



Harnessing the Power of Data from Benchmarking and Disclosure

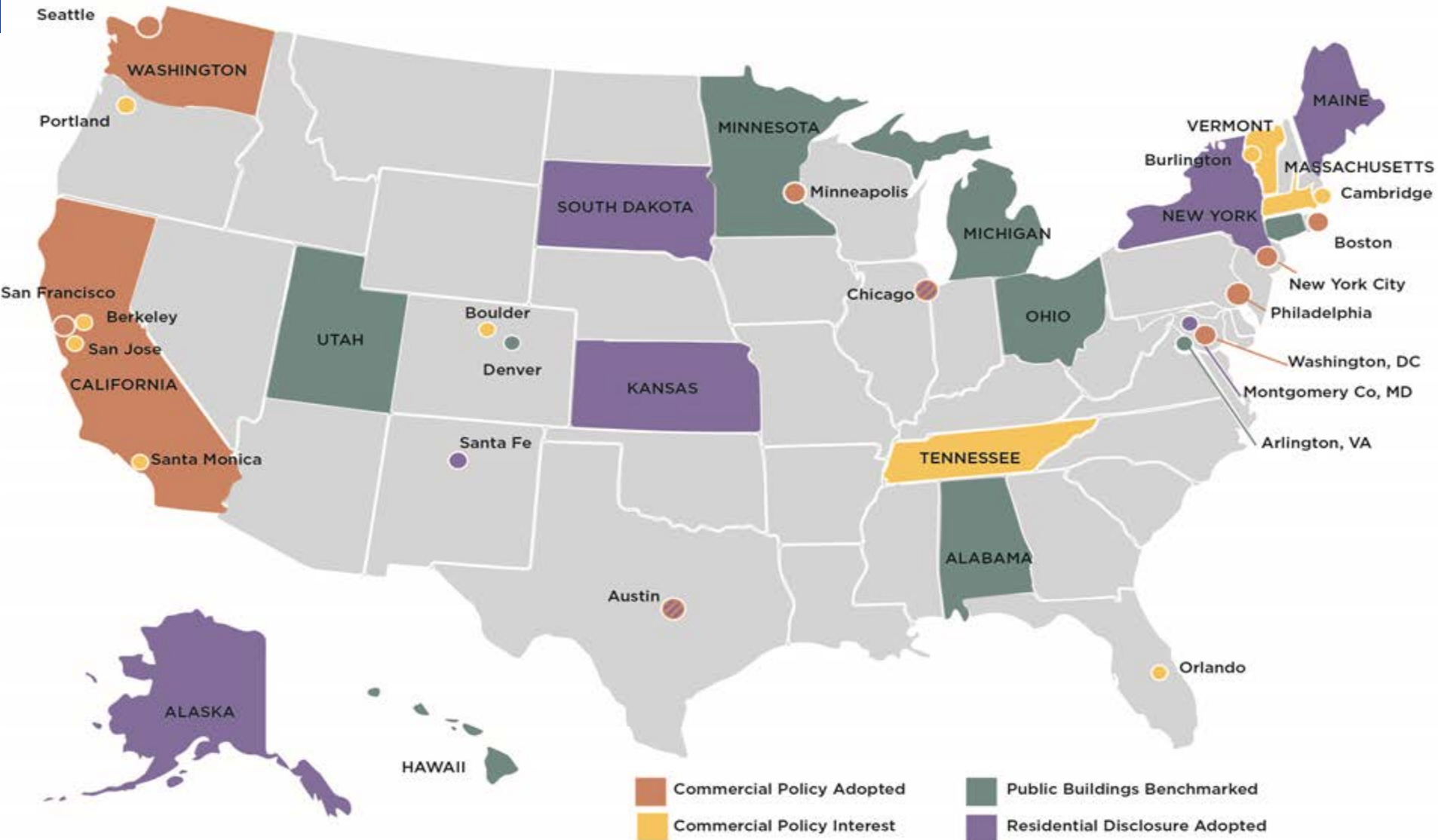
Alex Dews, Philadelphia, PA

Brendon Slotterback, Minneapolis, MN

Marshall Duer-Balkind, Washington, DC

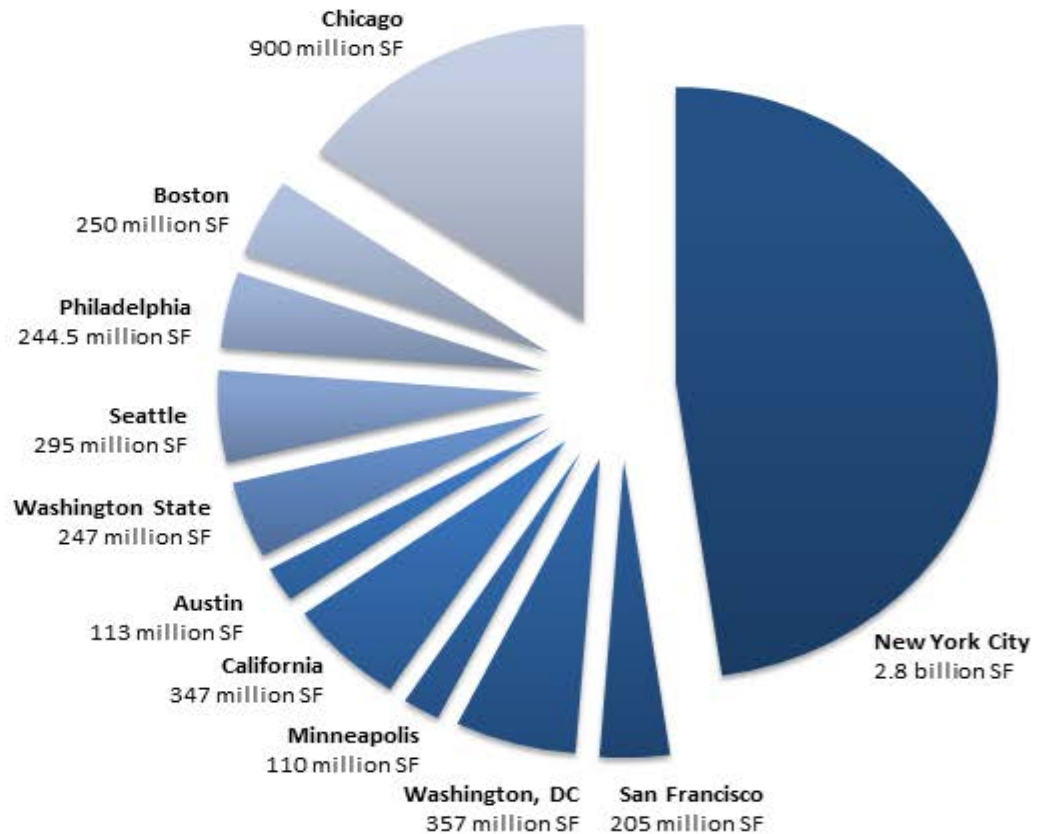
Constantine Kontokosta, Center for Sustainable Built Environment, New York University

U.S. Benchmarking Policy Landscape



Totaling approximately **5.8 billion SF** of floor space in major real estate markets

BUILDING AREA (IN SQUARE FEET) COVERED ANNUALLY

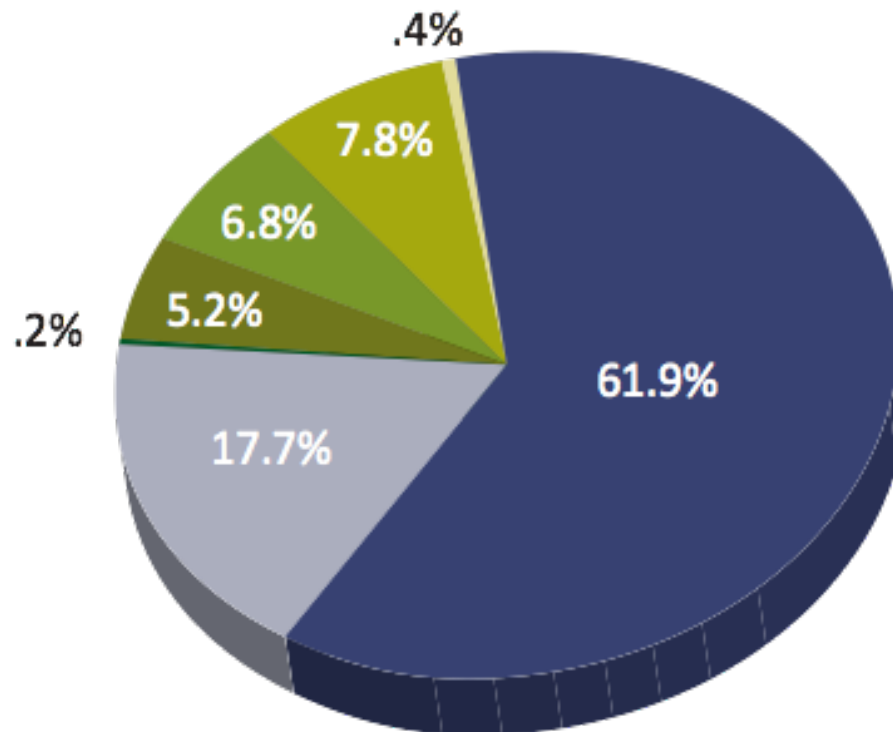




Benchmarking and Disclosure in Philadelphia
Alex Dews, Mayor's Office of Sustainability
Better Buildings Summit, May 2014

Why Benchmarking?

Buildings account for 62% of GHG emissions in Philadelphia

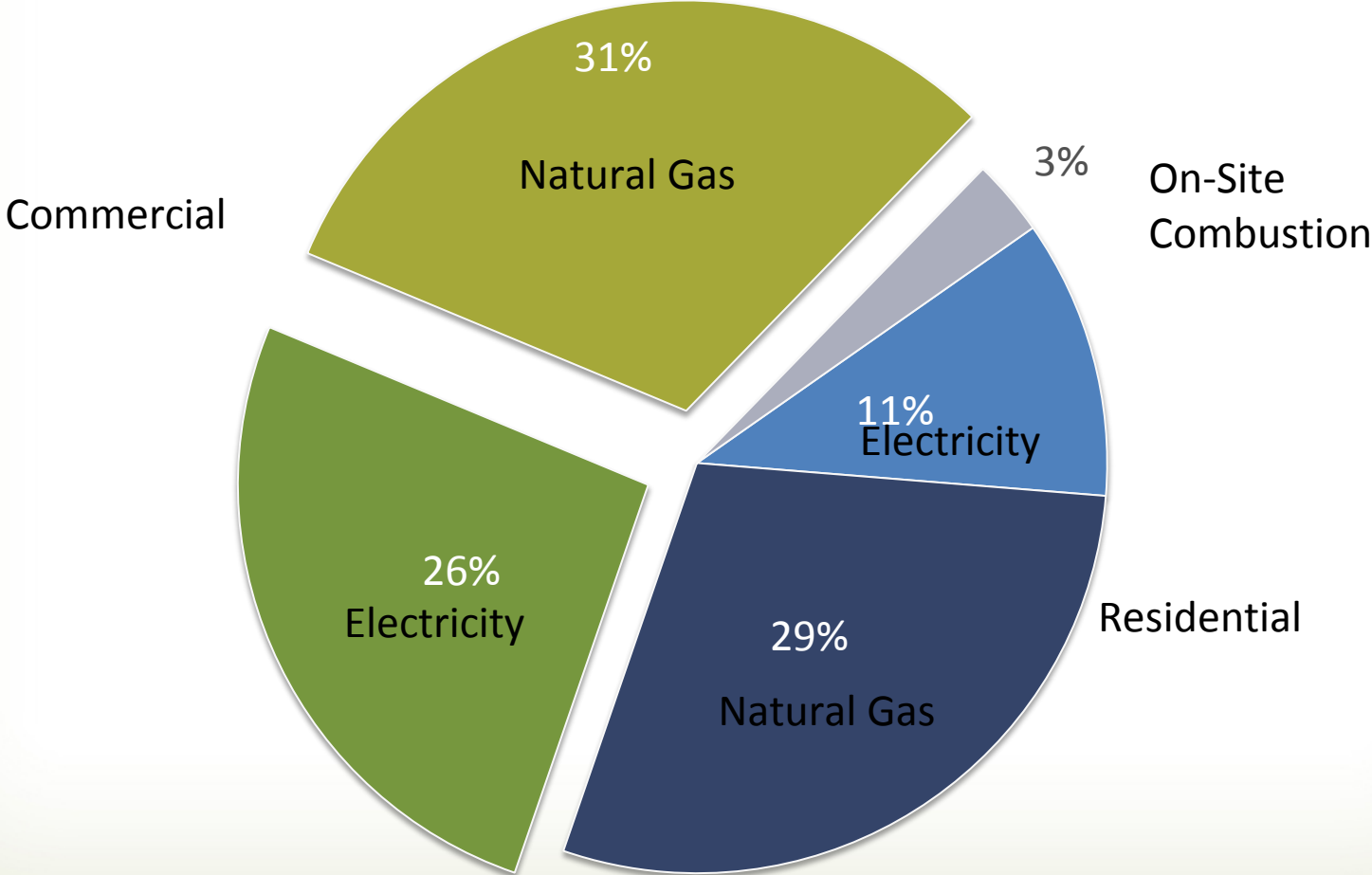


■ Buildings ■ Transportation ■ Street Lights ■ Fugitive
■ Industrial ■ Waste ■ Wastewater Treatment

