

# Building Performance Advisory Group

## Meeting 1: Setting the Context

September 5, 2019



THE CITY OF  
**COLUMBUS**  
ANDREW J. GINTHER, MAYOR

DEPARTMENT OF BUILDING  
AND ZONING SERVICES



**SUSTAINABLE  
COLUMBUS**  
ANDREW J. GINTHER, MAYOR



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ANDREW J. GINTHER, MAYOR

DEPARTMENT OF BUILDING  
AND ZONING SERVICES

Facilitator:

Mo Wright, RAMA Consulting

# Agenda

1. Welcome and introductions
2. Columbus' history of energy efficiency
3. Importance of efficiency in buildings
4. Establishing the need for policy
5. Standardizing policy definitions
6. Current policy landscape
7. Looking ahead

# Welcome and Introductions



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# Welcome

- Opening remarks
  - Tony Celebrezze, Assistant Director, Department of Building and Zoning Services

# Advisory Group introductions

- Member introductions
  - Name
  - Organization
  - Aspirations for the group
  - Why you agreed to participate

# Objectives for our time together

- Provide input on policy considerations for energy efficiency in large existing buildings
- Identify barriers and solutions to increasing energy efficiency
- Advise on implementation planning to achieve maximum potential
- Suggest resources and tools to support building owners

# Ground rules

- Practice democracy of time
- Chatham house rule
  - “When a meeting, or part thereof, is held under the **Chatham House Rule**, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.”
- Consider short and long term implications of policy options
- Deliberation must be positive and future-directed



# Columbus' History of Sustainability

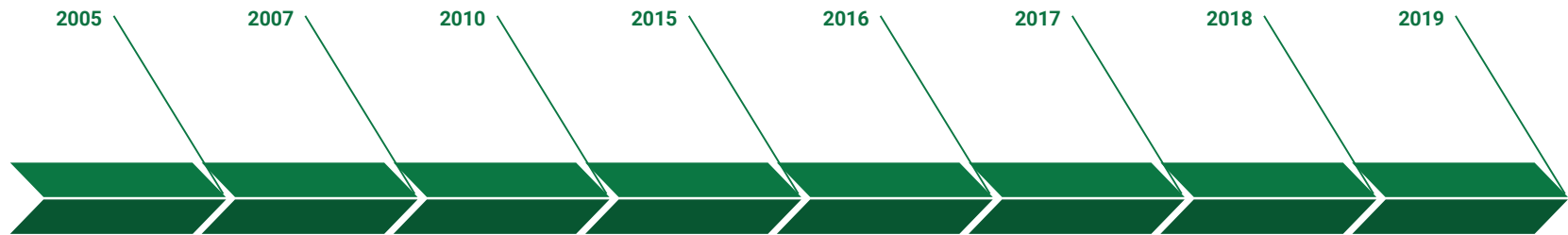


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# What we've done



Mayor Coleman launches Get Green Columbus

Mayor Coleman signs U.S. Mayors' Climate Protection Agreement

Columbus Green Fund launched

Columbus Energy Challenge launched

Mayor Ginther signs Compact of Mayors

Mayor Ginther & City Council join Sustainable 2050

Columbus named Leadership City by Bloomberg Philanthropies

Launch of American Cities Climate Challenge

# American Cities Climate Challenge

Columbus was selected as 1 of 25 leadership cities to participate in a two-year acceleration program to tackle climate change & promote a sustainable future

## LOWER ENERGY CONSUMPTION

through clean energy financing programs and benchmarking policies



Benchmarking:  
**Commercial/  
Industrial/  
Multifamily  
buildings**

Energy audits:  
**30,000 audits**

New clean energy financing: **\$15M in new financing**

Clean energy financing:  
**Decreased energy burden**

Workforce development:  
**10 Energy Efficiency Specialists & 40 Community Energy Advocates**

## REDUCE EMISSIONS FROM TRANSPORTATION



with new mobility programs & improved public transit lines

Incentives for low-carbon mobility:  
**100% large employers**

New mobility options:  
**3,000 new bikes/vehicles**

Increasing ridership:  
**5%**

Parking management and pricing:  
**850 street segments**

# Our goals

 **30%**

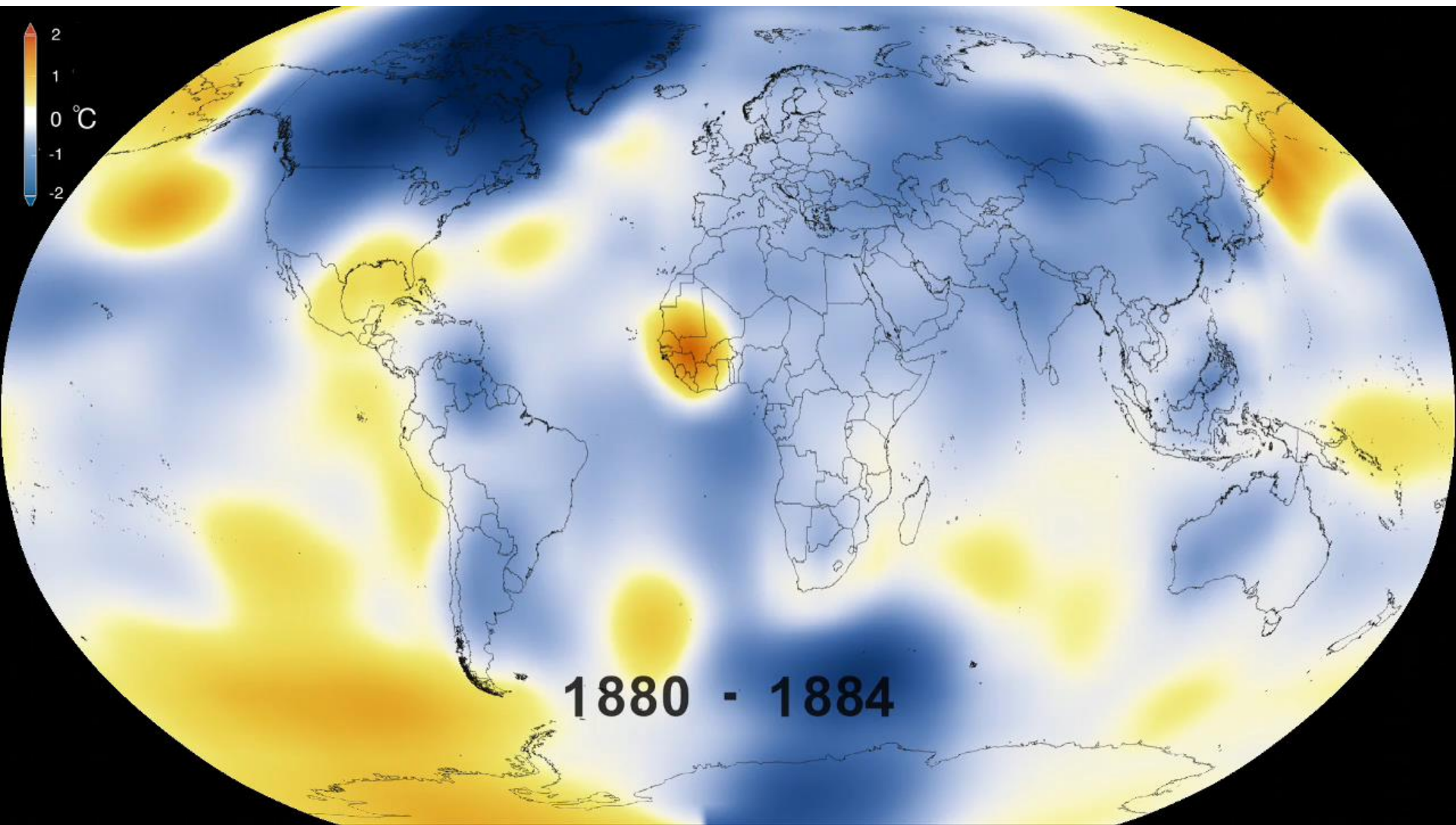
reduction in municipal  
CO2 emissions by 2020

