



Fuels for Schools

Is the program an outlet for local woody biomass?

By Barbara Coyner

“We’ve got a lot of woody biomass around here, but I’m not sure what we can do with it.”

It’s not unusual to hear that from a local logger, because solutions for utilization are anything but straightforward. And it’s not easy for a logging contractor to add one more lobbying project to the list when the working days are already too long. Yet that’s what Stan Krueger did more than a decade ago when logging in Montana’s Bitterroot Valley grew more challenging than ever. On the heels of the worst wildfire season in decades, Krueger and other loggers wrestled with salvage logging options and the need to thin overstocked forests. Meanwhile, local school districts were struggling to pay heating costs. Enter Fuels for Schools.

Heating Schools

Using woody biomass to heat schools isn’t exactly a new idea. New England has been doing it for more than 20 years. So in 2002, when the concept debuted out west, Krueger and several of his associates embraced it. They saw it as an opportunity for loggers. Tom Coston, a Forest Service retiree, knew the ropes from the agency side and partnered with Nan Christianson, who headed up State and Private Forestry for the Bitterroot National Forest. In turn, Christianson recruited Jim Freeman, president of the Bitterroot Resource Conservation and Development (RC&D) Area, and Sue Levan of the Forest Service’s Forest Products Laboratory in Madison, Wisc.

Coston chronicled the pilot program in his 2007 report, *Fuels for Schools in the Bitterroot Valley*, introducing the idea:

Noticing that wood chips had been used to fire boilers for heating buildings in New England, the Lake States, and eastern Canada for a couple of decades and was very common in Europe, the idea of utilizing non-merchantable wood as fuel was evaluated. It was found that boiler technology had advanced to the point of complete automation, burned efficiently, met air quality standards, and positively contributed to a number of national goals, such as using renewable, nonfossil energy sources.

Fuel Savings

Of equal attractiveness was the fact the experience in New England indicated a fuel cost savings of some 50 percent when using wood chips compared to fossil fuels. . . The partnership adopted the name ‘Fuels for Schools’ (although any suitable public building could be considered) and added two more partners: the Biomass Energy Resource Center (BERC) of Montpelier, Vermont, with their experience and knowledge gained over two decades in New England, and most importantly of all, Darby Public Schools (DPS). In 2002 the natural gas price was relatively low and fuel oil, propane, and electricity higher. Darby burned fuel oil and lay beyond the reach of natural gas distribution. Evaluation indicated it to be the best candidate for a pilot project.

You can read Coston’s full report online at http://www.fuelsforschools.info/pdf/BitterrootValley_Experiences_with_Fuels-forSchools.pdf



As timber interests watched, Fuels for Schools eventually took hold in several school districts out west, with Salmon, Idaho, currently studying the idea. The Darby district now saves about \$100,000 annually in heating bills, according to Krueger.

New Directions

Krueger initially signed on to deliver woody biomass to the school and did so for four years. Yet times have changed in western Montana, with mills and logging businesses closing due to downturns in the building industry and other economic factors. Krueger admits he too is evaluating new directions on a constant basis, and his Morbark chipper currently sits idle.

Instead of loggers bringing in the school's fuel supply, citizens of the area now donate whole logs, which are stored in a fenced area near the school and chipped once or twice a year. Krueger says storing the logs works better than storing chips, which are vulnerable to moisture. In time, perhaps loggers will again be the mainstay in the supply chain, he says, but impacts such as those caused by the closure of the pulp mill at Missoula ripple far and wide.

Raised in the mill industry, Krueger knows the ups and downs of timber, but he remains enthusiastic about Fuels for Schools as a practical alternative to fossil fuels, especially if an area's timber industry infrastructure stays viable.

The gasification process burns clean, with woody biomass quality being of prime importance. "You need clean chips because a true gasifier needs clean fuel," he explains. Moisture content is a huge consideration in keeping the gasification process operating at peak performance, and as Krueger concedes, the whole program presents an extreme learning curve.

Coston's 2007 report verifies the trail-blazing nature of the Darby program, and several fuel sources were analyzed independently as the program advanced. While hog fuel checked out as dirtier than chips, other trials examined such characteristics as ash content and clinker buildup. For example, this entry:

With the chips normally supplied by the fuel contractor — mostly Douglas fir and lodgepole pine slash with a high proportion of bole-wood to bark, branches, and needles — ash production was minimal, ash was powdery with no clinker formation, grates were scraped down daily, and ash removed about every third day. Ash production was estimated at about 1.5 gallons per ton of fuel burned.

The Path Ahead

Loggers continue to be watchful about woody biomass, and the routes to successful utilization remain largely unmapped. Krueger stays in touch with several European contacts who have long used wood energy, and he is intrigued by the different philosophies at work overseas. He envisions woody biomass taking hold much as rural electrification did in the past, with power distributed in smaller regions instead of being linked up on huge grids. And he admires the way the Europeans believe in heating just the rooms they occupy rather than heating massive unoccupied spaces.

Although Krueger no longer delivers fuels to the Darby School, he constantly rekindles the memories of the kids waiting for him as he brought in loads in the past. Finding those times to be teachable moments, he explained how the boiler worked and how fuels were processed. "The kids were always asking questions of how things worked, and how things could be made to work even better," he recalls. Somehow it's ironic that in those instances, Fuels for Schools was fueling education about the timber industry in an unexpected way.