



Washington Elementary School

Belvidere, Illinois



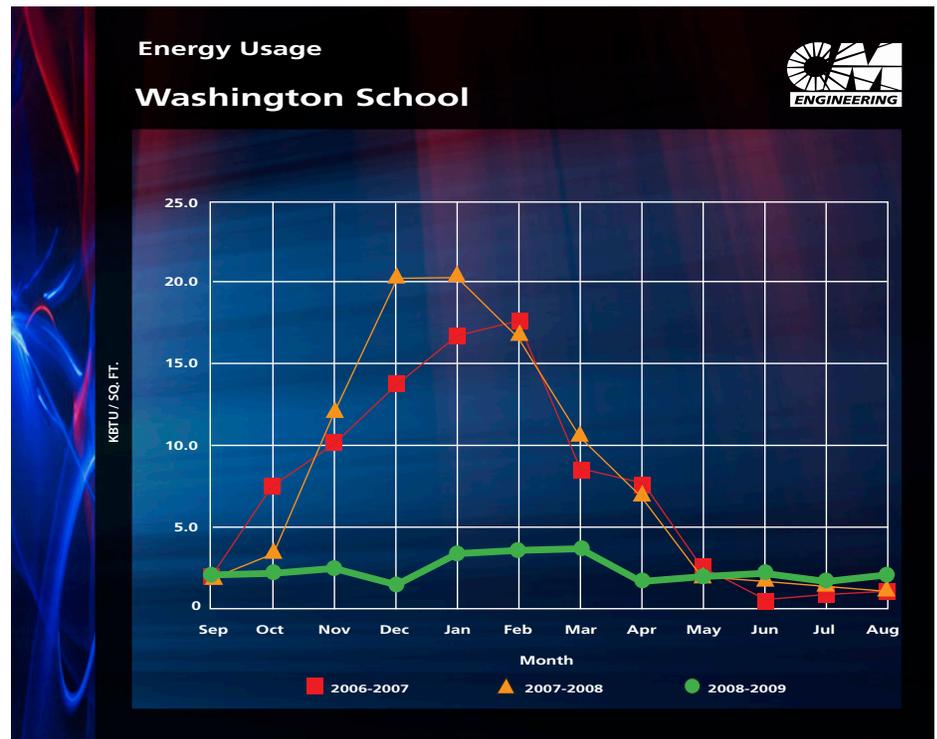
Washington Elementary School suffered high spikes of energy consumption during the winter months.

During the summer break of 2008, we installed our One-pipe geothermal exchange heating and cooling system. Digital controls were added to all spaces and classroom lighting was retrofitted. Energy recovery ventilation was added to the building, ensuring a healthier and more comfortable indoor environment.

These retrofits resulted in immediate energy savings as demonstrated by the chart below and \$64,000 of *COST SAVINGS* annually.

Retrofit of existing school

- Air conditioning added to every room
- Ground source geothermal exchange system
- One-pipe design
- 92,000 square feet
- 60 Classrooms
- Approximately 836 students ('08-'09)
- Energy recovery ventilation
- Digital temperature controls in every space
- Lighting retrofit in classrooms
- VRF (Variable Refrigerant Flow) in office area
- Retrofit cost \$26.16 / sq. ft.
- Energy use *BEFORE* retrofit: 86 KBTU / sq. ft. / yr.
- Energy use *AFTER* retrofit: 24 KBTU / sq. ft. / yr.
- Annual cost savings: \$64,000
- 2012 Energy Star rating: 97



The green tracing above shows measured energy consumption after installation of One-Pipe Geothermal exchange heating and cooling system. Red and orange show consumption for two years prior to retrofit. (Data source: Belvidere, Illinois Community Unit School District 100)

For our work on this project, CM Engineering was honored with a 2012 Technology Award for Outstanding Achievement in the Application of Heating, Refrigeration and Air Conditioning Technology in Existing Institutional Buildings. The award was one of only two given in this category and was presented by the St. Louis Chapter of the American Society of Heating, Refrigeration and Air Conditioning Engineers.