

**DRAFT - SUMMARY**

**STAKEHOLDER SCIENCE COMMITTEE MEETING/WEBINAR**

**LAKE TAHOE WEST RESTORATION PARTNERSHIP**

Tuesday, February 6, 1:00 pm to 3:00 pm

Tahoe Regional Planning Agency, 128 Market St, Stateline, NV 89410

*All meeting materials are publicly available on the Lake Tahoe West website <http://nationalforests.org/laketahoewest>. For questions please contact the program manager/facilitator Sarah Di Vittorio at [sdivittorio@nationalforests.org](mailto:sdivittorio@nationalforests.org) or (530) 902-8281.*

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**Action Items and Next Steps**

- **The Design Team** will clarify amount of managed wildfire and fire suppression in Scenarios 3 and 4 and how it is communicated in the table.

**Welcome, Agenda Review, and Introductions**

Sarah Di Vittorio welcomed the group, reviewed the agenda and webinar ground rules, and presented meeting objectives. Specific meeting objectives were to: (1) Discuss and collect stakeholder feedback on proposed modeling scenarios. (2) Provide updates on Phase 2 activities and meeting schedules.

Ms. Di Vittorio provided time for introductions and welcomed a new group member, Christina Restaino, Forest Ecosystem Health Program Manager for the Tahoe Regional Planning Agency, to the Interagency Design Team. Ms. Restaino also serves as a member of the Core Team.

There were no interested party comments.

**1. Phase 2 Status and Updates**

Ms. Di Vittorio began the meeting by informing the Committee of changes to the 2018 Lake Tahoe West Calendar:

- 2018 Field Visit dates were moved from the first Wednesday of June and October to the second Tuesday of each respective month (June 12 and October 9).

- North Tahoe Fire Station 51 (222 Fairway Dr, Tahoe City, CA 96145) will be the venue for the joint Stakeholder Science Committee and Stakeholder Community Committee meeting on March 6, currently planned from 9am to 4pm.

Ms. Di Vittorio provided the Committee with status updates on the Phase 2 process. The collaborative is currently focused on scenario development for the modeling, which will be essential to evaluating tradeoffs and developing an overall Landscape Restoration Strategy. Meanwhile, two parallel efforts are happening concurrently with modeling: (1) Development of an outline for the Landscape Restoration Strategy framework, identifying the content needs and format for this strategic document); and (2) Development of a framework of Lake Tahoe West goals, which we are now calling Intended Landscape Outcomes. The Intended Landscape Outcomes will be an important tool that we, and the Ecosystem Management Decision Support tool, will use to help us evaluate the outcomes of different modeled management approaches.

The Design Team and Science Team are working to translate the Scenario Descriptions into inputs for the models. There are eight models, and each uses different inputs and data. The process of converting descriptions into model inputs is complicated and it has taken more time than originally anticipated. We do not yet have a revised draft of Scenarios 1 & 2 (which we discussed and collected feedback on during the last SSC webinar) because our efforts have been focused on how to make these translations. .

Discussion followed. Responses were provided by members of the Interagency Design Team and Science Team:

**Stakeholder questions/comments:**

- Suggestion: Keep a detailed account of the translation process of variables or attributes from Scenario Descriptions into LANDIS.
  - This is being done with the overall vision of explaining what the scenario is trying to get at, and how it was cross-walked into the model.
- Q: Could basal area be used instead of age class? Age class may not accurately reflect carbon storage potential.
  - Even though using basal area would be ideal, LANDIS is based on biomass and age.
  - The Science Team is using LiDAR to test how well these translations reflect biomass.
    - There are opportunities to do monitoring moving forward to examine accuracy of LANDIS modeling.
    - LANDIS is one of the best models for the scale being used. Other effects can be examined using some of the finer scale modeling.
- Q: How will modeling products from LANDIS fit into project planning and on the ground implementation?
  - Modeling is one of the tools we will use to develop an overall Landscape Restoration Strategy that will then guide more specific project-level planning.
  - The Design Team and Science Team are working to ensure the analysis is as meaningful as possible to land managers. The modeling scenarios will not serve as alternatives for NEPA/CEQA analysis, but modeling results will likely be used to support the NEPA/CEQA analysis.

## 2. Revised Modeling Scenarios 1 & 2

Nadia Tase of the Interagency Design Team and Tahoe Fire and Fuels Team reviewed changes to Scenario 2 made since January, including in response to stakeholder feedback (see attached summary of change).