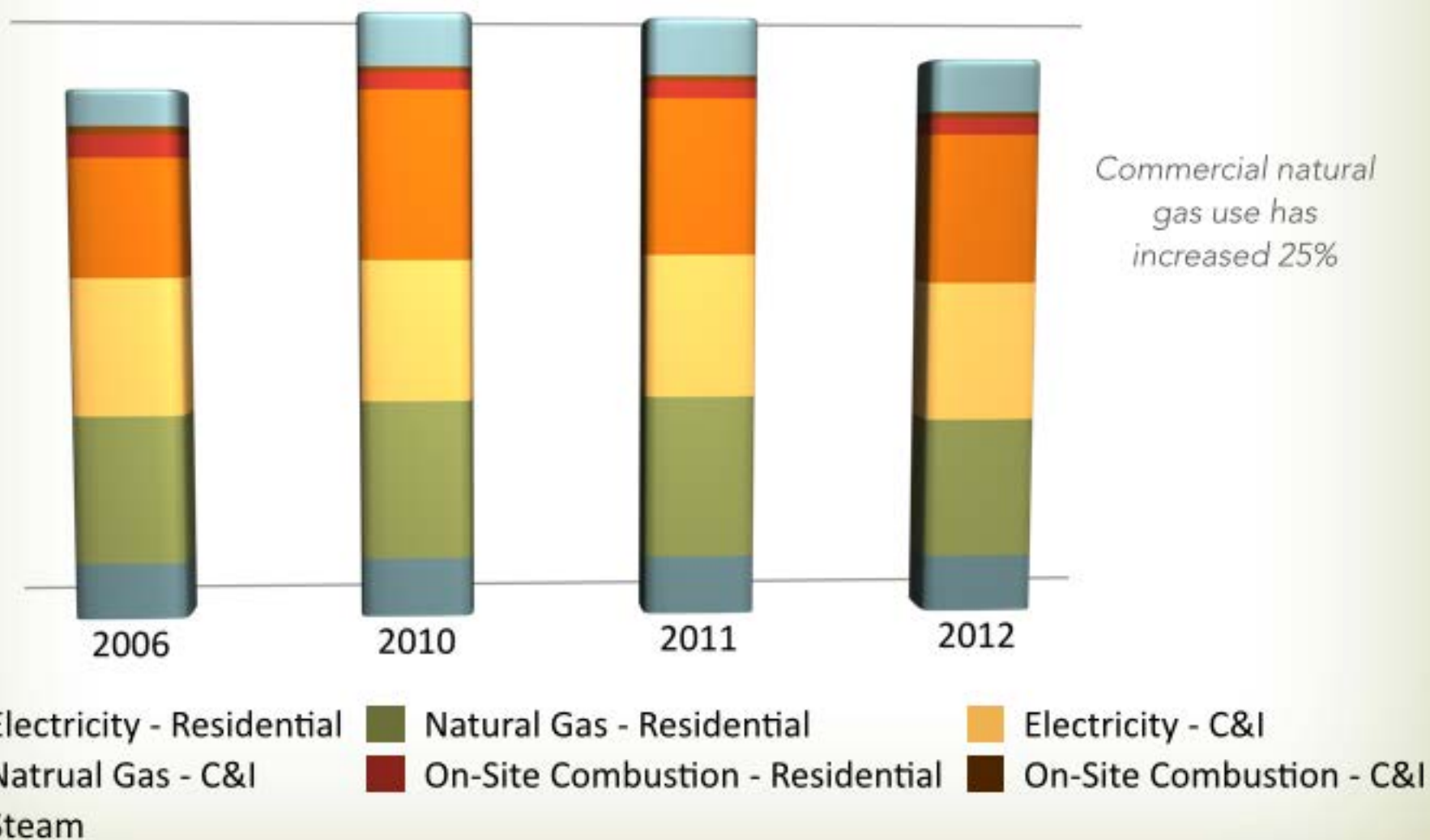


Why Benchmarking?

The commercial sector uses 57% of all building energy



Citywide building energy use has increased 6% since 2006



Benchmarking

Year One Compliance Rate: 86%



250m
Square ft.
(Non-residential)

Represents
25%
of total
Citywide
square footage



64



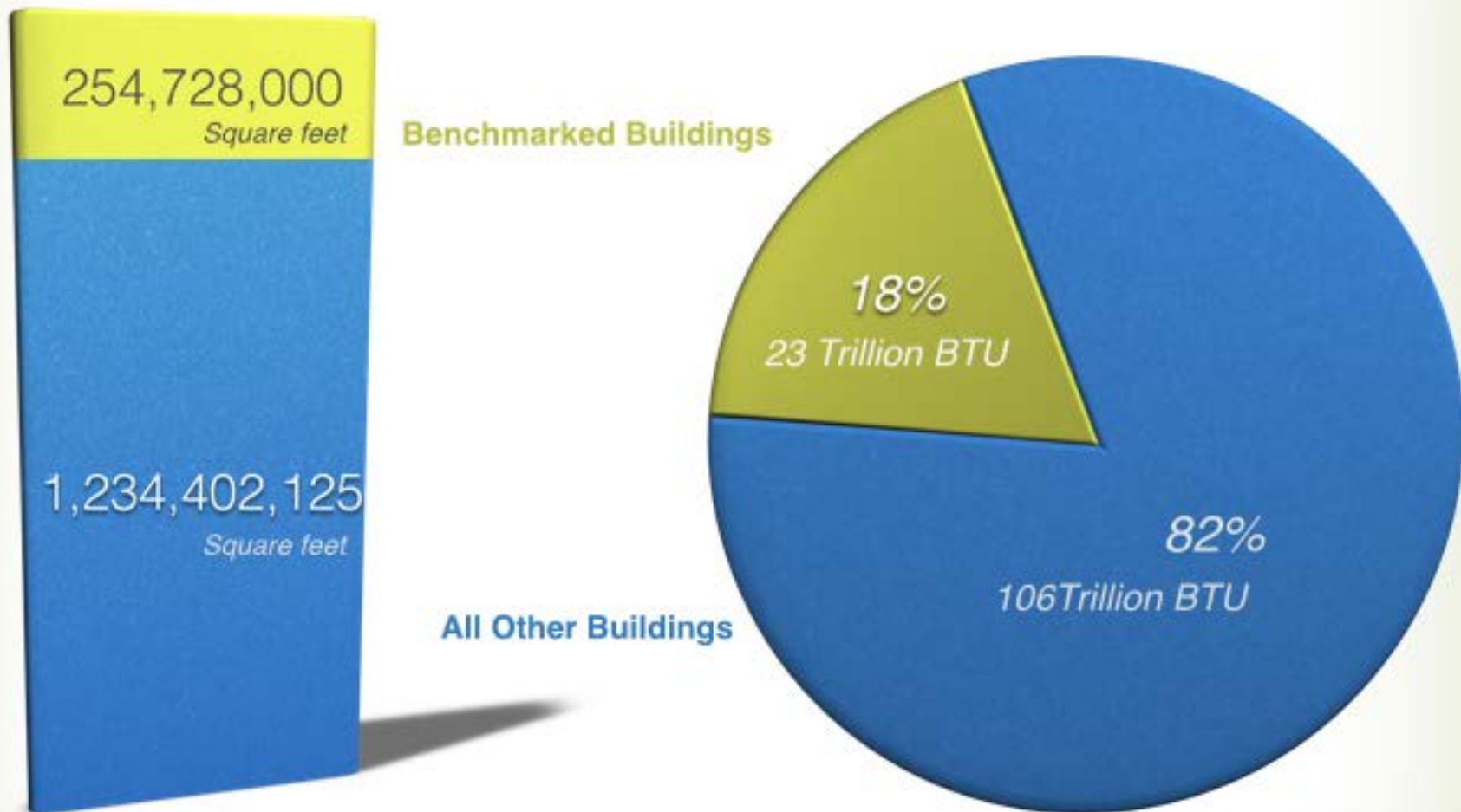
Average
ENERGY STAR
Score



1,700
Buildings



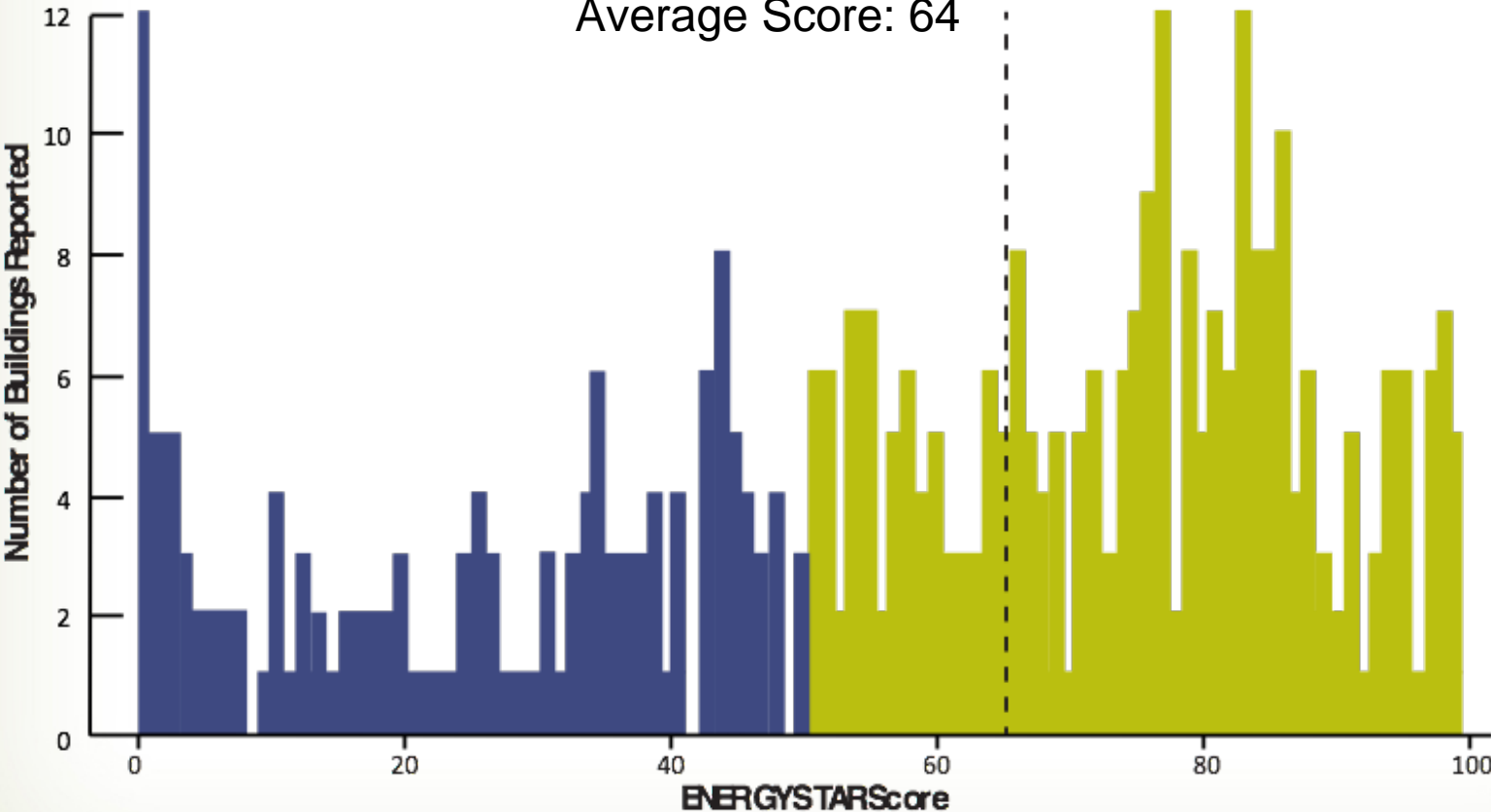
Benchmarking Impact Citywide



*Benchmarked buildings account for **24%** of city square footage, and **18%** of its energy use*

