



SHOWCASE PROJECT: FORT ATKINSON SCHOOL DISTRICT: LUTHER ELEMENTARY SCHOOL

SOLUTION OVERVIEW

Beginning in June 2012, the Fort Atkinson School District began exploring the feasibility of a geothermal system at Luther Elementary School, which will replace the existing gas fired boiler with a ground source (geothermal) heat pump system. The project is expected to reduce energy consumption by 40%, equivalent to 3.5 Million kBtu and save 27% in energy costs or \$22,000 when completed in 2018.

Luther Elementary School, which also houses school administration, is a partial, two story building dating back to 1955. While the current heating system consists of hot water feeding re-heat coils in the air ducts, the new system will provide both heating and air conditioning throughout the building without the need for supplemental gas fired heat. In addition, almost every room will feature its own heat pump and indoor air quality will be enhanced with dedicated outside air units that have heat recovery wheels.

SECTOR TYPE

Education

LOCATION

Fort Atkinson, Wisconsin

PROJECT SIZE

84,400 square feet

FINANCIAL OVERVIEW

Project Cost \$3 Million

SOLUTIONS

The geothermal heat pump system will be fed by a borefield located under a soccer field behind the building. The borefield will have approximately 115 bores drilled 306 feet deep and will circulate a glycol-water mixture to transfer heat either from or to the surrounding ground.

The school district is also considering augmenting the geothermal system with a solar roof-mounted hot water system, which will provide a supplemental thermal heat source in the bore field to accommodate peak system performance over time.

Project costs from the installation of the geothermal system are expected to total \$2.5 million while electrical upgrades are estimated at \$500,000.

The District has installed successful geothermal systems at four of their other buildings in 2008 and 2009. The Luther Elementary geothermal project is included in the District's long term maintenance plan, which is updated annually.


OTHER BENEFITS

Luther Elementary is currently an ENERGY STAR rated school, having earned certification in 2012. The District expects an increase in the school's rating after the completion of the project.

Annual Energy Use

(Source EUI)

Baseline(2012)
 104 kBtu/sq. ft.

Expected(2019)
 63 kBtu/sq. ft.


Actual()
 Coming soon

Energy Savings

40%

Annual Energy Cost

Baseline(2012)
 \$83,000

Expected(2019)
 \$61,000

Actual()
 Coming soon

Cost Savings

\$22,000



Luther entrance