 **20%**

reduction in city CO2  
emissions by 2020

 **20%**

reduction in per-capita  
energy consumption by  
2020



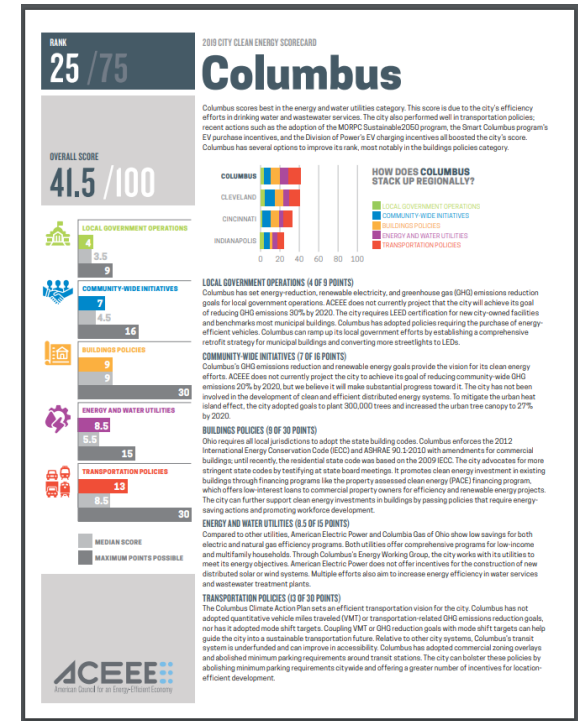
# How are we doing?

## Progress toward reduction goals

- Municipal operations:
  - Decrease of emissions by 14.6% from 2005
- City-wide operations:
  - Increase of emissions by 2.7% from 2013

## ACEEE City Clean Energy Scorecard & Ranking

- #25 on 2019 ranking of cities (out of 75)
  - 9 of 30 points earned for buildings policies
  - 8.5 of 15 points earned for energy & water utilities



# Importance of Efficiency in Buildings



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## Turning Point Instructions

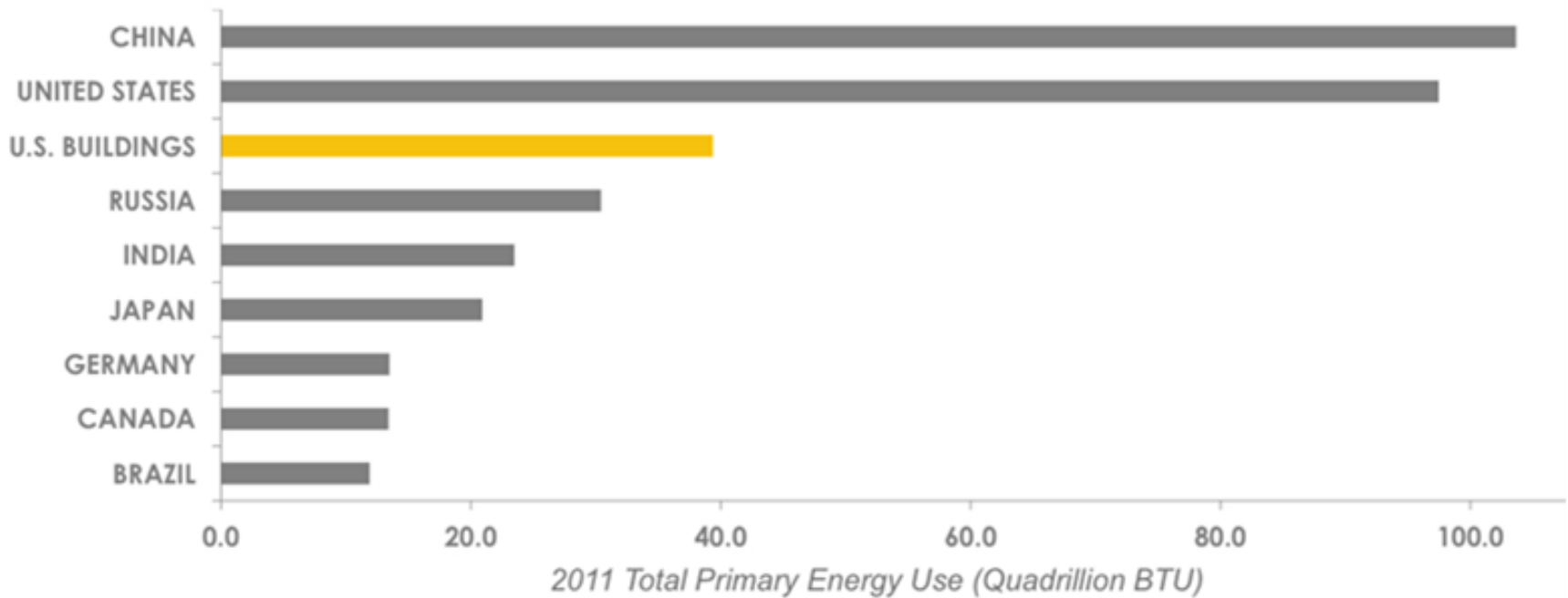
- Do NOT change the channel of your clicker
- To respond, press the button on the clicker that corresponds to the answer choice you believe is correct
- Polling results will be shown when the presenter ends the polling





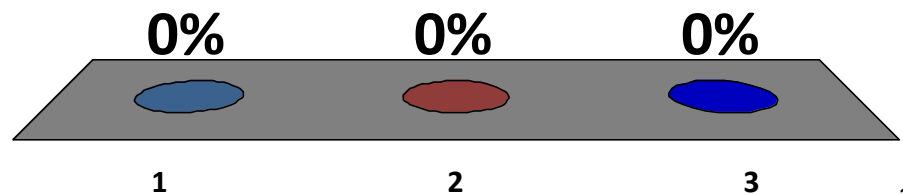
# Why buildings?

