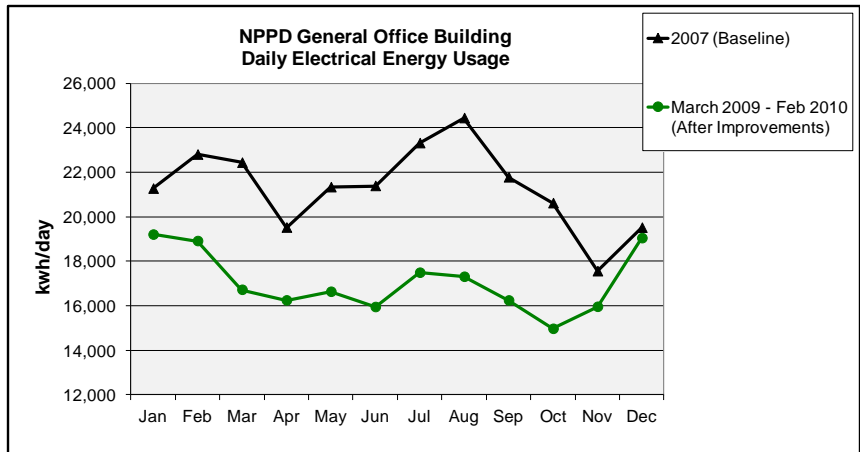


Case Study: HVAC System Efficiency Improvements

Nebraska Public Power District General Office Building

Project Overview

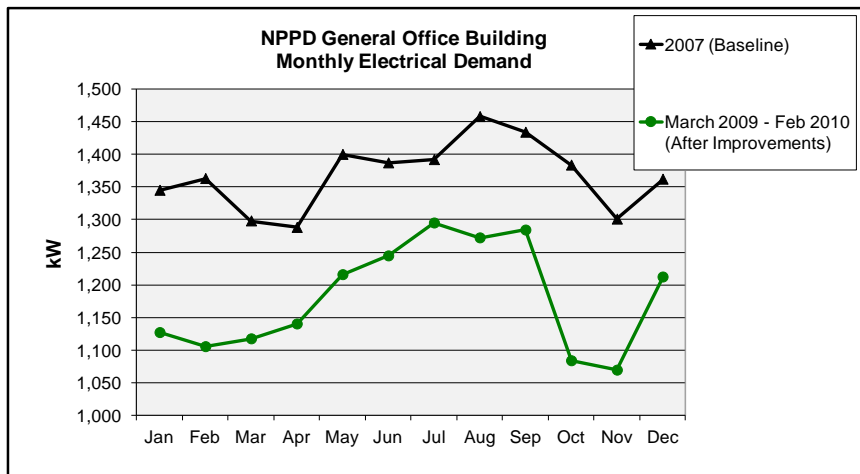
The Nebraska Public Power District recognized a two part need in their 204,000 square foot office building located in Columbus. Part 1 – Chiller Replacement: The three chillers that supplied air-conditioning for the building were in need of repair and beyond their useful lives, so the decision was made to replace them with one central air-cooled chilled water plant. Midwest Mechanical was awarded the bid for the chiller work. Part 2 – Air Distribution System Optimization: The main air-handling systems and variable air volume terminal boxes were in need of optimization. The services of the University of Nebraska’s Energy Systems Laboratory were utilized to complete this work.



Summary of Building Energy Performance

The charts on the right compare “before and after” energy consumption. The optimization began in August of 2008, and was completed in February 2009.

The table below shows estimated energy savings compared to the actual savings realized during the first year of operation following implementation of both Parts 1 and 2 of the efficiency improvements.



	Estimated Savings	Actual Savings	Percent of Estimated Savings Realized
Annual Electricity Consumption	1,317,000 kWh	1,517,000 kWh	115%
Average Monthly Electric Demand	250 kW	187 kW	75%

Project Energy Savings: 20% of total building energy consumption

Project Demand Savings: 14% of total building demand

Total Dollar Savings (1st year): \$76,000

The air distribution system optimization work was completed at a cost \$146,000. Annual savings due to optimization is estimated at \$38,000, yielding a simple payback of 3.8 years.