

Friends of Benchmarking

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Sustainable Energy Partnerships

Michael Bobker

Building Performance Lab

CUNY Institute for Urban Systems

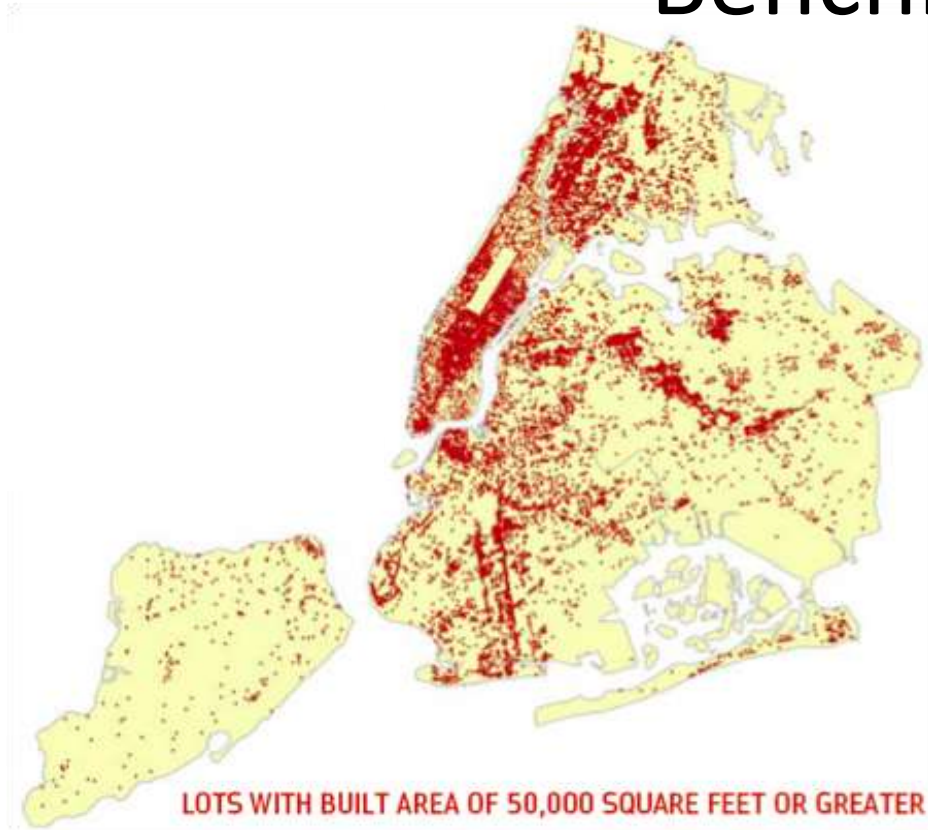


Building Energy
Performance Disclosure...

So What???...

...and What's Next???

Local Law 84: Annual Energy & Water Benchmarking



- 22,000 Buildings
- 2% of NYC Buildings
- Half of city's total floor area
- In every borough



Graphic by CoStar Group

How has public understanding evolved to date?

nytimes.com/2013/09/27/nyregion/a-fresh-set-of-grades-measures-energy-use-in-residential-buildings.html?_r=1

The New York Times N.Y. / Region

WORLD | U.S. | N.Y. / REGION | BUSINESS | TECHNOLOGY | SCIENCE | HEALTH | SPORTS | OPINION | ARTS | STYLE | TRAVEL

December 24, 2012

Beautiful The Carole King Musical "A MUST-SEE!" -ABC-TV, NEW YORK

City's Law Tracking Energy Use Yields Some Surprises

By MIREYA NAVARRO

In courting tenants over the last six years, 7 World Trade Center has trumpeted its gold LEED rating, an emblem of sound environmental citizenship.

But when it comes to energy efficiency, the young 52-story tower is far from a top performer, according to data released under a city law that tracks energy consumption by the federal Environmental Protection Agency's Energy Star program.

On the other hand, two venerated show horses from the 1930s, the Chrysler Building and the Empire State Building, sailed to an 84 and an 80 as a result of their insulation and mechanical systems.

And the Met life Building, a 1926 bulk loombox over Grand Central Terminal? It scored 70. Still, some are at hand for Met life's owners: the Sonoma B...

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What's Popular Now

The Art of Presence

www.nytimes.com/2013/09/27/nyregion/a-fresh-set-of-grades-measures-energy-use-in-residential-buildings.html?_r=1&pagewanted=print

The New York Times

September 27, 2013

A Fresh Set of Grades Measures Energy Use in Residential Buildings

By MIREYA NAVARRO

A small prewar co-op in Washington Heights in Manhattan gets an A.

But the mark for a modern luxury tower in Battery Park City that markets itself as "green"?

A dreaded D.

In its waning days, the Bloomberg administration is issuing a final batch of grades, this time to rate the energy use of the city's largest residential buildings. This week, the city released energy consumption data for large multifamily buildings, allowing residents to find out how their co-ops, condos and rental buildings compare with similar structures.

