

Oro Valley Community Center

CASE STUDY



Performance contracting solutions enable a holistic approach to infrastructure upgrades; enhanced comfort; improved operations; resulted in \$68,700+ energy savings and \$93,500+ water savings annually; rebates of more than \$30,000.

Challenge

Desiring to offer a community center to its residents, the Town of Oro Valley purchased a facility with existing membership. The Town identified within this facility that the building systems were inefficient and at the end of their useful lives, and the facility's energy consumption was high. With no funds immediately available, the Town was challenged to move forward with facility improvements and infrastructure upgrades following acquisition. "There is a considerable focus on efficiency and conservation in the community, so that served as a major tenet for us as we considered upgrades," said Stacey Lemos, Chief Financial Officer, Town of Oro Valley. "Another challenge we had was that this is a living and breathing facility, with no significant seasonal slow times and events to work around."

Solution

Based on a previous relationship with Trane for mechanical systems maintenance, the Town was interested in creative solutions the company might provide. Trane conducted a preliminary energy assessment, walking through the facilities to gather information. Using a State of Arizona cooperative contract, Oro Valley selected Trane as their energy services company (ESCO).

Identifying energy saving opportunities

Oro Valley entered into a performance contract with Trane, which would allow the Town to pay for upgrades with the energy savings realized from the project. The Trane team conducted an investment grade audit (IGA) to thoroughly evaluate the entire facility, including the 50,000 sq ft building, tennis courts, and golf courses. Trane defined potential energy conservation measures (ECMs) designed to reduce consumption of electricity, gas and water. This holistic approach would provide Oro Valley with their desired energy savings solutions, while maintaining a budget neutral project.

Improving efficiency and comfort, creating revenue opportunities

Trane replaced thirty-five HVAC packaged units with more energy efficient systems featuring multiple zone cooling to meet comfort demands of staff and guests. To reduce energy use and improve lighting quality, LED lighting was installed throughout the facility, including more than 250 fixtures on the tennis courts, six wall mounts in the racquetball viewing area, and flood lights near the pool. With the new fixtures, the center can now better accommodate revenue generating events, such as area tennis tournaments.

Oro Valley Community Center Oro Valley, Arizona

PROJECT HIGHLIGHTS

CHALLENGE

- High energy consumption
- Aging, inefficient mechanical systems
- Limited funds available for upgrades

SOLUTION

- Guaranteed performance contract
- HVAC, building management system, lighting, swimming pool filtration, golf course irrigation upgrades and water conservation

RESULTS

- Improved comfort and efficiency
- \$68,700+ annual energy savings
- \$93,500+ in annual water savings
- Utility rebates of more than \$30,000
- Budget neutral project



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Reducing water consumption with equipment and controls integration

With its location in the desert, water conservation also was a key issue for the facility. Trane analyzed industry data regarding use per acre-foot standards to evaluate water use at the golf courses and presented solutions to reduce consumption. The north pumping station was replaced early on in the project due to an unexpected mechanical failure. The new pumping station uses variable speed pump motors to help reduce energy use, along with a Trane® Tracer® SC building automation system (BAS) to enable connectivity to the remote pumping equipment. The existing south pumping station was retrofitted with a Tracer SC and both irrigation pumping stations were integrated into a new Tracer® Ensemble™ Enterprise Building Management System. Ensemble enables Oro Valley to easily access multiple sites and equipment from a single web-based interface. It also allows Trane to monitor, trend and validate water consumption in real-time, identifying savings opportunities. The swimming pool pumping filtration and heating systems were replaced to reduce maintenance and chemical costs, eliminating the chlorination system while improving overall operation. A new pool cover was also installed to reduce water evaporation and heat loss in the cooler months. The significant water use reduction achieved by the upgrades was a key factor in enabling the project to remain budget neutral.

Gaining an enterprise view with wireless system

The community center BAS was also integrated to the building management system and HVAC controls were installed using Trane® Air-Fi® wireless mesh network with Zigbee®/BACnet communication protocol. With no wires to run and all unit controls prepackaged and programmed, Trane technicians were able to spend less time on installation and more time educating facility managers on use of the controls and the Ensemble building management system.

The web-enabled Ensemble provides an enterprise view of the entire facility, allowing facilities managers to handle daily tasks, create schedules for the varied spaces in the center, manage alarms and make adjustments from anywhere in the building, or remotely with a tablet or phone. Oro Valley also has the option to integrate its other existing control systems into the system in the future. "For the comfort of our guests, our systems have to be reliable," said Lemos. "We have workout facilities, a restaurant, a pool; schedules vary and some spaces need more cooling than others. With customized thermostats and enterprise-wide monitoring and control, we are now better able to keep our temperatures where they need to be."

Results

Entering into a performance contract to use guaranteed energy savings to pay for needed upgrades, the Town of Oro Valley and Trane implemented a broad scope of ECMs designed to enhance comfort, improve operations and reduce energy costs. The upgrades, which included improvements to HVAC, controls, lighting, swimming pool systems, golf course irrigation and domestic hot water conservation, are exceeding expectations, providing more than \$68,700 in energy savings and more than \$93,500 water savings annually. The Town has also realized more than \$30,000 in utility rebates. In addition, the Town of Oro Valley was honored by Tucson Electric Power for improving its energy efficiency by replacing inefficient lighting with LED bulbs, and helping to make the community more sustainable by harvesting rain water and deploying a Green Team. "We are meeting projections, and have been able to keep to our budget," said Lemos. "Plus, the useful life of the equipment will far exceed our debt."



About Oro Valley Community Center

Oro Valley is nestled between the Catalina and Tortolita mountain ranges, approximately three miles north of Tucson. The more than 36 square mile town is home to more than 43,000 residents who enjoy an upscale lifestyle in the economically sound and growing community. The Oro Valley Community Center is one of the amenities available to residents, who make use of its lighted tennis, racquetball and basketball courts, swimming pool, fitness classes, cardio equipment and weight room.



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