

Pueblo County Courthouse

CASE STUDY



Chiller plant and controls system upgrades exceed expectations; reduce energy costs 24 percent; earn \$19,000 rebate and ENERGY STAR® certification.

Challenge

Challenged by an aging infrastructure, inefficiencies and high maintenance costs, county commissioners moved to restore the historical Pueblo County Courthouse to its original beauty, while improving energy management. Using a grant from the US Department of Energy, facilities management staff performed a comprehensive energy analysis of their buildings to determine ways to maximize efficiency, and developed a sustainability plan outlining their objectives to reduce energy use across county facilities by 5 percent in five years.

"The chiller in the courthouse was old, a big eater of electricity, and a cause of high maintenance costs," said Terry Hart, chairman of the Board of Commissioners, Pueblo County. "Plus, it was located near the entry door and was so loud that it interrupted your conversation as you entered the building."

Solution

Reducing supplier selection risk

With supplier selection a key element, the County moved forward with its improvement plans using cooperative procurement to select its project partner. With cooperative procurement, all contracts are competitively bid, evaluated, and awarded to vendors that have been carefully selected based on proven performance, and customer satisfaction. The procurement method allowed the County to maintain compliance with procurement regulations; streamline the process, saving time and resources; reduce its supplier selection risk, ensuring they would get the quality contractors they sought; and leverage pricing to stay within budget. The County chose Trane, a preapproved network vendor, as their project partner.

"I didn't want to bid the project out and have equipment from different suppliers that wouldn't interface well. I didn't want the uncertainty," said Burrer. "Plus, using a single supplier, we would know who to go to if something wasn't working right."

"One of the biggest issues we found was that the chiller and our boilers were running all the time, all year, fighting each other. It didn't make any sense."

- **Wes Burrer**, Construction Project Manager, Pueblo County.

Pueblo County Courthouse Pueblo, Colorado

PROJECT HIGHLIGHTS

CHALLENGE

- Aging equipment
- Inefficient, unreliable chillers
- High utility and maintenance costs
- High noise levels
- Lack of controls strategy

SOLUTION

- Cooperative procurement
- EarthWise® Ice-Enhanced, Air-Cooled Chiller Plant
- CGAM Scroll Chiller
- CALMAC® Ice Bank® thermal energy storage
- Tracer® SC building automation automation system
- 5-year service agreement

RESULTS

- Reduced energy costs by 24 percent, consumption by 28 percent, demand by 18 percent
- \$19,000 utility rebate
- Energy Star certification
- Improved working environment
- Reduced maintenance costs



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"Selecting Trane as our partner was very easy," said Hart. "We took a tour of their local facility, and they greatly exceeded our expectations. We also were pleased that they were local and involved in the community."

Improving energy efficiency

Trane began by analyzing past utility bills, looking at the building's typical loads. Working with the County, Trane designed an EarthWise® Ice-Enhanced, Air-Cooled Chiller Plant that combined a Trane CGAM Scroll Chiller with three CALMAC® Ice Bank® thermal energy storage tanks to create an efficient system with substantial energy savings and demand cost reduction. The system produces ice during off-peak hours when utility rates are lower, stores it in the ice tanks, and then melts it during the day to cool the building, while the chiller is shut down. With the more efficient plant design, the courthouse was able to reduce the size of its chiller from 125 tons to 80 tons. The low noise CGAM chiller and aesthetically pleasing CALMAC energy storage tanks were located next to the building adjacent to offices. "The system has reduced our kilowatt hour use and our demand," said Burrer. "It also complements the building. Employees and patrons see it every day. It's become part of the landscape."

Optimizing operations

The County uses a web-based Trane® Tracer® SC building automation system to access its controls from any internet connected computer, or remotely from a smart phone or tablet. Facility managers use the system to optimize operations, schedule systems to account for weekend and holiday loads, economize after business hours with night setback, rewrite the sequence of operations, control efficiency of fans and air handling units, and implement chiller and thermal energy storage programming. Under a 5-year service agreement, factory-authorized technicians provide maintenance on the chiller plant, and help ensure that the controls system stays up to date with the latest software to maintain optimal system operation, reduce maintenance costs and increase uptime and efficiency. "The building automation system is intuitive and flexible," said Burrer. "I was able to jump right in, reconfigure what I needed to, and implement overrides as required. We've also tied our electric meters into the Tracer SC, so we are able to use the system to monitor and control our peak demand."

Results

Improvements at the Pueblo County Courthouse have helped the County exceed its sustainability plan goals and provide substantial savings for taxpayers. Originally projected to reduce energy costs 15 percent, the courthouse's new thermal energy storage system has surpassed expectations with a 24 percent energy cost reduction, for a savings of \$45,000 annually, a 28 percent reduction in consumption and an 18 percent reduction in demand. The improvements have resulted in a \$19,000 utility company rebate and an ENERGY STAR® certification. The quieter chiller has also helped to improve the indoor working environment and maintenance costs have been reduced.

"Initially, it was about how we could save money, but our goal changed to being a community leader. We not only want to be an example of an efficient operation; we also want to help our County businesses be as efficient as possible, so they can be more productive and more successful," said Burrer.

"Trane helped us do that and they were easy to work with," added Hart. "We would tell them what we were looking for, and they'd suggest things I hadn't even thought about. I was always fascinated when we would outline our objectives, and they would ask if we would like to go beyond them."



About Pueblo County Courthouse

With a moderate climate, a stable and growing economy, and a competitively-priced real estate market, Pueblo County is a thriving community with a mixture of cultures from the southwestern US and around the world.

For over 100 years, the Pueblo County Courthouse has served the local community. In 1975, the courthouse was added to the National Register of Historic Places for Pueblo County. The courthouse exemplifies the pride of the community with its quality construction, attention to detail and hand-painted artwork decorating its walls. Each courtroom features its own color motif and custom built furniture.



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