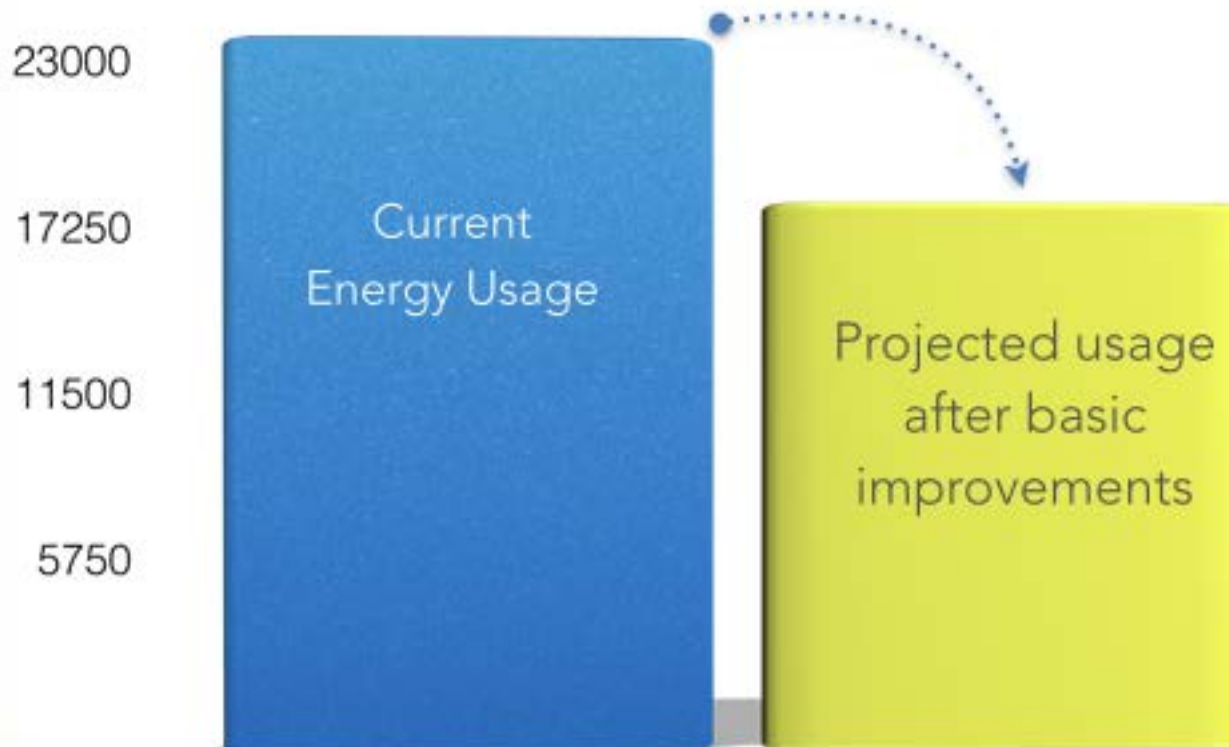


Citywide ENERGY STAR Distribution

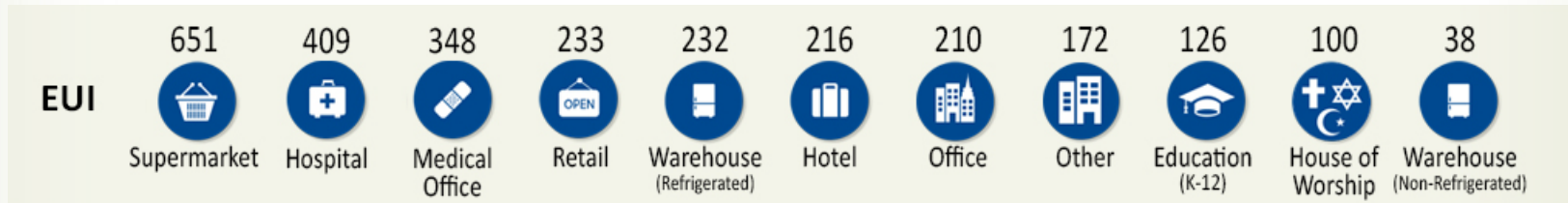


Potential Savings in Benchmarking Portfolio

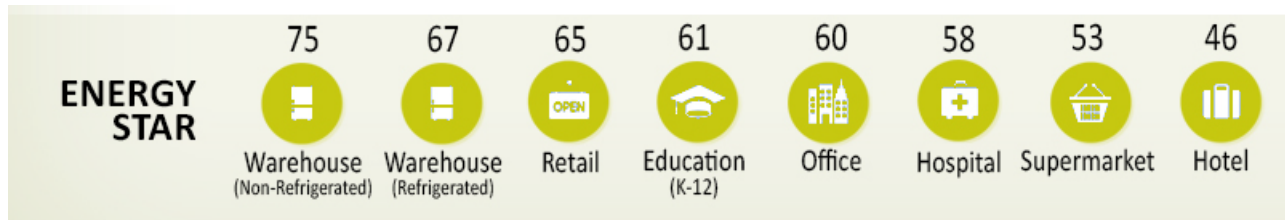
23% energy reduction across 1,700 Buildings
or \$100 million in annual savings



Connecting Performance to Financing and Technical Assistance



Sector Summary by Source EUI
(kBtu/per square foot)



Sector Summary by ENERGY STAR
Score (1-100)



Managing Data and Outreach with CRM

Building Data Tracking

Email Outreach & Marketing

Create New...

Covered Building
1701 JOHN F KENNEDY BLV

Recent Items

- 1701 JOHN F KENNEDY BLV
- Liberty Property Trust
- 1025 Walnut Street
- 1600-06 S 21ST ST
- 202-14 N 33RD ST
- 760 S 42ND ST
- 102 E MERMAID LA
- 1930 S BROAD ST
- 2901 W ALLEGHENY AVE
- 1330 N 30TH ST

Recycle Bin

Show Feed

Back to List: Accounts

Open Activities 0 |

Covered Building Detail [Edit] [Delete] [Clone]

Covered Building Name	1701 JOHN F KENNEDY BLV
OPA Number	883056605
Portfolio Manager ID	176
OPA Building Owner (1)	Liberty Property Trust
OPA Building Owner (2)	LTD IV EAST
Building Description (OPA)	OFF/BLD N/COMM W-PKG MASO
Square Footage (OPA)	1,200,021
Council District	5
Building Notes	

Campaign History [Add to Campaign] [Campaign History Help]

Action	Campaign Name	Start Date	Type	Status	Responded	Member Status Updated
[Edit] [Del] [View]	April Benchmarking Reported		Email	Sent	<input type="checkbox"/>	4/2/2014 1:34 PM
[Edit] [Del] [View]	Benchmarking/EW March 2014		Email	Sent	<input type="checkbox"/>	3/5/2014 4:52 PM

Contact Clicked Links [New Contact Clicked Link] [Contact Clicked Links Help]

Action	Link	Full Link	Clicks	Unique Clicks	Created Date	Last Click Time
[Edit] [Del]	http://www.phillybuildingbenchmarking.com/update	http://www.phillybuildingbenchmarking.com/update	1	1	4/7/2014	4/7/2014 12:05 PM
[Edit] [Del]	http://greenworksphila.wordpress.com/2014/03/12/kywide-benchmarking-update/	http://greenworksphila.wordpress.com/2014/03/12/kywide-benchmarking-update/	2	1	4/2/2014	4/7/2014 12:03 PM

Financing, Technical Assistance, and Benchmarking Update



Dear Building Owner/Operator,

Thank you again for your participation in the first year of the City of Philadelphia's benchmarking initiative. Results from this reporting will be available later this month on our website, www.phila.gov/benchmarking.

The results of the survey you and many others completed last month indicate that financing and technical assistance are the biggest barriers to improving a building's energy performance. So we wanted to tell you about the City's [EnergyWorks](#) program, which is a good resource in addressing these challenges.

Through the end of March, EnergyWorks is offering low-cost financing (as low as 3.5%) for eligible energy efficiency improvements and on-site guidance to identify potential improvements.

To learn more and see whether EnergyWorks might be a fit for your building, please call (215) 496-8157 or visit the EnergyWorks website at www.energyworksnow.com/commercial.

Reporting for 2013 energy and water usage will begin in April 2014. You will receive notice at this email address and via mail when the new reporting cycle opens.

Thank you,
Mayor's Office of Sustainability



Charts display averages from the 1 message in the "Released" status.

Support from Partner Organizations

LOCAL PARTNERS



DELAWARE VALLEY
GREEN BUILDING
COUNCIL

UTILITY PARTNERS



NATIONAL PARTNERS



Minneapolis Commercial Building Energy Rating & Disclosure Ordinance



DOE Better Buildings Summit
May 9, 2014

Brendon Slotterback
Sustainability Program Coordinator
City of Minneapolis

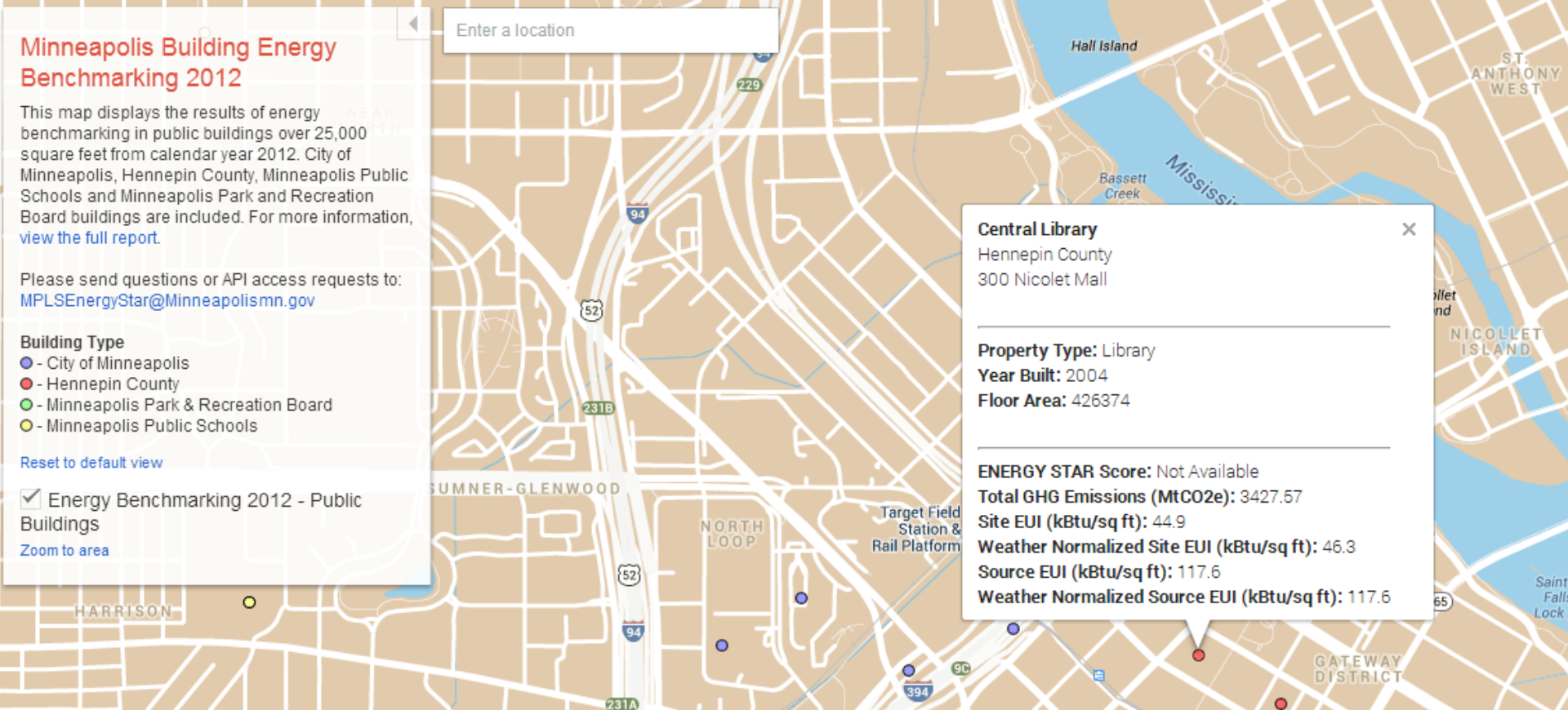


What is the Commercial Building Energy Rating & Disclosure Ordinance?

Two parts...



