Building Energy Performance Data Transforming Markets

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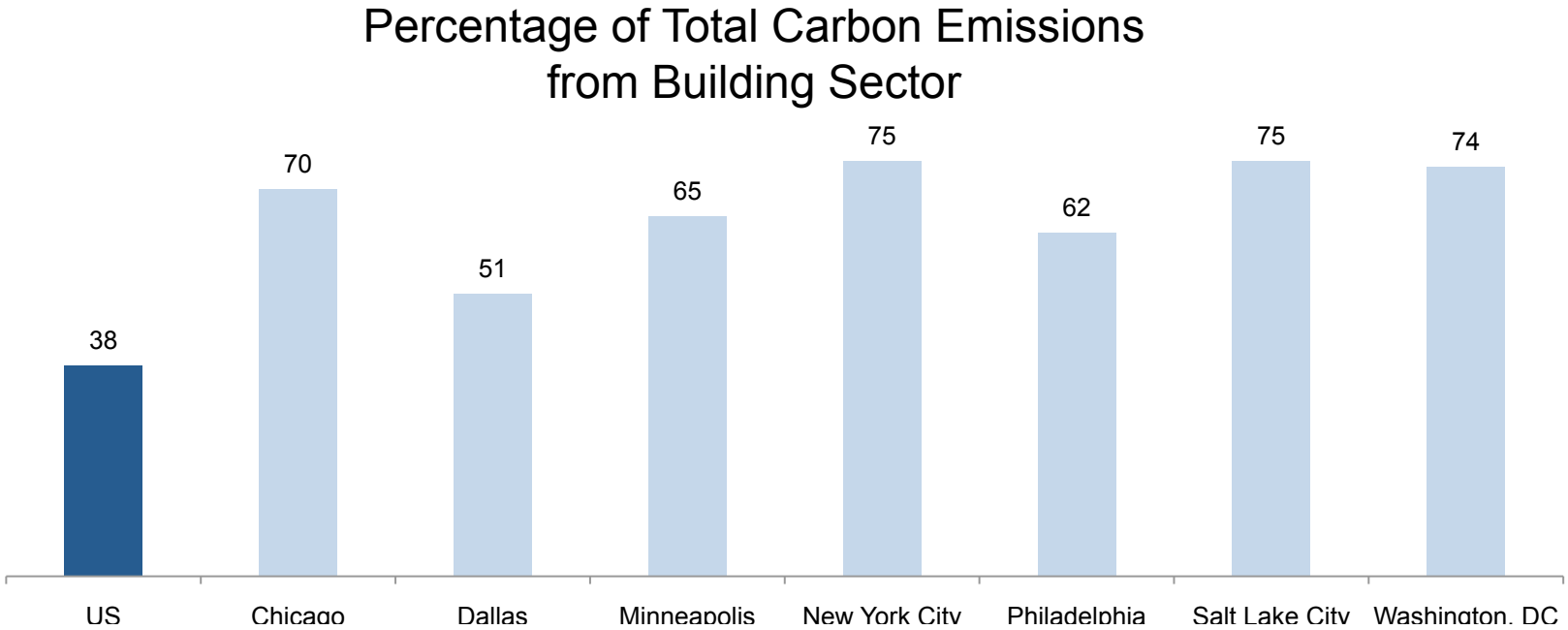
US spends $400 billion per year to power buildings

Building Energy Efficiency and Climate Change



The building sector is the dominant user of energy and generator of CO_2 emissions in the U.S. This is more true in cities due to density.

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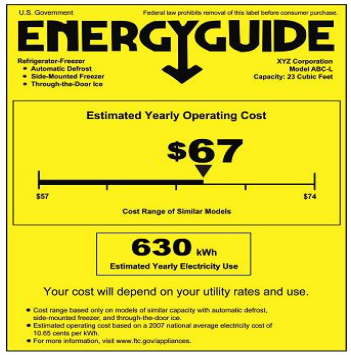
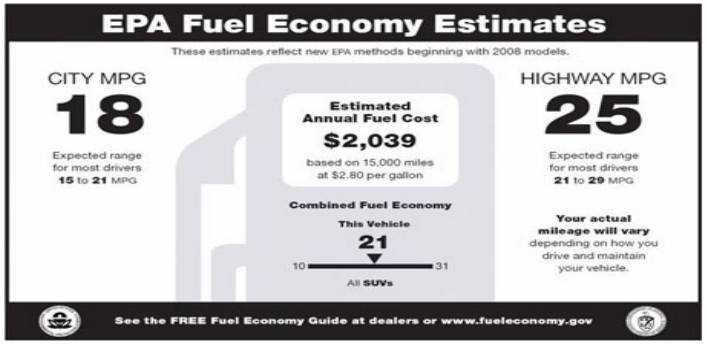
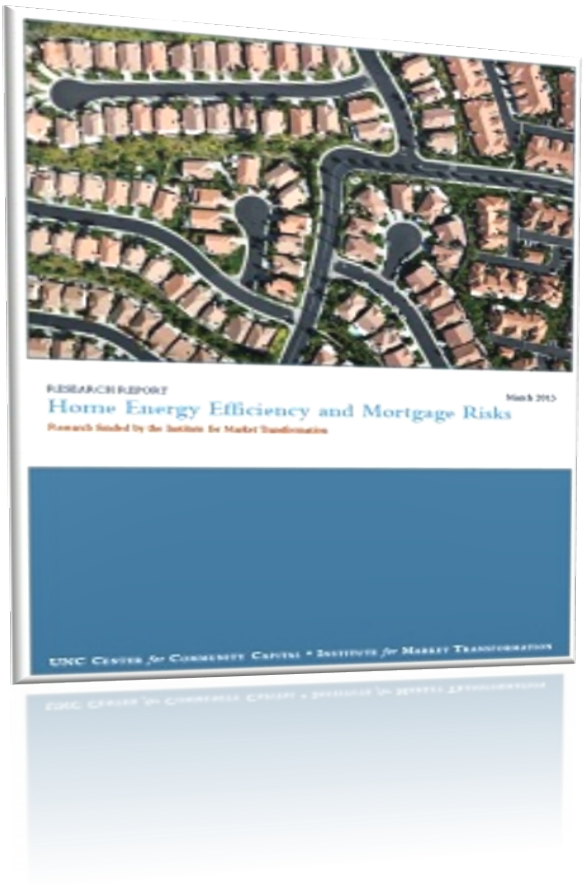
You Can’t Manage What You Don’t Measure






energy
ENERGY STAR

Home Energy Efficiency + Mortgage Risks



- Residential energy efficiency is associated with lower mortgage default and prepayment risk
- National sample of 71,000 mortgage loans
  - 29,994 Energy Star
  - 46,118 Control Group
- 32% lower default risk on ENERGY STAR homes, controlling for other factors, including price, location and FICO score. The more efficient the house, the lower the default risk.
- 10% lower prepayment rate.
- Statistically significant at a 99.9% confidence interval

