

# DATA ANALYTICS FOR COMMERCIAL ENERGY EFFICIENCY

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# Defining Energy Data Analytics

## Definition

From   
An Exelon Company

*“Automated integration of complex data (e.g. energy consumption, building characteristics, firmographic, etc.) to trend and analyze it at the building, portfolio or sector levels.”*

- Baltimore Gas & Electric 2015-2017 DSM plan

## Vendors

Silver Spring  
NETWORKS

FIRST FUEL

Energy

OPower

ENERNOC

Retroficiency

ENERGYSAVVY

SAP

Schneider  
Electric

SIEMENS

TENDRIL™

EcoFactor

ORACLE®

bidgely

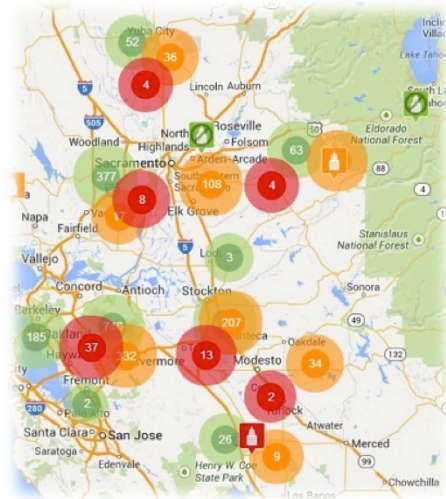
GRIDIUM

# A Program Change, Not A New Program

- Data analytics is not a new program but a new approach
- Potential benefits to *existing programs*:
  - Leverage AMI data
  - Identify EE potential remotely
  - Increase participation in EE programs
  - Generate personalized EE recommendations
  - Reduce wasted energy by identifying operational savings
  - Improve cost-effectiveness for hard-to-reach, cost-sensitive sectors like SMB and government

# Data Analytics Products

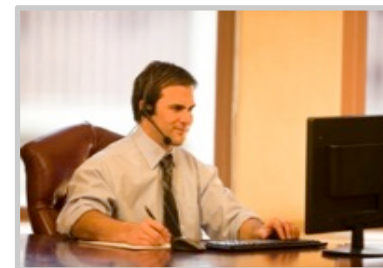
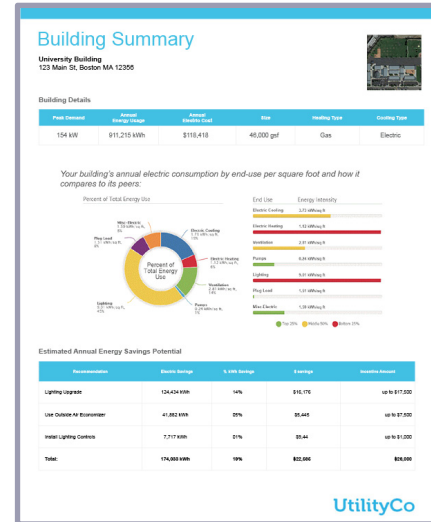
**EE Potential Mapping and Targeting**



