With a mission of serving “as a catalyst for regional prosperity and advancement,” Longwood University has turned its need for energy into an opportunity for regional innovation.¹

Longwood University’s campus of 4,500 students in Farmville, Va., now supplies 85 percent of its heating and hot water needs from bioenergy. The feedstock used to fuel that energy comes from regional mill operations, all within 45 minutes of the campus.

In 1973, Longwood’s primary energy source was fuel oil, which cost 10 cents a gallon. In the early 1980s, when fuel oil prices soared to more than $1 per gallon, the university sought new fuel sources to supply its energy needs. With limited access to coal and natural gas, the university found biomass to be the most cost-effective alternative to fuel oil.

In 1983, the university converted its two boilers to biomass. Then, in 2004, the university replaced both boilers with one wood-fired boiler. A new plant opened in 2011, adding a second biomass boiler.
Originally, the conversion to biomass saved Longwood $163,000 a year in energy costs. In 2010, the university saved $2 million. And in 2011, that number is expected to reach nearly $3 million. With a $100 million budget, that results in a 3 percent savings for the university.²

To make Longwood’s bioenergy project economical, the university purchases biomass from eight to 10 local mills, ranging from national corporations to family-owned businesses. The mills provide a variety of soft and hard wood sawdust that is created through regular mill operations.

The mills’ close proximity to the university keeps transportation costs low, which is key to keeping the university’s bioenergy economical. This relationship provides local mill operators with a local market for their sawdust and Longwood with access to a low-cost fuel source.

Richard Bratcher, vice president of facilities management and real property at Longwood, noted that during the recent economic downturn, “it was [Longwood’s] business that helped keep some of those smaller mills going and ride through the worst of the initial 2008 downturn.”³

Furthermore, the local mills see their partnership with Longwood as more than just another market, but as their contribution to the local community. Ken Morgan, owner of Morgan Lumber Co., said, “I’m a strong proponent for the reasons Longwood is there…and we want to help.”⁴

H.E. Tharpe, plant manager at Pallet One Inc., said the benefits of partnering with Longwood include “being involved with the community and helping those who are close to us.”⁵ Tharpe also noted that while Pallet One Inc. is part of a national corporation, the employees are locals who want to give back to their community.

Bratcher recognizes the local benefits of Longwood’s bioenergy facility. “We’re very proud of the fact that our energy dollars are going into those counties in southside Virginia and not overseas for fuel oil,” he said.⁶

While Longwood’s bioenergy facility is a win-win for local mills and for the university, there are still challenges to be addressed. The primary challenge is managing the biomass supply chain. Using the residues of local mills means that when the mills decrease their output, there are fewer residues available. In addition, “the more people that are interested in using biomass [for energy]...can mean less supply,” Bratcher said.⁷

An increase in demand or a decrease in supply also brings up the challenge of price. Either of these can increase the price of the feedstock and, by doing so, reduce bioenergy’s cost-effectiveness.

The final challenge of the supply chain is storage. In the wintertime, when mills have reduced productivity, Longwood is using the most energy for heat and hot water. During this time, the university burns up to four tractor-trailer loads of biomass each day. The campus stockpile of residues can cover more than an acre of Longwood University’s campus of 4,500 students in Farmville, Va., now supplies 85 percent of its heating and hot water needs from bioenergy.
Longwood is working to stabilize its fuel supply chain and energy costs through a Fuel Management Program. The goals of the program are to:

- Diversify the types of woody biomass supplied.
- Maintain local feedstock sources.
- Ensure that best practices for forestry management and preservation of wildlife habitat are used.

One piece of the Fuel Management Program is the future installation of a third biomass boiler. A third biomass boiler will allow Longwood to test other feedstocks as potential energy sources without sacrificing the current energy system.

The development of a fuel depot is another project to help Longwood better manage the supply chain. The fuel depot will offer a place to “collect, process and store fuel.” Bratcher says, “What we’d like to be able to do, instead of relying solely on the saw mills that we’re working with, [is to] allow people to bring various types of other wood waste to us that might end up in a landfill or ravine somewhere...[and to] have the capability to further refine that into a consistent product we can use.”

For institutions considering developing their own bioenergy program, Bratcher offers a few words of advice:

- Examine the entire fuel supply chain for your plant before getting started. Consider not only the question of being able to acquire the appropriate amount of feedstock at an affordable cost, but also how to manage the logistics of delivery and storage of that feedstock.
- Be diligent in calculating transportation costs. Bratcher’s experience suggests that transporting biomass farther than 45 to 60 miles from your site is not cost-effective.
- Plan for demand needs at peak periods. For example, in the wintertime, Longwood will burn four tractor-trailer loads of fuel a day. The stockpile of biomass can cover an acre of ground in the heavy winter months.
- Answer questions related to delivery and storage needs early. How will the biomass be transported? Do current transportation roads from the supplier to site support this new demand? Where will additional biomass be stored? How will this affect the surrounding community?

In short, Bratcher’s advice is to “look beyond the plant.”

To make Longwood’s bioenergy project economical, the university purchases biomass from eight to 10 local mills, ranging from national corporations to family-owned businesses.
planning, not only for the technology and distribution of energy at the site, but also fuel transportation and storage.

To learn more about Longwood University’s bioenergy project, contact Richard Bratcher at bratcherrw@longwood.edu.

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Richard Bratcher
Vice President of Facilities Management and Real Property, Longwood University

3 Ibid.
4 Ken Morgan phone interview with Charity Pennock, Southern Growth Policies Board, November 1, 2011.
5 H.E. Tharpe phone interview with Charity Pennock, Southern Growth Policies Board, November 1, 2011.
7 Richard Bratcher phone interview with Charity Pennock, Southern Growth Policies Board, October 20, 2011.
8 Richard Bratcher (September 13, 2011). Biomass Energy Use at Longwood University [Presentation]. September 13, 2011, Glenn Allen, VA.
11 Ibid.