- Adjacency, an important factor in increasing the efficiency/effectiveness of treatment, is still being worked on with the LANDIS team to figure out how it will be modeled.
- We are still working on how to address retreatments.
- More description was added to the section on prescribed fire.
- There is no emphasis on creating canopy openings, though this can be addressed with finer scale modeling.
- Placeholders were added to include watershed restoration elements, some of which will be used in other non-LANDIS modeling efforts.
- Discussion was added to the narrative regarding reforestation. Reforestation is so rare (except post-wildfire) that it is not being modeled in Scenario 2.

Discussion followed. Responses were provided by members of the Interagency Design Team and Science Team:

### Stakeholder questions/comments:

- Q: What scale is the limiting factor for modeling an opening? 5 acres? 10 acres?
  - LANDIS is modeled on a one hectare grid scale and won't address canopy gaps.
  - Canopy openings could potentially be analyzed in finer scale modeling (water movement, fine scale fire, wildland fire simulator).
- Q: If LANDIS modeling doesn't account for clumps/gaps and heterogeneity, how accurate are the resilience outcomes? Fine scale patterns affect landscape level processes.
  - There are many factors that go into determining resilience. Some will be modeled on a finer scale.
  - Modeling will not answer every question, but it will answer some of them.

## 3. Modeling Scenarios Overview; Scenarios 3 & 4

Ms. Gross walked the group through the Modeling Scenarios Overview document (attached). The document shows the key contrasts the Interagency Design Team proposes to model in the first round of modeling to evaluate how different management approaches perform toward achieving landscape resilience and to identify the relative tradeoffs between them. Consistent with stakeholder input, particularly at the November meeting,, the focus of the scenarios will show contrasts between the intensity, pace, and scale of treatment. They will also show contrast between type of treatment: vegetation-thinning focused versus fire-focused. Models will use on/off "switches" to examine the effects of particular regulatory safeguards on treatment effectiveness. The goal for each scenario is to have a resilient landscape, but they will differ in the extent to which that goal is achieved.

Potential safeguard “switches”:

- Slope
- Treatment in Protected Activity Centers (PACs)
- Distance of treatment from roads
- Burn windows
- Treatment in Designated Wilderness
- Diameter of trees to be removed
- Prescribed fire after thinning
- Managed wildfire
- Intensity of other treatments

Discussion followed. Responses were provided by members of the Interagency Design Team and Science Team:

**Stakeholder Questions/Comments:**

- Q: Will the Landscape Restoration Strategy be one of these Scenarios, or something in between that combines elements of each?
  - The overall Landscape Restoration Strategy is expected to combine approaches from multiple Scenarios.
- Q: Are desired conditions different between the four Scenarios?
  - Members of the Design Team and Science Team provided various responses during this discussion:
    - The overall goal of all the Scenarios is landscape resilience. Each Scenario may not get us to landscape resilience. But by comparing them we can see how well the management strategies being evaluated perform toward achieving the desired condition of landscape resilience.
    - A key rationale for Scenarios 1 and 2 is to provide a baseline. Scenario 2 will help answer the question of whether continuing the current approach, based on WUI-focused treatment, can get us to where we want to be in terms of landscape resilience.
    - The goal is to combine treatments in different ways to maximize overall benefit/resilience. There will be different perspectives about which components of resilience are most important.
    - There are still variables to be factored in from other modeling efforts: economics, air quality, water quality, etc.
- Suggestion: Modeling would tell us more if it used information on age classes/size classes removed and the location of treatment, rather than the biomass extraction/utilization and amount of general forest treatments.
- Q: Does the model account for changing conditions (e.g. fires) when prioritizing treatment?
  - Models will have random fires incorporated, though prioritization method is still being determined.
- Q: In Scenario 3, do we expect thinning to happen before fire?
  - It is being assumed that not much fire will be used in that scenario, in order to maximize contrast with Scenario 4 which is fire-focused.
- **Suggestion:** Vegetation treatment (Scenario 3) should have “high” fire suppression to maximize contrast with Scenario 4.

- **ACTION ITEM:** The Design Team will clarify amount of managed wildfire and fire suppression in Scenarios 3 and 4 and how it is communicated in the table.
- **Suggestion:** Turn burn windows off on Scenario 4 to maximize contrast.
- Q: Will LANDIS outputs tell us if treated PACs provide habitat?
  - Wildlife modeling will use LANDIS outputs to evaluate effects on PAC habitat.

