Greenforce INITIATIVE

Advancing Greener Careers and Campuses

Lansing Community College
Lansing, Michigan
Weatherization

SCHOOL

Lansing Community College West Campus (Technical Careers), Public, 2 year, 147 students in Alternative Energy Engineering Technology, over 3,000 in technical careers as a whole, Delta Township, Michigan.

ABSTRACT

The project purpose was to give students access to real world experiences and hands on training. The purchasing choices made focused on giving students skills that are most impactful in making them employable. This included a web-based home automation system, an energy recovery ventilator, and diagnostic tools for combustion based heating systems. The equipment installed in the home will be used for five years as a teaching tool. At the end of this period, the home will be given back to the city to sell and they'll give us another.

There were six faculty involved from several different programs including HVAC, Alternative Energy, Electrical Technology, Information Technology, and one high school building trades course. Students involved in the project numbered greater than 300. Partnerships and funding came from the Allen Neighborhood Center, the Ingham County Land Bank, Lowe's Home Improvement Center, and Skills USA.

The labor demand in the Mid-Michigan area is overwhelmingly driven by energy efficiency efforts. Companies like Franklin Energy, Dr. Energy Saver, and ClearResult perform energy audits on commercial and residential buildings. This is popular right now due to large tax incentives for energy retrofits.

GOALS AND OUTCOMES

Goals

The initial goal of the project was to purchase equipment that could be used for several years that would train students on the most employable skills in the energy efficiency industry. The goals of the project were met and exceeded.

Accomplishments and Outcomes

The first purchase made was for some spray foam. This purchase went a long way. Students in the energy auditing class and the high school building trades class got to learn how to best apply foam insulation in a retrofit scenario. We also ran three community education seminars for residents where we used the rest of the foam to fill in the remaining walls. These sessions were sponsored by two local utilities, Consumer's Energy and The Board of Water and Light. Both sponsors gave away free items like Kill-A-Watt meters and free weatherization kits. The home automation system was installed and benchmarked using a 3G connection and a photovoltaic panel. Once the home gets full service from an internet service provider, we'll make the website available to the public. We expect that to happen in

August 2012. Fourteen students were trained on performing the "Combustion Appliance Zone" test, which is a requirement for BPI certification. This training would not have been possible without the purchase of CO detectors, gas sniffers, and smoke pencils.

Challenges and Response

There were two challenges that occurred during this period. First, the college policy does not allow servicing of grants below $5,000, so initially I was turned down when I asked if I could apply. Eventually, an agreement was reached where our Grants Office allowed me to submit the application, but they would not assist in servicing the grant. Making small purchases and reconciling each one on my own was a real time consuming pain, but it was worth it to me. The other challenge was scheduling different classes and faculty members to meet their deadlines in order to meet our deadlines. For instance, small gauge wiring for the home energy management system sensors has to be installed after the utility wiring is installed, but before the insulation and drywall. I don't think there's much I can do about either of these challenges in the future except for better planning as I gain more experience with these kinds of projects.

Campus Climate Action: Your School's On-Campus Sustainability Projects

Since the Restoration Works project is a community project, we didn't spend much time on campus. This is something we have been promoting for some time, but we did present the project at our annual Eco-Scholars Day event that corresponds with Earth Day. Over 200 people and 50 projects were shown off, green job employers were present, and our keynote speaker was John Sarver, Director of the Great Lakes Renewable Energy Association.

