




Land Tender™
by vibrant planet

A Cloud-Based Planning and Monitoring Tool

for Collaboratives • Agencies • Organizations

November 2022



A man with long hair and a beard, wearing a tan U.S. Forest Service uniform, stands in a forest. He is speaking and gesturing with his hands. A green speech bubble is positioned to his right, containing text. The background is a sunlit forest with many trees.

We know **fuel treatments** and **prescribed fire** reduces the risk of high intensity wildfire...we just need more **capacity** to increase the **pace and scale**...

JOE FLANNERY

COMMUNICATION SPECIALIST
U.S. FOREST SERVICE

Breaking down Vertical Silos to increase pace and scale of restoration.

More people



More partnerships
(with Authority)



Democratize and
standardized
planning
methodologies and
tools –and access to
them.



North Yuba




The Tahoe National Forest's GIANT task:

- How much treatment is needed to mitigate significant loss
- Amount of acres treated vs. priority acres treated
- Need for efficiency - the clock is ticking
- A system to determine the highest priority treatment areas
- A system to unbiasedly assess tradeoffs
- A system to apply conventional science
- Create a plan that attracts private investment + grant opportunities
- On a 275,000 acre landscape
- With partners

North Yuba

USDA United States Department of Agriculture

North Yuba Landscape Resilience Project
Purpose and Need and Proposed Action



Forest Service | Tahoe National Forest | Yuba River Range District | July 2021

Environmental Analysis and Decision-Making Approach

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    graph LR
      A[NEPA and Project Planning] --> B[Initial Decision]
      B --> C[Subsequent Project Planning]
      C --> D[Subsequent Decisions]
  
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NEPA and Project Planning
Use LIDAR, HRV, TCSI and other high-resolution data and modeling to develop and analyze the proposed action and alternatives. Prepare ES analyzing actions across the entire landscape. Conduct surveys for areas that will be implemented first.

Initial Decision
Record of Decision would:
• approve implementation of sub-project(s) where surveys have been completed, and
• adopt any project-specific forest plan amendments.

Subsequent Project Planning
Conduct surveys for additional sub-project areas. Assess new information/changed circumstances. Determine if additional NEPA analysis is required. Provide designated opportunities for public comment and pre-decisional administrative review of new information and draft ROD.

Subsequent Decisions
Record of Decision would:
• approve implementation of additional sub-project areas where surveys have been completed.

Lidar, HRV, and Other High-Resolution Data and Modeling to Develop Project

Table 1. Strategic assets, resources, and areas (SARAs) within each North Yuba Landscape emphasis area.

Emphasis Area	Strategic Areas, Resources, and Assets	Key Treatment Focus
Infrastructure	structures; emergency service, communication, and power infrastructure	Promoting fire adapted communities
Developed Recreation Site	campgrounds, trails, day use areas, boating and fishing sites, and observation sites	Promoting fire adapted communities
Strategic Fuel Area	critical access roads, fuelbreaks, and community fuel reduction zones (i.e. wildland urban intermix (WUI) defense zones)	Promoting fire adapted communities
Unique Ecological Community	aspen stands, meadows, and fens	Improving water security and conserving biodiversity
Forest Matrix	tall tree/high canopy, old groves, plantations, and other forested areas	Enhancing forest resilience, restoring fire dynamics, and conserving biodiversity

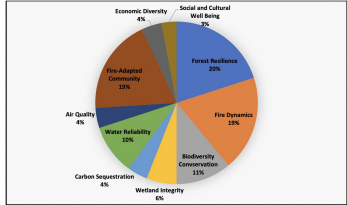
Strategic Areas Resources and Assets = SARAs

Estimating Forest Matrix Treatment Locations

Likely treatment locations in PACs, HRCAs, and other forested areas have been estimated based on the restorative return on investment (RROI) associated with proposed treatments. RROI is the expected change in ecological and societal value over a 10-year planning horizon associated with a

Using Restorative Return on Investment (RROI) to Estimate Treatment Locations

•ORSYS was used to determine which sub-project areas to treat first to achieve the highest levels of intended outcomes for this Project based on the priority weighting of the ten TCSI forest resilience pillars for the North Yuba Landscape (Figure 9). Pillar weights displayed in Figure 9 were based on input from the North Yuba Forest Partnership, informed by the Partnership's Memorandum of Understanding and the purpose and need for this Project.

