



KANSAS CITY, KANSAS PUBLIC SCHOOL DISTRICT 500 CASE STUDY

BPU helps bring efficient new heating and cooling systems to schools in Kansas City, Kansas.

In April 2001, taxpayers in Wyandotte County approved a \$120 million bond program to upgrade and install new heating and cooling systems, upgrade building envelopes and bring technology into the School District 500 Public Schools. Kansas City Board of Public Utilities (BPU) worked with the school district to upgrade HVAC systems in a total of 58 buildings – many of which did not previously have air conditioning – over the course of several years. As a result of exceptional teamwork, good planning and dedication, the program went according to schedule, with each school having air conditioning on the first day of classes.

SITUATION

Shortly after the bond approval, BPU joined the project team consisting of several architects, engineers, construction managers, district administrators and shop personnel to develop concepts that would provide new heating systems and introduce HVAC air conditioning in Kansas City, Kansas School District 500's elementary, middle and high schools, libraries and administrative buildings. The single-story buildings would receive rooftop units (RTUs), while the larger buildings would have central plants featuring two-pipe systems installed. The work was split up into five phases, beginning in 2001 and lasting through 2007.

ACTION

In addition to installing the new RTUs and building central plants, the school district made several improvements to enhance the energy efficiency of its facilities. Double-pane windows were installed. Exterior Installation Finish Systems (EIFS) on the outside of buildings provided for reduced heating and cooling costs for the district. And dedicated circuits and ports for computer systems in classrooms were installed to handle high-energy loads more effectively.

Perhaps the biggest single enhancement occurred when the school district introduced a centralized Energy Management System (EMS). Now, facilities personnel can monitor and adjust zone-specific temperatures, view trends, manage electric loads, and analyze and troubleshoot problem areas in more than 50 buildings throughout the school district – all from a centralized computer display. When equipment (such as a chiller or RTU) has an issue, it automatically triggers an alarm through the EMS. The system even enables personnel to control humidity levels. Reducing the level of extreme heat and humidity has helped reduce wear on building materials such as floor tiles and interior paint, saving the district even more money.



Kansas City, Kansas Public Schools
625 Minnesota Ave.
Kansas City, KS 66101

Installing an HVAC system at Wyandotte High School (located at 25th and Minnesota Ave.) was a unique challenge. Built in 1936, the historic building is one of the crown jewels of the entire metropolitan area. The school district was determined to preserve Wyandotte's integrity and aesthetics through the upgrade. BPU helped deliver a high-tech, energy-efficient heating and cooling system to a building that previously had no air conditioning – all without compromising any of its charm or historic value. The new windows feature a modern metal frame system and thermal glass, yet maintain the historical look of the originals. And when the cooling tower was built, school district engineers created a brick surrounding that matches the appearance of the adjacent building.

As with all of the upgrades, the majority of work at Wyandotte High School was performed over the summer break. At its peak, approximately 3,000 people were working on energy improvements in the district at once. BPU installed new service drops at many of the schools, providing additional electric capacity to handle the increased heating and cooling loads. These efforts were always rewarded in August when students, teachers and administrators came back to air-conditioned classes. During the school year, workers would continue to fine-tune each system by performing HVAC balancing tests and putting on the finishing touches.

RESULTS

By 2007, a total of 85 electrical improvements had been made to buildings in the Kansas City, Kansas Public School District 500 system, with more than 3.5 million square feet of building space upgraded with air conditioning. By performing the bulk of the work over the summer, the school district was able to complete each phase without causing any disruptions to classes. Despite the highly compressed timelines, the district always successfully met its goal of having air conditioning installed by the time students returned for class.

"This project was an enormous undertaking," notes Cindy Lane, the district's Assistant Superintendent of Public Affairs. "BPU was a key part of the design and implementation process. I'm very pleased at how well it all came together and the amount of money the school district will save through more efficient energy consumption."

BPU anticipates the school district will save \$3 million over six to seven years, thanks to reduced operations costs. The district has already received \$2.6 million in rebates over six years of this program.

"These upgrades will continue to pay dividends for the Kansas City, Kansas Public Schools for years to come," says George Powell, Director of Economic Development & Retail Services with BPU. "But best of all, we've been able to help the school district provide a better teaching and learning environment for staff and students, which provides an improved work force for the community."

