Sun Devils Score Energy-Efficiency Points

Engineering students at Arizona State University (ASU) are getting an education about energy efficiency and area apartment complexes and businesses are benefiting from their expertise. Beginning in the summer of 1997, the ASU College of Engineering, under the auspices of Rebuild Arizona, embarked on a 5-year program to perform building audits on area businesses and recommend improvements to building owners. To date, ASU students have performed audits on 1.8 million square feet in the Valley of the Sun including retail space, apartment complexes, commercial office buildings, an elementary school, and city and state government facilities including a water treatment plant.

"The program exposes the students to existing building equipment and to the technologies available to substantially upgrade them and prepares them to make appropriate recommendations for energy-efficiency improvements," notes **Rebuild Arizona** partnership leader **Jim Westberg** of the Arizona Department of Commerce-Energy Office. Partners of Rebuild Arizona include the City of Tempe, the City of Scottsdale and the Arizona Public Service Company.

According to ASU Faculty Research Associate of engineering **David Chau**, students have identified $700,000 in energy-efficiency improvements that would yield annual energy savings of $400,000 if implemented. He says the students are an independent third party and do not recommend contractors or specific products to building owners, nor do they participate in energy-efficiency installations.

The improvements that building owners have made based on student recommendations include lighting, electric motors, HVAC equipment, chillers, variable frequency drives, air compressor cooling towers, and daylighting using skylights with reflective mirrors to minimize summer heat gain, Chau says. Students also recommended the use of controlling devices such as occupancy sensors, timers and photocells.

The Arizona Department of Public Safety used a matching state grant to implement the students' recommendations and installed a new chiller, energy-efficient motors, occupancy sensors and 350 efficient light fixtures, according to Chau. Students have found that lighting operating costs, which represent approximately one third of building energy costs, can be significantly reduced, he notes.

ASU engineering students also teamed with the Arizona Department of Commerce's Housing and Energy Offices to help lower utility bills for residents of the 124-unit Mercy Court Apartments in Phoenix. The Housing Office provided State Housing Trust Fund monies to install the measures recommended by the students. The Energy Office helped prepare bid specifications and monitored the installation of the following measures in coordination with the property manager:

- Converting incandescent exterior lighting by the apartment entry walls and back patios to compact fluorescent technologies
- Converting exterior parking lot lighting from incandescent to high-pressure sodium technology
- Converting the kitchen light fixtures to more efficient fluorescent lighting.
- Testing and sealing leaks in heating and cooling equipment ductwork in each apartment
- Installing shade screens on all east, west and south facing windows.

The property manager reports that residents are pleased with the installation and especially with the added privacy provided by the shade screens. The installation of all of these measures cost $70,000 and is expected to save the apartment building owner and residents over $20,000 annually. The owner pays the utility bill for the common areas while residents are responsible for the utility bills for their own apartments. The Energy Office will be working with both parties to track their utility bill savings.

For more information, contact Jim Westberg of the Arizona Department of Commerce at 602-280-1434 or e-mail jimw@eps.state.az.us.