KLAMATH-CASCADE REGIONAL MEETING

California's 2030 Natural and Working Lands Climate Change Implementation Plan











Agenda

- 1. Overview of state direction for natural and working lands
- 2. Overview of draft goals for conservation, restoration, and management in the Klamath-Cascade region
- 3. Discussion of regional draft goals and outlook for future implementation

California's natural and working lands

















Overarching goal

CALIFORNIA'S CLIMATE POLICY PORTFOLIO



Double building efficiency



Cleaner freight and goods movement



50% renewable power



Slash potent "super-pollutants" from dairies, landfills and refrigerants



More clean, renewable fuels



Cap emissions from transportation, industry, natural gas, and electricity



Cleaner zero or near-zero emission cars, trucks, and buses



Invest in communities to reduce emissions



Walkable/Bikeable communities with transit



Protect and manage natural and working lands



Fully integrate natural and working lands into California's climate change policy portfolio

December 2017 Scoping Plan directive

- Maintain lands as a resilient carbon sink achieve net zero or negative greenhouse gas emissions
- Minimize, where applicable, net greenhouse gas and black carbon emissions
- Sets a preliminary goal for sequestration and avoided emissions of at least 15-20 MMT
 CO₂e by 2030 through existing pathways and new incentives

Achieving California's vision for natural and working lands

2030 Natural and Working Lands Climate Change Implementation Plan



Blueprint for achieving state vision for natural and working lands:

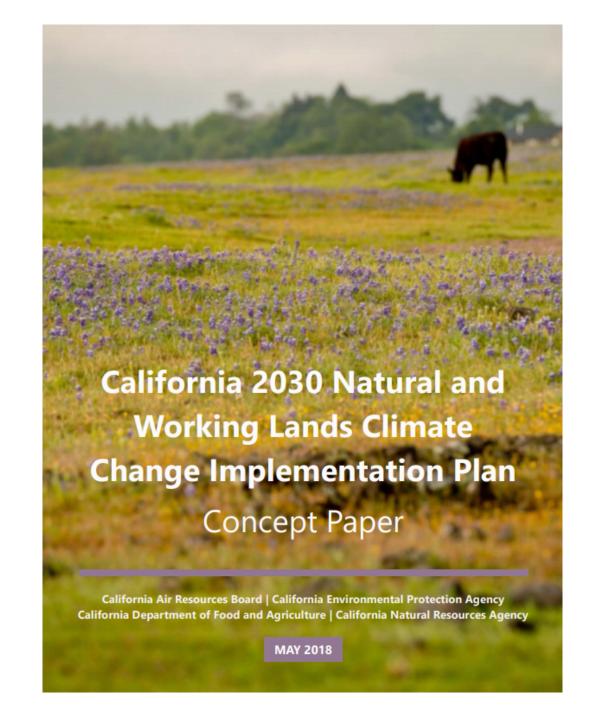
- 1. Protect land from conversion to more intensified uses by increasing conservation practices and local planning processes that avoid greenfield development;
- 2. Enhance the resilience of and potential for carbon sequestration on lands through management and restoration;
- 3. Innovate biomass utilization such that harvested wood and excess agricultural and forest biomass can be used to advance renewable energy and fuels objectives

Increased ability for land to sequester carbon and provide other benefits

- Health
- Social
- Economic
- Environmental

May 2018
Concept Paper
for the final
Plan

https://arb.ca.gov/cc/natandworkinglands/nwl-implementation-plan-concept-paper.pdf



State-funded activity ("intervention-based") approach

- Plan relies on using identified activities (interventions)
- Sets an ambitious but achievable goal with targets that are scaleable
- Focuses on State-supported land conservation, restoration, and management activities for State agency departments, boards, and conservancies
- Implementation will leverage **new and existing programs** at various departments and agencies & California's history of implementing these activities through programs that often do not have carbon sequestration as their primary goal
- Facilitates tracking and reporting on progress towards goal

