risk and fire effects
- Can increase probability of fire containment
- Do not act as stand-alone firebreaks
- Can have negative ecological consequences
- Integrated into large landscape treatments



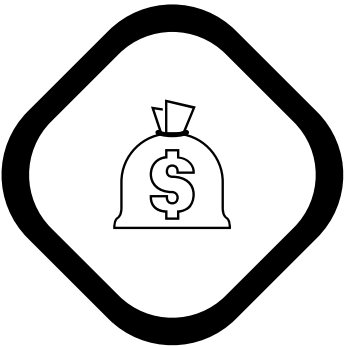
Credit: Kara Karboski\TREX

How DNR and Partners can use information from the Forest Health Assessment and Treatment Framework



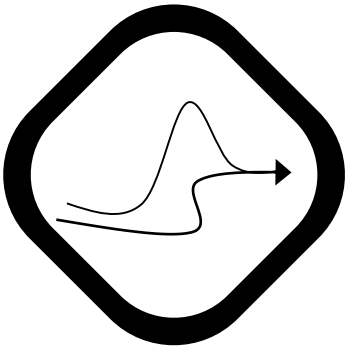
PRIORITIZE

Focus resources in high-priority areas to achieve work at needed scales



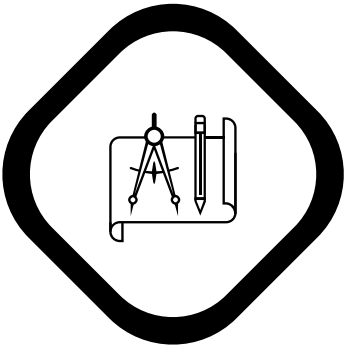
FUNDING

Focus limited treatment dollars in high-priority areas



ALIGNMENT

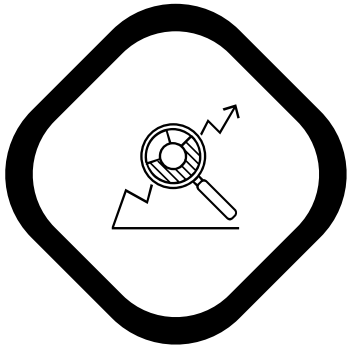
Align state, federal and local forest health efforts to achieve maximum impact



IMPLEMENTATION

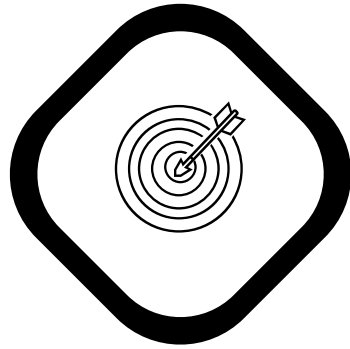
Information can be incorporated into local planning, e.g. NEPA & CWPP

How DNR and Partners can use information from the Forest Health Assessment and Treatment Framework



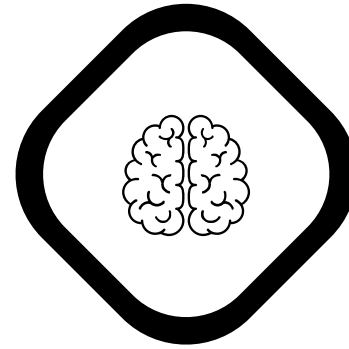
MONITORING

How are forest health conditions changing over time?



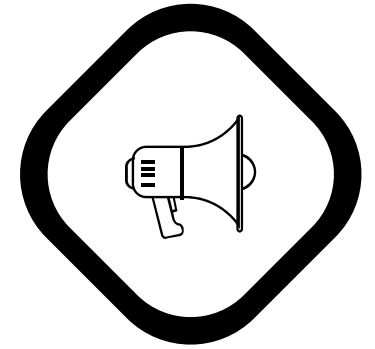
ACCOUNTABILITY

Are we achieving our goals?



