

U.S. DOE



CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

Dell Children's Medical Center & Austin Energy

4.3-MW CHP System



PHOTO: JOHN DURANT PHOTOGRAPHY/KARLSBERGER

Dell Children's Medical Center of Central Texas gets 100% of its energy from an efficient, clean, and reliable CHP system owned and operated by its local electric utility, Austin Energy, in a partnership that benefits them both.

Site Description

Dell Children's Medical Center of Central Texas is the region's only dedicated freestanding pediatric facility and a Level 1 trauma center. Owned and operated by Seton Healthcare Family, a health ministry of Ascension Health, it has a multidisciplinary team of pediatric specialists caring for kids and adolescents using a family-centered approach. Renowned for its innovation and environmental sustainability, Dell Children's Medical Center is the first hospital in the world to achieve LEED-Platinum certification from the U.S. Green Building Council—and a clean and efficient combined heat and power (CHP) system was a key part of this achievement.

Austin Energy, the local municipal utility, owns and operates the CHP system for Dell Children's Medical Center, in an innovative arrangement that benefits both the utility and the hospital complex.

Quick Facts

LOCATION: Austin, TX

MARKET SECTOR: Hospitals, Utilities

FACILITY SIZE: 590,000 sq feet, 248 beds

FACILITY PEAK LOAD: 1.5 megawatts (MW)

EQUIPMENT: Solar Turbines Mercury 50 gas turbine, HRSG, packaged chiller & boiler, absorption chiller, thermal storage

OWNED AND OPERATED BY: Austin Energy

FUEL: Natural Gas

THERMAL ENERGY USE: Steam, chilled water

CHP TOTAL EFFICIENCY: 65%

TOTAL PROJECT COST: \$18 million

ENVIRONMENTAL BENEFITS: CO₂ emissions

reduced by 40%, SO₂ by 99%, NO_x by 82%

CHP IN OPERATION SINCE: 2007

NOTABLE: First LEED Platinum Hospital

Reasons for CHP

Dell Children's Medical Center needed an energy supply that met its aggressive sustainability goals as well as its high reliability requirements to protect it from power outages, dips, or surges. CHP met all these goals—all while saving the hospital money on its capital budget. Austin Energy, through its role in the project, furthers its reputation as an advanced and forward-thinking utility that cares about meeting its unique customer needs.

CHP Equipment & Configuration

Known as the Mueller Energy Center, the CHP system meets 100% of the electricity, steam, and chilled water needs of Dell Children's Medical Center, even in the case of a grid outage.

The heart of the CHP system is a 4.3-MW Mercury 50 gas turbine from Solar Turbines. Waste heat from the turbine is recycled in a heat recovery steam generator (HRSG) to produce 22,000 pounds per hour of steam (bumped up to 28,000 with duct burning) and chilled water via a 900-ton Trane two-stage absorption chiller. Adjacent to the CHP system is a packaged 1,500-ton and two 2,500-ton electric centrifugal chiller plants from TAS, a 20,000 pound per hour packaged standby boiler, a 32,000 pound per hour Cleaver Brooks standby boiler, and an 8,000 ton-hour Thermal Energy Storage tank.

Excess electricity is exported to Austin Energy's grid, and excess chilled water is distributed to a half-dozen other nearby facilities.



Always-on Power

One hundred percent of the hospital can keep running uninterrupted during a grid outage, allowing it to be a place of refuge during natural disasters or other emergencies. The hospital is also backed up by two electric feeds from different substations in the surrounding power grid, and a 1.5-MW backup diesel generator with black-start capability. "For a hospital, having high reliability is a life safety issue. If you imagine your own son or daughter in there on an operating table, you can see how important it is that the hospital never goes dark," said Rich Wilkes, Austin Energy's Superintendent of On-Site Energy Resources.

Partners in Innovation and Sustainability

Built on a 30-acre brownfield site of a former airport, the hospital was designed with sustainability in mind at every step. "We wanted our facility to be healthy and 'green,' for the children's sake. Looking at the power aspect drove us to partner with Austin Energy on the CHP system," said Phil Risner, Senior Project Manager at the Seton Family of Hospitals. "CHP made the difference between LEED Gold and LEED Platinum," he said.

"We've formed a really strong partnership," added Wilkes. "Working together, we make ongoing improvements to the system, and we're currently partnering to find even more energy savings opportunities to reduce the hospital's energy costs further." He added, "Austin Energy benefits from getting revenue from electric, chilled water, and steam sales—but just as important, we support this prized hospital and the work it is doing."

The CHP system uses pre-packaged, modular equipment, reducing custom engineering time and costs, and increasing efficiency.

PHOTOS: COURTESY OF BURNS & MCDONNELL

For More Information

U.S. DOE SOUTHWEST CHP TECHNICAL ASSISTANCE PARTNERSHIP (CHP TAP)
www.southwestCHPTAP.org

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