

# **A Strategy to Utilize Biomass Generated from Forest Health and Hazardous Forest Fuels Treatments**

## **Executive Summary**

### **Introduction**

Fire protection agencies and land managers in the Lake Tahoe Basin (the “Basin”) have recognized the need to develop a strategy to utilize biomass resulting from forest health and hazardous fuels treatments.

A Biomass Working Group was convened by the California Tahoe Conservancy (CTC) to develop a biomass utilization strategy for the Basin. Made up of representatives from fire protection agencies, land management agencies, regulatory agencies and other organizations with expertise in biomass utilization the Biomass Working Group met regularly over a six-month period in 2010.

The Nevada Fire Safe Council (NVFSC) and the CTC provided funding to engage TSS Consultants to facilitate meetings of Biomass Working Group and to develop the draft Biomass Utilization Strategy. NVFSC funding came from Southern Nevada Public Land Management Act (SNPLMA) funds managed for the fire protection agencies. The fire protection agencies approved the use of these funds.

Beginning in Spring 2010, the Biomass Working Group met several times over a six-month period with TSS Consultants to provide data on past fuels and forest treatments, and to provide information on planned future fuels and forest treatments.

TSS Consultants, with support from NVFSC and CTC staff, prepared a draft Biomass Utilization Strategy (the “Strategy”). This draft Strategy was provided to the Biomass Working Group for review. Comments have been received from the Biomass Working Group and the Strategy in draft final format was generated in February, 2011. The Strategy was designed as a working document and will be updated on occasion as land management plans, fuels treatment plans and utilization opportunities change.

### **The Biomass Utilization Strategy includes:**

- A discussion of the benefits of developing a biomass utilization strategy. The primary benefits include improved air quality from the reduction of pile burning activities, partial offset of treatment costs and reduction of Greenhouse Gases;
- A discussion of the need for forest health and hazardous fuels treatments, including documentation of recent wildfires in the Basin;

- A description of the types of forest treatments currently utilized in the Basin, and an analysis of their costs, constraints, effectiveness, and potential for generating recoverable biomass;
- An analysis of the forested land in the Basin currently targeted for treatment, focusing on the extended wildland-urban interface (WUI), to determine the amount of overall acres that could support the various types of treatments given the current constraints on these treatments;
- A summary of the acres treated, types of treatments, and biomass generated by the fire protection districts and land management agencies between 2000 and 2009;
- A five year forecast of the acres to be treated, types of treatments, and biomass recovery potential, by the fire protection agencies and land managers;
- A description of the currently available biomass markets that are tributary to the basin;
- Identification of current barriers to getting biomass from forest treatments to these markets;
- A proposed strategy to overcome these barriers and thus increase the amount of biomass recovered from forest treatments.

**Strategy Findings include:**

- Under existing constraints, of the approximately 86,000 acres in the extended WUI that are available for treatment, about 42,000 acres could be treated mechanically with subsequent biomass removal, 17,000 acres could be hand thinned with the potential for removing biomass, and 26,000 acres are currently restricted to hand thinning followed by pile burning;
- Of the various types of treatments available to the fire protection agencies and land managers, mechanical treatment is the most efficient at removing biomass. Regardless of the ultimate fate of the biomass, it is removed from the treatment site. In addition, this treatment method results in the least amount of handling of the biomass material;
- As suggested by analysis of the forest land in the WUI summarized above, biomass can potentially be recovered from many manual, hand thinning treatment areas. However, the extensive labor involved, the inability to stage the necessary equipment on roads to collect the biomass, and other environmental considerations (such as the presence of Stream Environment Zones) continues to greatly limit the amount of biomass recovered from these types of treatments, resulting in a continued high use of burn piles;
- Over the next five years, the fire protection agencies and land managers plan to treat approximately 6,600 acres per year of the extended WUI. Of this acreage, approximately 60% (4,000 acres per year) are planned for hand thinning followed by pile burning (a

55% increase compared to annual accomplishments between 2000 to 2009). The USFS accounts for 74% of these acres. Approximately 31% (2,055 acres per year) are planned for hand thinning followed by chipping or mechanical treatments. Up to 53,000 green tons of potentially recoverable biomass material could be generated from the hand thinning followed by chipping or mechanical treatments. Over half of this biomass will be generated by the state and local agencies, with approximately 45% generated by the USFS.