**U.S. buildings use more energy than entire countries except China & the U.S.**

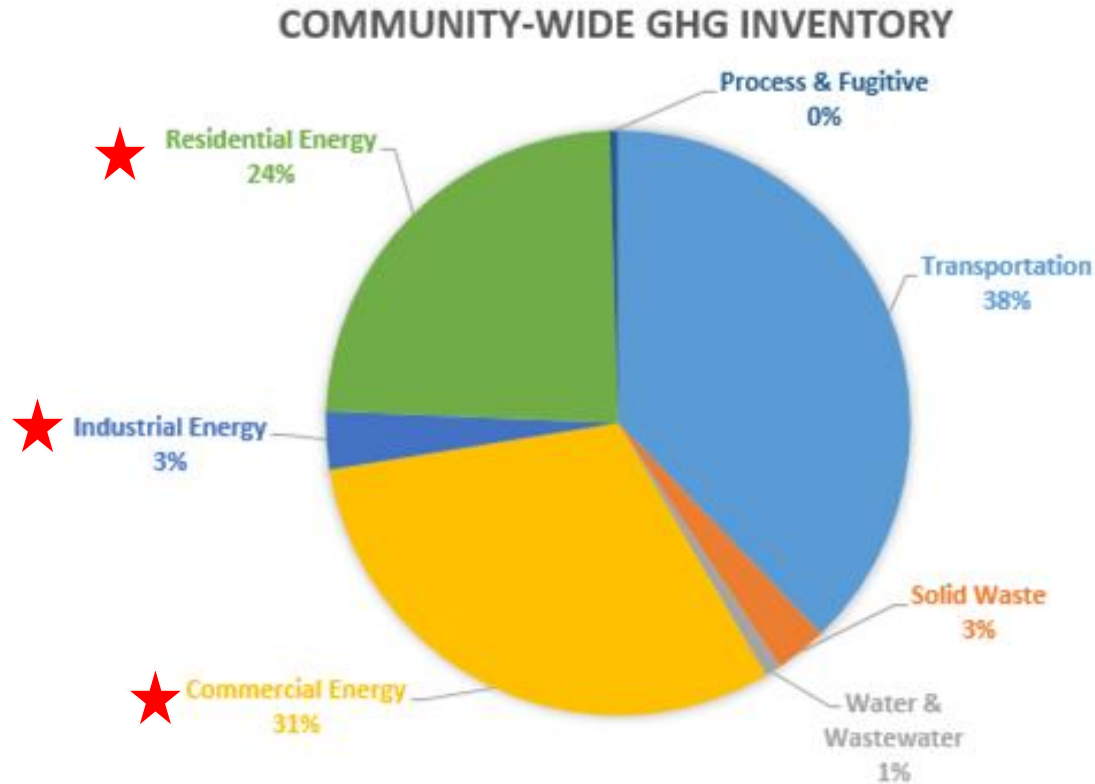


# In Columbus, what percentage of emissions come from buildings?

1. 23%
2. 58%
3. 81%



# Opportunity for Columbus

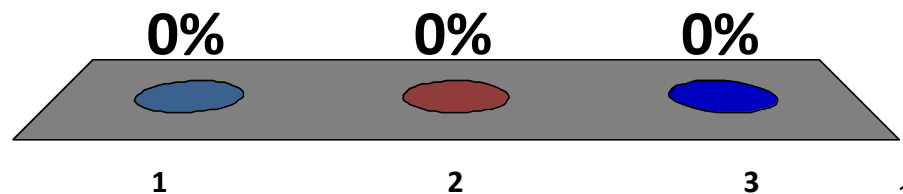


**58% of our emissions come from buildings**

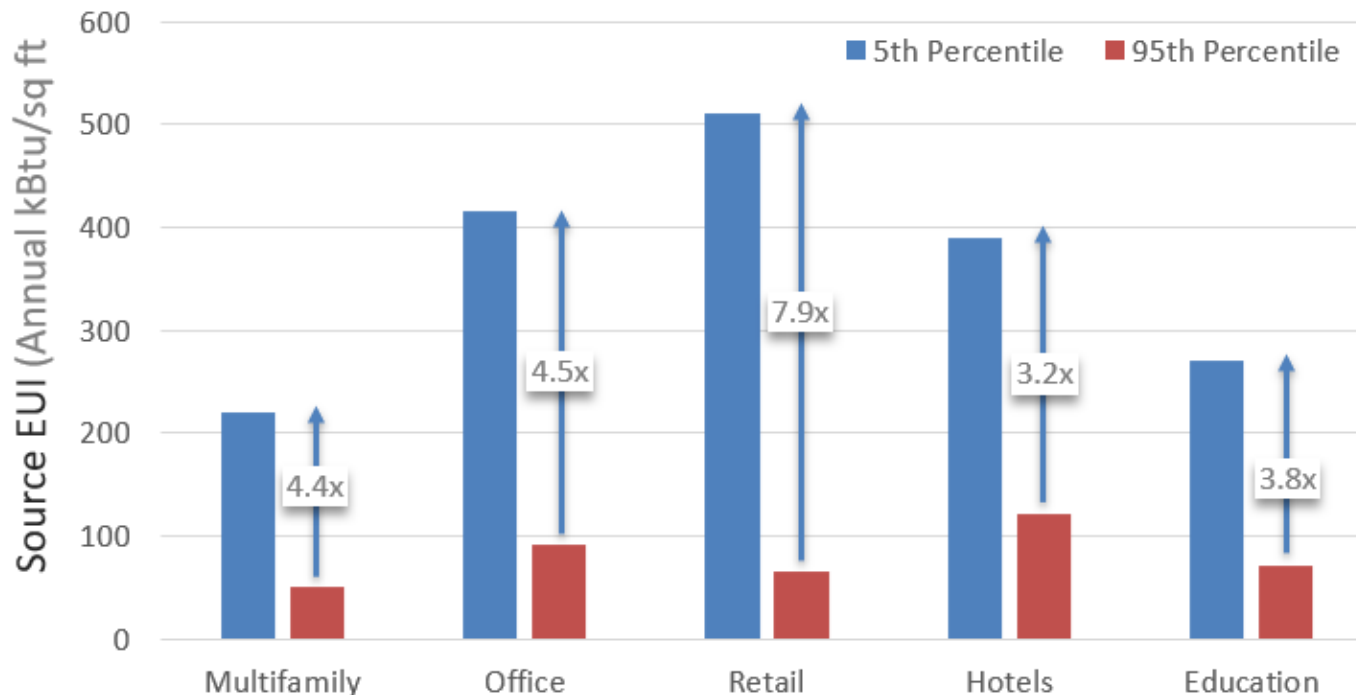
Source: City of Columbus 2018 GHG inventory

Poor performing buildings use \_\_\_\_\_ times more energy across all building types.

1. 2-3
2. 4-8
3. 10-12



# Varying building efficiency

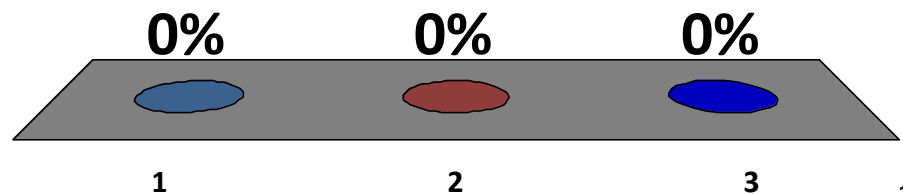


Poor performing buildings use **4 to 8 times more energy** than the best performing buildings.  
Poor performers represent an enormous energy savings opportunity.

