

# Energize Denver Ordinance

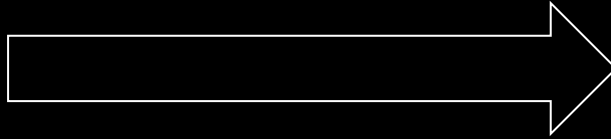
Jesse Hunt, CPHC, LEED AP BD+C, WELL AP  
Powers Brown Architecture



# Lecture Keynotes

Summary and History;

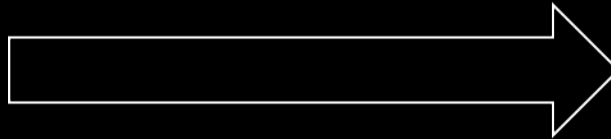
E X C U R S U S



At the beginning of each deck, as brief overview or abstract along with a brief history of its origin date, first presentation or generation

The big idea here is;

E X C U R S U S



Mid deck summaries of the main points for clarity & flow

Explainer

E X C U R S U S



Mid deck enhanced explanation of the details behind the main points for clarity and flow

E X C U R S U S

# Summary and History;

Beginning in 2017, the City of Denver took the first major step in decreasing the energy use of its largest buildings. This came in the form of an energy benchmarking ordinance requiring all owners of buildings 25,000+ SF to annually assess and report their energy performance. The ENERGY STAR Portfolio Manager tool allows each building to receive a 1-100 percentile score compared to a weather-normalized national database of the same product type.

To aid our clients in this transitional moment, Powers Brown Architecture developed, for the first time, an array of existing building services. This program enabled us to engage with clients in new ways about, at first, how to comply with the ordinance. We were then able to engage with these owners about how and why they may be experiencing energy performance issues, where the low hanging fruit lies for improvement, and what larger capital expenditures and paybacks look like.

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# Facility Types for Energy Star

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## In the United States:

Bank branch

Barracks

Courthouse

Data center

Distribution center

Financial office

Hospital (general medical & surgical)

Hotel

K-12 school

Medical office

Multifamily housing

Non-refrigerated warehouse

Office

Refrigerated warehouse

Residence hall/ dormitory

Retail store

Senior care community

Supermarket/grocery store

Wastewater treatment plant

Wholesale club/supercenter

Worship facility



# Denver, Colorado – Code of Ordinances

## Ch. 4, ARTICLE V. – ENERGY EFFICIENCY IN COMMERCIAL AND MULTIFAMILY BUIDLINGS

### Sec. 4-53. - Benchmarking and reporting.



- (1) Each owner of a covered building shall benchmark the building's energy usage annually using the ENERGY STAR Portfolio Manager tool, and by June 1 each year, shall accurately report energy performance information to the department for the previous calendar year.
  - (a) Each owner of a covered municipal building shall begin reporting by June 1, 2017.
  - (b) Each owner of a covered building, other than a covered municipal building, with a gross floor area greater than fifty thousand (50,000) square feet shall begin reporting by June 1, 2017.
  - (c) Each owner of a covered building with a gross floor area between twenty-five thousand (25,000) and fifty thousand (50,000) square feet shall begin reporting by June 1, 2018.
- (2) The energy performance information that must be reported to the department shall include, at a minimum, a covered building's annual energy use intensity, ENERGY STAR Portfolio Manager score if eligible for a score, greenhouse gas emissions, and any other data fields needed to calculate the ENERGY STAR Portfolio Manager score for auditing and verification purposes. Owners of covered buildings shall not be required to report monthly energy bill data.
- (3) Owners of covered buildings shall keep records of monthly energy consumption for a minimum of twenty-four (24) months. Such records shall be made available for the department's inspection upon request.

(Ord. No. 1231-16, § 2, 12-19-16)

### Sec. 4-54. - Board to promulgate rules.



The board shall promulgate rules for the energy efficiency program.

(Ord. No. 1231-16, § 2, 12-19-16)

### Sec. 4-55. - Enforcement.



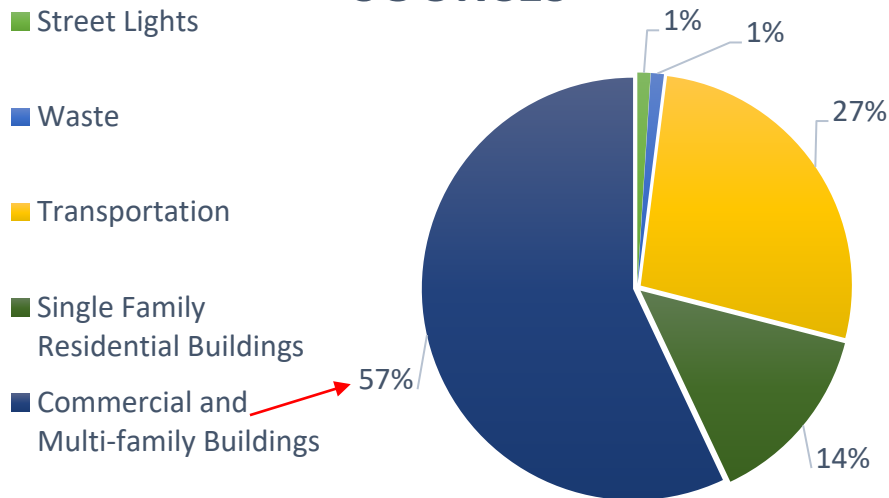
The manager, or the manager's designee, is empowered to enforce the provisions of this article and any rules and regulations adopted by the board pursuant to this article.