Energy Benchmarking and Transparency

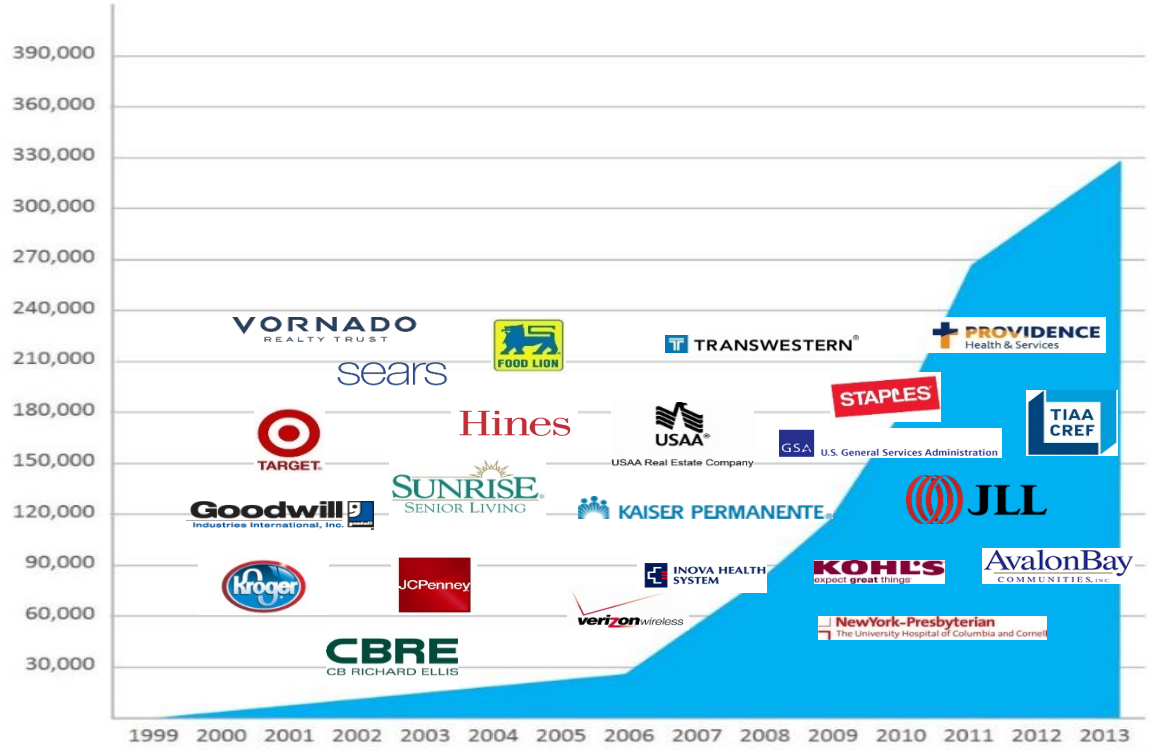
ENERGY STAR Rating for Building Efficiency

- EPA ENERGY STAR offers a 1–100 score, which is based on data from DOE's Commercial Building Energy Consumption Survey (CBECS). It is available for 21 different types of buildings and plants.
- Enables you to compare your facility's actual energy performance to similar facilities nationwide.
- On average, ENERGY STAR certified buildings use 35 percent less energy and cause 35 percent fewer greenhouse gas emissions than similar buildings.

ENERGY STAR Benchmarking is industry standard

Through 2014:

- More than 400,000 properties benchmarking energy use
- More than 25,000 properties are ENERGY STAR certified



What is CBECS?

- Commercial Buildings Energy Consumption Survey (CBECS)
  - the only national level source of data on the characteristics and energy use of commercial buildings
  - conducted every 3 or 4 years since 1979
  - mandated by the Department of Energy (DOE) Organization Act of 1977, Public Law 95-91

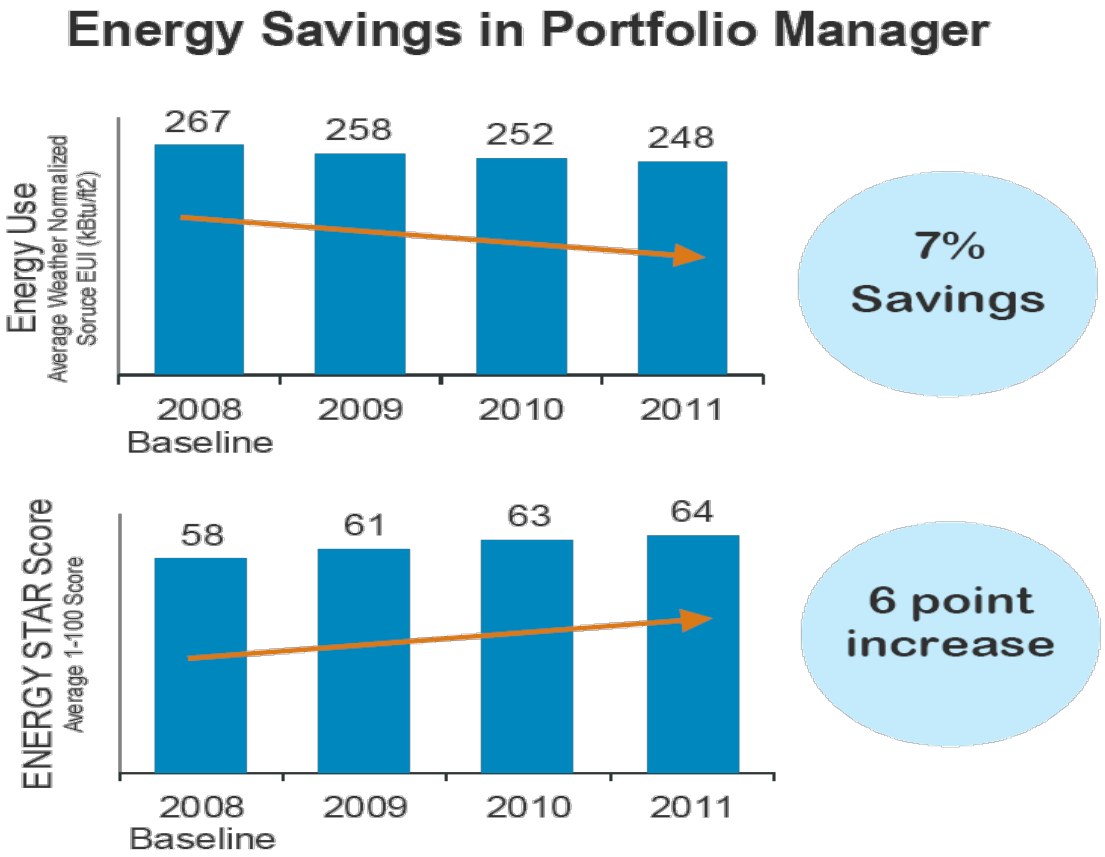
What is CBECS?

