Building Energy Exchange St. Louis

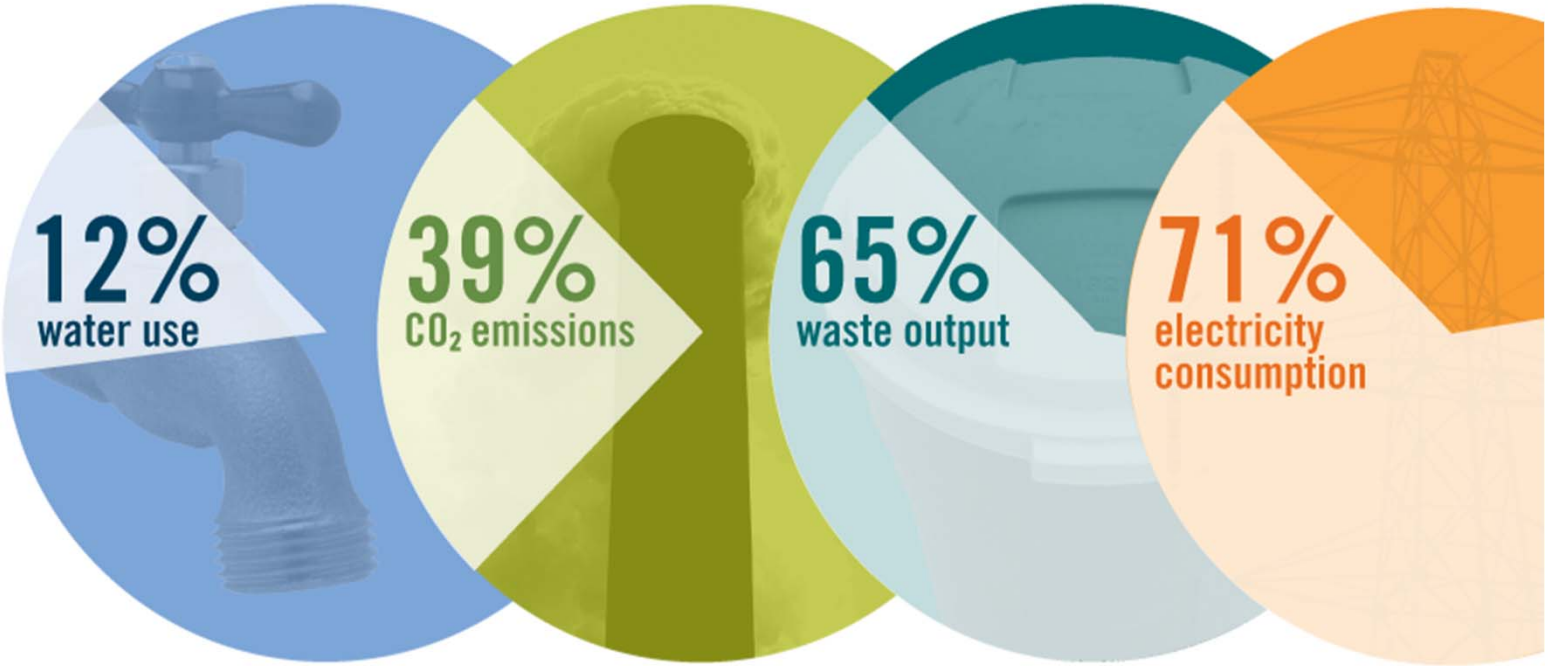
Air Quality Advisory Group

March 2022 Meeting

Building Energy Exchange
St. Louis: Mission

To advance building energy performance by mobilizing the professional expertise, funding, and technical resources the real estate industry needs to address affordability, improve the health and comfort of residents, and position St. Louis as a resilient and carbon neutral region.

Why buildings?
U.S. buildings have a BIG Impact



Where do St. Louis buildings fit in?
Our buildings have an even BIGGER Impact

So what's the total impact?