(Ord. No. 1231-16, § 2, 12-19-16)



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## DENVER CORE GHG EMISSIONS SOURCES



## New Ordinance Scope

### Who:

Building Owners with Property over 50,000 SF (2017) or 25,000 SF (2018).

### What:

Benchmark your buildings energy use and GHG footprint.

### Where:

All property within Denver city limits.

### When:

2017 Deadline - June 1 (90 day grace period).

### Why:

Transparency – Drive competition and investment  
GHG Reduction Goals – Below 1990 levels by 2020

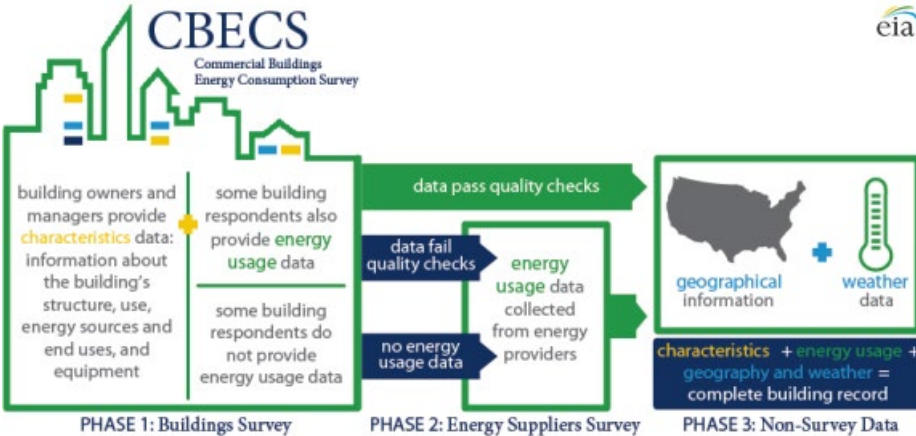
### How:

Benchmarking with EnergyStar Portfolio Manager

“WHAT DOESN’T GET  
MEASURED DOESN’T  
GET MANAGED”



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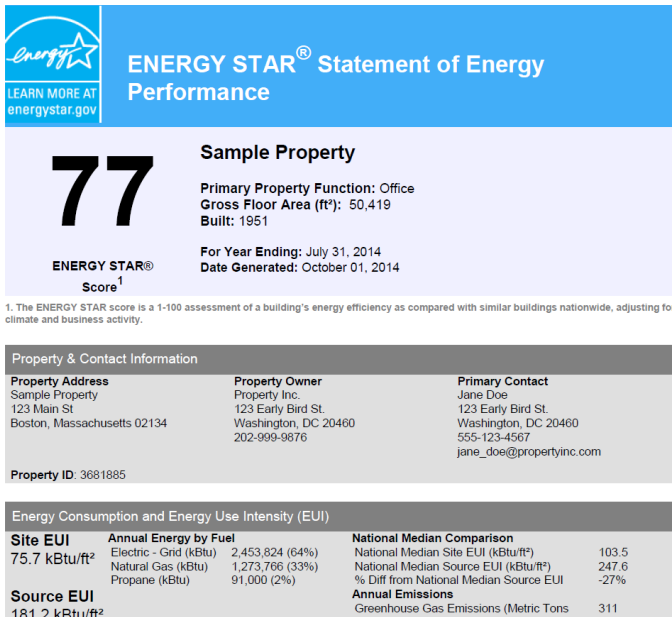


## Energy Benchmarking

- ENERGY STAR Portfolio Manager compares building energy performance to the Commercial Building Energy Consumption Survey (CBECS) database.
- CBECS is the only nation-level buildings of same typology under normalized weather conditions.
- Creates a 1-100 score based on energy use.

## Outcomes

- Transparency of energy efficiency to drive competition and investment.
- Each building will have published data including ENERGY STAR score, weather normalized EUI (kBtu/ft<sup>2</sup>), total GHG emissions (metric tons CO<sub>2</sub>e), and a few other data points.
- Data will be available in a public database and a clickable map.
- Free score cards sent to building owners with information about incentives and comparative market data.
- Future policies to rebate permit fees for high performers.





