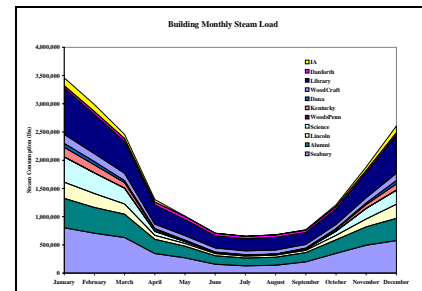
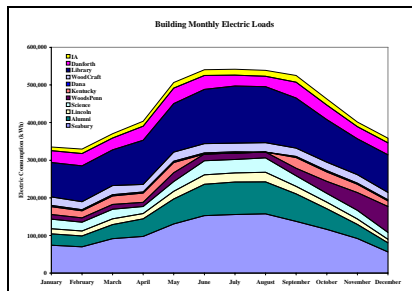
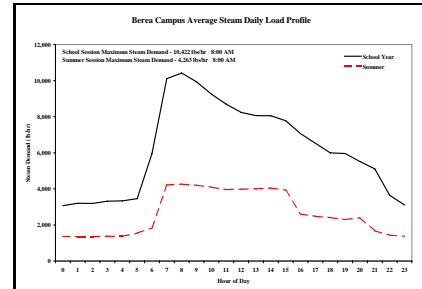
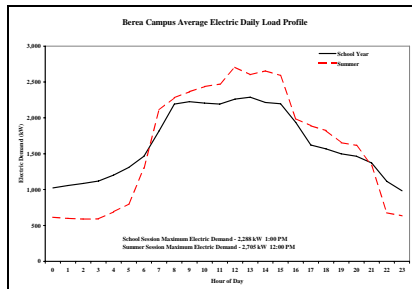


ARCHITECTURAL ENERGY CORPORATION
Integrated Engineered Solutions

Energy Conservation Measure Analysis and Load Study at Berea College

Berea, Kentucky



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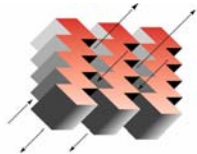
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Architectural Energy Corporation performed detailed energy audits of eleven campus buildings, encompassing 575,000 square feet of conditioned space. These buildings receive chilled water and steam from the campus heating and cooling system, and include academic buildings, residence halls, athletic facilities, laboratories, a hospital, a hotel, and various support buildings. Short-term monitoring and energy modeling were used to evaluate potential energy savings from system upgrades and control changes. Retrofit baselines were developed and used to estimate campus-wide loads to be served by the new central utility plant. Annual energy savings for the eleven buildings analyzed in detail were estimated at \$453,040, accounting for a 28% reduction in existing annual energy costs.

Project Information: Berea College

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|-------------------------------|--|
| Project Type | Energy Conservation Potential Analysis and Campus-Wide Load Study |
| Client / Energy Services Team | <i>Client:</i> Berea College <i>Energy Engineering Consultant:</i> Architectural Energy Corporation Boulder, Colorado |
| Size | Eleven buildings encompassing 575,000 ft ² ; results expanded to total building population, totaling 1.3 million ft ² |
| Location | Berea, Kentucky |
| Project Highlights | <p>Walk-through audits performed, including as-built plan and document review, facility personnel and occupant interviews. Data loggers installed and short-term monitored data analyzed to assess system operation and potential energy saving opportunities.</p> <p>DOE2.2 building energy simulation models developed for energy end-use analysis and energy conservation measure savings estimates at each building. Building types included academic, residence halls, athletic facilities, laboratories, a hospital, a hotel, and various support buildings. Retrofit baselines used to develop load shapes for entire campus, which were in turn used to help size the new central utility plant.</p> <p>Energy conservation measures recommended included:</p> <ul style="list-style-type: none"><input type="checkbox"/> Lighting fixture retrofits and controls<input type="checkbox"/> Window retrofits<input type="checkbox"/> Roof replacements and insulation upgrades<input type="checkbox"/> HVAC replacement<input type="checkbox"/> Controls upgrades<input type="checkbox"/> HVAC scheduling and optimum start / stop<input type="checkbox"/> Waterside economizing<input type="checkbox"/> Loop temperature reset schedules<input type="checkbox"/> Supply air temperature reset schedules<input type="checkbox"/> Heat pump retrocommissioning<input type="checkbox"/> VFDs on cooling tower fans<input type="checkbox"/> Water loop conversions to variable-flow<input type="checkbox"/> VAV conversions<input type="checkbox"/> Economizer repair and optimized operation<input type="checkbox"/> Minimum outside air fraction adjustment<input type="checkbox"/> Demand controlled ventilation<input type="checkbox"/> Efficient dormitory refrigerators |



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