SHOWCASE PROJECT: CITY OF ORLANDO: DOVER SHORES COMMUNITY CENTER

SOLUTION OVERVIEW

Dover Shores Community Center was built in 1978 and serves the Conway area as a community recreation center, including a gym, weight room, pool, tennis courts and handball courts. Regular activities at the center include before/after school care for children and athletic leagues on several courts and fields. The complex operates from 6:45am-9pm, 6 days a week.

The community center is comprised of three buildings. The main building houses a gym, weight room, locker room, storage and mechanical rooms, kitchen, and classrooms. The pool and pump building stores pool chemical and life guard supplies, along with the pool pump and filtration system. The concession building stores, prepares and serves food.

SECTOR TYPE

Local Government

LOCATION

Orlando, Florida

PROJECT SIZE

17,000 Square Feet

FINANCIAL OVERVIEW

$111,000

SOLUTIONS

This community center is one of the original projects identified for the City-Wide Energy Efficiency Initiative due to its higher energy use Intensity (EUI). An energy audit completed by an external engineering firm identified various recommended energy conservation measures (ECMs), and city facility engineers identified the opportunity for a solar thermal installation. Improvements include:

- Solar thermal system: A large 90 kW electric water heater was removed from the system, and then replaced with a solar water heater system with a 4500W backup heating element.
- New interior and exterior LED lighting: 233,000 kWh saved annually.
- Weatherization (window sealing and drainage improvement): 6,250 kWh saved annually.
- Envelope retrofit (low-E windows and building pressurization dampers): 27,500 kWh saved annually.

In December 2014, City facility engineers identified an operational issue and opportunity for energy savings in the hot water systems during their facility condition assessment walk-through. Based on limited consumption data, they estimated conservatively that replacing 94kW of 480VAC, three-phase 250-gallon hot water heating with two solar thermal hot water collectors and a backup 4.5kW 120-gallon tank should save approximately $12,500 a year in electrical charges, mostly from demand reduction. It is anticipated that the project will take a little over a year to pay back, the savings to be recouped over a two fiscal year period.

Additional ECMs identified by the outside engineering firm have led to further energy improvements. All interior and exterior lighting at the building is being replaced with energy efficient LED lighting, and building windows are being sealed to prevent water intrusion. A new natural drainage system is being placed in front of the storefront windows, which are also being re-sealed. In the recreation room, the old windows are being replaced with low emissivity (low-E) windows.

The original project also called for new LED tubes to be placed directly into the fixtures that previously held T8 tubes. However, the old ballasts in the existing fixtures were not compatible with the retrofit LED tubes. The solution involved hardwiring the new LED tubes directly and bypassing the ballast.

OTHER BENEFITS

The renovation of Dover Shores has led to quite a few improvements in the operation of the building. As a community center, Dover Shores sees most of its guests during its normal hours of operation from 6:45am to 9:00pm. The public will notice brighter, better lit rooms, a benefit of the LED lights. Another benefit of the new lights is brighter light in the parking lot, providing improved security at night during normal night time operations, as well as evening sporting events. Furthermore, LED lighting is well known for its decreased maintenance, requiring far less replacements with increased lifespan of the bulbs. The new damper in the gym will provide more comfort for the guests, lowering the humidity in the building and better controlling the temperature. Controlling the humidity is important in the maintenance of the gym floor, which contracts and expands with changes in humidity.

Annual Energy Use
(Source EUI)

Baseline(2014)
191 kBtu/sq. ft.

Expected(2016)
143 kBtu/sq. ft.

Actual()
Coming soon

Energy Savings
25%

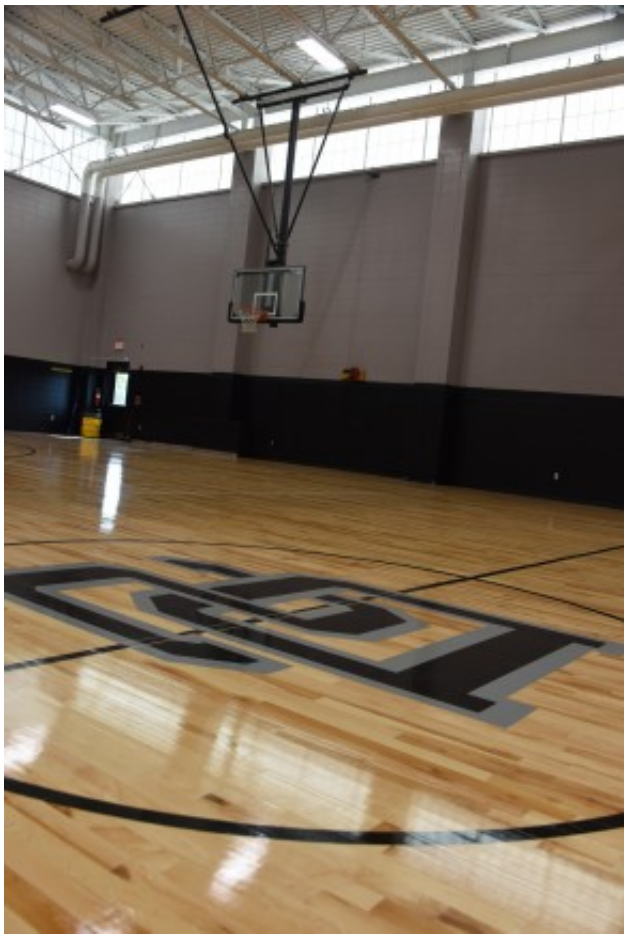
Annual Energy Cost

Baseline(2014)
$68,000

Expected(2016)
$51,000

Actual()
Coming soon

Cost Savings
$17,000



Gymnasium

LED High Bay Fixtures Above Gym Floor