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Commercial use of wood energy is heating up

Biomass heating has become an economically viable option for municipal, school and business operations

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New Hampshire's recently released 10-year energy strategy acknowledged an ongoing fact of life for the state's commercial and residential sectors: New Hampshire imports 100 percent of its fossil fuels and natural gas. According to the NH Wood Energy Council, New Hampshire pays more than \$1 billion annually to import heating oil, with a large chunk of that paid for by businesses, since the state's commercial sector is the second most dependent on heating oil in the nation, just behind Maine.

As energy customers realized again last winter, this dependence makes the state vulnerable to wild market swings and, in the case of natural gas last winter, shortages due to limited pipeline infrastructure.

That's why, among its many recommendations, the state's energy strategy calls for a greater use of wood as a fuel source. Wood, the energy report says, "offers a promising alternative to home heating oil and other petroleum products, providing a much needed option to extend fuel choice to rural areas of the state. Since New Hampshire is one of the most forested states in the nation, wood also presents an opportunity to capitalize on locally-produced resources, keeping money in state while promoting land conservation efforts."

In fact, the growth of a wood/biomass heating alternative for commercial use has been an ongoing under-the-radar trend taking place in more rural areas of New Hampshire. Like the wood stove heating the general store a century ago, biomass heating in the forms of wood pellets and wood chips has become an economically viable option for larger-scale municipal, school and commercial operations.

"For almost all businesses, how they heat their building is more important than electricity prices because heating can account for as much as 40 percent of their operating costs," said Charlie Niebling of the New Hampshire Wood Energy Council, a private-public nonprofit that advocates for biomass heating alternatives. "Wood chips or pellets are a less expensive and locally produced renewable resource. They keep fuel dollars circulating in our economy."

Economic stimulus

Lured by technological advances, the changing economics of the biomass industry and federal/state rebate programs, scores of schools, municipal organizations, nonprofits and private enterprises have begun to make the switch to wood over the past decade.

Niebling, an industry veteran and a partner with the consulting firm Innovative Natural Resource Solutions, believes momentum is on the side of this major shift.

"This is an opportunity for businesses around the state," he said. "We are never going to be the main heating fuel source, but we can be a significant alternative to lessen our vast dependence on fossil fuel."

After years of research on how best to attack rising energy and heating costs, Littleton Regional Healthcare, parent of Littleton Regional Hospital, installed a \$2.8 million wood chip heating system in 2013. It went fully operational in January and Henri Wante, director of engineering and facilities at LRH, said the two Messersmith automated wood chip heating biomass boilers have replaced three existing oil burners, leaving two burners as a backup to the new system.

“We started looking into biomass about seven years ago,” Wante explained. “(LRH) has to produce steam for sterilization as well as heating and water. We were very interested in the recent technological advances in biomass and this allowed us to take a more serious look at it.”

The LRH project included the installation of a large chip storage bin that can hold two semi-trailer loads of chips – enough for about one week during the peak heating season.

LRG’s system includes emissions controls that make it cleaner-burning, with up to 99 percent of all particulates removed before exhaust exits the stack. The nontoxic waste ash produced can be recycled as a source of organic potassium used by farmers.

Even though the system has been in operation less than a year, Wante said the financial payback has already begun.

Wante said that from January to September 2013, LRH spent \$526,000 on heating oil; in 2014 during the same time period the cost for heating dropped to \$207,000, including \$61,000 for oil to be used as emergency backup and for other operations.

Overall, LRH estimated it is using 20 gallons a day of heating oil compared to the more than 1,200 gallons per day of average daily use.

There’s another benefit: the money spent on wood chips (about \$150,000 through September) is staying in the North Country economy. LRH has a three-year contract for hardwood bole chips with A.B. Logging in Lancaster.

“The North Country has taken quite a hit over the years, and keeping this money in the local economy and supporting local industry is important for us,” Wante said.

Wante said he expects the entire project will be paid off in five to seven years.

Not a panacea

Farther south in Pembroke and Loudon, Pleasant View Gardens began its biomass conversion in 2008.

Jeff Elkins, the facilities manager, said the company was concerned about “drastically rising fuel costs” that continued to erode the bottom line of its plant material business for growers and garden centers throughout the country.

“We weren’t near a natural gas line and we were looking for an alternative energy course,” Elkins said. “The high heating oil prices were impacting our bottom line, and it was becoming harder to pass those costs onto our customers.”

After extensive research and inspections at different biomass operations of manufacturers in the U.S. and Canada, Elkins said a master plan was created.

The first biomass system was installed at the Pembroke greenhouse location in 2008, and then a few years later in Loudon. Altogether, the company invested more than \$5 million in the systems (a decision

helped by more than \$500,000 in U.S. Department of Agriculture grants), and it has cut its heating oil costs significantly.

At the Pembroke site alone, heating costs dropped from about \$1 million a year for No. 2 heating oil to \$250,000 annually in wood chips. Elkins expects the investment will be completely paid back in the next four to five years.

“This is much better for us than oil, natural gas or propane,” Elkins said. “And the beauty of it is that rather than sending as much as \$2 million out of state for heating oil, we are putting more than a half a million dollars in a 30-to-40-minute radius of our local economy.”

As with natural gas, wood heating is not a panacea for high heating energy costs. For example, at the consumer level, there was a shortage of wood pellets during the winter of 2013-2014.

As the energy strategy report notes: “Widespread adoption of biomass heating systems could result in the state importing wood in the same way that it currently imports fossil fuels, with similar economic results ... to the extent possible, the state should work to ensure that conversions to biomass heating systems are occurring strategically, focused in places located near wood supply and in concert with comprehensive efficiency efforts.”

“It’s still an immature industry,” said Mark Froling of Froling Energy Systems in Peterborough, which has transformed from a biomass manufacturer to a full-service biomass contractor with more than 100 commercial installations throughout New England.

Froling said his firm has never been busier than today, but the industry itself is hampered by two vital factors – a consistent wood pellet production infrastructure and financing to help businesses make the switch.

“When I wrote a business plan in 2008, I thought we would have much steeper growth,” Froling said. “The payback for larger commercial projects can range from two to seven years. It’s funny, but we put a bid on a project that would have had a payback of just over four years, and this business is having a hard time getting financing even though it will help its long-term bottom line. With all these major economic shifts, it has become harder to get money.”

But the supply side aspect of the industry is being sorted out, said Froling.

“We have seen huge growth and acquisitions with a lot of these operations being well-capitalized and being run more professionally,” he said. “I think we are going to go from 15 plants to about 22 plants which will make a big difference.”

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