

## Colorado Front Range & Arapahoe-Roosevelt National Forest

The Arapahoe-Roosevelt National Forest covers a diverse landscape ranging from high elevation mixed conifer-lodgepole pine forests surrounding Rocky Mountain National Park, to ponderosa pine-dominated forests in the lower elevations. Approximately 1.5 million acres are within the forest boundaries extending north of Denver to the Wyoming border and west across the Continental Divide.

The “Front Range” region of Larimer and Boulder Counties was chosen for the Joint Fire Science Program assessment because of its urban setting with a large number of people living in high fire prone areas. More than 30,000 homes alone are located within the boundaries of the forest and the population in the two-county region is approaching 550,000 people. Multiple jurisdictions exist locally including the USDA Forest Service, Boulder Parks and Open Space, Denver Water, and various municipalities including Fort Collins, Boulder, Loveland, and Longmont. This case represents the complexity of increasing biomass utilization within a diverse wildland-urban landscape. It also represents a region where more than 1.5 million areas of lodgepole pine have succumbed to the Mountain Pine Beetle in neighboring counties and has begun killing ponderosa pine locally.

Following the Hayman Fire in 2002 that burned more than 137,000 acres and destroyed some 600 homes and structures in the neighboring Pike National Forest, local stakeholders started working together more closely with the USDA Forest Service to reduce the risk of wildfire. Key partners were the Colorado State Forest Service, Colorado State University, Colorado State Parks, Governor’s Energy Office, Boulder Parks and Open Space, Boulder and Larimer Counties, and various landowners and conservation organizations represented in the Front Range Fuels Treatment Partnership. Coordination of these entities are viewed by local stakeholders as essential to establishing long range utilization enterprises; the existence of which are essential to improving forest health.



A recognized aspect of fuels reduction that is missing locally is a viable forest products industry. Prior to the 1980s there was a range of businesses capable of utilizing sawlogs for construction and dimensional lumber manufacturing primarily from lodgepole pine forests. They were instrumental in utilizing lodgepole pine in the 1970s when the last beetle outbreak occurred. Ponderosa pine in lower elevations was utilized but only in small quantities, and then only the larger trees. Dry conditions and poor soil conditions dictate that much of the ponderosa pine forest is shorter than in other regions of the country and because of decades of fire suppression, the forest is dominated by small diameter trees with a high proportion of juvenile to mature wood. The implication is that the quality of ponderosa pine harvested is poor and suitable for a smaller range of forest products than traditional species.

Today, the forest products industry is largely composed of small businesses. The ability to expand industry capacity is limited by an inconsistent supply of material from federal lands, and perhaps more important in recent years has been the high cost of transportation and challenges associated with multiple land owners. The magnitude of private in-holdings on the Arapahoe National Forest makes project planning difficult and road access a challenge. Only a fraction of acres identified as high risk could realistically be treated given steep slopes, sensitive areas, or because it is dispersed among thousands of private landowners. Despite the broad support for fuels reduction efforts, multiple municipalities also complicate efforts to coordinate zoning and there exists concern among residents for some industrial energy uses for biomass that might decrease air quality. In terms of the scale of development some believe that large industrial uses for cellulosic ethanol should be the focus to treat

the thousands of acres of beetle-killed and at-risk forests. Others argue for small-scale district heating applications to meet local industrial and commercial demand. Regardless of the scale, it is believed that fuels reduction efforts will require a value-added component to help offset the removal costs, which are generally \$600-\$1,200/acre depending on slope, size of material and proximity to homes and roads. In most instances, the cost of harvest and transport exceeds the value businesses are willing to pay. Depending on the distance to market, operators estimate costs to run about \$40/green ton to the "gate." The following strategies are being employed to address these challenges:



- Strategies to gain access and reduce transportation costs are central to local efforts. One strategy has been to identify local markets for wood chips, landscape timbers, and other low-value products appropriately matched to the size and type of material removed. If these markets can be sustained in the short term then sufficient treatment of high-risk acres can be accomplished giving other options time to develop. One example is a Boulder Parks and Open Space building that uses about 600-700 tons of chips annually from about 30-acres of treated forests.
- Efforts are underway with the USDA Forest Service, Forest Products Lab and Colorado State Parks to establish wood collection sites at various locations along the Front Range so that landowners would have a place to deposit forest thinnings free of charge. Contractors could then collect biomass from sites and deliver to wood processing facilities.
- Strategies to utilize biomass on the Arapahoe-Roosevelt National Forest attempt to promote a culture of utilization but there remain concerns for the consistency of supply. The use of

long-range Stewardship Contracts is seen by many as an important tool to creating greater assurances that may also help to entice new enterprises while retain existing ones.

- The Colorado State Forest Service has been a catalyst for emerging ideas and strategies through the Wood Utilization and Marketing Program. Their focus on local and regional markets, building technical expertise, and helping with business plan development has been essential. Their efforts have helped to expand the Colorado Proud™ label to include forest products and helped create the Colorado Forest Products program (<http://www.coloradoforestproducts.org/>).

There are several lessons from the Front Range case. First, while some efforts to utilize biomass have failed local knowledge and capacity have grown as a result. Second, the working relationships that have emerged are fundamental to future success, as is the ability to capitalize on the technical capacity of partners and political involvement of the state. Third, the deficiency of markets to cover the cost of removal will require strategies such as the recently enacted Forest Improvement District authority. Lastly, investment decisions will determine the scale of utilization but agency planning and community initiatives can facilitate or impede progress.

**For more information, contact:**

Dennis Becker, University of Minnesota  
 Department of Forest Resources  
[drbecker@umn.edu](mailto:drbecker@umn.edu); (612) 624-7286

Arapaho-Roosevelt National Forest  
 2150 Centre Avenue, Building E, Fort Collins, CO  
<http://www.fs.fed.us/r2/arnf/>

**Other researcher members include:**

Dalia Abbas, University of Minnesota  
 Kathleen Halvorsen, Michigan Technological University  
 Cassandra Moseley, University of Oregon  
 Pamela Jakes, USDA Forest Service, Northern Research Station  
 Sarah McCaffrey, USDA Forest Service, Northern Research Station

<http://www.forestguild.org/biomass/>

