Investing in Better Buildings

Rating & Reporting and Energy Efficiency for Commercial & Industrial (C&I) Building Owners: *Proposed Requirements*

City of Boulder

Wednesday, February 25, 2015

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Agenda

Investing in Better Buildings

- Key Definitions
- City Council's Directive
- Objectives & Community Benefit
- Public Process / Community Engagement
- Options for Proposed Requirements
- Estimated Costs and Savings
- Proposed Timeline

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Key Definitions

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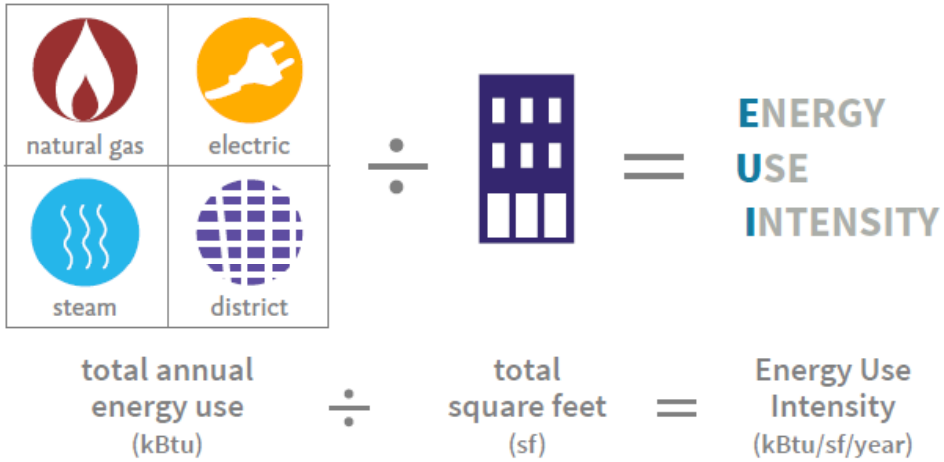
1) What is Rating & Reporting ?(Benchmarking & Disclosure)

- **"Rating"** is the process of measuring and comparing energy performance metrics (such as the normalized energy use of a building) to other similar buildings
- **"Reporting"** means disclosing the energy use and associated ratings to the city and other various parties (such as the public or interested buyers and tenants)

2) Energy Use Intensity (EUI) = a building's total energy use per SF per year



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Key Definitions

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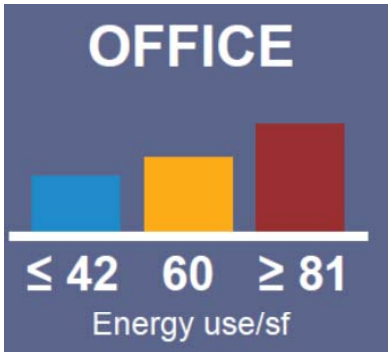
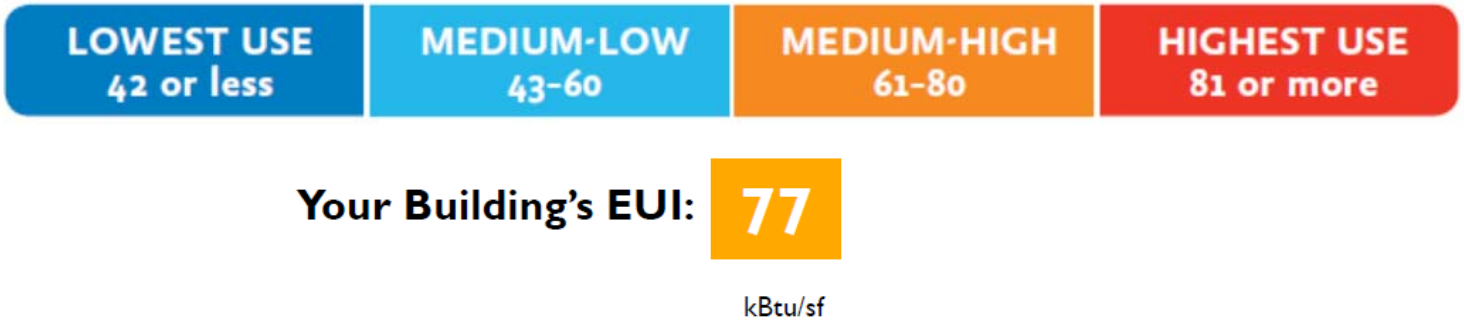
What does a building owner have to do to Rate & Report their building?

