

Name of Project: Energy Savings Performance Contract
Number of buildings: Sixty-one
Project Construction Schedule:November 2010
Project End Date: October 2011

Project Overview

In an ongoing effort to save energy, reduce cost and maintain a more sustainable campus, the University of Kentucky Board of Trustees approved on December 1, 2009 the initiation of an energy savings performance contract with AMERESCO, an energy service company based in Louisville, Ky.

An energy service company (ESCO), such as AMERESCO, provides comprehensive energy and water management analysis plans as well as energy and water-related capital improvement services. Enabled by Kentucky Revised Statute 56.774, energy savings performance contracting is a cost-effective process for energy upgrades. Energy service companies guarantee that utility savings generated by facility upgrades are sufficient to pay back the capital investment during the next twelve years. If the project does not provide these returns on the investment, the ESCo is responsible for the difference. No renovations that do not effect energy savings will be done as part of this initiative. This project will help meet the overall University goal, which is to decrease the university's overall energy demands by 10-15 percent.

AMERESCO was selected after a year-long RFP process which included a trial audit of 10 campus buildings. The scope of the first phase of the project will be \$25 million in sixty-one (61) buildings. Construction is scheduled for fourteen months starting December. Lighting and water upgrades will start at the north end of campus and work south. Other energy conservation measures will be scheduled as required to accommodate the heating and cooling season. Majority of other conservation measures as described will be installed in mechanical rooms and will not affect work and learning environment. Typically, any ECM that impacts an occupied office or classroom will take place after normal operating hours; and any ECM in a research lab will be coordinated with the end user to minimize impact to any research projects.

Energy conservation measures in the project that will reduce the university's overall energy consumption include: Upgrades to lighting systems to the latest electric saving technology; fume hood controls in Chemistry/Physics; HVAC systems; steam and chiller plant controls; Installation of motor speed drives (VFD's) to save energy during mild weather conditions; Energy management software to monitor usage in real time; and automatic utility metering devices; Replacement of old plumbing fixtures to the latest water saving technology; Repair of pipe insulation; Behavioral modification programs to encourage energy conservation, tailored for campus and developed, implemented and measured to maximize effectiveness and initiate a culture of energy efficiency.

Energy Conservation Measures (ECMs) By Building

Bldg #	Building Name	ECM L.1.1 (Lighting Upgrades)	ECM W.1.1 (High Flow Plumbing Fixture Upgrades)	ECM W.1.2 (Process Water Recovery)	ECM W.1.3 (Steam Sterilizer)	ECM W.1.4 (Solar water heating)	ECM M.1.1 (Steam Traps)	ECM M.1.2 (Insulation)	M.1.3 (Utility Monitoring)	ECM M.1.4 (Fume Hood Controls)	ECM M.1.5 (AHU VFDs)	ECM M.1.6 (Boiler Oxygen Trim)	ECM M.1.7 (Chilled Water Pumping)	ECM M.1.8 (AHU Air Blender)	ECM M.1.9 (Undergrou nd Steam Condensate Piping)	ECM M.1.10 (Boiler Turbulators)	ECM M.1.11 (Steam Water Heater)	ECM M.1.12 (AHUs Replacement)	ECM M.1.13 (AHUs Ultraviolet Tubes)	ECM M.1.14 (Retrocom missioning)
1 0001	Taylor Education BldgA	✓	✓					✓	✓											
2 0004	Central Heating Plant #2	✓	✓				✓	✓	✓											
3 0025	White Hall Classroom BldgA	✓	✓					✓	✓											
4 0027	Patterson Office TowerA	✓	✓					✓	✓											
5 0034	Gatton Business SchoolA	✓	✓				✓	✓	✓		✓		✓	✓						
6 0035	Miller HallA	✓	✓					✓	✓											
7 0042	Grehan Journalism BldgA	✓	✓					✓	✓				✓							
8 0045	McVey HallA	✓	✓					✓	✓											
9 0046	Anderson Hall TowerA	✓	✓					✓	✓											
10 0048	Law BuildingA	✓	✓					✓	✓				✓							
11 0049	Memorial HallA	✓	✓					✓	✓										✓	
12 0054	Funkhouser BldgA	✓	✓					✓	✓											
13 0055	Chemistry-Physics BuildingA	✓	✓					✓	✓	✓										
14 0056	Breckinridge HallA	✓	✓					✓	✓											
15 0057	Kinhead HallA	✓	✓					✓	✓											
16 0058	Bradley HallA	✓	✓					✓	✓											
17 0059	Bowman HallA	✓	✓					✓	✓											
18 0085	Medical Center Heating and Cooling Plant	✓	✓	✓				✓	✓			✓								
19 0089	Cooling Plant #1	✓	✓					✓	✓											
20 0091	Agriculture Science Center NorthA	✓	✓					✓	✓				✓							
21 0096	Combs Cancer Research Center	✓	✓		✓			✓	✓											✓
22 0099	Gluck Equine Research BldgA	✓	✓					✓	✓		✓									
23 0108	Center for Robotics and Manufacturing SystemsA	✓	✓					✓	✓		✓		✓							
24 0200	Wethington Allied Health Building	✓	✓					✓	✓											✓
25 0204	Cooling Plant #2	✓	✓					✓	✓											
26 0215	W.P. Garrigus BldgA	✓	✓					✓	✓											
27 0225	T H Morgan Biological SciencesA	✓	✓					✓	✓											
28 0230	Sanders-Brown Center on Aging	✓	✓					✓	✓								✓	✓	✓	
29 0241	Singletary Center For The ArtsA	✓	✓					✓	✓											
30 0275	Bruce Poundstone Regulatory Services BldgA	✓	✓				✓	✓	✓		✓					✓				
31 0276	Charles E. Bamhart BuildingA	✓	✓					✓	✓		✓		✓							
32 0286	A.S.T.E.C.C.A	✓	✓					✓	✓				✓							
33 0297	Dental Science Bldg	✓	✓					✓	✓											
34 0298	William R. Willard Medical Education Bldg	✓	✓		✓			✓	✓											✓
35 0305	Peter P. Bosomworth Health Sciences Research Building	✓	✓					✓	✓						✓					✓
36 0312	Plant SciencesA	✓	✓					✓	✓											
37 0456	W. T. Young LibraryA	✓	✓					✓	✓		✓									
38 0509	Biomedical Science Research Facility	✓	✓					✓	✓											
39 0514	BBSRB Utility Plant	✓	✓					✓	✓											
40 0005	F.D. Peterson Services BuildingA	✓	✓					✓	✓				✓							
41 0017	Dickey Hall A	✓	✓					✓	✓											
42 0022	Fine Arts Guignol BuildingA	✓	✓					✓	✓											
43 0024	Lafferty HallA	✓	✓					✓	✓											
44 0028	Barker Hall A	✓	✓					✓	✓											
45 0031	Frazee HallA	✓	✓					✓	✓											
46 0033	Ezra Gillis BuildingA	✓	✓					✓	✓											
47 0039	M.I. King Library SouthA	✓	✓					✓	✓											
48 0041	Pence HallA	✓	✓					✓	✓											
49 0044	Kastle HallA	✓	✓					✓	✓											
50 0047	C.W. Matthews BuildingA	✓	✓					✓	✓											
51 0050	Erkson HallA	✓	✓					✓	✓											
52 0053	Sloane Research BuildingA	✓	✓					✓	✓											
53 0064	Scovell HallA	✓	✓					✓	✓											
54 0073	Cooper Forestry Building A	✓	✓					✓	✓											
55 0076	Dimock Animal PathologyA	✓	✓					✓	✓											
56 0092	Seed HouseA	✓	✓					✓	✓											
57 0097	Good BarnA	✓	✓					✓	✓											
58 0107	Mining & Minerals Research BuildingA	✓	✓					✓	✓											
59 0154	Ag. Headhouse & Greenhouses A	✓	✓					✓	✓											
60 0224	Lucille Caudill Little Fine Arts LibraryA	✓	✓					✓	✓											
61 0281	Oliver H. Raymond Civil Engineering Building& Tunnels	✓	✓					✓	✓											

