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Clean Energy Fund Approves First Round of Projects

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Its southern orientation, easygoing slope, and ample surface area make the roof of the University of Vermont's Miller Equine Center on Spear Street a potentially ideal sunlight collector.

That fact was not lost on a committee of University of Vermont students, faculty, staff and alumni charged with greenlighting proposals received by the university's new Clean Energy Fund.

Thanks to the fund, the horse barn's red metal roof will house a large array of solar panels producing up to 150 kilowatts of electricity, one of nine renewable energy-related projects to be financed through the new fund.

The Clean Energy Fund assesses UVM undergraduate and graduate students a \$10 fee each semester to establish new clean energy projects on and around the UVM campus, generating about \$225,000 per year.

The idea for the program was launched by students in 2005 and endorsed by the Student Government Association two years later, after a randomized survey of 419 students showed that 68 percent would pay \$10 per semester for the development of clean energy for the UVM campus. The fund was approved by the university's board of trustees in 2008.

The fund's 11-member committee called for the first round of proposals in September 2009, receiving 18 applications from a mix of students, faculty and staff. It deliberated for six months before making its recommendations, which were then approved by UVM's vice president for finance and administration, Richard Cate.

In all, the fund allocated \$256,669 to support the program in its first year: \$174,669 for the nine approved projects; \$32,000 for an annual education and outreach fellowship to support student involvement in clean energy projects, coordinate with classroom instruction, secure grant funding, and disseminate information; and \$25,000 for professional project management for any construction the funded projects require. \$25,000 was also set aside as a contingency fund.

Engaging in the debate

The goal of the program, said the administrators and student leaders behind it, is to engage students and the

larger community in addressing the formidable energy challenges facing society in the 21st century.

"The committee carefully chose a variety of activities to support, from demonstration projects to research studies to courses, all designed to draw students in and promote awareness of energy issues in different ways, timeframes and depth," said Gioia Thompson, director of UVM's Office of Sustainability.

"Our hope is that the Clean Energy Fund will encourage students to think broadly about sustainable energy, become involved in a hands-on way, and learn about the issues so they can be informed participants in the global energy debate after they graduate," said Eric Garza, a doctoral student in Natural Resources, who chairs the Clean Energy Fund committee.

Leveraging funds

To make the best use of student fees and to extend their impact, members of the committee agreed to seek matching funds from organizations like the state of Vermont's Clean Energy Development Fund for some of the larger projects.

"Matching funds for energy-related projects are available from a range of organizations," said Thompson. "We felt an obligation to explore those possibilities to leverage student fees as much as possible."

Because funds have been accumulating for two years, the Clean Energy Fund has a surplus balance of \$195,944. Projects that require matching funds for which funds are not secured will be financed with the surplus.

Funded projects include the following:

- **A campus dashboard system.** Four buildings (University Heights North and South, Votey Building, and Given Building) and five renewable energy installations on campus will be outfitted with hardware and software enabling online display of the energy they use and the renewable energy they generate. The displays, similar to the [online dashboard at the Davis Center](#)³, will be used in classes and research and will serve as an outreach tool. Project cost: \$44,000. Project timeline: To begin in the fall of 2010.
- **Energy auditing course.** A new undergraduate course, "Energy Auditor and Renewable Energy Retrofit Training," will be developed by Gund Institute fellow Gary Flomenhoft as part of the existing Community Development and Applied Economics minor in Green Building and Community Design. The new course will produce an annual cohort of trained students capable of analyzing campus heating, transportation, and electrical use, and of making renewable energy recommendations -- and submitting proposals -- to the Clean Energy Fund. Project cost: \$12,110 for course development. Timeline: The course will be taught during the fall term, starting in the fall of 2010.
- **Virtual carport course.** The UVM Transportation Research Center will link the solar array on the Equine Center roof with the university's plug-in hybrid electric vehicle (PHEV) for a course module, seminars, and class speaking engagements connecting sustainable transportation and renewable energy. The PHEV would become the center of a two-week course module on sustainable transportation systems, the linkages between renewable energy and transportation, and the impacts of transportation relating to energy use, emissions and driver behavior. Project cost: \$6,000 for development of the course module. Timeline: The module is expected to be taught beginning in the spring of 2011.

- **Aiken Center solar trackers at Forest Service building on Spear Street.** Up to 15 solar trackers will be installed on a highly visible portion of UVM land leased to the U.S. Forest Service on Spear Street. The solar trackers will be credited as offsets in the environmental renovation of the George D. Aiken Center, home of the Rubenstein School of Environment and Natural Resources, that is about to begin, helping the project secure LEED (Leadership in Energy and Environmental Design) certification. Project cost: \$4,500 (the solar trackers will be leased from a vendor). Timeline: installation to begin summer 2010.
- **Solar Array on the Equine Center roof.** A grid-tied photovoltaic system will be installed on the roof of University of Vermont's Ellen A. Hardacre Equine Center in the Miller Research Center on Spear Street. The PV system will generate power for the horse barn's electrical needs, including lights, computers, appliances, and other necessary equipment during the academic year. From June through August, the Equine Center is not in use and solar power generated from the system will be sold back to grid. The solar array will also be used in faculty research and in classroom teaching. Project cost: \$125,618 - \$62,809 from the fund with an equal amount in matching funds. Timeline: Pending match funding; construction is expected to begin in the summer of 2011.
- **Solar hot water unit at Slade Hall.** Four to six solar panels will be installed on a planned garden shed with a north/south facing roof. The solar panels will feed into Slade Hall's boiler, providing the majority of the resident hall's hot water. Project cost: \$32,000 - \$24,750 from the fund with \$7,250 in matching funds. Timeline: pending construction of shed.
- **Solar Power and Smart Grid Research.** This project has two research components. The first involves smart grid experimentation with an existing or new larger scale solar installation, such as the Equine Center solar project. The second component involves experimenting with three different axis orientations of four solar trackers that will be installed on the roof of the Votey Building. The solar power and smart grid research projects, in addition to standing on their own, will also be integrated in existing energy-related courses offered at UVM. Project cost: \$27,000 - \$13,500 from the fund with an equal amount in matching funds. Timeline: Pending match funding; expected start in fall 2010.
- **Evaluation of biomass potential on the Trinity campus.** This project will assess the biomass energy potential at UVM's Trinity campus. The feasibility study will be conducted by a third-party consulting group, which will work with the Clean Energy Fund's education and outreach fellow and UVM instructors to integrate biomass research activities related to the study into existing UVM. The Clean Energy Fund will provide resources for project leaders to apply for additional matching funds from the Vermont Clean Energy Development Fund. Project cost: \$35,000 - \$7,000 from the fund with \$28,000 in matching funds. Timeline: pending match funding; project is expected to begin in the fall of 2010.

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