1. Large public and commercial buildings must measure (benchmark) and report to the City energy and water performance annually



2. The City discloses results annually after a one year grace period

Use market forces, not performance or design mandates, to increase the energy efficiency of existing commercial buildings.



city of minneapolis 2012
SUSTAINABILITY
report



The City of Minneapolis is committed to citywide economic opportunity, social equality, and environmental sustainability. For the seventh year in a row, the City is tracking progress on 26 sustainability indicators. Monitoring these indicators helps us understand the state of our community and focus on what needs to be done to preserve and enhance our quality of life for future generations.



.....
To learn more about each sustainability indicator and what is being done to achieve Minneapolis' sustainability goals, visit our new website:

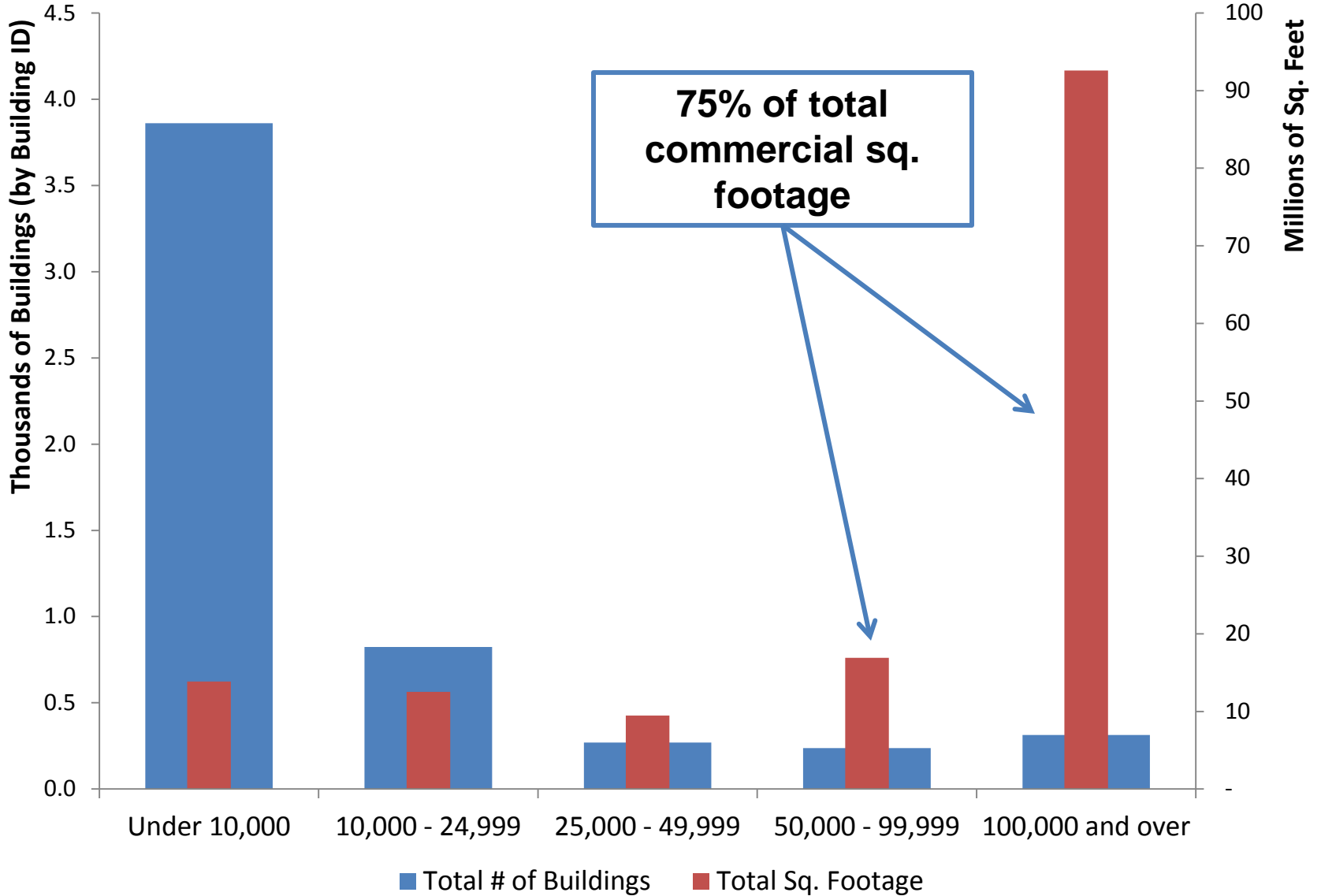
www.minneapolismn.gov/sustainability/indicators
.....

Eco-Focused

Jobs & Economic Vitality

Sustainability Indicators & Targets

Minneapolis Commercial Buildings by Size & Total Square Footage



Reporting timeline

2013 – Public buildings only

2014– Buildings at or over 100,000 square feet

2015 – Buildings at or over 50,000 square feet

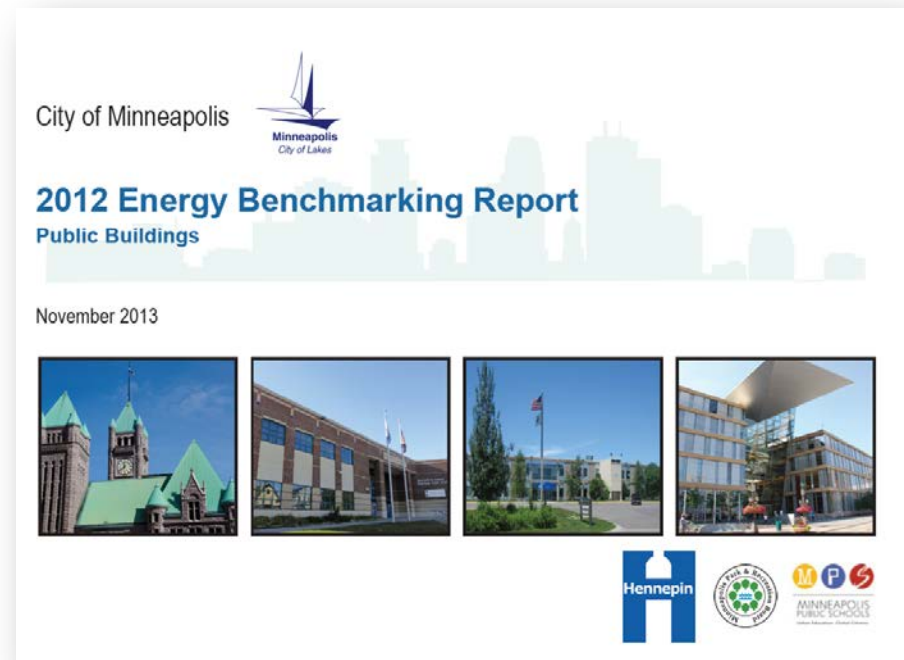


Resources for building owners



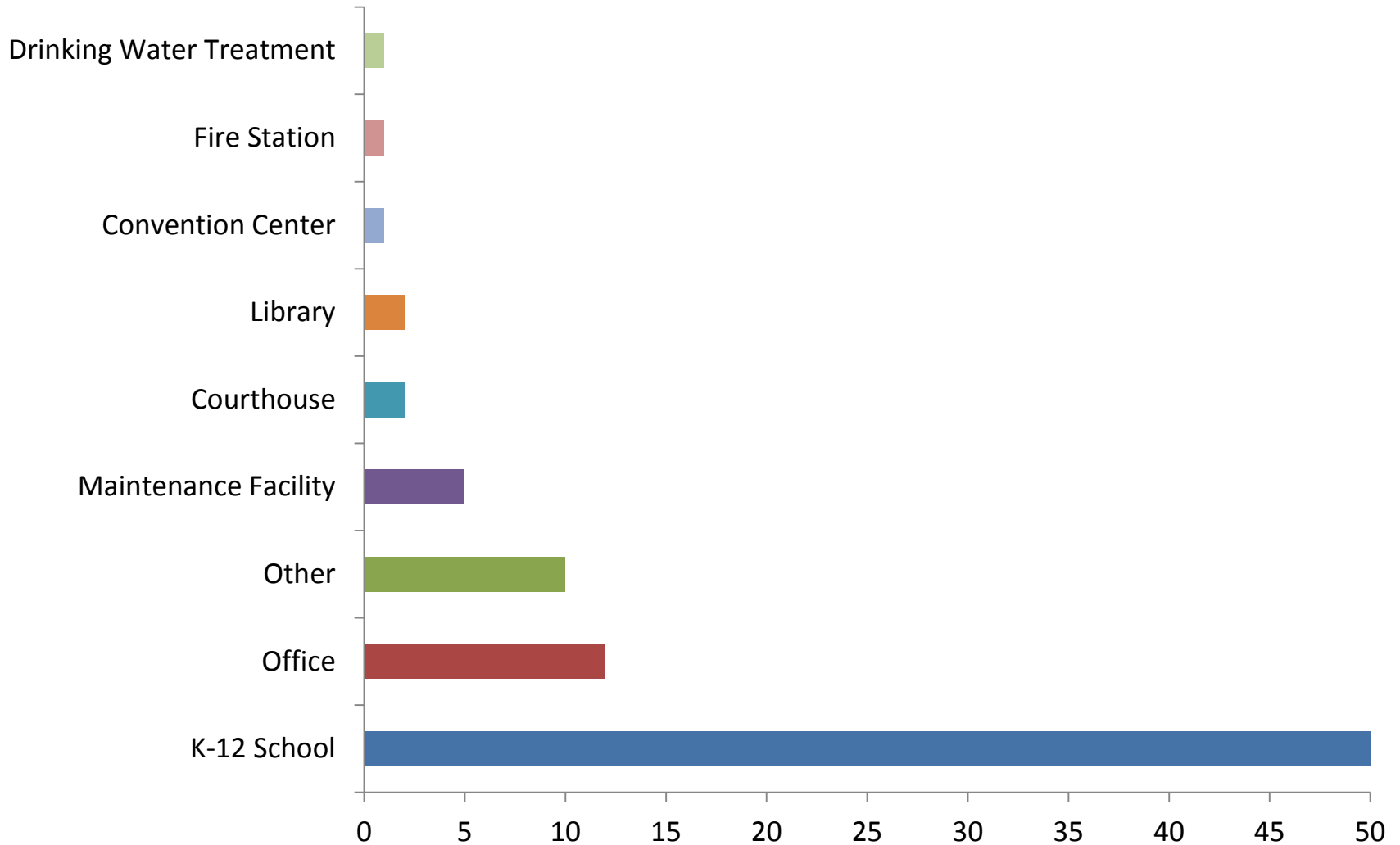
2012 Public building results

- 102 buildings, 21.3 million square feet
- Great cost savings potential: a 10% reduction could save \$2.5 m in energy costs.
- 50% of buildings were eligible for ENERGY STAR score
- Median score was 46, average 52
- Scores and energy intensity results vary widely
- Little connection between age and energy use intensity