1. Collect whole building energy use data
2. Enter or import data into EPA's ENERGY STAR Portfolio Manager (ESPM) Tool
3. Share Portfolio Manager data with City of Boulder

What kind of information will a building owner receive from Rating & Reporting?



Sample Data



City Council's Directive

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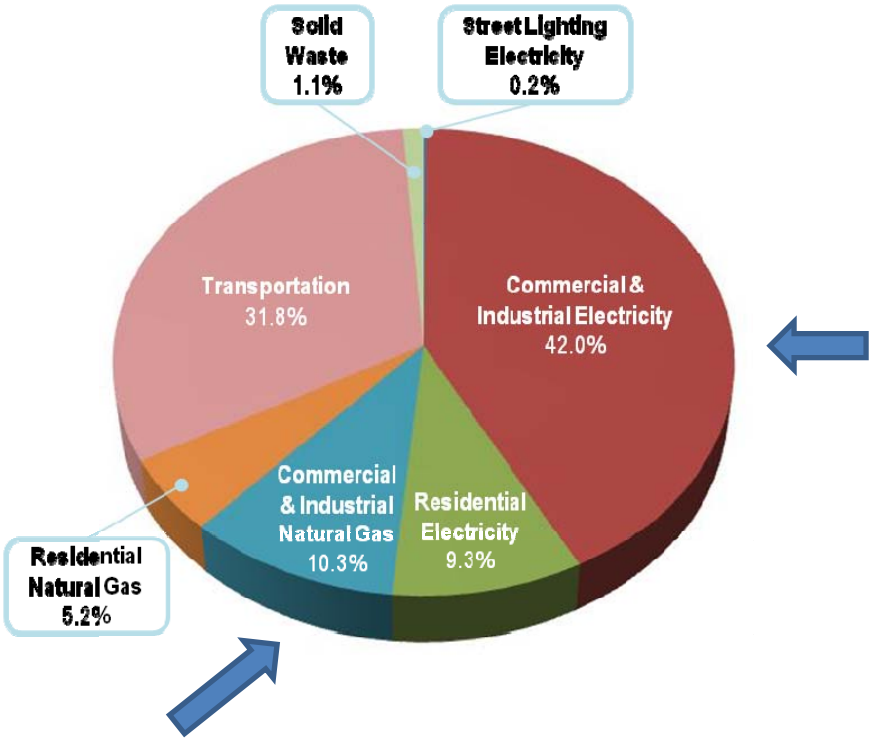
- 2012: Council directs staff to propose options for required efficiency in commercial and industrial (C&I) buildings
- 2013: Council gives preliminary direction for Climate Commitment Goal
- 2014-2015: Council reaffirms efficiency in C&I buildings as a top priority

2012 Greenhouse Gas (GHG) Inventory



City of Boulder Climate Commitment:

Reduce GHG Emissions by 80% by 2050

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Phased Approach for C&I

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Phase 1: Expand Voluntary Programs → Phase 2: Require Rating + Reporting → Phase 3: Require Energy Efficiency

Concurrent Phase: Design the Utility of the Future's energy services

Why not voluntary only?

- ❑ Mandatory policies impact 4-16x the amount of floor area compared to voluntary (ACEEE study)
- ❑ Widespread adoption is needed to meet the city's climate commitment

