DEPARTMENT OF ENERGY & ENVIRONMENT

# Better Buildings in the District of Columbia

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Department of Energy & Environment
Government of the District of Columbia

Metropolitan Washington Council of Governments
Washington, DC

July 16, 2016

# Our Better Buildings Challenge Commitment

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- **Goal**: To engage the local community in reducing energy consumption in **more than 65 million square feet** of buildings by at least **20% by 2020**, across both public (District Government) and private (Downtown DC BID) buildings.
- One of first partners in Better Building Challenge
- Community-wide planning initiative, legislation, & public-private partnerships to engage local community in achieving energy reduction

# Key Partners

DEPARTMENT OF ENERGY & ENVIRONMENT

DEPARTMENT OF ENERGY & ENVIRONMENT
GOVERNMENT OF THE DISTRICT OF COLUMBIA

DOWNTOWNDC

DGS
THE DEPARTMENT OF GENERAL SERVICES

DC SUSTAINABLE ENERGY UTILITY

Better Buildings
U.S. DEPARTMENT OF ENERGY

pepco

# Common Standards

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ENERGY STAR® Portfolio Manager®

- Operational Rating
- Management tool
- Free
- Online, user-friendly
- 1-100 score for many buildings
- Certification option
- Strong support from EPA
- Electronic Reporting
- Industry-standard

***7% average energy savings and 6 point ENERGY STAR score increase among Portfolio Manager buildings***

# Common Standards

DEPARTMENT OF ENERGY & ENVIRONMENT

ENERGY STAR® Portfolio Manager®

Benchmarking & Reporting

SEED STANDARD ENERGY EFFICIENCY DATA PLATFORM™

Data Management and Disclosure (via API)

BEDES BUILDING ENERGY DATA EXCHANGE SPECIFICATION

Alignment with National Standards

Green Button Connect My Data

Near-Real Time Interval Data

# Public Buildings

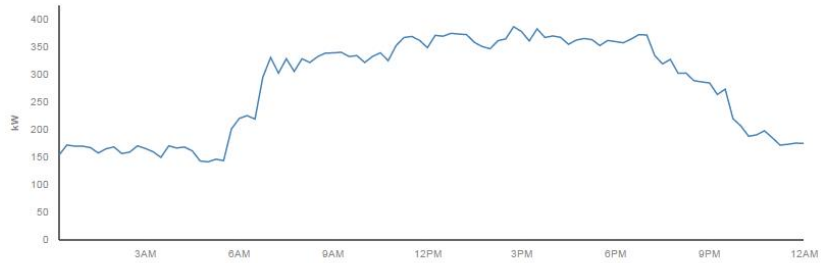
Dunbar High School

101 N STREET NW

ENERGY STAR RATING 81

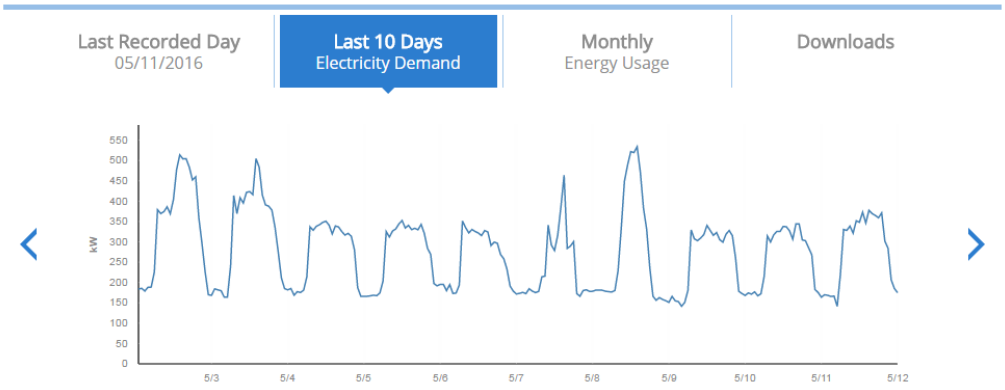
Their mission is to provide an all inclusive instructional program to students that foster maximum academic achievement, enabling them to enjoy lifelong learning while becoming productive citizens. Show More

