

Rock Hill School District #3 with 27 schools serving over 17,400 students is one of the largest school districts in South Carolina.

With a facilities valuation in excess of \$250 million, Rock Hill has been a leading example of forward thinking facilities management best practices. Savings achieved in this program were substantial and according to their Energy Manager, Joan Smith, these savings will be reallocated to help “keep their cash in the classroom.”



Rock Hill School District #3 Achieves Energy Savings

Leverages US Energy Grant Program

In 2009, the federal government passed the American Recovery and Reinvestment Act of 2009 (ARRA) which included support for ‘green’ energy projects. Driven by the ARRA funding from the Federal Government, the State of South Carolina Energy Office developed an Energy Efficiency Grant program for K-12 school systems. Rock Hill School District 3 (RHSD) saw an opportunity to evaluate their current Heating, Ventilation, Air Conditioning Systems (HVAC) and controls systems to determine how inefficient their systems were working. They knew they had a problem and needed to fix it.

Challenge: Identify, Evaluate and Recommend Areas of Needed Improvement

With 27 schools and 3.1 million square feet of facilities, the district has a wide range of systems and controls from different manufacturers, technologies and vintages. For this project, a representative subset of systems needed to be selected and profiled for potential upgrades.

Project Goals

- Select qualified Energy Consultant for the project
- Develop case for gaining approval for funds from the Energy Grant
- Identify subset of representative district facilities for study
- Prioritize and analyze HVAC control systems in the selected facilities
- Identify deficiencies in DDC controls
- Recommend actions to improve performance



The Response

RHSD partnered with Activelogix, a Charlotte, NC firm specializing in controls, software and services for facilities management. Rock Hill had enjoyed a longstanding relationship with this firm and asked Activelogix to assist them in completing an energy study of their schools to determine if they qualified for grant money. As part of the evaluation process, Activelogix performed energy usage analysis on approximately (6) schools at RHSD. This analysis was done using the schools’ existing Periscope™ Energy Dashboard, which had been installed and updated earlier. Periscope was instrumental in baselining the areas of interest and in identifying and documenting problems in controls and lighting performance. Three (3) buildings were identified as being ideal candidates for re-commissioning of the existing DDC controls. South Pointe High School was chosen among the schools as the primary focus.

About Rock Hill School District

Rock Hill Schools is located in Rock Hill, South Carolina, just 20 miles south of Charlotte, North Carolina. With 27 Schools and approximately 17,400 students, covering a total area over 1,136 acres, or 3.1 million square feet, Rock Hill School District is the largest of four school districts in York County SC.

About South Pointe High School

Located in Rock Hill, South Pointe opened as the district's third high school in the fall of 2005. The school currently serves a diverse population of about 1,400 students.

About RHSD Facilities Department

Rock Hill Schools is the 14th largest district of 85 school districts in South Carolina. We are the largest district in York County and larger than Lancaster, Chester, and Cherokee counties. The value of property and facilities owned by the district is \$256,345,477. The maintenance and operations department cares for 3.1 million square feet of building space and 1216 acres of grounds.

About Activelogix, LLC

Activelogix, LLC is a leading provider of Internet-based enterprise automation solutions for Building Intelligence, including design services, consulting, custom applications and technologies to enable management and optimization of sustainable, energy-efficient, and secure facilities in a vendor-neutral environment. For additional information see www.activelogix.com.



Periscope is featured in over 8 schools in Rock Hill's district, providing real time electricity consumption, demand, and cost values.

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During the study, it was determined that the existing DDC controls were not performing as they should. HVAC equipment was found to be running for extended hours unnecessarily. Their Building Automation engineer described their units as "running wild." Also, temperature control within the school was inadequate with many ongoing complaints of being either too hot or too cold. There were so many identified deficiencies in the existing DDC controls, that it was determined that only a complete re-commissioning of the DDC system would resolve the long list of problems which had existed since the building was first occupied. Put simply by their director of Facilities Services Bryan Vaughan, it was found that "We were not controlling the HVAC system or any lights on the 350,000 square foot campus."

The Results

With the assistance of Activelogix, RHSD was successful in receiving a grant from the SCEO for approximately \$470,000 of which \$180,000 was set aside to correct the environmental and energy consumption issues at South Pointe.

The baseline year of 2009 saw energy consumption levels of 4,817,000 kWh and 155,739 therms. The first year energy reduction realized by RHSD at the high school was over 1.6 million kWh and over 47,000 therms for a cost savings of \$175,000. Therefore, an annual reduction of 33% of the electrical energy previously consumed was realized after the re-commissioning project, as well as a 30% reduction in natural gas therms. Ultimately the Periscope application was configured to display performance dashboards for all buildings, thereby providing relevant insight into the ongoing performance of each. Results were impressive. According to their Energy Manager, Joan Smith, these savings

will be re-allocated to help "keep our cash in the classroom." Not only is the school system realizing a substantial cost and energy savings, school principal Dr. Al Leonard also reports, "The environment has improved significantly. There are many less complaints from students and teachers. The learning environment has been enhanced."



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Upon completion of the re-commissioning project, RHSD staff began energy awareness for its staff and teachers in order to maximize the energy efficiency of all their facilities. The District has hired an Energy Manager, implemented new [Energy Conservation Management Procedures](#), as well as [Shutdown Checklists](#). To keep both students and teachers engaged, contests like the [Energy Apple Contest](#) whereby teachers who have classrooms that are properly and completely shut down can earn Energy Apples for prizes. Students are involved in high schools, middle and elementary schools as part of the district's Energy Plan. Last year, students also participated in an art contest which was kicked off in October as part of the National Energy Awareness month. Due to their continued efforts and the re-commissioning project RHSD was awarded an Energy Star rating of 93 on South Pointe High School in 2012.

