

SHOWCASE PROJECT: ENERGY EFFICIENT RETROFIT FOR ORLANDO'S FIREHOUSE 5

SOLUTION OVERVIEW

Fire Station 5, built in 1955, is one of the City's older firehouses. Due to heavy rains over the years, a leak developed within the roof that was in turn weakening the old plaster lathe ceiling. In line with the Mayor's Greenworks Initiative and the necessity for renovation, the Facilities Management Division decided to retrofit the building to be more energy efficient.

Firehouse 5's 24/7 operation schedule presents a challenge because it is in operation during the entire renovation. It is necessary to keep firefighters working at the location throughout construction, creating tougher working conditions.

SECTOR TYPE

Local Government

LOCATION

Orlando, Florida

PROJECT SIZE

4,000 Square Feet

SOLUTIONS

The following energy conservation measures are being implemented as part of the building retrofit:

- High efficiency air conditioning units - 20 SEER
- R-19 ceiling insulation, R-5 roof insulation
- LED Lighting

The building had two existing 3.5-ton DX 14 SEER AC units, one for each side of the building. The two DX systems are being replaced with 20 SEER VRF systems, one 4-ton and one 3-ton. Nine cassette air handlers are being placed throughout the building. The existing ceiling tiles are being replaced with new acoustical tiles with R-19 insulation above them. The roof is being replaced with lighter color shingles, and the flat portions replaced with roll-on White Night coating for reflectivity, with R-5 insulation board underneath.

OTHER BENEFITS

Fire Station 5 operates around the clock, with 3 rotating crews of four firefighters every 24 hours. The two main improvements that the firefighters will notice are the new cassette air handlers and the new LED lighting.

The air handlers allow for the temperature in each room to be varied depending upon occupancy and the firefighter's preference. It is a general preference of firefighters to keep the rooms cooler, so these cassettes in each room allow for rooms to be kept at a lower temperature, while also saving electricity. The new LG air system also brings with it an expected decreased system loss, eliminating the duct system above the ceiling tiles and instead utilizing a ductless system. The LED lighting provides a far brighter, whiter light for the firefighters, improving the visibility in the working areas by 20-35 lumens. Furthermore, LED lighting requires far less maintenance than the older bulbs, reducing the need for bulb replacements.

Annual Energy Use

(Source EUI)

Baseline(2014)



Expected(2015)



Actual()



Energy Savings

20%

Annual Energy Cost

Baseline(2014)



Expected(2015)



Actual()



Cost Savings

\$1,300



Orlando Fire Station 5