

Case Study: Eagle Rock High Performance School

Small district gets the most for taxpayers' dollars

With Oregon's struggling economy, school districts throughout the state are finding that bond issues are a tough sell with voters. For each school bond issue that passed in the past seven years in Oregon, an equal number have failed.*

One small Oregon community beat the odds and was successful in convincing voters to pass a school bond issue in November 2000. Since then, school administrators have been working to make the most of the taxpayer's money. They are approaching this challenge from two directions:

1. They are building energy-efficient schools. One in particular is built to standards far above average and is getting national recognition, and
2. They are stretching their designated building funds by partnering with a community business. The school district can transfer the project's energy tax credit eligibility to the business and in exchange receives a cash payment to apply to the building project.



Eagle Point, an Oregon town of 5,000, is receiving national recognition for its new elementary school that is designed for energy and resource efficiency and sustainability.



The foyer at Eagle Rock Elementary allows an abundance of natural light into the hallways.

Eagle Point

Located in Southern Oregon 10 miles from Medford, Eagle Point has just 5,000 residents. Once surrounded by thriving lumber mills, the town has seen some lean years as the timber industry has declined. The median average household income in Eagle Point is \$37,557, below the state average of \$42,704.**

* Oregon School Boards Association unofficial election results

** US Bureau of the Census, 2000 Census



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“This small community has always stepped up for its schools, police, fire and water department,” said Dave McFall, manager for Eagle Point’s school construction projects, a lifelong community resident and former mayor. “We have always been pretty proactive.”

Residents passed a \$33.9 million bond issue for its school district to update several of its existing schools, and to build a new middle school and elementary school. It is the 394-student grade school, Eagle Rock Elementary (kindergarten through 5th grade), that is receiving attention in Oregon and on a national level.

Eagle Rock Elementary is a 38,850 square-foot \$7 million school that opened in November 2003. The school is comprised of numerous energy-efficiency features that will save taxpayers money throughout its life. “Everyone understands the long-term benefits for the community,” said McFall. “The more energy efficient the school, the less taxpayer money will be going out the window.”



Dave McFall, manager for Eagle Point School District’s construction projects inspects one of the underground water storage tanks that pre-cools water.

National award

Eagle Rock Elementary is on target to earn a national award from the U.S. Green Building Council for its design and energy efficiency measures. Few schools or other buildings can meet the criteria the Council established for its Leadership in Energy and Environmental Design (LEED®) program. Based on well-founded scientific standards, LEED emphasizes state-of-the-art strategies for water savings, energy efficiency, materials selection and indoor environmental quality.

Other Oregon school districts are looking closely at how Eagle Point has been able to build a school facility above code and school building standards, especially since it hadn’t built any new schools for more than 25 years. One resource for the small district was the Oregon Department of Energy, a state agency, in Salem.

The school district had just passed their bond issue in November 2002, when Greg Churchill, energy analyst with the Oregon Department of Energy, called on Greg Lecuyer, business manager for the district. “Greg explained how we could build an energy efficient school and he provided us with information on the benefits, costs and some of the incentives available,” said Lecuyer. “It made good sense.”

Architect’s design

The school district had already contracted with Portland architecture firm, Dull Olson Weekes Architects PC (DOWA), that specializes in educational architecture and has completed over 540 projects in 51 school districts throughout the Pacific Northwest. At the time, however, DOWA had not yet completed an energy efficient school that met the national standards of the U.S. Green Building Council’s LEED program when the Eagle Rock opportunity came. Architect John Weekes of DOWA gathered resources and information necessary on LEED requirements to begin the design process. Since then, Weekes and DOWA have worked on two other LEED school projects in Oregon.

Dave McFall and several other residents were on the community design committee that worked with Weekes and the school district in this important design stage. "The school district was very thoughtful about the process," Weekes said.

With LEED guidelines, Weekes designed the Eagle Rock Elementary to save an estimated 38 percent more energy than a building constructed to Oregon building codes.

Weekes said it is difficult to select any one feature or energy efficiency measure that stands above the others, since they all are designed to work together. He noted that considerable time was spent fitting the school to the site so they could use natural daylight effectively and save a majority of the mature trees on site.



The gymnasium at Eagle Rock has ample light from the high skylights. A stage and community/music room are accessible from one end of the room.

Some of the measures incorporated into the design included the following:

- The school uses daylighting extensively. Daylighting is the controlled admission of natural light into a space through windows, skylights, or roof monitors. Eagle Rock uses as much natural light as possible (especially in classrooms) while avoiding excessive heat loss, heat gain from the sunlight, and glare. Sunshades are installed on the outside of the South side of the building to prevent excessive heat gain.

"Natural daylight is the highest quality light source for visual tasks, as it enhances the color and appearance of objects," said Churchill. "Recent studies on classroom lighting indicate that daylighting can enhance student performances." (The study is available on the Department of Energy Web site at www.energy.state.or.us/school/Daylight.pdf) The gym has skylights that allow ample light in to eliminate the need for any artificial lighting on many days.

- The school equipped classrooms with fluorescent lighting fixtures with T-5 lamps and energy efficient ballasts. All will have occupancy sensors that are estimated to reduce lighting usage by 30 percent.

- Classroom windows are operable allowing for natural ventilation.



The bioswale behind the school effectively filters rain runoff before it enters the city storm system.