Multiple benefits of implemented projects





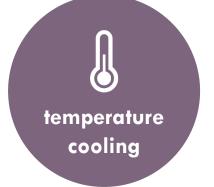












Land protection, restoration, and management activities in the plan

Land protection	Avoided conversion of land for development
Agricultural practices	Cultivated land soil conservation, rangeland compost amendment, rotational grazing, conservation crop rotation, mulching, riparian restoration
Urban forests	Expansion of existing urban tree canopy
Forest management	Understory treatment, partial cut, prescribed burn, biomass utilization, improved management
Restoration activities	Restoration and expansion of the extent of mountain meadows, managed wetlands, oak woodlands, riparian areas, and seagrass

Goals of final Plan

- Help integrate natural and working lands with broader state climate strategy and future Scoping Plan
- Include a final statewide 2030 intervention-based sequestration goal for natural and working lands
- Identify scale and scope of State-supported land conservation, restoration, and management acreage targets needed for long-term objectives & 2030 goal

Tools for setting the 2030 carbon goal

Two tools for projecting the carbon impacts of conservation, restoration, and management activities:

California Natural and Working Lands Carbon and Greenhouse Gas Model (CALAND)

COMET-Planner
Compost-Planner

California Natural and Working Lands Carbon and Greenhouse Gas Model (CALAND)

- Developed by Lawrence
 Berkeley National Laboratory
- Empirically-based landscapescale carbon accounting model
- Simulates effects of various practices and land use or land cover change on carbon dynamics



COMET-Planner & Compost-Planner

- COMET-Planner: developed by Colorado State University and U.S. Department of Agriculture Natural Resources Conservation Service
- Compost-Planner: developed by CARB with an interface developed by USDA-NRCS
- Both provide estimates of the net climate benefits resulting from implementation of various landbased management practices



Setting acreage targets

Three scenarios based on:

no state activities



BASELINE SCENARIO

Regulatory minimum only

two alternatives



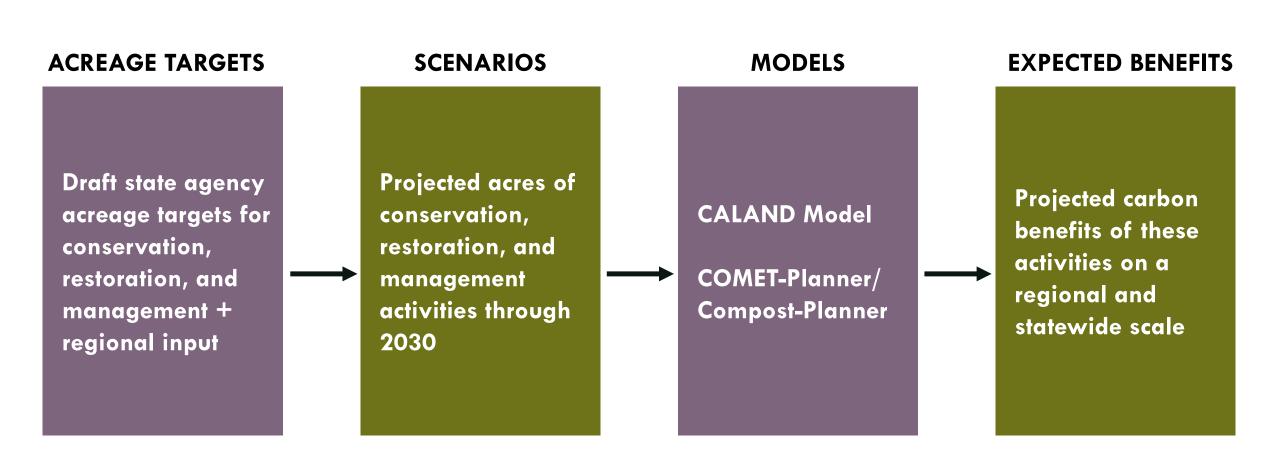
BUSINESS-AS-USUAL SCENARIO

Maintaining
California's current
track

AMBITIOUS SCENARIO

More aggressive levels of state funding for programs/voluntary efforts

Projecting carbon impacts of conservation, restoration, and management targets



Results of projections

- Alternative scenarios compared to baseline to show impact of state activities
- Projections will provide outlook on scale needed and reasonableness of proposed strategies