Results based on New York City's benchmarking data

# According to the U.S. EPA, how much energy consumed by buildings is wasted?

1. 15%
2. 30%
3. 45%



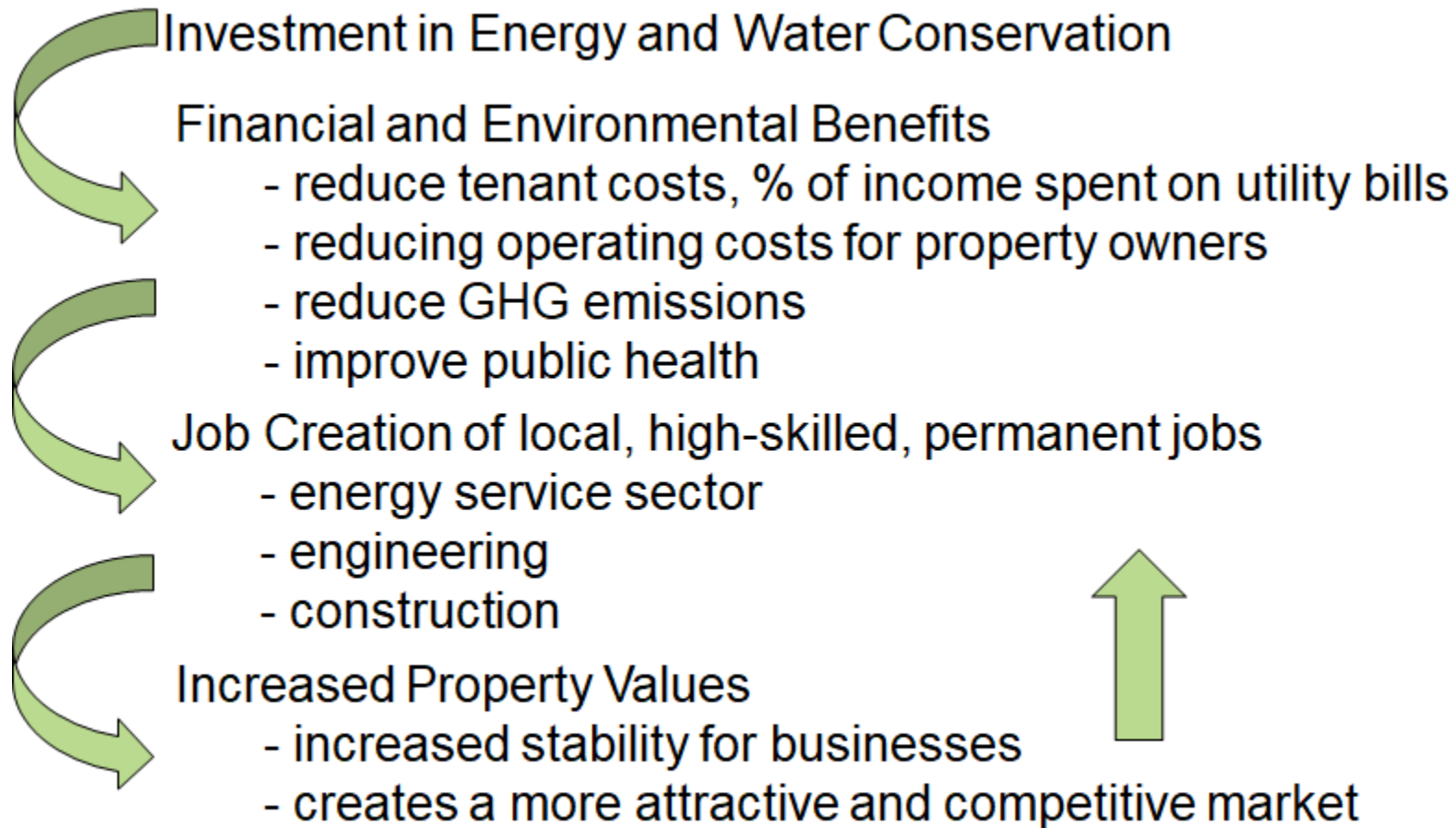
# Energy waste and energy reduction

- Buildings waste 30% of the energy consumed<sup>1</sup>
- Reducing energy consumption in buildings:



1. [https://www.energystar.gov/ia/partners/publications/pubdocs/C+I\\_brochure.pdf](https://www.energystar.gov/ia/partners/publications/pubdocs/C+I_brochure.pdf)

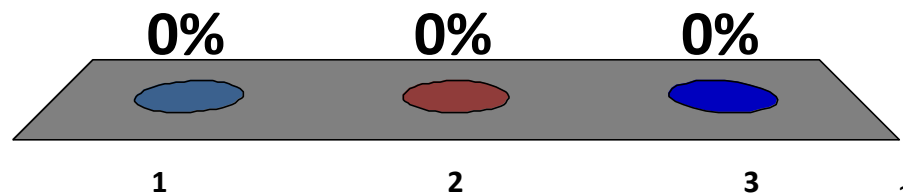
# Energy efficiency benefits & impacts





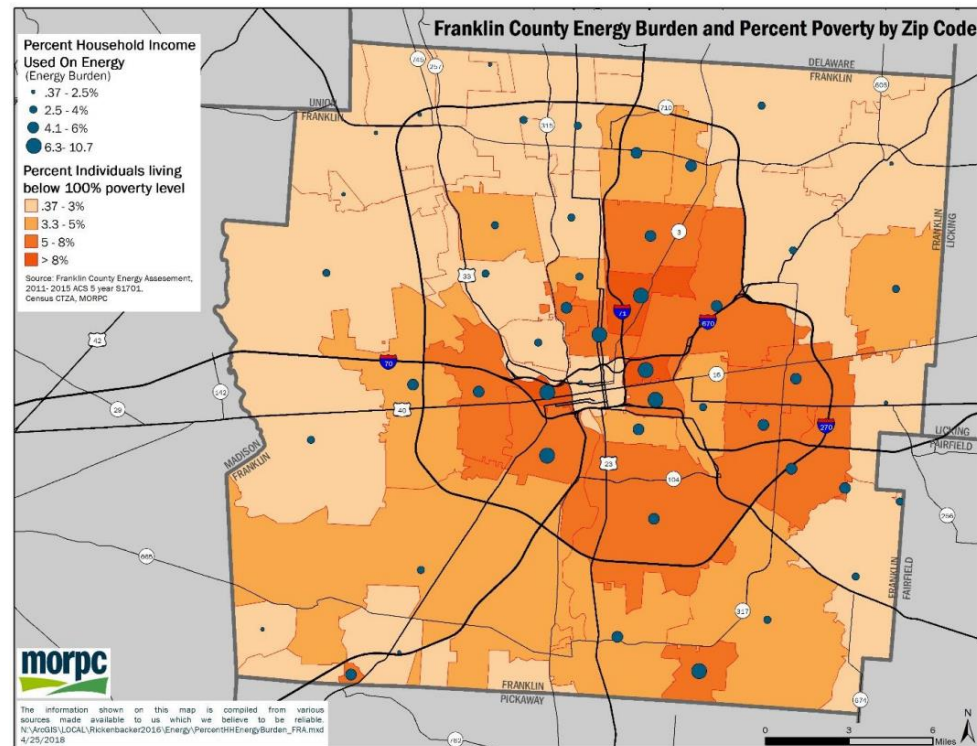
Nearly 21% of Columbus' population lives below the poverty line. How much of their income do you think they spend on utilities?

