

From Seattle to San Francisco

How **energy** performance mandates could...

t r a n s f o r m t h e m a r k e t



Moderated by:

Rebecca Baker

Program Manager
Building Energy Benchmarking
and Reporting



City of Seattle

Norm G. Miller, Ph.D.

Professor
Editor, Journal of Sustainable
Real Estate

BURNHAM-MOORES
CENTER FOR REAL ESTATE
UNIVERSITY OF SAN DIEGO

Barry Hooper

Coordinator
Green Building Program
Department of the Environment



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco



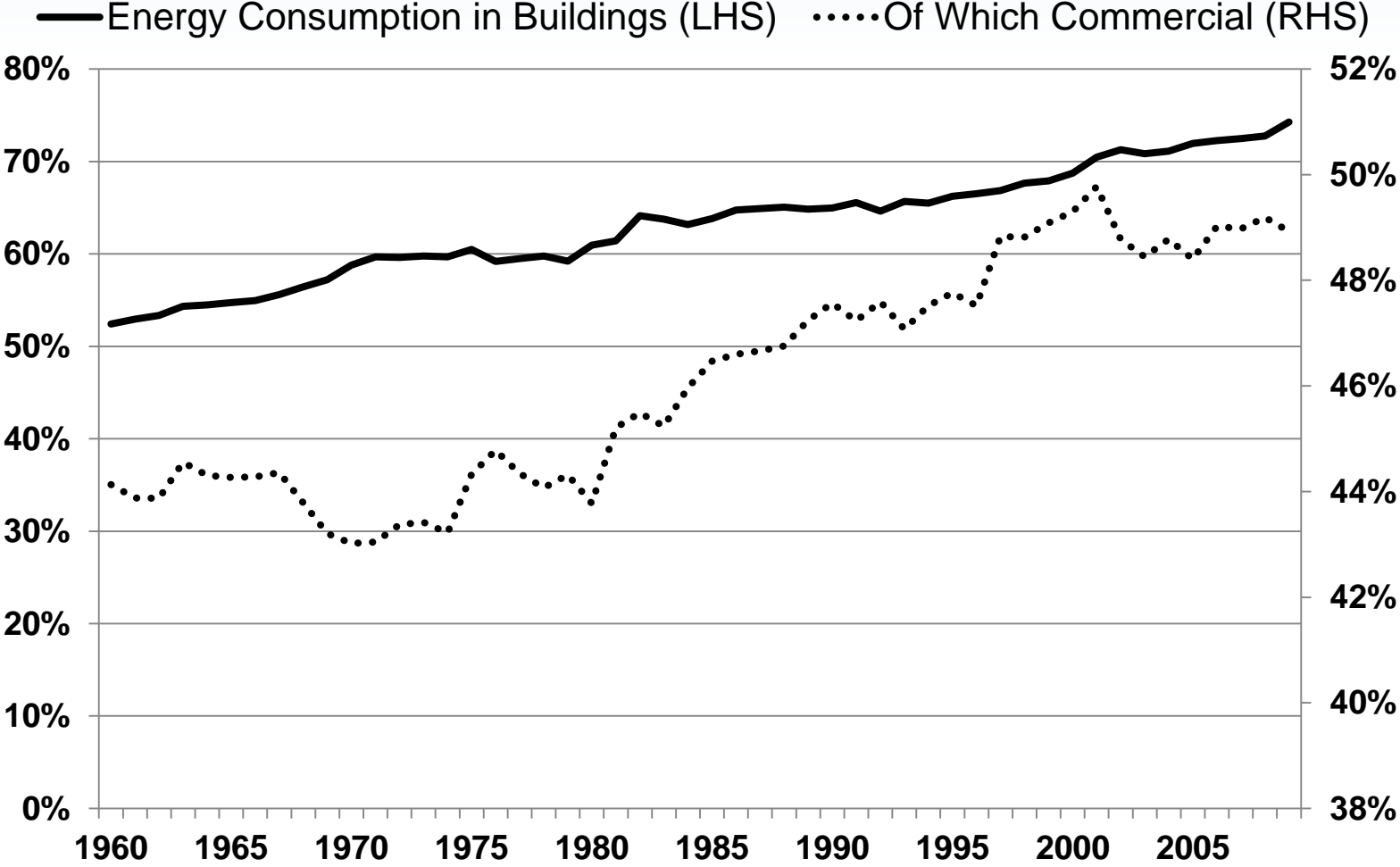
Learning Objectives

1. Explore implementation of performance disclosure.
2. Understand how market segments influence engagement.
3. Explore the tipping point for market transformation.
4. Review early indications of the effect of energy performance on performance.

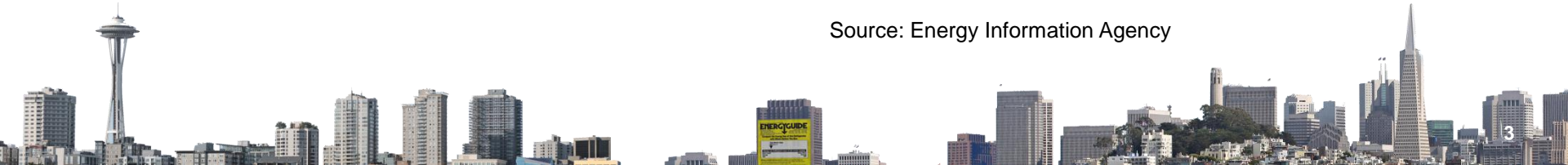


Energy Consumption and the Built Environment

Energy Dependence Starts in Buildings



Source: Energy Information Agency



Energy-Efficiency Debate Prominent in Policy Circles

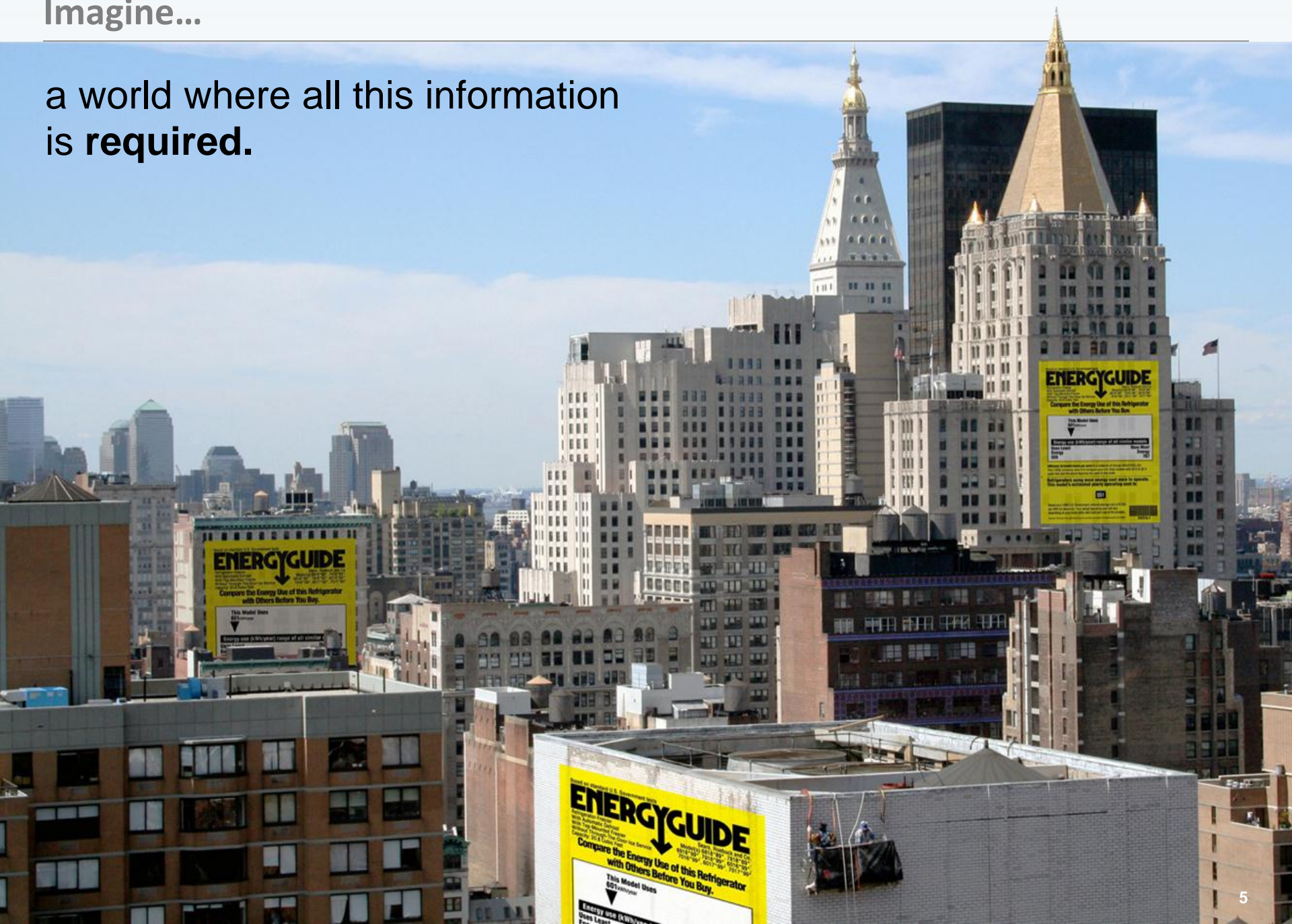
How to reduce energy consumption in the commercial property market?

