Fontana Unified School District

Education

Mechanical Systems

Located in Southern California, the Fontana Unified School District educates 41,142 kindergarten through 12th grade students in 45 schools. Just 50 miles east of Los Angeles in the heart of San Bernadino County, the school district prides itself on educating its diverse population and has a 87 percent graduation rate.

Despite the school district tackling poverty -- about 83 percent of students qualify for free or reduced lunch -- it has 96 percent daily attendance for all learners. Over 30 percent of the students are non-native English language speakers, which the progressive school district tries to combat with early education programs and adult classes for parents and other residents.

The K-12 district partnered with SmartWatt to complete an energy systems optimization project that included new rooftop air conditioning units funded through a state incentive program.

THE CHALLENGE

The district's portfolio of antiquated and inefficient rooftop air conditioning units and control systems were at the end of their useful life, causing the district to invest a significant amount of time and capital to maintain and operate them. Additionally, the old RTUs were unable to maintain temperature and humidity levels within the buildings, resulting in uneven temperatures, occupant discomfort and unnecessary overuse of the units. Also, the control system did not support software updated, adding inefficiencies and a suboptimal control system to the mix.

- **Lack of Budget:** The school district lacked the budget for the project and endured their inefficient air conditioning units for years because they couldn't afford to replace them.
- **Energy Costs:** The inefficient roof top units were expensive to operate and maintain and didn't adequately cool the educational environments.
- **Uneven Temperature:** The inefficient and antiquated air conditioning systems didn't properly cool the schools, causing students to not focus and slowing the learning process.

The US Department of Energy presented the "Highest number of RTU installations that meet/exceed RTU Challenge specification" to Errol Glen and Bob Copeland from the Fontana Unified School District.

THE SOLUTION

To reduce costs to operate and maintain the cooling systems, and stabilize temperatures throughout the schools, 210 rooftop units were installed on 30 buildings, along with controls.

- **RTU Design:** 201 of the highest efficiency rooftop air conditioning units, ranging from 2 to 20 tons were installed within a three month window over the district's summer vacation in 2016. In addition, SmartWatt worked with the manufacturer to ensure that the RTUs were installed and commissioned properly so the district could realize the full benefits of the new equipment.

- **Controls:** Commissioned controllers were installed on each unit to produce optimal humidity and temperature levels throughout the buildings. With the new remote user interface, the district can closely monitor temperatures and humidity levels, ensuring that they are moderate and at optimal levels for students to learn and teachers to teach. The new control system features an open protocol infrastructure, giving the district the option to integrate additional systems in the future.

THE IMPACT

The project has resulted in optimal educational environments for all users. For that, the Department of Energy awarded the district an A and named it a DOE RTU Challenge Winner. The district and SmartWatt will complete a second phase during the summer of 2017 to incorporate LED lighting in the district's schools.

$430K / annual savings

620 tons / CO_2 reduction

Annual kWh savings: **882K**

Annual natural gas savings: **430 therms**

Saving **69,765 gallons** of gasoline

Planting **586 acres** of trees