

# Wind turbine firm joins SU in Clean Energy Collaborative

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## ***Faculty, students to take part in developing urban wind power***

Syracuse University and Impact Technologies Group of Syracuse have formed an alliance to convert Central New York winds into kilowatts.

The SU *School of Architecture* and Department of Mechanical and Aerospace Engineering in the *L.C. Smith College of Engineering and Computer Science* (ECS) are joining with the company to develop innovative wind turbines and bring to market wind- and solar-powered street lights.

By next spring, the new Clean Energy Collaborative expects to have prototypes on area roofs and in public spaces, tapping the energy of the winds.

“Working with Impact Technologies, we will combine resources to develop new designs with higher efficiencies and sustainable energy savings,” says Professor Michael Pelken of the School of Architecture. “This is also a learning opportunity that will include research assistants from both departments.”

SU and the company both have patents and patents pending on additional designs and they expect to merge their ideas and technologies. One aspect of the work is the new light poles that integrate wind, solar energy and new LED lamps to illuminate streets, parking lots and pedestrian paths.

The ‘Self-Sustaining Street Light’ concept was created by Professors Pelken and Thong Dang. Under their guidance, an SU engineering/architecture student team then developed system components and produced a functioning model. It recently received the George Farnell Design Award from the American Society of Mechanical Engineering.

“We’re excited to be partnering with SU on the frontier of urban wind energy,” says Raymond Davis, CEO of Impact Technologies. “This is a full-court press to move the technology forward and develop new applications for locally generated wind power.”

The focus of the alliance is on ‘small wind’ turbines that generate 100 kilowatts or less. The huge turbine towers in wind farms produce megawatts, but cost millions. Small wind turbines can make efficient use of the turbulent winds around buildings and operate over a much broader range of wind speeds.

In Impact Technology turbines an innovative PowAIR Sail design captures much of the wind’s energy by funneling it into the sail, regardless of wind direction. Inside, a new, highly efficient generator amplifies the power produced as the sail revolves. The turbines are virtually silent

compared with wind farm machines. If you stand near one in operation, you can hear the wind but not the machine.

“This joint effort gives some students a chance to work on real-world projects with professional designers and engineers,” says Dang, of the Department of Mechanical and Aerospace Engineering in ECS. “They can take part in creative interdisciplinary work and gain valuable insight into the field of sustainable energy.”

The small wind market has been growing rapidly despite the recession, thanks to federal and state incentives and growing buyer interest. The U.S. market produces about half of the world’s small wind systems and is forecast to grow 30-fold in the next five years.

One person at the center of this effort is TriciaRae Davis. She graduated from SU in 2007 with a major in physics and is now a vice president of Impact Technologies.

“This is a relatively new segment of the wind power market,” says Davis. “The most common urban wind speeds are below 10 miles per hour and that is a good fit for our turbines. Most turbines don’t even begin to operate until the wind speed is above 10 mph.”

The collaborators expect their efforts will attract others into the regional green energy community, as well as those who may want to invest in it.

Earlier CNY development work in the field has relied in part on funding from the Syracuse Center of Excellence in Environmental and Energy Systems (SyracuseCoE) and the Corporation for Economic Opportunity, aided by grants from state and federal programs. The collaborative will seek such support to help fund its activities.