

Project Description

Energy Makeover Demonstration Program for Brevard County Florida Public Schools

Brevard Public Schools (BPS or District) has 84 traditional (elementary, middle and high) schools, two alternative learning centers and one adult education building. Fifty-eight of these facilities are more than 50 years old. BPS has invested in significant HVAC improvements over the last 7 years, but capital resources have not been sufficient to fully evaluate and address building envelope issues that can be significant for aging facilities. Energy efficiency is a consideration with capital investment projects; however, it is not the driver. The goals of this project are to:

- Develop and implement a replicable, scalable prototype approach to building system upgrades that focuses on synergistic outcomes of energy efficiency, cost savings and health and safety benefits.
- Test new technology on a small scale that could be implemented District-wide through a multi-year capital improvement plan.

Brevard County is 70 miles long, with very diverse communities. Prototype schools are proposed in the south (Stone Magnet Middle School 1101 University Boulevard Melbourne, Florida), central (Endeavour Elementary School 905 Pineda Street Cocoa, Florida) and north (James Madison Middle School 3375 Dairy Road Titusville, Florida 32796). Each of these schools is located in and/or serves students who live in disadvantaged communities.

The proposed improvements are based on the Building Energy Asset Score and an independent facility assessment that was done in late 2019 for all BPS facilities as the foundation for long-term capital asset planning. The recommendations of both assessments are consistent and will include improvements such as:

- Upgrading, insulating, sealing roofs
- Sealing the buildings including gap sealing and door upgrades
- Upgrading to high energy efficiency windows with window coverings
- Upgrading interior and exterior lighting to LED with occupancy sensors and controls
- Hot water system upgrades
- Some HVAC system improvements (to be determined as some upgrades have already been done)

The demonstration program will also have opportunities to test new technologies. Examples might include magneto caloric refrigeration (all schools have refrigeration and freezer/coolers for food services) and solar glass.

The cost estimate for the improvements is \$4-5 million per school.

The benefits of these improvements will include:

- Lower electrical consumption and cost
- Improved learning environment – especially relating to lighting
- Reduced opportunity for mold growth and other indoor air quality (IAQ) issues by reducing water intrusion
- Improved security – especially relating to window and storefront door coverings
- Improved safety and security– especially relating to exterior lighting
- Reduced reactive maintenance – transition to proactive maintenance of building systems

Research indicates a strong correlation between the quality of the learning environment and student performance and teacher recruitment and retention¹.

BPS is taking the initiative to retro-commission the three prototype schools now in order to better prepare the full application with specific projects and cost estimates. This document will be used by BPS to develop capital improvement projects whether or not the grant project is funded.

Based on the retro-commissioning report BPS will develop a design criteria package (DCP) for each site. The DCP will be used as the technical foundation for acquiring design build services to implement the improvements. The project time line is 2-3 years to completion depending upon the availability of roofing, mechanical and electrical equipment/materials, procurement processes and whether construction can occur in an occupied building.

The project will be managed by BPS staff who is highly experienced in K-12 renovation projects. BPS Plant Operations and Maintenance will be responsible for ongoing and preventive/proactive maintenance of the improvements.

The project is a demonstration program, such that before and after data will be collected and analyzed and projects can be scaled and replicated at other schools. Likely data collection will include:

- Power consumption
- Work order frequency and severity; maintenance costs
- IAQ complaints
- Student test scores
- Teacher turnover rates

Based on data and analysis, the most impactful project types can be incorporated into a multi-year District-wide capital improvement program.

¹ Council of the Great City Schools, *Reversing the Cycle of Deterioration in the Nation's Public School Buildings*, (2014)