- **CBECS interviews…**
  - conducted by professional interviewers using a computerized survey instrument, usually in-person – average interview lasts 30 minutes
  - advance package of materials (including worksheets) is provided to the building a few days before the interview
  - sample size historically 5,000-7,000 buildings
  - building interview covers many topics – building size and use; ownership and occupancy; energy sources, uses, and equipment; energy consumption and cost
  - building survey is followed by an energy supplier survey – if useable energy usage information is not available from the building respondent

Benchmarking and Energy Savings

Consistent benchmarking in buildings results in energy savings and improved performance

www.energystar.gov/datatrends



Transparency Drives Cycle of Improvement

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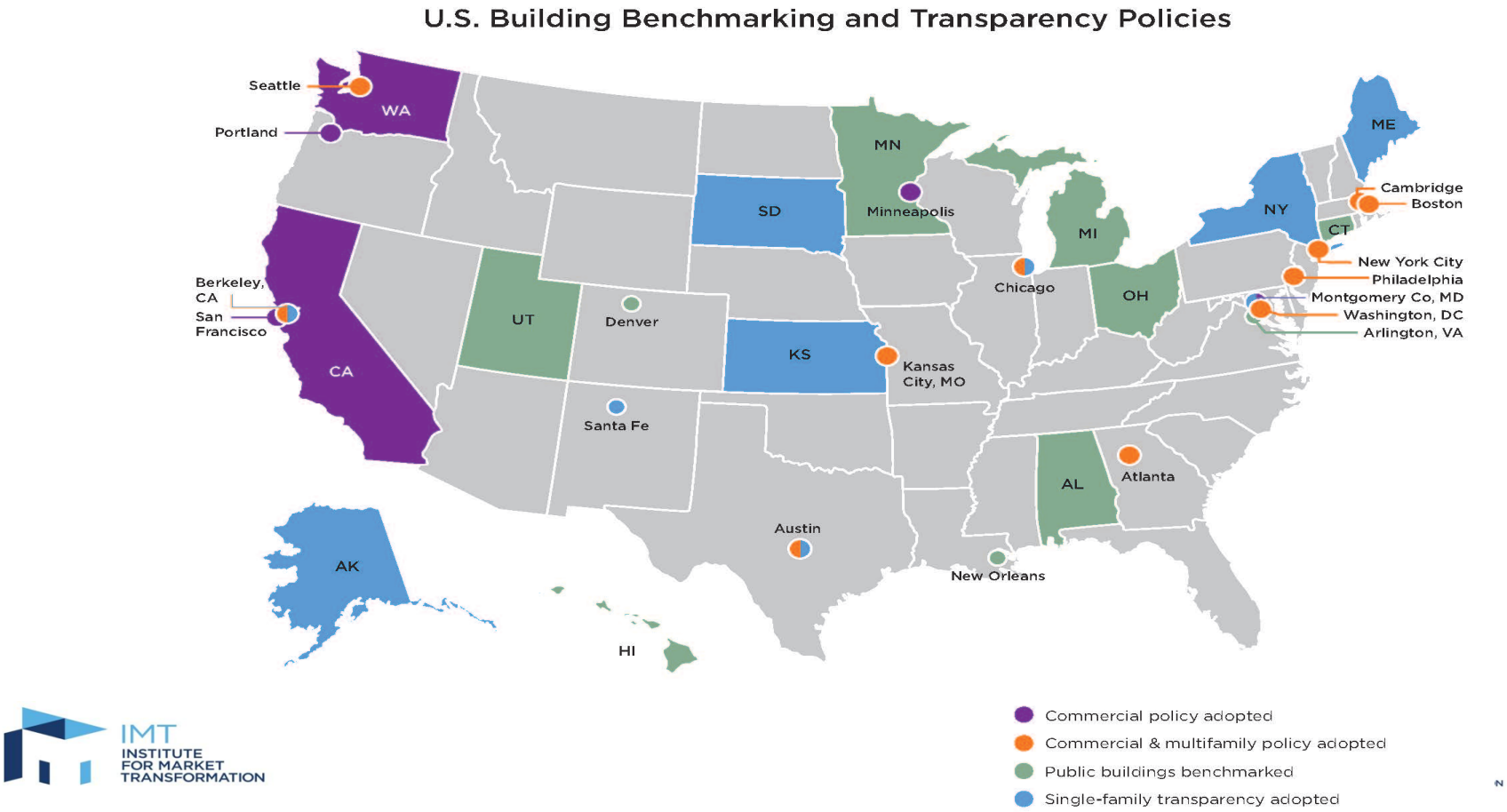
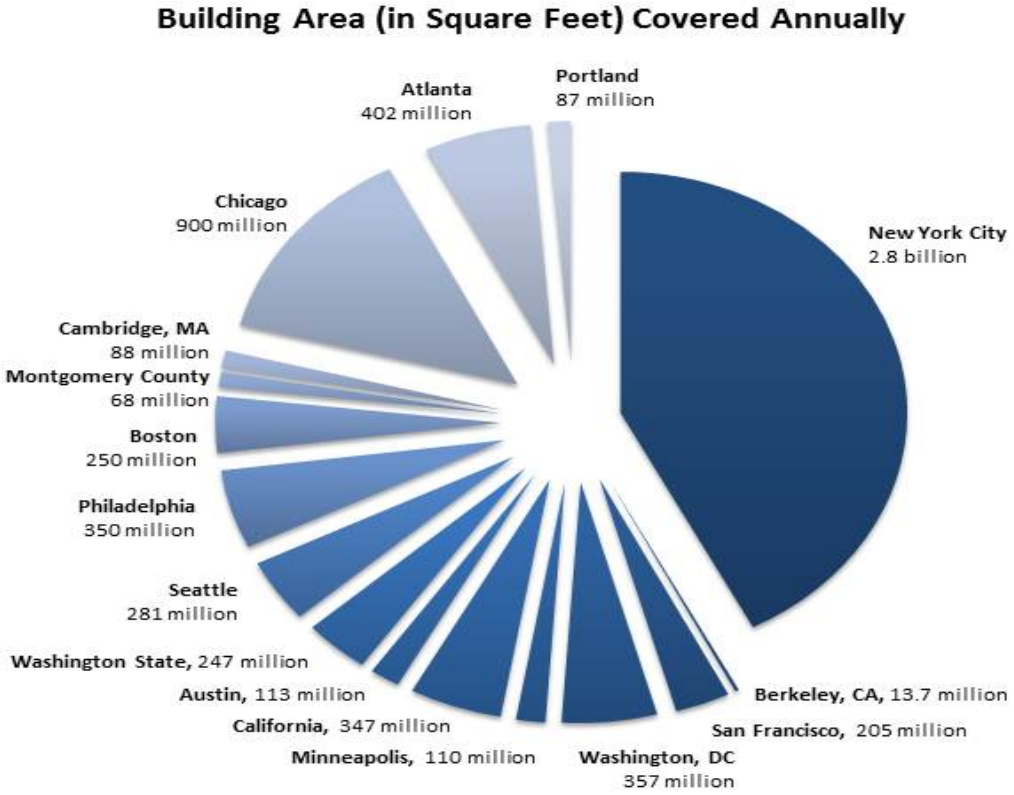
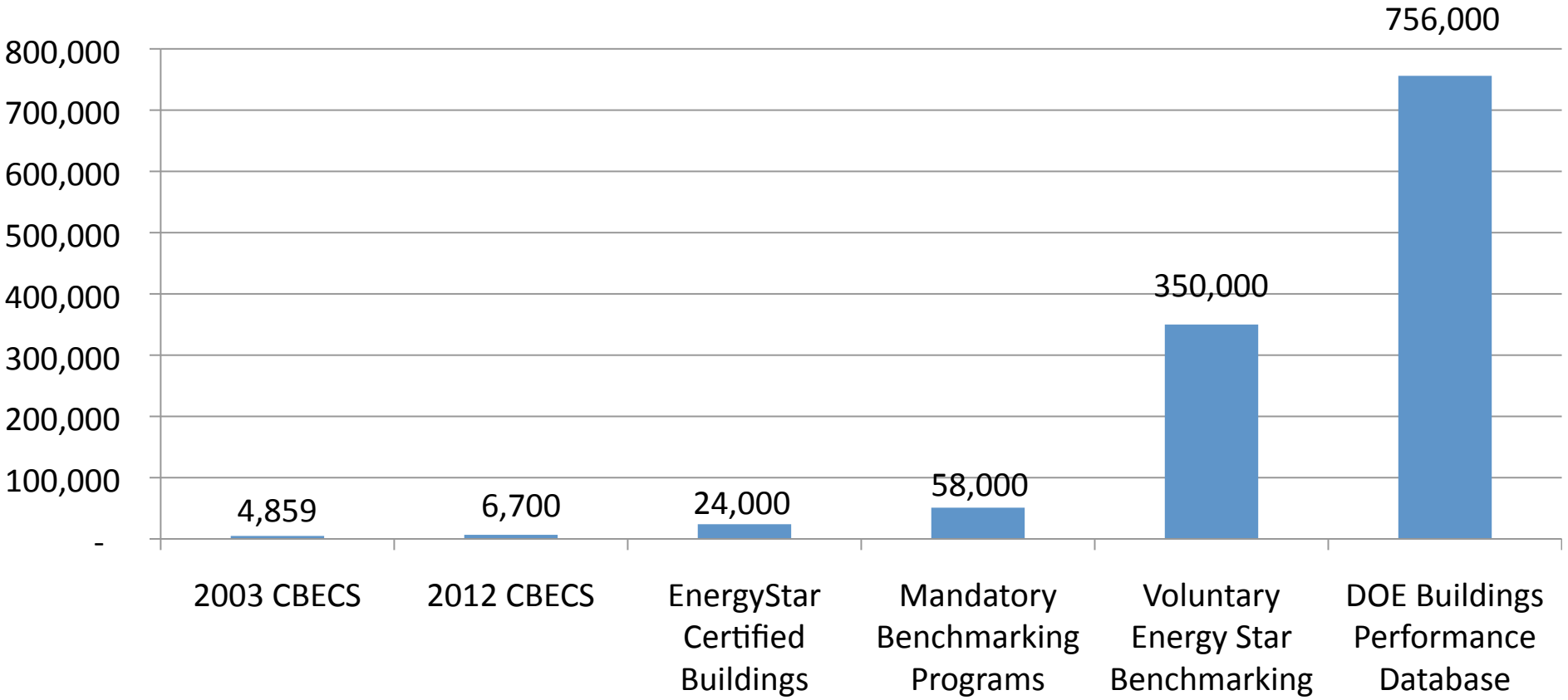
U.S. Benchmarking Policy Landscape