1. **Raise energy prices – not politically viable?**
2. Stricter building codes and subsidizing retrofits
 - Works, but mostly for new construction and retrofits and can inhibit renovation
 - Fiscal belt tightening will constrain future subsidies and tax credits
3. Stimulating market efficiency through energy labels and disclosure
 - Investments in energy efficiency may lead to:
 - Save on current resources, insure against future price increases
 - Higher transaction prices at resale
 - Labels in residential seem to have the desired effect (Brounen and Kok, 2011; Kahn and Kok, 2012)



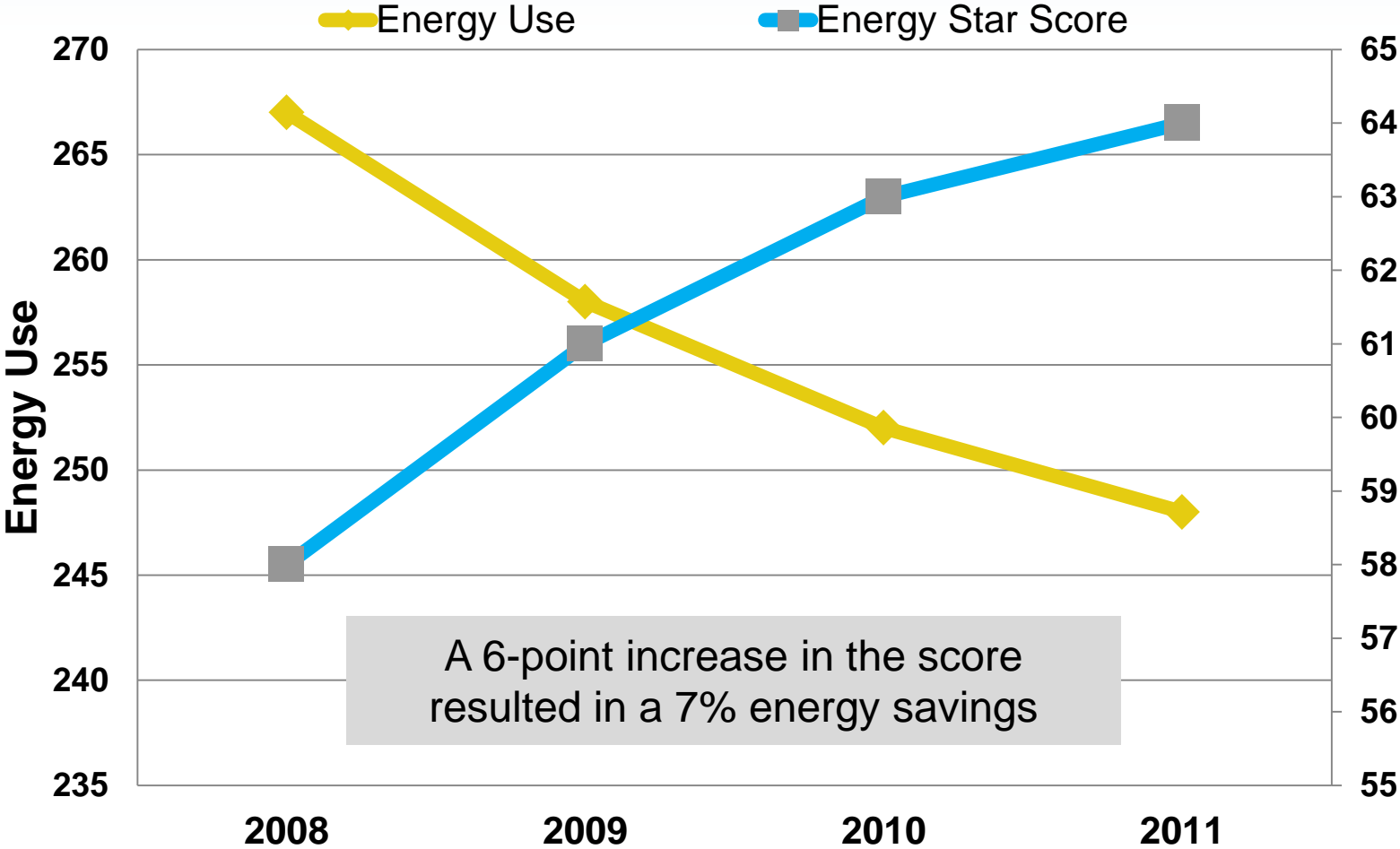
Imagine...

a world where all this information
is **required**.



EPA ENERGY STAR Scores Work

35,000 Buildings in Portfolio Manager Database



The “Economics” Are Ever More Important

Financial Implications of “Greening” Buildings

A higher initial outlay in some markets, but modest with smart planning and design

“Smarter” building managers, software and systems
...may be compensated subsequently

Direct Cost Savings

- Energy savings
- Emission reduction
- Lower life cycle costs of occupancy

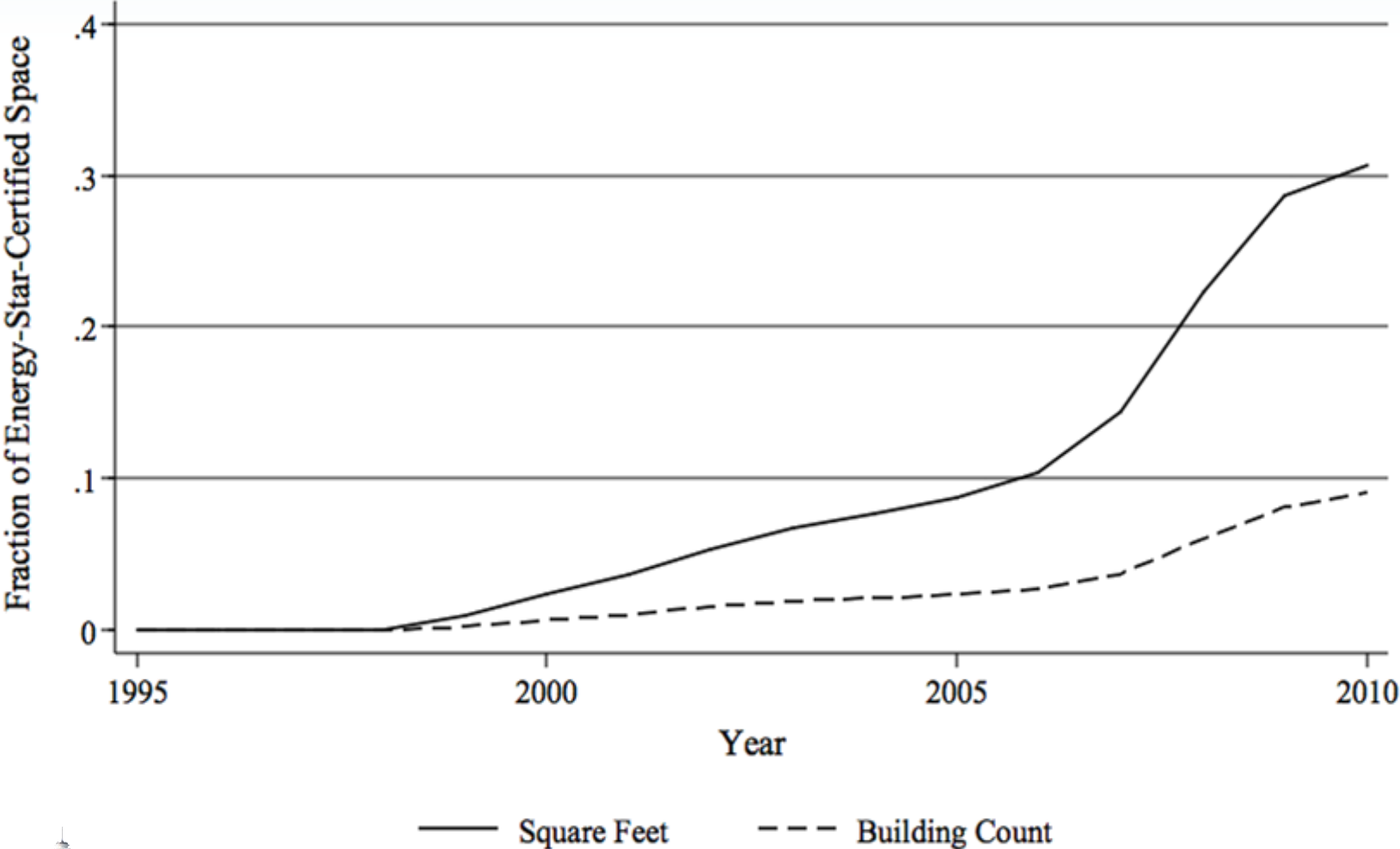
Increased rents, faster absorption, lower turnover