**Customized Energy Savings Tips**



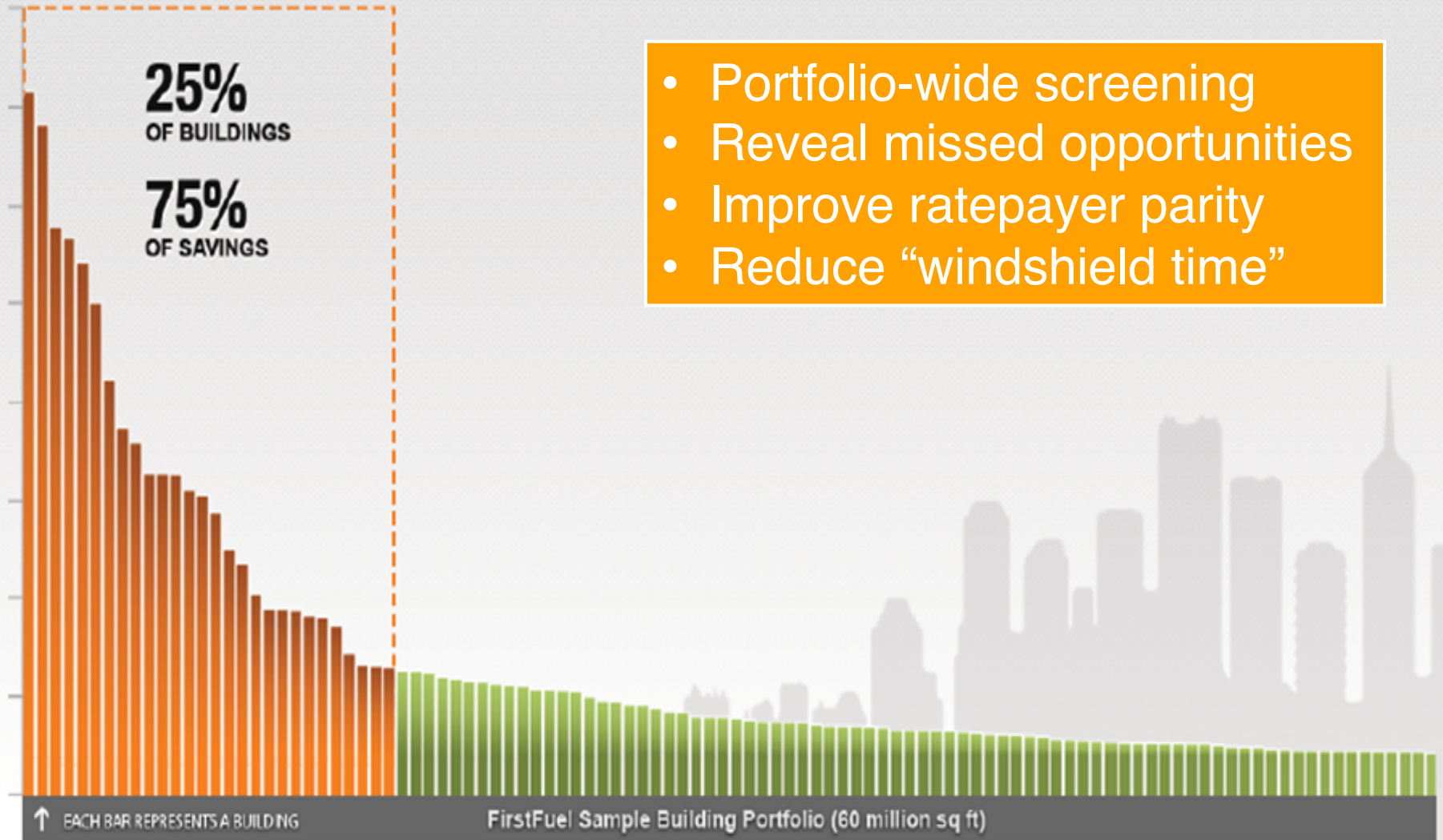
**Remote Building Audits**



**Account Manager/Implementer Tools**

# PORTFOLIO WIDE-SCREENING REVEALS HIGH-PRIORITY OPPORTUNITIES

Savings Potential (kWh)