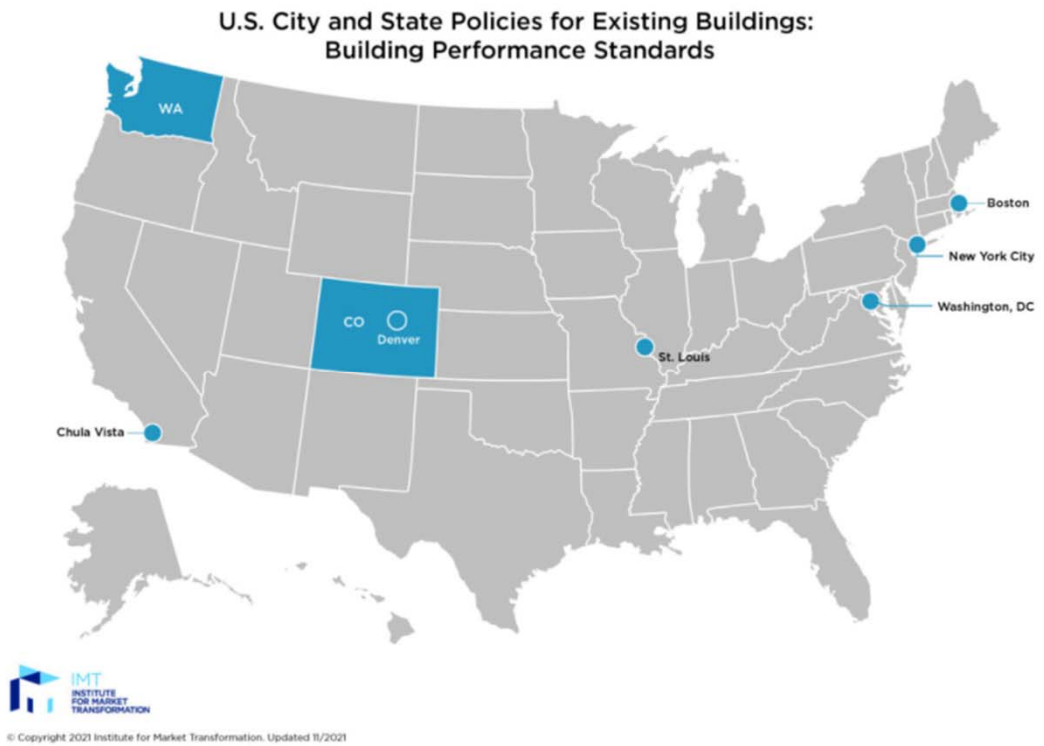
- Roughly 80% of all St. Louis community greenhouse gas emissions came from buildings
- In 2018, the City of St. Louis community was responsible for 6.6 million metric tons of carbon dioxide equivalents

THAT'S A LOT OF GREENHOUSE GAS!!!