Additional considerations

- Near and long-term carbon impacts
- Climate change impacts, health, social, economic, and environmental benefits
- Cost effectiveness
- Geographic, environmental, social, and economic suitability
- Permanence, or long-term effect

Tracking and reporting

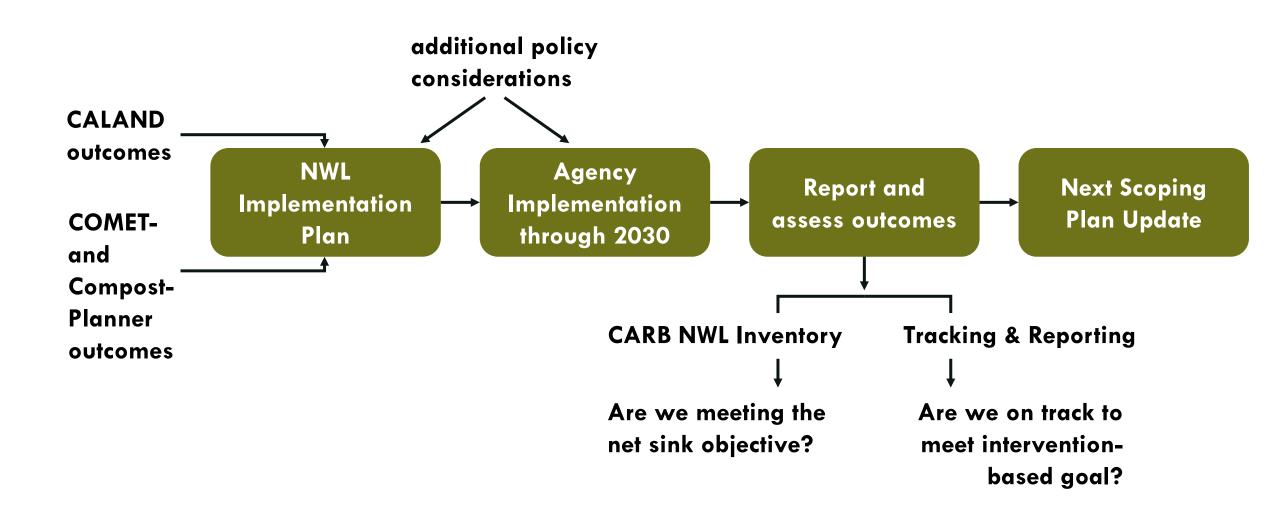
- Annual reporting on expected benefits based acres protected and brought under management using:
 - CALAND and other methods
 - COMET-Planner and existing quantification methodologies developed as part of California Climate Investments
- Develop a system for tracking and reporting actual outcomes

Assessing progress towards long-term objective

Natural and Working Lands GHG Inventory

- Retrospective snapshot of carbon stocks, stock-change and resulting GHG flux
- Used to assess progress on sector objective of net sequestration or negative emissions
- Will capture the effects of implemented interventions, along with other gains or losses that occur over the same timeframe
- Will help indicate scale of interventions needed