ADAPTABILITY

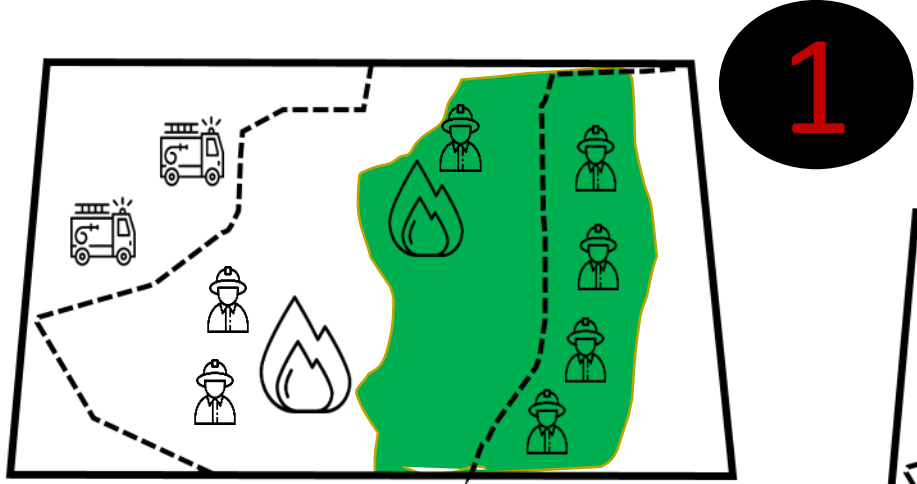
As conditions on the ground, science and priorities shift over time



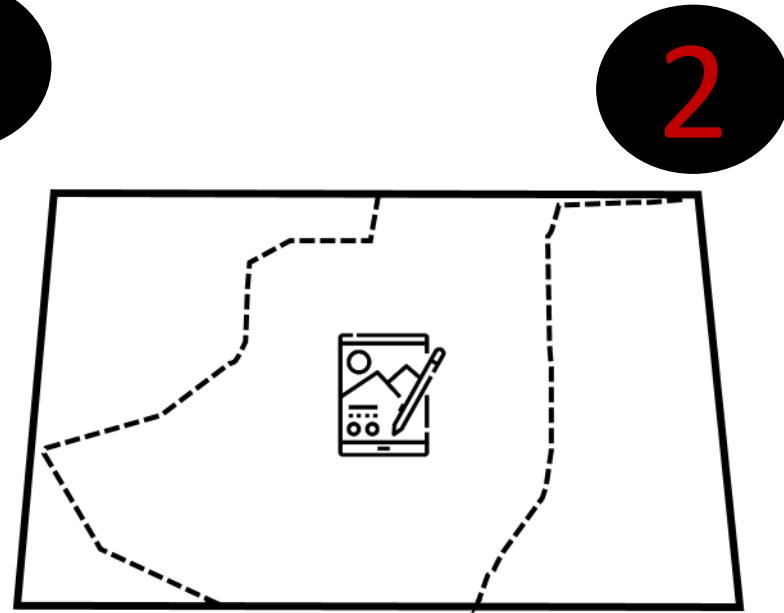
ENGAGEMENT

Educate communities so that they understand forest health priorities for their areas

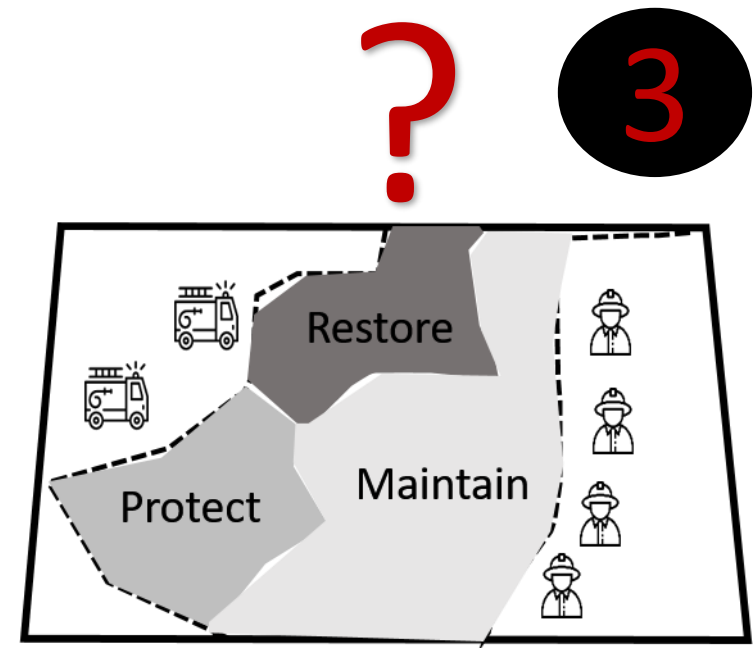
POD Applications



“Boxes only” used to prioritize for dual benefit and help screen for treatment locations in high priority PODs



PCL attribution and integration into DNR's GIS database(s)



Combined with local expertise and spatial analysis to define strategic response zones taking ownership into account