1. 3.5%
2. 7.4%
3. 11%



# Intersection of equity & energy efficiency

- **20.8%** of Columbus residents live below the poverty line<sup>1</sup>
  - These residents spend up to **11% of their income** on utility bills<sup>2</sup>
- Inclusion of multifamily buildings in energy efficiency policy, including affordable & low-income housing
- **Reduce energy burden** in opportunity neighborhoods



Source: MORPC's 2018 Franklin County Energy Study

1. <https://datausa.io/profile/geo/columbus-oh/>
2. <https://www.nrdc.org/stories/columbus-makes-its-historically-disadvantaged-neighborhoods-key-its-climate-future>

# BREAK

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# Standardizing Policy Definitions



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# Building performance policy definitions

## What is benchmarking?

- Measuring & tracking a building's energy & water use over time.

## What is reporting?

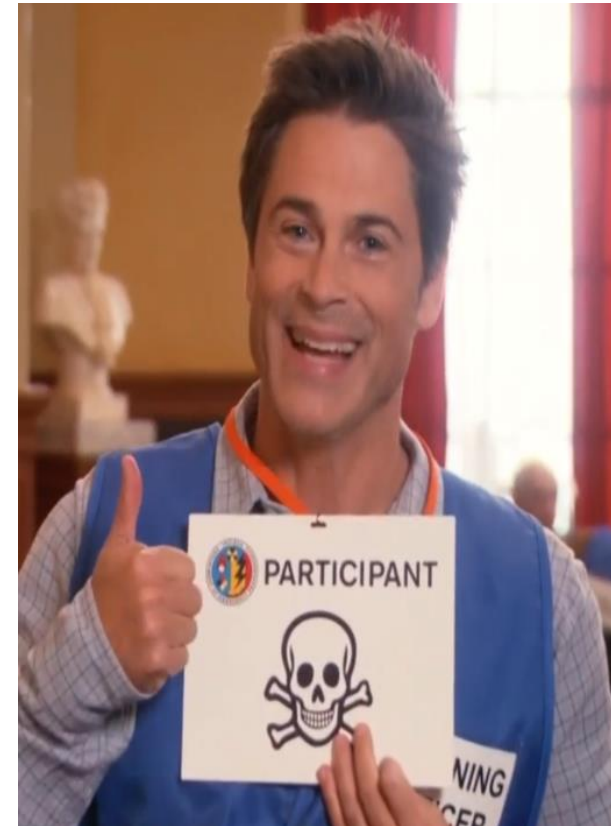
- Submitting a building's energy & water use to the City annually.

## What is transparency?

- Disclosing whole-building energy & water performance metrics to the market.

## What is retuning or retrocommissioning?

- The process to identify & correct suboptimal performance of building equipment, lighting, & controls systems.



# Building performance policy definitions continued

## What are retrofits?

- Replacement of outdated & inefficient equipment.

## What are audits?

- The process of identifying & quantifying opportunities to improve a building's energy efficiency.

## What is energy & water data verification?

- Confirmation of energy, water, & other benchmarking data to ensure it is being tracked & reported correctly.

## What are performance standards?

- Minimum efficiency thresholds a building must meet.



# Establishing the Need for Policy



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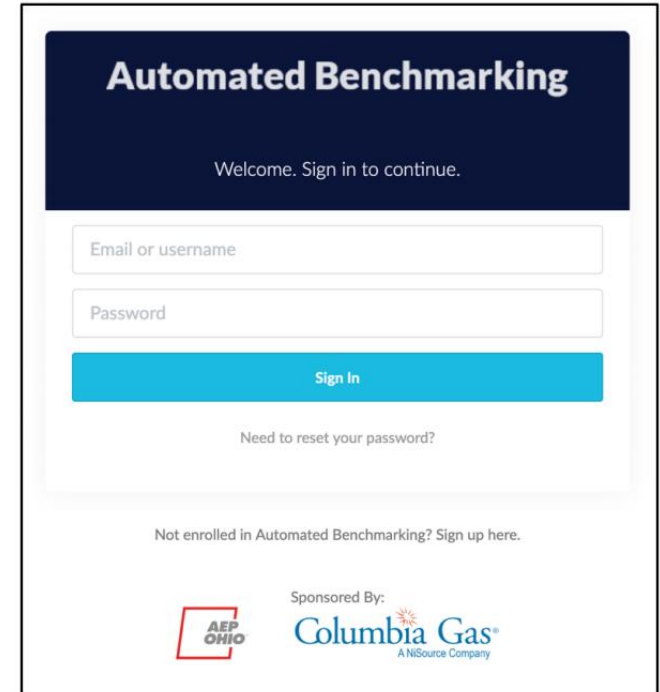
# The market needs motivation

- Our current landscape poses many barriers to energy efficiency:
  - Access to reliable to whole-building utility data
  - Lack of market awareness of building performance
  - Access to financing methods
- Policy is **necessary** for action from the entire building population



# Access to reliable, whole-building data

- Utilities assist building owners & operators by providing **whole-building energy data**
- Provides business customers with 36 months of historical data
- Aggregated, anonymous data provided with 5+ tenants



**Automated Benchmarking**

Welcome. Sign in to continue.

Email or username

Password

Sign In

Need to reset your password?

Not enrolled in Automated Benchmarking? Sign up here.

Sponsored By:

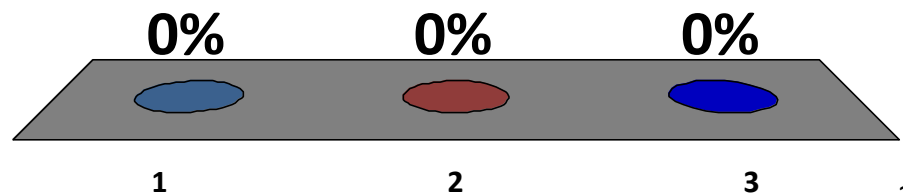
**AEP OHIO**

**Columbia Gas**  
A NiSource Company



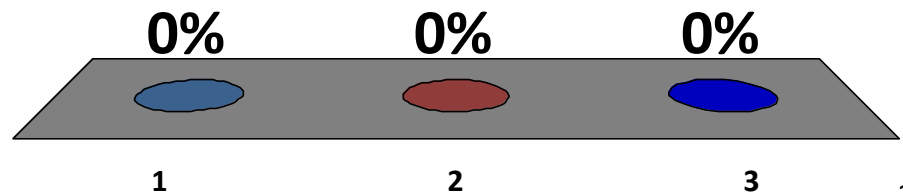
# How many calories is in this bean burrito?

