



Annual Energy Savings:

2,540,836 kWh/380 kW

Est. Annual Utility Bill Savings:

\$355,717

Utility Incentives Rebate:

\$191,455

Summary

Willdan conducted comprehensive building audits for Hoag to support the implementation of a number of complex incentivized energy efficiency measures. The HVAC system, made up primarily of air handlers and chillers, accounts for approximately 60% of the total energy usage within a hospital environment.

Results

Based on Willdan's recommendations, Hoag Memorial refurbished units varying in age from 20-60 years old from the ground up, receiving utility rebates for cooling coils, motors, drives and controls. Two measures significantly reduced the hospital's utility budget: variable frequency drive (VFD) installation on all HVAC condensing pumps (which numbered nine, ranging from seven to fifteen horsepower) and variable air volume (VAV) zoning, accomplished with the energy management system (EMS) programming. The VAV zoning allows Hoag's engineering team to provide cooling on an as-needed basis by programming multiple occupancy schedules for each floor unit.

Lighting

Lighting retrofits, with utility rebates, had a simple payback of 1.5 years and a savings of almost 1.6 million kWh per year. The lighting project involved installing occupancy sensors and replacing various existing fluorescent, incandescent, and halogen lighting – both interior and exterior – with compact fluorescent lighting (CFL) or LED lighting, as each situation warranted.

Project/Recommendations

Hoag Health Center, located just blocks away from the hospital, is comprised of three buildings ranging from 100,000 to 140,000 and built over a decade ago. Willdan recommended an EMS system for the 510 Superior Avenue building to overcome operational inefficiencies caused by previously installed equipment in the imaging department on the first floor. The old controls did not allow synchronization with the new system, which could not be shut off without operator assistance, causing the unit to run 24/7. By adding an EMS system, Hoag staff could separately control the various components of the system—saving almost 255,000 kWh annually. Willdan also recommended economizers and replaced actuators from two-position (on/off) to proportional (or modulating) to facilitate control by the EMS system, saving about 72,000 kWh annually. Finally, Hoag launched a project to retrofit all of the McQuay 90-110-ton DX system processing control boards with compatible BACnet controls to enable the hospital to adopt more reliable and efficient logistics that save energy and down time.