- Reputation and corporate social responsibility
- Corporate preferences (IAQ, corporate policies)
- Health and productivity of occupants
- Increased economic life of building

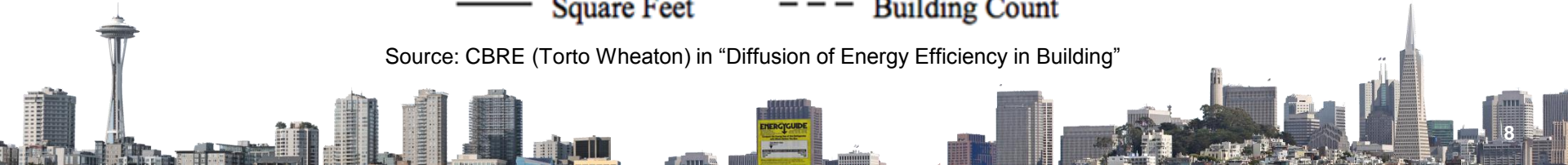


Energy Labels in the U.S. Marketplace

ENERGY STAR Ratings Are Becoming Prevalent



Source: CBRE (Torto Wheaton) in "Diffusion of Energy Efficiency in Building"




Energy Efficiency Literature Assumes Rationality

Labels... Or Just Efficiency?

- Current policies to reduce energy consumption assume rational decision-making by informed investors (if they trust the claims)
 - An owner occupied market or
 - One where landlords and tenants share benefits?
 - One frequent problem is a misalignment of incentives (landlords vs. tenants)
- Value impacts seems to hold for sophisticated investors and tenants in commercial property
 - Labels have financial implications (Eichholtz et al., 2010, Fuerst and McAllister, 2011, Miller, Florance and Spivey, 2008,etc)
 - Efficient capitalization of energy bills (Eichholtz et al., 2011)
 - GSA helps drive some markets, but not all markets observe differentials with respect to benefits and return on investment



The (In)Famous EU Energy Label

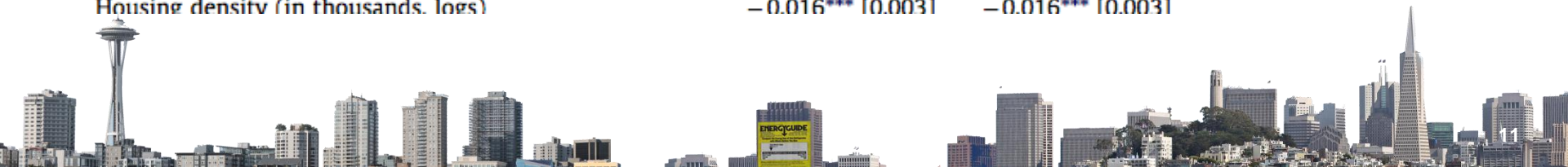
Energy Efficiency Rating		
	Current	Potential
Very energy efficient - lower running costs		
(92 to 100) A		
(81 to 91) B	84	85
(69 to 80) C		
(55 to 68) D		
(39 to 54) E		
(21 to 38) F		
(1 to 20) G		
Not energy efficient - higher running costs		
England & Wales	EU Directive 2002/91/EC	



Transaction Discount for Inefficient Dwellings

Brounen and Kok, 2011

	(1)	(2)
"Green" energy label (A, B, or C)	0.037*** [0.003]	
Energy label score		
A		0.102*** [0.021]
B		0.056*** [0.006]
C		0.022*** [0.004]
E		-0.005 [0.004]
F		-0.025*** [0.004]
G		-0.051*** [0.006]
Thermal and quality characteristics		
Central heating		
Exterior maintenance		
Insulation quality		
Dwelling type ^a		
Apartment	-0.386*** [0.011]	-0.388*** [0.011]
Duplex	-0.358*** [0.007]	-0.358*** [0.007]
Semi-detached	-0.223*** [0.007]	-0.221*** [0.007]
Dwelling size (log)	-0.266*** [0.012]	-0.268*** [0.012]
Number of rooms	0.003*** [0.001]	0.003*** [0.001]
Monument	0.051*** [0.016]	0.051*** [0.016]
Neighborhood characteristics		
Housing density (in thousands. logs)	-0.016*** [0.003]	-0.016*** [0.003]



Mandatory Disclosure in Australia

A Random View in Sydney



Mandatory Disclosure in Australia

...And the View at the Other Side of the Street



FOR LEASE

- ▶ Refurbished contemporary office space
- ▶ One of the largest floorplates in the CBD
- ▶ 526 sqm available now
- ▶ NABERS energy rating of 3.5 Stars

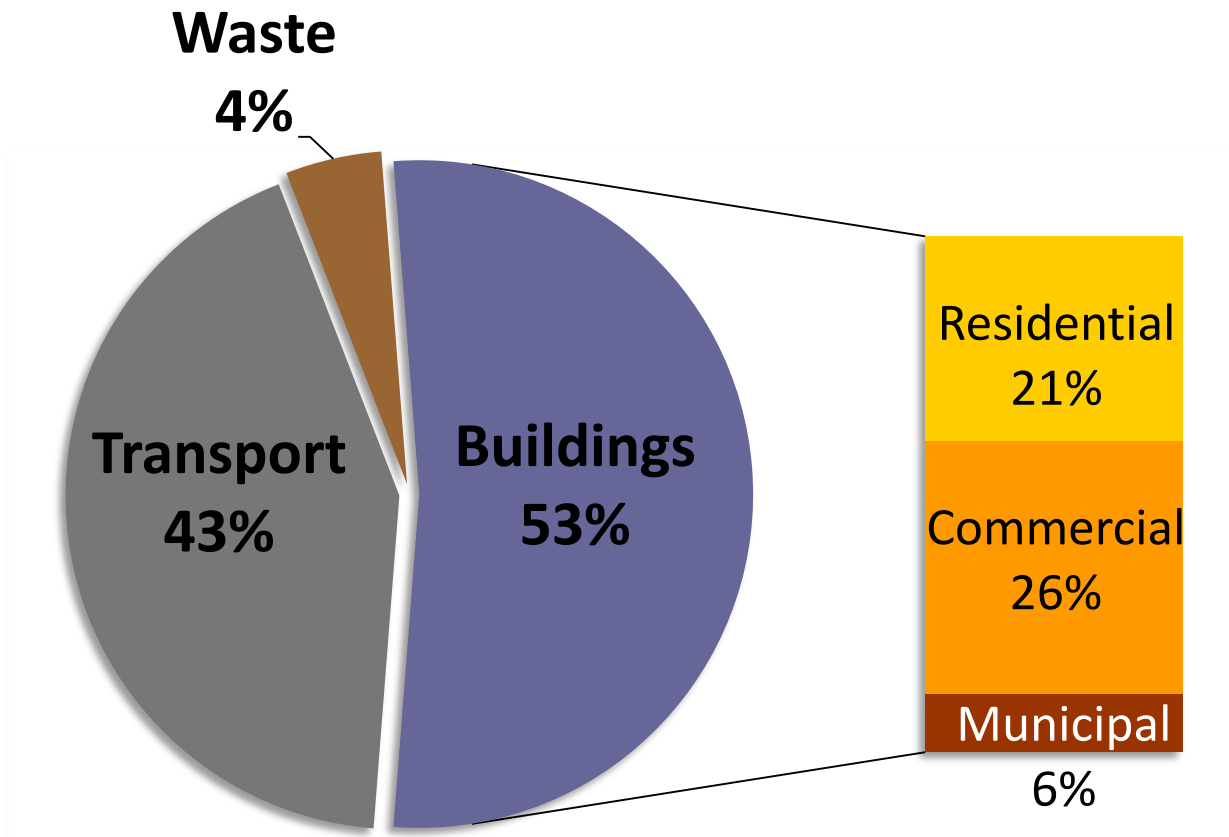
The sign is positioned in front of a window that looks out onto a city skyline. The view through the window shows a dense urban landscape with various skyscrapers and buildings. A prominent feature in the view is the Transamerica Pyramid, a tall, slender skyscraper with a distinctive top. Other buildings of varying heights and architectural styles are visible, creating a diverse skyline. The sky is clear and bright, suggesting a sunny day. The overall scene conveys a sense of a modern, high-rise office environment with a panoramic view of a major city.



