Energy Exchange℠

Better Buildings® SUMMIT

AUGUST 21-23, 2018 • CLEVELAND, OHIO

State of the Submeter: Considerations for Measuring Energy Use

Thursday 23rd, 2018

8:30am – 10:00am

Energy Exchange | Better Buildings SUMMIT

Panelists

Cindy Zhu

Building Technologies Office Fellow,
U.S Department of Energy

Jason McIntyre

Sustainability and Operations Manager,
USAA Real Estate Company

Chris Cayten

Principal,
CodeGreen Solutions

DOE and IMT recognize leaders through leasing

GREEN LEASE LEADERS

CREATING SUSTAINABLE LANDLORD-TENANT RELATIONSHIPS

Since 2014, Green Lease Leaders has:

- Defined best practices in green leasing and addressed the "split incentive" barrier
- Recognized tenants, property owners, and brokers that represent 1.8 billion square feet of commercial, industrial, and retail space who meet the Green Lease Leaders standard

2018 Green Lease Leaders

GREEN LEASE LEADERS

CREATING SUSTAINABLE LANDLORD-TENANT RELATIONSHIPS

AEW
BRIXMOR Property Group
CommonWealth partners
DIGITAL REALTY
Federal Realty INVESTMENT TRUST
ForestCity
Ivanhoé Cambridge
JAMESTOWN
JBG SMITH
KILROY REALTY CORPORATION
KIMCO REALTY
LaSalle INVESTMENT MANAGEMENT
Manulife
John Hancock
MORGAN CREEK VENTURES
NRDC NATURAL RESOURCES DEFENSE COUNCIL
PROLOGIS
ROCKY MOUNTAIN INSTITUTE
Sprint
TD Bank
THE TOWER COMPANIES
TRIOVEST
ULTA BEAUTY
WEINGARTEN REALTY

Green Lease Trends

Rocky Mountain Institute	KIMCO Realty	The Tower Companies	Brixmor Property Group
Maintain net-zero building operations	Tenant spaces are sub-metered saving million of dollars	Encourage high indoor air quality standards	Onsite renewable energy generation purchase requirements

Read more about this year's Green Lease Leaders at www.greenleaseleaders.com

Electric Submetering Guide for Leased Spaces

Quick reference for landlords and tenants.

Essential Feature	Basic Requirement	Enhanced Requirement
Data Types	Electricity use in kWh	+ electric demand in kW
Measurement Interval	15 minutes or less	-
Accuracy	2%. No annual recalibration. Tests in accordance with NEMA/ANSI C12	1%. NIST calibration certificate
Data Communication	Relay collected data to a central repository	Use open communication protocols (e.g. Zigbee, modbus, BACnet, HTTPS)
Security	128-bit (or greater) Advanced Encryption Standard (AES-128)	-
Data Storage	Minimum 128 measurements.	Minimum 36 months in accordance with ASHRAE 90.1-2016
Data Visualization	Real-time consumption with comparison to prior period. Monthly total energy use	+ Mobile device-enabled display
Data Export	csv format	+ Green Button format. API

Additional Features: Benchmarking, Alerts

Jason McIntyre
USAA Real Estate

U.S. DEPARTMENT OF ENERGY

STATE OF THE SUBMETER

Jason McIntyre

LEED AP O+M, FMP

Director, Real Estate Operations and Sustainability

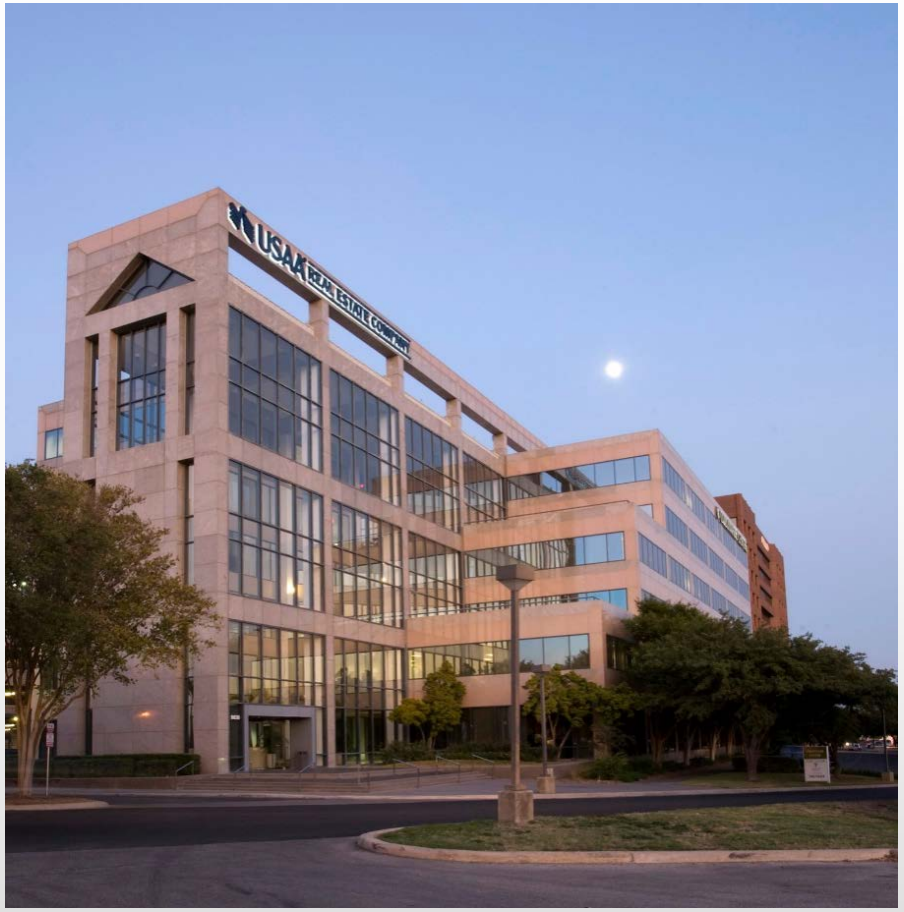
COMPANY BACKGROUND

- Approximately $20 Billion in AuM
- Product types include Office, Industrial, Retail, Multifamily, and Hotel
- 16 time ENERGY STAR Partner of the Year Award Winner