Framework: putting it all together

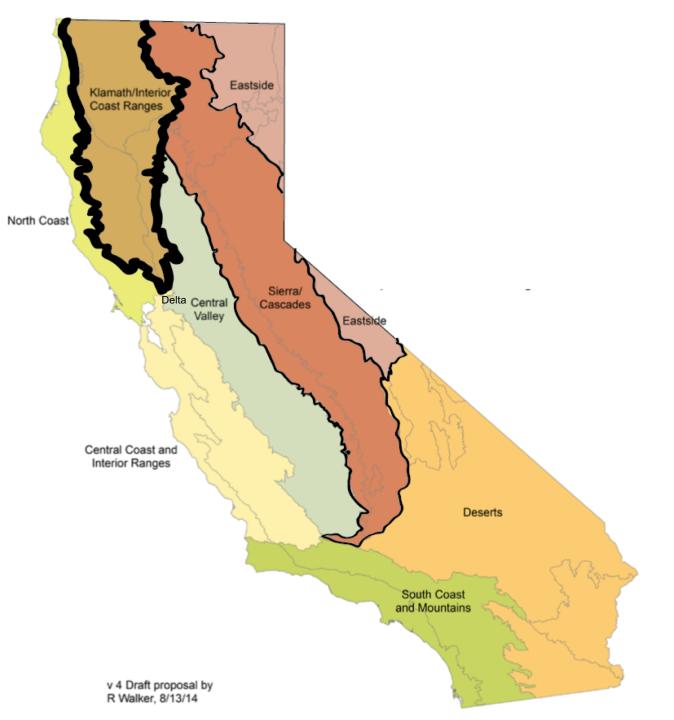


Moving Forward

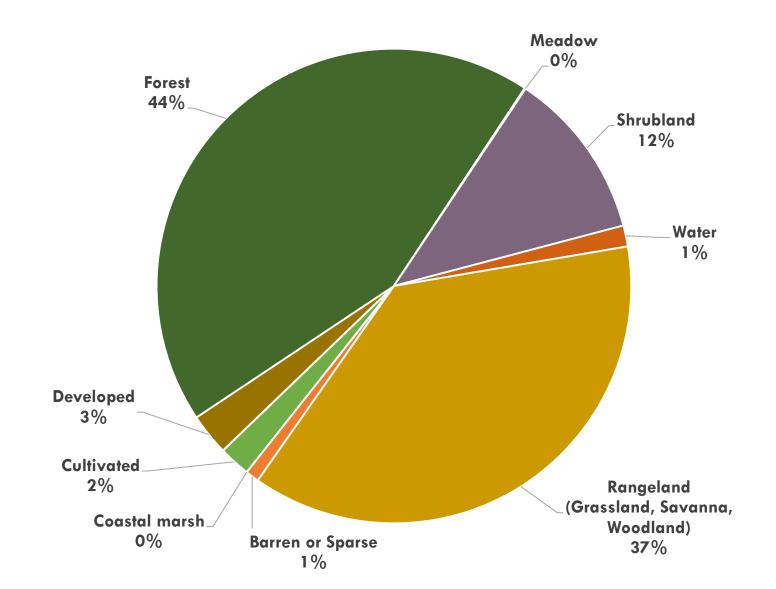
November September Summer 2018 June 2018 2018 2018 Release final Regional meetings Develop draft Announce natural and working **Implementation** 2030 natural and working lands lands Plan goal and Plan interventionbased carbon goal



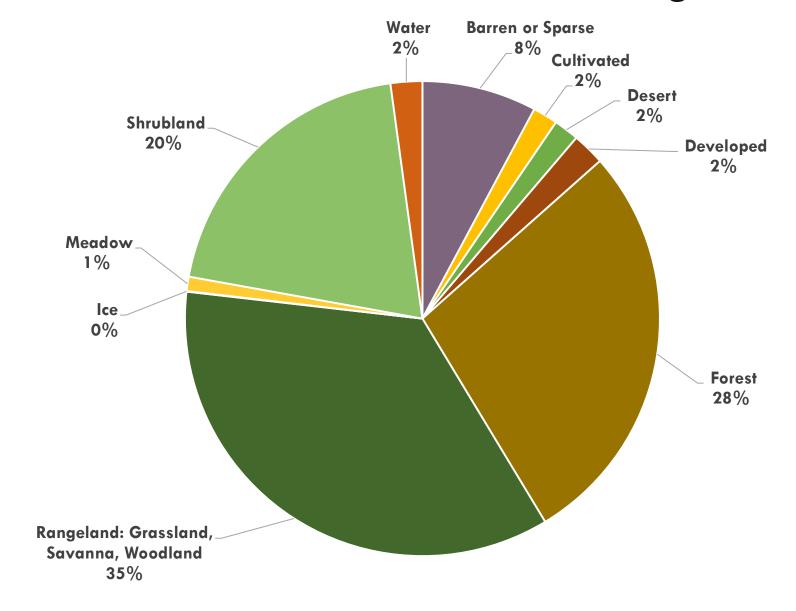
Klamath/Interior
Coast Ecoregion
and Sierra/ Cascades
& Eastside Ecoregions