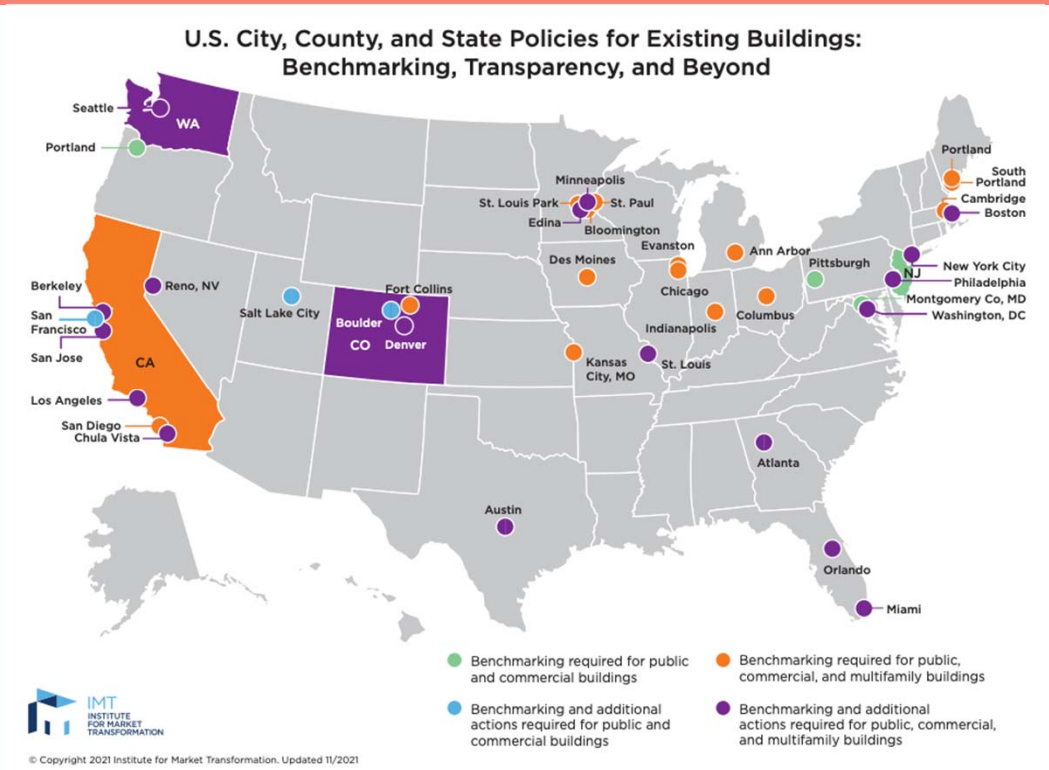
What is St. Louis doing about it?

- The City of St. Louis has taken concrete steps to improve building performance through legislative action
  - 2017 – Benchmarking ordinance passed by BOA
  - 2020 – Building Energy Performance Standards passed by BOA
  - 2022 – Cities of St. Louis and Kansas City were named to the National Building Performance Standards Coalition

Where else are building performance standards

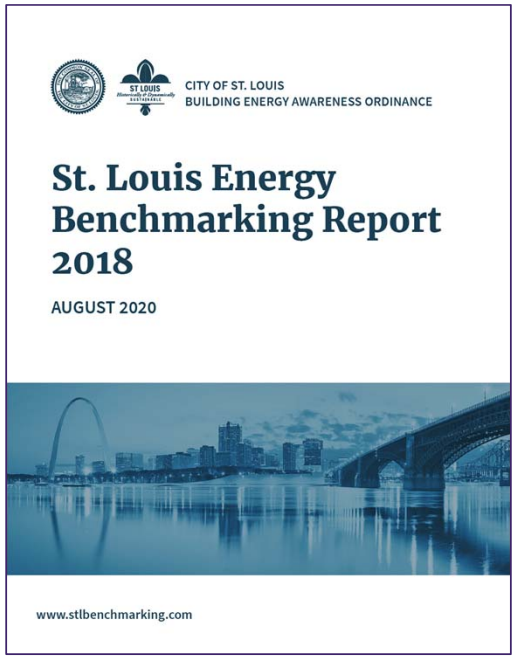


Where else are benchmarking policies



St. Louis Performance Standards: How were they set?

- The City started with the energy consumption data that had been submitted through the Benchmarking process for years 2017 and 2018
  - 983 buildings are required to report
  - 544 submitted usable data for 2017 (submitted in 2017 and 2018)
  - 500 submitted usable data for 2018 (54%)
  - 44 property types