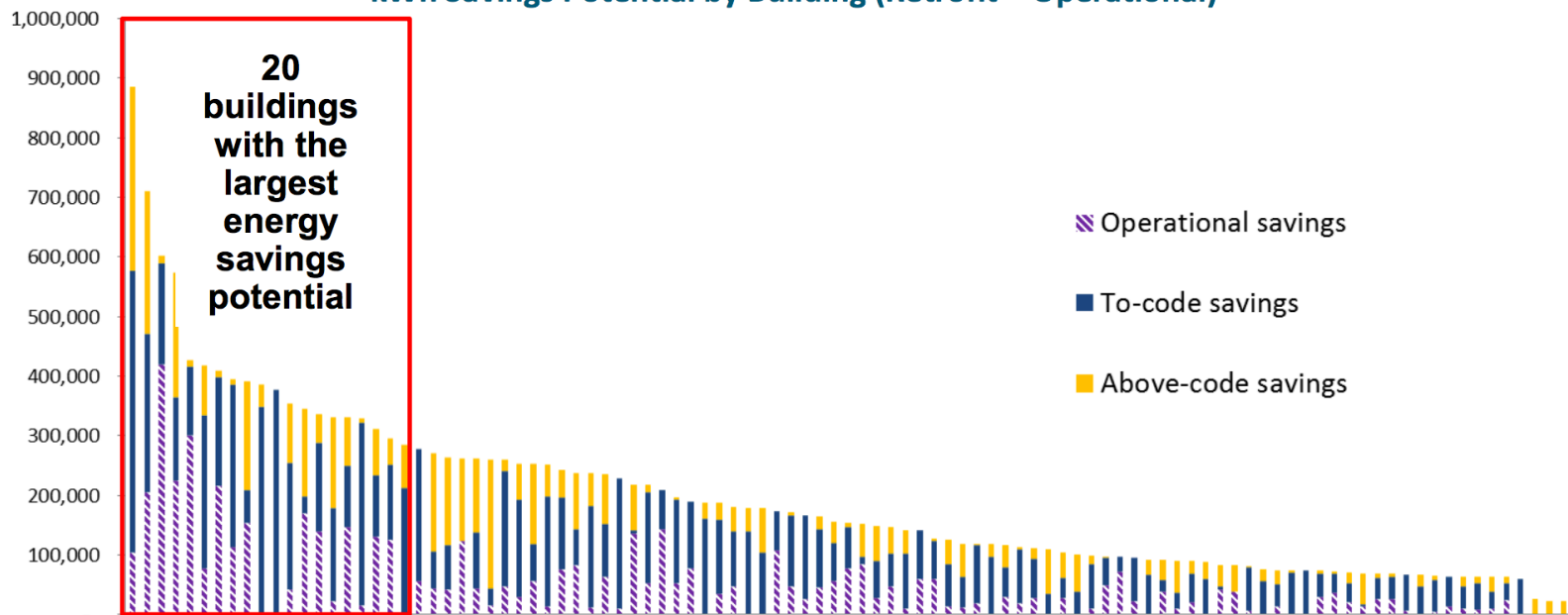


# PG&E Study of EE Potential



## Focusing on Inefficient Buildings

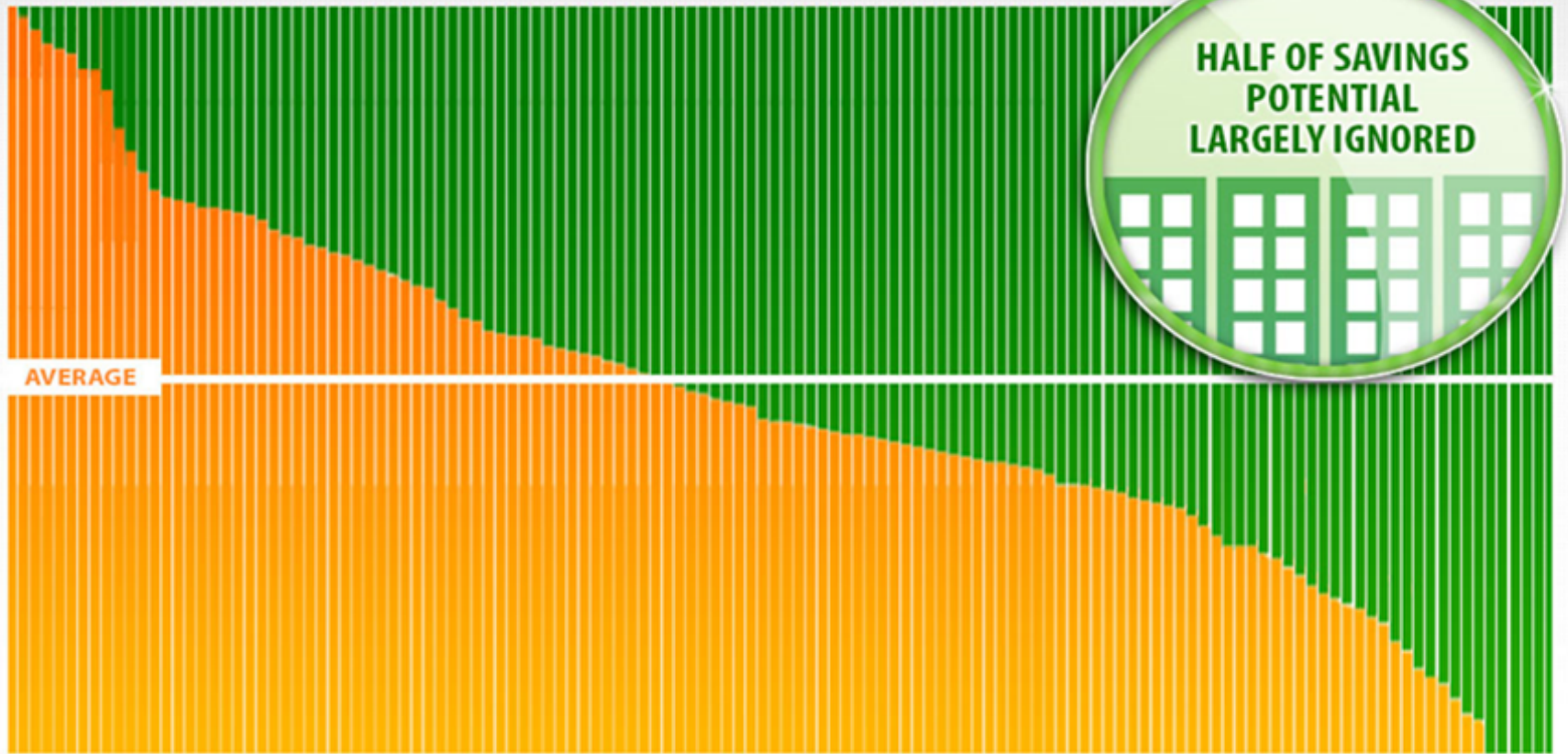
kWh Savings Potential by Building (Retrofit + Operational)



The 100 buildings with largest energy savings potential (out of the 164 examined)

# OPERATIONAL SAVINGS CAN DOUBLE THE MARKET FOR COMMERCIAL EFFICIENCY

## RETROFIT VS. OPERATIONAL SAVINGS POTENTIAL SPLIT



**HALF OF SAVINGS  
POTENTIAL  
LARGELY IGNORED**

↑ EACH BAR REPRESENTS A BUILDING

**FIRSTFUEL SAMPLE BUILDING PORTFOLIO ( 60M SQFT )**

- % OF RETROFIT SAVINGS
- % OF OPERATIONAL SAVINGS

51 percent of all energy efficiency savings in commercial buildings are achievable through operational improvements—many at little or no cost to building owners. The portfolio above represents a \$12M operational savings opportunity.

