



FACT SHEET

Evanston Township High School Building Cooling, Heating, and Power Plant

Site Description

Evanston Township High School (ETHS) is located in the City of Evanston, Illinois (home of Northwestern University). The school is a 1.3 million sq. ft. complex that includes 13 gymnasiums, 2 swimming pools, three auditoriums, 4 cafeterias, and 330 classrooms.

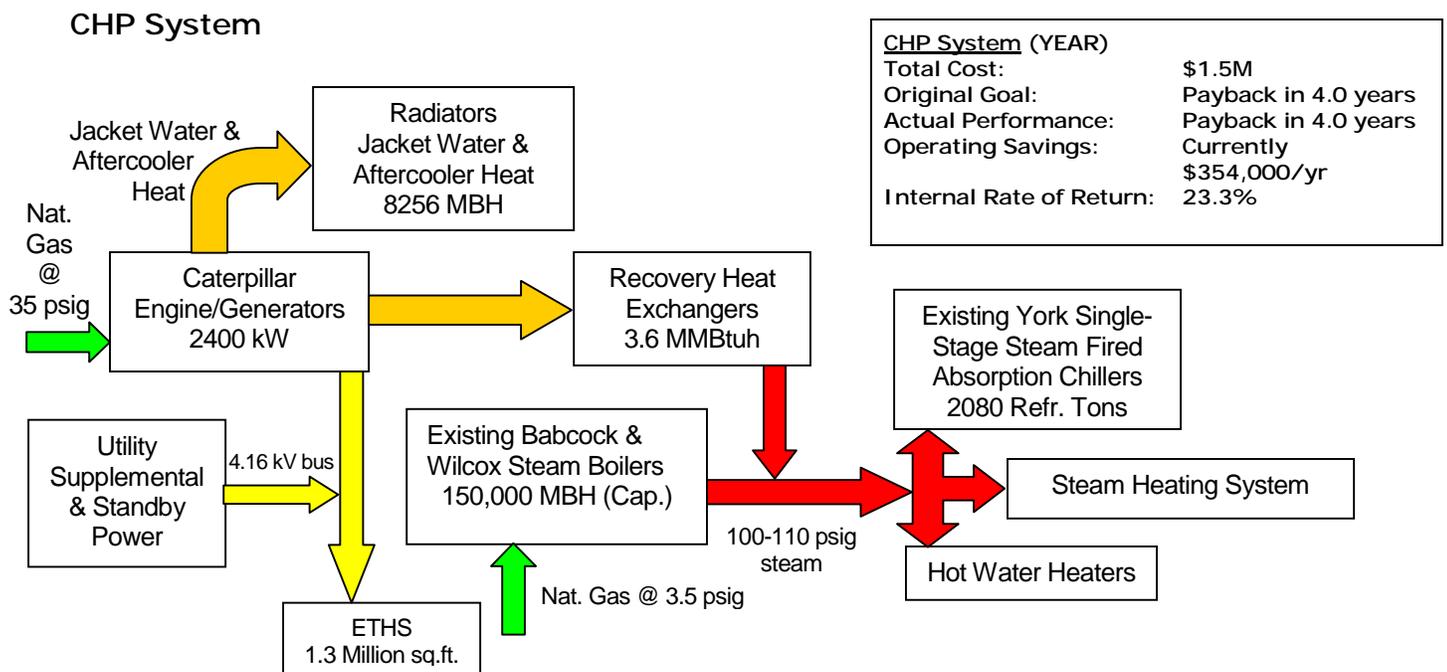
The school is air conditioned, and has 2080 Tons of low-pressure steam-fired absorption cooling. A central boiler plant provides steam for heating, hot water, and absorption cooling.

In 1990-1991, in a move to cut energy costs, the school began looking at installing a CHP system. By using engines with exhaust heat recovery to generate steam, the system could provide cooling, heating, and power.

In 1992 the school engaged LaSalle Associates of Glen Ellyn, Illinois, to design and construct a 3-engine 2400kW CHP system for the high school. Exhaust heat recovery was installed on the three engines to make 110-100 psig steam. The steam produced is used year round: for hot water heating throughout the year, for heating in the winter and air conditioning in the summer. The system began operation in October of 1992 and is still in operation today.

Installed at a cost of \$1.5 million, the system has paid for itself in approximately 4 years.

Cooling, Heating, and Power for Buildings (CHP) Configuration



Energy/Financial Statistics

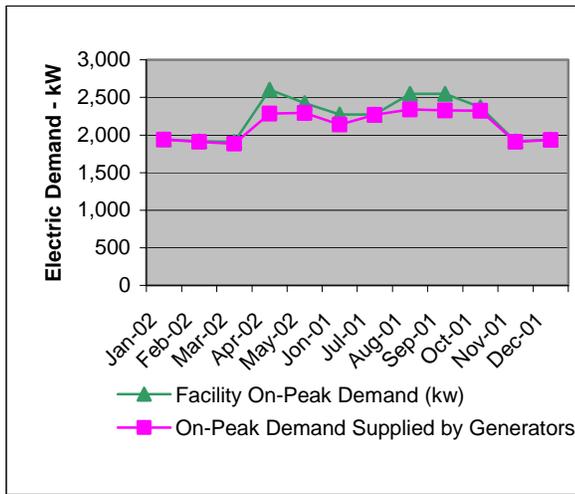


Fig. 1: Monthly Electric Demand

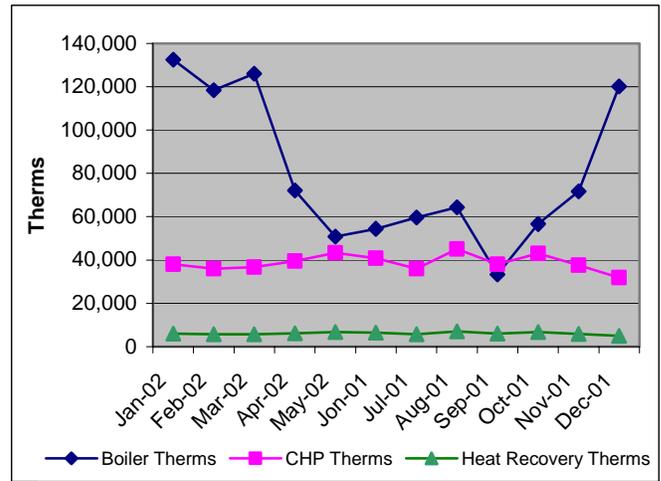


Fig. 2: Monthly Thermal Demand

Annual Utility and O&M Costs		
Item	Baseline System (Without CHP)	CHP System
Utility Electricity	\$800,000	\$261,000
Natural Gas		
Boilers	\$397,000	\$369,000
Engines	n/a	\$166,000
Total	\$397,000	\$535,000
Incremental Maintenance (1.2¢/kwh)	\$0	\$47,000
Total	\$1,197,000	\$843,000
Savings		\$354,000
Savings as % of Total Utilities:		30%

Table 1: Operating Economics Comparison Between the Baseline System and CHP System

Additional Considerations

Many high school complexes have characteristics similar to Evanston Township High School and may have:

- Central boiler plants located in separate buildings
- Large tracts of land with space for a generator building.
- Central absorption cooling systems.
- Or be able to negotiate time-of-day rates with the local electric utility similar to those for ETHS.

Energy or engineering companies specializing in CHP or the MAC may be able to provide a preliminary feasibility study at little or no charge.

For further information contact:



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