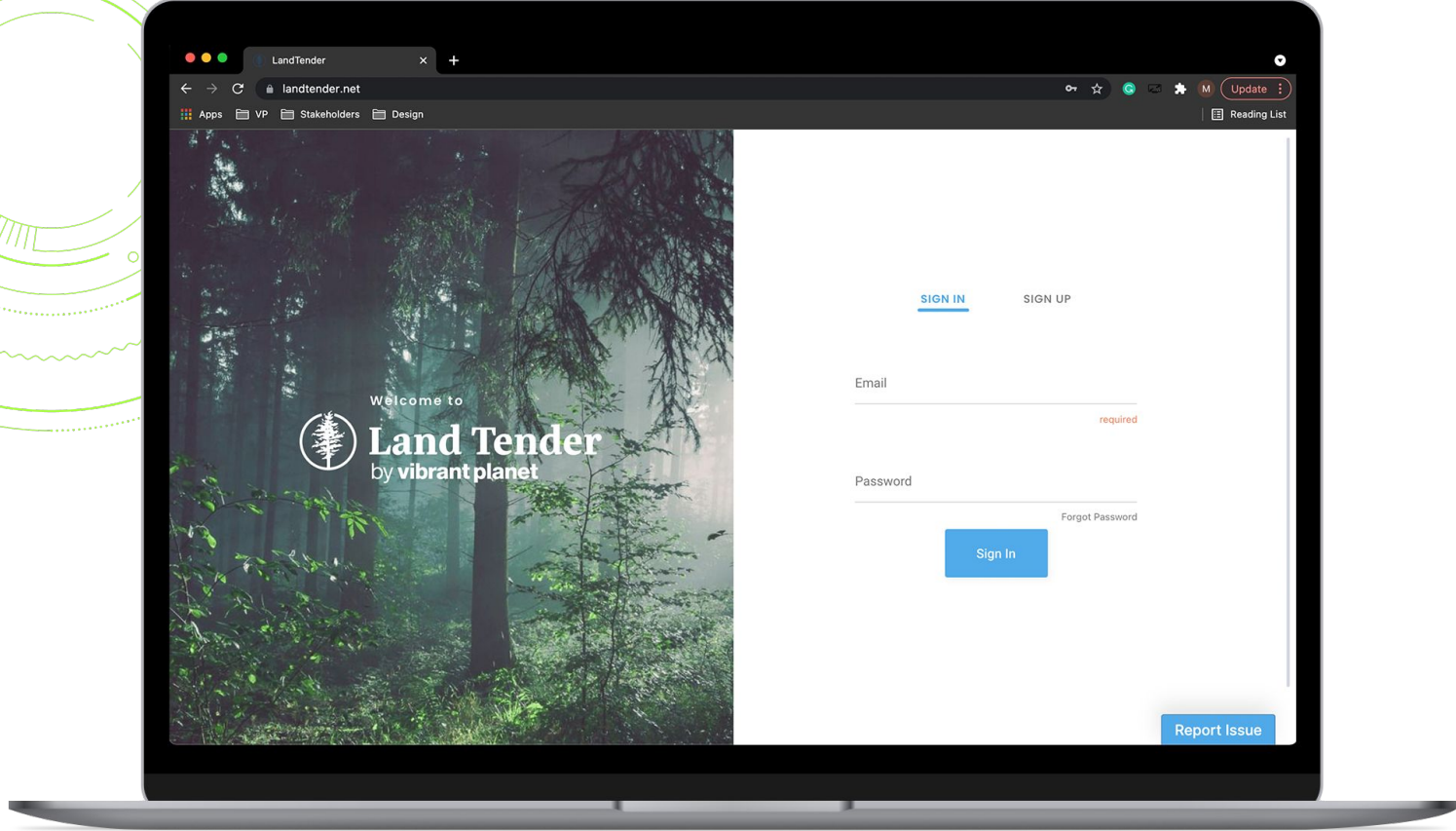


Using Forsys and SARA to Determine Sub-Project Areas

Figure 9. TCSI forest resilience pillar weights for the North Yuba Landscape.