ENERGY STAR AWARD 2018
PARTNER OF THE YEAR
Sustained Excellence

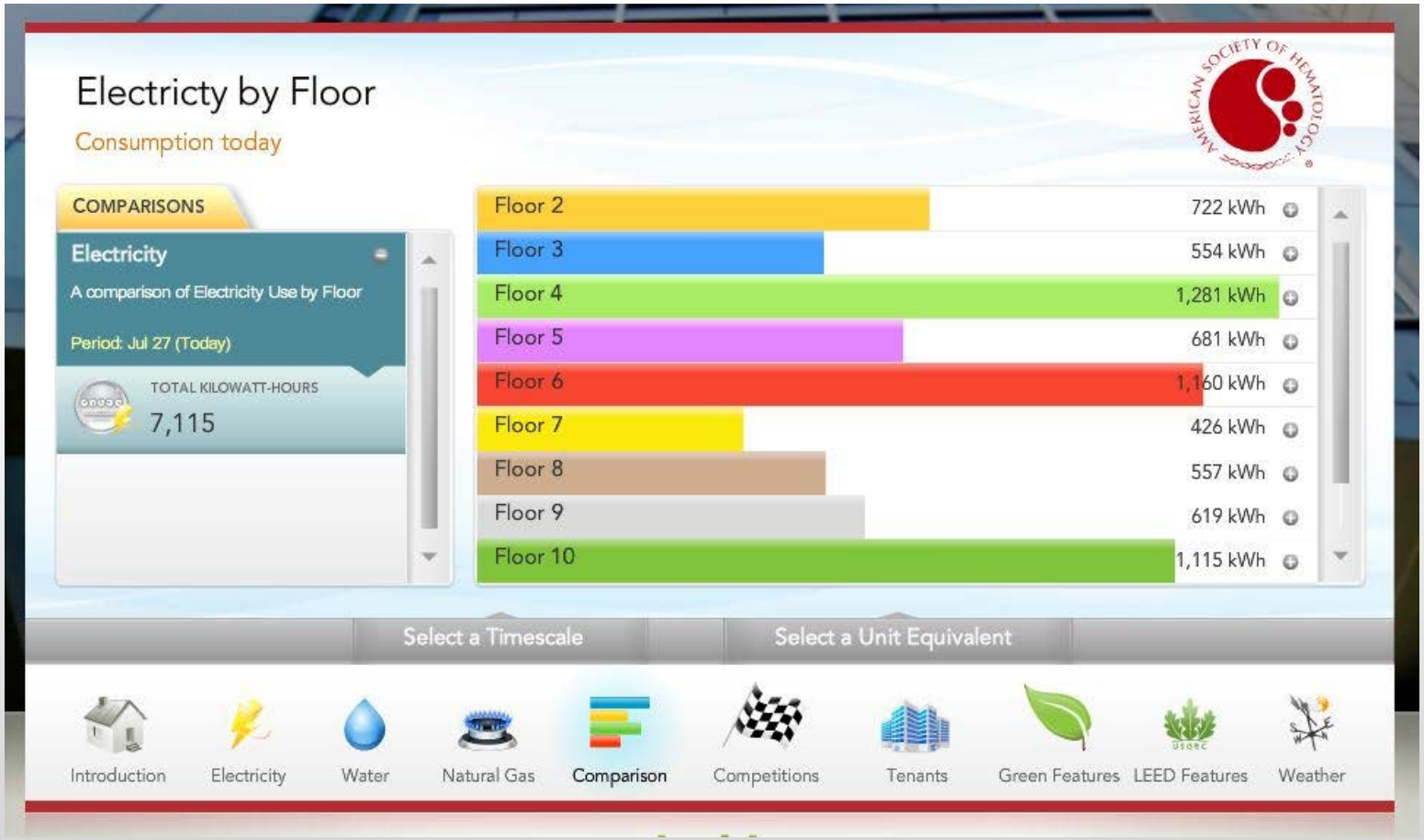
- IMT 2016 Green Lease Leader

GREEN LEASE LEADERS
CREATING SUSTAINABLE LANDLORD-TENANT RELATIONSHIPS



SUBMETERING – AN OWNER'S PERSPECTIVE

Business Case to Submeter



CONNECTING THE TENANT TO THE VALUE PROPOSITION

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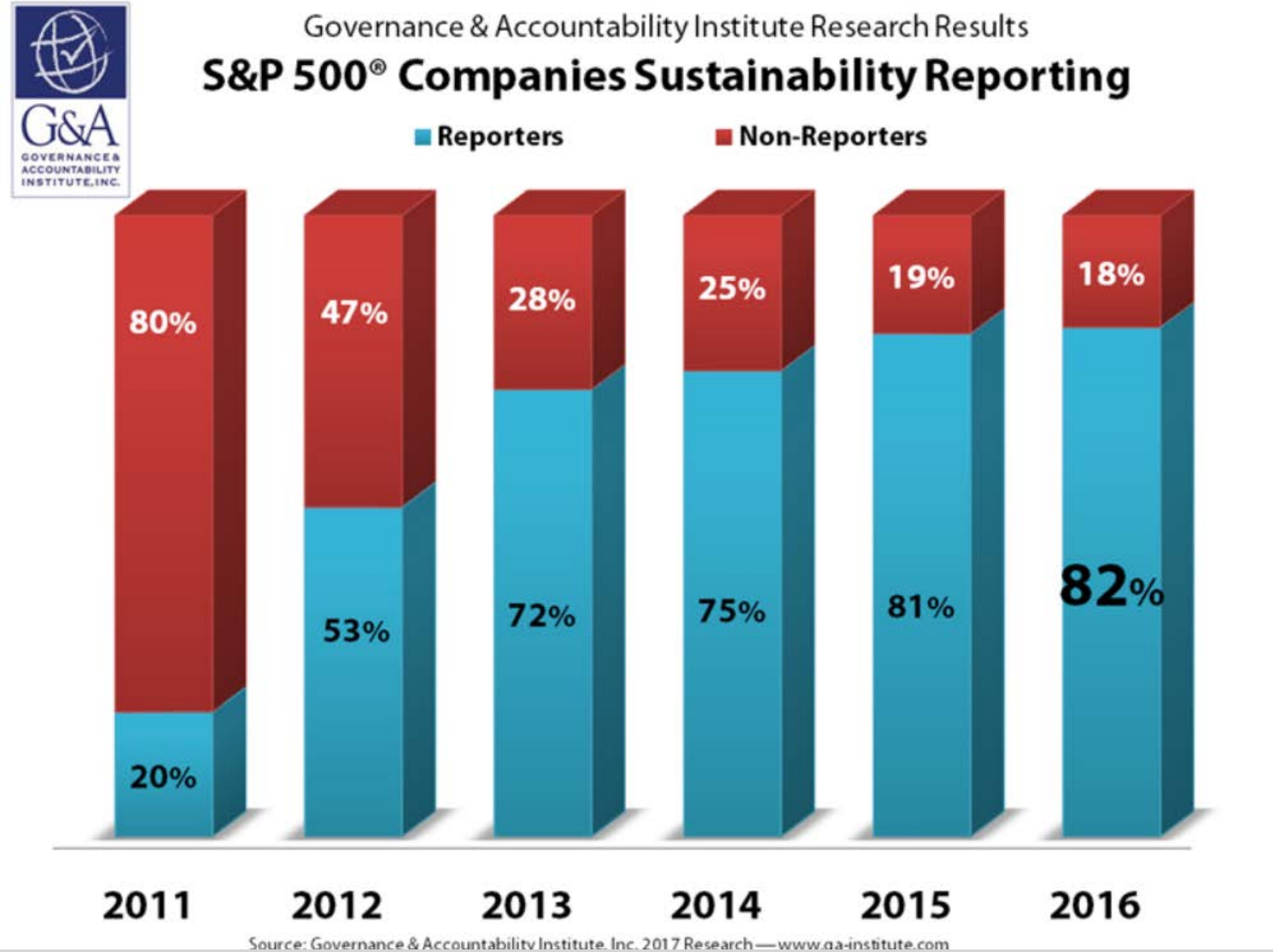


CONNECTING THE TENANT TO THE VALUE PROPOSITION

Key Reasons

- Reducing Energy Expenses & Consumption
- Improve Transparency, Awareness, and Accountability
- Partner with our tenants in their goals and objectives

TENANT ENGAGEMENT

"The cost of losing and subsequently acquiring a replacement tenant can cost building owners up to three times more than renewing a lease"

Jones Lang LaSalle's white paper, "The Economic Cost of Losing a Tenant."

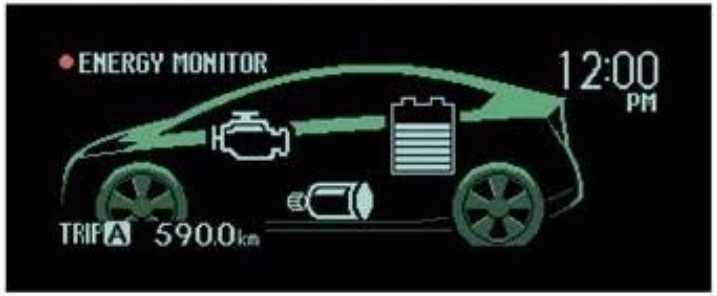
CONNECTING THE TENANT TO THE VALUE PROPOSITION

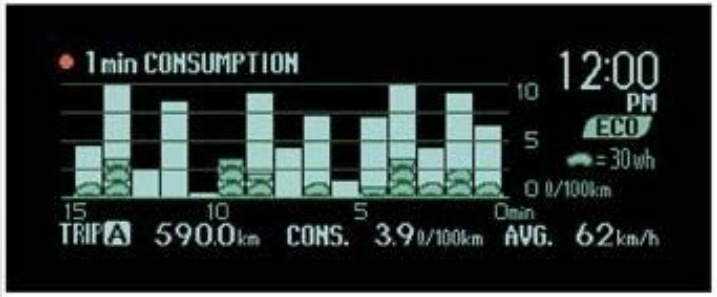
Key Reasons

- Reducing Energy Expenses & Consumption
- Improve Transparency, Awareness, and Accountability
- Partner with our tenants in their goals and objectives