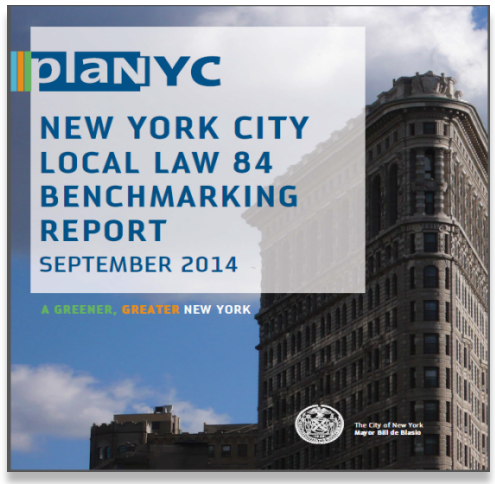
Currently Benchmarked Area



Growth in Building Performance Data Sets



Presenting Benchmarking Information



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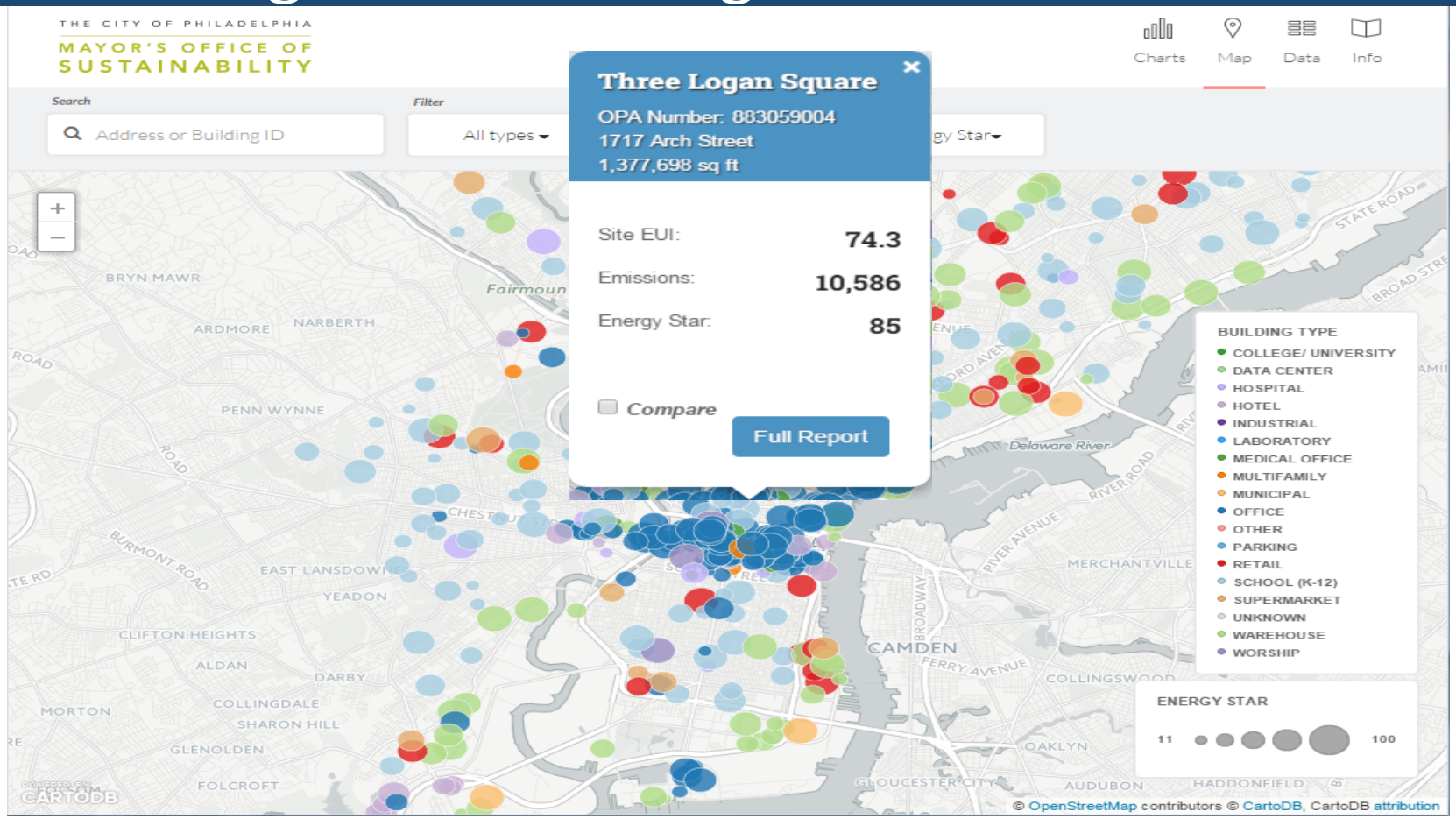

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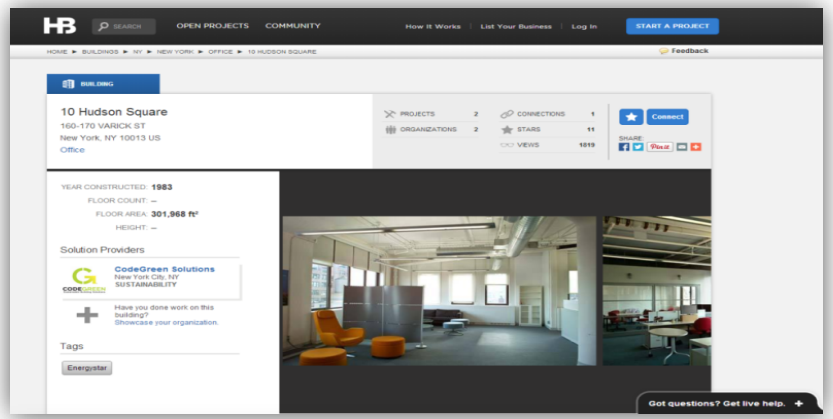

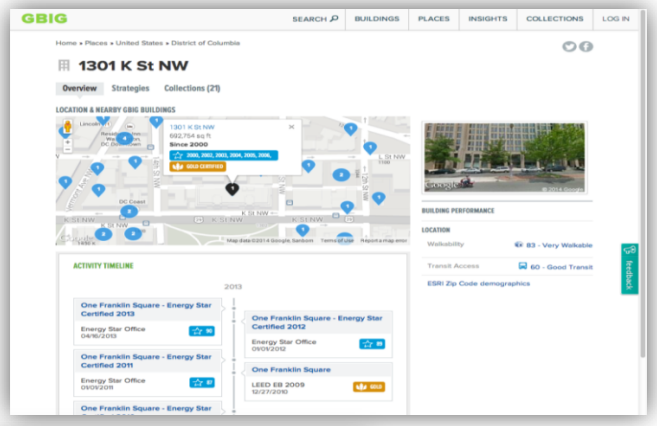

Benchmarking Benefits

Energy Cost Savings

- Average 7% energy savings over three-years
- Increased customer enrollment in utility rebate and incentive programs
- High correlation with building energy improvements

Smarter Business

- In Massachusetts, multifamily benchmarking data is used as a screening tool to target low-performing buildings for improvements.
- In San Francisco, account representatives of PG&E use benchmarking data to streamline outreach efforts and reach out to building owners about specific efficiency programs.

