



Rebuild America Success Stories highlight partnerships working to improve communities by practicing energy awareness and investing in energy-saving measures.

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- Energy Education



## Texas A&M University

### *Campus Tune-Up Saves Millions in Energy Costs*

Texas A&M University educates 44,500 students on its main campus in College Station. To contain energy costs, Texas A&M invested in building control upgrades and utility plant retrofits. Additionally, the university implemented a commissioning program that achieved Texas-sized savings by optimizing the operation of campus utility plants and building energy systems.

#### The Challenge

With a campus that is one-square mile in area, containing 15 million square feet of building space, Texas A&M University has enormous energy requirements. If building systems are not operating at optimum efficiency, the university wastes millions of dollars on additional utility costs. In 1996, to reduce energy consumption campus-wide, the university implemented the Continuous Commissioning® program developed by its Energy Systems Laboratory.

#### The Solution

Commissioning involves testing, monitoring and adjusting a building's HVAC, controls and other systems to ensure high-performance operation. It is the building equivalent of an automobile tune-up. The process can be applied to newly constructed or existing buildings, as well as to central utility-plant operation.

Bahman Yazdani, with Texas A&M University, explains that university buildings often go through various changes that affect operational requirements: A building may have fewer or more occupants; expansions may have changed air conditioning and humidity control needs or fresh air intake requirements; and system controls may have been compromised by equipment repair or adjustments made at the request of building occupants. These, along with a number of other changes, need to be taken into account to ensure that a building's systems are operating at their best performance.

The university began implementing the Continuous Commissioning program after installing metering devices in large buildings, the central utility plant and satellite thermal plants across campus. By assigning teams to regularly monitor and tune buildings and plant operations, the university has saved \$24.5 million since the program began. "These are actual, measured savings!" Yazdani explains.

A side benefit of the Continuous Commissioning program is that comfort-related complaints from building occupants have been reduced significantly. The program also helps operating staff enhance their skills at uncovering and addressing maintenance deficiencies, as well as assessing building mechanical systems. In

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# Partnership Facts:

**Name of Partnership:**  
Texas A&M University

**Targeted buildings:**  
Colleges & Universities

**Space completed:**  
6.3 million square feet

**Annual energy savings:**  
\$3.5 million

**Amount invested in energy-  
saving project or initiative:**  
\$5.6 million

**Contact:**  
Bahman Yazdani, P.E., CEM  
Associate Director,  
Energy Systems Laboratory  
Texas A&M University System  
979-862-2775  
byazdani@esl.tamu.edu

**DOE Denver Regional Office:**  
1617 Cole Blvd., MS-1521  
Golden, CO 80401  
303-275-4826  
www.eere.energy.gov/dro

**State Representative:**  
Dub Taylor  
Dub.Taylor@cpa.state.tx.us

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addition, Continuous Commissioning helps identify the most cost-effective priorities for future physical plant changes.

“The program was implemented at a total cost of about \$5.6 million, including the essential metering, equipment replacement and repairs, and new control elements, as well as on-going monitoring and analysis,” according to Dr. Dan Turner, director of the Energy Systems Laboratory. Energy cost savings have averaged \$3.5 million annually.

With about half of the square footage on campus completed, the Continuous Commissioning program still has potential to save additional energy dollars, which ultimately benefits the students and staff. “All energy savings get passed on to the customers, so there is an indirect financial benefit to saving energy,” explains Charles Sippial, vice president for administration.

## What the Future Holds

The next phase of Continuous Commissioning will include additional buildings, a 36.5 megawatt cogeneration utility plant and the central distribution loop. Additional capital improvements being planned include new chillers, boilers and control systems for the Central Utility Plant and West Campus Plant.

The university is also moving forward with additional energy projects. A pilot lighting retrofit project implemented in 2002 at the Engineering/Physics complex replaced T12 fluorescent lamps with more efficient T8 versions, and incandescent light bulbs with compact fluorescent lights. Occupancy sensors were also installed to turn off lights when a room is unoccupied. Energy consumption for lighting has been reduced by 35 percent since the project’s inception, with overall energy usage for the complex dropping by 10 percent. With the success of the project, the university plans to perform extensive lighting retrofits throughout campus.

## Key Technologies

Continuous Commissioning program, which includes:

- Utility metering and monitoring
- Air side and water side HVAC system balancing
- Use of direct digital control system in monitoring buildings and thermal plant performances
- Optimizing the Central Energy Plant operation
- Pump system motors and control

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Rebuild America is a U.S. Department of Energy program that focuses on improving communities through energy-saving solutions.



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