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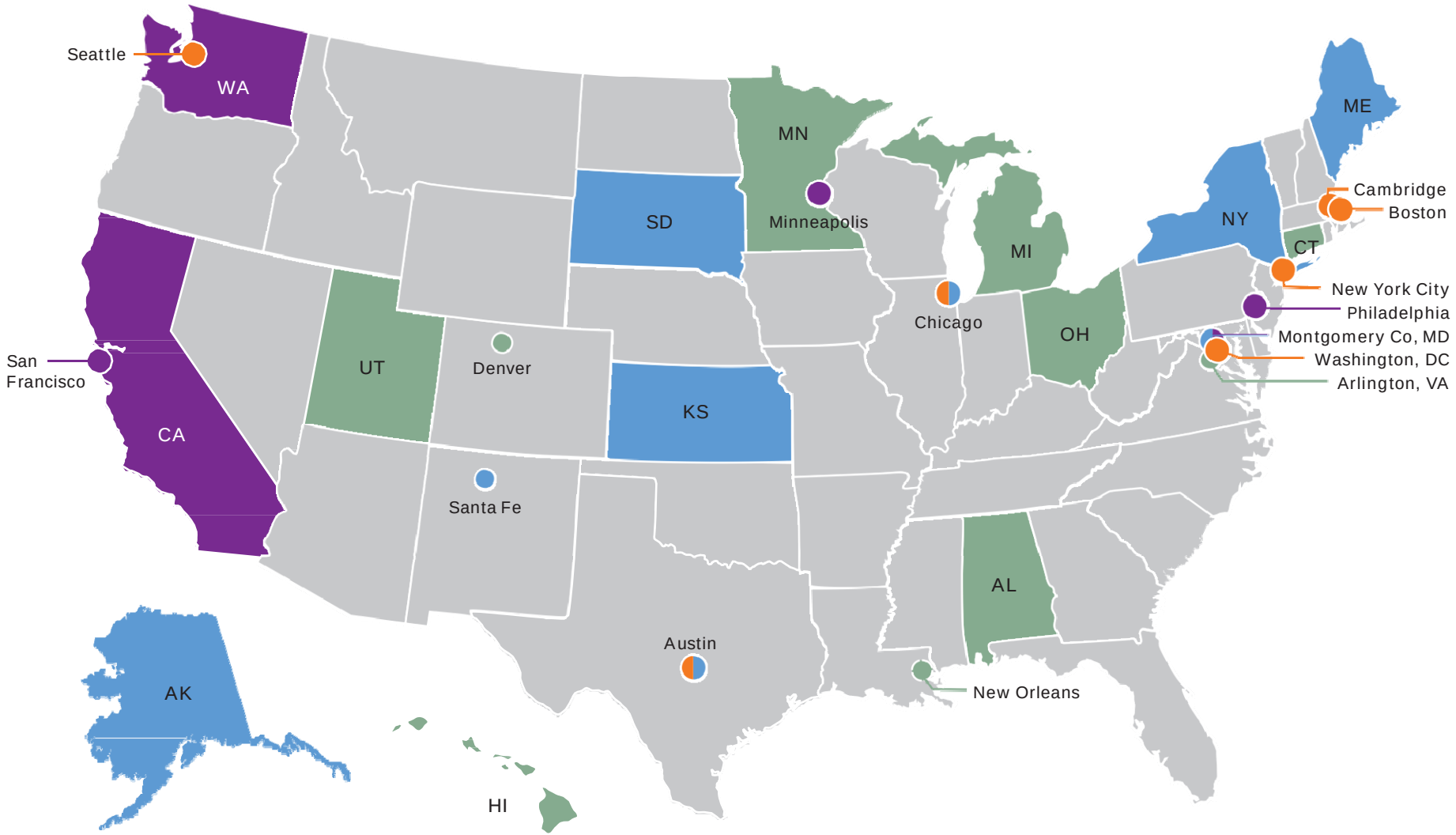
U.S. Building Benchmarking and Transparency Policies



- Commercial policy adopted
- Commercial & multifamily policy adopted
- Public buildings benchmarked
- Single-family transparency adopted