# ENERGY STAR® Statement of Energy Performance

# 77

ENERGY STAR®  
Score<sup>1</sup>

## Sample Property

Primary Property Function: Office  
Gross Floor Area (ft²): 50,419  
Built: 1951

For Year Ending: July 31, 2014  
Date Generated: October 01, 2014

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

### Property & Contact Information

**Property Address**  
Sample Property  
123 Main St  
Boston, Massachusetts 02134

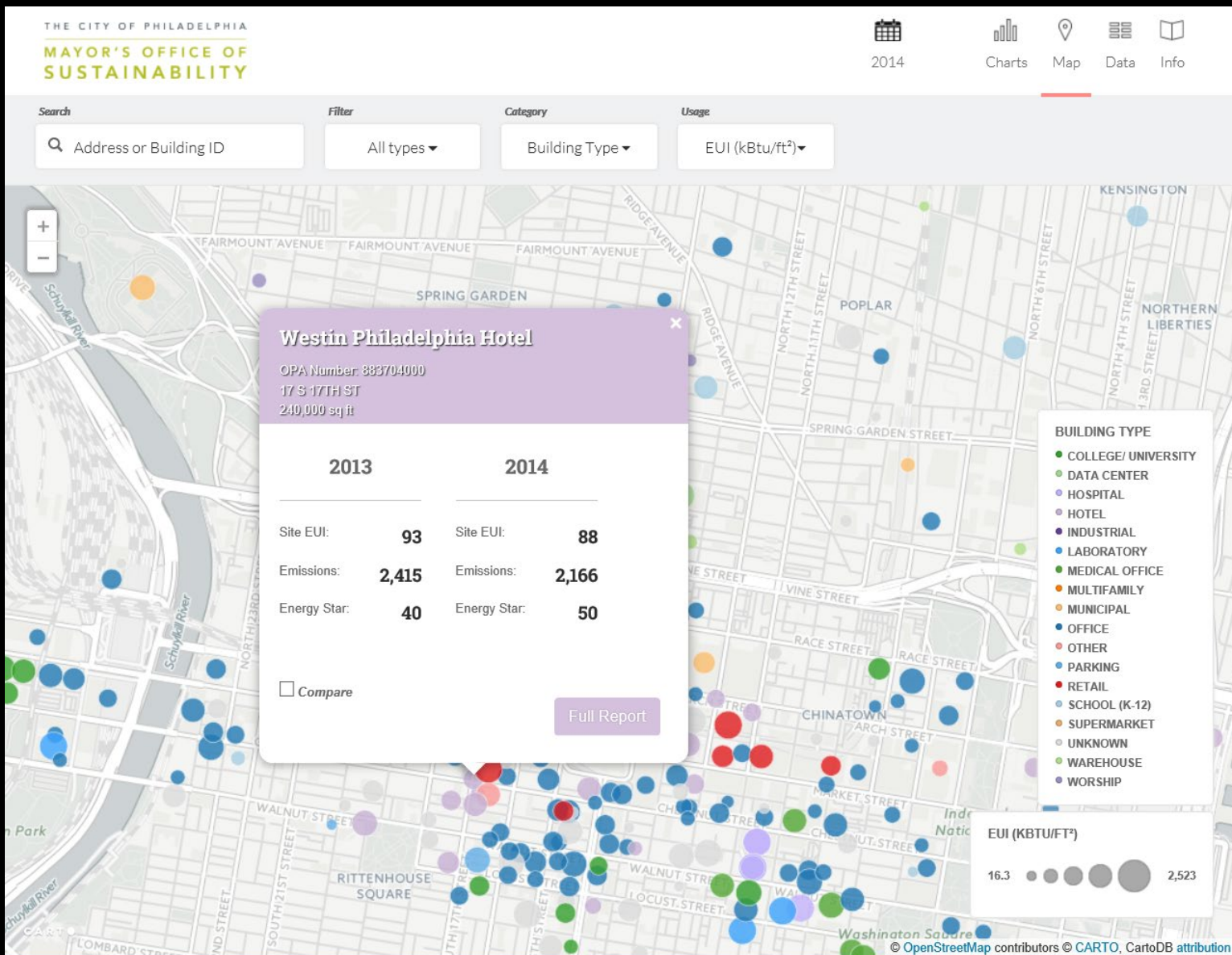
**Property Owner**  
Property Inc.  
123 Early Bird St.  
Washington, DC 20460  
202-999-9876

**Primary Contact**  
Jane Doe  
123 Early Bird St.  
Washington, DC 20460  
555-123-4567  
jane\_doe@propertyinc.com

**Property ID:** 3681885

### Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel		National Median Comparison	
75.7 kBtu/ft²	Electric - Grid (kBtu)	2,453,824 (64%)	National Median Site EUI (kBtu/ft²)	103.5
	Natural Gas (kBtu)	1,273,766 (33%)	National Median Source EUI (kBtu/ft²)	247.6
	Propane (kBtu)	91,000 (2%)	% Diff from National Median Source EUI	-27%
Source EUI	Annual Emissions			
181.2 kBtu/ft²	Greenhouse Gas Emissions (Metric Tons CO2e/year)		311	