It was the first time any city in the country publicized such data, environmental groups said, and will be one of the most prominent legacies of Mayor Michael R. Bloomberg's agenda. The city has been tracking energy use among its largest buildings under a 2009 law intended to help reduce the city's greenhouse gas emissions, an issue that became a top priority after Hurricane Sandy.

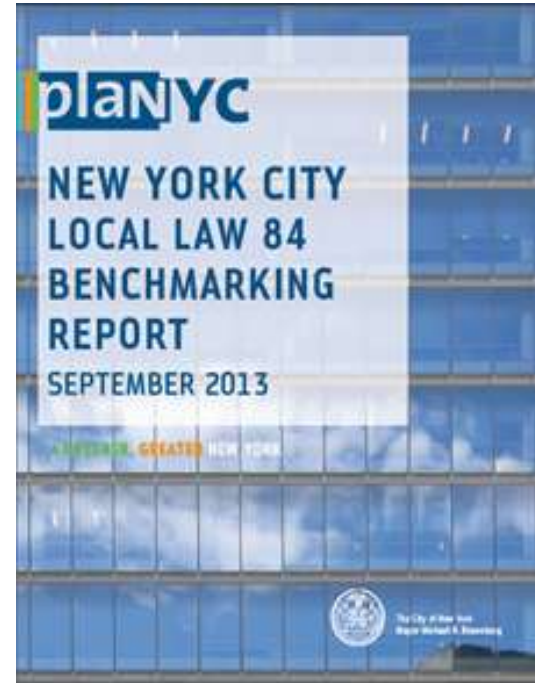
The heating and cooling of buildings produces three-fourths of the city's emissions contributing to global warming and sea level rise, city officials said. The 2009 law...

The Dakota, on the Upper West Side, received an A from the city for its relatively low energy use.

By MIREYA NAVARRO
Published: September 27, 2013

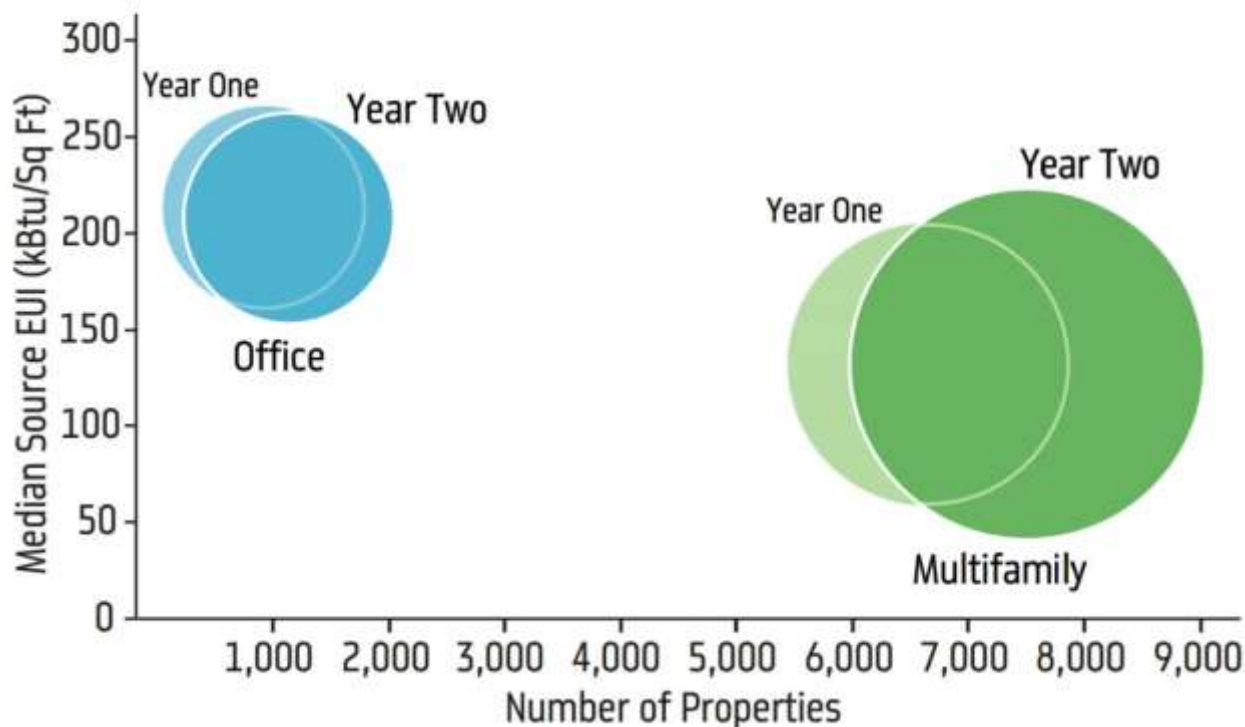
NY Times: 12/24/2012; 9/27/2013

What do we know?