Building Rating

IMT INSTITUTE FOR MARKET TRANSFORMATION

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Objectives

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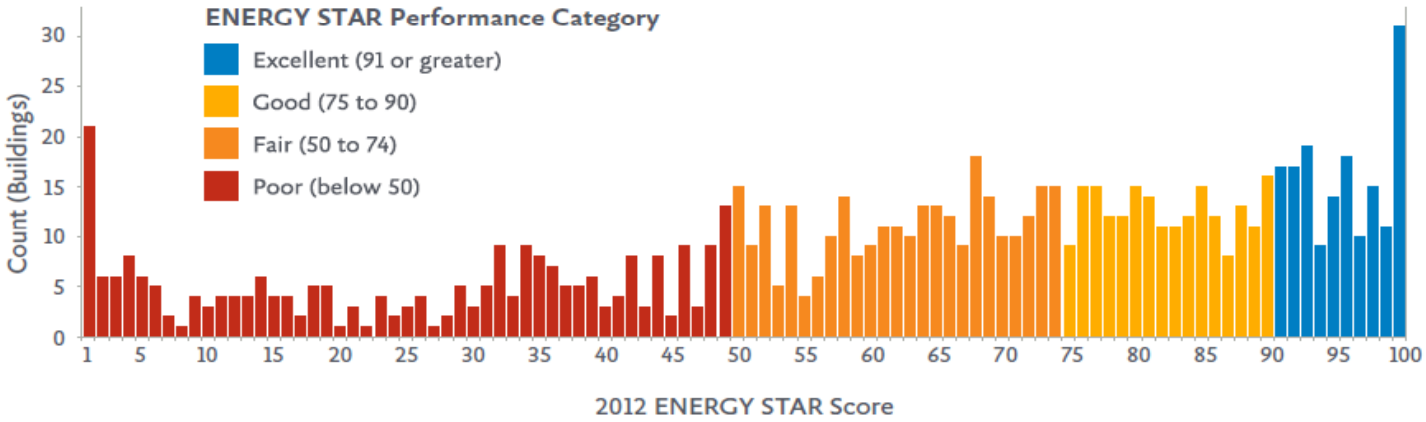
RAISE UP Low Performers

REWARD High Performers



- ✓ **Improve** the quality of Boulder's commercial building stock
- ✓ **Increase** awareness of efficiency opportunities and realize cost effective energy savings
- ✓ **Help** buildings owners understand and manage their buildings' energy use
- ✓ **Educate** tenants and other real estate professionals about building energy performance metrics
- ✓ **Collect** benchmarking data to inform future programs and services
- ✓ **Market** your building as energy efficient and high performing

Community Benefit

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WHO WILL THIS BENEFIT?

COMMUNITY MEMBERS

Reduces overall GHG emissions

C&I BUILDING TENANTS

Improves the quality of the building stock and reduces utility costs

C&I BUILDING OWNERS

Improves the asset value of the building stock and reduces utility costs

C&I BUILDING OWNERS

Recognizes high performing buildings and gives competitive advantage

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Public Process/Community Engagement

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2010-2012	Peer networking, consultant studies
2012-2013	Rating & Reporting Pilot Program
Oct 2014 – Jan 2015	Working Group
Feb – Apr 2015	Business Group Outreach
Mar 18, 2015	Webinar for all affected building owners

+ Continuous engagement with the Environmental Advisory Board, other cities with similar policies, and federal agencies and nonprofits supporting these efforts.

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BoulderBuildingPerformance.com

OPTIONS FOR PROPOSED REQUIREMENTS

Proposed Requirements

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KEY COMPONENTS OF ORDINANCE	PROPOSED OPTIONS
What would this ordinance require?	Commercial and industrial building owners (of a certain building square footage (sf)) would be required to rate and report the energy use of their buildings, and would also be required to take certain energy efficiency actions.
When would this proposed ordinance take effect?	In 2016, this ordinance would only affect building owners of: • Existing C&I buildings larger than 50,000 sf, • Newly constructed (since Jan. 1, 2015) C&I buildings larger than 10,000 sf, and • City owned C&I buildings larger than 5,000 sf. Smaller existing buildings (> 20,000 sf) will be phased in over time.
Disclosure: What metrics would be disclosed and to whom?	Building owners would be required to disclose total energy use and other energy performance metrics to the city and to their tenants. **<u>Options for Public Disclosure:</u>** Staff is presenting two options for feedback with regards to public disclosure of individual building energy use and performance metrics. • Option 1: Limited Public Disclosure • Option 2: Public Disclosure to drive Market Transformation

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Disclosure Spectrum

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City	Disclosure	Building Info	EUI	GHG	ENERGY STAR Rating	Water Data
Austin	Buyers (B), Tenants (T)		✓		✓	
Boston	Public	✓	✓	✓	✓	✓
Cambridge	Public	✓	✓	✓	✓	
Chicago	Public				✓	
District of Columbia	Public	✓	✓	✓	✓	
Minneapolis	Public	✓	✓	✓	✓	✓
NYC	Public	✓	✓	✓	✓	✓
Philadelphia	Public, B, Lenders & Leasers (L)	✓	✓		✓	
San Francisco	Public[1], B, T, L[2]	✓	✓	✓	✓	✓
Seattle	B, T, L		✓		✓	

