



**Public Building
Elementary School**
Victorville, California



Success Story

After retrofitting fluorescent lights with LED bulbs across all of its 18 locations, the Victor Elementary School District (VESD) decided it was time to build an exceptionally sustainable, state-of-the-art office—highlighted by the smartengine Intelligent Sensor Network.

Building toward an even brighter academic future

VESD serves 11,800 children in grades K-6 enrolled in 18 elementary schools across Victorville, California. One of the factors contributing to the district's academic success is its focus on cost-efficient operations. In keeping with this pursuit, VESD recently completed a \$2 million classroom retrofit. After their schools were taken care of, district leaders decided to integrate the same energy-saving technologies at their new 30,000 sq. ft. central office.

"smartengine intelligent sensor network is proof that VESD embraces the idea of investing today to equip our students for a brighter tomorrow," explained Dale Etter, Facilities Director.

Why smartengine?

Previous upgrades had replaced fluorescent tubes with LED retrofit tubes, leaving the existing line voltage cabling and standard light switches in place. Since the new project required a wall-to-wall wreck-out and remodel, VESD chose the smartengine Intelligent Lighting Network solution for several important reasons:

- 👍 Reduced installation costs via twisted-pair structured cabling (Category 5e/6/6A) to deliver low-voltage power and control to LED fixtures
- 👍 A high-density sensor network provides granular monitoring of space utilization, temperature and power consumption
- 👍 Smart backend software enables specialized operations like fine-grain dimming, light harvesting and policy-driven timeouts
- 👍 "Lights off" data centers provide motion-tracked illumination directly around the occupants; "lights on" data centers use dimming for security cameras
- 👍 An open-architecture framework that integrates with other automated building systems
- 👍 Compliance with UL, cUL and CE standards
- 👍 Cleaner, brighter, softer light
- 👍 Smartphone control



VESD selects the smartengine Intelligent Sensor Network

As his career progressed, Etter has become increasingly passionate about energy management. That passion was the driving force behind VESD's recent lighting renovations and their search for a solution at the district level.

Etter explained, "The next morning we're all meeting to seriously explore smartengine solutions. The opportunity and the solution couldn't have been better timed."

Etter was close to a decision, but wanted to see smartengine in action. It took one visit to a nearby working site in Irvine, CA, to convince him.

Why "how it works" matters

Controlled by a director, a single smartengine provides centralized power, communications and control for up to 48 light fixtures. Each director is managed by an intuitive Web-based interface that offers insights on resource utilization. A network of sensors and switches monitor light, temperature and motion to control the dimming and on/off settings of low-voltage DC LED lights. This enabled the district to:

- 👍 Increase energy efficiency while reducing costs by decreasing PUE, non-computing electrical overhead and maintenance expenses.
- 👍 Optimize space-saving designs through sensors that aggregate data on motion patterns, room occupancy and heavy traffic routes.
- 👍 Simplicity and fast adaptation over low-voltage cabling allows VESD to make changes on the fly, without any rewiring.
- 👍 Completely tailor the solution to its needs and fully leverage all available efficiencies using the open API and BACNet to code custom applications. Etter has already discovered how to shut off unused mechanical equipment in addition to lights.

A surprisingly simple, effective implementation

In the months following its completion, VESD has already hosted multiple tours of the platform. The feedback has been overwhelmingly positive. The future is even brighter. When Etter integrates HVAC, he expects energy efficiency to improve again – more dollars the district can reinvest in its students.

Happy to help!

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Pacific Western Communications installed and commissioned the solution using a dedicated team of six personnel. From May through November of 2013, the team invested 1,320 man-hours to run 1,014 Category 5e cables a total of 140,000 feet, connecting a single director to 18 engines, 83 dimmers and 508 fixtures.

"I'm proud of what our guys accomplished," Lindberg explained. "smartengine sent out an expert to commission the system. He said our setup was the second best he'd ever seen – and all we had to go by was the manual. That's how simple this platform is to install."

Lower energy costs create a brighter educational future

VESD is already achieving an energy savings of more than 75 percent over the fluorescent system at their prior location. Etter explained,

"We left a 12,000-sq.-ft. building that used fluorescent lighting for a 30,000-sq.-ft. one that uses the smartengine solution. Even though our new location is 18,000 sq. ft. larger, houses our entire district-wide network and is home to many additional employees, we're still using less energy than we did at our old location!"

Lindberg couldn't agree more. "smartengine is still miles ahead of everyone else in this space. You don't need to run conduit. There are no high-gauge wires. No subpanels dotting the structure. Then there's the added value of low-voltage LEDs. Couple all of this with flexible, intelligent software, and you have a cutting-edge energy management solution."