



Energy and Utilities Management and Cost Reduction For The University of Texas, Austin Campus

The University of Texas at Austin is one of America's largest educational institutions, with enrollment of 50,000 per semester; continuing education enrollment of 300,000; 3,000 faculty members and 18,000 staff members; 16 colleges; and an annual budget of \$1.3 billion.

The campus has 110 megawatts of cogeneration capacity combined with a distributed campus-wide chilled water system that serves 15 million square feet of educational facilities. Previous efforts by UT's energy coordinator and central utilities staff to improve plant efficiency and reduce total energy spending resulted in reduced energy consumption of approximately 500,000 million Btu's per year or 11 percent.

UT selected LightRidge Resources to provide its PE-Advisor™ solution for gaining additional efficiencies and better managing its energy and utilities infrastructure. PE-Advisor™ is an enterprise software platform that provides a comprehensive and integrated mass, energy and financial view of all the energy and utility systems for the physical plant department. PE-Advisor™ provides real-time and predictive insight into operations including bottom-line cost impact of decisions.

The U.S. Environmental Protection Agency awarded UT with its Energy Star Award™ for UT's various energy efficiency activities, including their use of the PE-Advisor system to improve overall energy and utilities management.

Highlights of Key Results and Improvements

- The PE-Advisor™ application generates an additional \$1.3 million annual recurring energy cost savings (\$2.9 million based on gas price of \$10/mmbtu)
- Savings of 7 to 8 percent of energy spending through the use of PE-Advisor™ resulted in a payback of 24 weeks.
- Examples of savings/impacts using PE-Advisor™ include:
 - a. Scenario analysis significantly improves operating approach to backup turbine operation. Annual, recurring savings of approximately \$500,000.
 - b. More accurate real-time understanding and prediction of energy consumption enables the management team to more aggressively manage energy commodities procurement. Annual recurring savings of approximately \$700,000.
 - c. Plant personnel utilize PE-Advisor™'s heat/mass balance engineering models and data reconciliation algorithms to improve operational efficiencies:
 - With ongoing identification of flow meter errors, plant operators are able to run pumps more efficiently. Annual recurring savings of approximately \$80,000.
 - Identified that a 25MW turbine throttle flow meter reading that appeared more efficient than it actually was. Operators are now enabled to change dispatch approach.

- System verifies steam measurements to campus and identifies meter calibration and maintenance opportunities, resulting in more accurate budgeting and trending.
- System reconciles measurements of energy used by chilling system resulting in much more accurate operation and information.
- d. Plant personnel use PE-Advisor™ to compare actual equipment performance to baseline and design data resulting in proactive maintenance and improved efficiency management. Plant personnel realize value through better and more proactive handling of areas such as gas turbine performance degradation, chiller condenser fouling and vibrations, and chiller performance issues.
- e. Plant engineers utilize PE-Advisor™ to identify equipment limitations that may be well above or below name plate capacity:
 - System was used to evaluate cost impact of inefficient gas turbine resulting in planned equipment replacement.
 - System identified 7 megawatts of additional power capacity in existing gas turbine system resulting in additional demand power capacity.
- f. Plant operators, engineers and managers are more proactive and productive by using PE-Advisor™ as a common, trusted view of the plant assets, operations and performance. Much less time is spent determining what is happening in the plant and more time is spent analyzing operational and design options.
- g. Additional insights and accelerated progress are realized with LightRidge Resources' energy and utilities domain experience, training and support.

“I could not live without this integrated software platform. We’ve always prided ourselves on understanding our environment; however, when we implemented PE-Advisor™, we discovered significant energy situations we were not aware of. Not only have we reduced our energy spend by an additional 7%, we now have an integrated energy software platform that can help us optimize our processes and assets into the future.”

Kevin Kuretich

Director, Energy Management, University of Texas at Austin