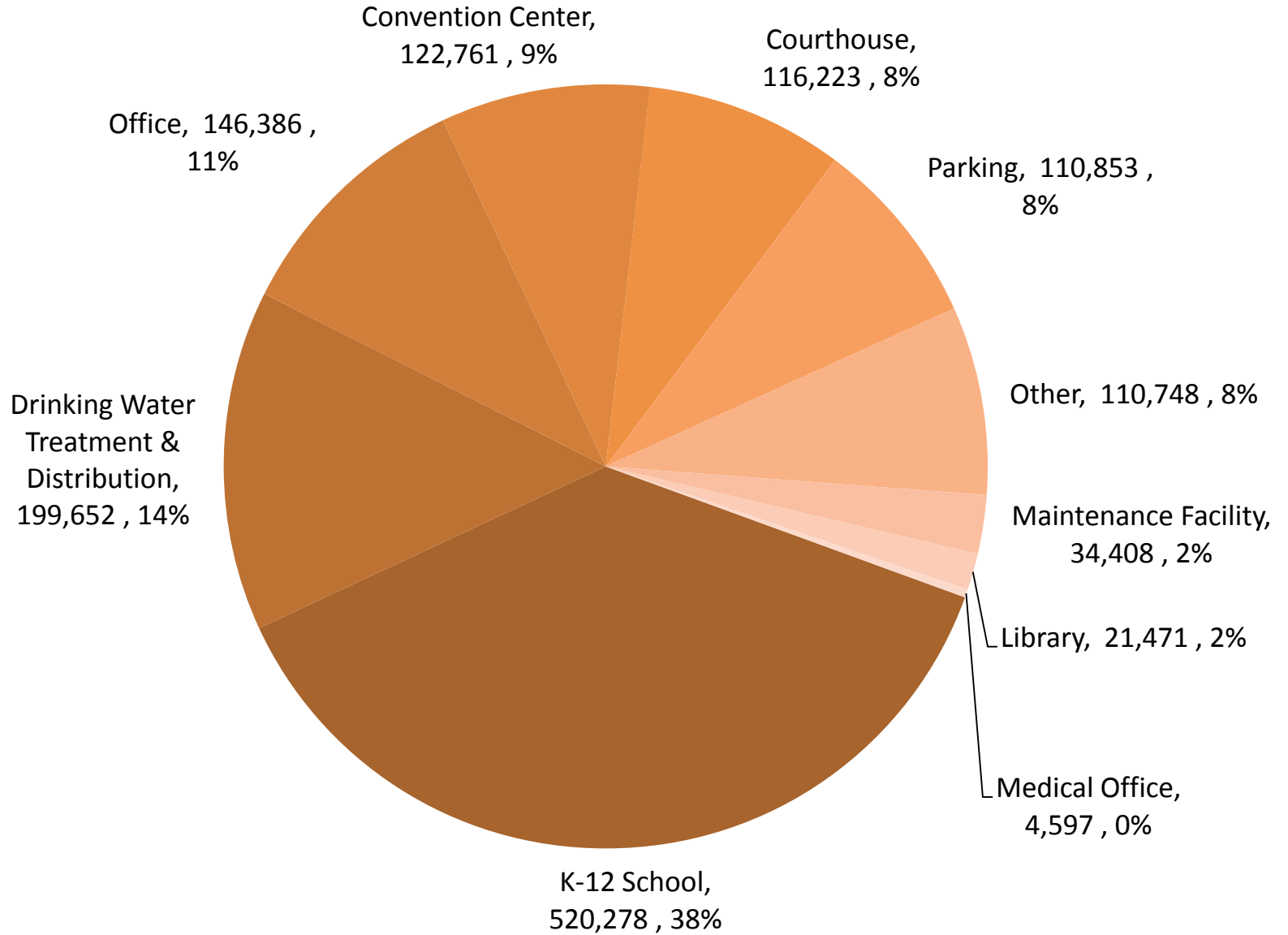
<http://minneapolismn.gov/environment/energy/WCMS1P-116916>

Benchmarked Public Buildings by Type

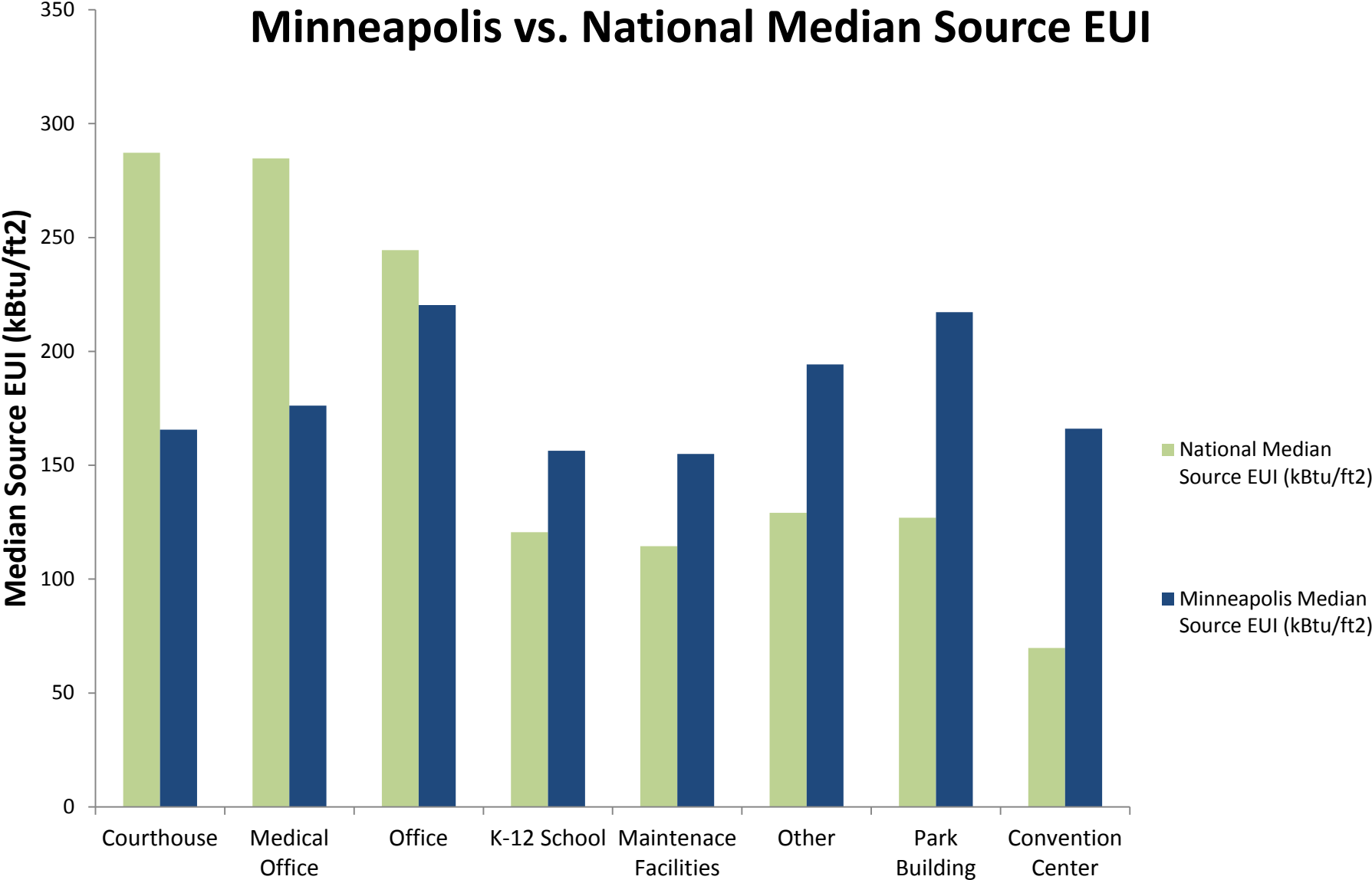


Benchmarked Energy Use by Building Type

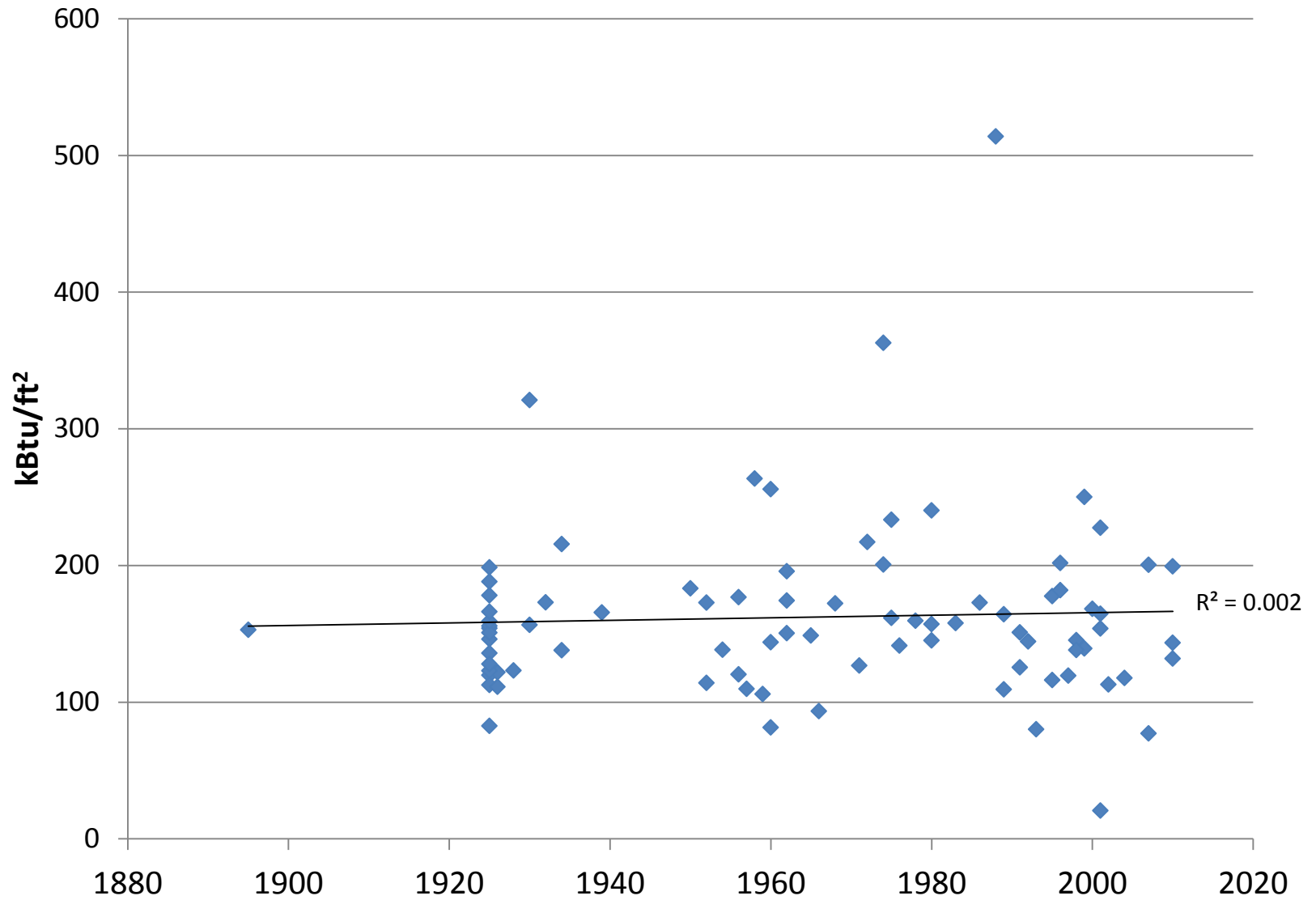
mmbtu



Minneapolis vs. National Median Source EUI



Source EUI by Year Built



Motivating action





Energy use data is transparent and is changing conversations...

Minneapolis Building Energy Benchmarking 2012

This map displays the results of energy benchmarking in public buildings over 25,000 square feet from calendar year 2012. City of Minneapolis, Hennepin County, Minneapolis Public Schools and Minneapolis Park and Recreation Board buildings are included. For more information, [view the full report](#).

Please send questions or API access requests to: MPLSEnergyStar@Minneapolismn.gov

- Building Type**
- - City of Minneapolis
 - - Hennepin County
 - - Minneapolis Park & Recreation Board
 - - Minneapolis Public Schools

[Reset to default view](#)

- Energy Benchmarking 2012 - Public Buildings
- [Zoom to area](#)

Enter a location

Central Library ✕

Hennepin County
300 Nicolet Mall

Property Type: Library
Year Built: 2004
Floor Area: 426374

ENERGY STAR Score: Not Available
Total GHG Emissions (MtCO2e): 3427.57
Site EUI (kBtu/sq ft): 44.9
Weather Normalized Site EUI (kBtu/sq ft): 46.3
Source EUI (kBtu/sq ft): 117.6
Weather Normalized Source EUI (kBtu/sq ft): 117.6

Energy use data is transparent and is changing conversations...

<BUILDING_NAME>

Address: <BUILDING_ADDRESS>

Year Built: <YEAR_BUILT> Gross Floor Area: <GROSS_FLOOR_AREA>

Seattle Building ID: <DPD_BUILDING_ID>



Compare Your Building to Others in Seattle

Your building's annual energy use per square foot or **Energy Use Intensity (EUI)** can be compared to the other 400 Seattle office buildings that reported 2012 energy performance as required by law.

Your building's 2012 EUI
<EUI> kBtu/sf



Full report and other building type comparisons at www.seattle.gov/energybenchmarking.

EUI = Total Annual Energy Use (kBtu) ÷ Total Square Feet (sf)



Compare Your Building to Others in the U.S.

If available, your building's ENERGY STAR® score shows how its energy use compares to other U.S. buildings on a scale of 1 (least efficient) to 100 (most efficient). Buildings scoring 75 or more may be eligible to earn ENERGY STAR certification. Unlike EUI, the ENERGY STAR score takes into account the number of workers, operating hours, computers and other factors. Learn more at www.energystar.gov.



Your Building's ENERGY STAR Score: <ES_SCORE>

Seattle Median ENERGY STAR Score for Offices: 75

A higher ENERGY STAR score indicates a more efficient building.

The information in this report is self-reported and subject to verification. The City is sending this report to the building owner and the person that reported the building.

www.seattle.gov/EnergyBenchmarking

Energy use data is transparent and is changing conversations...



Connecting building owners with resources



City of Chicago's
Green Office Challenge

a collaborative effort by
Office DEPOT · I.C.L.E.I. Delta Green **PSF**

[Home](#) [The Challenge](#) [Register](#) [Sponsorship](#) [Contact Us](#) [Facebook](#) [Twitter](#) [LinkedIn](#)

[Login](#)

Welcome, Chicago!

