

Section 5: Utilization Potential

The primary objectives of the proposed hazardous fuel reduction projects are to reduce the potential of a catastrophic fire, protect valuable assets at risk, and restore forest health. As a result, forest materials that are removed will generally be smaller diameter trees. Materials that are removed may provide some revenue to reduce the cost of the proposed projects, allowing public funds to be used elsewhere for hazardous fuels reduction. On National Forest System lands, this may be accomplished through the use of stewardship contracts. Potential forest products from the proposed projects include biomass, small logs, and large logs.

Biomass

Biomass is used to generate heat, steam, and electricity, and create products such as ethanol, soil amendments, or landscaping material. Developing a biomass facility or utilizing existing facilities in or near the Carson Range would be consistent with recent federal and state policies (Appendix A). However, sustainable production of biomass may be limited because projected biomass outputs from treatments proposed in this plan will decrease significantly in 10 to 15 years after first- and second-entry treatments are completed and because access to projects will be limited.

Support for Biomass

Over the past 12 to 18 months, several strategic actions have occurred that collectively provide the impetus necessary to develop and support a biomass program in or near the Carson Range. Key to this success has been commitments for funding and exploration of solutions to resolve regulatory concerns affecting air quality, including:

- The White Pine County Conservation, Recreation, and Development Act recently amended (December 2006) the Southern Nevada Public Land Management Act to provide funding for implementation of hazardous fuels treatments, including biomass energy development.
- The USDA Forest Service's, Lake Tahoe Basin Management Unit (LTBMU) provided \$355,000 in grants to the South Lake Tahoe High School for replacement of a boiler to heat the school with biomass. Additionally, the LTBMU has awarded a contract to remove excessive fuels as biomass from 105 acres.
- The USDA Forest Service has prepared a Coordinated Resource Offering Protocol study to determine the potential supply of biomass within a 100-mile radius of Grass Valley, California (Mater Engineering 2007).
- In Nevada, the Nevada Division of Forestry has initiated the "Fuels for Schools" program which promotes biomass as source for heat in public schools.

- The Nevada Biomass Working Group, organized by the Nevada Department of Energy, holds conferences around the state promoting biomass initiatives.
- Placer County is providing curbside boxes for residents to deposit biomass removed from their properties and is evaluating construction of a 1-megawatt heat and power facility in the Lake Tahoe Basin.

Availability of Biomass

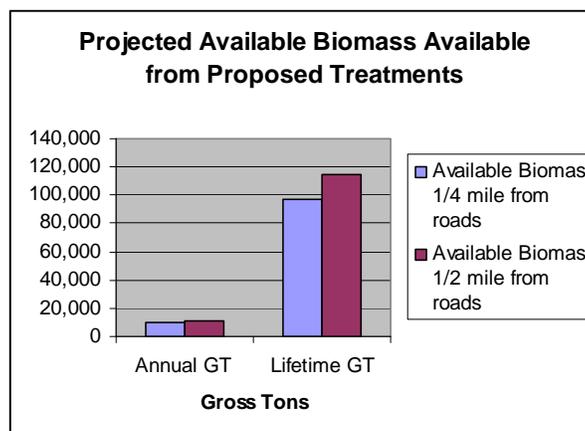
Machines are required to harvest trees or shrubs, process them into biomass, and transport the biomass from the project site to a facility. Under current operating conditions, machine access is limited to one-quarter mile from existing roads, making approximately 13,000 acres available for biomass throughout the Carson Range. Every acre available for biomass may reduce the number of acres that could be burned. Therefore, if access can be developed (temporary or permanent), the number of acres available for biomass throughout the Carson Range increases approximately 27 percent to 11,500 acres. Temporary access assumes it is only for the project; such access will be removed, and the site rehabilitated once the project is completed.

Biomass availability is also affected by the timeframe identified for completion of the proposed projects. If access is limited to one-quarter mile from a road and all projects are completed within 10 years, approximately 1,300 acres would be treated annually. If temporary access is approved for machines, approximately 1,570 acres would be treated annually over 10 years.

Additional biomass may be available from private residences in the course of clearing and maintaining defensible space (up to 100 feet clearance) around occupied buildings. Substantial amounts may be available from initial treatments; however, little will be available from subsequent maintenance treatments because little woody material will develop between the frequent treatments.

