Case Study

Truman State University

Energy Performance Contract

Background

Dating back to 1867, Truman State University's beautiful 210-acre campus blends old and new with a mix of historic and contemporary red-brick buildings that provide modern living and learning facilities. Consistently ranked among the nation's best colleges in publications such as U.S. News & World Report, Consumers Digest, Princeton Review, and Kiplinger's, Truman is home to 6200 students along with 760 faculty and staff.

Challenge

Like most universities, Truman is constantly seeking to maintain and improve its facilities. In any given year, the University can have around $2 million in deferred maintenance that needs to be addressed. Truman issued an RFP for a Guaranteed Energy Savings Project to help address those needs, and ultimately selected ESP as their partner.

Solution

ESP evaluated 25 of Truman's 42 buildings based on which ones the University felt had the most need. The level 3 ASHRAE energy audit revealed nearly $14 million of potential improvements that the teams from ESP and Truman worked together to narrow down to a $10.5 million final scope. The comprehensive project addressed both academic and auxiliary buildings, and included a wide range of energy saving measures: lighting, plumbing, HVAC, controls, weatherization, steam systems and laboratory hood controls.

Benefits

The resulting benefits to the University and surrounding community are numerous. The project is paid for via $1,000,000 in annual energy savings, so no taxpayer funds were required. Building comfort throughout campus has been improved, and specific improvements addressed issues at Pickler Library along with enhancing the safe research environment of University laboratories.

The University's annual energy consumption has been reduced by nearly 7.5 million kWh, and 50,500 MCF of natural gas, which is equivalent to the electricity use of 1,310 homes for one year.

Truman's annual carbon footprint has been reduced by 20,990,000 lbs of CO_2, and now saves an amount of water annually that would fill nearly 14 Olympic-sized pools.

Improvements Included in Project

Water Efficiency

Annual Savings in excess of $64,500

Over 1,900 water-saving improvements

- Faucets
- Toilets/Urinals
- Showerheads
- Ice Makers

Lighting Improvements

Annual Savings in excess of $150,000

- Over 5,000 fluorescent fixtures affected (new or re-lamped)
- Over 6,700 LED fixtures affected (new or re-lamped)
- Over 23,000 new LED and high-efficiency fluorescent lamps
- Over 400 new occupancy sensors

Weatherization

Annual Savings in excess of $8,400

- Weather-stripping doors
- Sealing air leaks

Controls

Annual Savings in excess of $370,250

- New energy management controls in several buildings
- Enhancements to existing building control systems

Laboratory Fume Hood System Improvements (Magruder Hall)

Annual Savings in excess of $198,500

- Replacement of existing pneumatic controllers and ancillary equipment
- New "Aircuity" system to monitor indoor air quality

Heating and Cooling Plant Equipment Replacements

Annual Savings in excess of $34,000

- New Chillers (McClain Hall, Pershing Hall & Pickler Library)
- New Boilers (Student Rec Center)

Heating, Cooling and Ventilating System Improvements

Annual Savings of nearly $67,000

- Air-handler replacements (Magruder, McClain, Pickler Library)
- Retrocommissioning and operational improvements
- Fume Hood Controls Upgrades (Magruder Hall)
- Steam system improvements
- DX-refrigeration system improvements

Steam System Improvements

Annual Savings in excess of $96,000

- Steam Trap Replacement
- Condensate Line Replacement
- Steam Distribution Improvements
- Pipe Insulation
- Steam Insulation Jackets