

case study | Grover Cleveland Elementary School

Allentown, Pennsylvania



Before: Poor overhead lighting causes problems like screen glare, making presentations difficult to view.



After: Balance LC from Lutron provides dimmable control of the fixtures, reducing glare, making presentations easy to see.

By installing the new Balance LC™ lighting control system for K-12 schools, Cleveland Elementary is using **53.23% less lighting electricity.**

Grover Cleveland Elementary School in downtown Allentown, Penn. is a 121-year-old structure that just got a very 21st-century upgrade. The school principal, Robert Wheeler, chose two classrooms to give a new technology a try, a lighting system that promised to both improve the learning environment and deliver substantial energy savings.

The technology, Balance LC from Lutron, is a revolutionary fluorescent lighting control system that integrates manual dimming control, daylight sensing and occupancy sensing with a network of digitally addressable dimming ballasts.

In practice, Balance LC gives teachers an unprecedented level of control of the lighting in the classroom. The overhead fixtures can be dimmed in two separate groups to suit the needs of the moment. For example, during a video presentation the lights at the front of the classroom dim all the way down to reduce glare and improve screen contrast. The second group of lights, over the students, stays just bright enough to allow the students to see their desks clearly and take notes easily.

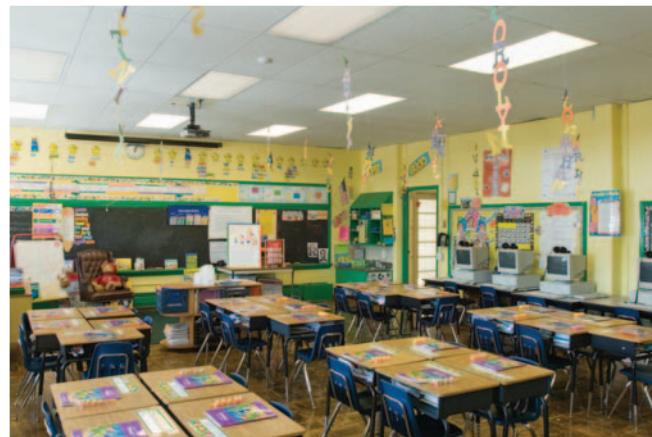
When the class is over and the room empties for lunch, dual technology occupancy sensors register

the vacancy and turn off all the lights in the room. When the class files back in, the lights automatically return. Meanwhile, a small daylight sensor measures the amount of sunlight available in the room, and dims the lights to take advantage of it. The lights closest to the window, where the sunlight is most intense, are the most dimmed; the lights on the far wall are adjusted less. The result is an even illumination throughout the learning environment. There is no flickering. There are no too-bright or too-dark spots. And the washed-out blue pallor that older-generation fluorescent lighting is known for is gone. In its place is a combination of daylight and well-designed overhead lighting and controls proven to enhance students' attention spans, motivation, and attitudes.

But Principal Wheeler and the administration also wanted to know about energy savings. The cost of powering a school is rising, so what does this new technology, and all it brings to the learning environment, do for his budget?

To answer that question, Lutron would install monitoring equipment above the ceiling in one of the classrooms. First, measurements were taken of the

lighting electricity usage of the classroom without Balance LC. After the installation, the monitoring equipment would register daily lighting electricity use for a month. Once the raw data was compiled, the numbers were remarkable.



Balance LC dims rows of lights to different levels to take advantage of natural light while providing even illumination on student desks.

The classroom was using less than half the lighting electricity it had been using before. The savings were more notable considering that, like most schools, lighting accounts for more than half the total electricity bill.

The Balance LC system replaced switching ballasts with Lutron EcoSystem electronic dimming ballasts. In both cases, two ballasts powered four lamps in each fixture. There were 12 fixtures per classroom, 57 watts per ballast, and 11 hours of operation per day. The study covered 26 days. When the data was pulled, it showed that the Balance LC system required 183 kilowatt-hours (kWh) versus the older system's 391.25 kWh:

53.23% less lighting electricity.

Cleveland Elementary School, built in 1883, now supports the most sustainable, technologically advanced fluorescent lighting control system available today.



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