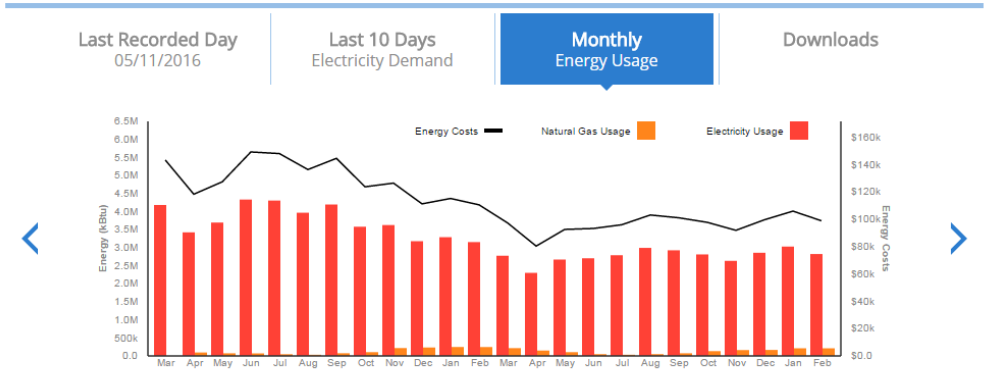
Last Recorded Day 05/11/2016 | Last 10 Days Electricity Demand | Monthly Energy Usage | Downloads

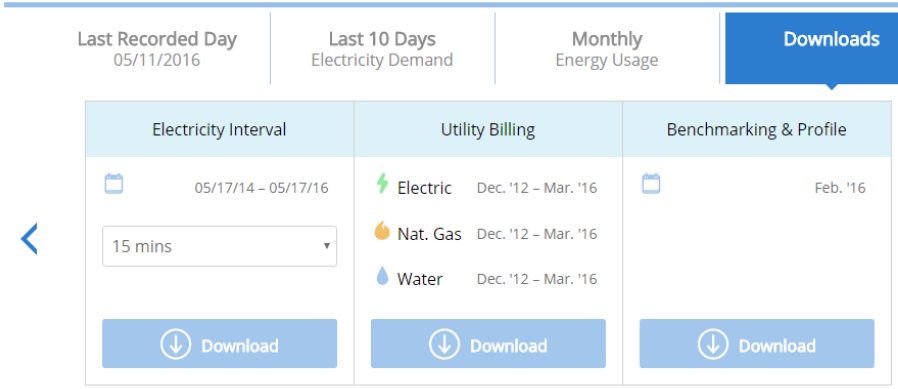



| BUILDING TYPE | SIZE ($FT^2$) | EUI (KBTU/SF/YR) |
|---|---|---|
| High School | 283,000 | 45 |
| **ANNUAL ENERGY COST** | **ANNUAL GHG EMISSIONS (TONS)** | **GAS AS % OF BTUS** |
| $396,302.30 | 2,012.68 | 12.31% |
| **GAS AS % OF ENERGY COST** | | |
| 3.83% | | |

- 230 DGS buildings tracked in Portfolio Manager ***BuildSmartDC.com***
- All part of Better Buildings Commitment
- 21 million sq. ft.
- Instrumentalities (DCHA, DC Water, etc.) not included
- Federal buildings not included




THE DEPARTMENT OF GENERAL SERVICES

# BuildSmartDC.com

- Next-Day 15-minute Interval Data for >350 buildings, via *Green Button* feed
- Enables crowd-sourced problem identification
- Access to monthly bills and cost data
- Graphs and downloads

# Private Buildings

- Downtown BID committed total square footage of Downtown DC Ecodistrict
- But how to get all this data?
- Measured by using the energy benchmarking data collected annually by DOEE

  …though this creates its own challenges

# DC Benchmarking Law

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***Green Building Act of 2006* and *Clean and Affordable Energy Act of 2008*. DC Official Code 6-1451.02, .03(c). Also 20 DCMR 3513.**

