

Case Study: Rural Oregon School

Eastern Oregon school gets energy-efficient lighting

Baker City, located on the historic Oregon Trail in Eastern Oregon, once boasted the largest population of any city in the state. But, that was then. Today, it has a population that ranks it 45th in the state and it is losing, rather than gaining, residents.

This is unwelcome news for the Baker School District as it faces declining enrollment and the accompanying financial challenge.

Baker School District Superintendent Don Ulrey reports that many school programs are being reduced by as much as 50 percent to maintain financial solvency. Retiring teachers are not being replaced. It goes without saying that many facility maintenance problems are being deferred until funds become available.

Thanks to the Oregon Department of Energy, however, some much needed energy projects are getting implemented. The Oregon Department of Energy recently facilitated a replacement and upgrade of lighting lamps and fixtures at the Baker High School gym. The lighting in the remainder of the 90,000-square-foot high school is scheduled for a \$60,000 replacement and upgrade in the summer of 2006. At the same time, the lighting in the gym at Brooklyn Elementary School will be upgraded.

The high school project included the upgrade of 250-watt metal halide lights in the gym with new fixtures, T5 lamps and electronic ballasts.

The project is expected to save more than 41,190 kilowatt-hours of electricity per year and reduce the Baker High School electricity bill by more than \$2,400 per year for the gym alone.

The lighting replacement for the remainder of the school is expected to save an additional 63,100 kilowatt-hours per year reducing the electricity bill by another \$5,000 per year.

Williams Oil Settlement

When funds became available in 2005 through the Williams Oil Settlement, Baker School District became a candidate for the lighting efficiency projects.

The Oregon Department of Energy administers the \$1 million Williams Oil Settlement. The settlement was the result of a coordinated investigation into allegations of price



The gym at the high school in Baker City is much brighter now that energy-efficient lighting has been installed.



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manipulation and antitrust violations in the Western power market during the energy crisis of 2000-01 by the attorneys general of Oregon, California and Washington.

The Oregon Department of Energy identifies and distributes the funds to Oregon school facilities with high-energy use. Baker High School and Brooklyn Elementary School qualified. The Williams Oil Settlement funds were used to pay a portion of the \$20,000 gym lighting project cost at the high school and will pay for a portion of the \$60,000 classroom lighting project at the high school as well as the Brooklyn school project.

Other funding

In addition to the Williams Settlement Funds, the Baker School District lighting projects also qualify for the Oregon Department of Energy's Business Energy Tax Credit Program. The School District, unable to use a 35 percent tax credit for the gym lighting project, partnered with a private business that served as the school's "pass-through" partner. The business accepted the School District's tax credit eligibility and paid the School District a lump sum of \$6,053 when the project was complete (30.5 percent of eligible costs). The business will take the 35 percent tax credit of \$6,946. The other Baker School District projects will take advantage of the Business Energy Tax Credit Pass-through Program also.

The School District's utility, Oregon Trail Electric Cooperative, is providing an incentive to the School District, too. They will help fund the high school classroom lighting project as well as the Brooklyn Elementary School lighting project.

Thanks to the Williams Oil Settlement, the Oregon Department of Energy, the Oregon Trail Electric Cooperative, and a business partner, Baker High School and Brooklyn Elementary School will have brighter, more uniform light and will save electricity and money.

Lighting Considerations for School Gyms

There are a number of issues that should be kept in mind when considering fluorescent lighting for school gyms (or other high ceiling spaces) lighting, according to Greg Churchill, Energy Analyst with the Oregon Department of Energy's School Team. "School districts should consider these factors if choosing T5 fluorescent lighting rather than the traditional metal halide or mercury vapor lighting."

Pros

- ✓ T5s can reach full light output quickly when they are first turned on and after the light is turned off then on again. Metal halide (MH) or mercury vapor (MV) lights do not.
- ✓ The light output from the T5 degrades slightly over time while the MH light levels drop significantly.
- ✓ Staff can wait for several T5s to fail before replacing lamps whereas when one MH fixture fails it needs to be replaced immediately.
- ✓ T5s provide better color output (referred to as color rendition) than MH or MV lights. Poor color rendition can make people and objects look dull.
- ✓ Cracked T5s do not emit UV radiation that can burn the eyes of students and staff. Broken MH lights can present a health hazard.
- ✓ T5s can be turned on and off quickly without effecting light levels while MHs can not. T5s can even be controlled using occupancy sensors.

Cons

- ✓ Staff must change several T5s compared to one MH. This may take more time as well as require a high lift.
- ✓ T5s are expensive compared to T8s and MHs. Prices are expected to drop over time as they did with T8s after they were introduced.

Fluorescent Lamps

T12 - 1.5 inches in diameter

T8 - 1 inch in diameter

T5 - 5/8 inch in diameter

New technology allows fluorescents with smaller diameter to provide brighter light using less electricity.