1. 190 calories
2. 360 calories
3. 880 calories



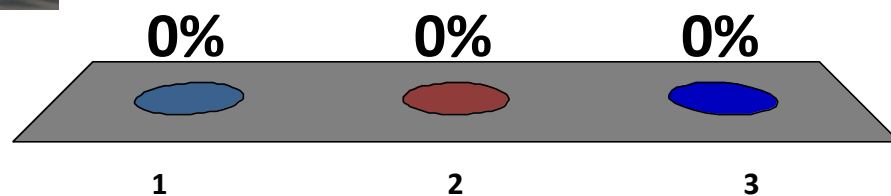
# What is the city miles per gallon for this car?

1. 25 MPG
2. 45 MPG
3. 60 MPG



# What is the ENERGY STAR score of this building?

1. 62
2. 87
3. 91



# Market transformation through transparency

**350 cal Triple Layer Nachos**  
**170 cal Crunchy Taco**  
**460 cal Cheesy Double Beef Burrito**  
**200 cal Soft Taco**  
**420 cal Big Taste Taco**  
**360 cal Bean Burrito**  
**290 cal Caramel Apple Empanada**

### Nutrition Facts

Serving Size 1 cup (228g)  
 Servings per Container 2

Amount Per Serving		Calories from Fat 100
Calories 280		
		% Daily Value*
Total Fat	13g	26%
Saturated Fat	5g	10%
Trans Fat	2g	
Cholesterol	2mg	5%
Sodium	600mg	12%
Total Carbohydrate	31g	10%
Dietary Fiber	3g	6%
Sugars	5g	
Protein	5g	
Vitamin A	4%	Vitamin C 2%
Calcium	15%	Iron 4%

\*Percent Daily Values are based on a diet of other people's secrets. Your daily values may be higher or lower depending on your calorie needs.

**ENERGY STAR® Statement of Energy Performance**

**87**  
 ENERGY STAR® Score<sup>1</sup>

**DPU\_ElectricalEng\_3500**  
 Primary Property Type: Non-Refrigerated Warehouse  
 Gross Floor Area (ft<sup>2</sup>): 72,000  
 Built: 1998  
 For Year Ending: May 31, 2019  
 Date Generated: August 23, 2019

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		
<b>Property Address</b> DPU_ElectricalEng_3500 3500 Indianola Avenue Columbus, Ohio 43214	<b>Property Owner</b> _____	<b>Primary Contact</b> _____
<b>Property ID:</b> 1948875		
Energy Consumption and Energy Use Intensity (EUI)		
<b>Site EUI</b> 32.8 kBtu/ft <sup>2</sup>	<b>Annual Energy by Fuel</b> Natural Gas (kBtu) 1,836,415 (78%) Electric - Grid (kBtu) 522,082 (22%)	<b>National Median Comparison</b> National Median Site EUI (kBtu/ft <sup>2</sup> ) 72.9 National Median Source EUI (kBtu/ft <sup>2</sup> ) 104.7 % Diff from National Median Source EUI -55% Annual Emissions Greenhouse Gas Emissions (Metric Tons CO <sub>2</sub> e/year) 184

U.S. Government  
 ENERGYGUIDE  
 Estimated Yearly Operating Cost  
**\$67**  
 630 kWh  
 Estimated Yearly Electricity Use  
 Your cost will depend on your utility rates and use.

Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the dealer.

**CITY MPG 60** **Fuel Economy Information** **HIGHWAY MPG 51**

4-Cylinder Hybrid with 201 EPA-estimated 60 city/51 highway mpg. EPA-estimated 50 city/45 highway mpg. EPA-estimated 48 city/43 highway mpg. EPA-estimated 47 city/42 highway mpg. EPA-estimated 46 city/41 highway mpg. EPA-estimated 45 city/40 highway mpg. EPA-estimated 44 city/39 highway mpg. EPA-estimated 43 city/38 highway mpg. EPA-estimated 42 city/37 highway mpg. EPA-estimated 41 city/36 highway mpg. EPA-estimated 40 city/35 highway mpg. EPA-estimated 39 city/34 highway mpg. EPA-estimated 38 city/33 highway mpg. EPA-estimated 37 city/32 highway mpg. EPA-estimated 36 city/31 highway mpg. EPA-estimated 35 city/30 highway mpg. EPA-estimated 34 city/29 highway mpg. EPA-estimated 33 city/28 highway mpg. EPA-estimated 32 city/27 highway mpg. EPA-estimated 31 city/26 highway mpg. EPA-estimated 30 city/25 highway mpg. EPA-estimated 29 city/24 highway mpg. EPA-estimated 28 city/23 highway mpg. EPA-estimated 27 city/22 highway mpg. EPA-estimated 26 city/21 highway mpg. EPA-estimated 25 city/20 highway mpg. EPA-estimated 24 city/19 highway mpg. EPA-estimated 23 city/18 highway mpg. EPA-estimated 22 city/17 highway mpg. EPA-estimated 21 city/16 highway mpg. EPA-estimated 20 city/15 highway mpg. EPA-estimated 19 city/14 highway mpg. EPA-estimated 18 city/13 highway mpg. EPA-estimated 17 city/12 highway mpg. EPA-estimated 16 city/11 highway mpg. EPA-estimated 15 city/10 highway mpg. EPA-estimated 14 city/9 highway mpg. EPA-estimated 13 city/8 highway mpg. EPA-estimated 12 city/7 highway mpg. EPA-estimated 11 city/6 highway mpg. EPA-estimated 10 city/5 highway mpg. EPA-estimated 9 city/4 highway mpg. EPA-estimated 8 city/3 highway mpg. EPA-estimated 7 city/2 highway mpg. EPA-estimated 6 city/1 highway mpg. EPA-estimated 5 city/0 highway mpg. EPA-estimated 4 city/0 highway mpg. EPA-estimated 3 city/0 highway mpg. EPA-estimated 2 city/0 highway mpg. EPA-estimated 1 city/0 highway mpg.

Estimated Annual Fuel Cost: \$362  
 see www.fueleconomy.gov

**Signature & Stamp of Verifying Professional**

I, \_\_\_\_\_ (Name) verify that the above information is true and correct to the best of my knowledge.