- Annually benchmark energy and water usage in *ENERGY STAR® Portfolio Manager®* by April 1st
  - Private Buildings > 10,000 gross square feet
  - Private Buildings over 50,000 gross square feet
- New Buildings >50,000 sq. ft. shall model projected performance in *ENERGY STAR® Target Finder™*
- DOEE publicly discloses benchmarking data
- Fines up to $100/day

ENERGY STAR

ENERGY STAR® PortfolioManager®

ENERGY STAR® TargetFinder™

# Purposes of a Benchmarking Mandate

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1. Help Owners and Managers understand and their energy use and compare to peers
2. Help Policymakers and DSM Program Administrators with analysis, planning, & program design
3. Drive Market Transformation

# Challenge: Data Access

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- **Best Practice: Aggregated whole-building consumption data, with direct automated upload** to ENERGY STAR Portfolio Manager
  - DC Mandated this in the *Sustainable DC Act of 2014*
  - Pepco provides aggregate data + upload to Portfolio Manager
  - Washington Gas provides aggregate data; upload in 2017
  - Available throughout service territories!
  - Best practices compiled in results from *U.S. Department of Energy Better Buildings Energy Data Accelerator*
  - Pepco now expanded to providing access to interval data via Green Button format

pepco

Washington Gas

Better Buildings
U.S. DEPARTMENT OF ENERGY

# Challenge: Data Quality

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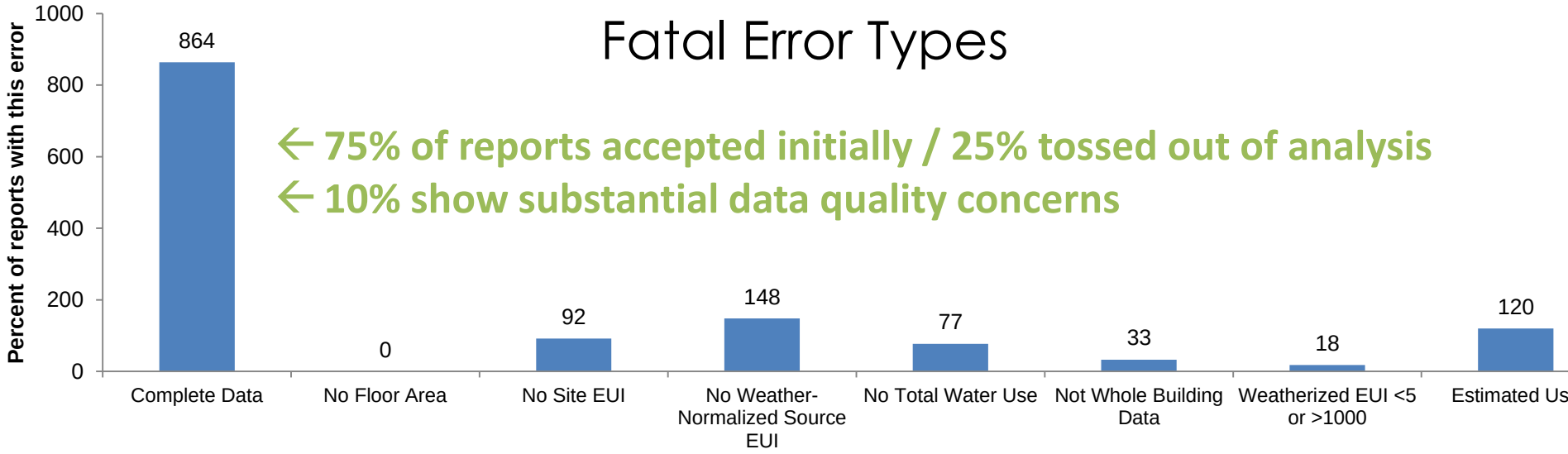
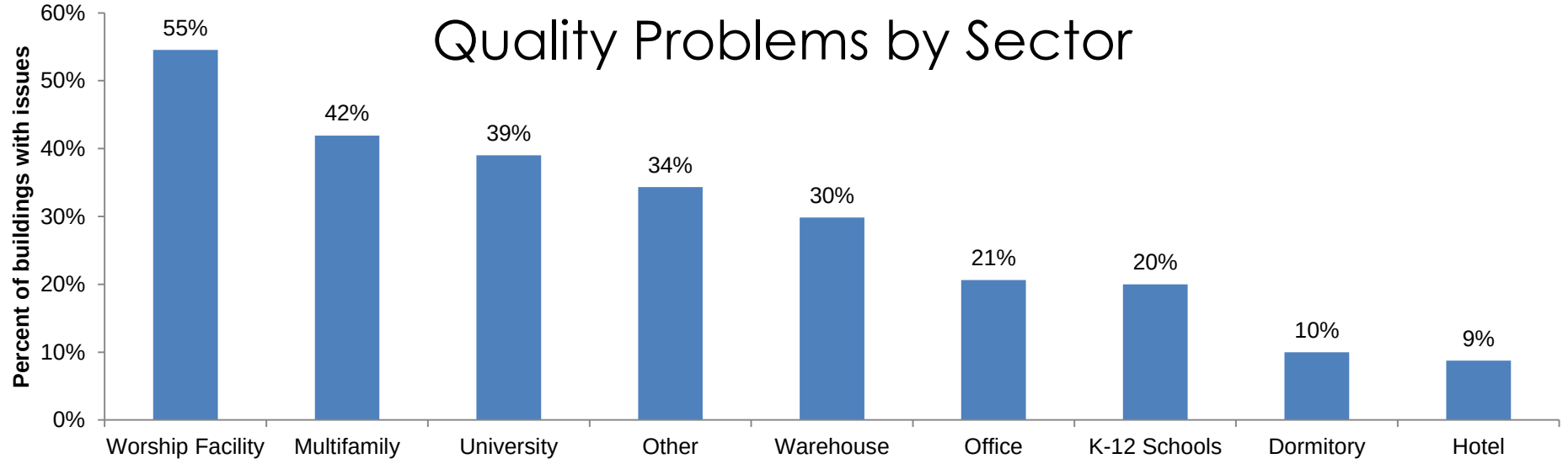
## Fatal Error Types




