

# Case study

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## *Hardin County Schools \$5 million in energy savings reallocated to student initiatives Elizabethtown, KY*

*Hardin County has one of the largest school districts in Kentucky, serving 13,948 students in three high schools, five middle schools and thirteen elementary schools. Recent upgrades have resulted in energy savings and eight ENERGY STAR® awards for the school district.*

### Challenge

Hardin County School District's vision, 'Helping Children Succeed', is pursued through high quality education and other unique initiatives. When faced with an aging infrastructure, indoor air quality problems and classroom comfort issues, an initiative was focused on providing students with the optimal learning environment by updating facilities and making them more energy efficient. With limited funds available, the school sought cost-effective solutions.

### Solution

Based on their thirty-five-year relationship with Trane and knowledge of the company's success in delivering HVAC equipment and performance contract solutions, Hardin County Schools selected Trane to help them reduce their total cost of ownership with a Trane Performance Contract. The performance contract included hybrid geothermal systems, new Trane Tracer Summit® systems and existing system upgrades, water source heat pumps and rooftop units, as well as lighting retrofits at fourteen facilities.

### **Geothermal systems, a natural fit for district's needs**

Perfect for Kentucky's moderate climate, hybrid geothermal systems replaced aging HVAC systems at two of the district's schools. The systems rely primarily on the earth's natural thermal energy, a renewable source, to provide a quiet,



*Hardin County Schools sought to provide the optimal learning environment.*

comfortable indoor environment for students and staff. Fluid in the geothermal system's below-ground pipes, or loop, absorbs the earth's heat in winter and carries it to the building. In summer, the process is reversed as excess heat is drawn from the building, expelled to the loop and absorbed by the earth. A conventional system provides additional heating and cooling in extreme conditions.

A geothermal system offers the lowest life cycle cost of any HVAC system. It is efficient and reliable, providing a 20-60 percent energy savings over a conventional system and requiring 50 percent less maintenance. A twenty-year life is standard for the geothermal system.

### Web access to energy data

A Trane Tracer Summit® building automation system (BAS) with Tracer ES™ building automation control software has been implemented district-wide. The BAS system provides Hardin County Schools with web access to live energy data from thousands of data points at multiple facilities, enabling them to make real-time energy management decisions. The software also allows facilities managers to perform daily operations tasks including troubleshooting, scheduling, alarm management and data analysis.

### Results

To date, the project has delivered \$5 million in energy savings, allowing Hardin County Schools to reallocate that savings toward student initiatives. Gary Milby, associate superintendent of finance and support services with Hardin County Schools said of these savings, "The money is in a general fund and with the savings, we're able to look at other areas that can benefit students such as purchasing text books, hiring teachers and now we can look into going wireless so that students can use their personal devices for educational purposes."

### Recognition for energy efficient choices

Trane assisted in gathering and submitting energy consumption data that resulted in New Highland and Parkway Elementary Schools receiving ENERGY STAR awards. In addition, six more schools also received Energy Star awards. To qualify as an ENERGY STAR building, energy performance must be in the top 25 percent of similar existing buildings, thermal comfort and indoor air quality must meet American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standards, and illuminance levels must be in accordance with the Illuminating Engineering Society of



*Through energy savings, Hardin County Schools are able to use money towards text books and facility updates. North Middle School is just one of the many schools seeing these improvements.*

North America (IESNA) guidelines. "I don't need a plaque to know that we're a great school system, but it's a nice reminder to us and the public that we work hard to make wise choices with tax dollars," said Hardin County Schools facilities director, David Wyatt. "We want to provide the right environment for our students."

"Trane worked on a large project at Fort Knox and that put more service people in our backyard," said Wyatt. "In the beginning, our relationship with Trane wasn't perfect, but we were able to build good relationships and the company helped us get more streamlined. Those key relationships and consistency have really helped."

Today, Hardin County considers Trane to be a valuable partner in supporting their vision as they witness incredible opportunities for growth in their district.



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