

At a Pioneering Maine School, Skeptics Become Believers

<http://www.biomasscenter.org/resources/case-studies/leavitt-high-school.html>

**Leavitt Area High School
Turner, Maine
4.5 MMBtu woodchip system
Installed in 1999**

When Leavitt Area High School in rural Turner, Maine proposed installing a woodchip boiler as part of a reconstruction project in the late 1990s, one key early supporter was Ralph Caldwell. Well-known and plain-spoken, the local farmer and businessman was already using chip boilers in several houses he owned. Leavitt High had been using electric heat, and was looking to become the first school in Maine to go with a chip system.

“Our superintendent then, he’s moved along now, but he’d pick out some of us who are sort of movers and shakers, the people who can give you grief—and he’d get you on the committee,” Caldwell recalls with a chuckle. “If you get the people who are going to give you a hard time on board, it goes a lot calmer. Once you’ve committed them, the rest isn’t a problem.”

Not that there wasn’t skepticism. The state of Maine was putting up 80 percent of the funding for the construction budget, and officials were leery enough of the chip system—it would be the first in a Maine school—to insist that its oil-fired backup burner be big enough to meet 100 percent of the need. The maintenance staff was also a bit concerned that the chip system would be an operation and maintenance headache at Leavitt High, which serves about 750 students from the towns of Turner, Leeds, and Greene in south-central Maine.

Townpeople approved the project in a local vote—and a 4.5 million BTU chip system, with a 6 million BTU oil backup boiler, was installed during summer and fall 1999.

“I was very involved that first winter that it went in, and then I got busy with other things,” Caldwell remembers. “During April vacation, I happened to meet the guy who was seeing to maintenance, so I asked him how the winter had gone. He didn’t say anything. I said, ‘Geez, was it that bad?’ He said, ‘Geez, the damn thing worked pretty good—and I’d damn well tell you if it didn’t!’”



“It Tells Us What It Wants”

In its first years of operation, the chip system proved itself nicely. From 2002-03 through the 2006-07 school year, the wood-fired boiler met 84 percent of the school’s heat and hot water needs—and it saved an estimated total of \$214,000 in energy costs compared to using all oil, says an independent study of the system’s costs and performance.

Commissioned in 2007 by the Maine Department of Education in response to growing interest among other schools in chip systems, the study by CCI, Inc., of Augusta found that the fuel-cost savings generated by Leavitt’s chip system were rising dramatically along with oil prices. In 2002-03, Leavitt’s total energy-cost savings, projected against current fuel-oil prices, was \$20,582. In 2006-07, it was \$53,113.

The chip system had so far required only one repair, a \$1,200 patching of the firebox lining. Operation requirements, while slightly greater than for an oil burner, are not a burden, says Gene Jordan, a member of the school’s maintenance staff who has been involved with the system since it was installed.

“It’s been pretty decent to us,” Jordan says. “It’s got a lot of moving parts, so a guy spends about an hour a day, keeping it clean. We’ve learned that if you keep it dusted down, it runs better. It tells us pretty well what it wants.”

Jordan says the oil burner is used mainly during the off-peak heating months, and is fired to full capacity only about 3 percent of the time. Even that may lessen as the school moves to use the chip burner to provide hot water during autumn and spring.

“This last year, we ran chips right up till June, just for hot water,” Jordan says. “We also have a gas hot-water heater, to use in summer.”

“Take Lots of Pictures”

These days, Leavitt High School draws a fair amount of interest from other Maine schools that are considering chip boilers. “Oh, they promote it, now,” Ralph Caldwell quips.

Gene Jordan says that when visitors ask about chip systems, he advises them to make sure they get a good supply of uniform-quality chips. Leavitt uses green hardwood mill chips, supplied by an area broker and mainly generated by Maine Wood Turning in New Vineyard. A consultant for another school project found that chip availability in forest-rich Maine shouldn’t be an issue.

Leavitt’s 60-ton chip bin takes delivery of a 33-ton load about once a week during heating season—and the bin’s

design requires some shoveling to spread the load. If he were planning a new system, Jordan said he would design a bin that would spread its load evenly without extra labor.

Other than that, he advises only to go look at a working system, just as the Leavitt folks did.

“Take a digital camera, and take lots of pictures—because when you get back, somebody’s always asking you things. If you’ve got it in color so they can see it, see what you’ve been looking at, that’s really helpful.”

“I got no complaints, no problems,” adds Ralph Caldwell. “Delighted we did it. But gasification is the next step up.”