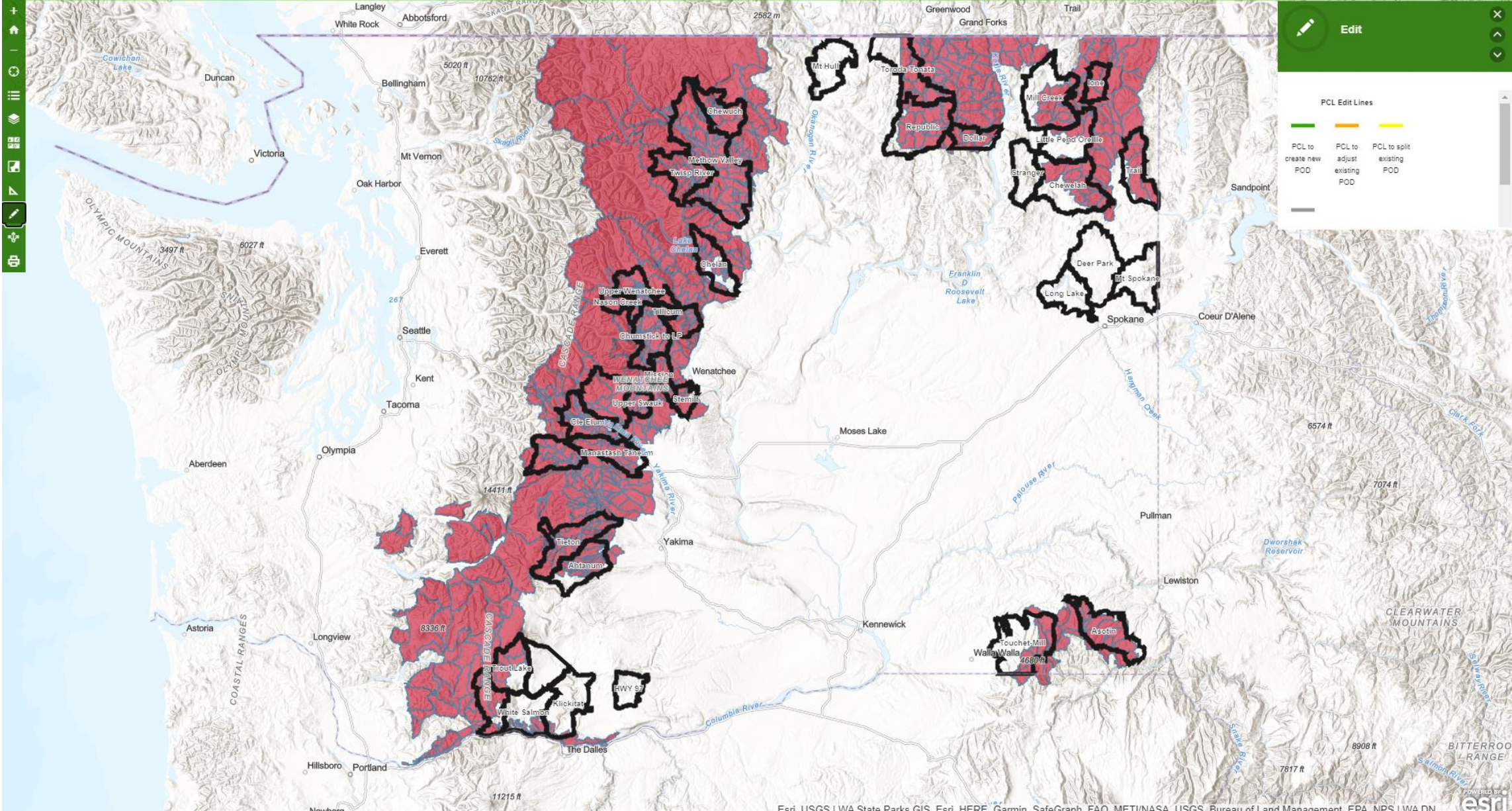
Leadership role

Forest Health

Wildfire

KITTI POD Editing App

Use this application to add and edit POD/PCL lines for your designated areas.