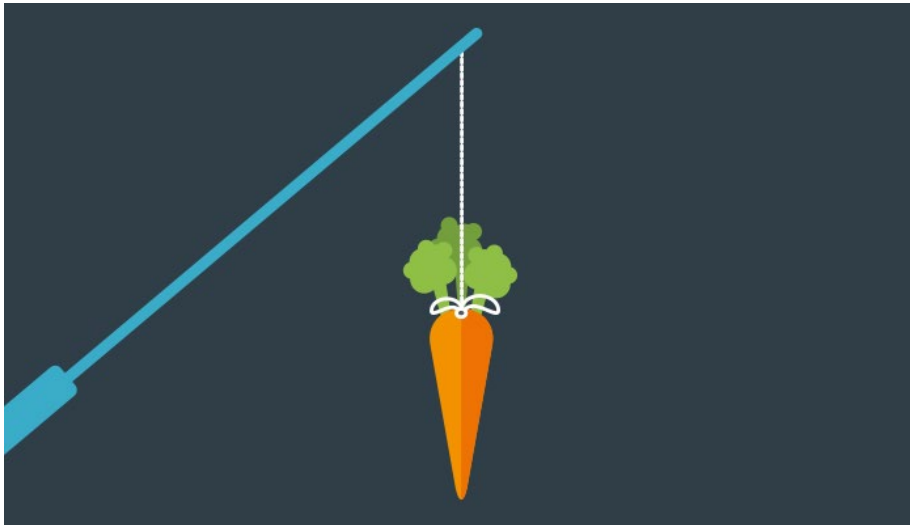
Why should I care?

## Incentives for Participation

- Financial penalty of \$2,000 per property.
- Competitive market advantage for same building types with better ENERGY STAR scores.
- Creates a new metric for property appraisal.
- Potential for increased fines.
  - ↳ Philadelphia fines \$300 for delinquent data and \$100 for each subsequent day.