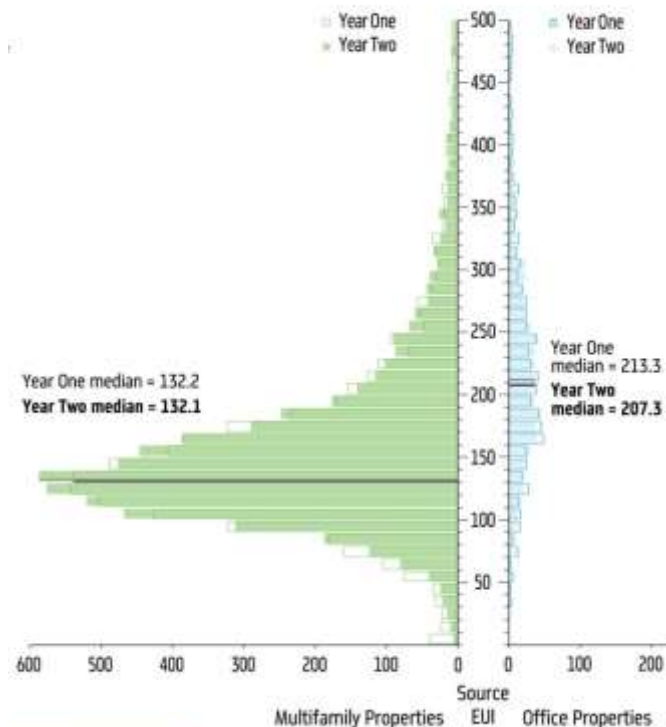
More Buildings Reporting Year on Year

[Fig. 18] Year Over Year Comparison of Median EUI, Number of Properties, and Total Energy Per Sector¹⁹



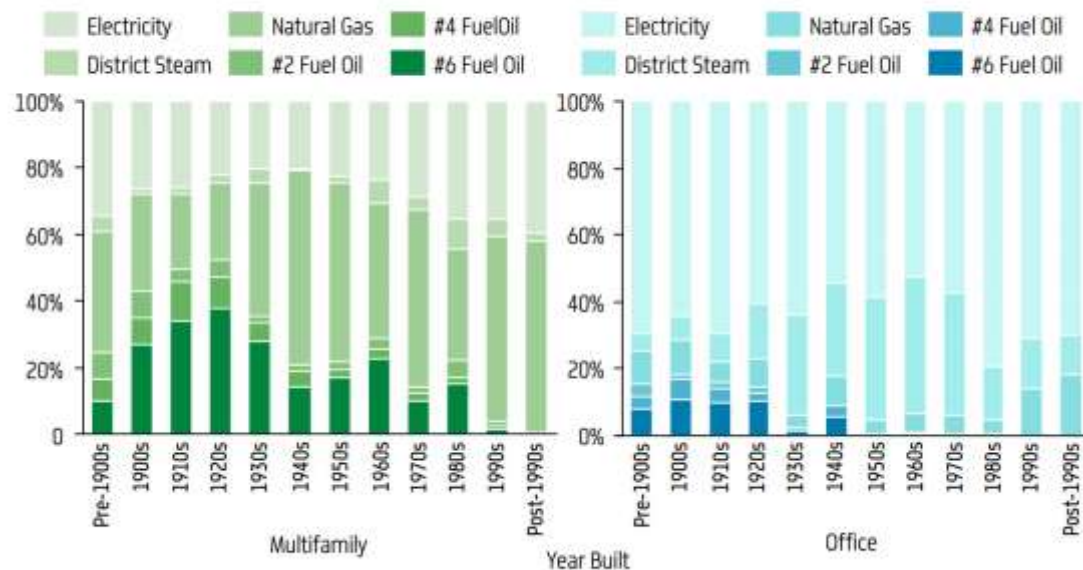
Lots of Info about Energy Performance

[Fig. 19] Source EUI Histograms for Multifamily and Office Sectors



Source: New York University

[Fig. 25] Multifamily and Office Energy Mix by Year Built



Source: New York University and NYC Mayor's Office

Informing Professional Dialogue

The screenshot shows the BuildingGreen.com website. The browser address bar displays the URL: www.buildinggreen.com/auth/article.cfm/2013/12/18/New-Energy-Data-Is-Changing-How-We-Judge-Efficiency-and-LEED/. The website header includes a navigation bar with links for 'TRY IT RISK-FREE', 'For firms', 'For campuses', 'Speakers bureau', 'Store', 'Membership', and 'Login'. Below the header is the BuildingGreen.com logo and a search bar. A secondary navigation bar contains links for 'NEWS', 'LEARN', 'CSI DIVISIONS', 'LEED CREDITS', 'GREEN PRODUCTS', 'CASE STUDIES', and 'BLOGS'. The main content area features the article title 'New Energy Data Is Changing How We Judge Efficiency—and LEED' in a large, bold font. Below the title is a sub-headline: 'Seeking lessons from New York City benchmarking data, researchers question everything we thought we knew about energy metrics.' The author's name, 'By Nadav Malin', is listed. The article text begins with 'In the beginning, there was Energy Star.' and continues with 'Supported by the online Portfolio Manager infrastructure and statistical models from the periodic Commercial Buildings Energy Consumption Survey (CBECS), the U.S. Environmental Protection Agency's Energy Star program...'. On the right side of the article, there are sections for 'ARTICLE CONTENTS' with links to 'Going beyond Energy Star', 'Stopping short of Energy Star', 'Rethinking efficiency', 'Btu per dollar', and 'Many numbers, few conclusions'. Below this is a 'DISCUSSIONS' section with the text 'What Matters: Marcus Sheffer, Dec 30, 2013' and a link to 'More comments'. At the bottom right, there is a 'RELATED ARTICLES' section with links to 'NYC Buildings Gain Three Energy Star Points in Year Two' and 'EBC: What's Happening - October 2013', along with a link to 'More related articles'. The bottom of the page shows a partial view of a photograph of a building.