CITY OF ST. LOUIS
BUILDING ENERGY AWARENESS ORDINANCE

St. Louis Energy Benchmarking Report 2018

AUGUST 2020

www.stlbenchmarking.com

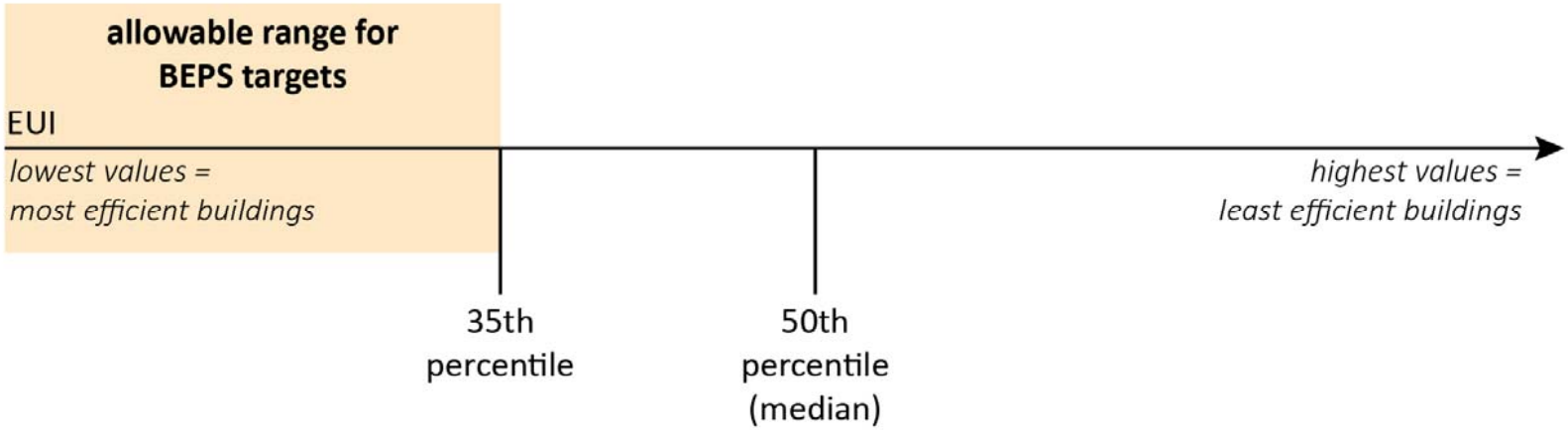
St. Louis Performance Standards: Data Cleaning

- Buildings were dropped for quality control

BUILDINGS IN DATA SET	NUMBER WITH 2017 DATA	NUMBER WITH 2018 DATA	TOTAL NUMBER
Buildings that reported in 2017	553	-	553
Buildings that reported in 2018	721	721	1,442
Buildings dropped for eligibility	685	189	874
Duplicate entry	*445*	*13*	*458*
Exempted/not in City	*216*	*164*	*380*
Floor area missing or <50,000 ft²	*24*	*12*	*36*
Buildings dropped for data quality	45	32	77
Electricity missing or zero	*38*	*27*	*65*
EUI outlier	*7*	*5*	*12*
Buildings included in analysis	544	500	1,044

BEPS Target Setting

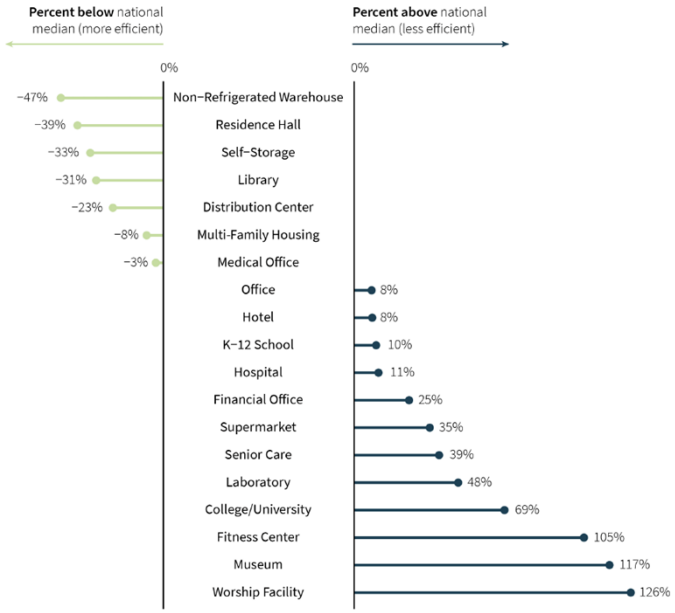
- BEPS targets must be set such that at least 65% of buildings need to improve energy performance (i.e., at or below the 35th percentile)



