

Case Study: Fort Polk's Conversion to GSHPs

At Fort Polk, Louisiana, the space conditioning systems of 4,000 military family housing units, occupying 5.6 million square feet were converted from air-source heat pumps (or, in some cases, central air / gas furnace combinations) to GSHPs with the help of an energy savings performance contract (ESPC).

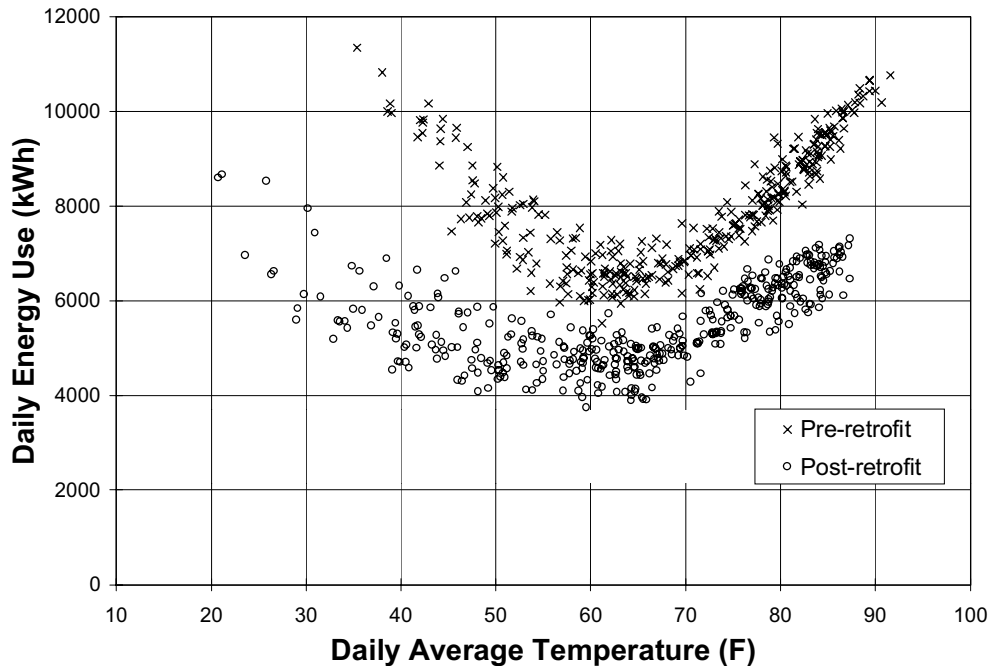
A total of 6,600 tons of cooling was installed to supply the 4,000 units. Approximately 75% of the new GSHPs included hot gas desuperheaters to supplement domestic hot water heating. As is common with major retrofit projects, other efficiency measures, such as compact fluorescent lamps (CFLs), low-flow shower heads, and attic insulation, were installed along with the GSHPs. Including all these measures, the total cost of the project came to approximately \$19 million.

An independent evaluation revealed that the project resulted in a 25.6 million kWh, or 33%, savings in electricity for a typical meteorological year. Peak electrical demand was also reduced, by over 6.5 MW, or 43% of the peak demand. Natural gas savings average 260,000 therms per year. In addition, the ESPC allowed the Army to effectively cap its future maintenance costs for heating, ventilation, and air conditioning in family housing at about 77% of the pre-retrofit levels.

The total value of all energy and maintenance savings is approximately \$3 million per year, part of which is paid to the energy service company that financed and installed the retrofit equipment.

Definition

A desuperheater is a type of heat exchange coil at the outlet of an air-conditioning compressor that permits the transfer of heat to service hot water. Desuperheaters provide substantial water heating savings when air conditioning is occurring, since heat normally transferred to the ground can be utilized for water heating.



Each data point represents the electric usage of 200 homes (one electrical feeder) on a given day.