www.buildinggreen.com/auth/article.cfm/2013/12/18/New-Energy-Data-Is-Changing-How-We-Judge-Efficiency-and-LEED/

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Environmental Building News

THE LEADING SOURCE FOR ENVIRONMENTALLY RESPONSIBLE DESIGN & CONSTRUCTION

New Energy Data Is Changing How We Judge Efficiency—and LEED

Seeking lessons from New York City benchmarking data, researchers question everything we thought we knew about energy metrics.

By Nadav Malin

In the beginning, there was Energy Star.

Supported by the online Portfolio Manager infrastructure and statistical models from the periodic Commercial Buildings Energy Consumption Survey (CBECS), the U.S. Environmental Protection Agency's Energy Star program...

ARTICLE CONTENTS

- [Going beyond Energy Star](#)
- [Stopping short of Energy Star](#)
- [Rethinking efficiency](#)
- [Btu per dollar](#)
- [Many numbers, few conclusions](#)

DISCUSSIONS

What Matters:
Marcus Sheffer
Dec 30, 2013

[More comments](#)

RELATED ARTICLES

- [NYC Buildings Gain Three Energy Star Points in Year Two](#)
- [EBC: What's Happening - October 2013](#)

[More related articles](#)

What are the “Right” Metrics?

- What is “Building Performance”?
- LL84 reports 1-100 Energy Star Score where applicable, and EUI
- Is “Energy Use Intensity” (EUI, energy per floor area) the best measure?
- What motivates “action”?

Multifamily – No Energy Star 1-100 Score

Just EUI without context not helpful;
Which One is “More Efficient”?

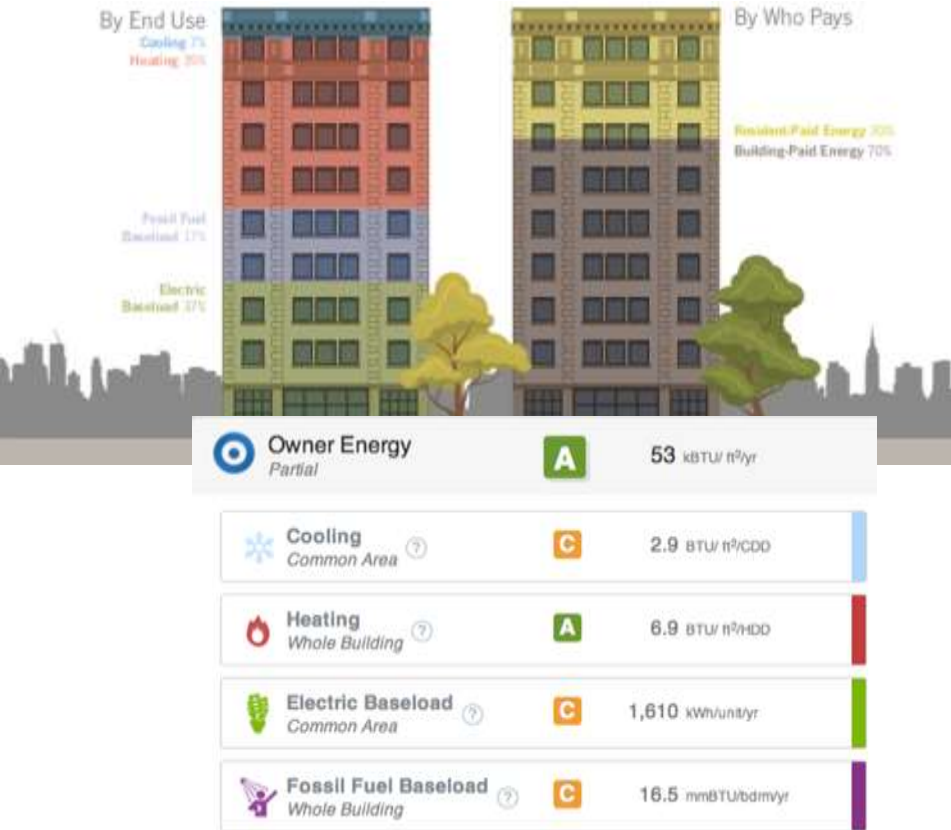


The Dakota, on the Upper West Side, received an A from the city for its relatively low energy use.