- Two central, natural gas-fired boilers heat the hot water for the school. They have thermal efficiencies of 88 percent compared to the code standard efficiency of 80 percent.

- The contractor for the school, Batzer Inc. of Medford, recycled nearly all of the waste generated during construction.

- The school has low or no-VOC (Volatile Organic Compounds) paints, varnishes, adhesives etc. that can be harmful to health.

- The plantings are drought resistant species. There is a drip irrigation system, but that will be used sparingly once plants are established.
- Water is stored and pre-cooled in three underground tanks before it goes to the chiller so the chiller doesn't have to operate as long or as frequently.
- A bioswale and pond system in the hillside behind the school holds and filters rain run-off before it enters the city storm system. The area is planted with native vegetation and does not require irrigation or maintenance. The ponds resemble dry lake beds that fill with rain water that is then gradually released to the storm system.
- A bicycle parking area is used by an estimated 95 percent of children who walk or ride bikes to school.
- The school "envelope" has excellent insulation. Part of the building is actually built into the hillside. McFall noted that when the HVAC system was shut down overnight one winter day to conduct some testing, the temperature inside the building the next morning had only dropped 4 degrees.
- Wall insulation is R-19 (code is R-13); roof insulation is R-38 (code is R-30); windows are U-0.29 (code is U-0.62).
- Low-flow plumbing fixtures; timed water faucets that turn off automatically.
- Multi-purpose areas. The music room can be used as a community room; the gym and cafeteria have a stage in between that can be accessed from either side; three special education rooms can be opened to make one big room when required.
- The gym, cafeteria, and community room have a separate entrance so they can be opened for evening and weekend events without accessing other parts of the building.
- Students can view relaxing green hillsides out the large windows of the rural school and many

of the common areas have a postcard view of 9,495-foot Mt. McLoughlin, part of Oregon's Cascade mountain range.

- The landscape architect designed a grass-covered amphitheater into the hillside beside the playground.

Commissioning

To qualify for LEED, the school must be commissioned. The commissioning process provides documented confirmation that building systems function to satisfy the school's operational needs. This means that the heating,



The library at Eagle Rock Elementary is built into the hillside, but still has skylights to let in natural light.

ventilation, and air conditioning (HVAC) systems and other building controls are working as expected.

Stretching project funds

In addition to using school project funds to construct a building that will save on energy, Eagle Point School District is stretching its project funds another way. The school district is taking advantage of the Oregon Department of Energy's Business Energy Tax Credit by partnering with a local business.

"The school can't use a tax credit directly, but it can use the Pass-through Option to transfer their 35 percent project tax credit eligibility to a business partner who can," said Churchill. "In exchange, the school will receive a cash payment equal to 25.5 percent of the eligible project costs."

The eligible costs for the project are \$164,200. The business will pay the school \$41,871 and, in return, will accept the \$57,470 tax credit. The Department of Energy sets the pass-through rate (25.5 percent) on an annual basis to take into account several factors including the value of money over time. (The business files the 35 percent tax credit over a five-year period but pays the cash payment to the school in full upon project completion.)

The business sees the partnership as a good opportunity for helping the community. It provides the school district with additional cash for the project up-front and the business can recoup their investment with the tax credit.

The Legislature passed the Pass-through Option in 2001. Since then, numerous school districts, non-profit organizations and public agencies have transferred their tax credit eligibility to business partners. The Department of Energy processed nearly 300 pass-through projects completed through August 2004. While schools and non-profits are responsible for finding business pass-through partners, the Department of Energy is happy to assist. To date, all pass-through projects have found business partners.

For more information on the Business Energy Tax Credit Pass-through Option see the Department of Energy Web site (www.energy.state.or.us) or call 1-800-221-8035 (toll-free) or (503) 378-4040 (Salem).

Eagle Rock Elementary School

School District:	Eagle Point School District 9
County:	Jackson County
Cost:	\$7 million
Size:	38,850 square feet
Students:	394
Architect:	John Weekes Dull Olson Weekes Architects PC (DOWA)
Contractor:	Batzer Inc.
Construction Project Manager:	Dave McFall, Eagle Point School District
Commissioning Agent:	Ross Finney, RHT Energy Services
Pass-through Partner:	An Eagle Point business
Certification:	Applied for LEED® Silver

High Performance Schools Program

The Oregon Department of Energy through its High Performance School Program provides Oregon school districts with grant to explore a design that would qualify for a U.S. Green Building Council's LEED® (Leadership in Energy and Environmental Design) Green Building Rating System.

The Oregon Department of Energy's High Performance School Program can help with both technical assistance and the expense of building a high performance school. The Department of Energy has a team of energy analysts who specialize in school energy efficiency. The Department also has special grants of up to \$50,000 per school for new schools that commit to designing a high performance school. In addition, the Business Energy Tax Credit Pass-through Option can cover some of the additional costs.

All High Performance School Program participants use Oregon Department of Energy technical services including:

- Facilitation of information sharing and decision making among the school district construction managers, architects, engineers, and the community
- Review of all schematic design and construction documents
- Verification of energy modeling
- Knowledge of financial resources

Department of Energy staff can assist you and discuss your school district's situation. It is most important, however, that you call Greg Churchill at the Department of Energy at 1-800-221-8035 or (503) 373-7563 in Salem as soon as possible. The High Performance School Program offers technical assistance and financing that must begin **prior** to the design phase to ensure a high performance school. The program's grants and free technical services are available for a limited time, first come-first served.



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