



Success Story

City of Austin

Texas



The City of Austin continues to demonstrate its leadership in resource conservation and environmental protection through self-funding projects that are lowering costs for the city while conserving resources.

Background

The City of Austin is recognized as a leader in resource conservation and environmental protection. Currently, the city purchases enough green power to meet 100 percent of its electricity use and was recently honored with the U.S. Environmental Protection Agency's 2012 Green Power Leadership Award.

In early 2007, Chevron Energy Solutions (CES) began working with the City of Austin to implement various facility improvements under energy savings performance contracts. In its most recent phase of work, CES designed and installed comprehensive improvements as part of a biogas-to-energy project at

the Austin Water Utility Hornsby Bend Biosolids Management Plant (HBBMP).

The 1,200-acre HBBMP is a centralized biosolids treatment facility that processes approximately one million gallons of sludge per day. The plant previously employed a 25-year-old cogeneration facility with two engine generators that had been converted to run on biogas and diesel fuel. When the generator units failed, leaving the plant without any on-site power production, the city initiated this project to reinstitute a cogeneration facility and address historical operational and maintenance problems associated with the on-site combined heat and power (CHP) system.

Self-Funding Program for Plant Improvements

CES designed and built the Hornsby Bend biogas-to-energy project under a performance contract that uses energy and operational savings to help pay for

Program Highlights

- Digester gas single-engine generator with provision for a second unit
- Cogeneration system improvements
- New equipment and upgrades to digester gas handling systems
- Electrical system integration and utility interconnections
- Instrumentation and control system integration
- HVAC equipment renovations and new direct digital controls
- Creates new revenue stream from sale of excess power
- Improves plant operational efficiency

Chevron Energy Solutions Company

A Division of Chevron U.S.A. Inc.

www.chevronenergy.com

Local Office

5525 N. MacArthur Blvd., Suite 290
Irving, TX 75038
Tel 972 550 3045

Chevron Energy Solutions

the project, freeing up capital dollars to use on other city projects. Project economics were further supported by an American Recovery and Reinvestment Act (ARRA) grant awarded to the City of Austin, \$1.2 million of which was used to procure the 850-kW biogas engine generator.

CES designed and installed a complete CHP system to generate electricity and recover waste heat to support digester methane production. The system includes a new single-engine generator to run on biogas produced at the plant. Provisions to add a second unit are included in the design.

Digester gas handling systems were modified and improved to remove sulfides, moisture and siloxanes from the biogas to provide conditioned gas suitable for fueling the generator. These process improvements are essential for ensuring the performance and longevity of the new cogen system. New instrumentation and controls were installed and connected to the plant's existing system.

CES managed the integration of all electrical equipment and interconnection with the community-owned electric utility.

Program Impact

The new engine generator is designed to produce enough power to offset average annual electrical consumption at the plant, significantly lowering utility costs. Through a net metering agreement, excess power will be sold to Austin Energy, creating a new revenue stream for the city. Heat from the cogeneration facility will support biogas production ensuring a continuous supply

of fuel for the generator. Improved controls systems will allow plant staff to operate the facility more consistently and efficiently. These improvements were funded without cutting into the city's budget. First year net savings are estimated to be \$203,455. The project meets critical goals for the biogas-to-energy component of the Hornsby Bend Plant's overall improvement and sustainability project.

Energy Efficiency and Water Conservation Projects

In an earlier project at the HBBMP, CES designed and installed various improvements including HVAC equipment renovations and new direct digital controls in the Administration and Maintenance Buildings, as well as lighting upgrades in the Administration Building.

In 2011, CES implemented improvements at Austin's Technicenter, which houses the city's first responders including the Fire Department, Emergency Medical Services (EMS), warehousing for Fire and EMS, Police Department offices, and the Department of Small and Minority Business Resources.

Upgrades were made to the building's energy management system, chilled water distribution system, and domestic hot water systems. A new chilled water thermal energy storage (TES) system allows the facility to generate chilled water during off peak hours at lower electricity rates. The city used ARRA funds to procure and install the TES tank. First year net savings were estimated to be \$173,458.

In an earlier contract, CES worked with the Parks and Recreation Department to improve energy efficiency and conserve



The combined heat and power system at the Hornsby Bend facility will offset current plant electrical consumption and support heat demands of the anaerobic digesters, which in turn produce biogas fuel for the generator.

water at its parks and playing fields. CES designed and installed a reclaimed water irrigation system at Krieg Fields, the city's largest softball complex, to use water from the new reclaimed water lines installed by Austin Water Utility. CES also installed evapo-transpiration (ET) irrigation controllers at approximately 80 city-owned fields that previously were being controlled manually.

Other water conservation measures and improvements to energy management and HVAC systems reduce energy use and utility costs and provide better control by city staff. First year net savings were projected to be \$304,847.