Land Cover in the Klamath/Interior Coast Ecoregion



Land Cover in the Sierra Nevada & Eastside Regions



Setting acreage targets

Three scenarios based on:

no state activities



BASELINE SCENARIO

Regulatory minimum only

two alternatives



BUSINESS-AS-USUAL SCENARIO

Maintaining
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track



More aggressive levels of state funding for programs/voluntary efforts

KLAMATH/ INTERIOR COAST: Compiled acreage targets

Practice	BAU	Ambitious	Implementing Agencies/ Departments
Land Protection	283,915	299,187	Wildlife Conservation Board, State Parks
Reforestation	60	60	State Parks
Partial Cut/ Fuel Reduction	97,200	130,920	Department of Forestry and Fire Protection, State Parks
Forest Understory Treatment	3,600	3,600	State Parks
Forest Prescribed Burn	42,792	57,448	Department of Forestry and Fire Protection, State Parks
Less Intensive Forest Management	96,805	128,408	Department of Forestry and Fire Protection, Department of Water Resources
Additional Forest Biomass Utilization	12,000	1 <i>5</i> ,600	Department of Forestry and Fire Protection
Oak Woodland Restoration	360	480	State Parks
Meadow Restoration	600	720	State Parks
Riparian Restoration	1,938	2,770	Department of Conservation, Department of Water Resources, Wildlife Conservation Board
Soil Conservation Practices			
Rangeland Rotational Grazing			
Rangeland Composting			_ - -
Urban Forest Expansion		10%	

KLAMATH/INTERIOR COAST: Forest management acreage targets

				Implementing Agencies/
Description	Practice	BAU	Ambitious	Departments
Reforestation of non-regenerated forest area post-wildfire	Reforestation	60	60	State Parks
Removal of a portion (20%) of the live canopy and standing dead trees for forest health objectives; represents a group of specific practices that require high levels of				
basal area to remain in the forest, such as uneven-aged	Partial Cut/ Fuel			Department of Forestry and
management and thinning for fuel reduction*	Reduction	97,200	130,920	Fire Protection, State Parks
Clearing and removal of forest understory to support forest health objectives	Forest Understory Treatment	3,600	3,600	State Parks
Prescribed burning for forest fire fuel reduction and ecological restoration; can be modeled as in sequence with mechanical thinning	Forest Prescribed Burn	•	57 , 448	Department of Forestry and Fire Protection, State Parks
Change from even-aged management to uneven-aged management (partial cut) or areas of no harvest (reserve areas) or extension in harvest rotation period	Less Intensive Forest Management	96,805	128,408	Department of Forestry and Fire Protection, Department of Water Resources
Increase in the percentage of slash material diverted to bioenergy and wood products, away from pile burning and decay	Additional Forest Biomass Utilization	12,000	15,600	Department of Forestry and Fire Protection

KLAMATH/INTERIOR COAST: Ecological restoration & land conservation acreage targets

Description	Practice	BAU	Ambitious	Implementing Agencies/ Departments
Reestablishment of oak woodlands on grasslands and cultivated lands	Oak Woodland Restoration	360	480	State Parks
Restoration of meadows in mountain regions	Meadow Restoration	600	720	State Parks
Riparian trees, primarily oaks, are established on grassland or cultivated lands	Riparian Restoration	1,938	2,770	Department of Conservation, Department of Water Resources, Wildlife Conservation Board
Reduced conversion of natural and working lands to urbanized land	Land Protection	283,915	299 , 187	Wildlife Conservation Board, State Parks