The Green Office Challenge is designed to help Chicago businesses and employees improve sustainability in the workplace and beyond.

Join the Challenge to reduce energy, materials, and water consumption – and encourage your colleagues and peers to do the same. Demonstrate environmental leadership and help us make Chicago an even better place to live and work.

[Register for the Challenge](#) and participate from February to November 2013.

The Challenge has Started

[Participant Login](#)

[Register for the Challenge](#)

The Chicago Green Office Challenge is powered by [Green Per Square Foot](#)

[Contact Us](#)

[Back to top](#)

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Engaging tenants

Important recent developments





DOE Data Accelerator
Better Buildings Initiative



Customer Energy Usage Data (CEUD)
Public Utilities Commission Workgroup

Reporting deadline for buildings 100,000 square feet and over: **June 1, 2014**

Benchmarking workshops:
April 24th and May 6th

City's website:

<http://minneapolismn.gov/energybenchmarking>

CEE website:

<http://buildingdisclosure-mpls.mncee.org/>

Brendon Slotterback - 612-673-2349 - brendon.slotterback@minneapolismn.gov



SUSTAIN
ABILITY



DC

**Putting Data to Work:
*Transforming Building
Performance in the District
of Columbia***

Marshall Duer-Balkind

Energy Administration
District Department of the Environment
Government of the District of Columbia

Better Buildings Summit
Washington, DC

May 9, 2013



Why Benchmarking?

Sustainable DC

DISTRICT
DEPARTMENT
OF THE
ENVIRONMENT



green forward

★ ★ ★
SUSTAIN
ABILITY



DC

Overall Vision:

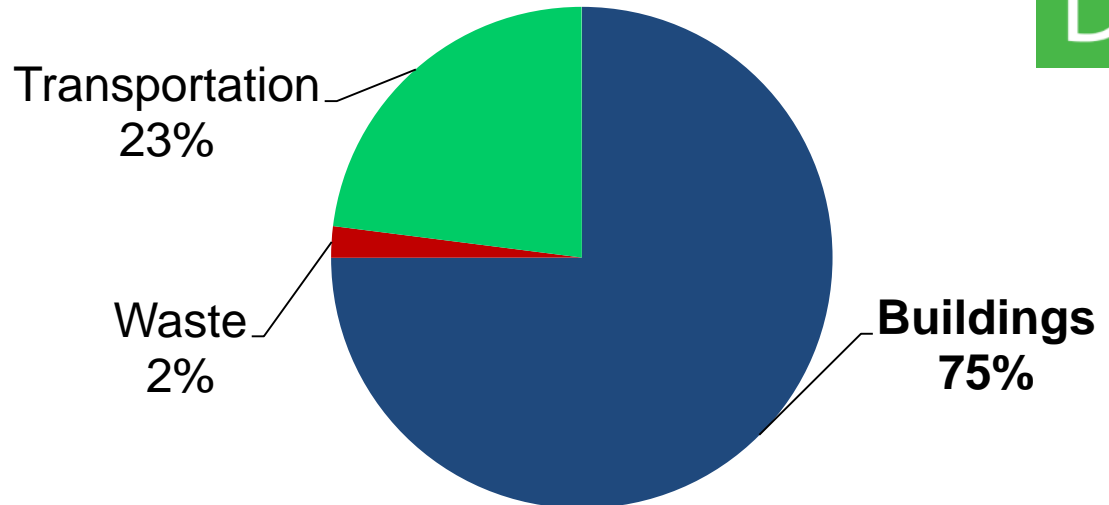
In just one generation—20 years—the District of Columbia will be the healthiest, greenest, and most livable city in the United States.

Energy Target:

By 2032, **cut citywide energy use by 50%** and increase use of renewable power to 50%

Why Benchmark?

Buildings are DC's largest source of Greenhouse Gas Emissions:



Source: DC 2011 GHG Inventory

Utilities are the largest non-fixed expense for DC building owners.

32% - Utilities

22% - Repairs/Maintenance

21% - Admin

5% - Security

1% - Grounds

Source: BOMA, 2010

DC Benchmarking Law



Green Building Act of 2006

Clean and Affordable Energy Act of 2008

(D.C. Official Code § 6-1451.03(c), 20 DCMR 3513)

- **ENERGY STAR Portfolio Manager** benchmarking & public reporting
 - DC Government Buildings >10,000 sq. ft.
 - Private Buildings >50,000 sq. ft., **each April 1**
- **ENERGY STAR Target Finder** modeling for new buildings >50,000 sq. ft.

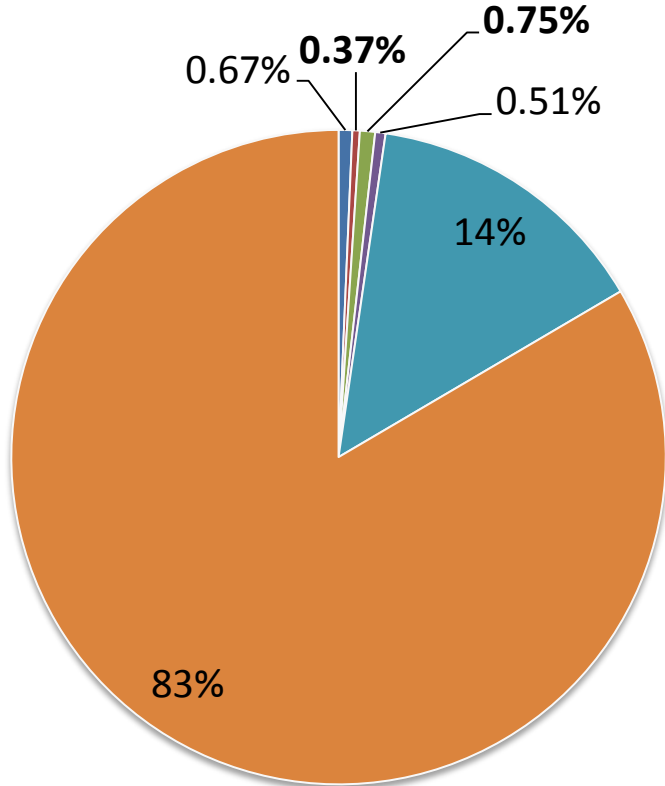


Building Stock: Effective Scale

2000 buildings, 357 million sq. ft. =
1.6% of the Buildings; 49% of the area

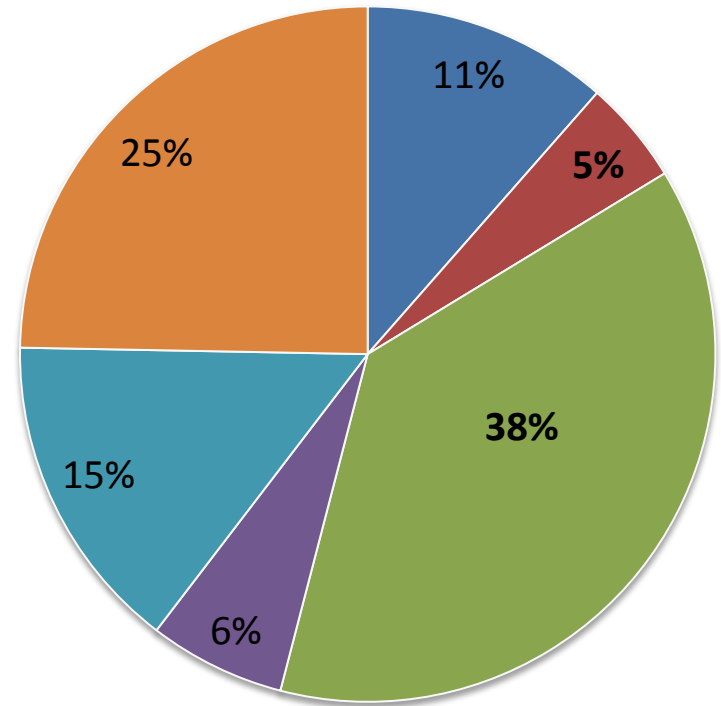


Buildings



128 thousand buildings

Building Area



730 million gross square feet

Utility Data

Problem: Owners often can't access tenant data

- Partial Solution: DDOE requires non-residential tenants to provide their landlord access to data
- Doesn't address residential; cumbersome

Solution: Aggregated whole-building consumption data + Direct upload to Portfolio Manager

- Aggregate Data Available from Pepco for 5+ accounts
- Pepco expects automated upload by Summer 2014
- US DOE Energy Data Accelerator