Information As An Energy Efficiency Accelerator

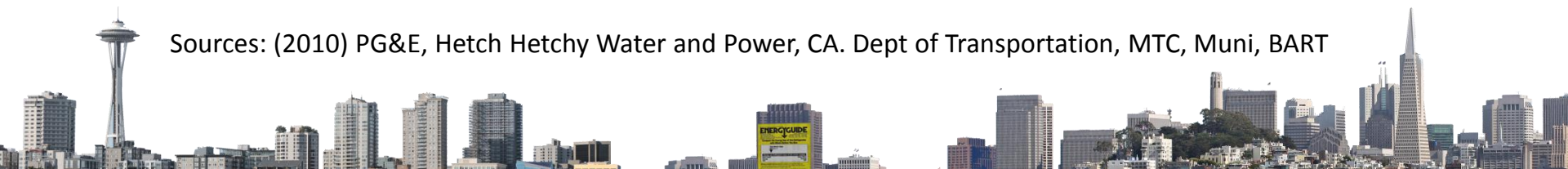


San Francisco Greenhouse Gas Emissions

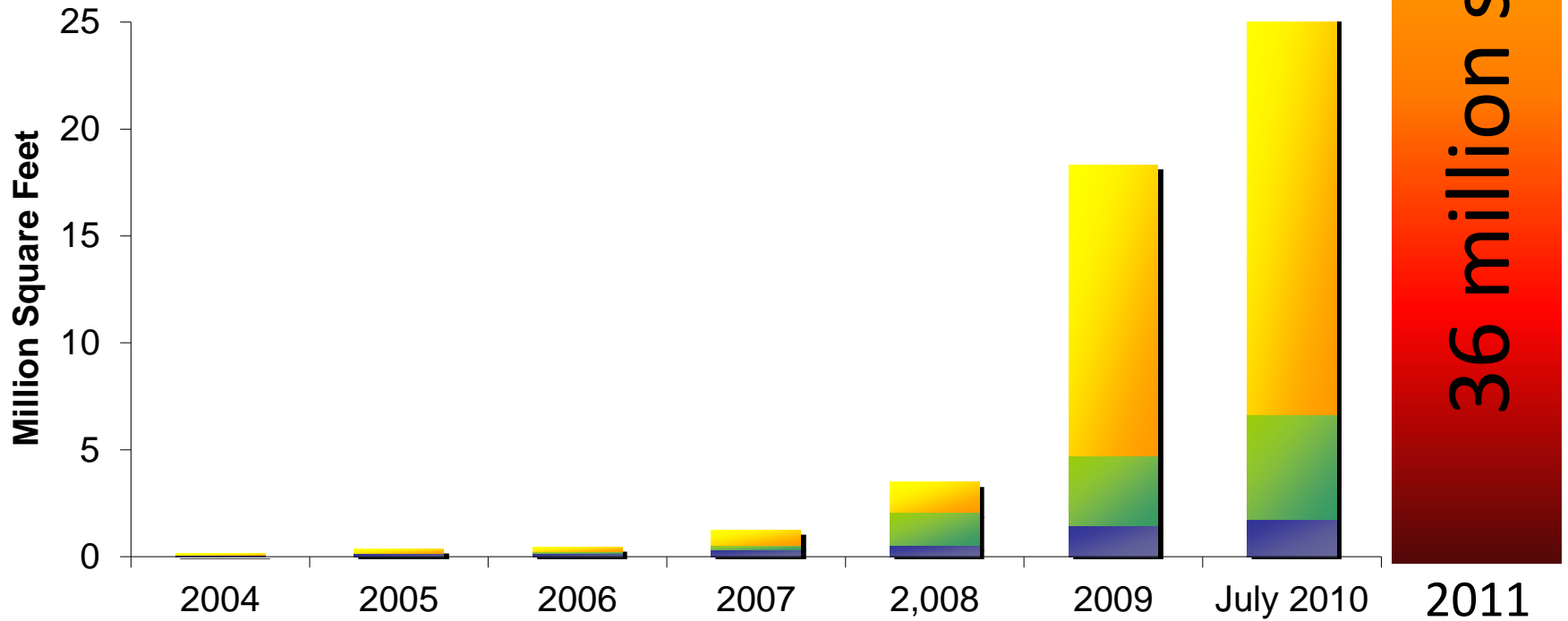


Source	CO ₂ e (MT)
Cars & Trucks	2,118,863
Commerical Electricity	748,458
Residential Natural Gas	782,960
Commercial Natural Gas	609,521
Residential Electricity	310,558
Waste	244,625
Municipal Electricity	186,103
Municipal Natural Gas	119,860
Rail (BART & Caltrain)	78,635
Ferry	34,103
Muni	22,044
Total:	5,255,730

Sources: (2010) PG&E, Hetch Hetchy Water and Power, CA. Dept of Transportation, MTC, Muni, BART



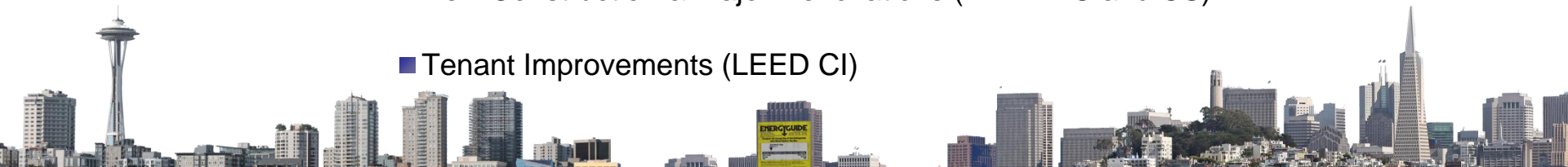
Green Building Growth in San Francisco



■ Existing Buildings Operations & Maintenance

■ New Construction & Major Renovations (LEED NC and CS)

■ Tenant Improvements (LEED CI)



Commercial Stakeholders:
'We will manage what we measure'

Benchmark

An Action Plan

Transparency



San Francisco Benchmarking Requirement

Benchmark with
Portfolio Manager



 PACIFIC GAS AND ELECTRIC COMPANY
**DATA RELEASE AUTHORIZATION FOR
BENCHMARKING ANALYSIS FORM**

Automated benchmarking is a powerful tool that makes it easy for building owner utilities to get the information they need to identify the best energy efficiency measures that can improve building energy performance.

DATA RELEASE AUTHORIZATION FOR BENCHMARKING

I, _____
NAME TITLE (IF APPLICABLE)

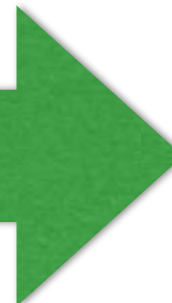


Click link, get report
template



Review Annual
Energy Benchmark
Summary

Release



Receive Confirmation
from SFE

San Francisco Benchmarking Requirement

Benchmark with
Portfolio Manager

 PACIFIC GAS AND ELECTRIC COMPANY
DATA RELEASE AUTHORIZATION FOR
BENCHMARKING ANALYSIS FORM

Automated benchmarking is a powerful tool that makes it easy for building owners and utilities to get the information they need to identify the best energy efficiency measures that can improve building energy performance.

DATA RELEASE AUTHORIZATION FOR BENCHMARKING

I, _____
NAME TITLE (IF APPLICABLE)

Click link, get report
template

Review Annual
Energy Benchmark
Summary

**Limited Public
Disclosure:**

- ENERGY STAR Rating**
- Energy Use/sq ft/year**
- Annual CO₂e emissions**
- Basic descriptive data**

San Francisco Existing Commercial Buildings Energy Performance Ordinance: Compliance Map

Is your building compliant?

Enter an address to find out...

Note: Compliance information was last updated on November 12th, 2012.