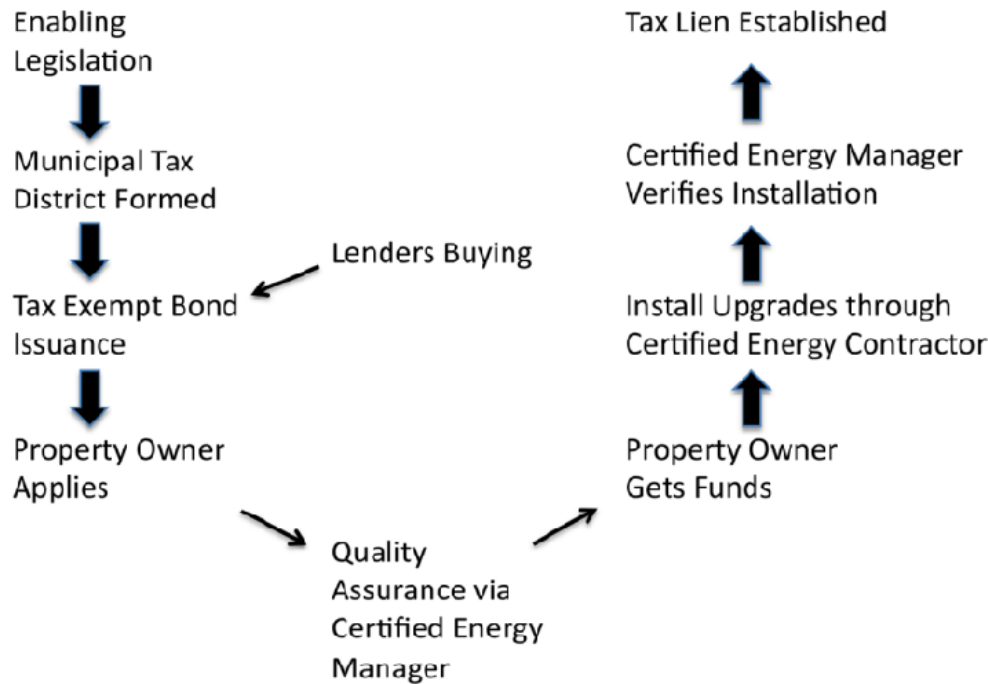
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Licensed Professional  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Professional Engineer Stamp  
 (if applicable)

# Access to financing methods

- Property Assessed Clean Energy Financing (C-PACE)



Source: Brown, M. A., Jackson, R., Cox, M., Cortes, R., Deitchman, B., & Lapsa, M. V. (2011). *Making Industry Part of the Climate Solution: Policy Options to Promote Energy Efficiency*.

## BENEFITS OF PACE



Source: PACENation

# A virtuous cycle



# Current Policy Landscape



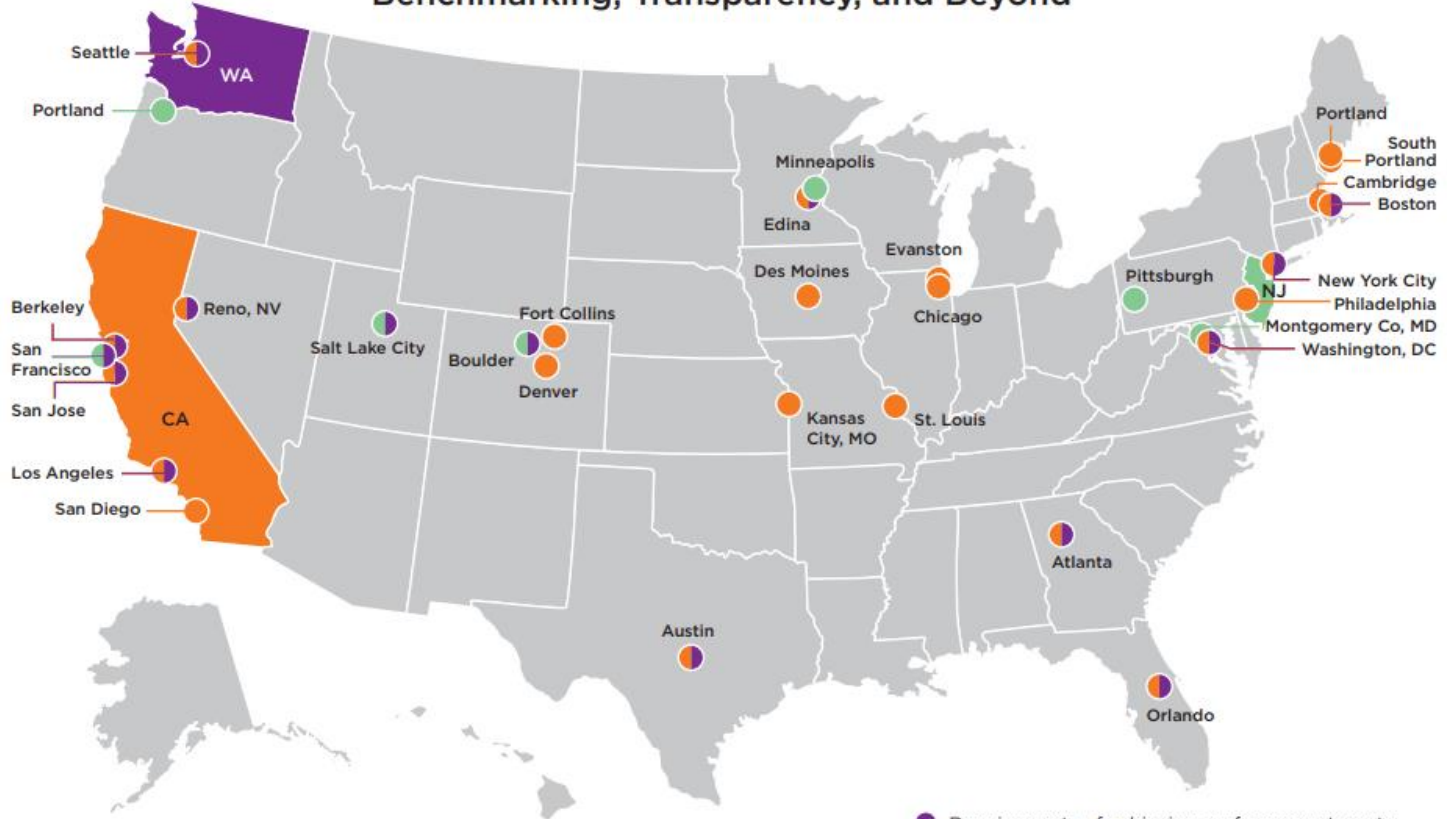
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# U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency, and Beyond

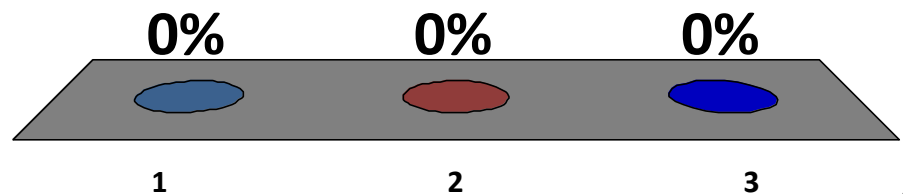


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- Requirements of achieving performance targets or completing additional actions
- Benchmarking policy for public, commercial, and multifamily buildings adopted
- Benchmarking policy for public and commercial buildings adopted

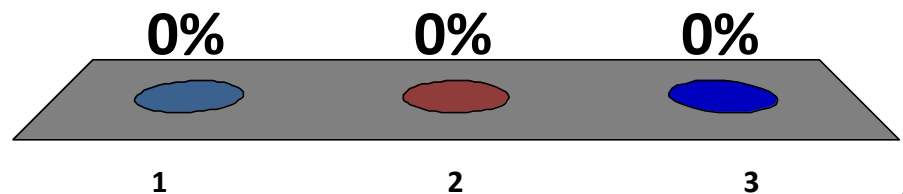
# How many buildings will existing policies impact?