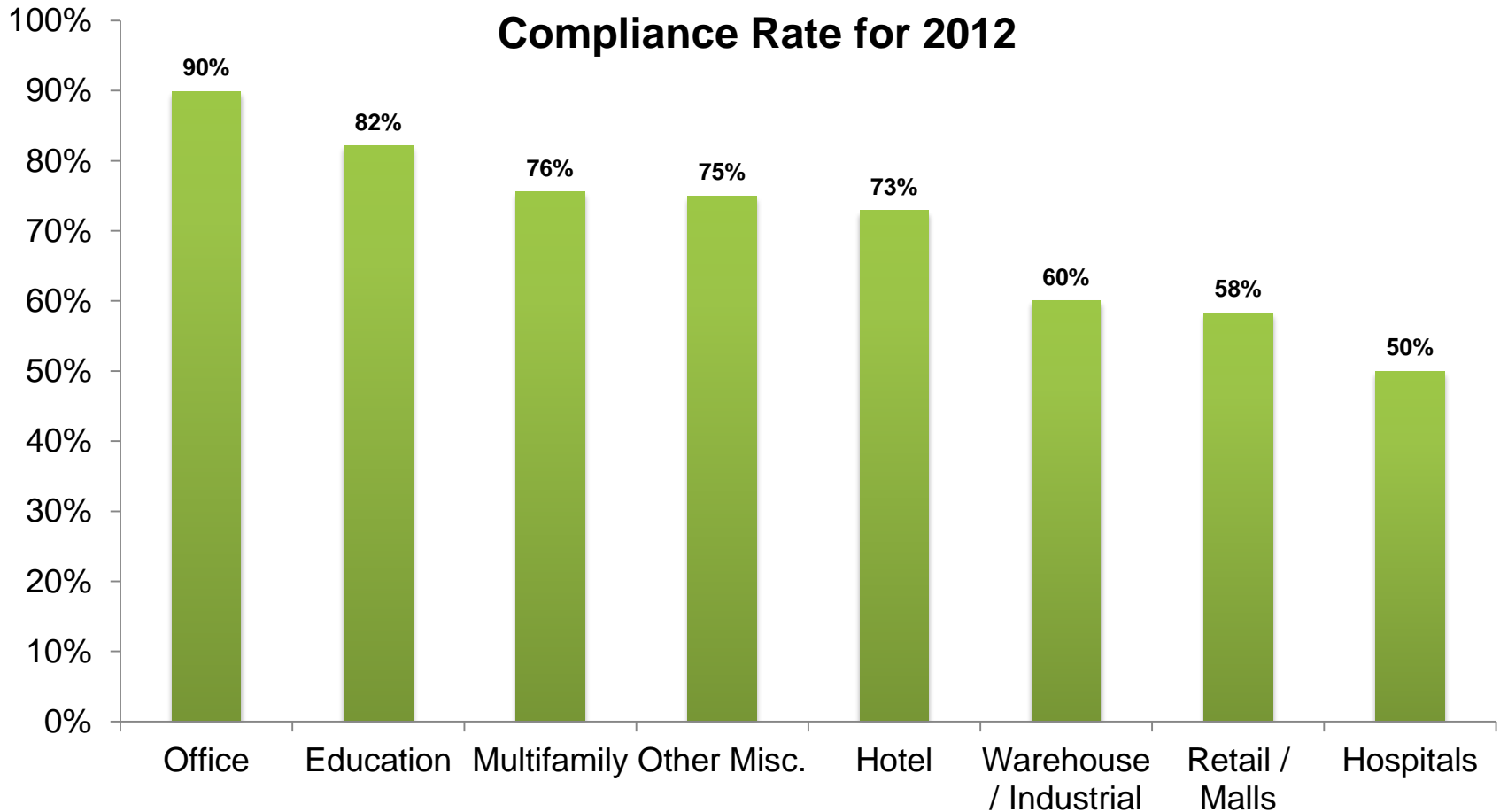


Findings

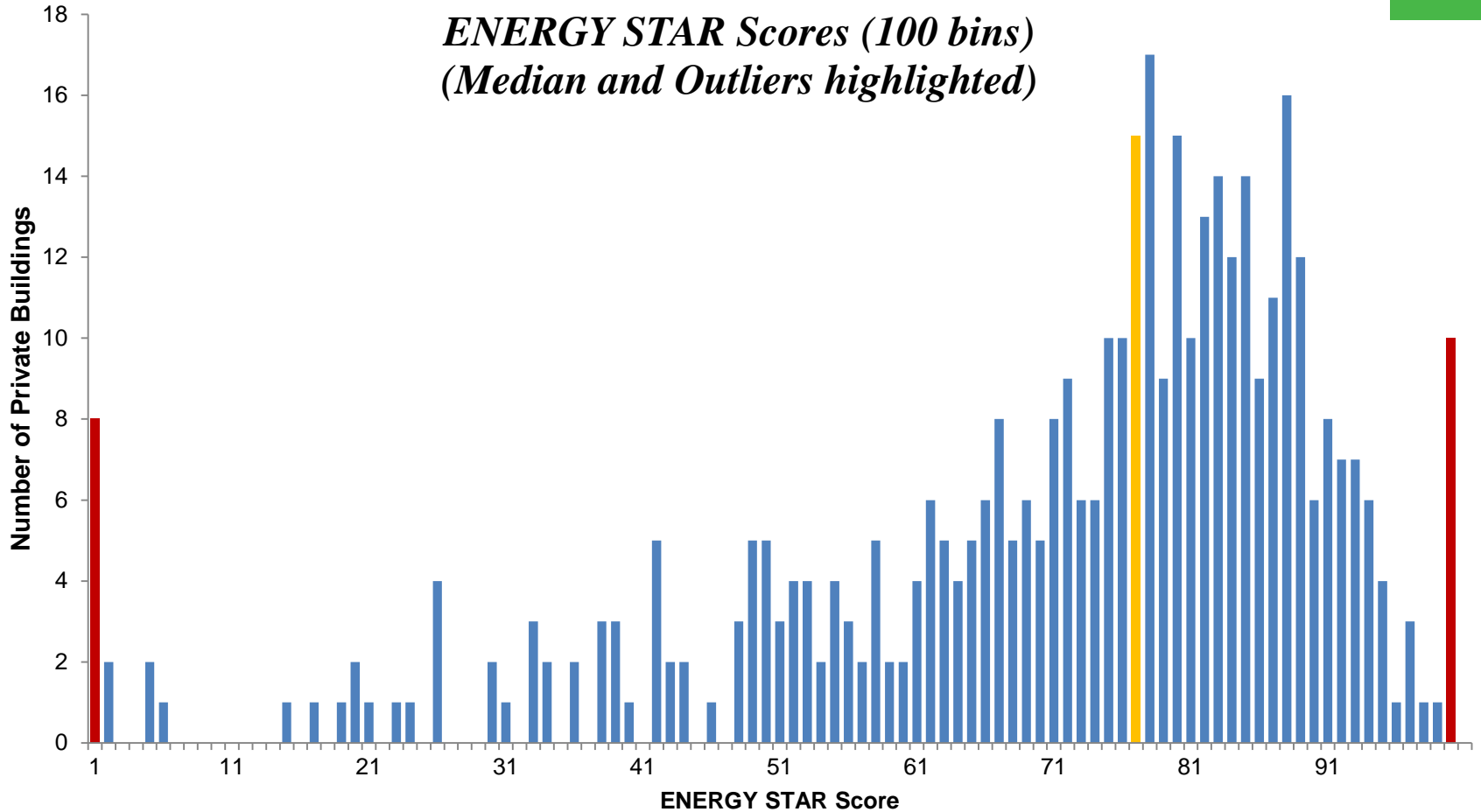
Compliance Rate:

2012: 83%

2013: 58%



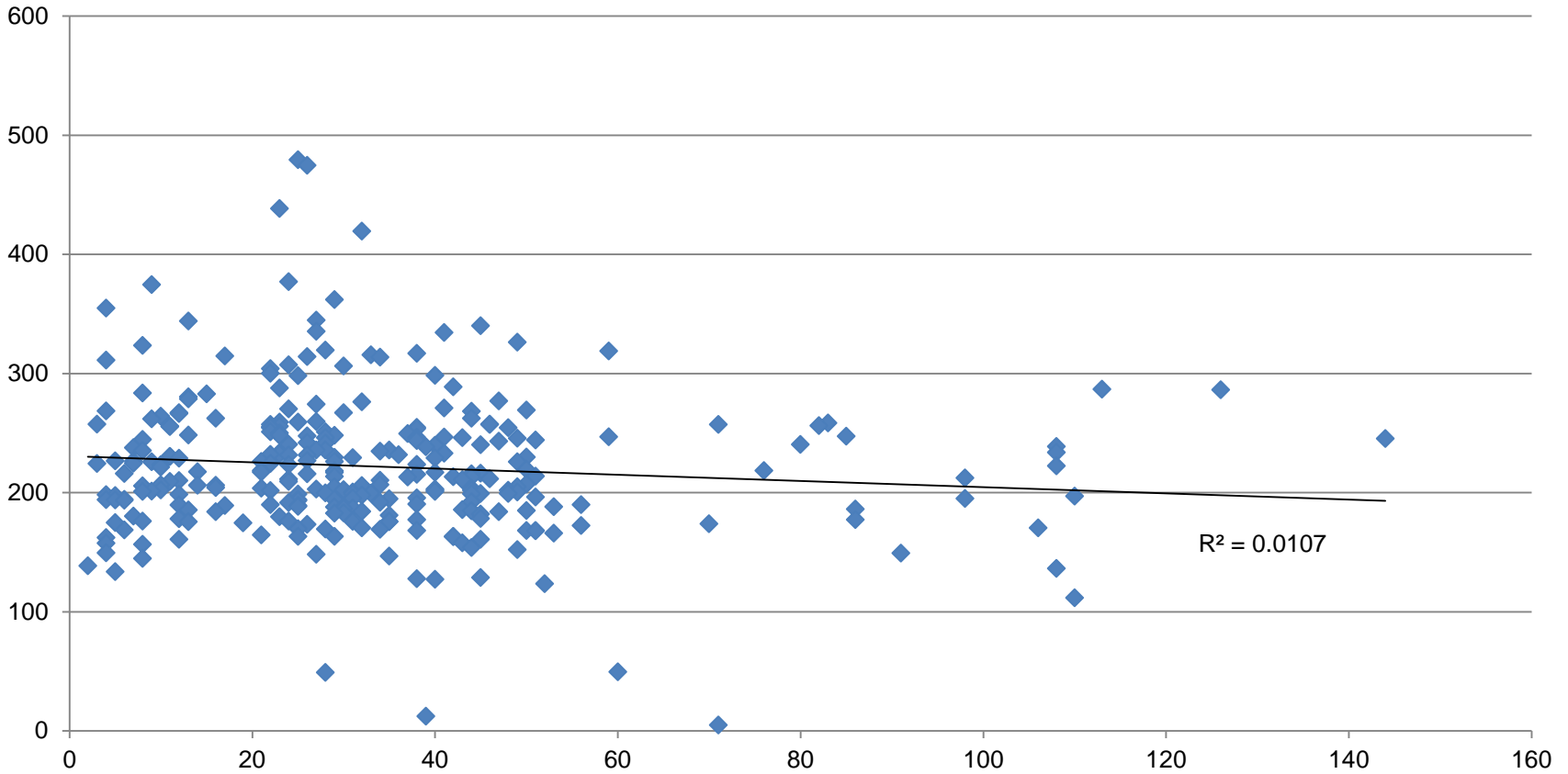
ENERGY STAR® Scores (2012)



Age Doesn't Matter



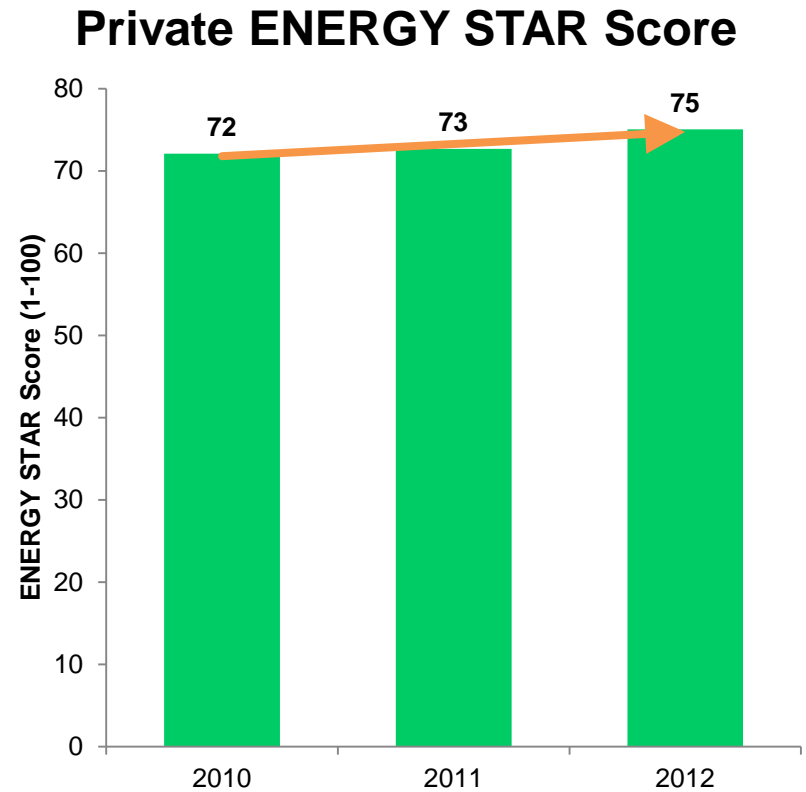
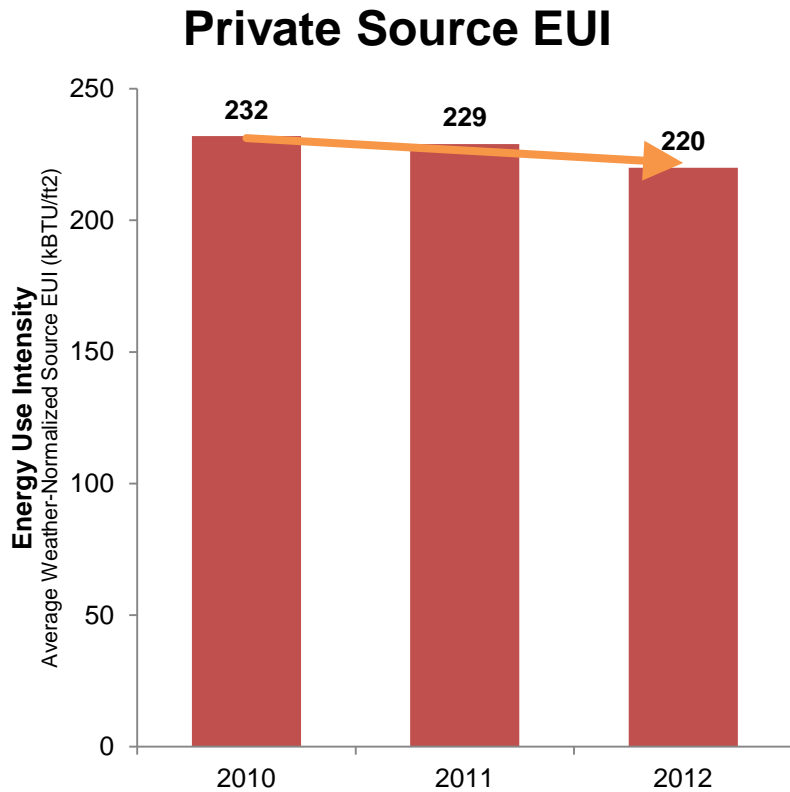
Source EUI v Age



Energy Savings



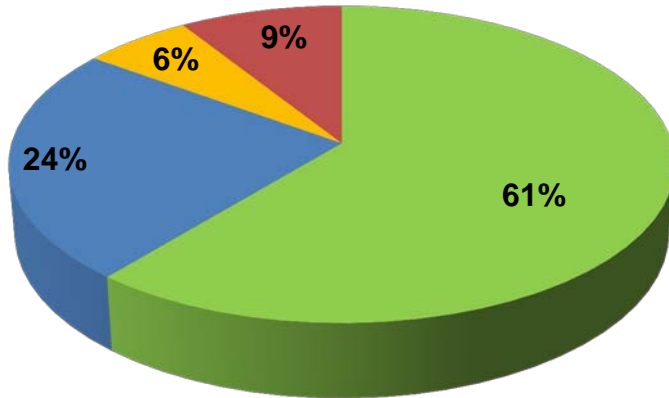
DC Government & Private Buildings, 2010-2012: 6% Energy Savings