611 Compliant **481** Not Compliant

The Existing Commercial Buildings ordinance, adopted in 2011, is ensuring property owners, managers, and tenants know how their buildings are performing and the most effective energy-efficiency strategies to reduce their utility costs. This is a map of properties that have benchmarked and reported energy use annually, and buildings that have not met their legal obligations. Has your property complied?

2011: 112 million square feet (65% of affected stock) compliant

2012: 121 million square feet (59% of affected stock) compliant

[Click here for more info](#)

Show/Hide: Confirmed Not Compliant

Confirmed Not Compliant

1760 CESAR CHAVEZ ST

SF Confirmed

1760 CESAR CHAVEZ ST San Francisco, CA

TYPE: Other

SQ FT:65,000 ft²

1301 VAN NESS AVE

SF Confirmed

1301 VAN NESS AVE San Francisco, CA

TYPE: Industrial

SQ FT:27,125 ft²

450 OFARRELL ST

SF Confirmed

450 OFARRELL ST San Francisco, CA

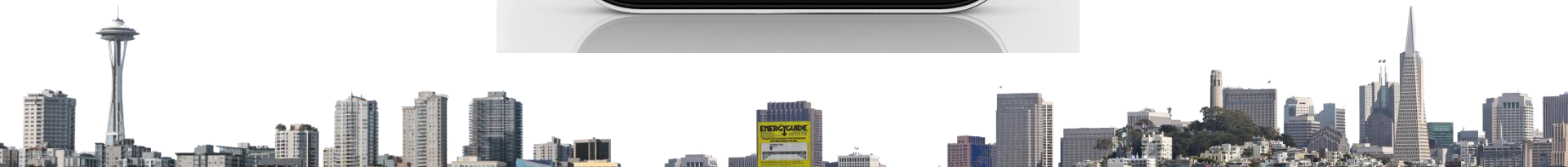
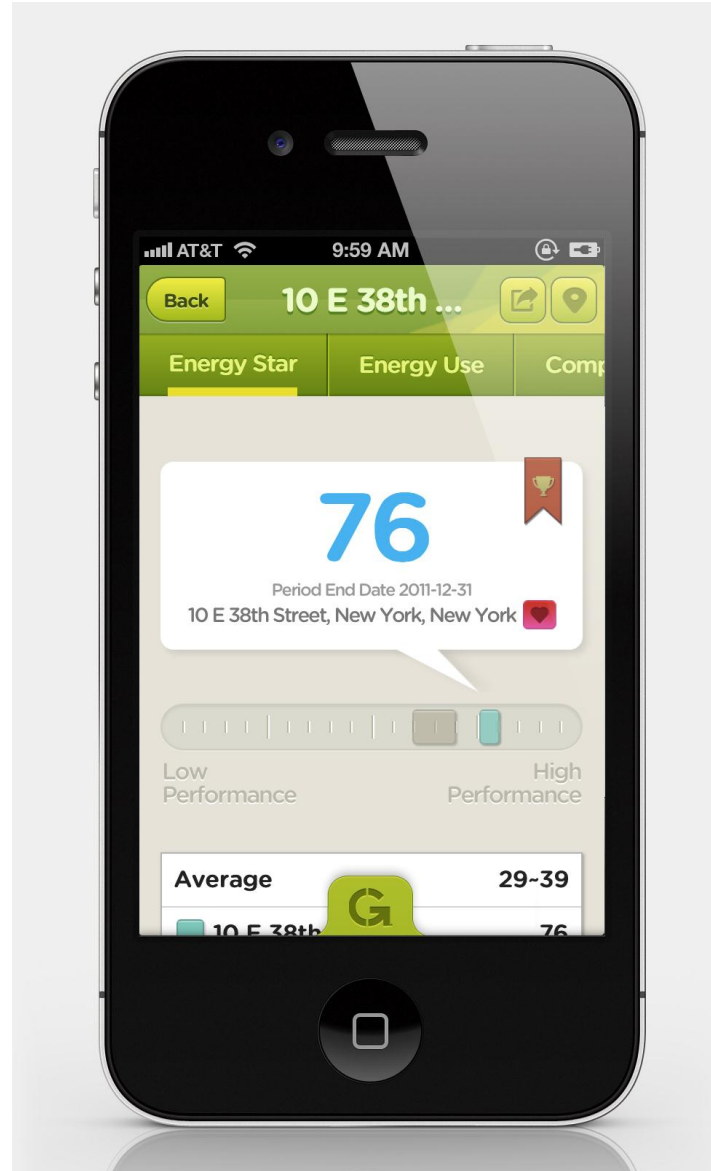
TYPE: Other

SQ FT:26,904 ft²

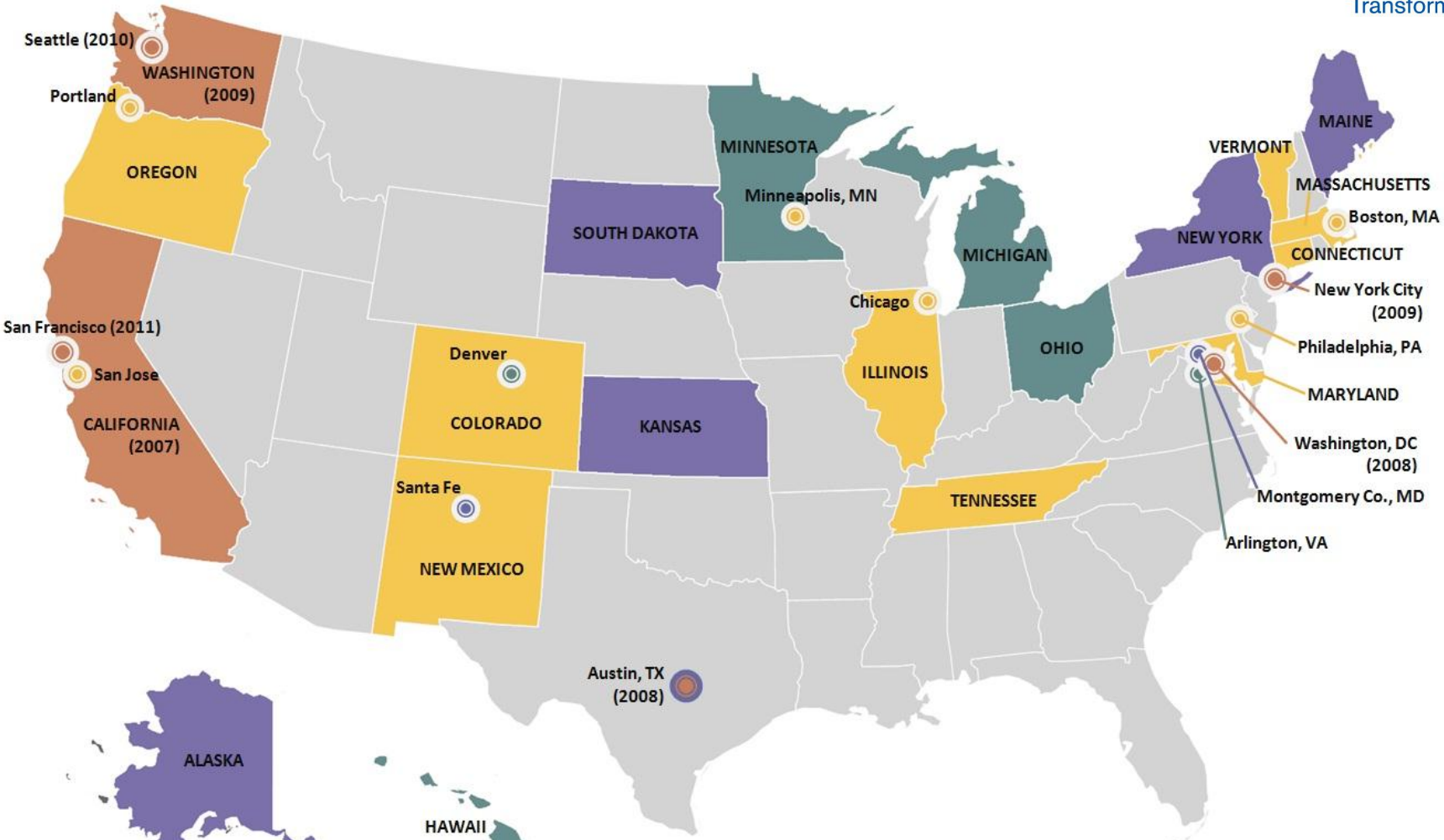


HonestBuildings.com/sf-ecb

Next Step:



Policy Map



- Existing Commercial Rating & Disclosure
- Commercial Policy Under Consideration
- Public Buildings Only
- Existing Residential Disclosure