St. Louis Building Performance compared nationally

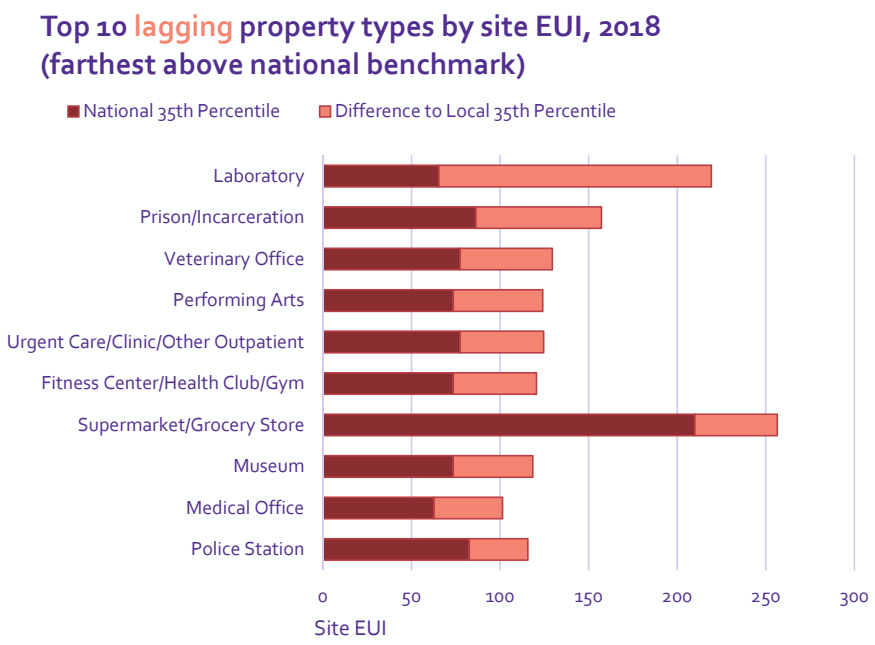
- St. Louis buildings generally perform worse than their national counterparts, with some exceptions