**Additional questions/comments:**

- Q: How is resilience being measured?
  - LANDIS modeling reflects resilience through measures of fire risk and vegetation characteristics.
- Q: Will Scenario 3 include any prescribed burning? Is it realistic not to include?
  - Scenarios 3 and 4 will provide contrasts, and a combination of the two will likely achieve the desired outcome.
- Discussion on the role of modeling:
  - The modeling scenarios will highlight some of the tradeoffs between different potential approaches, and EMDS will help interpret our results.
  - Modeling will not be able to do all of the balancing for us, but will provide useful information by highlighting key contrasts and exploring the result of turning on and off “switches” that represent regulatory policies.
  - As a group we will seek consensus on a Strategy through discussion and by looking at the results of the analysis.
  - Modeling is designed to determine which treatments we might deploy, how the system responds, and how we might integrate treatments into an overall Landscape Restoration Strategy. Modeling will help us to determine the right mix of tools, but will not provide all of the answers.
- Q: How does the on/off switch work for PAC treatments?
  - The on/off switches are still in development, but the PAC treatment “switch” will likely reflect a state of “treatment” or “no treatment” in PACs.
  - It will seek to answer the questions: (1) Do we need to treat PACs to get to resilience? (2) Do we need to treat PACs to retain them on the landscape?
- Q: What are the desired conditions? What are the goals?
  - Intended Landscape Outcomes are being developed to answer this question. We will share those at the next stakeholder meeting.
  - Modeling will help inform desired conditions and goals through an iterative process.
- Suggestion (Ms. Manley): Think about on/off switches as environmental safeguards, and seek to answer the question – do they restrict our ability to achieve resilience, or do they provide more benefit?
- Mr. Long: Some switches may be challenging to model, including burn windows and treatment in wilderness. The Science and Design Teams will continue to work out which elements can be modeled using “switches.”

## Meeting Attendees

### Organizing and Participating Agencies

CTC – California Tahoe Conservancy

NFF – National Forest Foundation

State Parks – California State Parks

TFFT – Tahoe Fire and Fuels Team

TRPA – Tahoe Regional Planning Agency

USFS LTBMU – U.S. Forest Service Lake Tahoe Basin Management Unit

USFS PSW – U.S. Forest Service Pacific Southwest Research Station

### **Stakeholder Science Committee Members**

1. Jeff Brown
2. Jennifer Quashnick
3. Matt Freitas
4. Sue Britting
5. Roland Shaw
6. Maria Mircheva
7. Maureen McCarthy
8. Tricia Maloney
9. Brett Storey

### **Staff**

10. Shana Gross, USFS LTBMU
11. Pat Manley, USFS PSW
12. Brian Garrett, USFS LTBMU
13. Daniel Shaw, State Parks
14. Jason Vasques, CTC
15. Jen Greenberg, CTC
16. Sarah Di Vittorio, NFF
17. Evan Ritzinger, NFF
18. Whitney Brennan, CTC
19. Jonathon Long, USFS PSW
20. Nadia Tase, TFFT
21. Christina Restaino, TRPA
22. Patrick Wright, CTC

**Memo on Modeling Scenario Edits Since 1/9/18**

The Interagency Design Team and Science Team are currently working to further refine and translate Scenarios 1 & 2 for the modeling effort. This memo outlines adjustments made to Scenarios 1 & 2 since the January 9, 2018 Stakeholder Science Committee webinar, based on stakeholder feedback as well as internal conversations.

Revisions to the Scenarios are ongoing, particularly for Scenario 2. The process of translation into modeling involves many additional decisions based on how the models operate and the kinds of inputs they require. Changes are being made to a working draft of the Scenarios which we will share as the translation to models is further developed.

<b>Changes to Scenarios 1 &amp; 2 since January 9</b>	
<b>Scenario Titles</b>	<ul style="list-style-type: none"> <li>• Scenario 1 was changed from “No Action” to Suppression-Only Approach to Landscape Resilience</li> <li>• Scenario 2 was changed from “Business as Usual” to WUI-Focused Approach to Landscape Resilience</li> </ul>

