Building Analytics Success Story
District of Columbia Dept of General Services

When the District of Columbia Department of General Services (DGS) launched BuildSmartDC in 2013, sharing transparent energy data was at the forefront of their approach to empower operators, occupants, students, and residents to take energy saving actions. DC DGS shares next-day, 15-minute electricity data, monthly utility data, renewable generation, and ENERGY STAR benchmarking for 375 DGS operated buildings, through a public website buildsmartdc.com. This energy information system (EIS) is used by staff to review load profiles, prioritize buildings for projects, and track performance of the whole portfolio.

What is an EIS?

An EIS, or energy information system, is a combination of software, data acquisition, and communication systems used to store, analyze, and display building energy meter and system performance data on a consistent, frequent basis.

In addition to enabling transparency, DC DGS has created an operations center that connects building automation system data from 56 of their largest buildings, about 10 million square feet. Through this centralized database, a team of energy (and comfort) managers actively reviews faults and analyzes the data to diagnose causes. They implement a building retuning process (see PNNL's Building Retuning Process) in an ongoing fashion with the support of their EMIS; this process is commonly referred to as monitoring-based commissioning (MBCx).

DC DGS also piloted predictive energy optimization for air handlers and central plants at six sites. The results show intelligent load control algorithms can yield energy and demand savings without disrupting comfort or service and at already high performing buildings.

We prioritized open and standardized data flows to meet our needs today - with flexibility, adaptiveness, and an eye toward the future.

- Zach Dobelbower, Associate Director for Sustainability and Energy, DC DGS

Quick Facts

Location: District of Columbia

Building types: Office buildings, schools, fire and police, parks & recreation buildings and libraries

EMIS stats: BuildsmartDC EIS (375 buildings, 30M sq ft), Enteliweb FDD (56 buildings, 10M sq ft), and BuildingIQ (6 buildings, 2.2M sq ft)

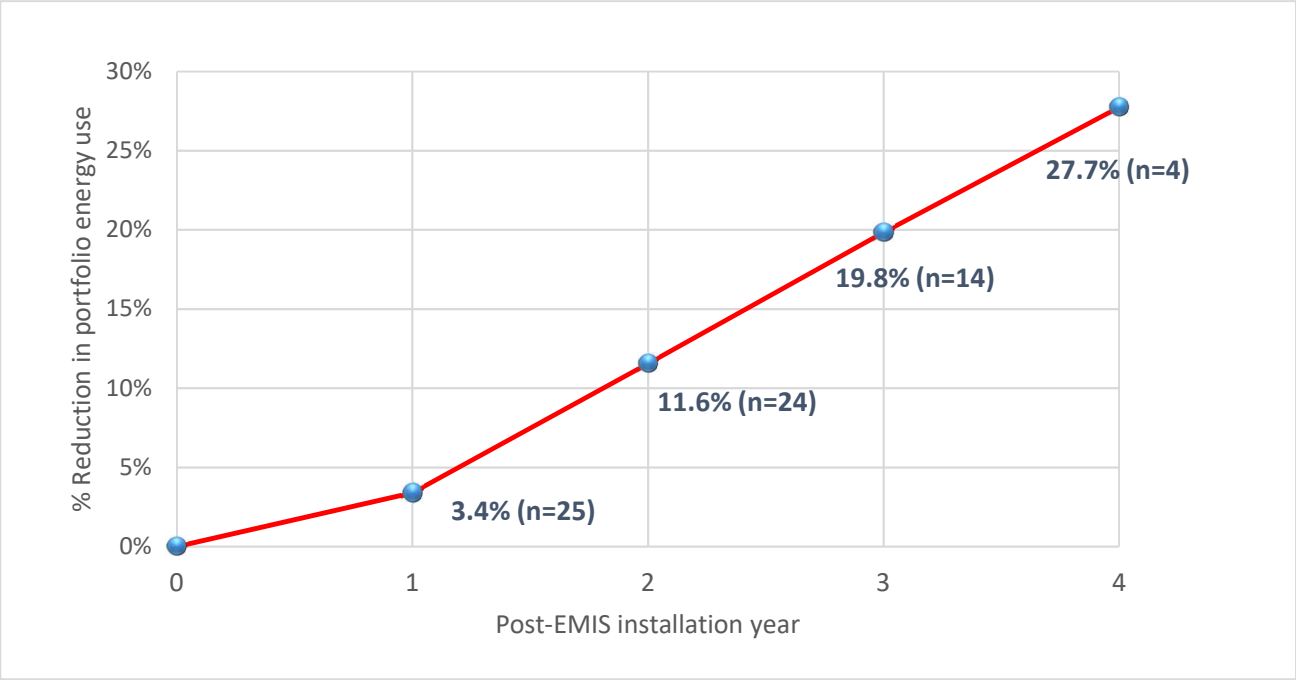
Energy savings since the installation of EMIS: 17% whole building savings for 25 buildings after 4 years

Service providers: New City Energy, Intellimation, Reluminati

EMIS Tools: Enteliweb, BuildsmartDC, BuildingIQ

Smart Energy Analytics Campaign: Recognition for Largest Portfolio Using EMIS

The District of Columbia Dept. of General Services was recognized by Lawrence Berkeley National Laboratory and the U.S. Dept. of Energy in May 2018 for their exemplary work to save energy through the use of EMIS.



DC DGS average portfolio-level energy use reduction after installation of EMIS
n= number of buildings with 1 or more years of post-implementation data.

Top Ten Opportunities

When DGS digs into the operations of a site, they regularly uncover many opportunities for improvement, including the following top 10 operations retuning needs:

1. Economizer and minimum outside air
2. Heating/cooling setpoint deadbands
3. Schedule and optimum start
4. Nighttime temperature setback
5. Manual override review
6. Equipment staging
7. Reset schedules
8. PID loop tuning
9. Simultaneous heating and cooling
10. Demand response

Through this review of common measures, they find significant opportunities for savings. The key to success is their systematic review utilizing their centralized, open architecture, and standardized BAS data flows.

Plans for the Future

DC DGS plans to deploy and iterate on their EMIS, extending it to all appropriate sites to find more energy saving opportunities. They are working to improve interfaces that support operators and occupants and expand training programs. DGS also plans to integrate their HVAC management and an increasing volume of local energy generation and storage solutions, and add sensors that will enable additional indoor air quality management.

Workforce training and standardized data management have been key to our improvements
–Zach Wilson, Innovation and Programs Manager

As city and state governments focus on energy savings to control costs and mitigate their carbon impacts, DC DGS is an impressive example of what's possible when a large portfolio manages its data well.

The Smart Energy Analytics Campaign is a public-private sector partnership program focused on commercially available Energy Management and Information Systems (EMIS) and monitoring-based commissioning practices. The campaign couples technical assistance with qualitative and quantitative data collection to inform research, development, and field study priorities. Partnering participants are encouraged to share their progress and may receive national recognition for implementations that demonstrate exemplary practices.