SIERRA NEVADA: Compiled acreage targets

Activity		Cascade Eastsi		side	Implementing Agencies/	
	BAU	Ambitious	BAU	Ambitious	Departments	
Reforestation	2,568	2,568	36,033	42,757	WCB, State Parks, Sierra Nevada	
Keroresianon	2,300	2,300	30,033	42,/ 3/	Conservancy, CAL FIRE	
					State Parks, DWR, WCB, CAL FIRE,	
Partial Cut	349,447	5,370,388	1 <i>7,</i> 780	563,280	Tahoe Conservancy, Sierra Nevada	
					Conservancy	
Forest Understory Treatment	30,552	42,400	0	0	State Parks, Tahoe Conservancy,	
	30,332	42,400			Sierra Nevada Conservancy	
Forest Prescribed Burn	104562	122 204	0	0	State Parks, CAL FIRE, Sierra Nevada	
	104,562	132,306	<u> </u>	0	Conservancy, Tahoe Conservancy	
Less Intensive Forest Management	1 <i>5</i> 6,000	202,800	0	0	CAL FIRE	
Additional Faces Diagram Hillery	25 420	40.000	^		CAL FIRE, Tahoe Conservancy, Sierra	
Additional Forest Biomass Utilization	25,430	42,290	0	0	Nevada Conservancy	
Oak Woodland Restoration	522	750	0	0	State Parks	
Meadow Restoration	27 201	01 0 / 2	2710	0 1 5 4	CDFW, WCB, Tahoe Conservancy,	
Meddow Restoration	27,281	81,843	2,718	8,156	Sierra Nevada Conservancy	
Dinarian Destaration					DOC, DPR, DWR, WCB, Tahoe	
Riparian Restoration	2,309	3,558	28	100	Conservancy	
Soil Conservation Practices	183	348	12	24	State Parks	
Rangeland Rotational Grazing	0	60,000	0	0	State Parks	
Rangeland Composting	0	0	0	0		
Urban Forest Expansion	-	+10% expansion in urban tree canopy		+10%	CAL FIRE, Natural Resources Agency	

SIERRA NEVADA: Forest management acreage targets

Description	Practice	Sierra/Co BAU	ıscade Ambitious	Eastside BAU	Ambitious	Implementing Agencies / Departments
Reforestation of non-regenerated forest area post-wildfire	Reforestation	2,568	2,568	36,033	42,757	WCB, State Parks, Sierra Nevada Conservancy, CAL FIRE
Removal of a portion (20%) of the live canopy and standing dead trees for forest health objectives; represents a group of practices that require high levels of basal area to remain in the forest, such as uneven-aged management and thinning for fuel reduction*	Partial Cut	349,447	5,370,388	17,780	563,280	State Parks, DWR, WCB, CAL FIRE, Tahoe Conservancy, Sierra Nevada Conservancy
Clearing and removal of forest understory to support forest health objectives	Understory Treatment	30,552	42,400	0	0	State Parks, Tahoe Conservancy, Sierra Nevada Conservancy
Prescribed burning for forest fire fuel reduction and ecological restoration; can be modeled as in sequence with mechanical thinning	Prescribed Burn	104,562	132,306	0	0	State Parks, CAL FIRE, Sierra Nevada Conservancy, Tahoe Conservancy
Change from even-aged management to uneven-aged management (partial cut) or areas of no harvest (reserve areas) or extension in harvest rotation period	Less Intensive Forest Management	156,000	202,800	0	0	CAL FIRE
Increase in the % of slash material diverted to bioenergy and wood products, away from pile burning & decay	Additional Biomass Utilization	25,430	42,290	0	0	CAL FIRE, Tahoe Conservancy, Sierra Nevada Conservancy

^{*}Some acres listed under 'partial cut' will be slotted under 'prescribed burn' or 'understory treatment after further analysis; the 5,370,388 acres represents need for fuel reduction treatment.

SIERRA NEVADA: Ecological restoration & land conservation acreage targets

Description	Practice	Sierra	/Cascade	Eastside		Implementing Agencies/	
		BAU	Ambitious	BAU	Ambitious	Departments	
Reestablishment of oak woodlands on grasslands and cultivated lands	Oak Woodland Restoration	522	750	0	0	State Parks	
Restoration of meadows in mountain regions	Meadow Restoration	27,281	81,843	2,718	8,156	CDFW, WCB, Sierra Nevada Conservancy, Tahoe Conservancy	
Riparian trees, primarily oaks, are established on grassland or cultivated lands	Riparian Restoration	2,309	3,558	28	100	DOC, State Parks, DWR, WCB, Tahoe Conservancy	
Reduced conversion of natural and working lands to urbanized land	Land Protection	461,150	512,016	64,028	118,673	WCB, Sierra Nevada Conservancy, DWR, DOC	

Developing targets for conservation and restoration: what regional plans, goals, and strategies should be included?