<b>Changes to Scenario 2 since January 9</b>	
<b>Adjacency; how to place treatments on the landscape</b>	<ul style="list-style-type: none"> <li>• A discussion of project timing and adjacency was added to narrative.</li> <li>• We are working to determine how LANDIS will group treatments on the landscape.</li> </ul>
<b>Table 3 and PACs/age class treatments</b>	<ul style="list-style-type: none"> <li>• PAC/Wildlife discussion was added to narrative. PAC restrictions and LOP’s were added to modeling inputs.</li> <li>• Updating table inputs to clarify that treatments in PACs are less intensive than treatments outside.</li> <li>• Removed the SEZ and meadow columns from Table 3.</li> <li>• Reorganized font/columns, etc. to make more readable.</li> <li>• Clarifying and adjusting specifications for mechanical treatments and hand thinning to reflect needed LANDIS inputs.</li> </ul>
<b>Fuels and forest health treatments</b>	<ul style="list-style-type: none"> <li>• Reformatted to show fuels and forest health treatments by vegetation type</li> <li>• Discussion added regarding how treatments are applied in upland, SEZ, riparian, and meadow areas</li> <li>• Also added a description of restoration-focused vegetation treatments (confer removal in meadows, riparian, aspen)</li> </ul>
<b>Canopy openings</b>	Clarified that there is no special focus on creating canopy openings in this scenario. LANDIS operates at a resolution too coarse for consideration of canopy opening; this information will inform fine-scale modeling.

## Lake Tahoe West Restoration Partnership

February 1, 2018

<b>Watershed Restoration; Roads, Culverts, BMPs</b>	<ul style="list-style-type: none"><li>• The Design Team is currently focusing on the LANDIS model which does not address these treatments. Descriptions to be developed.</li><li>• Placeholders added to narrative for non-vegetation focused restoration projects:<ul style="list-style-type: none"><li>- Stream channel restoration</li><li>- Road decommissioning/BMP upgrades</li><li>- Fish passage and habitat improvement</li></ul></li><li>• More discussion of roads was added to the narrative as it relates to vegetation treatments.</li><li>• We are working on how to reflect roads in LANDIS and other models. Roads have important interactions with forest management strategies.</li></ul>
<b>Reforestation/Post wildfire approach</b>	Post wildfire discussion was added to narrative. Replanting is so rare that it will not be modeled in this scenario, except post wildfire.
<b>Retreatments</b>	We are working to specify modeling rule sets for retreatments.
<b>Rx fire</b>	Added information regarding prescribed fire timing, pile size, piles per acre, and prescribed burn windows to the modeling inputs.



## **OVERVIEW: LAKE TAHOE WEST MODELING SCENARIOS**

The Lake Tahoe West Restoration Partnership is currently working to develop an overall Landscape Restoration Strategy that will guide future project planning. Scientific modeling will be a central tool to inform development of the Landscape Restoration Strategy. Specifically, several models addressing vegetation, wildlife, air quality, water quality and quantity, and fire behavior will project future outcomes of different approaches to restoring landscape resilience. An Ecosystem Management Decision Support (EMDS) tool will compile data from all of the models and an economic analysis to help evaluate tradeoffs between different approaches. Stakeholders and managers will draw on the modeling, EMDS, and economic analysis to determine an overall Landscape Restoration Strategy.

To advance the modeling effort, the Interagency Design Team, in consultation with the Science Team, is currently developing four initial modeling scenarios. The initial scenarios are designed to show contrasts between different potential approaches to restoring landscape resilience. Each scenario takes a different approach to pace, scale, intensity, and types of treatments, and each will be evaluated under two different climate scenarios. For the modeling exercise, it is important that the initial scenarios are highly contrasting. After initial model runs, an additional scenario may be modeled that combines aspects of each scenario to maximize resilience. The final Landscape Restoration Strategy will likely combine elements of the different scenarios to maximize resilience.

The following pages provide a big-picture summary of the 4 initial scenarios:

- 1) Suppression-only approach to landscape resilience
- 2) WUI-focused approach to landscape resilience
- 3) Vegetation treatment (hand and mechanical) focused approach to landscape resilience
- 4) Fire-focused approach to landscape resilience

Detailed descriptions of Scenarios 1 & 2 have been drafted, which the Design Team and Science Team are working to translate into model inputs and further refine. Scenarios 3 & 4 will be further developed in February and March, taking into account stakeholder input.

At the November 2017 Stakeholder Science Committee meeting, participants suggested a 3-axis approach that differentiates the initial modeling scenarios by pace, scale, and intensity. Table 1 and the scenario descriptions that follow show how each scenario reflects the 3-axis approach.

