

Thermal Energy Corporation Combined Heat and Power Project

Deploying and Demonstrating a High-Efficiency Combined Heat and Power System at a Leading Medical Campus

Project Description

Thermal Energy Corporation (TECO) operates the largest chilled water district energy system in the United States at the largest medical center in the world, the Texas Medical Center. In order to meet rapidly growing thermal energy loads, TECO will install an additional 32,000 tons of chilled water capacity, a 75,000 ton-hour (8.8 million gallon) thermal energy storage tank, and a new high-efficiency natural gas-fired combined heat and power (CHP) system capable of producing 48 megawatts (MW) of on-site generation and 330,000 pounds of steam per hour.

The CHP system can operate as a baseload system to serve 100% of the TECO plant peak electrical load and 100% of TECO customers' peak process and space heating loads. Following installation and commissioning, a three-month demonstration will document technical goals and assess system performance, with an emphasis on system efficiency.

Recipient Organization	Thermal Energy Corporation, also known as Texas Medical Center Central Heating and Cooling Services Corporation
Location	Houston, Texas
Award Date	October 2009
Expected Operational Date	Began operating in September 2010
Funding	\$10 million in U.S. Department of Energy funding from the American Recovery and Reinvestment Act of 2009; \$62 million in private-sector cost share
Equipment	48 MW CHP system with a GE LM6000 combustion turbine and a heat recovery steam generator



The CHP System at the Texas Medical Center.
Photo courtesy of Thermal Energy Corporation

Benefits for Our Industry and Our Nation

This project will create immediate engineering, manufacturing, and construction jobs, as well as long-term maintenance and servicing positions, supporting the U.S. economy. The CHP system will exceed 80% efficiency, save an estimated 0.75 trillion British thermal units (Btu) annually over separate electrical and steam generation, and reduce carbon dioxide emissions by more than 300,000 tons per year. The system will also enable the entire TECO plant to continue operations and provide uninterrupted energy services to TECO customers in the event of a prolonged grid outage.

Project Partners

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