The resulting hazardous forest fuels treatments will create large amounts of forest biomass waste which historically has mostly been open pile burned. This increase in open pile burning could significantly increase uncontrolled air pollutant emissions, which will result in reduced air quality in the Basin. Such emissions can be significantly reduced in the controlled environment of a biomass power plant (for example on the order of 96% reduction of particulate matter). Reduction of air pollutant emissions not only has a beneficial effect on human health and aesthetics in the Basin, but also reduced particulate matter and other chemical constituents from uncontrolled emissions can affect Lake Tahoe water clarity through increased particle deposition.

**Barriers to Sustainable Collection and Removal of Biomass Material include:**

- *High Transportation Costs to Value Added Markets Limits Economic Utilization:* Current utilization markets for biomass material range from 30 to 135 miles away from the forest treatment activities. Because of the low value of the biomass, and the high cost of transport, it currently costs more to transport the material to these markets than the resulting value of the biomass. This results in increased costs of treatments by 1) the addition of transport costs to the already high costs of hand thinning treatments, or 2) the inability of mechanical operators to offset some of the costs of biomass removal, resulting in higher treatment costs per acre charged to the fire protection agencies or land managers.
- *Lack of a Sustained Budget to Support Biomass Removal Activities:* Very few agencies have developed options for sustained funding of biomass removal operations. Currently, these operations are subsidized by grants for conducting fuels treatment from American Recovery and Reinvestment Act (ARRA) or SNPLMA sources, which will be greatly reduced in the future.
- *High Cost of Biomass Removal:* Current policies prohibit the use of equipment in many areas (steep slopes, near houses, in Stream Environment Zones). The use of hand thinning crews necessitated by these policies results in a high cost of biomass removal, due to high labor costs and the fact the biomass must be handled several times, which significantly adds to cost.

**Strategies to Address Barriers include:**

- *Support of market-based solutions for local value added biomass utilization that will significantly reduce transportation costs, such as:*

- Encouraging innovative value-added uses for biomass material including expanding local markets for soil restoration/soil amendments with the basin;
- Supporting the development of biomass facilities in or near the Tahoe basin.
- *Securing consistent funding to support biomass removal activities, by:*
  - Encouraging coordination between agencies removing the biomass and value-added utilization enterprises, including long-term supply contracts;
  - Pursuing options for long term funding, including state and federal grants, and/or a local tax initiative to support forest treatment activities.
- *Pursuing options to increase the market value for biomass material, which:*
  - Reflect the actual costs of renewable power generation in wholesale power rates, rather than tying the wholesale power rates to externalities such as natural gas prices;
  - Value the societal benefits of renewable energy including hazardous fuels reduction, air quality improvement (diverting biomass material away from open pile burn and reduction of wildfire occurrence) and substitution of fossil fuel generation;
  - Support alternative uses for biomass material such as soil restoration/amendment.
- *Reducing the high cost of biomass removal by:*
  - Changing policies, which do not allow mechanized equipment on certain land types to reflect improvements in collection technology supported by field or pilot studies;
  - Changing fuel treatment operations to combine biomass removal with initial treatment to reduce the number of times the biomass material is handled;
  - Encouraging the creative use of mechanical methods by supporting pilot studies to demonstrate compatibility with environmental standards (such as exploring the use of mechanical treatment on smaller lots, on steeper slopes, in Stream Environment Zones) along with appropriate monitoring;
  - Expanding the use of long-term contracts (such as stewardship contracts) to provide stability to fuels treatment contractors and encourage the investment in innovative equipment;
  - Sharing lessons learned and innovative fuels treatment techniques with all stakeholders.