

## Rocky Mountain News

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### Wood waste raises burning question

By Jim Erickson, Rocky Mountain News

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NEDERLAND - Mayor Scott Bruntjen thinks of the town's new wood chip-fired, steam-powered microturbine as the ultimate controlled burn of an overgrown forest.

In a nondescript metal shed above this mountain town's aging community center, the miniature power plant hisses and chugs as workers feed wood chips into its firebox hopper.

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The chips come from surrounding forests being thinned by private landowners, the U.S. Forest Service, utility companies and others. Electricity from the generator will power the town's community center, and steam from the boiler will heat the building.

The Nederland Community Bio-fuels Project marks the first time in Colorado that waste wood, or slash, from forest-thinning projects has been used to heat and power a municipal building, according to Denver-based Delta Dynamics, the microturbine's manufacturer.

When fully operational, the Nederland facility is expected to consume about a ton of wood chips a day.

#### Technology is a slam dunk

Given the overstocked state of Front Range forests and the thinning projects planned there, the region could easily support several dozen chip-burning plants like Nederland's, said forester Craig Jones of the Colorado State Forest Service.

"The technology is a slam dunk. Vermont already heats 25 percent of its schools with wood chips," Jones said. "The real question is whether the economics will work out, and we think it will."

Congress recently approved legislation to reduce the risk of wildfires in national forests by speeding the removal of overly dense trees and brush - especially near homes and towns.

The bill authorizes \$760 million a year for hazardous fuels reduction projects - a \$340 million increase over the current level. At least half the money spent on forest-thinning projects must be near homes and communities.

Along Colorado's Front Range, 3.5 million acres of forest lie near moderate- to high-density housing, Jones said. Those "red zone" areas are targeted for thinning projects, which typically remove 10 to 20 tons of vegetation per acre in Colorado.

One burning question: What to do with all that wood?

Some of the chips in the Nederland firebox came from the 4,000-acre Winiger Ridge thinning project south of town. The project started in 1996 and has cost nearly \$1.5 million, Jones said.

About 80 percent of the removed trees are 8 inches in diameter or smaller, Jones said. Roughly 65 percent of the Winiger wood is sold as firewood or for use as mulch or fence posts. A tiny fraction is cut into boards at sawmills.

## **Much remains behind**

But the rest remains in the forest. About 15 percent is heaped into slash piles and burned on the spot. Twenty percent is chipped and sprayed across the forest floor.

That discarded wood contributes to the high cost of thinning projects, Jones said. The U.S. Forest Service currently pays contractors \$400 to \$1,200 per acre for forest thinning in Colorado, he said.

If the contractors could find more buyers for the slash, the U.S. Forest Service could pay contractors less per acre to thin the forest, Jones said. The savings in turn could pay for more thinning.

The Nederland Community Bio-fuels Project is part of a larger effort to find new outlets for the wood generated by thinning projects.

Boulder County will soon break ground on a new parks building that will be completely heated by wood chips. It is expected to burn 650 tons a year.

In Jefferson County, wood from thinning projects is used as compost. In Fort Lupton, one entrepreneur is running small trees through a shaver to create bedding for dairy cows and turkeys.

In Florence, the Forest Service is working with the operators of a coal-fired power plant to add wood chips to the fuel mix, said Bob Dettmann, branch chief for rural development with the U.S. Forest Service in Golden.

"We've got all this work being done to protect communities and reduce the fire hazard, and we're generating a tremendous amount of material," Dettmann said.

In Nederland, about \$500,000 has been spent on the community center project so far, said Steve Roosa, a Delta Dynamics vice president. The cost includes the value of the existing storage building that now houses the power plant.

A \$200,000 addition will soon be added to store wood chips. So the project's total design and construction cost is expected to be about \$750,000, Roosa said.

Funding for the project comes from the town, the Governor's Office of Energy Management and Conservation, the U.S. Forest Service, the Environmental Protection Agency, Delta Dynamics and others.

## **Emissions being assessed**

The EPA wants to assess the emissions produced by the burner to see if they have a significant impact on air quality. With a grant from the agency, Evergreen Air Services has been hired to measure the carbon monoxide, particulates, carbon dioxide and nitrogen oxides emitted.

Michael Pierce, senior project manager for Evergreen, brought a truckload of analytical devices to Nederland when the firebox was burning at full-bore.

"It looks to be burning clean, but we won't know how clean until we run all the tests," he said.

Fans blow air into the Nederland firebox, heating the burning wood chips to 2,000 degrees. The system resembles a wood-pellet stove more than a home fireplace.

Flames from the firebox roar into the boiler, creating steam that spins the microturbine's 9-inch stainless-steel rotor, generating 30 kilowatts of electricity.

A microturbine is a turbine that generates less than 500 kilowatts of electricity. A typical home uses three to five kilowatts; the peak load at the Nederland community center is 20 to 22 kilowatts, said Denis A. Walsh, a Delta Dynamics vice president.

Steam from the Nederland boiler will heat the 30,000-square-foot community center.

Until now, the annual power and gas bill for the center and adjacent buildings has been running around \$50,000.

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