



School Dist.....Days Creek  
Project Type:.....Biomass  
Stimulus Funds: ...\$276,000  
Savings/year .....\$10,718

## Former logging community replaces fossil fuel heat with biomass

Days Creek Charter School (grades 6<sup>th</sup> -12<sup>th</sup>) has some advantages that many Oregon school districts would envy. It is a rural community-supported school with an average class size of 20 students and it boasts a comprehensive curriculum strong enough to be recognized in the 2008 *U.S. News and World Report's* "Search for America's Best High School."

Located 35 miles south of Roseburg, Days Creek is an unincorporated community of 610 residents. Like many Oregon communities where timber was once king, logging has been slowly dying the past few decades. The primary employer for the area today is the nearby Seven Feathers Casino in Canyonville.

The Days Creek Charter School budget is tight, yet the school of 150 students is a definite bright spot for the entire community and actually attracts half of its student population from neighboring school districts.

The 59,898-square-foot Charter School building, like many Oregon school facilities, was constructed in phases. The original school was built in 1900; an addition was constructed in 1959; the gym was rebuilt in the 1990s.

The district received a donated boiler from a neighboring school district in 1990. The exact age of the boiler was unknown. The boiler was not as efficient as school officials would have liked, said Kim Dunn, Days Creek Charter School District business manager, but using the donated boiler was all they could afford at the time. It averaged \$77.40 per day in fuel costs for 210 days/year in 2008-09 school year. Dunn and others were getting more concerned at the growing portion of the budget being spent on fuel.

When school officials heard from Douglas County Commissioner Joe Laurance of the success that school districts \* in former logging communities were having with biomass boilers, they decided to investigate. In March 2009, the Days Creek Charter School District hired McKinstry, an energy consulting firm with an office in Portland, to conduct a feasibility study on a biomass boiler installation.

The idea of replacing a fossil fuel (heating oil) with a renewable resource (wood chips/pellets) supplied by Oregon contractors was very appealing to the Days Creek Charter School District. With local unemployment at 18.3 percent, job creation was important.

The biomass boiler would reduce carbon emissions of the district by an estimated 54.25 tons annually. The

**Biomass boilers typically cost half to a third the cost of fossil fuels to operate on a Btu basis.**

\*Oakridge, Three Rivers, and Enterprise School Districts



**Days Creek Charter School installed a new biomass boiler to replace an inefficient and costly donated oil-fired boiler. The biomass boiler was paid for in part with Recovery Act (stimulus) funds from the Oregon Department of Energy**





**Days Creek Charter School Business Manager Kim Dunn provided documentation for the installation of the school's new biomass boiler paid for in part with Recovery Act (stimulus) funding.**

District could develop a curriculum around the biomass boiler for their science class. Best of all, a biomass boiler would cost \$2,910 per year to operate compared to the oil-fired boiler costing \$16,253. The estimated average net annual savings considering both fuel and operational costs would be \$10,718.

The study noted that with a 2.0 MMBTU/hour biomass boiler, the boiler could supply sufficient heat to the school except during very cold weather. The oil-fire boilers would be kept as back-up for those very infrequent occasions.

The high-efficient biomass boiler would produce virtually no odor or visible smoke. The ash, removed on a regular basis, is non-toxic and can be used as a soil amendment to lawn or fields.

There was just one problem for Days Creek Charter School District. How would they pay for the estimated \$480,000 biomass boiler?

“Borrowing funds was a hard sell,” said Dunn. “We have other needs—like a roof. McKinstry helped us made the decision by explaining the technology.”

About the same time that the feasibility study was produced in 2009, the US Department of Energy awarded some of the federal Recovery Act (stimulus) funds—\$42.1 million—to the Oregon Department of Energy’s State Energy Plan.

The funds could be used for renewable resource projects such as Days Creek biomass boiler.

With the help of McKinstry, Days Creek Charter School completed an application for the stimulus funding. In a competitive solicitation, the Oregon Department of Energy announced that Days Creek Charter School would receive a \$276,000 award to help install its biomass boiler. The total project cost was \$480,000. Days Creek applied for a Business Energy Tax Credit to help defray more of its costs. They also borrowed funds from a Qualified School Construction Bond which carries a near 0 percent interest rate for 15 years.