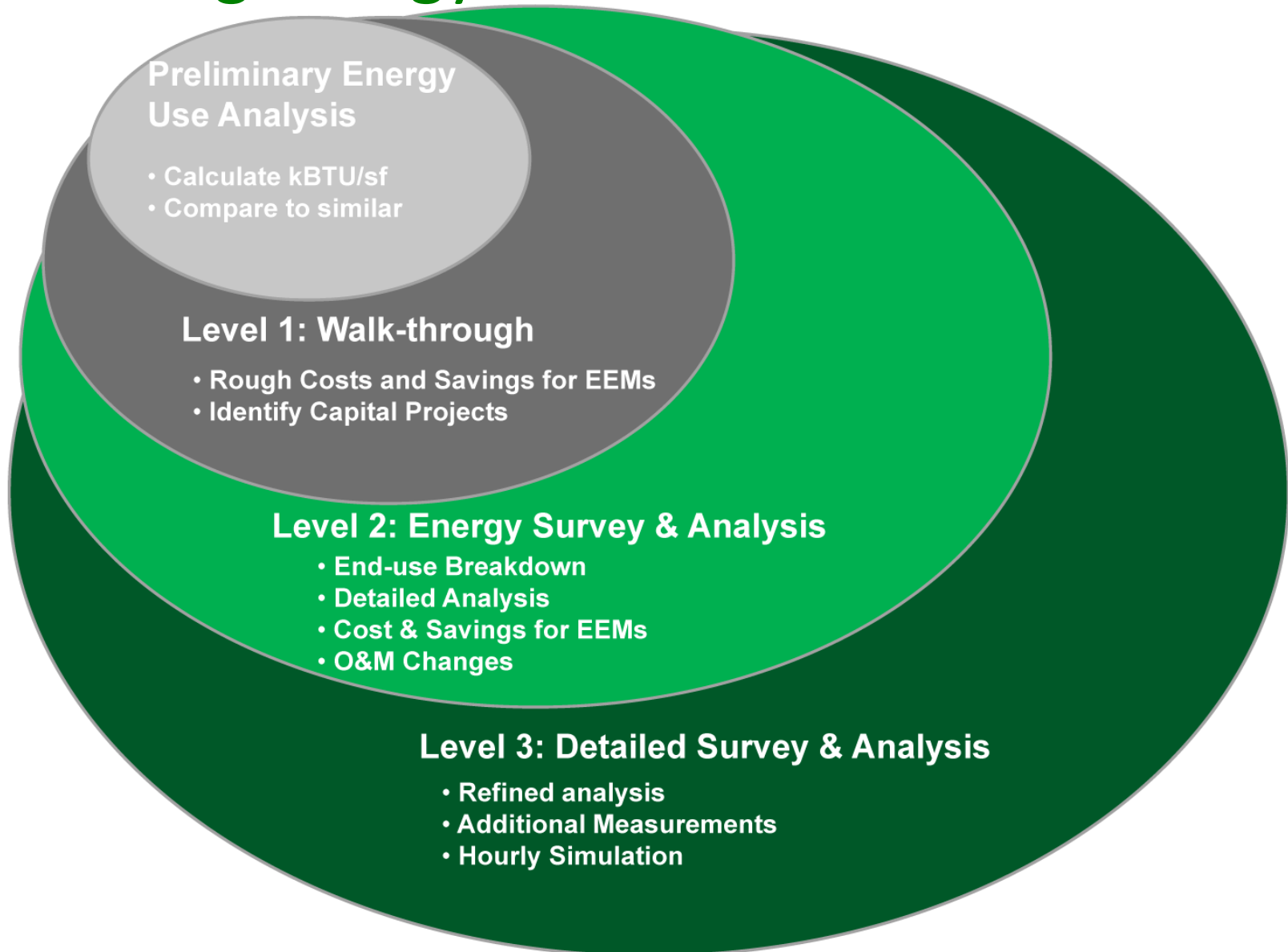


All U.S. policies leverage Energy Star Portfolio Manager

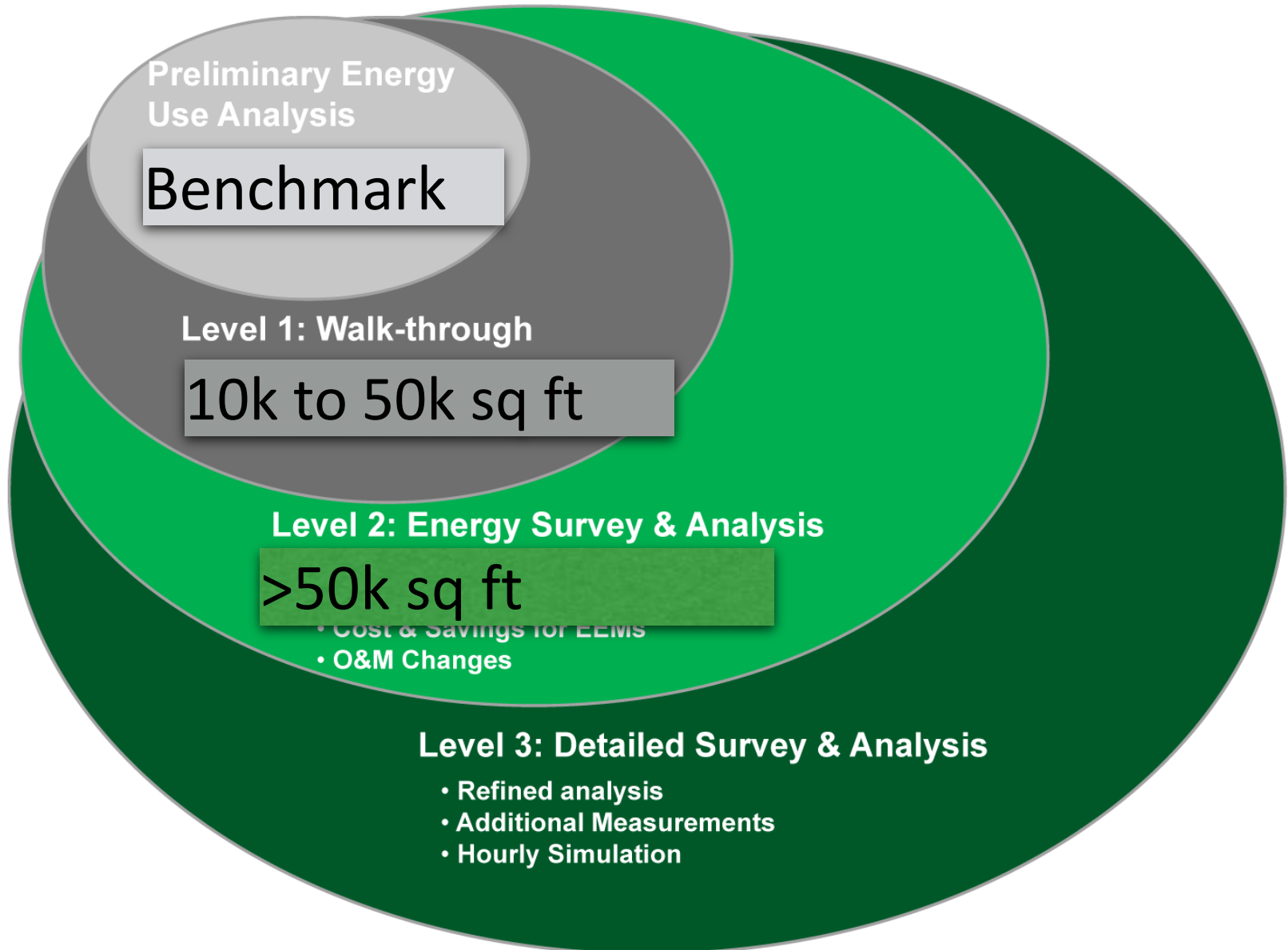
Jurisdiction	Benchmarking (Building Type and Size)		Disclosure					
	Non-residential	Multi-family	Public	To government	To tenants	To transactional counterparties		
						Sale	Lease	Financing
Austin	10k SF+	-	-	✓	-	✓	-	-
California*	5k SF+	-	-	✓	-	✓	✓	✓
District of Columbia	50k SF+	50k SF+	✓	✓	-	-	-	-
New York City	50k SF+	50k SF+	✓	✓	-	-	-	-
San Francisco	10k SF+	-	✓	✓	✓	-	-	-
Seattle	20k SF+	20k SF+	-	✓	✓	✓	✓	✓
Washington	10k SF+	-	-	-	-	✓	✓	✓