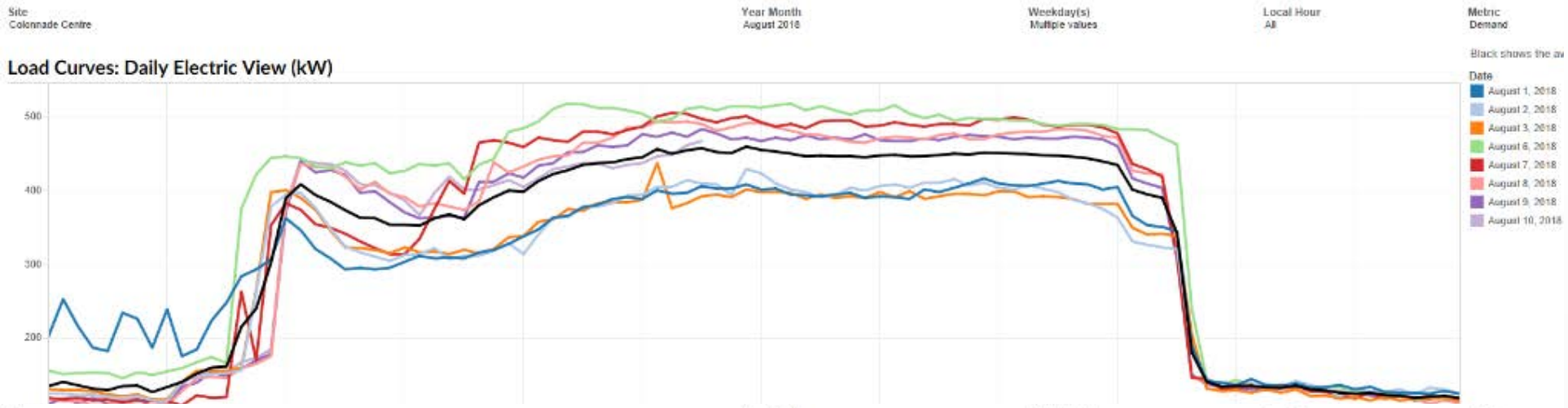
THE PRIUS EFFECT

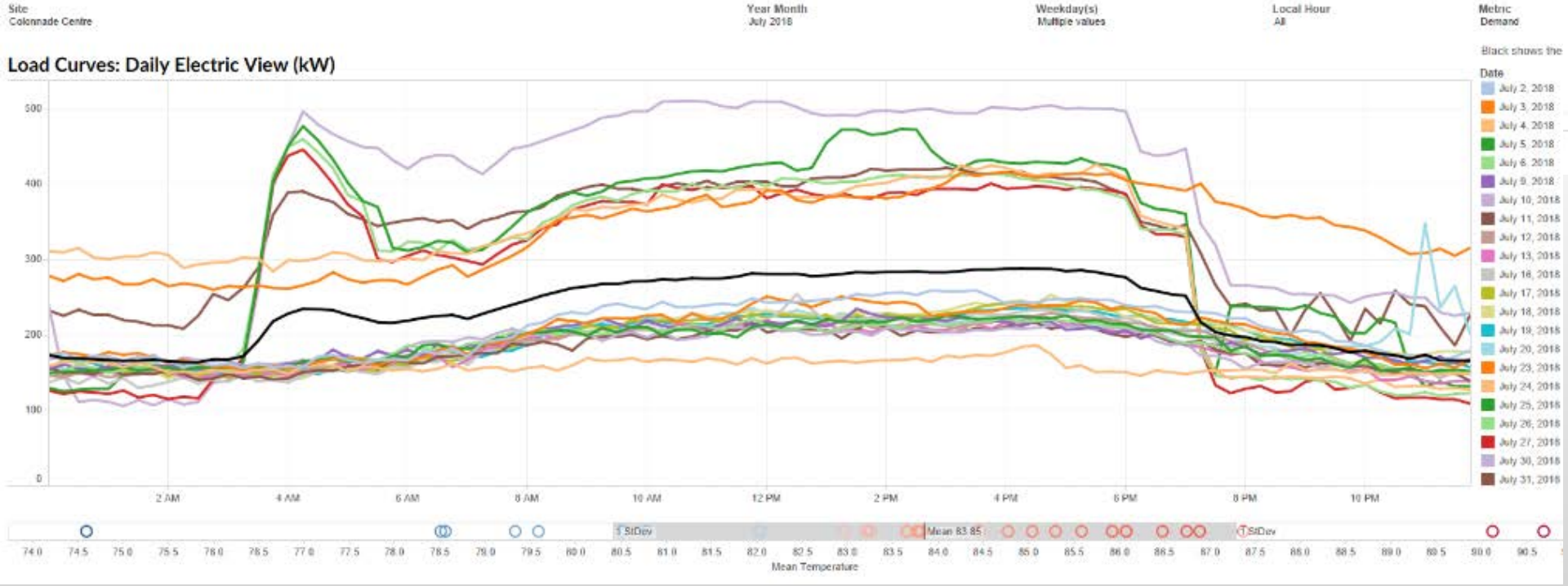
Real Time Feedback on Consumption



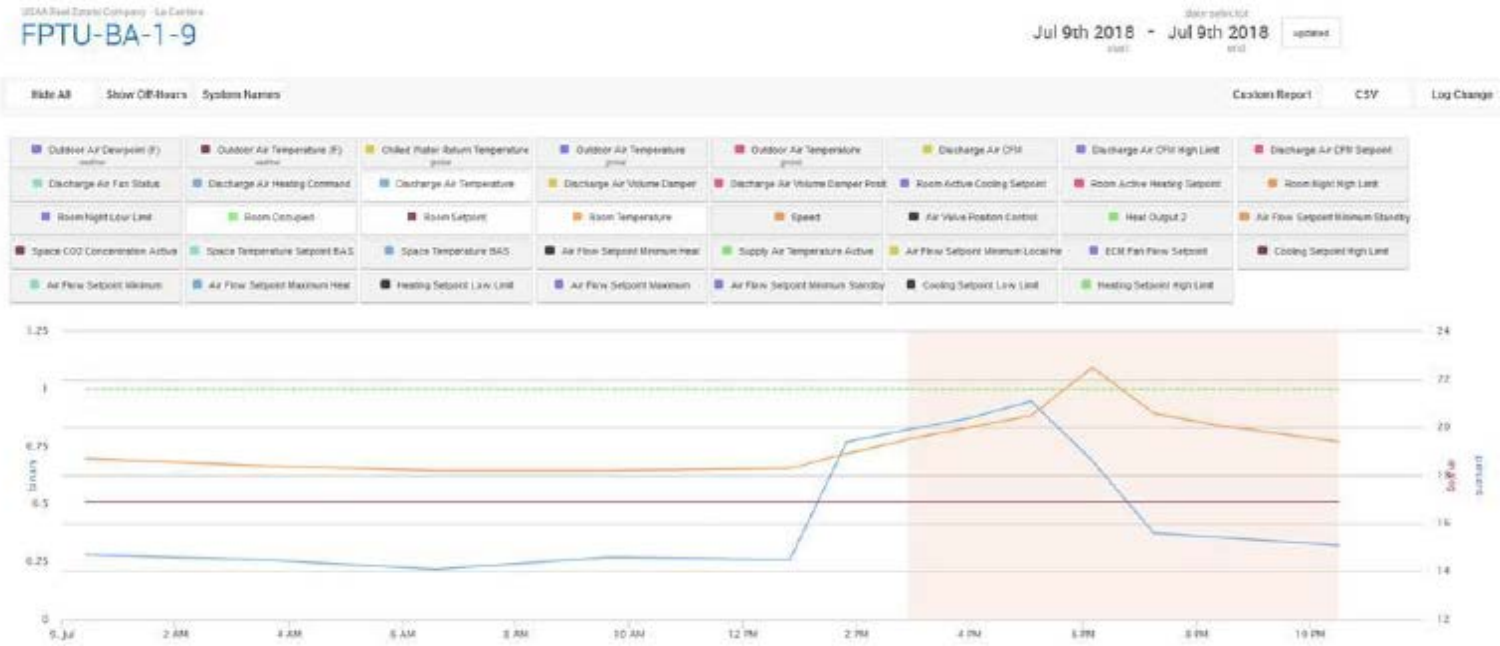


REAL TIME FEEDBACK





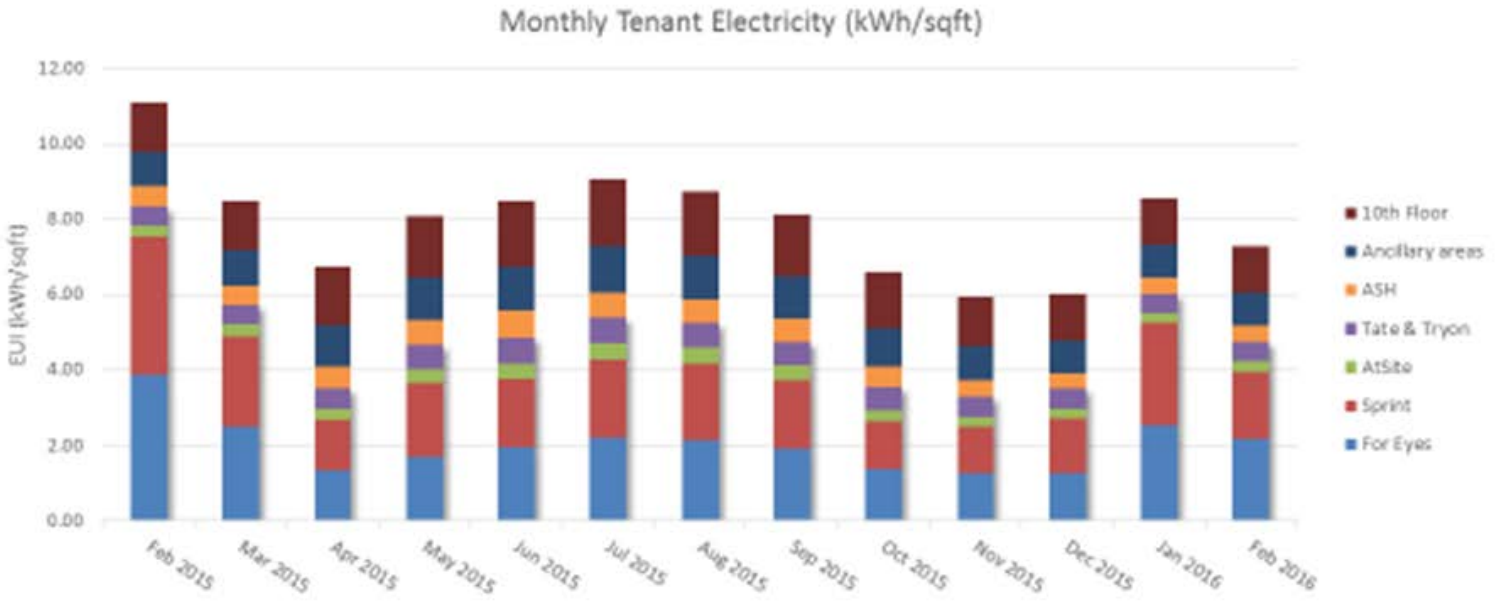
REAL TIME FEEDBACK



REAL TIME FEEDBACK

Tenant Electricity Use

	Ave. Temp
Feb-15	30
Feb-16	40



Electricity Use	Feb 2015	Feb 2016	% change
For Eyes	12,684	7,099	44%
Sprint	4,708	2,287	51%
AtSite	2,548	2,417	5%
Tate & Tryon	10,712	11,390	-6%
ASH	17,250	13,640	21%
Base Building	33,324	28,682	14%
10th floor	2,315	2,185	6%
Total Building	**84,932**	**69,237**	**18%**

Powering Building Performance

AtSite 13

ADDITIONAL REASONS TO SUBMETER

Tenant Recognition

GREEN LEASE LEADERS

CREATING SUSTAINABLE LANDLORD-TENANT RELATIONSHIPS

Legislation (current and future)

Energy Efficiency Improvement Act of 2015

Investor Reporting

GRESB

REAL ESTATE

Accountability & Net Energy Billing

Pay Per Use

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Christopher Cayten, CodeGreen Solutions

U.S. DEPARTMENT OF ENERGY

New York City Carbon Challenge & Sub-metering Policies

Christopher Cayten, LEED AP
Principal
CodeGreen Solutions

DOE Better Buildings Summit

2018

CODEGREEN

Experience

Energy Management and Sustainability Advisory Services

525 million ft^2

Sustainability Software Platform

