

BENCHMARKING 2023 ANNUAL REPORT



THE CITY OF
COLUMBUS

ANDREW J. GINTHER, MAYOR

DEPARTMENT OF BUILDING
AND ZONING SERVICES



**SUSTAINABLE
COLUMBUS**

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EXECUTIVE SUMMARY

The Energy & Water Benchmarking and Transparency Ordinance completed its third year in 2023. The Ordinance, which was created after an extensive stakeholder engagement process, requires owners of buildings 50,000 square feet and larger to track monthly energy and water usage data and submit yearly reports to the city.

Since last year's annual report there have been significant challenges regarding the data aggregation tools required for collecting and submitting natural gas data. In order to be in compliance with the Benchmarking Ordinance, multi-unit building owners need access to aggregated, anonymized utility data including natural gas. The need for these aggregation tools had been expressed to our utility partners dating back to the stakeholder engagement process in 2019 . Unfortunately at the end of 2022, Columbia Gas eliminated its aggregation tool for commercial customers and ceased development of the multi-family tool, a challenge the program is stepping up to address.

Despite not having a commercial aggregation tool for natural gas like part of the previous year, Columbus still had higher overall compliance numbers than in 2022. At the time of the annual report in 2022, there were 728 buildings in compliance for that year. In 2023, that number rose to 867 buildings in compliance. Additionally, Benchmarking saw the launch of the Online Transparency Map which allows visitors to view and compare certain elements of a building's energy performance against other Columbus buildings and/or against a national average.

Benchmarking, housed in the Department of Building and Zoning Services, has developed tools and processes to make the benchmarking process easy and efficient for building owners throughout the first three years of the ordinance. In 2023, the Benchmarking Help Desk updated its website to include helpful how-to videos and launch the Online Transparency Map. In addition, staff fielding over 317 phone calls and 8,882 emails. The Help Desk spent considerable time and energy in 2023 reaching out to potential building owners to confirm ownership and share information. These efforts will help create a building performance data set that will inform decision making for the [Columbus Climate Action Plan](#) for decades to come.

For more information about the history of the ordinance, why it's important, and a historical timeline, download a copy of the [2022 Benchmarking Annual Report](#).

The City of Columbus continues to meet with Columbia Gas regarding the need of a natural gas aggregation tool and a path forward to help their customers comply with this ordinance. At the same time the program continues exploring alternatives to address the Columbia Gas shortcomings. Columbus remains committed to the success of the Benchmarking Ordinance and the Columbus Climate Action Plan.

Our business community in Columbus has been very supportive of our climate action plan and our work with renewable energy — and some of the changes to the building and development in zoning codes around this work.

- Mayor Andrew Ginther, City of Columbus, Ohio

BENCHMARKING UPDATES

One of the most significant updates to Benchmarking in 2023 was the launch of our online Transparency Map. Potential renters, investors, or even concerned citizens interested in learning about building performance in Columbus are able to view and compare certain elements of an individual building's energy use on the new Transparency Map.

Viewers can search a building by address to see its ENERGY STAR® Score and Energy Use Intensity. Additionally, the website allows for the comparison of different buildings of the same use type and also which buildings are the best performing in Columbus. Sharing a subset of the information collected through benchmarking on the new Transparency Map helps Columbus remain a vibrant and competitive place to live and work in a world with increasing emphasis on sustainability and transparency.



NATIONAL PERSPECTIVE

At the time of the 2022 Annual Report, Columbus was one of 33 state and local governments to have signed onto President Biden’s Building Performance Standard Coalition. This coalition, now numbering 46 entities, is supported by federal agencies and non-governmental organizations who provide technical analysis, localized policy design, location-based workforce engagement, and overall support for the adoption of more efficient building performance standards. As this coalition grows in size, it grows in strength, and new Building Performance Standards will align emissions, electrification, and performance requirements with community-wide equity goals. These goals align with the Mayor’s priorities on inclusion. Benchmarking lays the groundwork for residents to understand and make better informed decisions regarding energy use and performance goals.

The State of Building Performance Standards (BPS) in the U.S.
Members of the National BPS Coalition as of December 2023



BENEFITS OF BENCHMARKING

Tracking energy usage is typically considered the beginning of an organization's energy efficiency improvement journey. There are multiple benefits to an organization when it begins to benchmark its energy usage. Inconsistencies or spikes in energy use can be identified and monitored. Benchmarking is the first step in establishing a Comprehensive Energy Management Plan.