← 75% of reports accepted initially / 25% tossed out of analysis

← 10% show substantial data quality concerns

## Quality Problems by Sector



# Points of Intervention for Improving Data Quality

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- Technical Assistance
- Training
- Education

- Utility Data Upload
- EPA Data Quality Checker

- Internal Review + Follow-up
- **Third party review (DOE)**
- Enforcement & Fines
- Inspections
- Iterative Legislative & Regulatory Improvements

**DOE review of submitted public and private data has been one of single biggest benefits of BBC program!**

# Challenge: Turnover

- DOE Review had one big problem…they wanted to track a static set of buildings since 2010.
- For both DC government and private buildings, this is difficult due to property turnover, renovation, construction, and non-compliance
- **Result**: High flux of buildings in and out of sample, therefore difficult to track over time
- **Solution**: DOE now tracks the District's BBC progress in *average annual percent improvement*
- Floor area of commitment has had to shift as well, accordingly

# Energy Use 2010-2014

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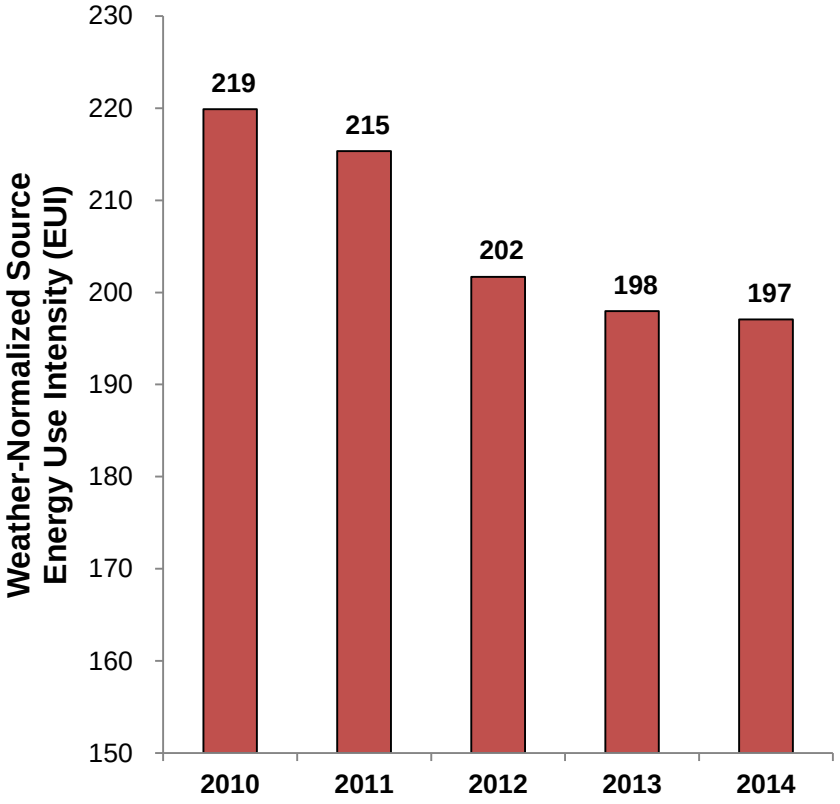
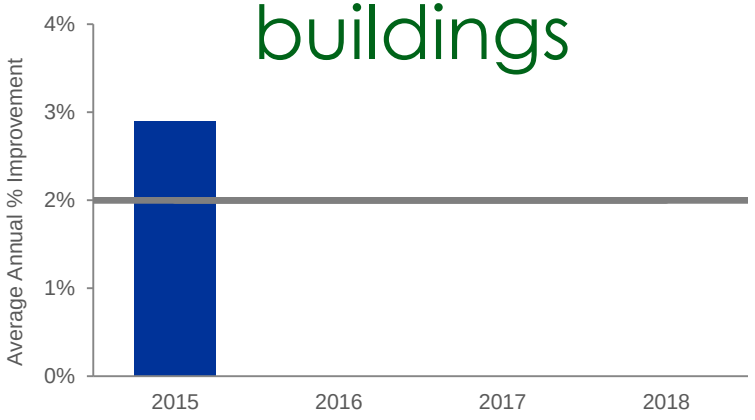
## Large Private Building Source Energy Use Intensity: 10% decrease




