

## Energy Technology Works in ‘Harmony’ With Historic New York Mill Town

- 45.6kW photovoltaic arrays to be installed on the High School and Middle School roofs
- Total annual utility cost savings of over \$20,000
- School District has history of earning U.S. Environmental Protection Agency Leader Awards

**In the mid-1800s, the City of Cohoes harnessed the Cohoes Falls to power the rapidly expanding textile industry. Hydropower - the new power source of that era - allowed the city’s Harmony Mills to become the largest manufacturer of cotton in the United States. Nearly 150 years later, the town again finds itself using cutting edge renewable energy.**

By means of grants from the American Recovery and Reinvestment Act, the Cohoes Middle School and the Cohoes High School will each install a 45.6kW rooftop photovoltaic array totaling 90kW of combined solar power capacity. Power from these two systems will be used on-site in a fashion reminiscent of the Harmony Mills water turbines of years ago. “This project speaks to the emphasis that Cohoes is placing on embracing new technologies,” says Ken Kellogg, Superintendent of Buildings and Grounds for Cohoes City School District. “This project is a step toward the future for our kids.”

### Significant Savings

ARRA funds awarded to the city have made these two projects possible that otherwise would not have been feasible. Taken together, the grants of \$309,821 for the Middle School project and \$314,309 for the High School project represent a significant capital investment for this city of 15,000 residents. This project also is an investment in local markets: the Middle School project will employ skilled New Yorkers and install American-made materials including SCHOTT Solar panels manufactured in Albuquerque, New Mexico, and a PV Powered inverter from Bend, Oregon.



By each producing an estimated 58,765 kWh per year, the Middle School and High School systems will replace approximately 14% and 10%, respectively, of each facility’s annual electric consumption. The estimated utility cost savings for the district will total \$20,200 and will serve as a welcome reminder of one of the many benefits of on-site energy generation. “We hope that these projects will help us to maintain our energy budget for the coming years,” says Mr. Kellogg. With Cohoes currently carrying out construction on five of its six school buildings, “any way that we can offset costs helps.”

### Energy Smart

This is not the first project that the Cohoes City School District has undertaken to improve energy efficiency at its facilities. In June of 2010, each school in the district took advantage of the Benchmarking program offered by the New York State Energy Research and Development Authority (NYSERDA).

“We cannot manage what we do not measure,” notes Mr. Kellogg. “Benchmarking gives us something to shoot for.” By understanding where and how energy is used across the district, projects can be prioritized, and

applications to NYSEERDA for financial and technical assistance can be started. “With these reports we’ve been able to identify problem areas, which we then address with capital projects.”

After participating in NYSEERDA’s free Energy Benchmarking Service for Schools, five Cohoes CSD schools have been consistently awarded the U.S. Environmental Protection Agency’s ENERGY STAR Building Labels on an annual basis, which indicates that these buildings are more efficient than at least 75% of other school buildings in the nation. This is a significant acknowledgement from the U.S. Environmental Protection Agency of high achievement in facility efficiency. Realizing a district-wide 40% drop in energy use since 2004, Cohoes CSD also has been recognized as an ENERGY STAR Leader each year since 2006.

“Energy efficiency is the primary step toward the installation of renewables,” says Dennis Phayre, commercial sales director for Alteris Renewables, the firm which will install the Middle School project. “Once you’ve taken great strides to reduce inefficiency, it becomes viable and valuable to bring in renewables to help offset what’s left. And that’s exactly what the Cohoes school district did.” “Cohoes really did the upfront work,” Mr. Phayre continues. “These grants are a testimony to a series of steps that they’ve already taken.”

### **Good timing**

The American-made panels are to be mounted at a tilt angle of 15 degrees to the horizon to maximize summer production. Because the load of the Middle School is smallest during the summer, when students are out of school, the system will contribute a high percentage of the schools utility use during these sunny summer months. They will also provide peak power during some of the most congested times on the electric grid and will help reduce the peak electric demand of the two facilities.

### **Keep an Eye On It**

With a combined 1,200 enrolled students, the schools provide fertile ground for future climate scientists and energy engineers, and an innovative computer based data logging system will be installed to peak their interest. “This system is an inspirational educational tool for the students,” says Mr. Phayre. “Kids in the Middle School don’t know a world without cell phones. These are the same kids who won’t know a world without renewables.”

Carbon dioxide offset, daily and monthly power production levels, and money saved will be viewable through any computer monitor within both schools and beyond. This program will combine with an easy-to-read kilowatt hour meter installed at a convenient location within each school, which will monitor power production from the photovoltaic system. Together, the technologies will provide students multiple avenues for studying on-site energy generation.

“With this project, these students are on the cusp of a shift in the way the next generation perceives renewable energy. They will experience photovoltaics first hand and be supported with the equipment and curriculum that they need in order to develop an understanding of the system,” says Mr. Phayre. “The educational benefits of this system are innumerable.”

The Cohoes City School District 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](#).”