



BOC™ is a nationally recognized professional development program for building operators offering improved job skills and more comfortable, efficient facilities.

## CASE STUDY SERIES

KERN HIGH SCHOOL DISTRICT

# Kern High School District

### Kern High School District, Kern County, California

**Facility Types:** ... 16 high schools, 9 other facilities (administration, special ed)

**Facility Square Footage:** ..... 3,600,000

**Dates Built:** ..... 1906 – 2006

**Number of Facilities Personnel:** ..... 400

**BOC Participant Profiled:** ..... Chris Hall, Assistant Director of Maintenance & Operations

In the last 19 months, Kern High School District in the Central Valley of California has saved \$2.6 million dollars by reducing energy use in its 25 buildings – primarily through encouraging behavior changes in the maintenance staff, administration, teachers and students. Chris Hall, assistant director of maintenance and operations, took the lead on this sweeping project, which included everything from implementing a school-board-approved

policy on energy conservation to training administrators, teachers and students about the changes to training the facilities staff and making changes to equipment.

### Challenges

#### Energy Management Systems (EMS) Not Efficiently Scheduled

When Chris came to the district, he found a variety of EMS systems. Staff had been operating these large systems for extended hours

outside the normal operating day. He and his staff needed to re-commission the systems, adjusting them and analyzing how they should be working together in the district for optimum efficiency, while continuing to address the needs of the district.



Chris Hall, Assistant Director of Maintenance and Operations.



Frontier High School, Bakersfield, CA.

#### Bad Habits Were Not Allowing for Efficiency

One of the biggest challenges was getting all the occupants on board with the new procedures for operating the buildings. Doors and windows were being left open when heating or cooling systems were on, thermostats were set inefficiently and discomfort complaints were high.

### Results

#### Energy Management Systems Savings

After having spent significant time analyzing, testing, and verifying how the energy management system worked, Chris and his staff are now able to run the districts facilities with amazing efficiency. Currently, 60% of their equipment runs on the EMS at a district level, with 40% under local control. This allows the district to operate the heating and cooling systems only when needed. The district was able to shave off about six hours of operating time per day, Monday through Friday, resulting in extra savings

and less wear and tear on the equipment. In addition, the district's nine thousand computers shut off automatically at a set time – saving about \$150 per computer annually.



Fully EMS-compatible chillers at Frontier High School.

*“Additionally, the courses on HVAC Systems and Controls and Indoor Air Quality helped me understand the importance of maintaining good occupancy comfort and what to do to provide acceptable levels of occupancy comfort.”*

– Chris Hall

**Behavior Changes and Awareness through Education**

The board policy helped to convince occupants of the need for change, and then Chris worked personally to speak to employees in every facility. He gave presentations detailing the policy and asked for their help. During his subsequent periodic building audits, he continues to reiterate the positive and to make suggestions for improving their comfort. The number

of discomfort complaints has been minimized, and staff members who work late have been trained to operate their systems so that they can remain comfortable after hours. There is another strong incentive also helps get staff and teachers on board: principals get to put back into their operating budgets about 40% of the money they help to save through the new energy efficiency practices.



*Cooling tower at FHS that allows chillers to run more efficiently than in an air-cooled system.*

**A Worthwhile Investment**

Among other resources and support, Chris credits their success in the district to working with consultant Energy Education, Inc. throughout the process – as well as the

BOC training he and two other Kern facilities staff members received – for their success in the district.

“I credit BOC for teaching me about whole-building strategies: giving me a good understanding of energy values, energy accounting, benchmarking, trend analysis and energy conservation and facility management,” Chris said. “Additionally, the courses on HVAC Systems and Controls and Indoor Air Quality helped me understand the importance of maintaining good occupancy comfort and what to do to provide acceptable levels of occupancy comfort.”



*Rendering of the style of high school the county has been building recently.*

**BOC National Partners**

Midwest Energy Efficiency Alliance, Northeast Energy Efficiency Partnerships, Northwest Energy Education Institute, North Carolina Community College System, Sacramento Municipal Utility District, and Wisconsin Focus on Energy.

**About BOC™**

BOC™ is a nationally recognized professional development program for building operators offering improved job skills and more comfortable, efficient facilities. Training topics include building systems overview, energy conservation techniques, HVAC systems and controls, lighting and electrical, IAQ, and environmental health and safety regulation. Operators who successfully complete training are awarded the BOC™ designation. Since 1997, over 200 federal sector building operators have earned BOC Level I certification. For more information, visit the BOC web site at [www.theBOC.info](http://www.theBOC.info).