



SHOWCASE PROJECT: CLARK COUNTY, NV: FIRE STATION 16 LIGHTING AND HVAC UPGRADES

SOLUTION OVERVIEW

Clark County's new prototype for fire station design is based on a combination of lessons learned from past County prototype fire stations, ideas gleaned from visiting other fire stations, previous experience of the design team, and input from stakeholders during a design charrette. The building houses living quarters, emergency medical services, a day room, dining and kitchen spaces, a fitness room, and a public training and lobby area.

The overall building design is simple – a balance between exhibiting civic pride in its appearance, while also recognizing the cost-driven nature of public facilities in the Las Vegas Valley. This also reflects the Fire Department's stated goal of a modest image for the new building.

SECTOR TYPE

Local Government

LOCATION

Las Vegas, Nevada

PROJECT SIZE

9,000 Square Feet

SOLUTIONS

The following energy conservation measures were implemented at Fire Station 16:

- LED lighting with daylight sensors, occupancy sensors and multilevel switching
- High-efficiency DX air conditioning – 20 SEER
- Gas fired split HVAC system – 95% AFUE
- Wi-Fi-enabled thermostat control

All lighting systems were selected based on energy efficiency, durability, color, architectural considerations, IESNA recommended lighting levels, control requirements, and costs (both upfront and maintenance). LED lighting is being used wherever appropriate, and lighting controls help exceed International Energy Conservation Code (IECC). Clark County also used an Energy

Performance simulation following the requirements described in ASHRAE 90.1-2007 performance rating method to model and select high efficiency energy equipment.

The Wi-Fi thermostat serves as an advanced command center for the HVAC system. The control monitors indoor and outdoor temperatures so the fire station can adjust the system to operate efficiently, and every component is designed to work in harmony with the others – optimizing energy use over time.

OTHER BENEFITS

The HVAC thermostat control is matched to the space conditioning system for complete, seamless comfort. It tells the operations department when it's time to change filters and schedule routine maintenance. The system includes a 7-inch, color, interactive touch screen in each room that enables digital, room-by-room control, shows the five day weather forecast and live weather reports, and permits remote internet access via computer, smartphone, and tablet. These features allow operations personnel to save time and money on service calls and routine maintenance associated with fire station.

Additionally, the project qualifies for Nevada Energy's Sure Bet Program, which is designed to make energy efficiency improvements cost effective for Nevada's energy users. The landscaping theme for the fire station is a desert-adaptive, modern landscape that compliments that natural and adjacent built environment while enhancing the building architecture. The landscape design creates microclimates around the building and outdoor spaces, providing a cooling effect to help reduce the energy required to cool the building while utilizing plants that are drought tolerant and have low water requirements.

Annual Energy Use

(Source EUI)

Baseline(ASHRAE Standard)

283 kBtu/sq. ft.

Actual(2017)

178 kBtu/sq. ft.

Energy Savings

37%

Annual Energy Cost

Baseline(ASHRAE Standard)

\$13,000

Actual()

\$11,300

Cost Savings

\$1,700



Street View of New Clark County Fire Station 16



Energy Command Center



20 SEER DX Cooling Units