

Greater Efficiencies Mean Greater Savings



Waubonsie Valley High School

Facility Type:	Public High School
Square Footage:	585,000
Date Built:	1975
Number of Staff:	300, including 32 building operators
BOC Participant Profiled:	Jim Jansky, Facility Manager



Waubonsie Valley High School (WVHS) in Aurora, Illinois, is more than just a school. A variety of functional spaces—including a theater, field house, and swimming pool—are open year-round and used by community residents as well as the school's 3,000 students. The complexity of the building structure and the scheduling of diverse activities complicate maintenance and operations, making it difficult for facility engineers to control energy use.



Jim Jansky, WVHS Facility Manager, enrolled in **Building Operator Certification (BOC)** training because he wanted to reduce energy costs at the school by learning more about facility operations, building systems interactions, and their effect on energy use—in short, to better manage energy consumption.

■ CHALLENGES

Inefficient, High-maintenance Lighting

The school had inefficient T-12 fluorescent and metal halide lighting. The metal halide lighting was especially problematic. Because metal halide lamps required a warm-up period, lights were left on even when rooms were not in use. During the summer the heat from the lamps added to the HVAC cooling load. The high heat output also led to maintenance problems. The lamps would, in effect, become fused in their sockets making replacement difficult.

Understanding Electric Demand

Jim and his department staff needed to use data from utility bills to better understand the school's electric demand profile and monitor energy use. It was difficult to carry out appropriate energy cost savings measures without this knowledge.

Operations and Maintenance Inefficiencies

WVHS's physical plant was aging. Much of the building's equipment was more than 25 years old and increasingly prone to malfunction. Routine maintenance suffered because facility engineers had to devote an inordinate amount of time to emergency repairs.



ABOUT BOC



Building Operation Certification (BOC™) is a nationally recognized training and certification program for building operators offering improved job skills and more comfortable, energy-efficient facilities. The training topics include building systems overview, energy conservation techniques, HVAC systems and controls, efficient lighting fundamentals, environmental health and safety regulations, indoor air quality, and facility electrical systems.

The Northwest Energy Efficiency Council (NEEC), a nonprofit business association of the energy efficiency industry, developed BOC with support from the Northwest Energy Efficiency Alliance (NEEA).

The Midwest Energy Efficiency Alliance (MEEA) is a 501(c)(3) nonprofit organization and a collaborative network whose purpose is to advance energy efficiency in the Midwest in order to support sustainable economic development and environmental preservation. MEEA administers a regional BOC program in Illinois, Minnesota, Missouri, and Ohio with the support and involvement of the Illinois Department of Commerce and Economic Opportunity; the Minnesota Department of Commerce, Minnesota Power, and other Minnesota energy utilities; the Energy Center of the Missouri Department of Natural Resources and AmerenUE; and the Ohio Department of Development and the Ohio Public Facilities Maintenance Association. For a complete schedule of upcoming BOC training series, visit www.boccentral.org.

Remodeling over the years contributed to an inefficient building layout that led to humidity problems and mechanical systems that were not effectively controlling temperature and indoor air quality (IAQ). The gymnasium and other large unconditioned spaces opened directly into conditioned corridors. With the facility in constant use, it was difficult for building operators to monitor these doors and keep them closed.

■ RESULTS

Lighting Upgrades and Better Maintenance Procedures

BOC training prompted WVHS to undertake extensive lighting upgrades. The T-12 fluorescent fixtures with magnetic ballasts and metal halide lighting were retrofitted with energy-efficient T-8 fluorescents. The impact was immediate. Staff and students commented on the improved quality of the light and overall appearance of the school.

The new lighting saved energy in several ways. There were immediate savings since less energy was required to produce the same level of light. In addition, the new T-8 lamps required no warm-up period so lights were turned on and off as needed. The decreased heat from the lamps also reduced the amount of energy required to cool the building in the summer, and unconditioned spaces like the gym were more comfortable.

Better Understanding of Electric Demand

The building energy analysis process that Jim learned in BOC training helped him better understand the school's utility bills and identify energy-saving measures. He documented how staff behavior, as well as weather, can affect energy usage. For example, a jump in demand in October was due to the daylight savings time change. Also, faculty and staff worked longer hours than in the summer, using lights and office equipment for longer periods. Jim can now suggest building schedule modifications as a way to reduce energy use and minimize electric demand charges.

"THE BOC HOMEWORK IS A VERY GOOD LEARNING TOOL. IT MAKES YOU DIG INTO YOUR BUILDING TO FIND THE ANSWERS."

—Jim Jansky, Facility Manager,
Waubonsie Valley High School

Improved Building Operations and Indoor Air Quality

BOC training demonstrated how regular HVAC maintenance improves both energy efficiency and IAQ. As a result, HVAC filter replacement and regular boiler maintenance are now higher priorities. Operating HVAC equipment efficiently and maintaining IAQ is especially difficult on hot, humid days in summer. To improve IAQ on these days, Jim learned to close the outside air, pre-cool the supply air to remove excess moisture, and then use boiler reheat to warm the air to the required temperature.

In addition, Jim developed policies and procedures for emergency building envelope repairs and equipment replacement. By operating HVAC equipment more efficiently and dealing quickly with roof leaks, he is saving energy and preventing mold growth, a major concern for facility managers. Jim also developed procedures for replacing the facility's aging motors. Two newly installed pump motors are already saving energy.

■ A WORTHWHILE INVESTMENT

BOC training provided Jim with the tools and knowledge he needs for better energy management and improved his overall skills as a facility manager. "The BOC homework is a very good learning tool," he says. "It makes you dig into your building to find the answers."