80 million ft^2

LEED Certified Space

>55 million ft^2

Sustainability Expertise

Green Building Ratings

Reporting Frameworks & Standards

Corporate Sustainability Rankings

Select Clients

CalPERS
Hines
ROCKEFELLER GROUP
TISHMAN SPEYER
DGS Department of General Services STATE OF CALIFORNIA
VORNADO REALTY TRUST
TH Real Estate
JBG SMITH
Bloomberg
NYC Mayor's Office of Sustainability
bxp Boston Properties
Jonathan Rose Companies
LaSalle INVESTMENT MANAGEMENT
UBS
L&L HOLDING COMPANY
SL GREEN REALTY CORP.
ALBANESE ORGANIZATION, INC.
NFL
BLACKROCK
AG&Co ANGELO, GORDON & CO.
CUSHMAN & WAKEFIELD
RXR
CALLAHAN CAPITAL PROPERTIES
NORMANDY REAL ESTATE PARTNERS
KILROY REALTY CORPORATION
CBRE
Heineken
TIFFANY & CO.

New York City has committed to reduce greenhouse gas emissions by

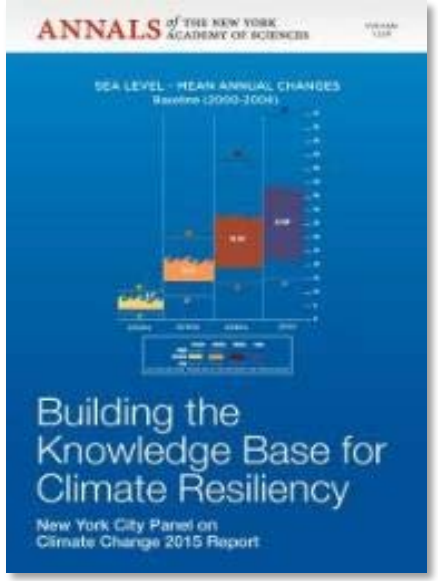
80% by 2050

(80 x 50)

#ONENYC

Why 80 x 50?

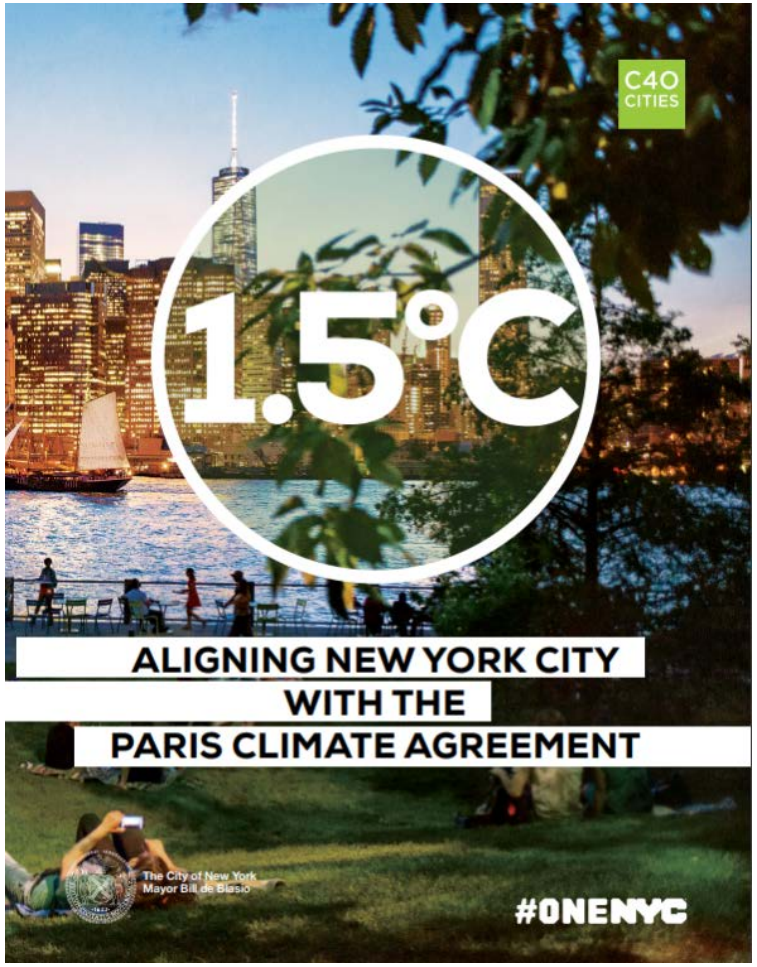
- According to the IPCC, developed nations must reduce greenhouse gas emissions 80 percent by 2050 to avoid catastrophic impacts of climate change
- The NYC Panel on Climate Change (NPCC) projects increased chronic climate hazards and increase impact from extreme water events



By the 2050s:

- 4.1ºF to 5.7ºF increase in average temperature
- Number of days in NYC above 90º could triple
- Sea levels likely to rise 1-2 ft.; maybe 2½ ft.

