

# Land Tender: A collaborative, cloud-based decision support platform for wildfire risk mitigation

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## BACKGROUND

- The world is experiencing rapidly increasing scales and velocities of ecosystem degradation
- Complex, multi-jurisdictional management problems require collaborative planning
- Key needs:
  - Efficiently incorporate stakeholder input, provide effective interfaces for stakeholder engagement
  - Generate relevant data and analytical outputs that managers and stakeholders can understand and manipulate
  - Cogently prioritize potential investments and mgt actions

**Land Tender (LT)** is a cloud-based, visual scenario building & decision support tool for complex, collaborative, fire risk mitigation planning

- Currently being deployed in western US, with high potential for extension to other high-risk landscapes

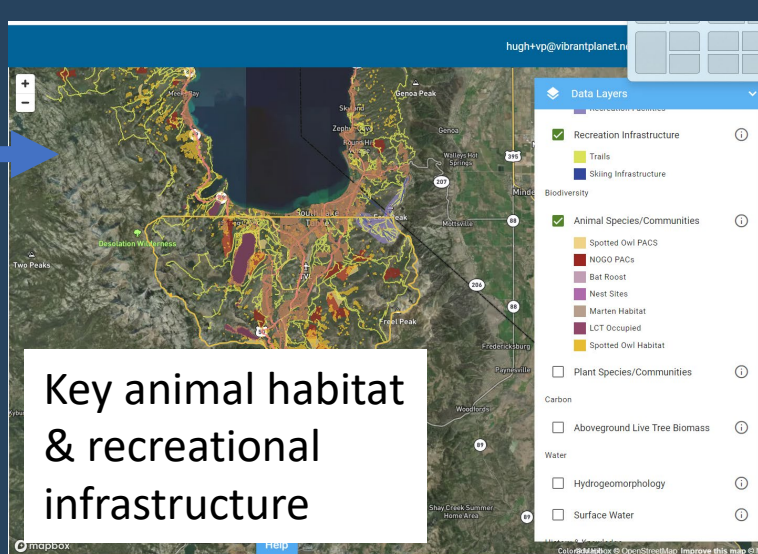
## LAND TENDER WORKFLOW

LT incorporates high-resolution data, disturbance simulations, and optimization routines to develop a comprehensive atlas of management scenarios

ID/weighting of strategic areas, resources, & assets (SARAs)

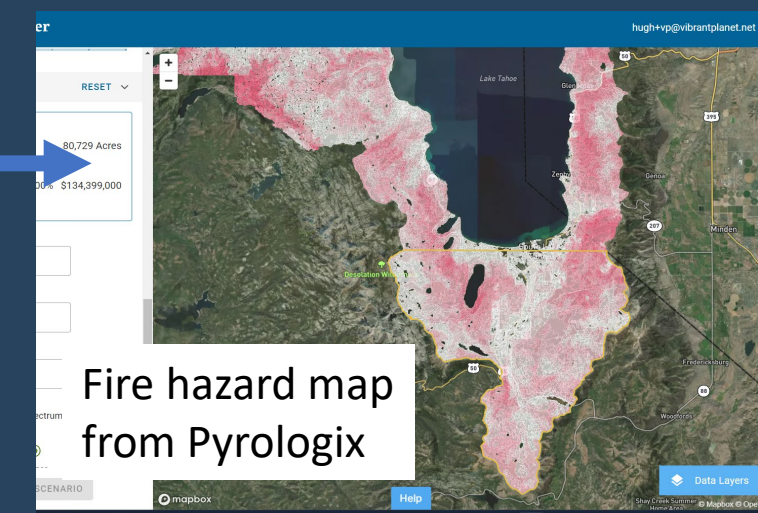
- Mix of *a priori* ID and stakeholder input

- Vegetation and fuels
- Structures and built assets
- Biodiversity features
- Other SARAs.....



Data input & normalization

Risk assessment & "stewardship atlas", which summarizes probable mgt actions to reduce risk. Project cost estimates can be produced before environmental analysis