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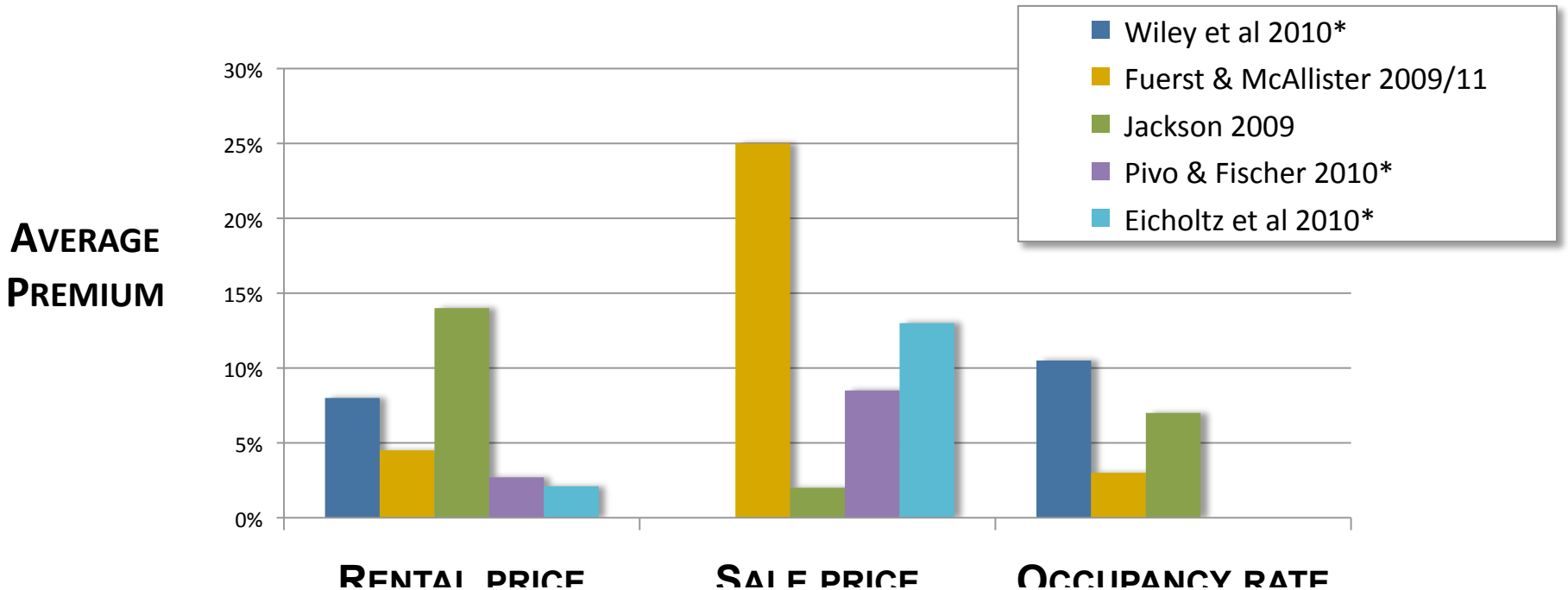
Added Value of ENERGY STAR-Certified Commercial Buildings in the U.S. Market



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Benchmarking Benefits

Market Competition and Reward

- Higher occupancy levels, rental premiums, and sale prices
- Help U.S. buildings remain globally competitive

Job Creation

- Significant new demand for energy efficiency services
- More than 1,000 jobs each in Chicago and Atlanta

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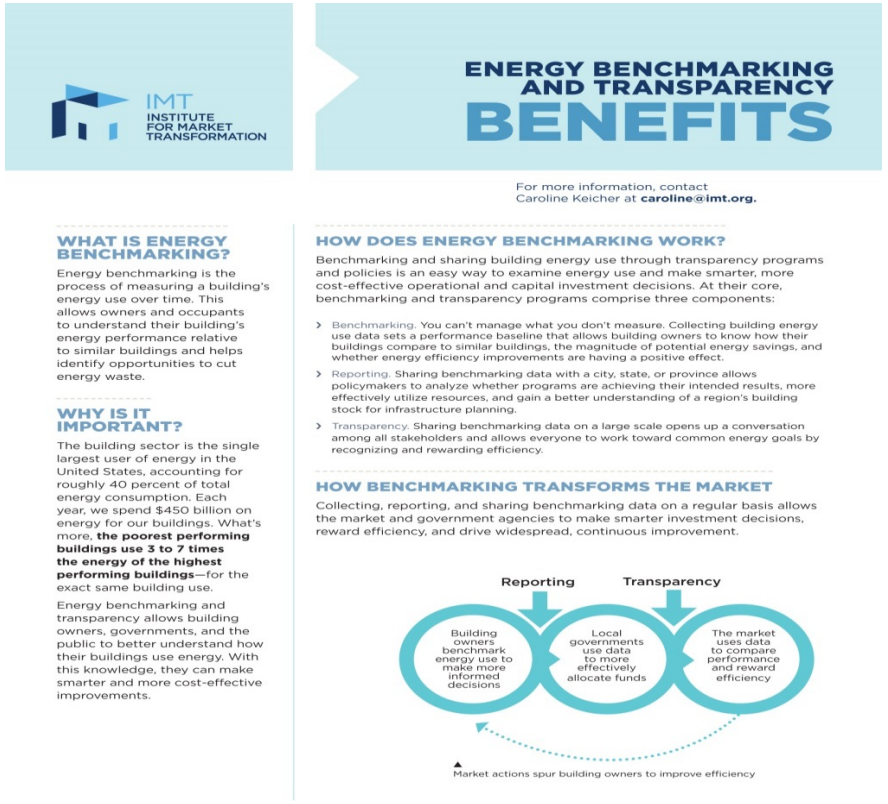
Benchmarking Benefits

Better-Informed Consumers

- Individual owners retain the choice of investment
- Data can help drive more cost-effective investments
- Ability to improve over time
- Low cost to benchmarking and low-cost options for quick ROI



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ENERGY BENCHMARKING AND TRANSPARENCY
BENEFITS

For more information, contact
Caroline Keicher at **caroline@imt.org.**

WHAT IS ENERGY BENCHMARKING?

Energy benchmarking is the process of measuring a building's energy use over time. This allows owners and occupants to understand their building's energy performance relative to similar buildings and helps identify opportunities to cut energy waste.

WHY IS IT IMPORTANT?

The building sector is the single largest user of energy in the United States, accounting for roughly 40 percent of total energy consumption. Each year, we spend $450 billion on energy for our buildings. What's more, **the poorest performing buildings use 3 to 7 times the energy of the highest performing buildings**—for the exact same building use.

Energy benchmarking and transparency allows building owners, governments, and the public to better understand how their buildings use energy. With this knowledge, they can make smarter and more cost-effective improvements.

HOW DOES ENERGY BENCHMARKING WORK?