Energy Conservation Measures (ECMs) Descriptions

L.1 Lighting Upgrades

Scope summary: replace broken fixtures, install several new fixtures and retrofit existing fixtures.

W.1 Water Upgrades

Scope summary: install new low flow plumbing fixtures; replace flush valves and install sink aerators

W.1.2 Process Water Recovery

Scope summary: install new piping in Medical Center steam plant. The piping will be extended from existing water cooled equipment to the existing cooling tower tank outside. Water is currently going down the drain.

W.1.3 Steam Sterilizer

Scope summary: retrofit existing equipment to better monitor water discharged down the drain.

W.1.4 Solar Water Heating

Scope summary: install solar water heating system at Poundstone Regulatory Services Building.

M.1.1 Steam Traps

Scope summary: replace existing defective steam traps.

M.1.2 Insulation

Scope summary: repair piping insulation. The scope includes installing permanent piping insulation and removable jackets on service valves and pressure reducing stations.

M.1.3 Utility Monitoring

Scope summary: install devices to monitor electric, chilled water and steam condensate in buildings.

M.1.4 Fume Hood Controls

Scope summary: upgrade existing fume hood controls in Chemistry/Physics to Phoenix controls.

M.1.5 AHU VFDs

Scope summary: remove existing AHU turning vanes and install new VFDs on several AHUs.

M.1.6 Boiler Oxygen Trim

Scope summary: install boiler oxygen trim to monitor oxygen use in the gas-fired boilers in the Medical Center steam plant.

M.1.7 Chilled Water Pumping

Scope summary: install new pumps and valves to decouple chilled water loop in several buildings from the central plant.

M.1.8 AHU Air Blender

Scope summary: install air blender in one AHU in Patterson Office Tower to better mix outside air with return air.

M.1.9 Underground Steam Condensate Piping

Scope summary: replace existing underground steam condensate piping exterior of Bosomworth building.

M.1.10 Boiler Turbulators

Scope summary: install boiler turbulators in two boilers at Poundstone Regulatory Services Building.

M.1.11 Steam Water Heater

Scope summary: install one (1) instantaneous steam water heater at Sanders-Brown .

M.1.12 AHUs Replacement (Sanders-Brown)

Scope summary: replace five (5) existing AHUs in Penthouse of Sanders-Brown.

M.1.13 AHUs Ultraviolet Tubes

Scope summary: install ultraviolet tubes in two (2) AHUs in Sanders-Brown and in two (2) AHUs in Law building.

M.1.14 Retrocommissioning _____

Scope summary: provide retrocommissioning services for Combs, Wethington, Medical Education and Bosomworth buildings.