McKinstry, the only respondent to the RFP, won the school district’s bid proposal and opted with an Oregon manufacturer, SolaGen, Inc. of St. Helens, to build the biomass boiler. SolaGen employs 20 and sources US manufactured components and raw materials to manufacture biomass boilers for the commercial and industrial sectors. It is one of the leading US manufacturers of biomass boilers.

“All components of an energy project funded with stimulus money must be compliant with the Buy America Act,” said Oregon Department of Energy Project Manager Shanda Shribbs. “It’s great this boiler was made locally as it directly helps Oregon’s economy and saves on transportation costs, too.”

The school district already had a steel building in place at the back of the school with room for the new boiler. A silo for storing fuel pellets was located adjacent to the building and is automated to provide fuel according to the building’s demand for heat.

Days Creek School District had hoped to get its wood pellets from a local mill.

“They couldn’t produce them in the end,” said Dunn. “It was a disappointment.”

Days Creek turned to Bear Mountain Forest Products, located in Brownsville between Corvallis and Eugene, for pellets. Bear Mountain, founded in 1988 by Bob Sourek in Hood River, is a success story itself. The firm relocated from Hood River to Cascade Locks and then acquired another fuel firm in Brownsville in 2001 for its second manufacturing location. Bear Mountain employees more than 70 workers today. For Days

Creek it was nice to have a convenient supply source just up the freeway in Brownsville since they couldn't get a local supplier.

"The installation of the biomass boiler went very smoothly," said Dunn. "Installation and commissioning of the boiler was completed in September 2011, just in time for the new school year."

The school district held a community dedication of its new biomass boiler on November 3. ODOE Director Bob Repine along with ODOE Recovery Act Manager Paul Egbert attended the event.

Teachers at Days Creek Charter School are now working to integrate biomass fuel topics into existing classes. A proposal to develop curriculum in grades 4 through 12 in which students connect with McKinstry experts online has already earned national recognition from the Jhumki Basu Foundation as one of nine finalists out of 265 nationwide submissions.

The Days Creek Charter School faculty was also invited to join a select group of 34 educational entities from across the country to engage in curriculum development in



**Days Creek Charter School dedicated their new biomass boiler in a community celebration on November 3, 2011. From left: Oregon Department of Energy Director Bob Repine, Douglas County Commissioner Joe Laurance, McKinstry Project Manager Cam Hamilton and Days Creek Charter School Superintendent Laurie Newton.**

partnership with the Carnegie Corporation of New York and other private benefactors.

"We're excited," said Dunn. "It's hard to imagine getting excited about a boiler, but it is very exciting."

## Why Biomass?

Wood was the first energy source used and man's main fuel source until the Industrial Revolution.

Today, as Americans look towards renewable energy resources and less reliance on fossil fuels, wood is again getting attention, especially in timber states such as Oregon.

What are the advantages of biomass boilers that utilize forest residue and small diameter trees that have no other use? Oregon Department of Energy Senior Policy Analyst Matt Krumenauer lists these advantages:

1. Biomass boilers use a renewable resource that Oregon has statewide.
2. Biomass boilers typically cost half to a third the cost of fossil fuels to operate on a Btu basis.
3. Biomass energy can create and retain local jobs in rural economies that have high unemployment rates.
4. Wildfire is a major concern in timber-covered Oregon. Thinning forests reduces wildfire hazards. Biomass boilers located in rural areas near the forests can use that forest residue which would otherwise be fuel for a wildfire, be part of a controlled burn, or be harvested and shipped a distance using fossil fuel in the process.
5. Biomass boilers do not emit any more greenhouse gas emissions than slash burning or even natural decay of trees. They certainly emit far less emissions than a wildfire burn would.
6. Biomass ash byproduct can be used as a soil amendment.
7. Biomass boilers are not difficult to operate and maintain, considered very safe, and last for decades.

The Oregon Department of Energy (ODOE) awarded this energy project with American Recovery and Reinvestment Act (stimulus) funds through the State Energy Program. These funds are designated for energy efficiency and renewable energy projects. The U.S. Department of Energy administers the funds, approves the projects and reviews the state's progress. The Oregon Department of Energy received \$42.1 million in SEP funding.

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