Benchmarking and sharing building energy use through transparency programs and policies is an easy way to examine energy use and make smarter, more cost-effective operational and capital investment decisions. At their core, benchmarking and transparency programs comprise three components:

- Benchmarking. You can't manage what you don't measure. Collecting building energy use data sets a performance baseline that allows building owners to know how their buildings compare to similar buildings, the magnitude of potential energy savings, and whether energy efficiency improvements are having a positive effect.
- Reporting. Sharing benchmarking data with a city, state, or province allows policymakers to analyze whether programs are achieving their intended results, more effectively utilize resources, and gain a better understanding of a region's building stock for infrastructure planning.
- Transparency. Sharing benchmarking data on a large scale opens up a conversation among all stakeholders and allows everyone to work toward common energy goals by recognizing and rewarding efficiency.

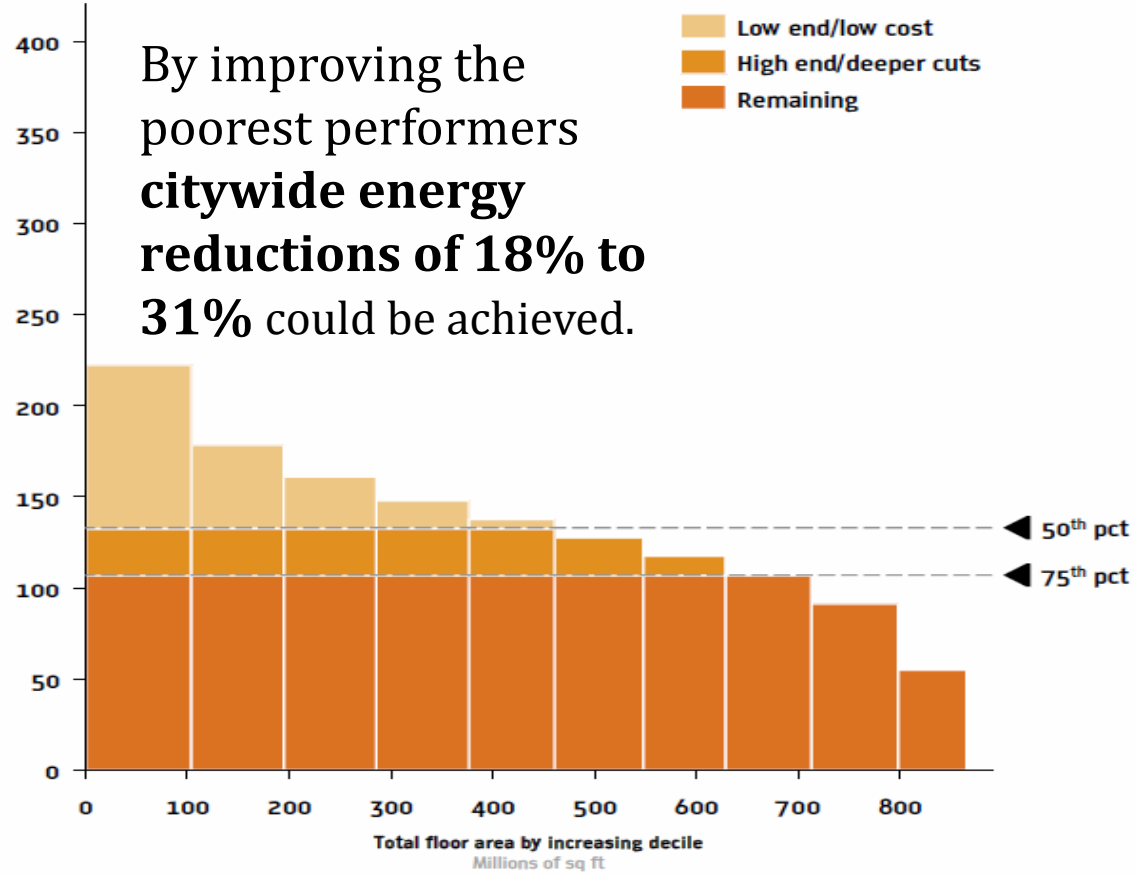
HOW BENCHMARKING TRANSFORMS THE MARKET

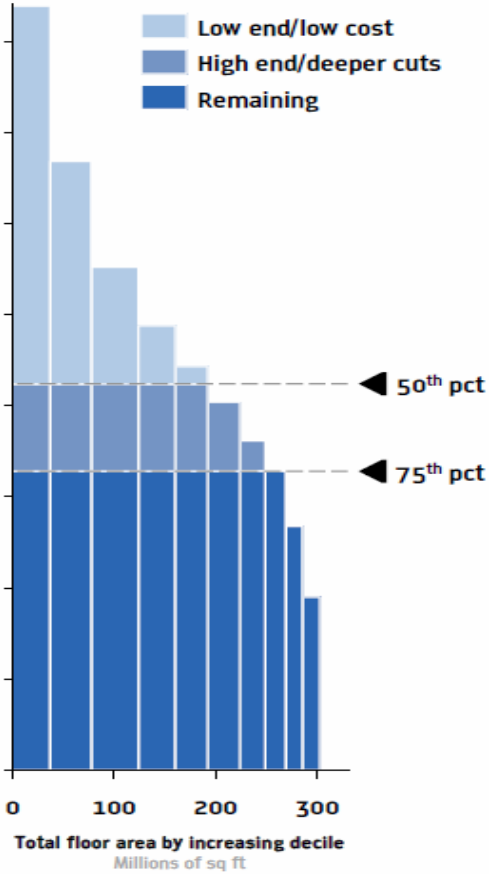
Collecting, reporting, and sharing benchmarking data on a regular basis allows the market and government agencies to make smarter investment decisions, reward efficiency, and drive widespread, continuous improvement.

www.imt.org/policy/building-energy-performance-policy

Early Findings from Energy Benchmarking in New York City

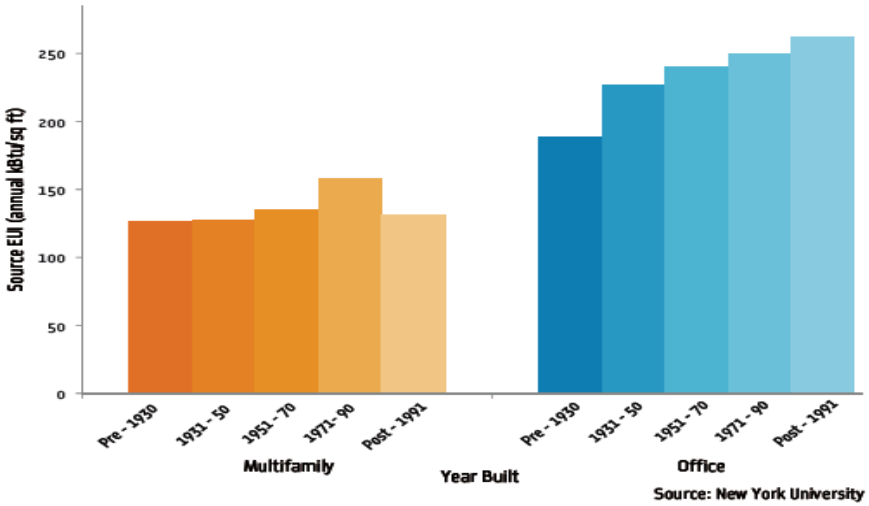
By improving the poorest performers **citywide energy reductions of 18% to 31%** could be achieved.