ASHRAE Procedures For Commercial Building Energy Audits



Energy Audit Requirement





GreenFinanceSF



Saving You Money, Energy and Water

Financing For: Energy Efficiency • Renewables • Water Efficiency

City and county
creates
land-secured
financing district



Property owners
voluntarily sign-up
for financing and
install energy
projects



Proceeds from
financing provided
to property owner
to pay for project



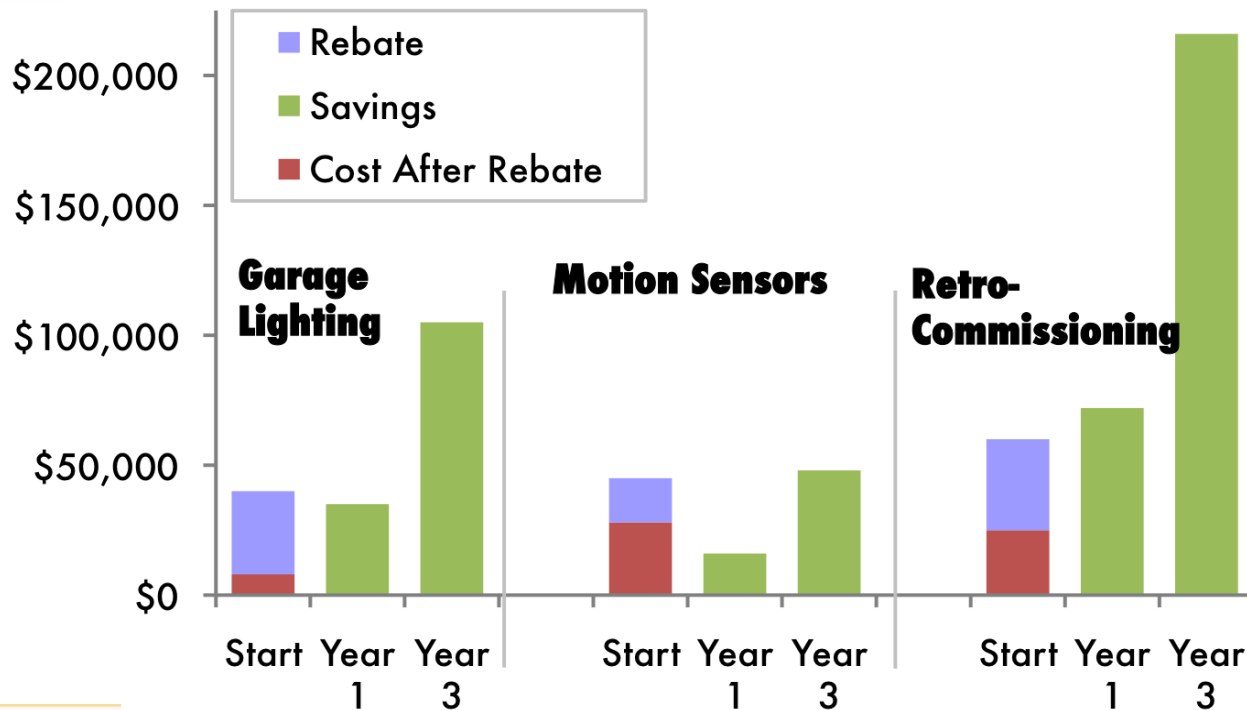
Property owner
repays bond
through property
tax bill
(up to 20 years)





"By benchmarking our hotel's energy use and identifying inefficiencies through an audit, we were able to maximize savings without sacrificing our customers' experience."

Peter Koehler,
General Manager
InterContinental Hotel



“Benchmarking is crucial. Energy management has become a passion.”
— Garry Cook, Chief Engineer, 500 Washington

“Reducing energy costs is the most significant way to increase operating income and appeal to future tenants, investors and owners. Your competition is benchmarking and auditing.”
— Blake Peterson, Senior Property Manager, Orrick Building

“To improve efficiency, you need to know where you're at.”
— Doug Peterson, Chief Engineer, Transamerica Pyramid



2011 ENERGY BENCHMARKING REPORT

San Francisco Municipal Buildings

October 2012



San Francisco
Water Power Sewer

Services of the San Francisco Public Utilities Commission

Respectable Performance for Ratable Buildings

San Francisco Facilities in ENERGY STAR Categories: Comparison to National Median Rating		
	Number of Facilities	Percentage of Rated Facilities
Top 25% (76-100 rating) ●	11	36.7%
2nd Quarter (51-75 rating)	11	36.7%
Median (50 rating)	1	3.3%
3rd Quarter (26-49 rating)	5	16.7%
Bottom 25% (1-25 rating) ●	2	6.7%
TOTAL	30	100%



Facility	EUI Change Since 2010	Annual Site EUI (kBtu/sq.ft.)	ENERGY STAR 	Carbon Footprint (lbs CO2e / sq.ft.)
----------	-----------------------	-------------------------------	---	--------------------------------------

Education

			0	50	100	150	200		0
Childcare / Teen Center - San Francisco Average	23.2%	45.8							3.85
Earl P Mills Community Center	19.5%	77.0						N/A	6.28
Sojourner Truth Child Center	105.4%	41.0						N/A	3.52
MLK Child Care Center	0.4%	31.8						N/A	3.13
Shorey Childrens Center	28.1%	10.7						N/A	0.80
College / Adult Education - San Francisco Average	-11.9%	102.0							10.07
GGP – Senior Center	-6.0%	159.6						N/A	14.72
SFPD Academy	-19.1%	139.8						N/A	11.45
Southeast Community Facility and Greenhouses (5)	-12.3%	98.2						N/A	10.13
Sheriff Community Programs / Five Keys Adult School	34.9%	71.3						N/A	4.02

Libraries

			0	50	100	150	200		0
Library - San Francisco Average	0.1%	71.2							3.74
Ocean View Branch Library	5.7%	173.3						N/A	3.35
West Portal Branch Library	-9.2%	102.7						N/A	7.03
Noe Valley/Sally Brunn Branch Library	-16.0%	97.3						N/A	7.46
Potrero Branch Library	N/A	89.3						N/A	6.00
Western Addition Branch Library	13.4%	88.0						N/A	6.50
Marina Branch Library	-10.2%	87.2						N/A	5.17
Chinatown Him Mark Lai Branch Library	-4.2%	87.0						N/A	3.69
Main Library	-6.8%	75.3						N/A	4.03
Park Branch Library	N/A	73.9						N/A	4.29

SEATTLE'S ENERGY BENCHMARKING AND REPORTING PROGRAM

GREENBUILD 2012

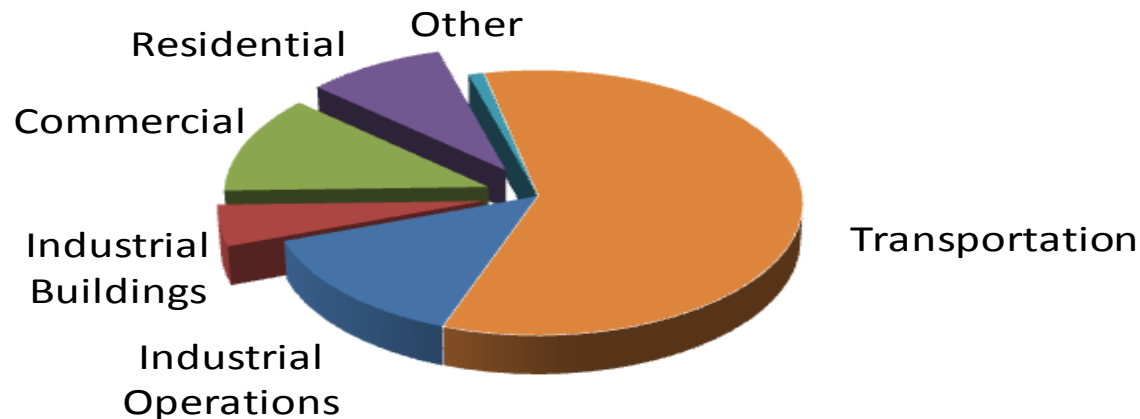


- Improve energy efficiency in residential & commercial buildings
 - Improve energy efficiency in existing buildings 20% by 2020
 - Improve energy efficiency in new buildings and major retrofits consistent with intent of the 2030 Challenge






Reduce greenhouse gas emissions:

- 7% below 1990 levels by 2012
- 30% below 1990 levels by 2024
- 80% below 1990 levels by 2050



Buildings account for 26% of our carbon footprint

- **Benchmarking**  Building Owners
- **Disclosure**  Affected Parties
- **Annual reporting**  City of Seattle

