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Evergreen Energy

A biomass power plant could be in Tahoe's future BY DAVID BUNKER SIERRA SUN,

LOYALTON—The fire box spews orange embers as David Kelley pushes and pulls wood chips across the superheated grates of the Loyalton co-generation plant.

Kelley's face, a mask of soot, is steeled into a mild grimace. His short mustache is barely visible beneath the dark ash. The smooth rowing motion of his work has a rhythm governed by the inhale and exhale of the 850-degree fire box that generates enough electricity to power approximately 7,000 homes.

Every several seconds orange sparks shoot from the square hole, showering around Kelley. The roar of the burning woodchips and the glow of the airborne embers give Kelley's otherwise dark workplace a subterranean feel, like he's working in the belly of the beast.

"I know the boiler pretty good," says Kelley. "I know when it's going to spit. It's kind of like a dragon, you know when it's going to puff."

Kelley is one cog in a team of workers that turns hundreds of tons of wood chips into roughly enough energy to power half of the Town of Truckee each day in this small town of 860 people on the northern edge of the Sierra Valley.

The Sierra Pacific Industries co-generation plant, sometimes called a biomass plant, burns wood chips to heat water to steam. The steam then spins a turbine at 3,600 revolutions per minute, and under its battleship gray steel housing, produces energy.

Among the 280 tons of wood chips fed into the fire box each day, about two truckloads come from Truckee and Tahoe.

But Placer County's biomass program manager and Office of Emergency Services manager recently toured the facility for another reason. They want to build a similar power plant in Tahoe.

Not as big, and definitely with newer technology, but the county has been pursuing this dream for years.

Biomass in the Basin

Today, much of the Basin's forest slash and yard waste is burnt in piles. The energy goes up in smoke, clouding the air and eventually Lake Tahoe and other alpine lakes.

The biomass initiative in Tahoe has several different upsides: green energy, improved air quality, improved water quality, and more efficient forest thinning.

Placer County is planning to have a biomass plant built in the Tahoe Basin by 2010, although Brett Storey, the county's biomass program manager, admits that "a lot of things would have to go right" to hit that goal.

But there are reasons to be optimistic. California Gov. Arnold Schwarzenegger's proposed budget has \$3.5 million in it for a Tahoe biomass plant, Storey says.

And congressional leaders from California Senator Dianne Feinstein, Nevada Senator John Ensign and U.S. Representative John Doolittle have pledged to support the effort, Storey says.

"It doesn't appear to be a political issue, which is pretty refreshing," he says. "I think people are coming together and understanding that this is the right thing to do."

Storey says the county is investigating whether a biomass facility might fit at the new justice center off Burton Creek Road east of Tahoe City.

The excess steam and heat from the plant could be used to heat the building, sidewalks and driveways.

The power plant might cost between \$7 million and \$8 million, produce between one and three megawatts of power and run

year-round from forest waste. The forest waste could be stored at the Cabin Creek transfer station.

The energy would be fed from the plant into the energy grid.

"We're hoping this will be a model for the rest of the country," Storey says.

At the Controls

Rodney Lacey is five stories up at the control room of the Loyalton biomass plant, presiding over video screens, meters and dozens of dials.

Wearing a rumpled green flannel shirt and thick glasses, Lacey twists knobs to control temperatures and inspects the amount of emissions puffing from the smokestack of Sierra Pacific Industries' power plant.

The plant emits carbon monoxide, carbon dioxide and nitrogen oxides — but much of it is captured within the plant by various air-cleaning machinery. The emissions are strictly monitored by the U.S. Environmental Protection Agency.

Capable of producing 20 megawatts of energy, the co-generation plant is currently running at about half capacity.

Although Lacey is at the controls of the plant, Jim Turner, who has worked in Loyalton with Sierra Pacific Industries off and on since 1978, actually oversees the entire operation.

To make the plant run smoothly, Turner has to keep tabs on a network that provides the plant hundreds of tons of wood chips each day.

Outside the plant, the mountains of fuel emit the thick odor of Christmas trees. Standing among roughly 21,000 tons of wood chips, Turner explains the fuel must be mixed expertly to burn at peak capacity.

"It's an art," he says. "It's pretty impressive."

The fuel comes from as far as Carson City, Redding, Klamath Falls and Stockton. A few truckloads roll in from Truckee and Tahoe each day.

"I'm reaching out pretty far for fuel right now," Turner says.

Much of the wood comes from forest thinning operations and logging, but some wood is diverted from the landfill and sent to the plant.

The power plant staff also has to continuously turn the mountains of wood chips to keep them from spontaneously combusting from within.

Biomass Backing

Biomass in Tahoe has been championed by Placer County's Tahoe representative Bruce Kranz. Kranz, a former California State Parks Superintendent, knows the overstocked nature of local forests well.

The idea of thinning forest while producing energy and reducing air pollution has become a cornerstone policy of Kranz's Placer political career.

Representing a thickly forested district from North Auburn to Homewood, Kranz sees catastrophic wildfire as a looming threat to the area.

And the county has put its money where its mouth is, committing to spend \$525,000 per year for the next five years on the twin purposes of forest thinning and biomass.

But the county acknowledges that the effort to build a biomass plant will take funding from the state, the federal government and private interests, according to Storey.

Rui Cunha, the county's director of emergency services, says the three chipper crews the county has are maxed out during the summer. The biomass facility could increase forest thinning without increasing smoke.

"Obviously what we are trying to do is encourage reduced burning," Cunha says.

Emerging Technology

Biomass is an ever-changing technology, and the Loyalton co-generation plant, although an effective energy producer, reflects the technology of the time.

Since the plant was built in 1989, biomass experts have learned heating forest material to extremely high temperatures while withholding oxygen can vaporize the gases within the wood, which is then burned. This process, often called gasification, burns more cleanly than the method used in Loyalton.

The Truckee Donner Public Utility District received a grant to build and run a biomass gasification plant at the Truckee River Regional Park. After several years of mixed success with the machine, the district's biomass experiment was decommissioned.

Placer County is looking further into the future, where emerging technology promises to convert solid waste into energy, Storey says.

Although the county knows that technology is still not perfected, it plans to keep abreast of the newest, most efficient advances.

"We're hoping to be as close to 99 percent [reduction in emissions] as possible," Storey says.

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