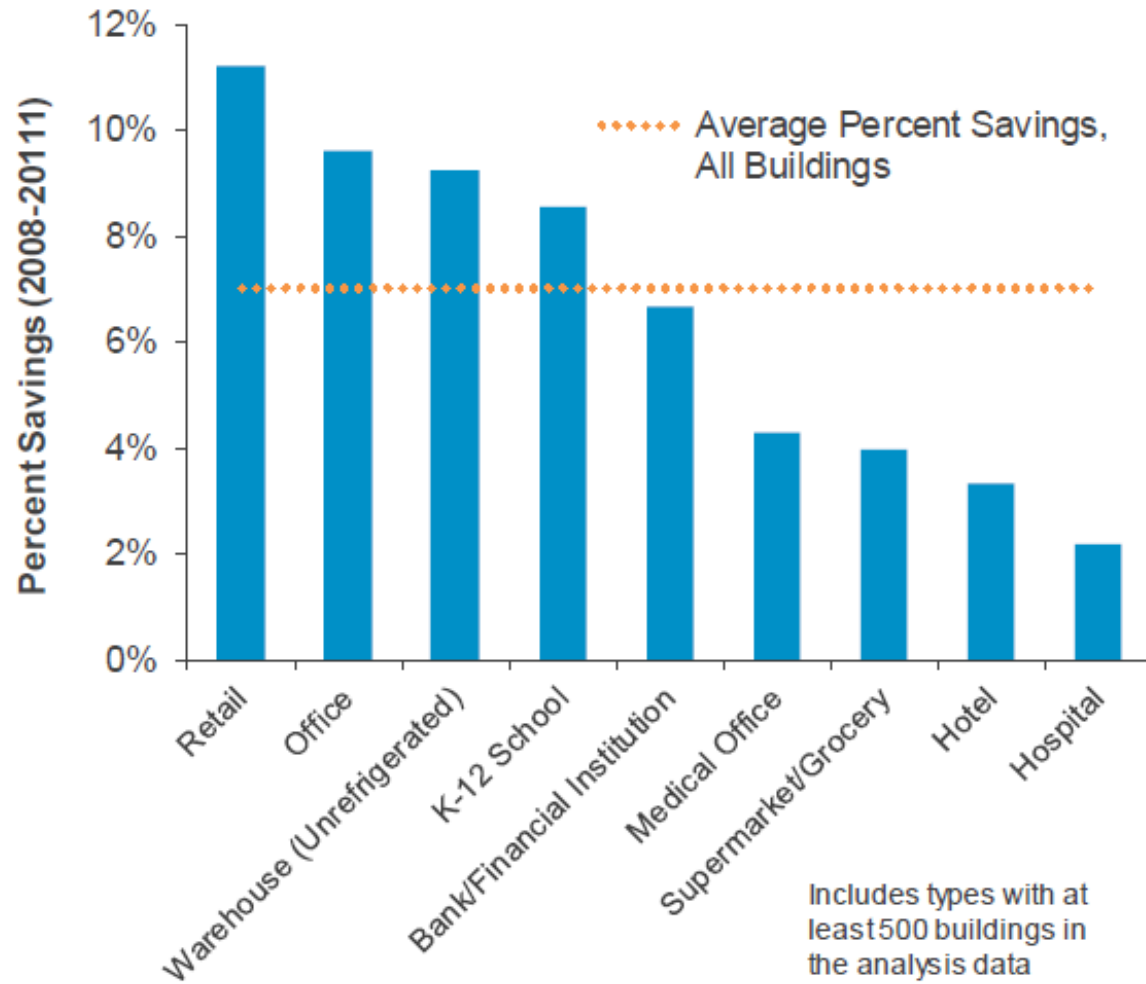
## Effects of Participation

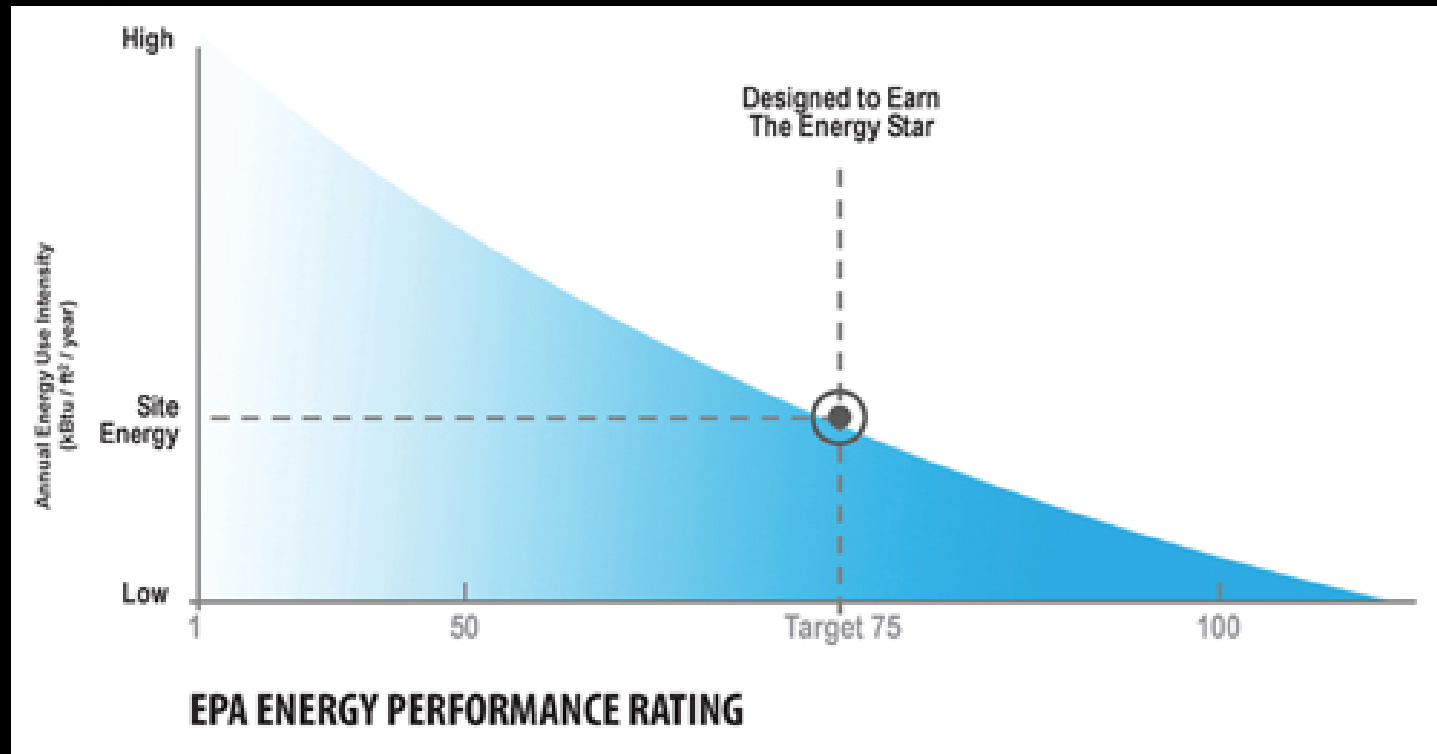
- EPA study of 35,000 buildings found average annual energy savings of 2.4% over 3 years with a total savings of 7% and a score increase of 6 points.
- Buildings *who participated* in the program with below average scores saved twice as much energy as those above.
- Energy Reductions:
  - San Francisco = **2%/year**
  - NYC = **1.9%/year**
  - Washington DC = **3%/year**





## Savings by Building Type





Who has to comply?  
When is the deadline?



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# Facility Types for Energy Star

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## In the United States:

Bank branch

Barracks

Courthouse

Data center

Distribution center

Financial office

Hospital (general medical & surgical)

Hotel

K-12 school

Medical office

Multifamily housing

Non-refrigerated warehouse

Office

Refrigerated warehouse

Residence hall/ dormitory

Retail store

Senior care community

Supermarket/grocery store

Wastewater treatment plant

Wholesale club/supercenter

Worship facility



## Case Study: *Value Plastics*

- 115,000 GSF
- 25,000 SF Office Space
- Loading Docks = Distribution



### In This Case:

- Count the computers, workers, operating hours etc...
- Separate space related to distribution



However...