Solair in Lower Manhattan received a D; it has water recycling and fresh air systems.

EnergyScoreCards Tailors Info



| Building Source EUI (kBtu/sqft/yr) | | |
|---------------------------------------|----------------|---------------------------|
| | Master-Metered | Resident-Paid Electricity |
| A | ≤ 120 | ≤ 108 |
| B | 120 - 142 | 108 - 126 |
| C | 142 - 171 | 126 - 150 |
| D | 171 ≤ | 150 ≤ |

Bright Power's EnergyScoreCards;
see www.energyscorecards.com

Which Office Building is “Greener”?



ENERGY

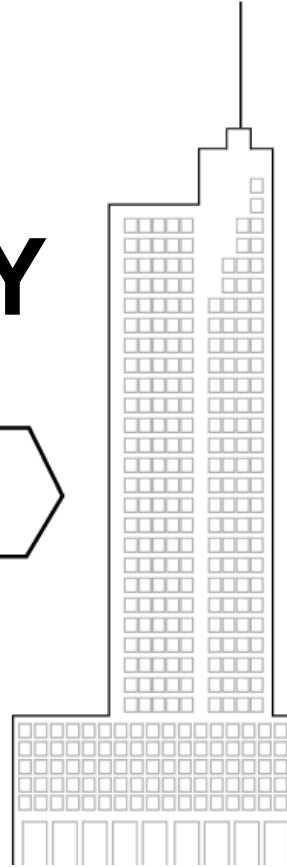


SOURCE EUI
(kBtu/sf-yr)

ECONOMY



**BUILDING ECONOMIC
INTENSITY INDEX (BEII)**



$$\eta_{\text{BUILDING}} = \frac{\text{ECONOMY} \text{ } BEI}{\text{ENERGY} \text{ } EUI}$$

(Weather Normalized Source)

Is LL84 Having an Impact?

From Tishman Speyer – “How LL 84 Has Changed the Way We Operate”:

New Technologies:

- Using Pulse Meters to track energy consumption in 15-minute intervals
- Provides greater transparency and clarity on how we can improve

More Energy Efficiency Projects:

- Leasing, ECM, and Asset Management teams take more notice now that the information is public
- Increasing number of tenants are inquiring about EnergyStar scores
- Increasing number of investors are inquiring about current and historical EnergyStar scores

Could it be Better?

Again; Tishman Speyer view - Positive and Negative:

Positive Example: Chrysler Building / MetLife Building

- Chrysler Building showed that not all energy efficient buildings had to be brand new; was recently certified as LEED Gold for EB
- MetLife building score improved from a 42 to a 47 after major renovation and energy efficiency project

Negative Example: Rockefeller Center

- Many space types that don't exist within EnergyStar
- No comps
- Campus layout – everything is interconnected
- High-energy tenants (NBC)

| Building | ES Score |
|---------------------------------|----------|
| 11 West 42 nd Street | 44 |
| 520 Madison Avenue | 77 |
| 300 Park Avenue | 86 |
| Chrysler Building | 86 |
| Chrysler East | 71 |
| CitySpire | 85 |
| MetLife Building | 47 |

Next Steps for More “Actionable” Metrics

- Can we make data more “Accessible”?
- Would Other Metrics Help?
- What is the right information to drive Action?

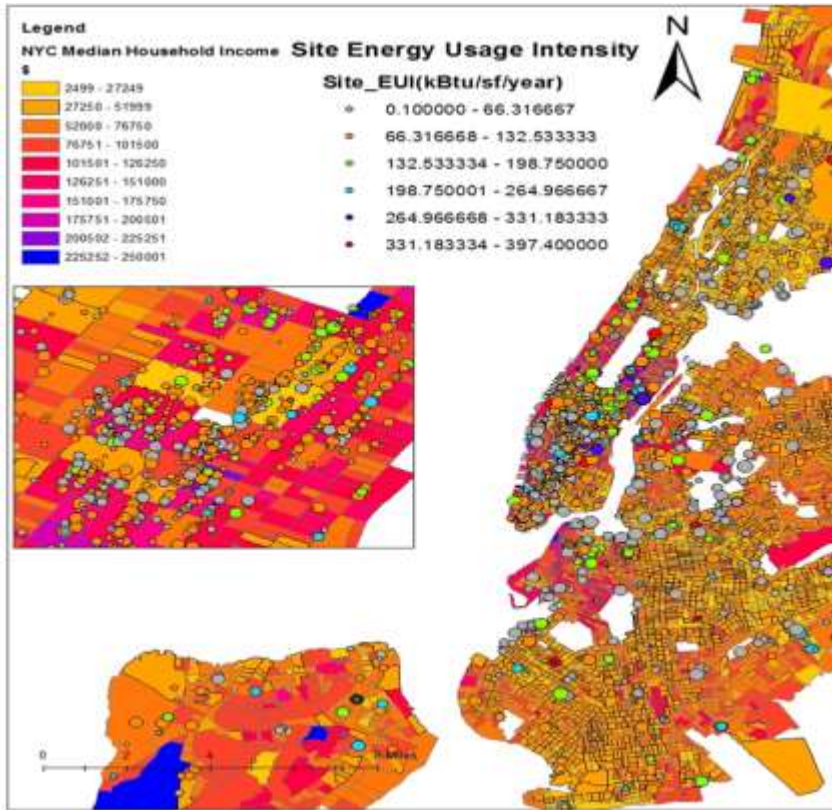
Not Necessarily “Accessible”