## LAKE TAHOE WEST RESTORATION PARTNERSHIP

Phase 2: Modeling Scenarios Overview

January 31, 2018

**Table 1.** Comparison of Modeling Scenarios

	Suppression Only	WUI Focus	Vegetation Treatment Focus	Fire Focus
Pace and scale of mechanical thinning treatments	None	Moderate	High	Low
Pace and scale of hand thinning treatments	None	Moderate	High	Low
Intensity of thinning treatments	None	Moderate	High	Low
Amount of managed wildfire	None	Low	Low	High
Amount of prescribed fire <sup>1</sup>	None	Low	Low	High
Amount of biomass extraction and utilization	None	Moderate	High	Low
Amount of general forest thinning treatments	None	None	High	Low
Amount of WUI forest thinning treatments	None	Moderate	High	Low
Amount of non-forest restoration (aspen, meadow, in-channel)	None	Low	High	High
Amount of fire suppression	High	High	Moderate	Low

### 1) Suppression-only approach to landscape resilience

Under the suppression only approach, forest fuels reduction work does not continue in the future. Full fire suppression action continues to be taken on all ignitions, on all ownerships. (Full fire suppression action is not the same as no fire on the landscape, as not all fire suppression is 100% effective).

- Intensity: low
- Pace: slow
- Scale: low

### 2) WUI-focused approach to landscape resilience

This scenario focuses on community protection with vegetation treatments occurring primarily in the WUI with minimal fire used for management. (An expanded description is currently under development and will provide additional detail). Non-forest restoration activities will only occur within the WUI.

- Intensity: moderate
- Pace: moderate
- Scale: moderate

### 3) Vegetation treatment (hand and mechanical) focused approach to landscape resilience

This scenario evaluates treatment across the entire landscape utilizing several “on/off switches” to evaluate how much treatment is needed to obtain landscape resilience. The primary management tool utilized in this scenario is vegetation thinning treatments (both hand and mechanical). This scenario has a higher biomass removal as compared to other scenarios. The vegetation treatments drive structure of the forest. Non-forest restoration activities (e.g. aspen, meadow, in-channel work) will occur across the entire landscape. When applicable, vegetation thinning treatments will drive restoration.

- Intensity: high
- Pace: fast
- Scale: high

We hope to conduct model runs that can turn on/off the following constraints in this scenario. The combination of when on/off still needs to be developed, but at a minimum we hope to conduct all-on and all-off runs of the following:

- Slope constraint for mechanical treatment: <30% slope versus 30% to X0%
- Treatment constraints within PACs and HRCA: yes versus no
- Distance from existing roads that can be treated mechanically: average current versus larger distance
- Treatment in wilderness: yes versus no (we also still need to determine what these treatments would look like)
- Trees DBH removed: <30” versus >30”

To be determined:

- Managed wildfire: One idea is to incorporate suppression initially and as vegetation treatments occur, the use of managed wildfire increases
- Prescribed fire following mechanical treatment (not as treatment by itself because that is scenario 4)
- Intensity of other restoration treatments (in-stream, meadow, aspen, etc.)

#### **4) Fire-focused approach to landscape resilience**

This scenario evaluates treatment across the entire landscape utilizing several “on/off switches” to evaluate how much treatment is needed to obtain landscape resilience. The primary tool utilized in this scenario is fire, both managed wildfire and prescribed fire. Prescribed fire is primarily in the form of understory burns, not pile burning. However, it is recognized that some vegetation thinning treatments (both hand and mechanical) would be needed in order to utilize fire. This scenario has a lower biomass removal as compared to other scenarios. Fire drives the structure of the forest. Non-forest restoration activities (e.g. Aspen, meadow, in channel work) will occur across the entire landscape. When applicable, fire will drive restoration.

- Intensity: moderate
- Pace: moderate to low
- Scale: high

We hope to conduct model runs that can turn on/off the following constraints in this scenario. The combination of when on/off still needs to be developed, but at a minimum we hope to conduct all-on and all-off runs.

- Treatment constraints within PACs and HRCA: yes versus no (potentially fuel breaks around these areas?)
- Distance from existing roads that can have understory burns: **average current** versus **larger distance**
- Treatment in wilderness: yes versus no
- Burn windows: on versus off

To be determined:

- What does this look like – is State Parks a good model, or is this even more simplistic as to covering the area evaluated under Scenario 3 but with limited vegetation thinning?
  - One idea is to focus thinning in riparian areas, which would act as fire breaks
- Extent and approach to vegetation thinning that is assumed to be needed in order to utilize fire
- Size of prescribed fire