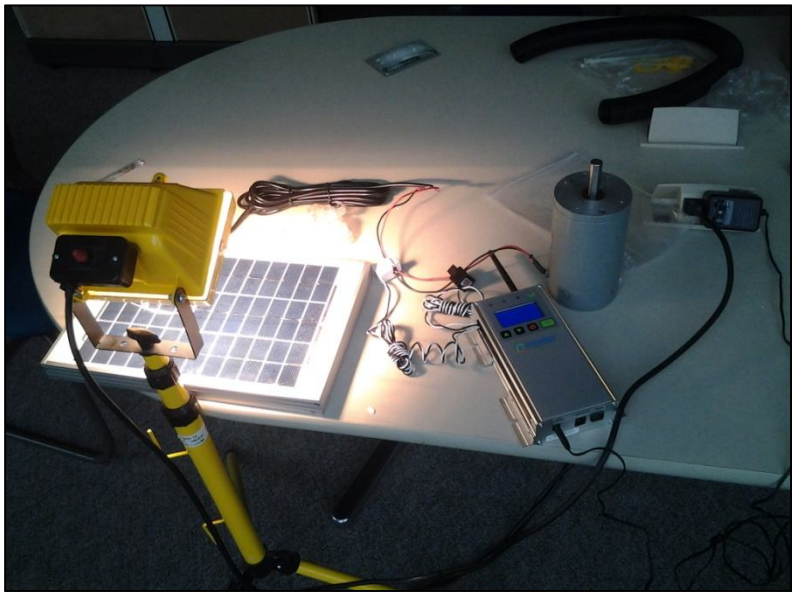
Commentary and Reflection

Since we are a community college, we decided to actually put our students into the community to learn. The classroom is the place where we store things. Many of my lectures this year happened on the front porch of one of the project houses. Pointing to the real thing is much more engaging than pointing at a slideshow picture. The most important lesson I learned is that planning way ahead and moving toward this kind of delivery should be slow. I survey students and take notes after every single session. I also bring in as many industry experts as I can and get their feedback about our projects. Moving faculty out of the classroom has not been an easy task. Many of them have been teaching for 20 years or more, so they are resistant to new methods.

ENGAGEMENT AND SUPPORT

Leaders and Supporters

The Dean of Technical Careers, George Berghorn, was instrumental in convincing the Grants Office to let me apply for the grant. He also made it possible for me to get the legal waivers in order to let students work on real equipment.



Gregory Dunham, the Lead Faculty for the HVAC program was vital to the project. He won a grant from Skills USA for heating and cooling equipment. Without that, we would have had no mechanical equipment to test. He also planned and scheduled construction efforts with me and helped bring more students to the project.

Matthew Dunham, the Program Director of Utility Energy Systems is working with me right now on setting up a troubleshooting scenario in the home using the Energy Recovery Ventilator. This training will be tied to some national standards and includes an additional 100+ students.

James Lynch, Program Director of Design and Construction Technologies, is the project manager for Restoration Works. Without his guidance and leadership, construction would not have gone so smoothly. He also gave me the time to work while he fostered relationships with our partners. Finally, he helped me reconcile my purchases and allocate space to store it until it was installed in the home.

Funding and Resources

The project gets some money and resources from the Allen Neighborhood Center, a non-profit community organization. Lowe's, Skills USA, and other smaller private donors are involved. We also have an NSF-ATE grant that supports the entire curriculum development of the Alternative Energy Engineering Technology program.

Employer and Other School Partnerships

We collaborated with two energy auditing companies, Inspired Green and Dr. Energy Saver. Both gave resources for the community education sessions. Because of the NWF grant, we were able to start offering training for the BPI standard. This partnership has now grown into a better pipeline for students to graduate and get a job in energy auditing as we are in the process of offering the BPI exam at LCC. According to the regional manager of Dr. Energy Saver, 95% of their mid-Michigan employees come from LCC AEET.

Education and Community Outreach

The local community was engaged from the start. The last community education session we held was standing room only. There's no doubt that if we receive more funding to involve the community, it will be far-reaching and beneficial.

CONTACT INFORMATION

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MORE ABOUT YOUR SCHOOL

Campus Sustainability History

LCC opened the West Campus location in 2005. The building is LEED certified and has a 250+ shallow-well geothermal ground source heat pump system. The Alternative Energy Engineering Technology Program was started in that same year on a grant from the DOE. LCC created a sustainability advisory group in 2007 made of faculty and administrators. That same year, a sustainability group was formed on the main campus made of students and faculty who wished to promote sustainability on campus.

In 2011, the Technical Careers Division was awarded a grant from NSF to work on a project called, "Career and Educational Pathways in Building Science." This grant aims to create a pathway for students from high school to community college and then to either employment or articulation to a four year university. Although the focus of the project is centered on buildings, the curriculum will retain courses in solar, wind, and geothermal technologies as they relate to the built environment.

In 2011, the college announced that retro-commissioning efforts had saved over $300,000, reducing energy consumption about 15%. This effort continues today with the renovation of two large campus buildings to reflect a change in delivery of education and the importance of high performance buildings. Finally, LCC announced the "Neighborhood Energy Demonstration Project" where a neighborhood of net zero buildings will be constructed for training and educational purposes. Michigan State University and the Massachusetts Institute of Technology have offered partnerships when funding for the project comes through.