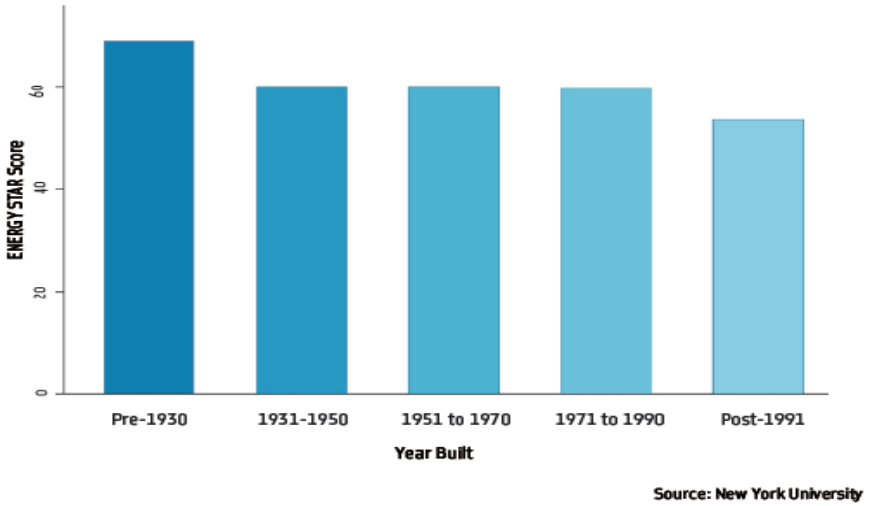
Early Findings from Energy Benchmarking in New York City

Figure 24: Median Energy Use Per Sq Ft by Building Type and Age Group



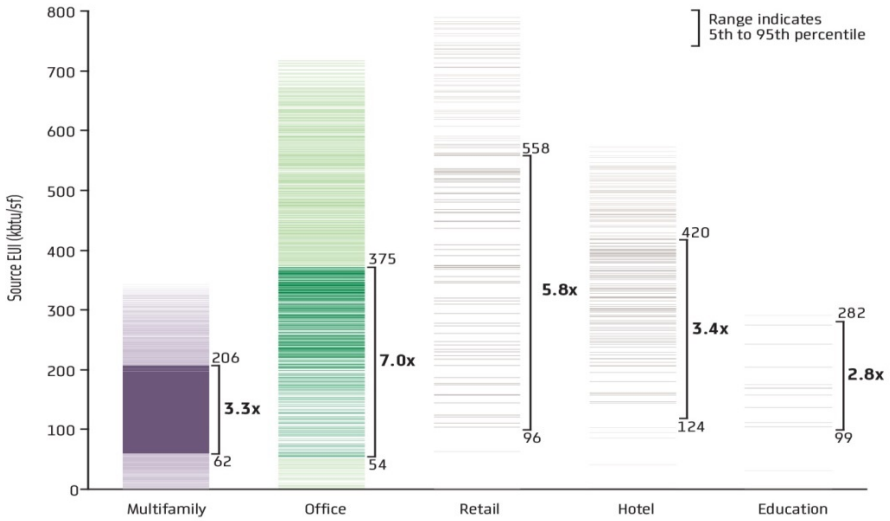
Energy intensity is greater in newer office buildings than older buildings.

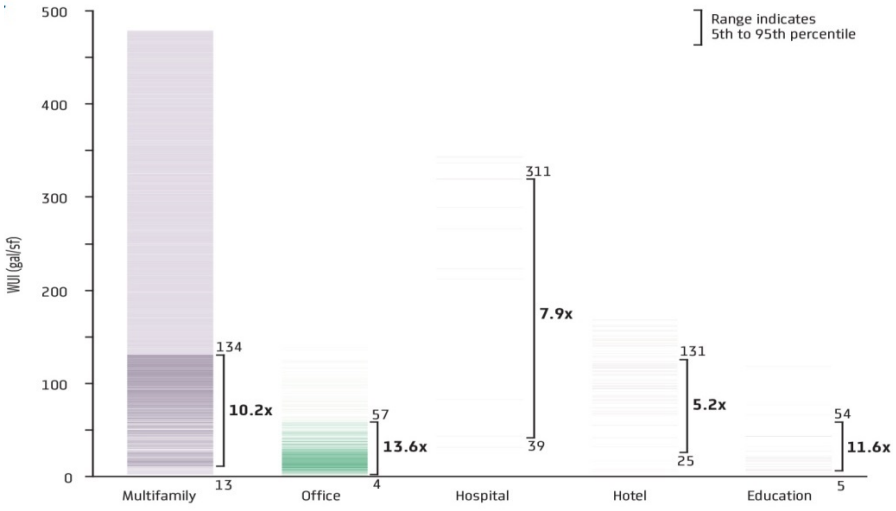
Figure 25: ENERGY STAR Score for Office Buildings Based on Year Built



ENERGY STAR scores are higher in older office buildings than newer buildings.

Early Energy Intensity Findings in New York City





The poorest performing buildings **use 3 to 7 times the energy** and roughly 8 to 13 times the water of the highest performing buildings.

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Thank you!

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Overcoming THE BARRIERS TO BENCHMARKING

Challenge:
A building owner needs 12 months of whole-building energy usage data to benchmark a building in Portfolio Manager.

Barrier 1

Barrier 2

Solution

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DATA | Data Access and Transparency Alliance

The Data Access and Transparency Alliance (DATA) is a collaborative effort led by the commercial real estate industry and energy efficiency organizations to provide building operators with energy consumption data to advance energy-efficiency and energy cost savings in buildings.

More information can be found: [e]

BOMA International

The Real Estate Roundtable

Enterprise

U.S. Green Building Council

NRDC
The Earth's Best Defense

Utility Data Access Programs