[1] Discloses summary of compliance, but not building energy use
[2] CA's statewide initiative, AB 1103, requires buildings to disclose energy performance at point of transaction

Seattle (Aggregate Only)

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Type of Building	2012 Annual Energy Use Intensity (Site EUI in kbtu/sf)					Number of Buildings*	Year Built (Median)	Building Size (Median sf)	EPA ENERGY STAR (Median)
	Median	Lowest Use (1st Quartile)	Medium-Low (2nd Quartile)	Medium-High (3rd Quartile)	Highest Use (4th Quartile)				
Multifamily Housing	31.9	≤ 25	26 - 32	33 - 43	≥ 44	1309	1981	39,212	NA
Office	59.8	≤ 42	43 - 60	61 - 80	≥ 81	419	1972	64,858	75
Other	61.7	≤ 33	34 - 62	63 - 115	≥ 116	240	1960	40,854	69
Warehouse	30.4	≤ 16	17 - 30	31 - 52	≥ 53	228	1962	43,080	56
K-12 School	43.5	≤ 36	37 - 43	44 - 55	≥ 56	114	1962	55,427	72
Retail	74.1	≤ 42	43 - 74	75 - 106	≥ 107	94	1967	53,500	68
Hotel/Motel	73.1	≤ 53	53 - 73	74 - 97	≥ 98	52	1988	107,117	68
House of Worship	42.0	≤ 26	27 - 42	43 - 54	≥ 55	45	1952	26,374	63
Medical Office	82.9	≤ 62	63 - 83	84 - 112	≥ 113	41	1984	66,588	47
Senior Care Facility	65.6	≤ 48	48 - 66	67 - 104	≥ 105	29	1995	94,370	51
Supermarket/Grocery	215.4	≤ 202	203 - 215	216 - 269	≥ 270	17	1996	46,280	59
Residence Hall/Dorm	47.3	≤ 33	34 - 47	48 - 82	≥ 83	11	1960	34,560	77
Hospital	166.5	≤ 122	123 - 167	168 - 206	≥ 207	9	1961	879,000	67

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Philadelphia (Building Specific)

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Building Information		Building Performance					
Address	Property Floor Area (Buildings and Parking) (ft²)	Electricity Use (kBtu)	Natural Gas Use (kBtu)	ENERGY STAR Score	Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)	Total GHG Emissions (MtCO2e)
1924 W Olney Ave.	757,521	61,617,356	6,394,249	99	849.5	2,469.2	7,995
9801 Frankford Avenue	62,000	162,661,197	8,811,112	93	757.4	2,210.1	21,832
3400 N. Broad Street	155,228	18,290,057	22,115,596	16	323.3	644.0	3,503
3440 N. Broad Street	129,260	17,966,207	40,195	46	323.2	514.7	6,436
3500 N Broad Street	485,000	16,699,836	71,788,580	Not Available	320.6	463.1	5,925
1121 W. MONTGOMERY AVENUE	421,938	29,807,048	2,159	34	319.8	617.5	7,299
3307 N. Broad St.	169,976	15,246,713	7,864,771	25	308.6	749.6	2,348

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Proposed Requirements

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KEY COMPONENTS OF ORDINANCE	PROPOSED OPTIONS
Efficiency Requirements	**Options:** • Option 1: Energy Assessment with No Required Action • Option 2: Energy Assessments with Limited Required Action (only lighting and retro-commissioning) • Option 3: Energy Assessments with Required Action (custom to each building, based on what is deemed cost effective)
Exemptions	**Options - Exemptions for Rating and Reporting Requirements:** • Buildings with less than one year of energy use data (i.e. new buildings) • Unconditioned and unlit buildings (i.e. airport hangers) • Proven financial hardship • Others upon request and review **Options - Exemptions for Efficiency Requirements:** • Current ENERGY STAR Certification • Current LEED for Existing Buildings: Operations and Maintenance (EBOM) Certification • For the first compliance deadline: Buildings that have had an energy assessment in the past seven years and implemented measures that resulted in at least a 10 percent energy reduction • Proven financial hardship • Others upon request and review