In addition to the inherent benefits of benchmarking and the useful information provided in ENERGY STAR® Portfolio Manager®, Columbus building owners that comply with the Benchmarking Ordinance get other benefits as well. Their building performance data is shared on the Transparency Map, they have access to free energy consultations provided by AEP Energy, and they receive yearly Energy Performance Scorecards via email. These scorecards provide useful information such as energy performance compared to similar buildings, supportive links, and ordinance information. As Columbus acquires more usage data in the coming years, these scorecards will eventually include trending and historical data which will help inform building owners to manage and operate their buildings more efficiently. In March of 2023 these scorecards, reporting 2021 calendar year data, were emailed to all building owners that had successfully submitted Benchmarking Reports for the 2022 compliance cycle.

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City of Columbus 2023 Energy Performance Scorecard

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

2104 Jackson Pike	Timeframe Jan. - Dec. 2022	Building ID CBUS4760	Square Footage 314,057	Year Built 1937
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Annual Energy Use Local Comparison

See how your building measures up against other similar buildings locally.

Site Energy Use Intensity (kBtu/ft²)	Number of Buildings	Efficiency Level
0-28	~100	Most Efficient
29-56	~250	Average
57-84	~200	Average
85-112	~150	Average
113+	~100	Least Efficient

Site EUI Compared to National Median

Your building this year (2022)

423.5

Your building last year (2021)

522.3

National Median

598.1

Site Energy Use Intensity (EUI) is the amount of energy a space has used over a period of time.

Benchmarking & Transparency Map

In 2023, Benchmarking launched the [Transparency Map](#). This is a public facing, interactive map that shows building compliance and a subset of building performance data.

Improve your ENERGY STAR® Score

Contact AEP Energy for free advice on managing your building and EE improvement projects. [AEP Energy Benchmarking Flyer](#)

Climate Action Plan

On December 9, 2021, Mayor Andrew J. Ginther unveiled the city's first ever 'Columbus Climate Action Plan,' a community roadmap to achieve carbon neutrality by 2050. [Download the Columbus Climate Action Plan](#)

Questions? <https://www.columbus.gov/sustainable/benchmarking/benchmarking@columbus.gov> (614) 724-1277

KEY METRICS - ORDINANCE COMPLIANCE DATA

2023 marks the end of the third year of the Benchmarking Ordinance in Columbus. Benchmarking compliance cycles are similar to tax cycles in that you are reporting the previous calendar year's data. As the Benchmarking Help Desk works to get in touch with new building owners and share pertinent ordinance information, compliance numbers continue to improve. For example, the 2022 Benchmarking Annual Report reported 728 buildings were in compliance for the 2022 Cycle. Whereas the 2023 Annual Report showed 801 buildings are in compliance for that same 2022 Compliance Cycle. Columbus will continue to work with building owners to improve compliance rates even for previous years.

As the Benchmarking Help Desk acquires building owner contacts to increase its compliance rates, its energy performance data set improves also. As this data set grows in maturity, Columbus will be able to share multi year trending data to provide customers with the information needed to make informed decisions. In the meantime, the annual reports focus on general compliance data and energy performance by building type. Anyone interested in viewing individual building performance data can visit our [Transparency Map](#).

To comply with the Columbus Ordinance, Building owners either submit benchmarking reports or exemptions. Any building owner may submit an exemption request if the building's function is primarily manufacturing, is less than 50% occupied for the reporting year, or if disclosing energy data would expose trade secrets. If the exemption is approved, the building is considered in compliance. City-wide total combined energy usage recorded through the ordinance is measured in MMBtu (Metric Million British Thermal Units). The greenhouse gasses (GHG) associated with this energy use are measured in MTCO₂e (Metric Tons of Carbon Dioxide Equivalent), which represents the total GHG impact of the energy use.

2022	801 buildings 'In Compliance'	2023
	80 exemptions approved	
	721 Benchmarking Reports Accepted and Approved	
	124,037,507 sq ft 'In Compliance'	
	321,002,023.95 MMBtu	
	16,264,340.5 MTCO ₂ e*	
	901 buildings 'In Compliance'	
	79 exemptions approved	
	822 Benchmarking Reports Accepted and Approved	
	139,909,035 sq ft in 'In Compliance'	
	359,804,986.75 MMBtu	
	20,251,745.3 MTCO ₂ e*	

KEY METRICS - ENERGY PERFORMANCE BY BUILDING TYPE

The graph below shows how building types in Columbus compare to similar buildings around the country. ENERGY STAR® Scores range from 1 to 100, with higher values representing more efficient buildings and 50 being an average score. Some building types, such as campuses and industrial facilities, are not eligible for a score.

Energy Use Intensity (EUI) is the amount of energy a space has used over a period of time (total energy use in thousand British Thermal Units/ total square feet/ year), and is the most commonly used metric to evaluate the energy efficiency of buildings. Weather Normalized Site EUI considers local weather patterns and adjusts the value accordingly to not penalize building owners for extreme temperatures that are beyond their control.

