

Coast College District



THE CHALLENGE

The Coast College District is a multi-college district that includes Coastline Community College, Golden West College, and Orange Coast College. The district was interested in pursuing an energy systems optimization project at their district office building in Costa Mesa, CA for the following reasons:

- **Multiple Service Contracts with Vendors:** The current HVAC control, security keycard access, security camera, solar PV and lighting systems were all serviced by different contractors, resulting in lack of accessibility to the systems by the district and confusion on which contractor to contact when maintenance issues or questions arose.
- **Inefficient & Outdated Equipment:** The current HVAC control, security camera and security access systems were not commissioned properly, outdated, and weren't properly designed for the space, causing unknown and numerous failures.
- **Occupant Discomfort:** An unfinished plenum existed near the loading dock, allowing outside air to enter the building. In addition to this causing the HVAC units to work overtime, exhaust fumes from trucks were being pulled in and recycled back into the space. This unfiltered, toxic air resulted in headache complaints from staff, a stench in the office and an inordinate amount of dirt and dust build-up. In addition, the air handling unit (AHU) coils weren't designed for their current use, causing excessively humid air inside the building. On top of that, the light levels were extremely low on both the inside and outside of the building, leading to safety concerns and a poorly lit interior office environment.

“We’ve enjoyed our relationship with SmartWatt, and have worked with them for years because of the great work that they do.”

– Jerry Marchbank, Director of Maintenance & Operations

THE SOLUTION

To give the district easy access and control of energy systems, update the aging equipment, and enhance occupant comfort, the district partnered with SmartWatt to implement a bundled energy systems optimization project that included:

- **Building Automation Systems:** New controls were installed and all HVAC (VAVs, boilers, and AHUs), security keycard access, security camera, solar PV, plug load, and lighting systems were integrated together. The systems are accessible on a web-based user interface that allows easy access to systems for monitoring, master scheduling, and overall control. Additionally, metering equipment was installed to add monitoring capabilities for overall site electricity, natural gas and water consumption, as well as solar generation. The new building automation system features open controls, giving the district freedom to choose a preferred vendor to service all systems, and the ability to easily expand and integrate future controls into the same platform.
- **Mechanical Systems:** The HVAC system was commissioned and the AHU coils were repaired to ensure proper and optimal systems operation.
- **Building Envelope:** The open plenum was repaired near the loading dock, decreasing the infiltration of polluted outside air, the build-up of dirt and dust, and alleviating unnecessary strain on the HVAC systems.
- **Security Systems:** The existing security access system was removed and replaced. The analog security camera system was replaced with a new digital system, including extra camera locations to increase coverage.
- **Lighting Systems:** The existing lighting systems were replaced with efficient LED fixtures throughout interior and exterior areas and equipped with an advanced control system, reducing lighting-related energy consumption, while providing a higher quality of light and increased security at night.

THE IMPACT

This energy systems optimization project has allowed the district to have full control and monitoring capabilities of all building systems. A user interface with personalized control dashboards was created to allow easy access to all building systems for monitoring, master scheduling, and overall control. The user interface is web-based, allowing remote access anywhere that an internet connection is available. The new open protocol control system frees the community college from being locked into service contracts with particular control system manufacturers. They can continue to tie in additional components and capabilities in future years as new technologies are released in the market.

Additionally occupant comfort has been enhanced dramatically, with a brighter office interior and exterior, providing enhanced aesthetics, safety and security.

Financial Impact



Environmental Impact



By removing this quantity of CO₂ from the atmosphere, this project will have the same effect on the local community as:

Energy cost savings: **\$71K**

Saving **45K gallons** of gasoline

Maintenance cost savings: **\$27K**

Planting **377 acres** of trees