1.5°C: Aligning New York City with the Paris Climate Agreement



- **On June 1st, 2017, President Trump** announced intention to withdraw United States from the Paris Climate Agreement

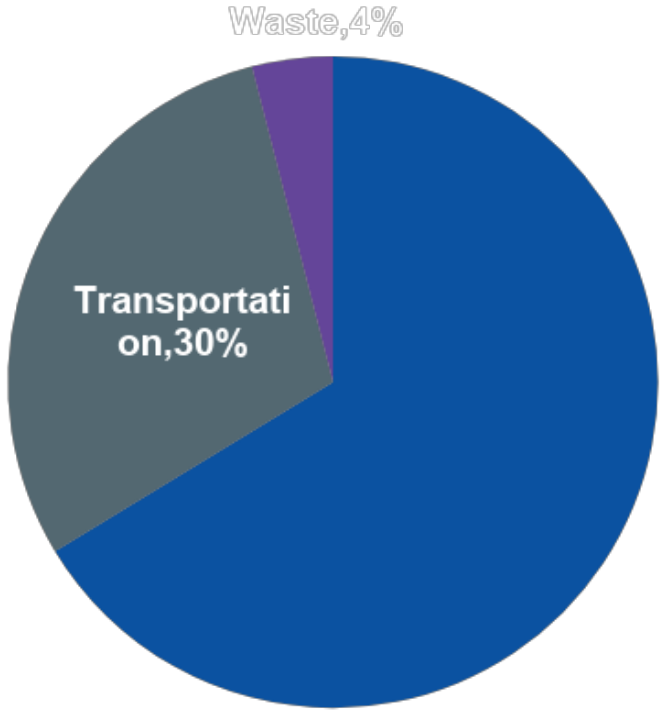
- **On June 2nd, 2017, Mayor de Blasio** signed New York City's Executive Order 26, committing the City to uphold the Paris Climate Agreement

The Importance of Buildings

Improving energy efficiency in buildings is critical to achieving 80 x 50.

- **66%** of NYC's GHG emissions come from the energy used in buildings
- **90%** of NYC buildings that exist today will still exist in 2050

2015 NYC GHG Emissions by Source



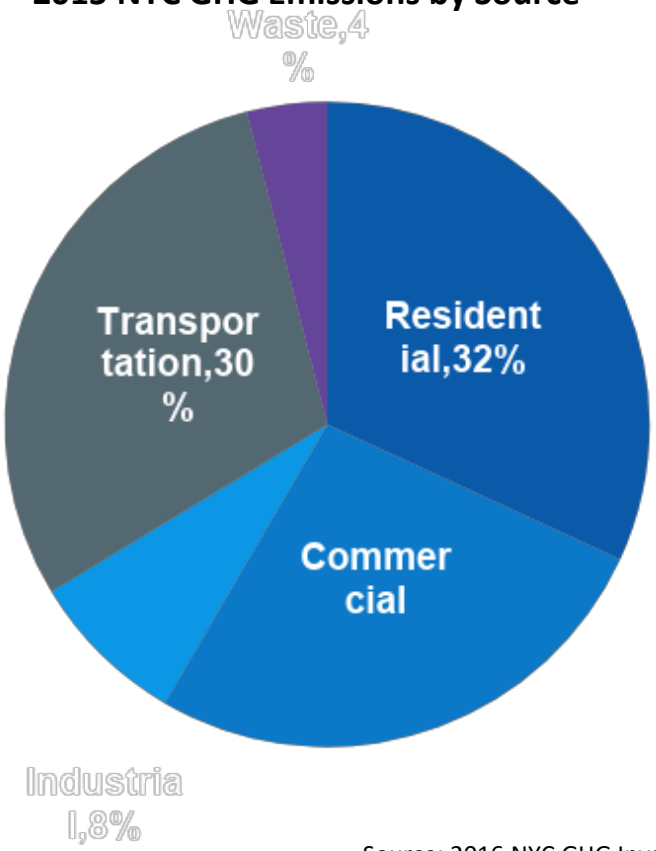
Source: 2016 NYC GHG Inventory

The Importance of Commercial Buildings

Improving energy efficiency in buildings is critical to achieving 80 x 50.

- **66%** of NYC's GHG emissions come from the energy used in buildings
- **90%** of NYC buildings that exist today will still exist in 2050
- **26% of New York City's Greenhouse Gas Emissions is attributable to commercial buildings**

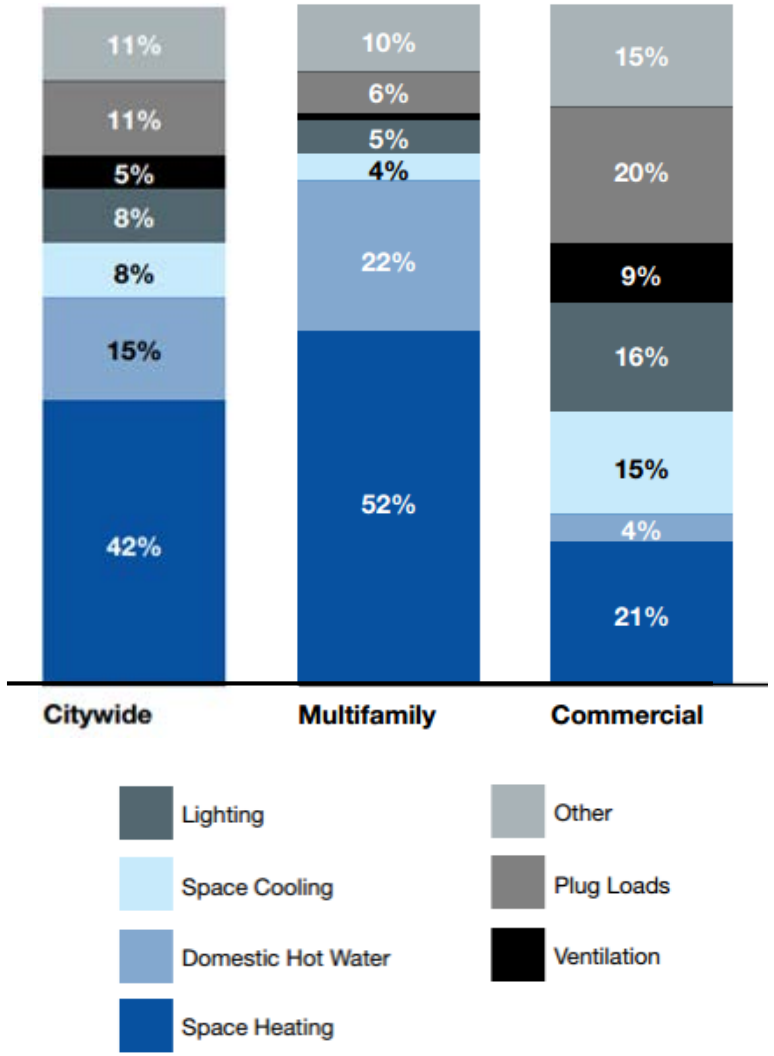
2015 NYC GHG Emissions by Source



Source: 2016 NYC GHG Inventory

The Importance of Commercial Tenants

NYC GHG Emissions from Large Buildings by End Use



Tenant energy consumption from lighting, plug loads and supplemental systems account for **40 – 60%** of building GHG emissions

Owner and Tenant Coordination Issues and Barriers

- Tenant's broker representative does not advocate for energy efficiency
- Lack of transparency in tenant versus owner energy use and
- Limited market penetration for smart sub-metering for small and mid-sized commercial owners
- Lack of coordination between owner's base building systems and tenant's supplemental systems
- Oversizing and/or sub-optimal design of systems in new tenant fit-outs
- Energy efficiency not integrated into leasing conversations
- Tenant fit-outs rarely go above achieving minimum energy code requirements

The NYC Carbon Challenge:

A cross-sector voluntary leadership program to reduce greenhouse gas emissions by 30% or more in ten years.