The amount of biomass available from fuel reduction projects was estimated assuming an average biomass yield of 11,330 green tons (GT) per acre (Mater Engineering 2007)¹. Based on the number

of acres treated annually, this would provide approximately 9,720 GT annually for 10 years (97,200 GT over life of plan) if access were limited to one-quarter mile from a road; or 11,500 GT annually, if temporary access was gained, or 115,000 GT over the life the plan. These



¹ Mater Engineering (2007) estimated 11,330 GT of biomass would be available annually from National Forest System lands in the Lake Tahoe Basin. This assumes biomass is obtained from trees less than 7 inches dbh. Per acre output was adjusted (weighted) for shrub-based acres.

estimates are gross calculations and may not be accurate based upon final site-specific prescriptions and project design. They represent material available but removal of the material may be further limited by terrain and legal access requirements that may affect the removal methodology.

Existing Demand for Biomass

Currently, eight agencies, organizations, or companies in or adjacent to the Carson Range are using or are planning to use biomass as a product (Table 5). Based on these estimates, they could absorb at least 20,000 GT annually and perhaps more than 35,000 GT annually.

Table 5. Demand for biomass in and near the Carson Range

Facility	Use	Estimated Annual Capacity	Status
Northern Nevada Correctional Center (Carson City, NV)	Electricity–1MW capacity	12,000–24,000 GT ^{1/}	Operational June, 2007; expansion over the next 3 years is possible
South Lake Tahoe High School	Wood-fired heating boiler	2,200 GT tons ^{2/}	Planning
Placer County Justice Center	Heat and electricity–1 MW capacity	10,000–16,000 GT ^{3/}	Planning
Carson City Renewable Energy	Biomass processing yard; Wood chips for correctional center, landscaping, and soil amendment	Large quantities, but not quantified ^{4/}	Fully operational
Full Circle Compost (Minden, NV)	Landscaping mulches, compost, and soil amendment	3,000–4,000 GT ^{4/}	Fully operational
Bently Agrow Dynamics (Minden, NV)	Compost and soil amendment for application to company farm	Large quantities, but not quantified ^{5/}	Fully operational
South Lake Tahoe Refuse	Transfer facility for chips and needles, storage site for South Lake Tahoe High School	Variable ^{6/}	Operational, proposing to build storage facility
Loyalton Co-Generation Plant - CA	Electricity -20MW Capacity	74,000 GT	Fully Operation

1 Stan Raddon, Carson City Renewable Energy

2 McNeil Technologies 2003

3 Brett Storey, Placer County

4 Craig Witt, Full Circle Compost

5 Carlo Luri, Bently Agrow Dynamics

6 Jeanne Lear, South Lake Tahoe Refuse

Firewood and Christmas Trees

When possible, agencies may also make available material that could be classified as biomass or small logs as firewood (see below). For example, on urban lots (in the adjoining Lake Tahoe Basin) Nevada Division of State Lands provides, when possible, the use of firewood to local

communities and the citizens of Nevada where treatment is accomplished. This benefits Nevada Division of State Lands by removing the material from the treated parcel and benefits the public by providing a resource at no cost. In addition, Nevada State Parks offers approximately 100 cords of firewood each year at a cost of \$45 per cord. The USDA Forest Service sells personal and commercial use firewood. In 2007, this included sales of nearly 1,900 cords of personal use firewood for \$15/cord and 1,500 cords (from 2005-2007) of commercial firewood. In addition, the USDA Forest Service sells nearly 3,500 Christmas trees each year often in areas targeted for fuel reduction.

Small Logs

There is a growing interest in the use of small logs for constructing traditional structures (USDA Forest Service 2000b). In the recent Coordinated Resource Offering Protocol study (Mater Engineering 2007), it was estimated the Carson Ranger District would produce 8.9 million board feet of timber from smaller diameter logs (defined as trees 7 to 12 inches dbh) during the next 5 years. This represented 1 percent of the volume from the entire study area, defined by a 100-mile radius from Grass Valley, California. This estimate is probably high because most of the material from small logs removed in the Carson Range is projected to be used as biomass.

Small logs have been used to produce pulp, veneer for laminated lumber, oriented-strand board, posts and poles, and sawn lumber. Sawn lumber provides the lower economic return because the juvenile wood that is sawn is subject to extensive warping and cupping. Posts and poles are less susceptible to warping than sawn lumber; however, there is a lack of information on structural use and how to fasten and secure round pieces of wood in traditional structures (USDA Forest Service 2000b).

Large Logs

Fuel reduction treatments in the Carson Range will emphasize removal of small, suppressed, and intermediate-sized trees through prescriptions that thin from below. These prescriptions will include removal of trees greater than 8 inches diameter to be sold as large logs. The Coordinated Resource Offering Protocol study (Mater Engineering 2007) estimates that approximately 4 million board feet of large logs may be made available from the Carson Ranger District of the Humboldt-Toiyabe National Forest (based on historic funding). If funding increases, this output may increase. These lands represent the majority of acres capable of producing large logs in this study area.