North Yuba





Land Tender Overview

- Land Tender is a decision support system
- Land Tender is a vessel that incorporates various data and models. The system allows users to complete landscape-level analysis and project prioritizations using those data and models
- Land Tender is a landscape system to address landscape disturbances
- Land Tender was not designed for any one Agency or individual

Science + Land Management

Scott Conway
Chief Resilience Officer

Forester, Applied Scientist:
USFS, Conway Conservation Group



Hugh Safford, PhD
Chief Scientist

Forest and fire ecologist:
USFS, UC Davis



Dr. Colton Miller
Forest Ecologist

Text



Danielle Perrot
Applied Ecologist

Text



Mike Cartmill
Forester

Text



Dr. Derek Young
Forest Analytics Lead

Text



Dr. Kevin McGarigal
Landscape Ecologist

Text



April Brough
Spatial Analyst

Text



Ian Hageman
Geospatial Lead

Text



Sky Skach
GIS Analyst, Ecologist

Text



Joe Flannery
Community Relations Lead

Text



Dr. Zack Steel
Ecosystem Forecasting &
Monitoring Lead

Text



Dr. Tony Chang
Lead Data Scientist

Text



Ryan Anderson
Spatial Analyst

Text

Science + Land Management + Tech

Scott Conway
Chief Resilience Officer

Forester, Applied Scientist:
USFS, Conway Conservation Group



Hugh Safford, PhD
Chief Scientist

Forest and fire ecologist:
USFS, UC Davis

Guy Bayes
Chief Technology Officer

Data and application engineering:
Lyft, Facebook, Lawrence Livermore National Labs



Tory Nelson
Product Manager

Product management with analytic focus:
Lyft, Facebook, Guidewire, NIH



Marcelo Murachovsky
Product Designer

Text



Dr. Ryan Herring
Software Engineer

Text



Cyrus Dukart
Product Engineering Lead

Text



Nahum Wild
Product Engineering Lead

Text



Bogdan State
Head of Machine Learning

Text



Maria Tran
Product Advisor

Text

Mission Locked Hybrid Structure



Mission

Build the data and technological infrastructure to facilitate and unlock funding for the regenerative economy.

VP Data Commons
501c3 Nonprofit

OS Data Repository

Stewards open source data, APIs, & scientific / developer community

Vibrant Planet, Inc.
Public Benefit Corp.

Platform

Data

Applications


Builds visual, data-driven applications for specific resilience building challenges & opportunities, offered with planning & decision support services

Science-Based

USDA United States Department of Agriculture

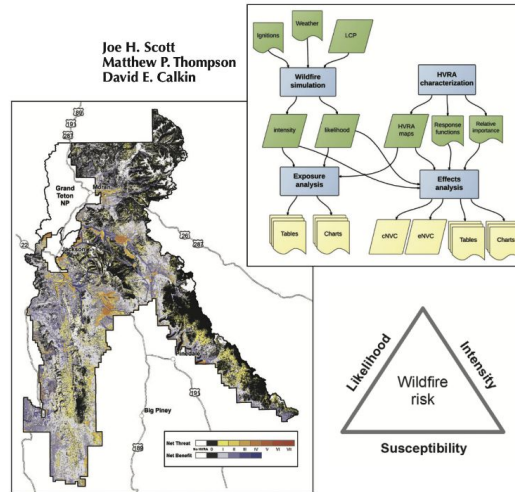
Cross-Boundary Wildfire and Community Exposure: A Framework and Application in the Western U.S.

Alan A. Ager, Michelle A. Day, Palaiologos Palaiologou, Rachel M. Houtman, Chris Ringo, and Cody R. Evers



US Forest Service Rocky Mountain Research Station General Technical Report RMRS-GTR-302 May 2018

A Wildfire Risk Assessment Framework for Land and Resource Management




USDA United States Department of Agriculture / Forest Service
Rocky Mountain Research Station
General Technical Report RMRS-GTR-315
October 2013



USDA United States Department of Agriculture

Postfire Restoration Framework for National Forests in California



US Forest Service Pacific Southwest Research Station General Technical Report PSW-GTR-270 January 2021

Forestry Department

- Recreation
- Water
- Carbon



Forester Scott

County Supervisor's Office

- Homes
- Evacuation Routes
- Utility Infrastructure



Supervisor Tory

Biodiversity Foundation

- Spotted Owl Habitat
- Aspens & Meadows
- Sierra Nevada Yellow Legged Frog



Biologist Joe

New Collaborative: Multi Jurisdictional Planning

- Create an initial wildfire and forest resilience plan
- Prioritize treatments within plan
- \$20m over 10 years