Fire hazard map from Pyrologix

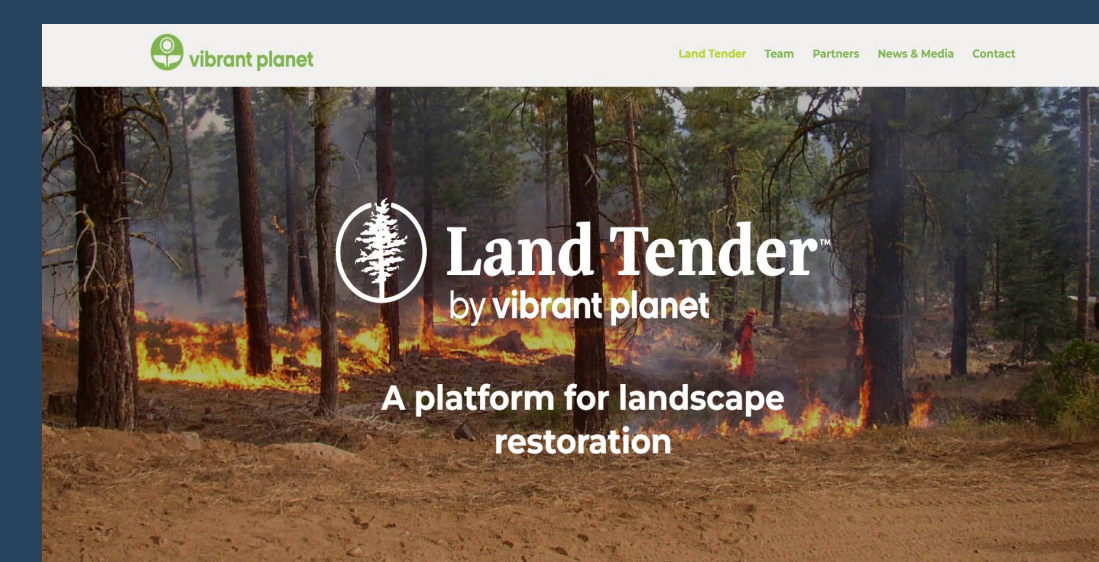
## LAND TENDER HIGHLIGHTS

- Stakeholders have efficient and meaningful input at multiple stages of the workflow
- Cloud-based workflow permits rapid analyses & real-time comparisons of mgt alternatives
- Early estimates of project cost = investment can be secured well before planning is completed
- RROI leads mgt to focus on important hectares rather than easy hectares

- SARA identification & weighting
- Weighting of resilience categories
- Scenario generation
- Comparison of alternatives

Project 1 details	
Source: Thinning with Removal	30% 503 Acres
Mechanical Thinning	5% 89 Acres
Pre-fire Ground	5% 1,008 Acres
Post-fire Ground	5% 105 Acres
Financial estimates	
Total Acres	1,705
Estimated Gross Cost	\$5,114,000
Estimated Initial Cost	\$2,925,000
Estimated Follow-up Prep	0
Estimated Follow-up Treatment	193,000
Estimated Product Benefit	\$1,132,000
Estimated Net Cost	\$1,986,000
Estimated Cost/Acre	\$1,110

- Mgt action alternatives and scheduling developed by optimization routine, weighted by user-generated prioritizations of ecosystem resilience categories
- Land Tender deployment can greatly reduce the time and cost of carrying out collaborative management in complex landscapes



Visit the Vibrant Planet booth to view a Land Tender demonstration

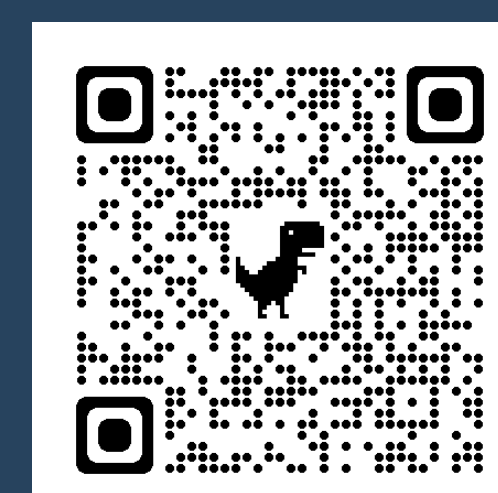
## WITH INPUT & FUNDING FROM



8<sup>TH</sup> INTERNATIONAL WILDLAND FIRE CONFERENCE  
Porto-Portugal  
May 16-19<sup>th</sup>  
2023

## LEARN MORE

<https://www.vibrantplanet.net/landtender>



**Restorative Return on Investment (RROI):** sum of SARA-based treatment-driven avoided costs (from risk assessment) and quantified ecosystem benefit of mgt actions

Prioritized & scheduled management projects:

Optimized by RROI, user weightings, & user limits on cost and area

RROI under pictured weightings of ecosystem resilience categories

Prioritization of mgt actions from Ager's FORSYS optimization model. Sequences actions based on user weightings of ecosystem resilience categories linked to SARAs (see Fig above)

- E.g., watershed values, biodiversity conservation, carbon sequestration, economic outputs, asset protection

Plan outputs include spatial and tabular comparison of mgt alternatives

- Include projected costs and relative benefits of alternatives across SARA resilience categories
- Easily exported to environmental analysis processes

**Climate Change**

Climate change effects can be included via climate scenario-driven modifications to fire and drought occurrence and intensity, or by feeding climate change scenarios into an underlying disturbance and succession model

Observed mortality (2015)

Forest drought mortality risk as f(x) of climatic water deficit

**Stakeholder Participation**

Stakeholders engage with LT collaboratively throughout the work-flow. Users visualize mgt action tradeoffs, prioritizations, and sequencing. Project participants share and compare their preferred scenarios and arrive at consensus or a range of mgt alternatives quickly and efficiently

**6**