# Example 1: Bank Branch



- 12% savings identified
- Operational
  - HVAC Scheduling
    - Started heating/cooling at 3:30 AM
  - Data Center Cooling
- Retrofit
  - Plug load management
  - Lighting

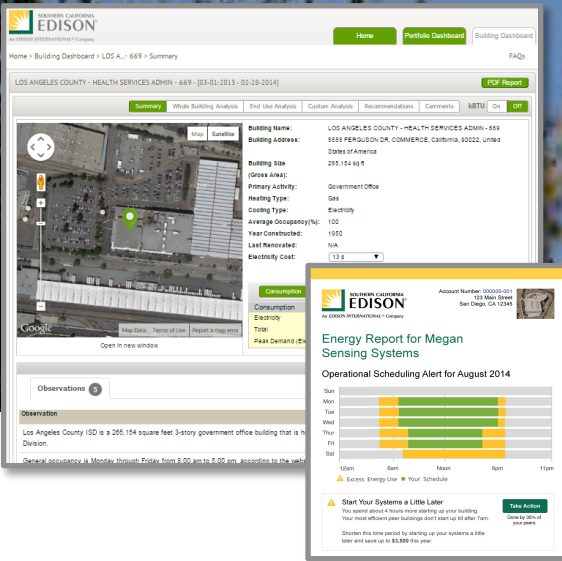


# Example 2: Commercial Office Park



- 22% savings identified
- Operational
  - HVAC Scheduling
    - ~40% of identified savings
    - HVAC left on overnight
- Retrofit
  - AHU CAV to VAV Conversion
  - Lighting (Exterior and Interior)
  - Building Envelope Improvements

# SCE: DSM PROGRAM LEAD GENERATION



*Across 10,000 mid-size customers...*



**Targeted outreach**

*To underserved & geographic segments*

**3X acceleration**

*In energy efficiency sales cycle*

**70%**

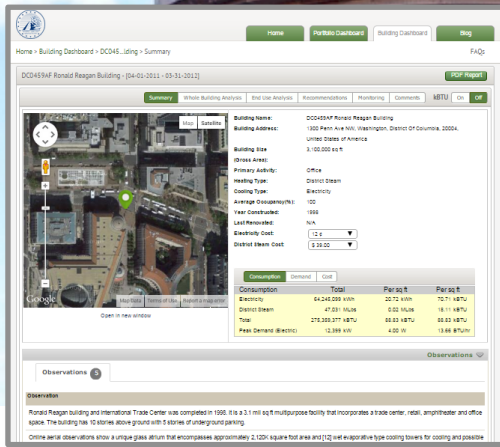
*of customers pre-committed to projects*

**4.6/5.0**

*average customer satisfaction score*

# GENERAL SERVICES ADMINISTRATION

## Comprehensive Portfolio Efficiency Management



**Endorsed for low-cost RCx compliance at Federal facilities.**



*“Agencies are encouraged to utilize remote auditing technologies at appropriate facilities to 1) improve energy use diagnostics, 2) monitor and measure energy demand, and 3) reduce the cost of on-site audits.”*

*“Implementing Instructions for Executive Order 13693 Planning for Federal Sustainability in the Next Decade”*