This facility also has *industrial manufacturing processes*.

- “Manufacturing”, “Agriculture”, and “Assembly” can be exempt from the ordinance.
- Energy use for process vs. building
  - Exempt if process load is  $>10\%$  of building load
- Interpretations for energy use as a “confidential business practice”



Where do I start?

# Explainer

Here I go into a high-level breakdown of what building types are mandated to comply and some of the complexities that come from buildings with a variety of special use types.

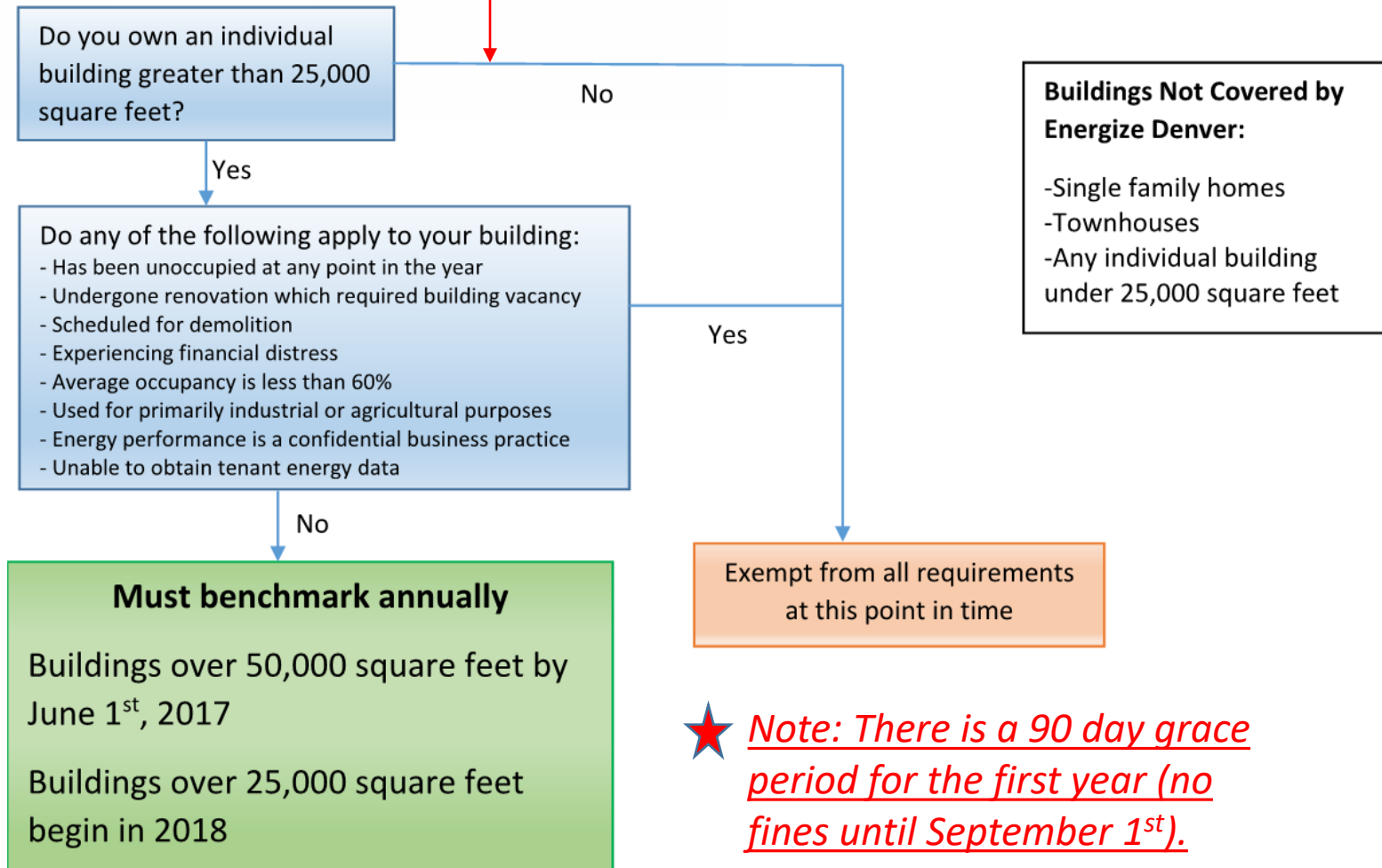
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# Compliance Decision Tree

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If you don't have 12 mo. of utility data for 2016 you are exempt





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### Department of Environmental Health

Our Divisions   About Us   Animal Shelter   Community Health   Public Health Inspections   Environmental Quality

Department of Environmental Health / Environmental Quality / Energize Denver / Commercial and Multifamily Building Benchmarking



Benchmarking the energy performance of a buildings is the first step to understanding and reducing energy consumption because you can't manage what you don't measure. All large commercial and multifamily buildings are now required to annually assess and report their energy performance using the free [ENERGY STAR Portfolio Manager](#) tool. The following deadlines apply:

- June 1, 2017, buildings over 50,000 square feet submit annual report
- June 1, 2018, buildings over 25,000 square feet submit annual report



The most-used energy measurement and tracking tool for commercial buildings.