Figure 5. Median Site EUI in St. Louis Compared to National Median



St. Louis Building Performance compared nationally

- Property types lagging (EUI farthest above) national counterparts

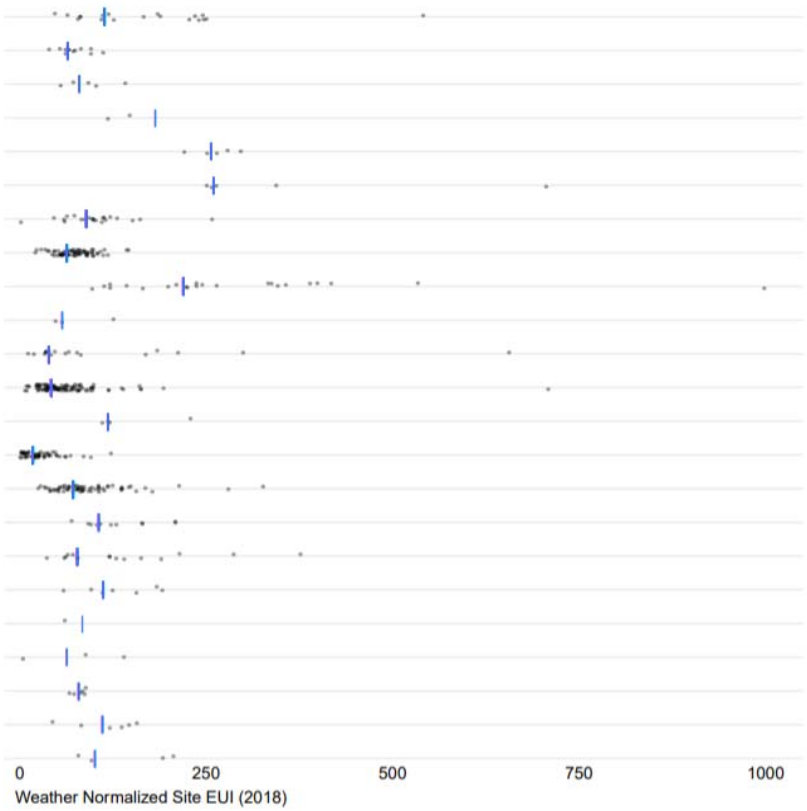


BEPS by Property Type

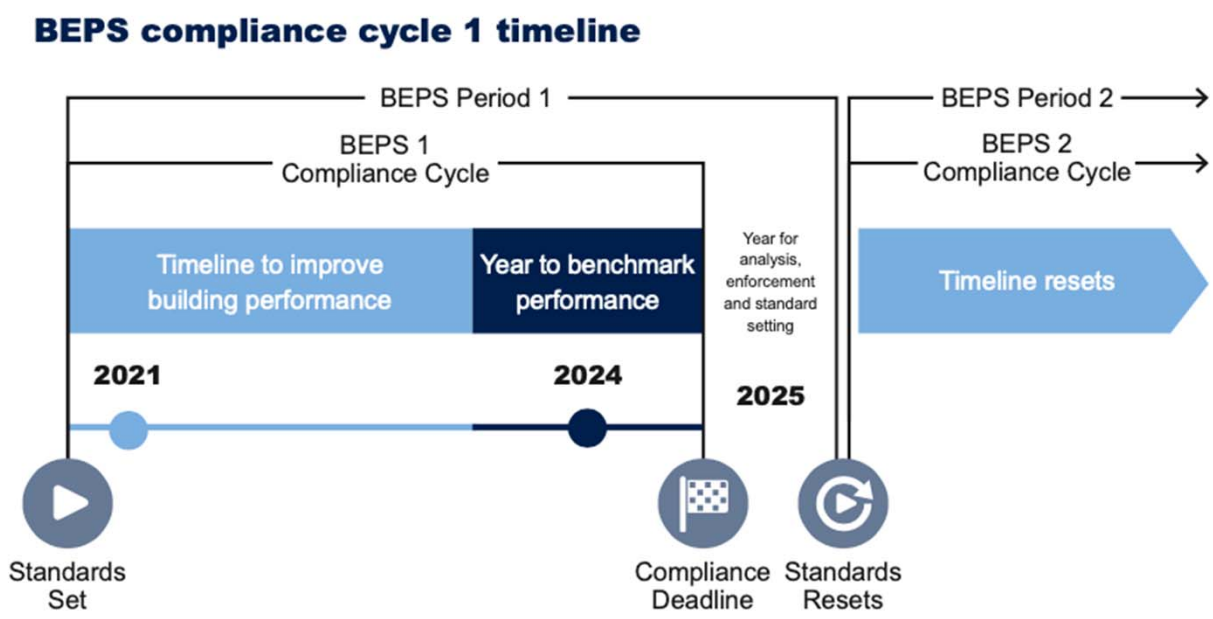
In this chart, each dot represents a building. Blue lines represent BEPS. Wastewater treatment and data centers are omitted due to data limitations. To the left of the blue line, buildings are in compliance; to the right, they are not in compliance. Example: Compliant | Not compliant

