

Background

The Board has been briefed on a number of times in the past relative to the Mokelumne Watershed Avoided Cost Analysis. Using the upper Mokelumne River Watershed as a representative case, the Sierra Nevada Conservancy (SNC) joined a number of partners in an analysis to answer the following question: Does it make economic sense to increase investment in fuel treatments to reduce the risk of large, damaging wildfires? The analysis suggests that the economic benefits of landscape-scale fuel-reduction treatments far outweigh the costs of wildfire.

Although wildfire and the associated costs are increasing in the western United States, few studies have taken a hard look at the costs and benefits of fuel treatments to determine if an increased investment in treatments makes economic sense. Through a collaborative process with key stakeholders and using state-of-the-art models for fire, vegetation and post-fire erosion, the potential impacts of a landscape-scale fuel treatments program in the upper Mokelumne Watershed was analyzed. In addition, an evaluation of who would benefit the most from investing in fuel treatments and reducing the risk of high-intensity wildfires was conducted. These findings can help inform forest management not only in the Mokelumne Watershed, but also in similar watersheds throughout the Sierra Nevada and the western United States.

Current Status

The analysis focused on modeling wildfire in the Mokelumne Watershed both with and without implementation of the fuel-treatments scenario. The size and intensity of five potential representative fires based on fire history in the region, current forest conditions and state-of-the-art wildfire models were modeled. The fuel-treatments scenario to identify how active forest management would likely modify wildfire behavior and post-fire erosion over a 30-year time period was modeled. Using these results, the financial costs and benefits of the treatments, focusing on those elements to which a dollar value can readily be assigned such as homes, infrastructure, timber, biomass energy, carbon and employment was calculated.

The analysis was based on conservative assumptions regarding potential costs and benefits, not a worst-case wildfire scenario. For example, the nearby 2013 Rim Fire was significantly larger than all five modeled fires combined and burned at higher intensity. In addition, wildfire impacts with economic values that could not be readily determined, such as the effects of fire on wildlife habitat, recreation, tourism, and public health and cultural sites were not included. Thus, in multiple respects, the conclusions likely underestimate the costs associated with future wildfires and the benefits of active management, suggesting an even stronger case for action.

Avoided Cost Analysis Key Findings:

- **Fuel treatments can significantly reduce the size and intensity of wildfires.**
Proactive forest management can significantly modify fire behavior by reducing fire intensity, size and rate of spread. The results showed that the modeled fuel-treatments scenario reduced the size of each of the five fires by 30 to 76 percent, or a total reduction in size of approximately 41 percent. More importantly, the

modeled scenario reduced the acreage of high-intensity wildfire by approximately 75 percent.

- The economic benefits of fuel treatments may be three or more times the costs. In total, across the categories of benefits quantified in this report, the value of avoided costs significantly exceeds the cost of fuels management. The avoided losses in terms of both costs and lost income opportunities include the value of structures saved from wildfire and the costs of fire suppression and post-fire restoration, as well as potential revenue from carbon sequestration, merchantable timber and biomass that could be used for energy. For each cost category, an estimated range of values from low to high were estimated. Using the high estimates for benefits (\$231 million) results in a benefit-cost ratio for the fuel-treatments scenario of 3.4:1. Even when applying a more conservative approach, using the low estimate for benefits (\$126 million), the benefits of investing in fuel treatments are nearly twice the costs, with a benefit-cost ratio of approximately 1.9:1.
- There are many beneficiaries from increased fuel treatments, especially taxpayers. The economic benefits of fuel treatments accrue to a wide range of landowners, public and private entities, taxpayers and utility ratepayers. As shown in figure ES-4 (page xix of the [report](#)), the primary beneficiaries are the State of California, federal government, residential private property owners (and their insurers), timber owners, and water and electric utilities. By comparison, the costs of fuel treatments are largely borne by public land managers (and, by implication, taxpayers). An accelerated fuel-treatments program would also result in an estimated 35-45 jobs relating to fuel treatments and 7-10 biomass-to-energy jobs over a 10-year period. These figures represent a significant addition to the current number of such jobs in these rural areas.

In sum, the analysis shows that it makes economic sense to invest in forest management to reduce the risk of destructive, high-severity wildfires in the upper Mokelumne Watershed. Although achieving such benefits requires a significant increase in funding to achieve the appropriate pace and scale of fuel treatments, the long-term cost savings far exceed the costs of the initial investment. To the extent that the Mokelumne Watershed is representative of other fire-adapted forested watersheds of the Sierra Nevada and the western United States, this report makes the economic case for significantly increasing investment in fuel treatments in western forests. A brochure produced by SNC and project partners is included as [Attachment A](#).

SNC Staff teamed up with U.S. Forest Service and The Nature Conservancy (TNC) outreach and media staff to release a press release on the report's findings on April 10th. The release of the Mokelumne Avoided Cost Analysis was covered 25 times by print media - 11 Sierra outlets, a Coastal paper (the Salinas Californian) and a San Francisco East Bay paper (the Santa Cruz Sentinel). In addition, the report was referenced in the Wall Street Journal, in four (4) Central Valley papers, and seven (7) electronic newsletters. In addition, the study was featured in the May edition of the Forestry Source, a monthly publication produced by the Society of American Foresters.

Finally, Capital Public Radio will feature the analysis' findings as part of their summer wildfire series. There were also three (3) radio interviews and one (1) television interview. Capital Public Radio (Sacramento), KQED public radio (San Francisco Bay Area) and a radio and television interview with My Mother Lode, based in Sonora.

In addition to media outlets, staff has briefed the East Bay Municipal Utility District's (EBMUD's) Board members, U.S. Department of Agriculture (USDA) Under Secretary level, USDA Forest Service Region 5 Forest Supervisor and Directors, Department of Interior (DOI), Bureau of Reclamation Under Secretary level, Center for Environmental Quality (CEQ), California Congressional, and US Senate staff, and Assembly Natural Resources staff. At the time this staff report was prepared, staff was attempting to schedule briefings with key State legislators and staff representing the San Francisco East Bay area, as well as the Sierra Nevada.

Next Steps

Staff is continuing to have discussions with EBMUD Board members and staff about opportunities to provide direct outreach to their 1.3 million rate payers. EBMUD has offered their outreach tools such as rate payer bill inserts, surveys and focus groups. These tools could be used to educate the rate payers about the high risk conditions of the watershed, as well as gauge their interest in financially supporting forest restoration work.

In partnership with the National Forest Foundation, the Mokelumne Fund has been established. This fund will direct all monies to fuel treatments and restoration projects on Forest Service lands in the upper Mokelumne Watershed. The water users of the East Bay will be the primary target for raising these restoration monies. These monies would be invested in restoration projects located in the areas of the watershed that most directly reduce risks to water supply and water quality. The program development and outreach are at a preliminary stage but more will be reported during a future Board meeting.

Recommendation

This is an informational item only; no formal action is needed by the Board at this time, although Boardmembers are encouraged to share their thoughts and comments.