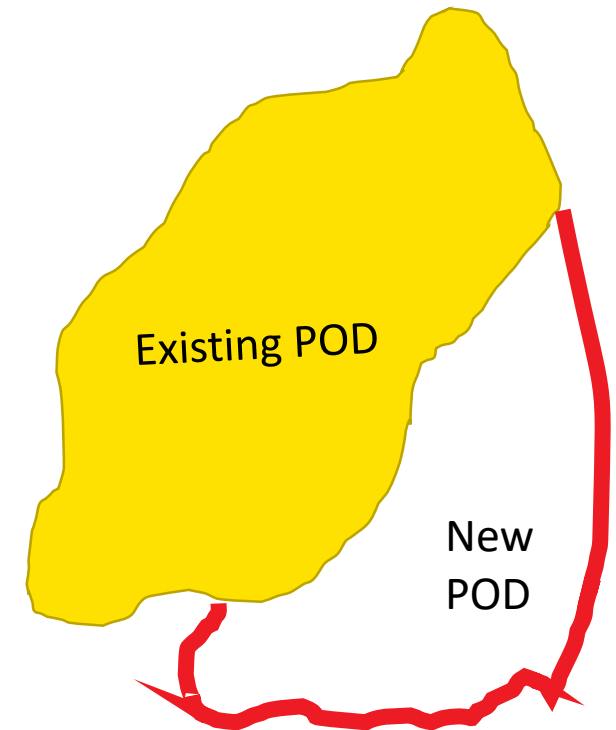
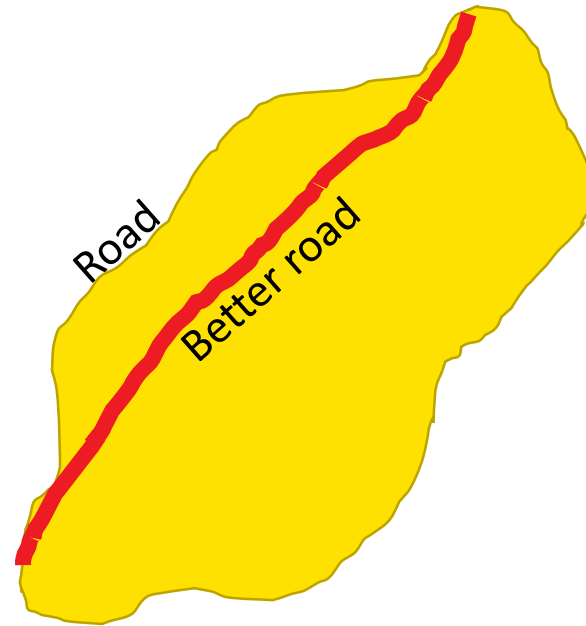
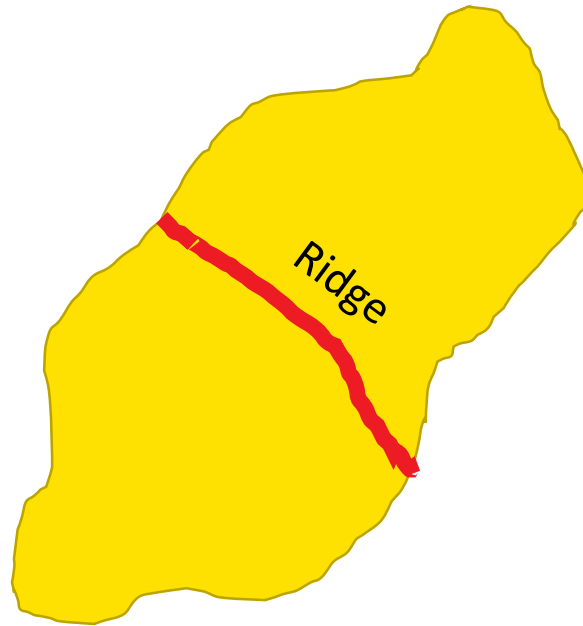
✕
✎ Edit

PCL Edit Lines

- PCL to create new POD
- PCL to adjust existing POD
- PCL to split existing POD

Using the KITTI app

1. Keep it or tweak it?
2. Split a big POD into smaller PODs
3. Adjust boundary of a POD
4. Add a new POD



KITTI survey

Survey to identify a wishlist of PCL attributes that are relevant to the work you do.

KITTI survey: data for PCL attribution

The Washington DNR Forest Health Science team is conducting a survey to identify what information on potential control lines (PCL) are most relevant to both forest health and fire management work that relies on these lines.

PCLs are pre-identified, strategic linear locations that can be used for containing fire during forest health or fire suppression activities and are part of the Potential Operational Delineation (PODS) framework. PCLs are optimal locations to contain a fire due to landscape features such as ridges, creeks, roads, old treatments, etc., and their locations support operational priorities.

The goal of this survey is to identify what information on PCLs would help support their use on the ground.

Thank for you for participating in this survey and please contact Ana Barros (ana.barros@dnr.wa.gov) if you have any questions.