Rangeland management; afforestation; oak woodland restoration

SUMMARY OF THE RANGELANDS SUITABLE FOR TERRESTRIAL CARBON SEQUESTRATION IN SHASTA COUNTY

PIER COLLABORATIVE REPORT

CALIFORNIA ENERGY COMMISSION

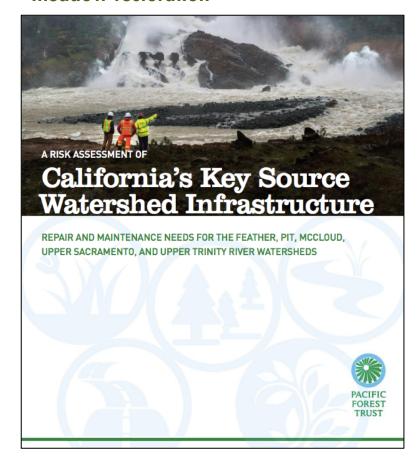




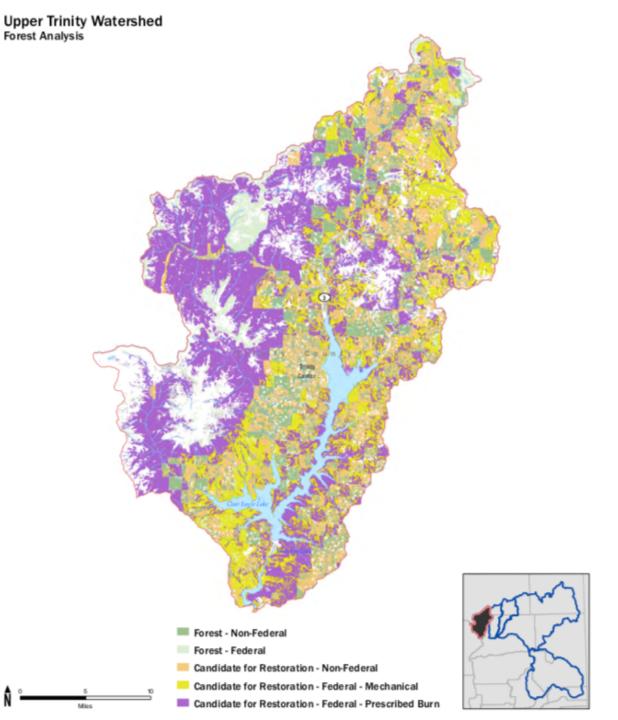


Winrock International

November 2007 CEC-500-2007-101 Forest management; riparian and meadow restoration



Pacific Forest
Trust analysis of
land for
restoration,
Upper Trinity
Watershed



Developing targets for rangelands and cultivated lands

Soil conservation practices

Includes cover cropping, reduced tillage, no-till, mulching, and compost

Rangeland compost application

Compost is applied to traditionally managed rangeland (grassland, savanna, and woodland land types in CALAND) and repeated either every 10 years or every 30 years. The base land type is traditionally managed rangeland.

Prescribed grazing practices

Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.

240,000

total acres of **cultivated land** in the Klamath/Interior Region

4,200,00

total acres **rangeland** in the Klamath/Interior Region





QUESTIONS & DISCUSSION

Discussion Questions

- 1. Are regional projects reflected in the baseline and more ambitious draft acreage targets for conservation, restoration, and management?
- 2. How should the **ambitious** scenario be scoped for activities in your region? Are there existing regional planning and goal-setting documents that should be included within the ambitious scenario?
- 3. What are your regional implementation **priorities?** What is needed to support successful regional implementation?

CONSERVATION, RESTORATION, & MANAGEMENT ACTIVITIES

Land protection	Avoided conversion of land for development
Agricultural practices	Cultivated land soil conservation, rangeland compost amendment, rotational grazing, conservation crop rotation, mulching, riparian restoration
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Restoration activities	Restoration and expansion of the extent of mountain meadows, managed wetlands, oak woodlands, riparian areas, and seagrass

Feedback on Acreage Targets

BY JULY 9

Please submit written comments on

acreage targets to:

emma.johnston@resources.ca.gov

Thank you

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Shelby Livingston, California Air Resources Board shelby.livingston@arb.ca.gov

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