Everett School District LED Lighting Upgrades Case Study

Everett School District installs efficient LED Lighting in its new construction projects.

Project Background & Scope

The Everett School District needed to rebuild two elementary schools from the ground up. Construction on Monroe Elementary started in 2010 and was completed in winter 2012; construction on View Ridge Elementary started in 2011 and was completed in fall 2012. Mr. Darcy Walker, construction manager, believes these were among the first schools in the country to use predominantly LED lighting.

It was a challenge to meet both the lighting power allowance of commercial energy codes and minimum light levels mandated by the Washington State Department of Health. The school district considered using a fluorescent lighting system, but they were drawn to the LED lighting products because of their very long life, lower maintenance costs and high efficacy (ratio of light output to power use) that would make it easier to meet the codes. In fact, the District found that by using LED lighting, they could provide twice the minimum light level allowed and still save energy.

The District completed a detailed investigation before deciding on LED lighting, including:

- Hiring the engineering firm Argus to assess the myriad products on the market and identify appropriate options,
- Obtaining samples of the LED lighting products under consideration, and
- Conducting extensive in-house research on construction quality and other features of LED products under consideration.

After completing this process, the District chose the following products:

- **Classrooms:**

Monroe: Cree LR24 dimmable recessed troffer, CRI- 90, 3500K, 44 Watts

View Ridge: Cree CR24 CRI-90 dimmable, 3500K

Classroom

- **Cafeteria:** Lunera 2200 Series, thin panels, 2'x2' lay-in panels, 4000K, 62 Watts
- **Reception Counter:** Suspended 8-foot fixture, Lunera 6800 Series, 4000K, 65 Watts
- **Under-counter task lights:** Phillips Alkco Aris Series
- **Parking lot lights:** Bi-level 100% to 50% Guardco pole lights, 6500K, 174 Watts
- **Covered play area:** Solid state luminaires POD 4.4 SM, 4000K, 100 Watts
- **Exterior wall packs:** Philips Day Brite/WL-43200 Nite Brites, 4000K, 24 Watts

The District chose a cool 4000K color temperature for improved visibility.

Lighting controls were installed along with the new lighting sources to provide additional energy savings. All of the classroom lighting is dimmable and teachers frequently use this feature. Additionally, as light output drops over time, the control system can boost the light levels back to the required levels.The common areas have a packaged dimming system and the parking lot fixtures have integral dimming. Both systems are controlled by time-clocks.

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Results

When asked if he was happy with the new lights, the construction manager gave an enthusiastic "Absolutely!" One teacher commented that the new lights are so bright that she no longer needs to use her reading glasses. Many have noticed how vivid colors appear. Walker says, "It's unbelievable how crisp the light is in the classrooms."

The maintenance staff is happy, too, and Walker hopes to keep them that way. He does not want the LED lighting to be problematic, which could potentially cause maintenance staff to veto LED products for future projects. Only two products failed right out of the box, and none have failed since then. In case any units prematurely fail before the expected 15-year life, 24 extra lamps were purchased. The expense of the extra units offset the energy savings, but the manager did not want maintenance staff to have the hassle of removing failed units, shipping them back to the manufacturer and waiting for replacements to arrive. With extra units on hand, maintenance staff can take out a bad unit, install a back-up model and ship the failed one back on warranty without leaving a dark hole in the ceiling. Walker is also aware that this technology is evolving quickly; because it might be difficult to get a matching product several years (or less) into the life of the system, he would rather have spare units on hand now.

The lighting quality and reduced maintenance were major factors that influenced the decision of the school board when they were presented with the bid for a fluorescent system and the LED lighting as an additive alternate. Energy savings were not a major factor in the decision; the District was more concerned that the new lighting system would provide a good learning environment and reduce labor costs. The District also used a lifecycle cost analysis, which was a key factor in the selection of LED lighting. The District is very proud of the resulting state-of-the-art lighting system.

Lessons Learned

The major pieces of advice offered by Walker are:

- "Get qualified help to help sort through all the choices!"
- "Find a reputable company who has been around and will be around for the long haul."

If you are interested in seeing these schools, contact Walker to set up a tour. The District is happy to share their lighting success.

Additional Resources

Products
Cree LR24: http://www.cree.com/lighting/products/indoor/troffers/lr24-32ska35

Lunera 2200 Series 4000K, 62 Watts: http://www.lunera.com/products/2200series.html

Lunera 6800 Series: http://www.lunera.com/products/6800series.html

Guardco pole lights: http://www.sitelighting.com/product_selector.cfm
Covered play area:
http://www.solidstateluminaires.com/product/interior/02/downlite/POD%204.4%20SM

Wall packs: http://www.daybrite.com/nitebrites/NiteBritesfixture.cfm?ID=3497

School District Website Photos
- **View Ridge**
http://www.everett.k12.wa.us/facpla/View%20Ridge%20ES%20Replace, wall packs and parking lights visible in daylight

- **Monroe**
Case study by Cree-Monroe Elementary School: http://www.cree.com/news-and-events/cree-news/press-releases/2012/february/120229-everett-school

Cafeteria

Considerations for Purchase

Before purchasing LED lighting:

- Understand warranty coverage and length. Coverage might include various components, field repair, shipping and labor, over 5 to 10 years. Warranty eligibility may require multiple LEDs to fail before replacement.
- Install a sample before committing to a purchase.
- Check your local utility for available incentives.
- Engage a professional to provide lighting that meets your needs, complies with energy code, and is compliant with utility incentive requirements.

Most utility incentives for LED lights use a qualified list:

- For light bulbs, look for ENERGY STAR products: http://www.energystar.gov/index.cfm?c=manuf_res.pt_lighting
- For commercial light fixtures, refer to Design Lights Consortium qualified product lists: http://www.designlights.org

Additional questions to ask are listed at this U.S. Department of Energy website: http://www.eere.energy.gov/buildings/ssl/what-to-ask.html