Property Type Group	BEPS
College/university	113.8
Dormitory	64.5
Education	80.1
Food service	181.9
Grocery store	256.5
Hospital	259.9
Hotel	89.4
K−12 school	63.5
Laboratory	219.2
Library	57.0
Manufacturing/industrial	38.9
Multifamily housing	42.5
Museum	118.4
Nonrefrigerated warehouse	17.6
Office	71.7
Outpatient healthcare	105.9
Public assembly	77.3
Public order and safety	112.3
Refrigerated warehouse	84.1
Religious worship	63.4
Retail/service	79.3
Senior care/residential care	111.3
Strip shopping mall	101.1

Distribution of Site EUI Values Relative to BEPS



BEPS Compliance Cycles



BEPS Compliance Pathways

There are four main compliance paths for BEPS.

- **Performance:** The building's site EUI for the property is equal to or lower than the EUI standard for its property type.
- **Early Adopters:** To incentivize owners to invest in deeper energy retrofits
  - If at the conclusion of cycle 1, a property's EUI is at or below the standard for its property type, AND the EUI of the property was reduced by 20% or greater compared to its 2018 Property Baseline, then the property will be in compliance for cycles 1 and 2.
  - If at the conclusion of cycle 1, the property's EUI is at or below the BEPS for its property type, AND the EUI of the property was reduced by 50% or greater compared to the 2018 Property Baseline, then the property will be in compliance for cycles 1, 2, and 3.

BEPS Compliance Pathways

- **Narrow the Gap Alternative Compliance Path:** For each cycle, a property can comply by reducing its EUI by 50% of the difference between its 2018 Property Baseline EUI performance and the EUI standard for its property type and submitting required documentation.
- **Custom Alternative Compliance Path:** If a property has any unique characteristics or situations that prevent it, within reason, from meeting any other compliance pathways, the owner can apply for a Custom Alternative Compliance Path. A completed Alternative Compliance Path template application and technical report (meeting the requirements for an ASHRAE Standard 211 Level 2 Energy Audit) is required. Compliance is achieved through application approval by the Building Division, which becomes a binding agreement between the City and owner.

Building Energy Exchange St. Louis: *A History*

be-ex STL grew out of work with City of St. Louis on energy efficiency, benchmarking & building performance standards

- 2017, 2020: regulations passed in the city
- Early 2021: Needs assessment conducted
- First hire September 2021, interns Jan, Feb 2022
- Official launch: March 2022

- Initial focus: compliance with City's Building Energy Performance Standards
  - Goal: quickly expand to serve the region's needs
- Initially incubated within the USGBC with funding and major support from key partners: Ameren, Spire, Washington University, NRDC, Lowenstein Foundation and Institute for Market Transformation

Regional and National Partners and Funders

be-ex STL: Property Prioritization

We have to start somewhere! We are going to start with those properties that have to get in compliance and build out from there based on need

1. Buildings in the City that are subject to BEPS (50,000 sq ft)
2. Underserved sectors in both the City and the County that are at least 25,000 sq ft (Non-profits, affordable housing, houses of worship, etc)
3. Buildings over 50,000 sq ft in the County
4. Public Housing authorities and HUD properties

Building *not* competing

- be-ex STL will not compete with local professionals, vendors, and service providers – rather will partner with organizations to build the market for energy efficiency
- We are a trusted source of information, we are not here to sell services, but to make connections and help build the energy efficiency industry

Where does AIR fit in?

Improving ventilation has been identified as a key aspect of reducing the risk of COVID and other illnesses. The Biden Administration just launched the Clear Air in Buildings Challenge – March 2022

- Increased outside air reduces efficiency
- This will be a challenge for meeting BEPS targets

Early communication with the Building Division will be key to getting a building on a custom pathway if necessary

How can you get involved?

BE-Ex STL is looking for ---

Case Studies to showcase great work

Experts to help customize some of our materials

Presenters for educational outreach

Advisors / Board members

and of course – funders!

Thank you!

www.be-exstl.org