2013_nyt_b4_disclosure - Microsoft Excel

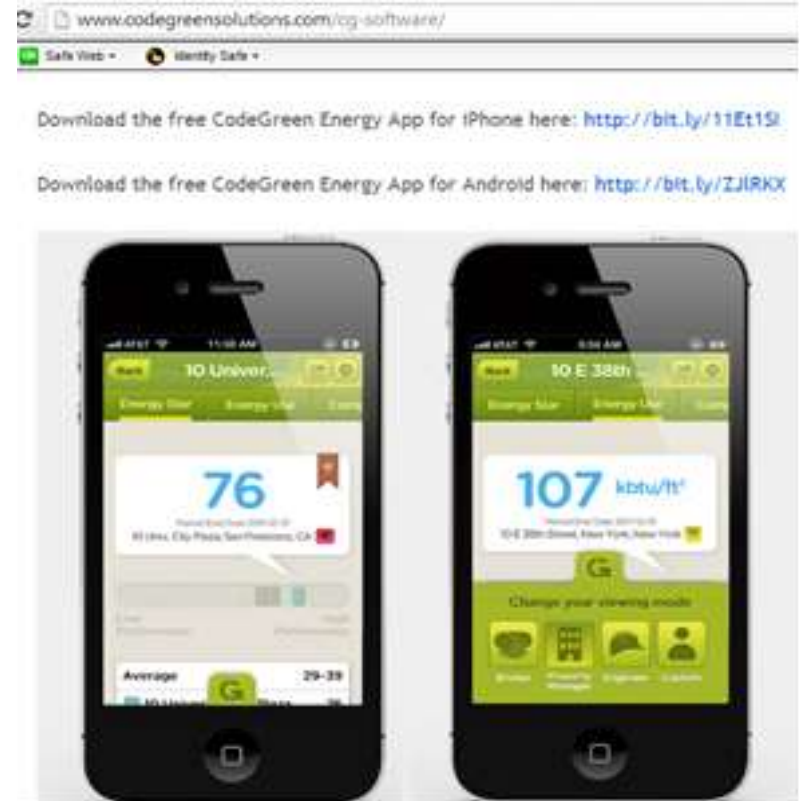
| BBL | Street Number | Street Name | Borough | Zip | Benchmarking Submission | Entry Number | Site EUI (kBtu/h) | Weather Normalized Source EUI (kBtu/h) | Indoor Water Intensity (All Water Sources) (gal/h) | Reported Water Method | ENERGY STAR Score | Total GHG Emissions (MCO ₂ e) | Property Floor Area (Buildings and Parking) (ft ²) | Primary Property Type - Self Selected | Number of Buildings | Page |
|------------|---------------|------------------|-----------|-------|-------------------------|--------------|-------------------|--|--|-----------------------|-------------------|--|--|---------------------------------------|---------------------|--|
| 1000010010 | 1 | GOVERNORS ISLAND | MANHATTAN | 10004 | No Record as of 06/1/13 | | | | | | | | | | 1 | |
| 1000020001 | | MARGINAL STREET | MANHATTAN | 10004 | No Record as of 06/1/13 | | | | | | | | | | 0 | |
| 1000047503 | 1 | WATER STREET | MANHATTAN | 10004 | Yes | 41 | 152 | 267.9 | 18.37 | Manual | 75 | 25932.88 | 1428125 | Office | 1 | 1000005 |
| 1000057503 | 125 | BROAD STREET | MANHATTAN | 10004 | Yes | 3871 | 119.8 | 261.5 | | Manual | 70 | 11687.42 | 1338000 | Office | 1 | 1000006 |
| 1000420001 | 134 | AVENUE D | MANHATTAN | 10008 | Yes | 8812 | 90.3 | 85.7 | 1.57 | | A/A | 13709.99 | 1207812 | Multifamily housing | 1 | 1077504.1 9.1077540 541.10775 77948.107 1077549.1 7.1077551 555.10775 77896.107 1078047.1 8.1078050 562.10780 78055.107 |
| 1000090001 | 34 | WHITEHALL STREET | MANHATTAN | 10004 | Yes | 8579 | 99.5 | 902.8 | | Manual | 35 | 7771.18 | 852840 | Office | 1 | 1000018 |
| 1000090014 | 17 | STATE STREET | MANHATTAN | 10004 | Yes | 735 | 79.7 | 210 | | Manual | 82 | 4033.53 | 574095 | Office | 1 | 1000020 |
| 1000090026 | 24 | WHITEHALL STREET | MANHATTAN | 10004 | Yes | 99 | 119.4 | 295.2 | 11.06 | Manual | 41 | 10308.19 | 809807 | Office | 1 | 1000021 |

2013 NYC Benchmark Data 2013 Data Dictionary

What's Needed to Raise Awareness?