Source: DC Benchmarking Reports from rated buildings with 3 years of data

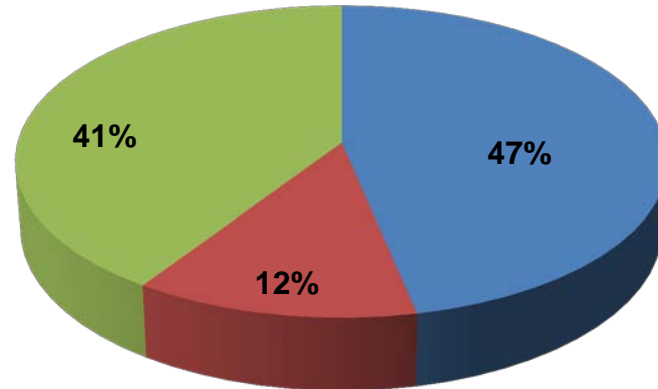
Missing Data

Missing Utility Data (2012)



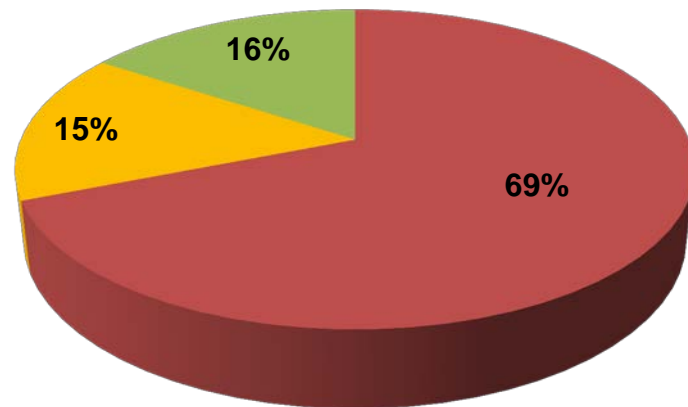
■ Energy and Water ■ Energy, No Water
■ No Energy, Water ■ No Energy No Water

Floor Area Discrepancy (2012)



■ OTR>ESPM ■ Equal ■ OTR<ESPM

Multifamily Meter Configuration (2012)



■ No Selection ■ Partial Building ■ Whole Building



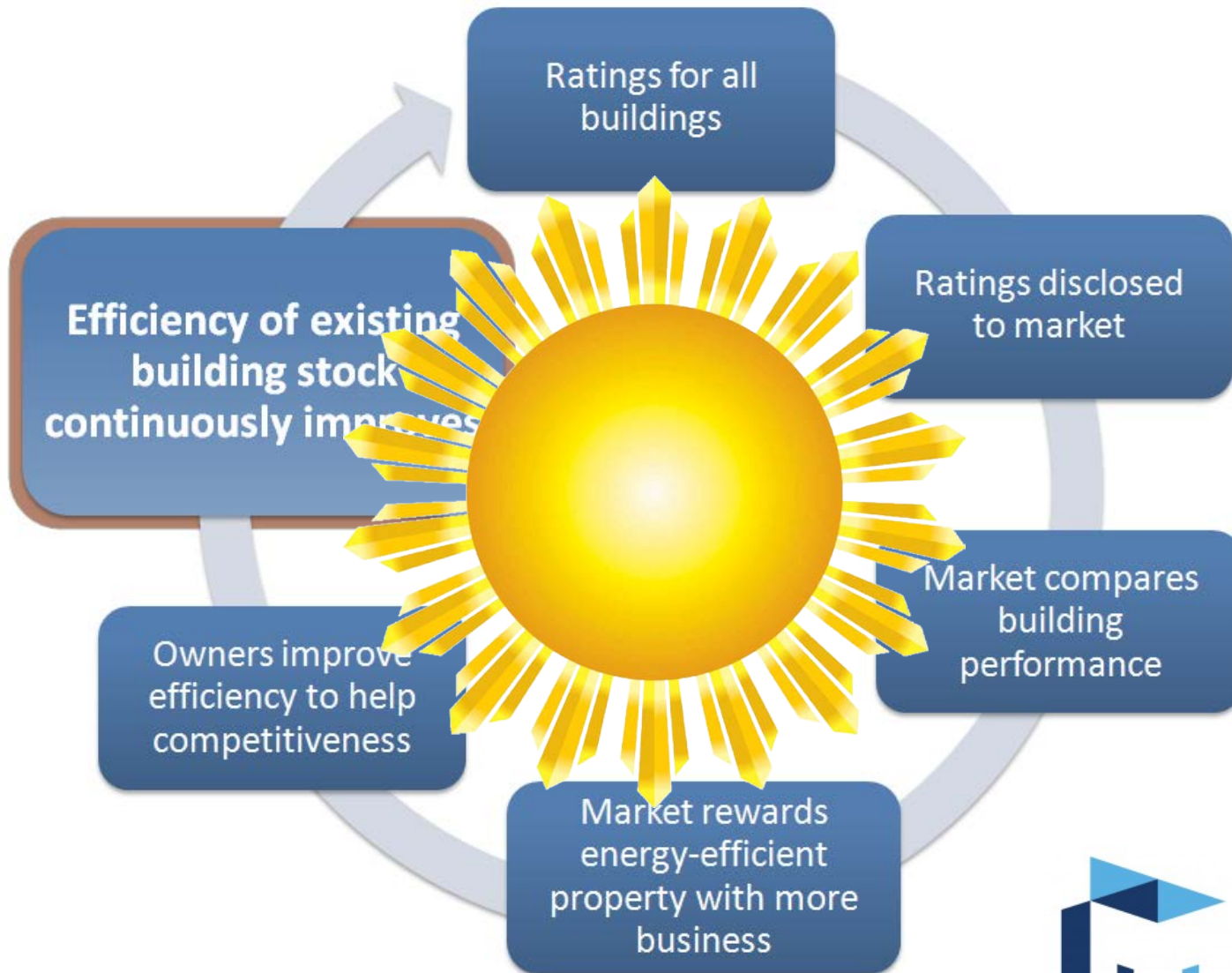


Putting the Data to Work

Data Uses

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

Why Transparency?





Public Building Transparency

- District government benchmarked close to 400 buildings
- BuildSmartDC.com
- ENERGY STAR Score for 125+ buildings
- Interval Data for select facilities
- **Game Change Initiative: 20% in 20 months!**

Wilson Building
 1350 PENNSYLVANIA AVE NW,
 Washington, DC

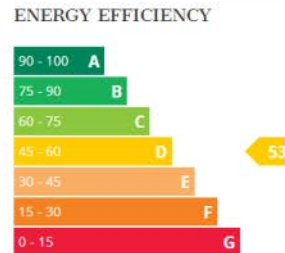
The John A. Wilson Building, popularly known simply as the Wilson Building or the JAWB, houses the offices and chambers of the Mayor and Council of the District of Columbia. Originally called the District Building, it was renamed in 1994 to commemorate former Council Chair John A. Wilson. Completed in 1908, the building is a contributing structure to the Pennsylvania Avenue National Historic Site. In 1995, two-thirds of the Wilson



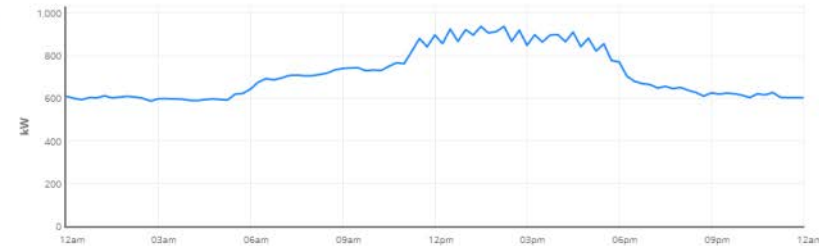
SHOW MORE



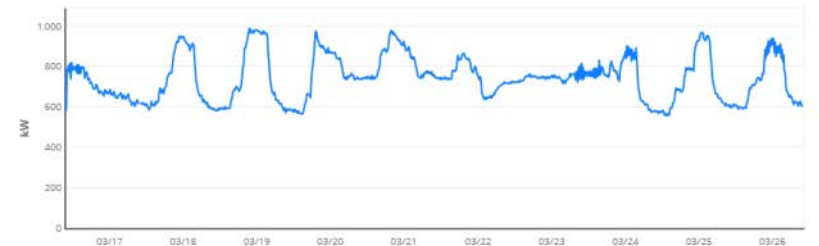
BUILDING TYPE	Office
SIZE	328,760 SF
EUI (KBTU/SF/YR)	66 EUI
ANNUAL ENERGY COST	\$751,629
ANNUAL ELECTRICITY USE	6,391,399 kWh
ANNUAL GHG EMISSIONS	2,762 Tons



LAST RECORDED DAY - 03/26/2014



LAST 10 DAY ELECTRICITY DEMAND



Private Building Transparency

- Benchmark results are disclosed publicly online
- DC is second city to publish this data
- 490 buildings in initial release set
- Will be in BuildSmartDC and other mapping tools
- Data fields in public database currently include:

Address	Year Built
Space Type(s)	Gross Building Area
Energy Performance Rating (1-100)	Energy Use Intensity (EUI)
<i>Electricity Use</i>	<i>Natural Gas Use</i>
<i>Water Use</i>	<i>Other Fuel Use</i>
Optional Narrative Information	CO ₂ Emissions

Data Reliability

- Data Quality and Reliability is a big outstanding question!
- Reliability is more than just cleaning = **“Can you trust the data?”**
- Our Hypothesis: Most errors are accidental
- DDOE has put out an grant for intense data quality reliability analysis and confidence indexing; could direct enforcement actions and/or technical assistance

Improving Performance



DC Sustainable Energy Utility (DC SEU)

- Energy efficiency 'utility' under contract to DDOE

DC SEU Benchmarking Help Center: FREE Technical assistance via email, phone, & in-person training:

- benchmarking@dcseu.com | [202-525-7036](tel:202-525-7036)
- Assisted 70% of buildings that reported in 2013

DC SEU is using data to:

- Proactively engage with customers
- Identify sector-specific needs
- Target limited resources effectively

Building on Existing Law

Aggregate Benchmarking Data Access

- Utilities provide aggregate data for 5+ meters
- Requires direct monthly automated upload to ENERGY STAR Portfolio Manager

Benchmarking Data Transfer Improvement

- Seller of building covered by benchmarking law must provide buyer with all data needed for benchmarking; buyer benchmarks for that year

Building Energy Performance Standards

- DDOE Directed by Mayor to finish plan in 2014

Thank You!



Marshall Duer-Balkind

marshall.duer-balkind@dc.gov

(202) 671-3042

<http://ddoe.dc.gov/energybenchmarking>

Twitter: [@BenchmarkDC](https://twitter.com/BenchmarkDC)

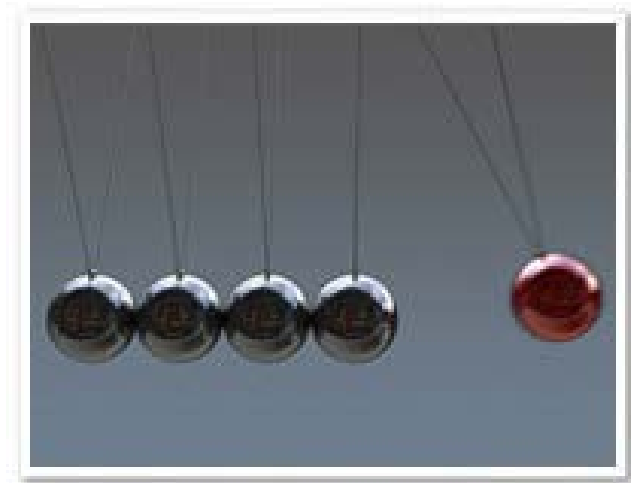
DISTRICT
DEPARTMENT
OF THE
ENVIRONMENT



green forward

DOE Resources – Impact Evaluation Handbook

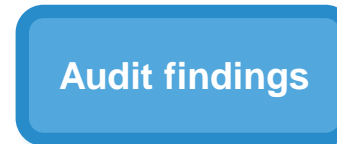
- Publishing an Impact Evaluation Handbook for benchmarking and disclosure
- Addresses short, mid, and long term consumption, environmental, and economic impacts
- Contains all information needed for independent third parties to conduct
- Uses data already available
- Available Fall 2014



DOE Resources – (SEED) Standard Energy Efficiency Data Platform

- Help state and local governments manage data resulting from benchmarking programs
- To manage benchmarking programs, cities combine data about many buildings from a range of tools and sources
- Can also be used by other efficiency programs and building owners

Tools & Databases



Aggregation Platform



Enables cities to manage and analyze data in a private, secure repository.