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Proposed Requirements

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IMPLEMENTATION CONSIDERATIONS	PROPOSED OPTIONS
Training and Support	The city should provide: • A website with information and instructional guides, • A help-call center, • Green lease templates, • In-person and online training for the ENERGY STAR Portfolio Manager tool, • Continued support from EnergySmart advisors, and • Financial support for the Colorado Industrial Energy Challenge (CIEC) to provide assistance with goal setting and performance metrics to local industrial/manufacturing companies.
Incentives	• Early Adopter Incentive: Subsidizes the cost of the required periodic energy assessments • New EnergySmart Rebates for custom efficiency measures identified by required energy assessments

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Estimated Costs and Savings

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Requirements	Cost to Building Owner	Savings to Building Owner	Simple Payback
Rating and Reporting (annually)	Annually: $500-$2,400 per building OR 4-8 hours of in-house staff time ** free benchmarking assistance is available through Energy Smart advisors*	~2% savings each year in annual energy costs	< 1 year
Energy Assessments (every 10 years)	$0.12-0.25/sf * *~0.2% of a building's annual operating expense*	$0.02-0.04 /sf-yr (if efficiency is implemented)	Varies
Lighting Upgrades (every 10 years)	$0.10-0.20 per sf	$0.03-0.05/sf-yr	3-4 years
Retro-commissioning or Building Tune-Up (every 10 years)	Every 10 years: $0.13-0.45/sf**	$0.20-0.45/sf-yr	0.5 – 2.5 years

* The city will provide rebates for early adopters to help offset these costs.

**Xcel Energy offers rebates for retro-commissioning and building tune-ups for as much as 75% of the costs of the study, and up to 60% of the costs of the implementation.

Case Study: DC Office Building

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- Owners thought the building was efficient….until they benchmarked
- First 3 years: reduced energy costs by 13% with no capital costs
- After realizing these savings, they pursued additional projects and saved even more
- Current ENERGY STAR score = 89

- Built in 1989
- 12 stories
- 590,000 sf
- Office and retail

Savings Up Close:

- Operational changes.

Project Cost	$0
Annual Savings	2,100,000 kWh
Payback	Immediate

- Added variable frequency drives throughout building.

Project Cost	197,500 (spread over 9 years)
Annual Savings	$92,500
Payback	<2.5 years

- Installed LED lighting in garage.

Project Cost	$50,400
Annual Savings	$10,853
Payback	<5 years

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Potential Savings: Seattle

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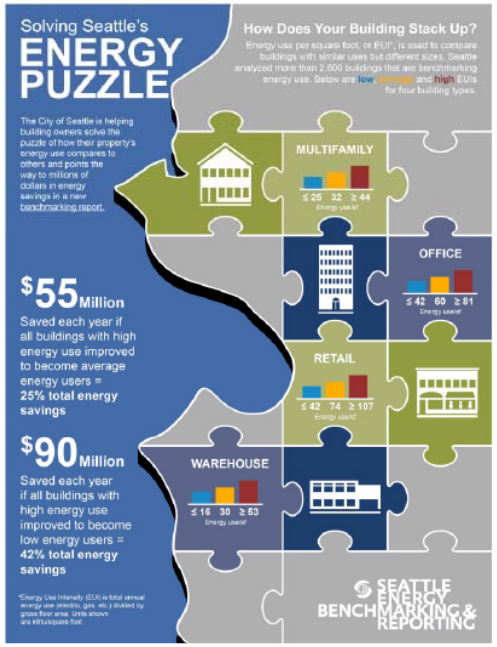
$55 million

saved each year if all buildings with high energy use improved to become average energy users
= **25% total energy savings**.

$90 million

saved each year if all buildings with high energy use improved to become low energy users
= 40% total energy savings.



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Proposed Timeline

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Target Milestones

- Study Session: **May 12, 2015**
- Ordinance Presented to Council: **Q3 2015**
- Compliance Begins: **Q2 2016**

	Phases
Oct 2014 – March 2015	Stakeholder Engagement/ Public Process
Dec 2014 – May 2015	Develop options and recommendations for a C&I Energy Efficiency Ordinance
Aug 2015 - 2016	• Communication/ Education Efforts • Develop systems & tools for implementation – A reference website for the ordinance – Implementation guides for owners and tenants – Educational and training opportunities – Incentives for early adopters – Administration and enforcement systems and procedure
Q2 2016	Targeted compliance deadline for the first buildings (e.g. city owned and C&I buildings > 50,000 sf)

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