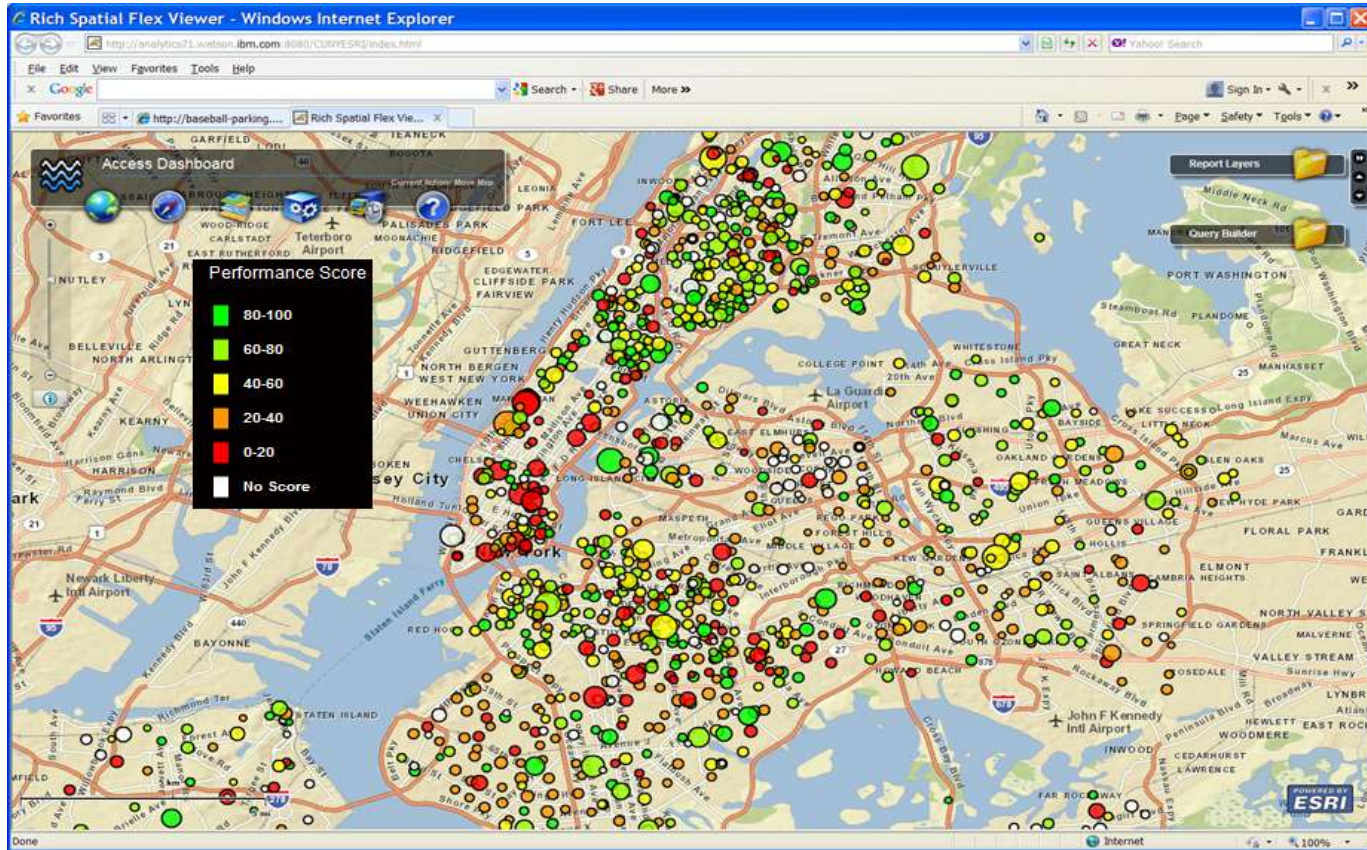


CUNY Building Performance Lab



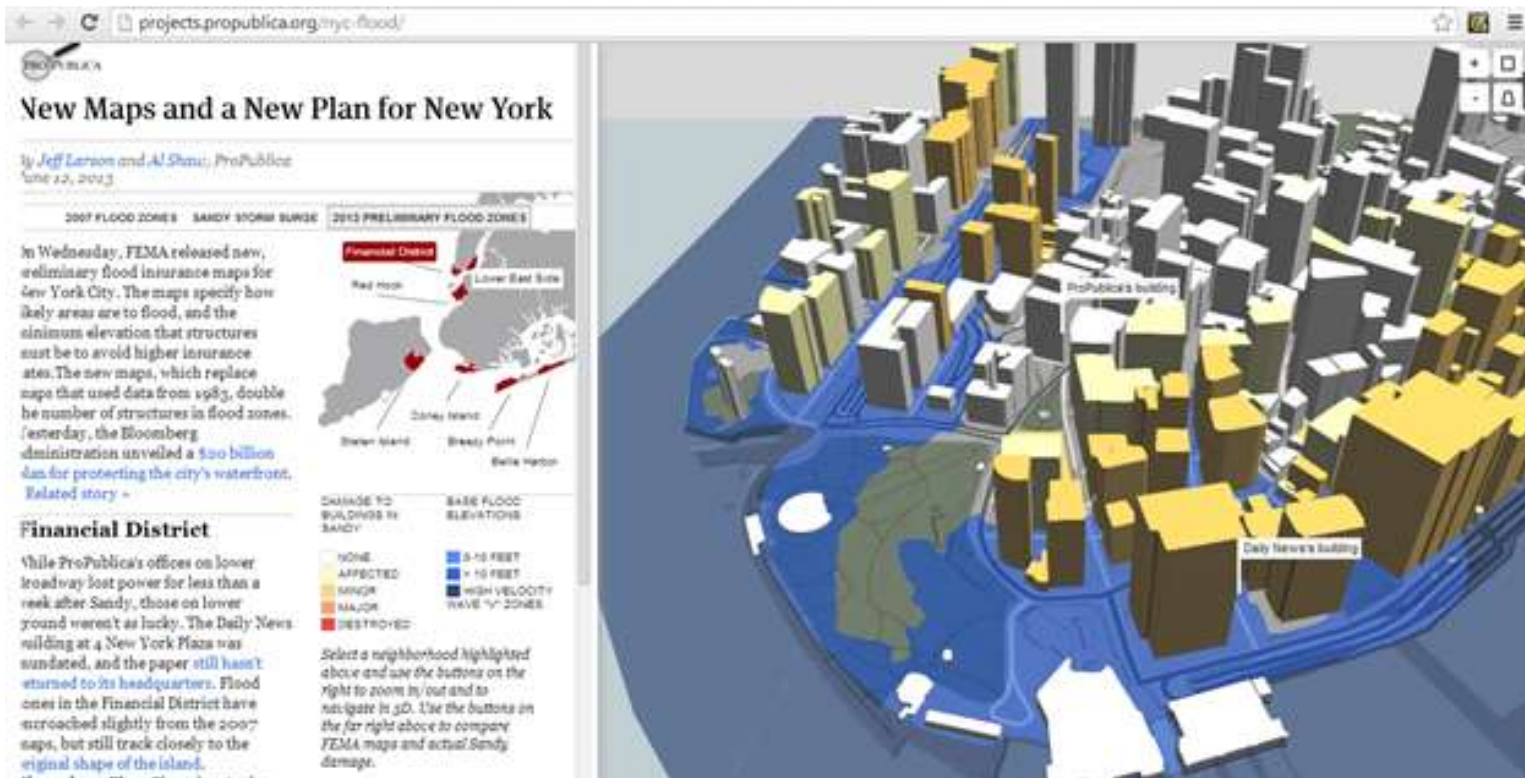
From Code Green Solutions

Energy Performance Score: All Energy



IBM Analysis of NYC Schools Energy Performance

Opportunities for “Visualization”?

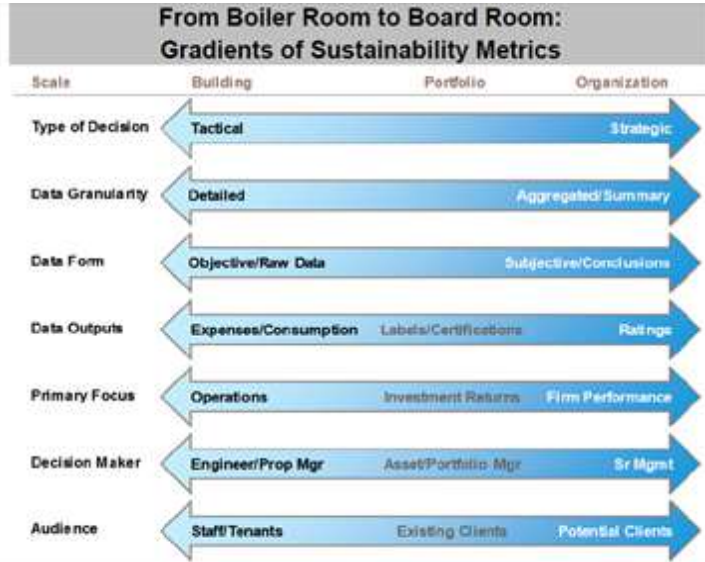


Separate Landlord/Tenant Ratings?

- Could separate ratings drive more action?
- Some jurisdictions have landlord ratings
- Comes with its own set of challenges...



Different Metrics for Different Audiences?



- Investors will want different metrics than building operators
- Hard to get “one size fits all”

From “Building Labels vs. Environmental Metrics;” RREEF Real Estate; www.rreef.com

One View of NYC Office Energy Performance



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Based on 2011 LL84 Submissions