1. 79,700
2. 84,300
3. 91,800



# What is the total floor space impacted by policies?

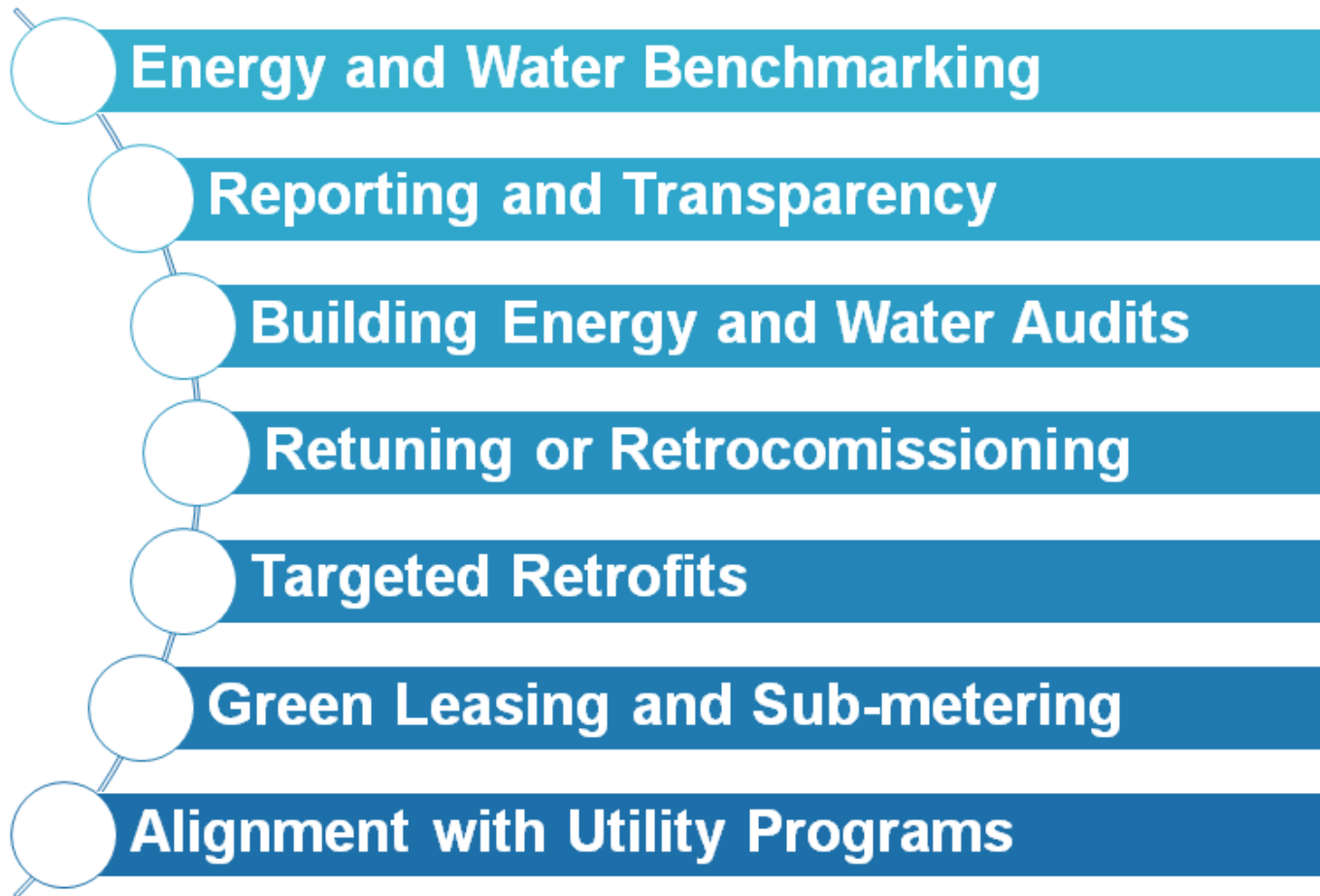
1. 6 billion square feet
2. 11 billion square feet
3. 20 billion square feet



## Early adopters & proven energy savings

Legislation	Policy Impact			Buildings Included	Compliance	
Jurisdiction	Number of Bldgs	Square Footage	Energy Savings	Types & Sizes	By # of Buildings	By % of Sq. Ft.
Chicago	3,500	900 million	10% (2010-15)	Comm ≥ 50K MF ≥ 50K	84% (2014)	92% (2014)
District of Columbia	2,000	357 million	9% (2010-13)	Comm ≥ 50K MF ≥ 50K	83% (2013)	-
New York City	33,417	2.8 billion	6-14% (2010-14)	Comm & MF ≥ 50K Comm & MF ≥ 25K	84% (2012)	84% (2012)
San Francisco	2,312	203 million	7.9% (2010-14)	Comm ≥ 10K	-	82% (2013)
Seattle	3,250	281 million	2.7% (2014-15)	Comm & MF ≥ 20K	99.2% (2013)	99.4% (2013)

# Trends & best practices from other cities



# Improvement through ambitious policy

## Action:

- **Passed building performance policy requiring:**
  - Annual benchmarking & reporting
  - Annual data disclosure & market transparency
  - Periodic audits and/or retrocommissioning action for low-performing buildings



## Results:

- **Orlando, Florida**
  - Improved ACEEE ranking from #30 to #15 (2015 to 2019)
  - Increased ‘buildings policies’ points from 4 to 14 (out of 30)
- **San Jose, California**
  - Improved ACEEE ranking from #16 to #11 (2015 to 2019)
  - Increased ‘buildings policies’ points from 10 to 23 (out of 30)

## Small Group Discussion

- Based on what you've heard other cities are doing, is there anything that you find interesting or would like to see us consider in developing our policy?
- Group report outs

# Looking Ahead



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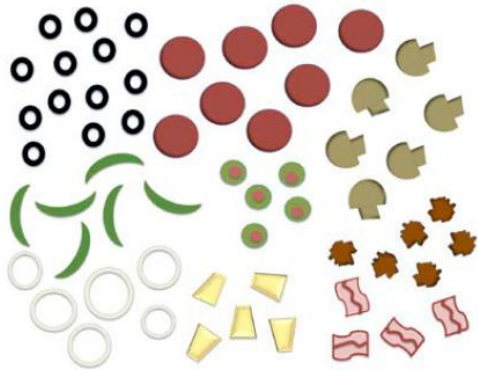
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# Next month... assembling our policy pizza!

## Policy Elements



## Potential Policies



## Recommended Policies



## Upcoming meeting schedule

- September 5, 2019 - *Setting the Context*
- October 8, 2019 - *Building Performance Policy Design Part I*
- November 12, 2019 - *Building Performance Policy Design Part II*
- December 10, 2019 - *Confirming Advisory Group Recommendations*
- January 14, 2020 - *Policy Implementation*

All meetings held from **9am-11am** at the Coleman Government Center, 111 N. Front Street, 2nd Floor Hearing Room. Calendar invite meeting holds forthcoming.

# For More Information:

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[ARShockey@columbus.gov](mailto:ARShockey@columbus.gov)