# DEPARTMENT OF DEFENSE

Technically Validated Audits



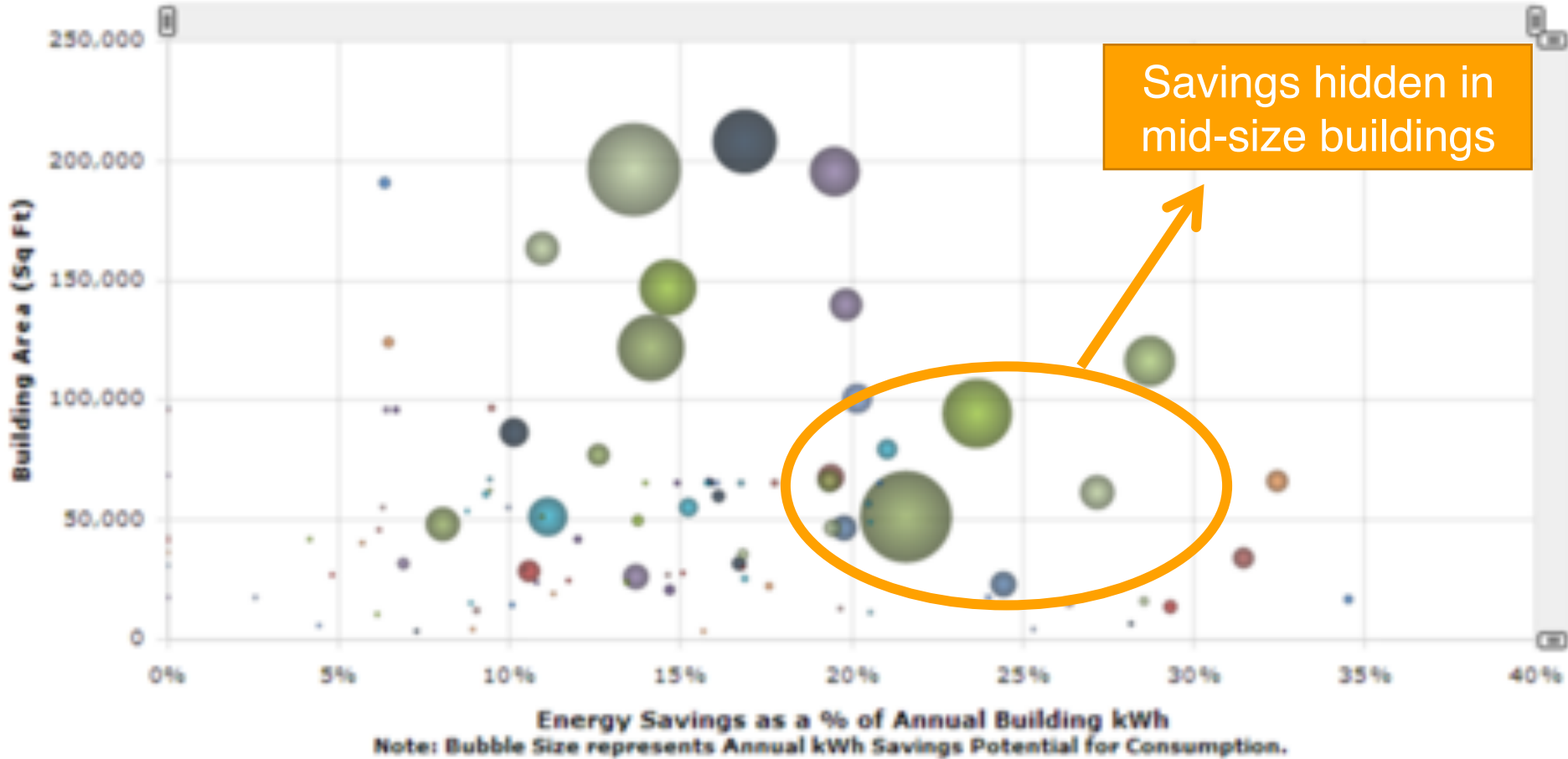
*“FirstFuel used the RBA to analyze more than 100 DoD buildings, consisting of five different building types, on eleven military installations in multiple climate zones. To validate the RBA, an independent building auditor conducted ASHRAE Level 2 onsite audits of 16 of the buildings. The RBA revealed 16-37% more Energy Conservation Measure savings than the onsite audits.”*



Source: <https://www.serdp-estcp.org/News-and-Events/Blog/Expediting-Building-Energy-Audits>

# DEPARTMENT OF DEFENSE

Technically Validated Audits



# Proposed Change

- *Program administrators integrate energy data analytics into the implementation of commercial energy efficiency programs.*

## Programs Affected:

- Utilities and DCEO

## Goals and Benefits:

- Leverage AMI data
- Identify EE potential remotely
- Increase participation in EE programs
- Generate personalized EE recommendations
- Reduce wasted energy by identifying operational savings
- Improve cost-effectiveness for hard-to-reach commercial sectors