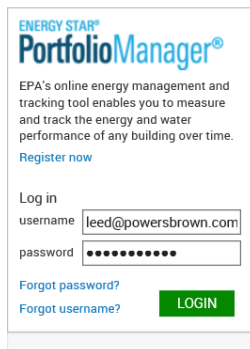
#### Use Portfolio Manager

You've heard it before: you can't manage what you don't measure. That's why EPA created ENERGY STAR Portfolio Manager®, an online tool you can use to measure and track energy and water consumption, as well as greenhouse gas emissions. Use it to benchmark the performance of one building or a whole portfolio of buildings, all in a secure online environment.

#### Not sure if Portfolio Manager is for you? It is!

You can use Portfolio Manager to manage the energy and water use of any building. Seriously. Any building. K-12 school? Check. Office building? Check. Stadium? Check. We could keep going. All you need are your energy bills and some basic information about your building to get started.

Are you designing a new commercial building? You can also use Portfolio Manager to set your energy use target and see how your estimated design energy stacks up against similar existing buildings nationwide.



## Know Where to Look

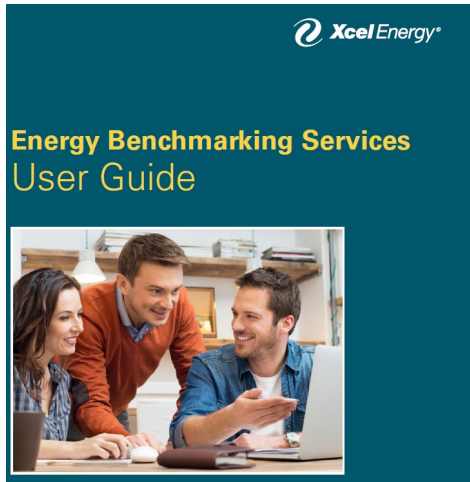
Every building type has its' own set of data necessary for entry and unique rules and exceptions.

- Portfolio Manager has a [quick start guide](#), [data collection worksheets](#), [detailed glossary](#) and [training materials](#).
- City of Denver has a [webpage](#) with consent forms, required fields to report to the city and guides how to connect the city portal with Portfolio Manager.
- Xcel has a [website](#) devoted to Portfolio Manager integration. They also offer a variety of discounted [audits](#) and [rebates](#).
- City of Denver email:
  - [energizedenver@denvergov.org](mailto:energizedenver@denvergov.org)
- City of Denver Call Center Helpline:
  - Coming May 1<sup>st</sup>



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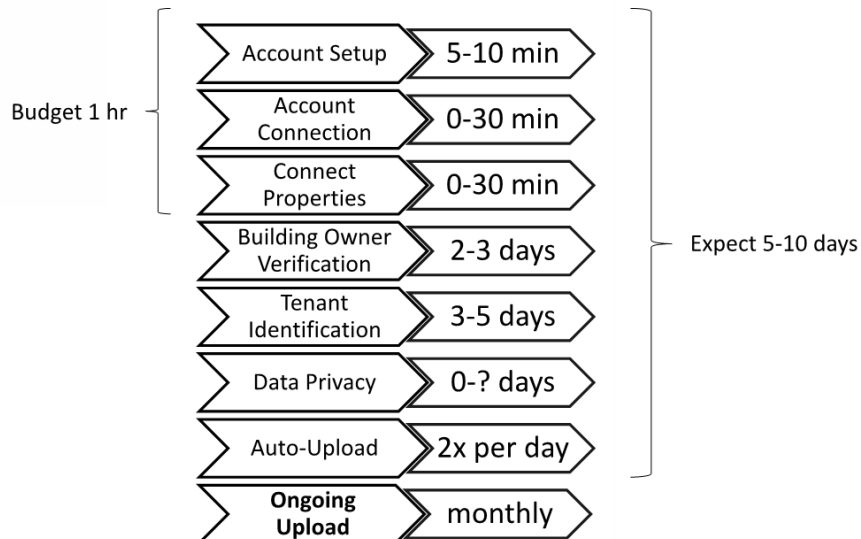
# Automated Uploads for Xcel Customers



In the past:

- Collect billing data from historic utility bills.
- Manually enter or upload data into Portfolio Manager.
- Repeat every month.
  - This process is time/resource intensive and error-prone.

## Setup Process Recap



You can now automate your data but only **IF**...

- You are an Xcel customer for all your fuels.
- Your energy is tracked in kWh and therms.
- Limitation: only tracks consumption not PV production (has to be entered manually).



## Required Information for All Properties

- Property Name
- Property Address
- Total Gross Floor Area of Property (BOMA)
- Irrigated Area
- Year Built
- Occupancy
- Number of Buildings
- 12 consecutive months of energy data



## Special Building Use Factors

- Retail space > 5,000 sf
- Parking Areas
- Phone Towers / Billboards
- Swimming Pools
- Assisted Care
- Data Centers
  - You want energy data associated with those spaces for optimization.



