



# DGS SUSTAINABILITY AND ENERGY DIVISION

## Retro-Commissioning Case Study: Columbia Heights Education Campus



\*Columbia Heights Education Campus

### Project Overview

**Description:** Equipment scheduling, controls improvements, minor mechanical repairs, training

**Project cost:** est. \$100,000

**Energy reduction:** 30%

**Energy savings in 2017:** \$274,000

**Est. 5 year savings:** \$1-1.2 million

### Facility:

Columbia Heights Education Campus (CHEC) is a 325,000 square foot joint middle and high school built in 2006.

### Project Description:

In 2016, after identifying significant opportunities to reduce energy use and cost, DGS Sustainability and Energy Division worked with the Facilities Management Division and the building operator to implement a building retro-commissioning process focused on low-cost, high-saving improvements.

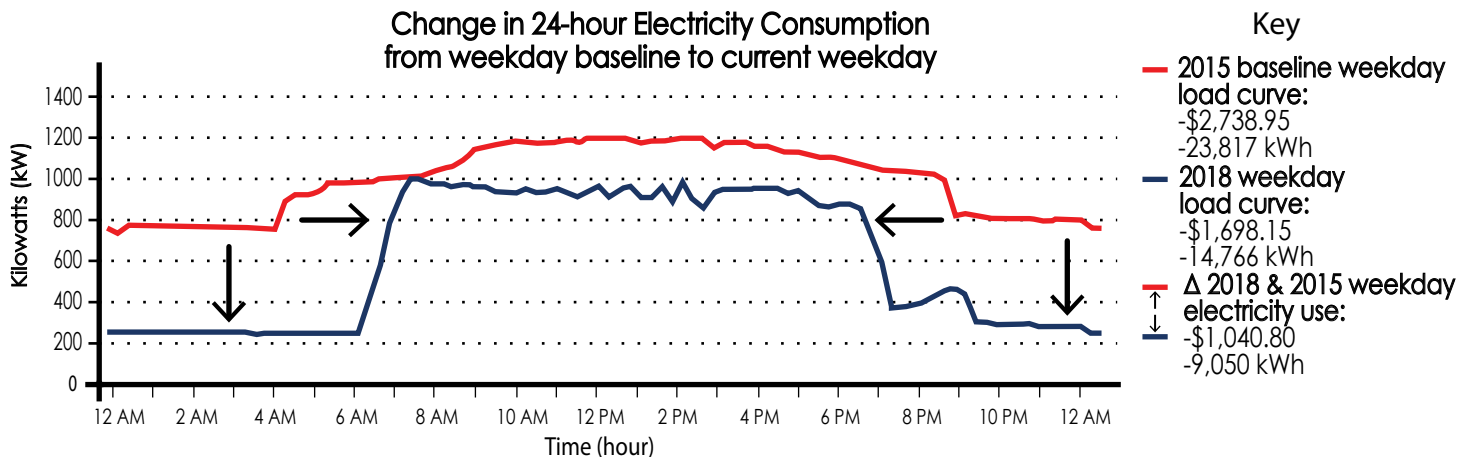
### The Process (detailed on the following page)

- 1: Identify and address minor repairs
- 2: Configure building automation system controls
- 3: Implement building optimization and equipment scheduling
- 4: Train operator
- 5: Monitor energy use for sustained savings

### Results:

The DGS building operator significantly reduced the building's baseload energy consumption and tightened the equipment schedules to match occupancy. The project resulted in the following benefits:

- \$200,000-250,000 annual cost savings
- Improved occupant comfort and satisfaction
- Reduction in work orders and repair costs





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## The Process

**Identify and address minor repairs:** The project began by identifying and addressing minor repairs related to the mechanical system, such as valve and damper replacement, sensor calibration and deferred maintenance. The project, which had a payback period of less than one year, targeted low-cost improvements that would be required to implement the project and maintain savings post-implementation.

**Building automation systems (BAS) controls configuration:** The building operator worked with a contractor to set up and program the BAS controls. The building was also connected to a cloud-based controls system called Enteliweb so that the operator could monitor his building remotely and ensure smooth operations while working at other locations.

**Implement building optimization and equipment scheduling:** Once the first steps were completed, the operator scheduled the mechanical equipment around occupancy in six building zones. Run schedules and nighttime set backs were applied to air handlers, heat pumps, VAV boxes, exhaust fans and energy recover units. Unneeded equipment was shut down.

**Operator training:** Without proper training and support for the building operator, operational efficiency changes often disappear quickly after the implementation stage. To avoid this, the operator was engaged at the very beginning of the project and received training during and after implementation. This included Building Operator Certification Training and specialized instruction on new software.

**Monitoring energy use for sustained savings:** Using the building automation system and the cloud-based Enteliweb system, the operator now has the control to constantly monitor and fine-tune building operations, on-site and remotely. Through the city's energy tracking platform, BuildSmartDC.com, the operator and a DGS energy manager track electricity interval data to ensure sustained efficient operations and detect energy use irregularities.

## Spotlight: *Jose Santos, DGS Building Operator at CHEC*



“My main goal is to reduce comfort complaints. That's my job. If you run the building efficiently, you reduce comfort calls and save energy. I used to get 20 comfort calls a day, now I get one every few days. The repairs went way down. If you run it as designed, it saves the building. We used to operate 24/7, but now the equipment runs only 14 hours a day.”

To learn more about retro-commissioning and the other facilities participating in the initiative, please visit the DGS website: <https://dgs.dc.gov/page/energy-efficiency-0>