● Benchmarking Building Owners

- Establish a baseline of energy performance for each property, using **EPA Portfolio Manager** (free, online)
- Local utilities offer “automated” upload of summarized energy use (saves time, maintains tenant privacy)
- Guide energy efficiency investment decisions

● Disclosure

● Annual reporting

● Benchmarking

● Disclosure → Affected Parties

- Compare performance (future operating costs) between similar properties
- Guide purchasing, leasing and financing decisions

● Annual reporting

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Sample Office Building

Building ID: 2648530
 For 12-month Period Ending: April 30, 2011¹
 Date SEP becomes ineligible: N/A

Date SEP Generated: May 23, 2011

<p>Facility Sample Office Building 100 Efficiency St. Seattle, WA 98103</p>	<p>Facility Owner Building Owner, LLC 1000 Benchmark St. Seattle, WA 98103</p>	<p>Primary Contact for this Facility Facility Manager 2000 Energy St. Seattle, WA 98103</p>
---	--	---

Year Built: 1970
Gross Floor Area (ft²): 98,630

Energy Performance Rating² (1-100) 77

Site Energy Use Summary³		
Electricity - Grid Purchase(kBtu)		5,888,452
Natural Gas (kBtu) ⁴		568,548
Total Energy (kBtu)		6,457,000

Energy Intensity⁵		
Site (kBtu/ft ² /yr)		65
Source (kBtu/ft ² /yr)		205

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)		706
---	--	-----

Electric Distribution Utility
 Seattle City Light

National Average Comparison

National Average Site EUI		92
National Average Source EUI		288
% Difference from National Average Source EUI		-29%
Building Type		Office

Meets Industry Standards⁵ for Indoor Environmental Conditions:		
Ventilation for Acceptable Indoor Air Quality		N/A
Acceptable Thermal Environmental Conditions		N/A
Adequate Illumination		N/A

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

Certifying Professional
 Licensed Professional
 3000 Conservation St.
 Seattle, WA 98103

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.

2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.

3. Values represent energy consumption, annualized to a 12-month period.

4. Values represent energy intensity, annualized to a 12-month period.

5. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

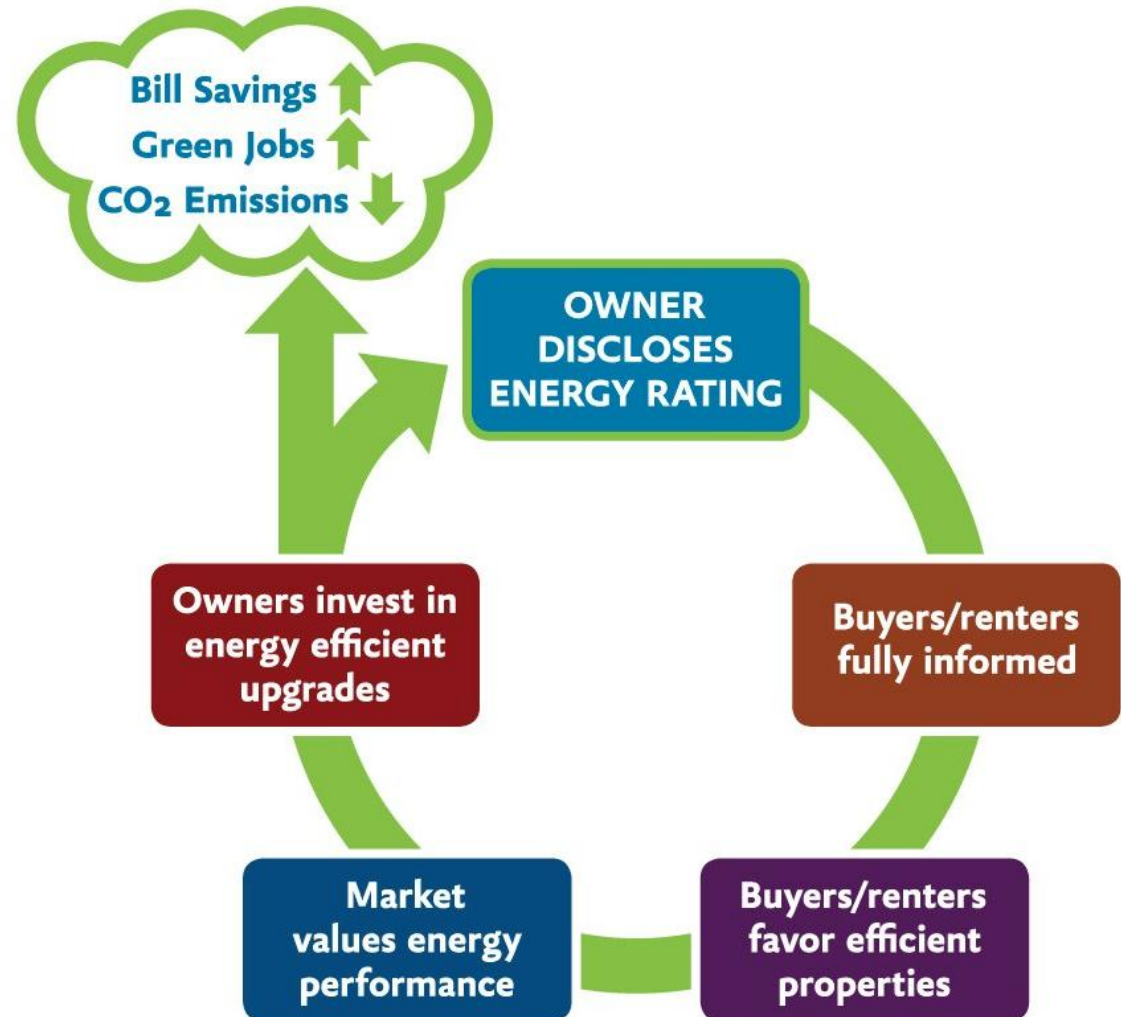
● Benchmarking

● Disclosure

● Annual reporting → City of Seattle

- Monitor changes in energy use across the entire portfolio of buildings in the city
- Identify market sectors with the greatest needs and opportunities
- Guide development of future policies and incentive programs

Allow an informed market to drive energy efficiency improvements



Seattle 2030 District



- Compliance check list
- How to guide
- Workshop trainings
- Webinars
- Drop-in hours
- Helpline
- Case studies
- Local service providers

SEATTLE ENERGY BENCHMARKING & REPORTING

HOW TO GUIDE

Step-by-step instructions to use the U.S. EPA's Portfolio Manager to comply with the City of Seattle's Energy Benchmarking and Reporting requirements.

Contents

STEP 1	Get started.....	1
STEP 2	Create a building profile in Portfolio Manager.....	2
STEP 3	Set-up automated benchmarking for utilities serving your building.....	2
STEP 4	Authorize annual reporting to the City of Seattle.....	7

APPENDIX

A	Seattle Benchmarking Data Collection Worksheet
B	Resources

SEATTLE OFFICE OF Sustainability & Environment

www.seattle.gov/dpd/EnergyBenchmarking

- Raised building size threshold to 20,000 SF
- Phased timeline for reporting requirement
- Simplified enforcement process
- Explore better approach for small scale buildings

Compliance Rates

Building Type & Size Threshold	Deadlines	Reporting Rates	Annual Deadlines
PHASE I Non-Residential 50,000 SF or Greater	April 1, 2012 For 2011 data	57% 98.2 million sf	Reporting is due each April 1st for prior year's building energy use. For example, 2012 data will be due on April 1, 2013.
PHASE II Multifamily 50,000 SF or Greater	October 1, 2012 For 2011 data	60% 56.2 million sf	
PHASE III Non-Residential & Multifamily 20,000 to 49,999 SF	April 1, 2013 For 2012 data		
Below 20,000 SF	Voluntary Reporting (Encouraged)		

Two Leading U.S. Cities in Energy Disclosure

Questions

- Is the private sector supportive or resistant?
- Is disclosure better accomplished at the city, county, state or Federal level?
- Do other cities inquire about following suit?
- What is the next generation of disclosure policies?



From Seattle to San Francisco

How **energy** performance mandates could...

t r a n s f o r m t h e m a r k e t



Moderated by:

Rebecca Baker

Program Manager
Building Energy Benchmarking
and Reporting



City of Seattle

Norm G. Miller, Ph.D.

Professor
Editor, Journal of Sustainable
Real Estate

BURNHAM-MOORES
CENTER FOR REAL ESTATE
UNIVERSITY OF SAN DIEGO

Barry Hooper

Coordinator
Green Building Program
Department of the Environment



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco