



Helping Durham Public Schools Fulfill Their Mission and Students Succeed

Challenge

Durham, North Carolina is booming! Recognized as America's eighth leading high-tech metro area and one of the best cities in which to begin a career, the city is growing in population, area, and prestige. This overall growth is paralleled by growth in K-12 school enrollment. The Durham Public Schools district has 53 schools, more than 34,000 students, 2243 teachers, and 4697 employees. It is no surprise, then, that DPS is one of North Carolina's largest school districts.

DPS considers it their privilege and duty to provide all of their students with "an outstanding education." They do so by offering a variety of learning options including traditional schools, magnet programs, year-round calendar schools, and small specialty high schools. DPS also has robust Academically and Intellectually Gifted Student programs, Exceptional Children programs, and even a partnership with Duke Children's Hospital that allows chronically ill and hospitalized children to continue their education. With this wealth of

*Projected
total savings:
Over \$7.9
million*



learning opportunities, it is no wonder DPS has been nationally recognized for school, student, and teacher excellence.

In 2008, the DPS administration began noticing other trends within their district—increasing energy and utility costs, and decreasing reliability of some of the schools' HVAC and mechanical systems. Of particular concern was the inconsistent indoor environment at some schools due to poor temperature control, poor lighting, and noise from mechanical system components.

The district dug deeper to identify the specific drivers of these trends, and they soon realized that aging equipment and systems were the source of the problems. They created a priority list of six schools at which upgrades were needed, and used the State procurement process to solicit proposals from qualified firms. DPS knew they would need a creative solution to fund the improvements because they were part of the nationwide trend of decreasing state and local revenues.

Solution

Brady proposed performance contracting with guaranteed energy savings as a way for DPS to self-fund the needed upgrades at their schools. Brady's proposal demonstrated their expertise and proven track record with performance contracting, and they were awarded the project.

Brady worked with the DPS administration and facility engineers to design the system upgrades and project approach that would best meet the district's needs and goals. The upgrades and energy-saving measures were installed in 2009–2010 and included:

- High-performance, energy-efficient lighting systems
- Direct digital control systems
- Building automation systems
- Solar-powered water heating systems
- Piping modifications in boiler rooms to improve water heating systems
- New A/C units, chillers, and cooling towers
- New vapor barriers and roofs
- Water conservation technologies such as fixture replacements and system upgrades
- Conversion of air handling units from constant volume to variable air volume
- Performance optimization of numerous control systems such as scheduled temperature setback/setup controls, ventilation controls, CO2 demand controlled ventilation systems, economizer controls, optimum start controls, chiller controls, and boiler controls

The project included guaranteed annual energy savings of \$299,609 for a total savings of \$5.9 million over the first 20 years of operation. The project cost was \$5.1 million, which would easily be covered through the guaranteed energy savings.

Results

Thanks to performance contracting, DPS was able to improve the learning environment in their schools despite state and local revenue challenges. More than 764,000 square feet of DPS schools now have consistently comfortable indoor environments for students, teachers, and staff.



The energy cost savings for operational Years 1–6 was \$2,147,119, which was even greater than forecasted. Add to this the savings in O&M time and costs and the total savings was \$2,388,317. Based on this savings rate, the projected total savings for the 20-year contract period is more than \$7.9 million. This means DPS will recoup the project cost of \$5.1 million and will have an additional \$2.8 million to cover financing interest and other district needs.

Looking at these savings from an environmental stewardship point-of-view, the total avoided CO2 emissions in Years 1–6 was the equivalent of the consumption of more than 2 million gallons of gasoline. The reduction in use of water and non-renewable resources further enhances the positive outcomes of the project. Years 1–6 savings for specific resources included:

- Electricity: 23,070,920 kWh
- Water / wastewater: 49,557,000 gallons
- Natural gas: 401,904 therms

Brady—helping schools fulfill their mission and helping students succeed!