## Space Exclusions

1. Allowable exclusion of actual energy consumption of things exterior to and not related to the operation of the building. (ex. Cell tower, LED billboard sign).
2. Parking Structures.
3. Allowable 10% exclusion of a space type that cannot receive an Energy Star score.



## Now what?

- Create a Portfolio Manager Account at [energystar.gov](https://energystar.gov).
- Add Buildings to your Portfolio.
- Add Energy Meters and Data.
  - Add 12 months of data to comply with City of Denver and create Energy Star Score.



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# Resources

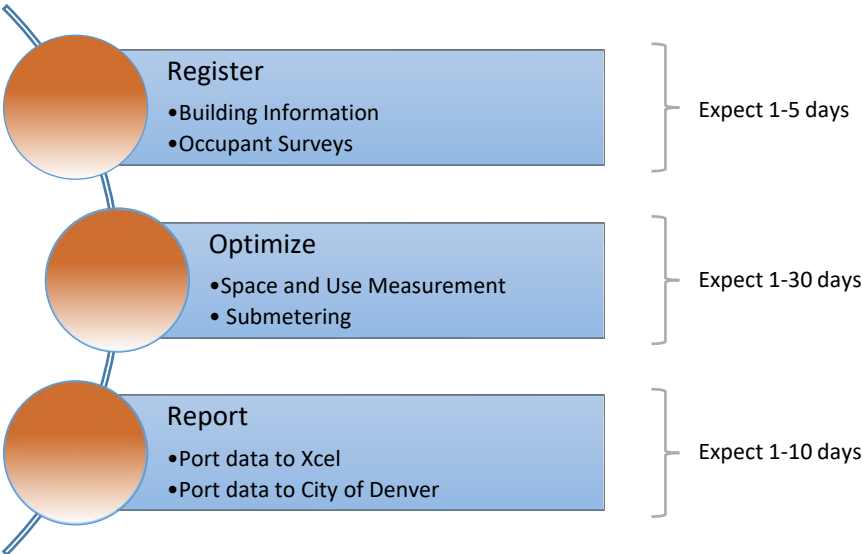
[www.denvergov.org/EnergizeDenver](http://www.denvergov.org/EnergizeDenver)

[www.energystar.gov](http://www.energystar.gov)

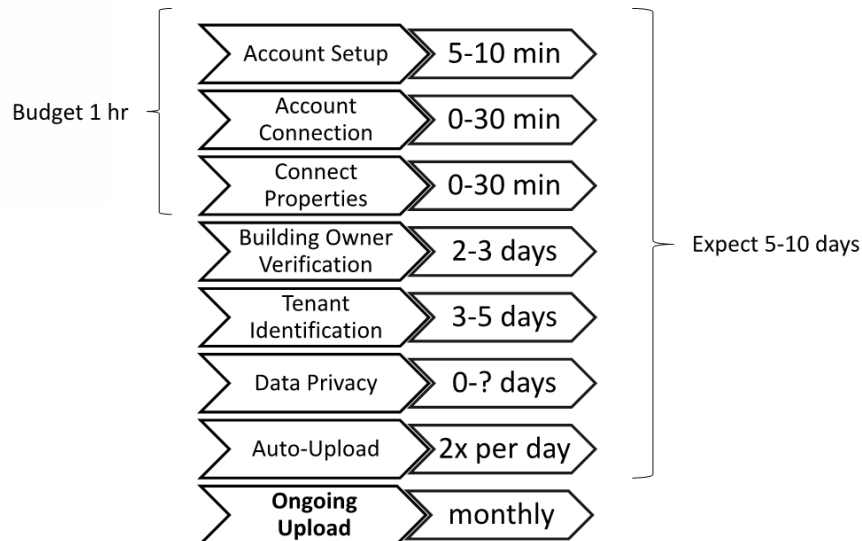
<https://portfoliomanager.energystar.gov/pm/dataCollectionWorksheet>

[www.xcelenergy.com/energybenchmarking](http://www.xcelenergy.com/energybenchmarking)

## Energy Star Process



## Setup Process Recap



## Our Services

### Registration

- Input of building and meter data
- Registration for automated Xcel meter uploads
- Data verification and porting to City of Denver

### Data Management and Remote Optimization

- Ongoing meter entry
- Remote building surveys
- Square footage measurements

### Retrofit Consulting

- Fixture and equipment upgrades
- Submetering and scheduling
- On site surveys and measurements

# The big idea here is;

The Denver CRE market now has new metrics for commercial property valuation—buyers and sellers are going to have quantifiable indicators of a properties energy bills in the form of an easily comprehensible index score. Many cities worldwide are following this trend.

The Energy Use Intensity (EUI), much like the MPGs in our vehicles, is becoming a more widely used metric for a building's financial performance. The city is not issuing penalties for low scores; however, buildings with a lower score have some of the lowest hanging fruit to decrease bills and improve scores with shorter payback periods.

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# Energy Star Support

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