



## PENNSYLVANIA FUELS FOR SCHOOLS AND BEYOND

Promoting renewable energy to Pennsylvania schools and businesses

### Case Study:

Clearfield Middle School  
Biomass Heating System  
Clearfield, Clearfield County



### System Size/Type:

8.5 MM BTU 15 psig steam  
Wood fired boiler system

### Fuel Type Past:

#2 fuel oil / natural gas

**FUEL COST SAVINGS: > \$89,000.00/YEAR (NATURAL GAS)  
PROJECTED #2 FUEL OIL SAVINGS: > \$138,000.00**

### Fuel Type Current:

Various clean wood chips

### Economic Benefit:

The Clearfield Middle School Biomass Heating System replaced one of two dual fuel boilers which were capable of burning either #2 fuel oil or natural gas. These dual fuel boilers in years past have allowed the school district to switch between # 2 fuel oil and natural gas to help manage their heating costs. With #2 fuel oil at record high prices (approx. cost in Clearfield area was \$2.50/gallon for the 2007-2008 season), the school district for the 2007-2008 school year accepted a contract for natural gas at \$12.53/DTH.

This heating season the Clearfield Middle School purchased a total of 640 tons of locally available wood chips. At a delivered cost of \$35 dollars/ton. Their total wood chip cost for this heating season totaled \$22,400. With an estimated heating value of 7,000 Btu's/lb for their wood chips they consumed approximately 8,960 MM Btu during this year's heating season. Compared to operating on natural gas at \$12.53/DTH, the district saved a total of \$89,869 by converting over to biomass as a heating fuel. If the Clearfield Middle School would have continued to burn #2 fuel oil this year at an approximate cost of \$2.50/ gal., their potential savings could have exceeded \$138,000 for the 2007-2008 school year.

### Environmental Benefit:

The Clearfield Middle School, by utilizing wood chips as an energy source, will be displacing approximately 8,960 DTH of natural gas with a carbon neutral fuel with estimates of reducing up to 525-tons of CO<sub>2</sub> annually. Large CO<sub>2</sub> reductions are possible because wood is considered to be a carbon neutral fuel.

### Educational Benefit:

The Clearfield Middle School uses their biomass heating system as an educational tool. Math and science students record operating data from the system, providing comparison of biomass with other forms of energy. They also offer tours of the facility to other school districts and organizations considering biomass as an alternative energy source.