What is the focus of your work? *

- Forest management
- Fire management
- Both (forest and fire management)
- Other...

How important is it to have pre-identified egress routes to safety zones available?

not important 1 2 3 very important

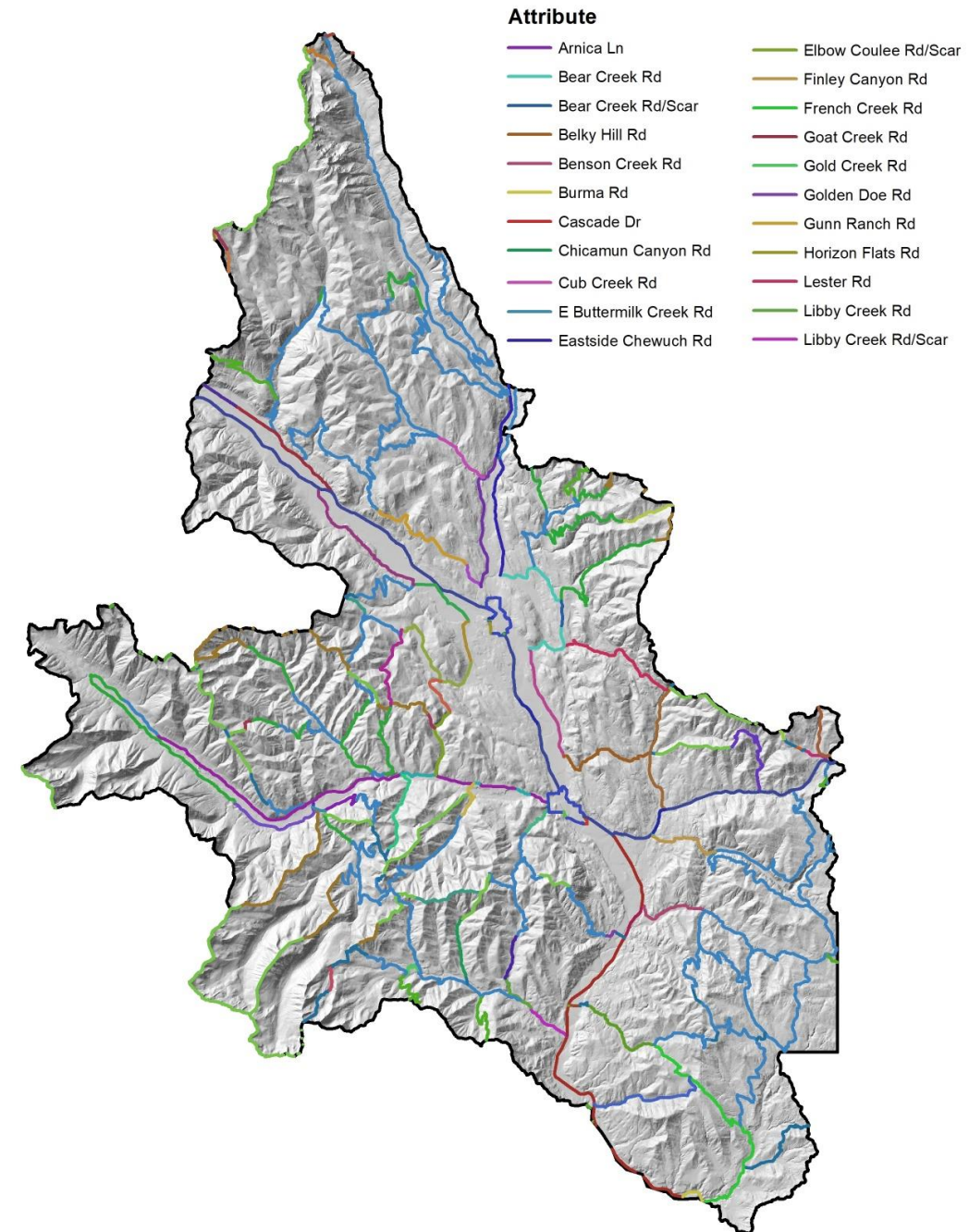
⋮

How important is it to have ownership information along a PCL?

not important 1 2 3 very important

PCLs attribution

- Attributes to support fire incident management (*fire manager hat*)
- Attributes to support treatment projects (*forester hat*)



Considerations

- How do Wildfire Division and their fire partners want to use PODs?
- Where do we need PODs?
- Who needs to be involved in POD delineation, attribution and objective setting? Who coordinates the process?
- What are forums and venues for collaboration?

