Bard College SHINES

By Gerhard Klier

With its park-like campus location overlooking the Hudson River and Catskills Mountains in New York's Hudson Valley, it's no wonder that Bard College is committed to being green.

At the liberal arts college in Annandale-on-Hudson, students learn and live in 25 geothermal buildings on campus that don't burn fossil fuels on site. Instead of driving to class, they walk, take shuttles, or even can borrow electric bikes. When their old light bulbs blow out, they trade them in for compact fluorescent light bulbs supplied by the college, which has given out more than 1,000 of the more efficient bulbs.

The newest innovation—solar thermal panels for hot water at two residence halls—is the latest example of the college's forward-thinking efficient and ecological initiatives as well as being an energy- and cost-saver.

The solar thermal project is part of Bard's ongoing green initiatives and another step toward meeting the goals in the American College & University Presidents Climate Commitment pledge signed by college president Leon Botstein in 2008.

STIMULUS FUNDING FOR SOLAR

The solar thermal system uses radiation from the sun to generate heat for hot water for about 100 students living in the two residence halls—Tremblay and Keen—for showers, washing their hands and dishes, and other uses.

Bard received grant funding for the $112,000 project under New York State Energy Research and Development Authority (NYSERDA)'s administration of the State Energy Program funded by the American Recovery and Reinvestment Act (ARRA). The grant covered 90 percent of the costs for the solar systems at the two residential halls as well as advanced monitoring at one building.

"Students love the endless hot water and pride themselves on being green," said Laurie Husted, the college's sustainability coordinator. "It also teaches the students, staff, prospective students and other visitors about Bard's environmental focus and how they can participate."

The system was designed and installed in January 2011 by EarthKind Solar with no interruption to student services. At Tremblay Hall, eight collectors were installed on the roof while 11 collectors comprise the system in Keen Hall.

RECOVERY ACT

Bard College received this award from the U.S. Department of Energy's State Energy Program. The State Energy Program provides grants to states and directs funding to State Energy Offices from technology programs in DOE's Office of Energy Efficiency and Renewable Energy. States use grants to address their energy priorities and to adopt emerging renewable energy and energy efficiency technologies. SEP is distributing $3.1 billion of funding to the states and U.S. territories under the 2009 Recovery Act.

SILVER STAR RATING

An early adopter of renewable energy technologies in its building construction since the mid-1990s, Bard has been recognized as a sustainability leader among colleges in the state and country, having recently earned a silver STARS (Sustainability Tracking Assessment & Rating System) rating from the Association for the Advancement of Sustainability in Higher Education.

In achieving the rating using the STARS transparent, self-reporting framework for colleges and universities to measure their sustainability performance, Bard was recognized for the innovative enhanced monitoring and verification installed on

the solar thermal system at Tremblay Hall.

The data now being collected using this enhanced solar thermal monitoring system from the solar water heating system is giving a real look at how solar thermal technologies work in this region of the United States. And the results from the system that provides extensive data every ten minutes, show the real value—in both cost savings and to the environment—of solar thermal systems.

Students living in this residence hall at Bard College get most of their hot water from the sun, thanks to a new solar thermal system.

"It is exciting both operationally and academically," said Husted. "We have faculty that are taking hold of the data for use in the classroom and research."

Since installing the roof-top solar collectors at the start of the 2011, Bard expects to save about $10,000 annually at Tremblay, plus the additional savings at Keen. Monitoring shows that the systems are working according to expectations. The Tremblay hot water consumption is almost covered with 85 percent of the energy supplied by solar.

Rising in popularity, solar thermal systems are as much as 80 percent less expensive than photovoltaics (PV or solar electric) systems that use solar radiation to directly generate electricity.

Solar thermal systems work by using the sun to heat a fluid running through the solar collectors and then circulate it to the storage tank. Internal heat exchangers inside the tank transfer the heat absorbed by the collector to the water in the tank. This pre-heated water is then stored for future use.

"Solar thermal is playing an important role in helping Bard reduce is carbon footprint and lower our reliance on fossil fuels," Husted said.

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