17 leading universities

10 largest hospital organizations

26 commercial firms

12 commercial owners

21 residential management firms

18 hotels

510 million square feet

9% of citywide square footage

510,000 metric tons of carbon

projected to be eliminated, equivalent to making

45,000 homes carbon neutral

NYC Carbon Challenge Participants

18 Universities

1. **Barnard College**
2. Berkeley College
3. City University of New York
4. Columbia University
5. The Cooper Union
6. **Fashion Institute of Technology**
7. Fordham University
8. The New School
9. **New York University**
10. NY School of Interior Design
11. Pace University
12. Polytechnic Institute of NYU
13. Pratt Institute
14. The Rockefeller University
15. **School of Visual Arts**
16. St. John's University

9 Hospital Organizations

1. Maimonides Medical Center
2. **Memorial Sloan Kettering Cancer Center**
3. **Montefiore Medical Center**
4. Mount Sinai Health System
5. NewYork-Presbyterian Hospital
6. **NewYork-Presbyterian/Queens**
7. Northwell Health
8. **NYC Health + Hospitals**
9. **NYU Langone Health**

BOLD designates participants committed to 50% reduction goal by 2025

NYC Carbon Challenge Participants

22 Residential Management Firms

1. A&E Real Estate
2. Akam Associates
3. AvalonBay Communities, Inc.
4. CH Greenthal & Corp.
5. Community League of the Heights
6. Compass Rock Real Estate
7. Douglas Elliman Property Management
8. FirstService Residential
9. HCCI, Inc.
10. Lott CDC
11. Marion Scott Real Estate.
1. Milford Management
2. New Holland Residences

19 Hotels

1. 1 Hotel Brooklyn Bridge
2. 1 Hotel Central Park
3. Crowne Plaza Times Square
4. Grand Hyatt New York
5. Hampton Inn NY – LaGuardia Airport
6. Hotel Pennsylvania
7. Hudson Hotel
8. LaGuardia Plaza Hotel
9. Loews Regency Hotel
10. Lotte New York Palace
11. The Peninsula New York
12. The Pierre, A Taj Hotel

NYC Carbon Challenge Participants

27 Commercial Firms

1. Allen & Overy LLP
2. Barclays
3. Barnes & Noble
4. BlackRock
5. **Bloomberg LP**
6. Citi
7. Credit Suisse
8. **Deutsche Bank**
9. Environmental Defense Fund (EDF)
10. **Etsy**
11. Fried, Frank, Harris, Shriver & Jacobson, LLP
20. Paul, Weiss, Rifkind, Wharton & Garrison LLP
21. Pfizer
22. PVH Corp.
23. Stoock & Stroock & Lavan LLP
24. Sumitomo Corporation of Americas
25. UBS
26. Viacom
27. White & Case LLP

13 Commercial Owners

1. Durst Organization
2. Fisher Brothers
3. Forest City Ratner Companies
4. Hines
5. Industry City
6. Normandy Real Estate Partners
7. Related Companies
8. Rockefeller Group
9. **Rudin Management Company, Inc.**
10. RXR Realty
11. Silverstein Properties, Inc.
12. SL Green Realty Corp.
13. Vornado Realty Trust

BOLD designates participants committed to 50% reduction goal

NYC Carbon Challenge

Leading the way in greenhouse gas emissions reductions from buildings

SIZE	510 MILLION SQUARE FEET OF REAL ESTATE 9% OF CITY-WIDE BUILT SQUARE FOOTAGE
CARBON	580,000 TONS OF CO_2e REDUCED EQUIVALENT TO REMVOING 125,000 CARS OFF THE ROAD
ENERGY	7.2 MILLION MMBTU REDUCED EQUIVALENT TO TAKING 170,000 HOMES OFF THE GRID
SAVINGS	$190 MILLION IN ENERGY COST SAVINGS TO DATE
HEALTH	2,300 HOSPITALIZATIONS AVERTED BY 58 MILLION TONS OF PM2.5 REDUCED
JOBS	1,600 DIRECT JOBS CREATED

Early Achievers

COLLEGES & UNIVERSITIES

BARNARD COLLEGE	-30%
FASHION INSTITUTE OF TECHNOLOGY	-55%
NEW YORK UNIVERSITY	-30%
NYU TANDON	-32%
ST. JOHN'S UNIVERSITY	-32%
WEILL CORNELL MEDICINE	-30%

HOSPITALS

MEMORIAL SLOAN KETTERING	-32%
MONTEFIORE MEDICAL CENTER	-36%
NEW YORK PRESBYTERIAN - QNS	-39%
NYU LANGONE HEALTH	-31%

COMMERCIAL

BLACKROCK	-45%
CREDIT SUISSE	-41%
EDF	-43%
GOLDMAN SACHS	-45%
GOOGLE	-43%
INTERPUBLIC GROUP	-43%
JP MORGAN CHASE	-31%
JETBLUE	-78%
KIRKLAND AND ELLIS, LLP	-31%
NORMANDY REAL ESTATE PARTNERS	-40%
UBS	-54%

Owner and Tenant Collaboration Case Study

CASE STUDY

SL Green
Viacom Inc.

NEW YORK CITY'S LARGEST COMMERCIAL BUILDING OWNER COMMITS TO REDUCE GHG EMISSIONS BY 30 PERCENT IN PARTNERSHIP WITH TENANTS IN MORE THAN 8 MILLION SQUARE FEET OF REAL ESTATE

To make progress towards the 30 percent

VIACOM INC

SL Green Re
commercial
of its propert
square feet—
SL Green ha
gas emission
below their
to 2014.

33 | NYC

PROJECT HIGHLIGHT: SL GREEN AND VIACOM SUSTAINABILITY PARTNERSHIP

In August 2012, Viacom Inc. renewed and extended its lease with SL Green Realty Corp., occupying 1.3 million square feet for its global headquarters at 1515 Broadway in Times Square. Located in a densely populated area with a Broadway theater and concert venue as tenants, the building provides significant opportunities to increase sustainability.

As part of the lease renewal, SL Green agreed to enhance the operational efficiency of both the base building and Viacom's leased spaces. To advance energy reduction initiatives, the companies created employee "green teams", comprised of executive leadership and staff from operations, engineering, leasing, and facilities. Together, these teams evaluated vendors and new technologies, and implemented energy efficiency and sustainability strategies.

Projects completed through this partnership include the retrofitting of all common spaces with LED lighting, optimization of steam plant controls and pipe insulation, and improvements in the flexibility and efficiency of air handlers, as well as the implementation of a building management system (BMS) to track and improve building efficiency, and software to power down computers and phones after-hours. Additional enhancements include the planting of a green roof and terrace garden on-premises to reduce the urban heat island effect of the building and supply local produce for the cafeteria.

To date, Viacom and SL Green have achieved a 24 percent energy reduction, resulting in $2.3 million of annual utility savings during the course of improvements and $7 million of overall savings. SL Green expects an additional five percent reduction in energy once all measures are fully operational. In recognition of these efforts, the building has been awarded a LEED® Gold certification for Existing Buildings: Operations and Maintenance, and Viacom holds LEED® Commercial Interiors certifications across nine of the 45 floors that it occupies.

VIACOM LOBBY IN 1515 BROADWAY

34 | NYC CARBON CHALLENGE PROGRESS REPORT APRIL 2018

- SL Green agreed to enhance operational efficiency of base building and Viacom's leased spaces as part of lease renewals
- Both companies created green teams
- Upgrades included retrofitting all common spaces with LED lighting, optimization of steam plant controls and pipe insulation, implementation of BMS system
- 24 percent energy reduction, resulting in $2.3 million of annual utility during the source of improvement and $7 million overall savings

Program Working Groups Structure

Full NYC Carbon Challenge Commercial Group

Working Group #1

Topic Area Focus:

Energy metering and information

Operations and maintenance

Tenant Engagement

Working Group Members:

Co-Chairs

Emily Kildow, Taconic Management/Google

Marc Rauch, Environmental Defense Fund

Commercial Participants and Support Organizations

Mayor's Office Staff

Working Group #2

Topic Area Focus:

Financing energy efficiency improvements

New fit-outs and major renovations

Leasing

Working Group Members:

Co-Chairs

Mitchell Grant, RXR Realty

Molly Dee, JB&B

Commercial Participants and Support Organizations

Mayor's Office Staff

Sub-metering Local Laws in New York City

- **Local Law 88 of 2009** – required all buildings greater than 50,000 square feet to update all non-residential lighting to the current Energy Code and sub-meter all commercial leased spaces larger than 10,000 square feet (hereinafter, all sub-metering laws are referred to as “LL88”).

- **Local Law 134 of 2016** – expands LL88 to include all common areas in residential buildings and all areas in non-residential buildings greater than 25,000 square feet in area

- **Local Law 132 of 2016** – expands LL88 to include commercial leased spaces larger than 5,000 square feet in buildings larger than 25,000 square feet

Sub-metering Market Development

Set LL88 Sub-metering rules	Guidelines on smart sub-metering for tenants	Qualify market to achieve standards
Set rules under LL88 that would require sub-meter with certain accuracy rating and data collection interval, and align monthly statements with sub-metering requirements	Mayor's Office published document that would provide guidance on best sub-metering solutions and RTEM solutions for tenants based on size and system type	Mayor's Office issued Request for Qualifications (RFQ) for sub-metering vendors to achieve specifications designated in LL88 rules and guidelines

LL88 gives the City the authority to:

- Define a sub-meter:

  "A device meeting the standards of the department or, where applicable, the public service commission, installed within a building's electrical distribution system that ***measures the flow of electricity within a defined space within the building and that may, but need not, be used for apportioning the cost of electricity among the building's tenants or subtenants***."

