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**Green schools grow**

***A number of projects in the works in area***

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Like sprouts of grass, green initiatives are popping up in schools across the region this year.

The efforts range from a rainwater collection system and a wood chip boiler being designed at the new Keene middle school to a "net-zero" gymnasium at The Putney School in Vermont.

Keene State College recently won an award for green building at its Pondsides III dormitory from the N.H. Chapter of the American Institute of Architects, and an electric cogeneration turbine brought online at the end of 2009 reduces the school's kilowatt hour usage by about 15 percent when in use.

The people in charge of school building projects began pushing for more energy-efficient systems about five years ago, according to Frank P. Marinace, whose New Hampton-based Marinace Architects is designing the Keene middle school project on Maple Avenue, set to open in fall 2011, and a new Marlborough kindergarten-through-8th-grade school, due to be ready for this fall.

Taxpayer-funded projects are forced to balance green ideals with budget constraints, he said. Many school district officials want to install the latest green technologies, but rely on taxpayers to approve the price tag.

"If it ends up costing them a tremendous amount of money, do they want to do it just to be green?" he said. "If you inflate the project cost too much, not only are you not going to get the green building, you're not going to get the building at all."

Some ideas, like a rainwater collection cistern at the new Keene middle school to irrigate athletic fields, could cost about \$75,000 to install, but the payback period is very short, according to Tibor Farkas, an architect at Marinace's firm.

Depending on the price of oil, wood-burning heat systems can pay for themselves in as few as five years, some officials estimated. The new Keene school will have a wood chip boiler, and Marlborough will use a pellet-burning system.

Others, like solar panels, cost so much up-front the payback period is too long for public schools to afford them without help. The Marlborough district recently applied for a grant for funding to install solar panels on the new school's roof, but if the funding doesn't come through, that idea will likely be left on the cutting room floor.



The Putney School Headmaster Emily H. Jones next to the solar panel array that powers the new gymnasium at the school.

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The state pays about 55 percent of the cost for most school construction projects. It offers an extra 3 percent if schools meet certain "green" standards, which Keene is aiming for.

Those standards include requiring systems that provide better air quality, using more local, green materials in the building process and systems and fixtures that promise water savings and energy efficiency, Farkas said.

Another benefit is educational, officials said.

The new Keene school will likely have some sort of meter that will allow students to see how much energy is generated from renewable sources and how much is being saved by efforts like the cistern, said Elizabeth H. Coppola, co-chairman of the middle school building committee.

In addition to the science lessons, the district has the chance to show students the importance of "making choices that have a less detrimental impact or no impact" on the environment, Coppola said.

"This is stuff we should be doing anyway, paying attention to the resources that we consume. Any efforts we can take to show kids that decisions can be made to protect our environment are good efforts."

Emily H. Jones, director of The Putney School, agreed.

In November, the 225-student private high school opened a new gymnasium that was more than a decade in the making. The building is considered "net-zero," which means it generates as much energy as it consumes.

"We think of the building as a teaching tool for our kids that you can do something really beautiful, and really well and not do any damage to the environment," she said. "Kids in this generation think anything you do is going to do damage, but this shows there are ways to move forward without adding to the carbon load."

In the design phase of the project, the students' passion taught the adults, Jones said.

"At that point, the student body ... said they wanted two things: They wanted the building to be modest and to be green. They didn't want a big flashy, splashy building and they wanted it to be very green."

Though the exact effect of the systems won't be clear until after the building has been open for a year, it's designed to generate as much energy as it uses thanks to a field of solar panels. Energy the building doesn't use, like during the summer when there's more sun, but less demand at the school, gets pumped into the power grid to be called back in the winter when the need is higher.

The project cost \$7 million, more than a traditional gym would have, but Jones isn't sure by how much.

Jones said she didn't know how much of the price tag was directly tied to the net-zero efforts, but expects that the entire project cost will be paid back in energy savings over the next 10 to 12 years.

But it wasn't difficult to convince the school's board, Jones said.

"The numbers folks on the board were the ones that said this is the responsible thing to do," she said. "They told us, to build another building that uses oil would be irresponsible."

Here, the private and public school officials agree.

Said Coppola, Keene's building committee chairman: "If you're building a building in 2010, and you have the (green) technology, you've got to do what you can."

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