*Source: DC Benchmarking Reports from buildings with 5 years of data*

# 2.9%

## Annual Improvement for public buildings




*Source: DOE Better Buildings Challenge 2015 reporting*

# Energy Savings Vary

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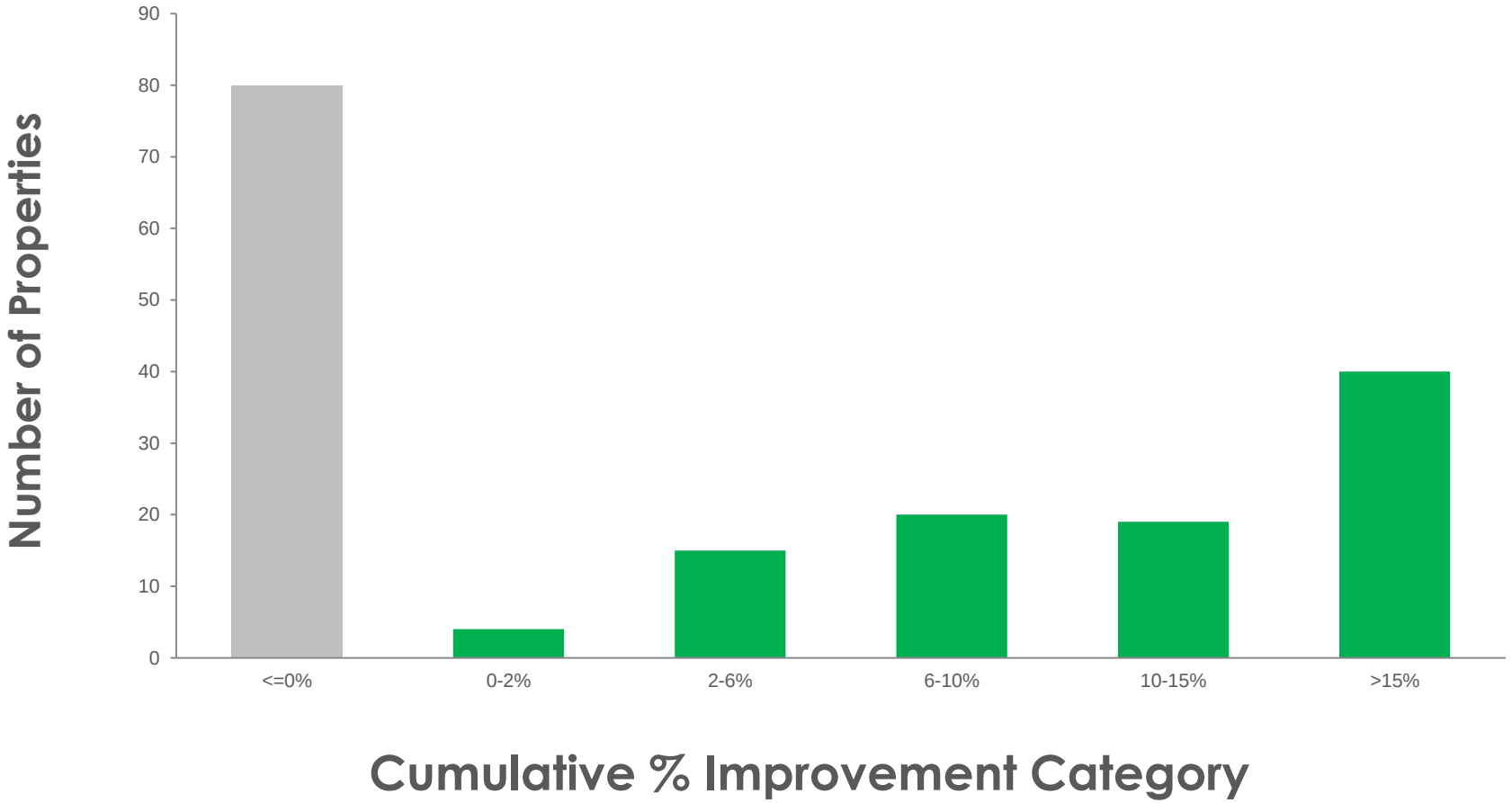

# Government Operations

- 2.9% average annual decrease since 2010
- 8% drop in energy use since 2012
- Mix of operational and capital improvements
- $1 million in savings to date from ongoing Retrocommisioning program
  - pilot of 5 million sq. ft.; greater savings expected
- Facility manager and building engineer engagement at 50+ facilities
- 3 million sq. ft. of right sizing and shutting down vacant space

# Showcase Projects

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**Hotel Monaco**
*District of Columbia*
**28%** energy savings
**$447k** cost savings

**Macy's Metro Center**
*Macy's*
**30%** energy savings
**$223k** cost savings

**815 Connecticut Ave**
*Transwestern*
**36%** energy savings
**$345k** cost savings

**Millennium Building**
*Tower Companies*
**20%** energy savings
**$201k** cost savings

# Challenge: Engagement

- District could more effectively leverage Better Building Challenge for engagement
- Lack of awareness of participation in challenge
- Lack of buy in to commitment
- To some extent this is inherent in model
- DOEE is working to leverage various tools and programs to improve outreach

# Putting Data to Work

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DC SUSTAINABLE ENERGY UTILITY

SMARTER DC CHALLENGE
Sustainability Makes Dollars and Sense

DC PACE COMMERCIAL
an energy finance solution

POWER DOWN DC
A Multifamily Energy & Water Challenge

ENERGY smart

energy
LEARN MORE AT energystar.gov

# Thank You!

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GOVERNMENT OF THE DISTRICT OF COLUMBIA

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