



4. RENEWABLE ENERGY: Beetle-ravaged trees will fuel Colo. biomass plant (10/29/2009)

Eryn Gable, special to E&E

WOODLAND PARK, Colo. -- While the invasive bark beetle has become a major nemesis in Western forests, rendering millions of trees dead or dying, an innovative project in this small, southern Colorado city aims to convert the carcasses of beetle-infested trees into something useful -- renewable energy.

The project aims to cull pine beetle-infested trees on private and public lands, including the 1.1-million-acre Pike National Forest, to help generate power for thousands of Colorado residents, while reducing the risk of catastrophic wildfire in at-risk communities.

Wildfire threats loom large in Woodland Park, a community of nearly 8,000 only a few miles from the edge of where the record 2002 Hayman Fire occurred. The fire charred more than 138,000 acres and caused nearly \$40 million in damages.

Since then, groups such as the Coalition for the Upper South Platte have joined with city, state and federal officials under the umbrella of the Woodland Park Healthy Forest Initiative to work on projects aimed at reducing future fire risk.

"The goal is to improve forest health and resiliency in the local forest, so that the next fire hopefully will not be as catastrophic," said Carol Ekarius, the coalition's executive director. "We can't fireproof the forest, but we can make it to where it is less vulnerable to the type of fire we had."

Improving forest health means removing a lot of the trees that sprang up in recent decades when fire suppression was the order of the day. The absence of fire created an unnatural, overcrowded forest that can quickly become engulfed in flames. Because much of the wood targeted for removal from the forest has little economic value as lumber, the initiative turned to biomass as a possible use for it.

One of the partners in the forest initiative is Colorado Springs Utilities, which provides electricity, natural gas and water to several hundred thousand customers in the Pikes Peak region. As the main electricity provider for Colorado Springs, a city of 360,000 people about 20 miles southeast of Woodland Park, the utility saw economic and environmental advantages to using biomass as a fuel for electricity generation.

The utility is currently working on an upgrade to its coal-fired Drake Power Plant, after which it will be able to receive roughly 100,000 tons of woody biomass each year from the forest initiative to power customers' homes.

The locally harvested biomass will replace about 75,000 tons of coal each year once the boiler system is upgraded to burn biomass, officials said. And because woody debris burns more cleanly than coal, the project is expected to reduce emissions of mercury, sulfur dioxide and nitrogen oxides -- pollutants that contribute to air and water quality problems.

The project has already earned praise from Colorado Gov. Bill Ritter's (D) Energy Office as an example of what can be done to address the pine beetle epidemic, reduce wildfire risk for local communities, help the environment and bolster local economies.

"It's really a model for Colorado in that it's trying to take the implementation of safety zones [in the wildland-urban interface] and ask, 'What can we do to benefit the community with what's available after all of our activities?'" said Stacey Simms, the Energy Office's renewable energy program manager.

Pike National Forest Supervisor Bob Leaverton noted that the initiative is an almost unparalleled collaborative effort between



Trees infested with pine bark beetles in Woodland Park, Colo., are being harvested to fuel a biomass power project being developed by Colorado Springs Utilities. Photo courtesy of the Coalition for the Upper South Platte.

federal, state and local partners. "It's way overachieved what I thought it would do," he said.

Unique approach

The project represents a unique approach for turning the pine beetle epidemic, which has ravaged the West's forests, into an opportunity for positive change in damaged areas. In Colorado and Wyoming alone, the bark beetle epidemic has affected about 2.5 million acres, creating large swaths of dead and red-needled pine trees.

And the number of pines expected to be affected by the bark beetle epidemic is growing. Terry Meikle, project manager for Colorado Springs Utilities, noted that the Forest Service is predicting the beetle infestation could eventually affect 5 million acres of trees in Colorado.

"Five million acres is more than sufficient for our project," Meikle said.

Although beetles are a natural occurrence in Western forests, scientists believe the devastation they have caused in recent years has been exacerbated by a combination of past forest management practices and climate change. In addition to the ecological consequences of all those dead and dying trees, including changes to wildlife habitat and hydrological regimes, there is ongoing concern about the possibility of devastating wildfires.

Since Colorado Springs Utilities also provides water to its customers, one incentive from the utility's point of view was to make sure the watershed it relies on remains healthy. "If we prevent one forest fire, we prevent a major cost in terms of the destruction we'd have in our watersheds," Meikle said.

But there were other incentives as well. Meikle noted that biomass costs less than other renewable energy sources such as wind and solar power. And unlike other renewables, biomass can provide a constant supply of power so long as the woody debris is available to burn.

Meikle sees economic benefits to using biomass as well, especially since the utility's new boiler system will allow the power plant to burn coal, natural gas and wood. "We can select the lowest-cost fuel to fire and that gives us leverage in purchasing those fuels," he said.

Gaining a foothold

Despite the clear advantages of using biomass to generate electricity, the fuel has failed to take off as a renewable energy source. Currently, less than 1 percent of the electricity in the United States is produced by wood and wood-derived fuels, according to figures from the Energy Information Administration. And many projects that use biomass are small in scale.

For example, the Northern Nevada Correctional Center in Carson City recently installed a wood-fired biomass boiler, a 1,000-kilowatt steam turbine generator and a 30-kilowatt photovoltaic solar system that is expected to reduce the prison's utility bills by 75 percent. The system will use wood chips from forest thinning operations in the Sierra Nevada range, which were previously transported to a landfill, to produce electricity, steam and hot water.

Other local uses focus on burning biomass to offset the use of fossil fuels to heat schools and community buildings. The rural Montana towns of Darby and Victor, hit hard by devastating wildfires in 2000, were eager to reduce fuel loads surrounding their communities and have developed projects to heat school buildings using wood slash.

In other cases, biomass is being used to manufacture wood products and biofuels, rather than being burned for heat or electricity. One such notable project emerged from a 10-year stewardship contract awarded by the Apache-Sitgreaves national forests in August 2004 that allows the removal of small-diameter trees and woody biomass on 15,000 acres annually, mainly in the wildland-urban interface.

The biomass and small trees collected from the project are used as a fuel for bioenergy plants as well as to make weather-resistant products, wood molding, animal bedding, compost materials, wood pallets, wood pellets and other products.

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