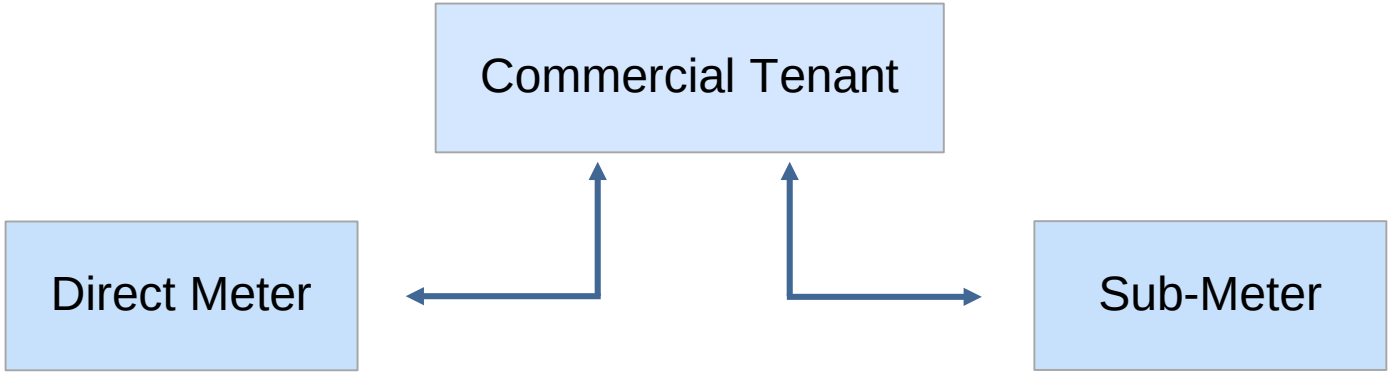
- Require standard format of the monthly statement:

  "Each tenant or subtenant within a covered tenant space that has a sub-meter or sub-meters to measure electrical consumption shall be provided with a ***monthly statement showing the amount of electricity measured by the sub-meter*** for such tenant or subtenant during the month, ***and any amount charged to the tenant or subtenant for electricity***."

Goal of Setting Rules of LL88 Sub-metering Requirements:

Provide information on electricity consumption and cost to commercial tenants to motivate energy reduction, reduce greenhouse gas emissions and save money.

LL88 Sub-meter Compliance Pathways



Automatically meets City specifications by having a utility grade meter and monthly statements from utility

Must meet City specifications for sub-meter and monthly statement

LL88 Sub-meter Proposed Specifications

- Sub-meter
  - Defined as meter and associated devices such as current transformers used to measure electrical watt-hour energy consumption for a three-phase or single-phase circuit, consistent with the definitions in IEEE 1459 and ANSI C12.1., located at or near an electrical conductor that measures the characteristics of the electrical energy flow during a specified time interval.
- Accuracy
  - The sub-meter, including the meter and associated devices such as current transformers, shall provide kWh measurement value that is within +/- 1% of the actual kWh value over 90%, 100% and 110% of the of the meter's rated current input range and operating environment at both the lowest and highest rated voltages, and certified with a NIST traceable Calibration Certificate.

LL88 Sub-meter Proposed Specifications

- Data Collection Interval
  - Sub-meter must record data at increments of 15 minutes or less in alignment with ASHRAE 90.1-2016 8.3.4.1
- Safety
  - The Sub-meter components must fully comply with applicable safety standards, including NFPA 70 (NEC) and UL 61010.

LL88 gives the City the authority to:

- Require standard format of the monthly statement:

  "Each tenant or subtenant within a covered tenant space that has a sub-meter or sub-meters to measure electrical consumption shall be provided with a ***monthly statement showing the amount of electricity measured by the sub-meter for such tenant or subtenant during the month, and any amount charged to the tenant or subtenant for electricity.***"

Local Law 88 Monthly Statement Proposed Rule

- Monthly Statement
  - The monthly statement must be given to the tenant or subtenant within a covered tenant space that has a sub-meter or sub-meters to measure electrical consumption:
    - on a monthly basis;
    - be configured in a digital spreadsheet format;
    - display the aggregate amount of electricity in kWh measured by the sub-meter for each calendar or billing month, beginning from lease start date or 24 months, whichever is shorter;
    - include, at tenant's request, the electricity consumption in kWh measured in alignment with the data collection interval; and
    - display the amount charged to the tenant or subtenant for electricity for each calendar or billing month, beginning from lease start date or 24 months, whichever is shorter.

Sub-metering Market Development

Set LL88 Sub-metering rules	Guidelines on smart sub-metering for tenants	Qualify market to achieve standards
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Mayor's Office published guidelines on SS+P/RTEM

Size of Space	HVAC System Type	Type of Meter	Type of Platform/Controls
Small Tenant **(<10,000 square feet)**	No supplemental system	SS+P for total electricity consumption	SS+P
Medium-Sized Tenant (10,000 – 50,000 square feet)	**No** supplemental system	SS+P with minimum of one smart sub-meter per full or partial floor	SS+P
	Supplemental system	Minimum of one smart sub-meter per full or partial floor plus separately sub-metered supplemental HVAC equipment	SS+P with supplemental HVAC controls integrated with owner's BMS
Large Tenant **(>50,000 square feet)**	**No** supplemental system	SS+P for every full or partial floor**–OR–** SS+P/RTEM monitoring consumption and representative sample of plug/lighting loads and all major electricity-consuming equipment	SS+P/RTEM
	Supplemental system	SS+P for every full or partial floor plus separately sub-metered supplemental HVAC equipment **–OR–** SS+P/RTEM monitoring consumption and representative sample of plug/lighting loads and all major electricity-consuming equipment	SS+P with supplemental HVAC controls integrated with owner's BMS **–OR–** SS+P/RTEM with monitoring of supplemental HVAC equipment integrated with owner's BMS

Sub-metering Market Development

Set LL88 Sub-metering rules	Guidelines on smart sub-metering for tenants	Qualify market to achieve standards
Set rules under LL88 that would require sub-meter with certain accuracy rating and data collection interval, and align monthly statements with sub-metering requirements	Mayor's Office published document that would provide guidance on best sub-metering solutions and RTEM solutions for tenants based on size and system type	Mayor's Office issued Request for Qualifications (RFQ) for sub-metering vendors to achieve specifications designated in LL88 rules and guidelines

MOS Solution: Qualify Market to achieve standards

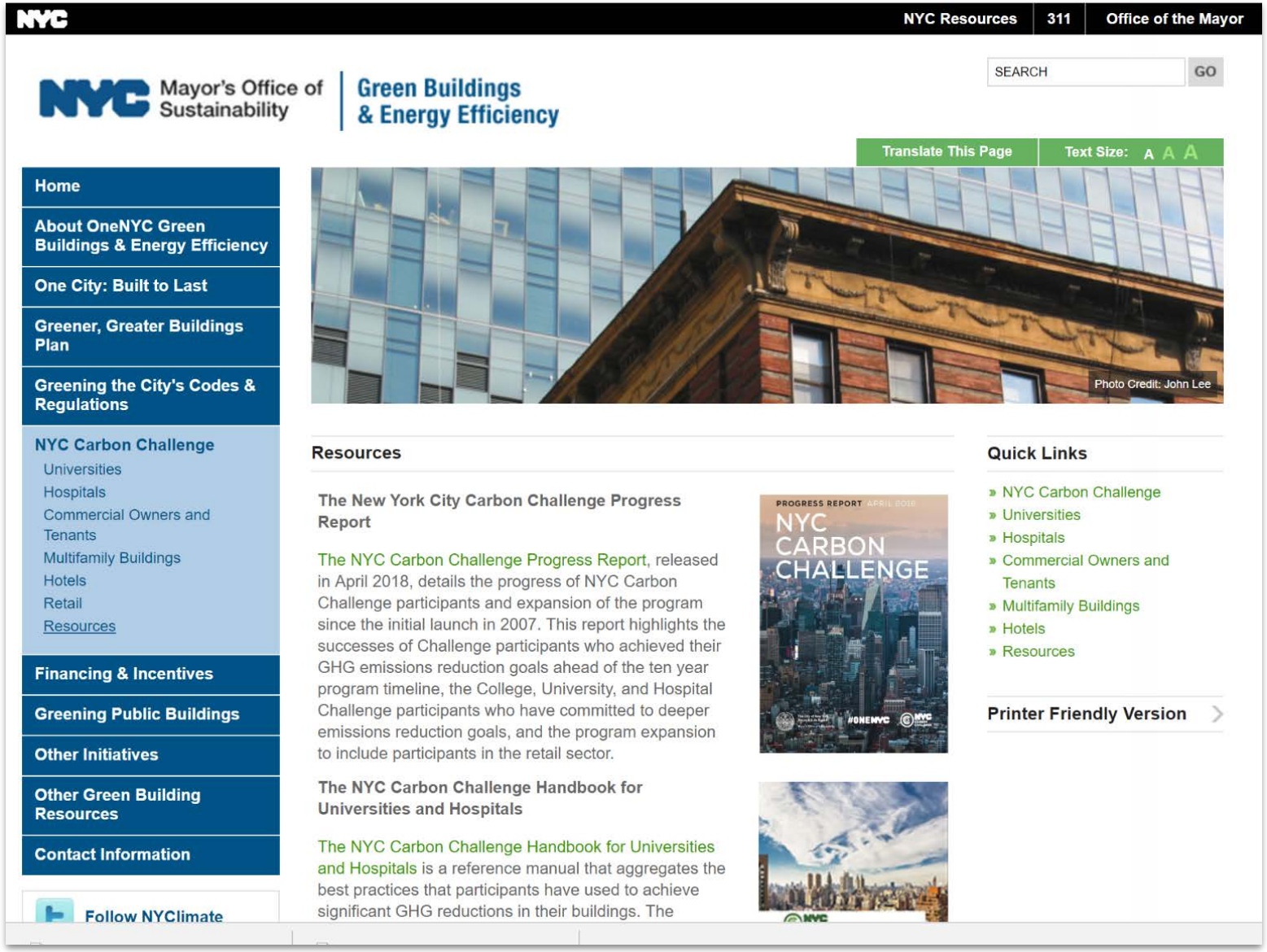
Once sub-meter rules are established and guidelines are published, Mayor's Office to release a Request for Qualifications for:

1) Manufacturers to qualify to meet sub-metering specifications set in rules issued under LL88

2) Vendors to qualify to meet the SS+P guidelines

3) Vendors to qualify to meet the RTEM guidelines

Mayor’s Office Resources



http://www.nyc.gov/html/gbee/html/challenge/resources.shtml

Mayor's Office Resources

Mayor's Office published templates, developed with participants, to help owners and tenants better collaborate on energy efficiency

Operations and Maintenance Plan –

- **Summary** – comprehensive plan with goals, contacts, energy management procedures, schedules for equipment, regular maintenance and commissioning schedules
- **Audience** – developed jointly by owner and tenant
- **Intent** – coordinated energy management and operations between owners and tenants to maximize efficiency of both base building and tenant spaces

Energy Information Push Notification –

- **Summary** – quarterly statement given to tenant to highlight energy consumption, costs and efficiency opportunities on rent statement or direct e-mail
- **Audience** – given by owners to tenants
- **Intent** – consistently inform tenant of energy consumption cost and opportunities to improve energy efficiency of space

Mayor's Office Resources

MOS Inc. Energy Performance Sheet

City Hall Realty - 1 Centre Street

Contact us if you are interested in learning more about enegy efficiency opportunities -- propertymanager@1cityhallpark.com

Sustainability is a central component of City Hall Realty's business strategy. We understand the impact that a robust sustainability program has on mitigating risks related to operational expenses. We continue to measure, manage and reduce, our carbon footprint. As part of our commitment to have our buildings operate at efficiently as possible, we are extending a helpful hand to our tenants to help them join in on this mission, reduce their operating costs, enhance their employee experience and support their sustainability commitments to customers, clients and investors.

Tenant Energy Manger:	**John Smith**
Tenant Energy Manager E-mail:	JohnSmith@MOSInc.com
Tenant Square Footage:	**40,000 SF**

Energy Performance Summary		**Performance Indicactor**
% change - avg. monthly cost (2014 - 2017)	5.97%	▲
% change - kWh/SF (2014 - 2017)	3.42%	▲

Avg. kWh/SF for MOS Inc.	187	-
Avg. kWh/SF for 1 City Hall Park tenants	170	-
Avg. kWh/SF for all City Hall Realty tenants	164	-

Sample energy efficiency opportunities in your space:

1) Install computer monitoring software to shutdown computers at night

2) Install variable frequency drives on variable air volume boxes.

3) Recalibrate BMS with new temperature settings

Available Financing and Incentives

City Hall Realty On-Lease Financing

We provide tenants the upfront capital at a minimal cost to fund energy efficiency projects. Tenants can pay back the investment on their lease over time.

NYSERDA's Commercial Tenant Program

Receive a FREE energy model of your space to learn about additional energy efficiency opportunities available.

www.nyserda.ny.gov/Programs/Commercial-Tenant-Program

Con Edison

Receive cash incentives for light bulb and fixture replacements

www.coned.com/en/save-money/rebates-incentives-tax-credits

Other Energy Efficiency Resources

U.S. EPA's ENERGY STAR for Tenants Program

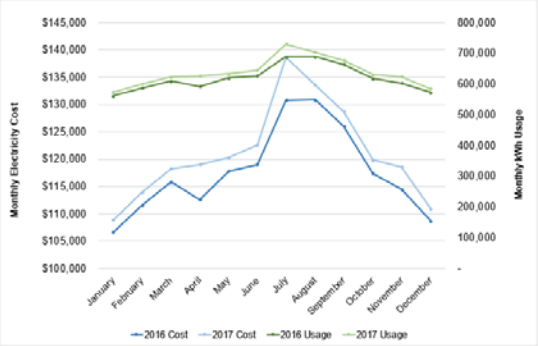
Pilot program run by the U.S. EPA to recognize commercial tenants for energy efficient spaces

www.energystar.gov/buildings/tenants/about_tenant_space

International Facilites Management Association Sustainability Guide

A series of guidelines assembled by IFMA to help tenants with a range of subjects related to sustainable facility management

www.foundation.ifma.org/research/sustainability

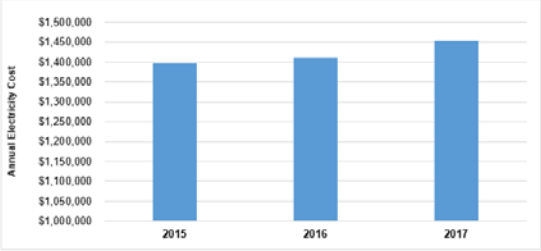


MOS Inc. Monthly Electricity Usage and Cost

	2016		2017			
	Cost	Usage (kWh)	Cost	Usage (kWh)	Peak Demand (kW)	Day of Peak
January	$ 106,690	561,526	$ 108,930	573,318	845	1/3/2017
February	$ 111,588	587,303	$ 113,931	599,636	952	2/21/2017
March	$ 115,821	609,585	$ 118,253	622,386	847	3/12/2017
April	$ 112,612	592,695	$ 119,022	626,431	951	4/21/2017
May	$ 117,810	620,052	$ 120,284	633,073	967	5/23/2017
June	$ 118,982	626,223	$ 122,614	645,337	1,004	6/22/2017
July	$ 130,769	688,261	$ 138,621	729,582	1,043	7/9/2017
August	$ 130,846	688,665	$ 133,594	703,127	988	8/3/2017
September	$ 126,021	663,266	$ 128,667	677,195	903	9/18/2017
October	$ 117,368	617,727	$ 119,833	630,700	923	10/1/2017
November	$ 114,461	602,427	$ 118,591	624,163	843	11/13/2017
December	$ 108,640	571,790	$ 110,921	583,797	894	12/5/2017

MOS Inc. Avg. Monthly and Total Annual Electricity Cost

	2014	2015	2016	2017	2018
AVG. MONTHLY	$ 114,286	$ 116,311	$ 117,634	$ 121,105	$ 105,634
TOTAL	$ 914,284	$ 1,395,735	$ 1,411,609	$ 1,453,262	$ 105,634



Mayor's Office Resources

Mayor's Office published templates, developed with participants, to help owners and tenants better collaborate on energy efficiency

Building Specification Sheet –

- **Summary** – standardized summary sheet outlining general description of building and sustainability features
- **Audience** – given by commercial owner to broker to use with prospective tenants to educate them on owner's commitment to sustainability and building's energy features
- **Intent** – appeal to prospective tenants on the owner's commitment to sustainability and building's energy features

Tenant Design Criteria –

- **Summary** – standardized set of design criteria to guide new tenant fit-outs and renovations
- **Audience** – given by commercial owner to commercial tenant, owner's reps, engineering and architecture firms involved in new tenant fit-outs and renovations
- **Intent** – provide guide on right-sizing of tenant systems and equipment and to encourage tenant fit-outs and renovations to exceed code requirements

CODEGREEN

Thank You

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Thanks! Any Questions?

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