All building types below, with the exception of supermarkets, have more accepted submittals than last year. For some building types, Columbus has significantly more submittals which provides a more accurate look into Columbus building performance. For the purpose of accuracy, extreme outliers were removed from the Columbus Average Weather Normalized EUI category.

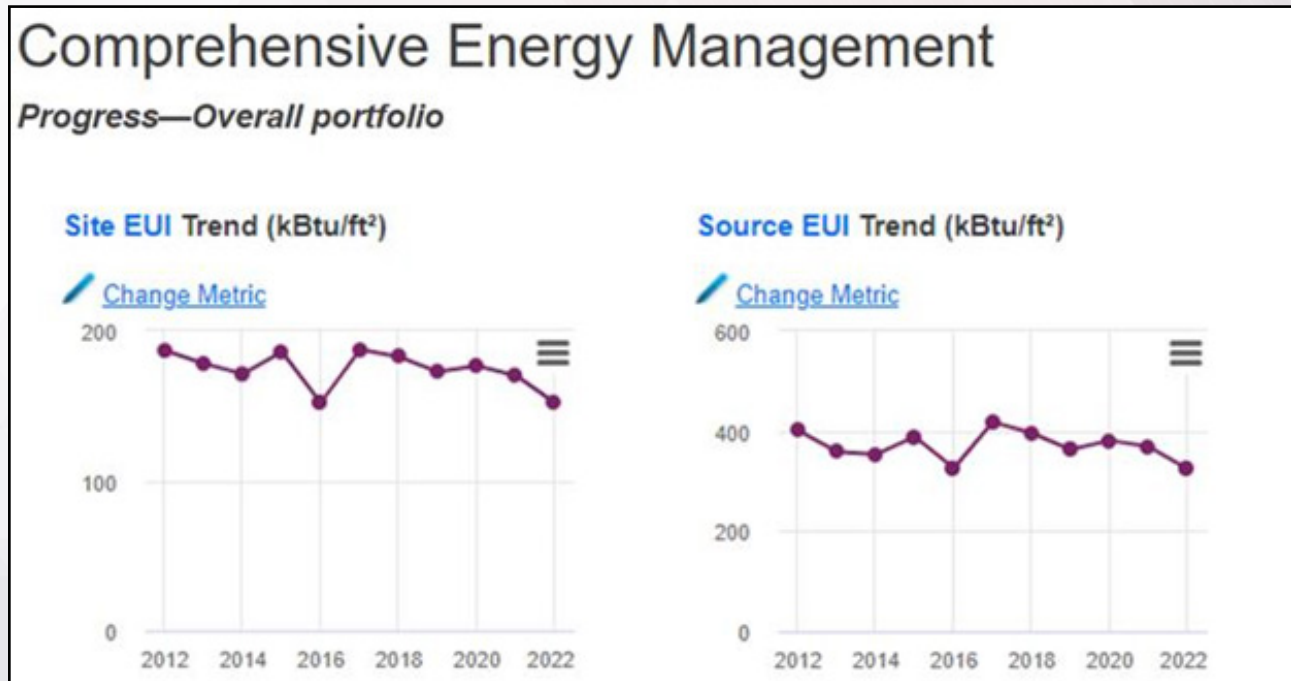
Building Type	# of accepted submittals	Columbus Average ENERGY STAR® Score	Columbus Average Site Weather Normalized EUI (kBtu/ sq. ft./ year)	*National Median Site EUI
College/University	95	N/A	147.9	84.3
Distribution Center	33	53.8	38.7	22.7
Fitness Center/ Health Club/Gym	15	N/A	111.3	50.8
Hotel	31	67.9	73.7	63
K-12 School	124	38.7	69.9	48.5
Laboratory	25	N/A	244	115.3
Manufacturing/ Industrial Plant	33	N/A	30,589.7	N/A
Medical Office	18	29.8	122.2	51.2
Multi-Family Housing	102	72.8	40.8	59.6
Non-Refrigerated Waterhouse	33	54.8	34	22.7
Office	111	57.6	75.5	52.9
Residence Hall/ Dormitory	28	57	85	57.9
Retail Store	32	67.9	58.3	103.5
Supermarket/ Grocery Store	14	69.9	173.4	196

** Multi-families with natural gas and large commercial properties with multiple gas tenants do not have an aggregation tool and have not reported yet

ORGANIZATION SPOTLIGHT – City of Columbus Municipal Efforts

Since December of 2021 Columbus has been leading the central Ohio community in energy efficiency by following the Comprehensive Energy Management Plan. The plan outlines in detail how the city will achieve its municipal energy efficiency goals. These ambitious goals, outlined in the Mayor's Climate Action Plan, include improving energy efficiency 25% by 2030 and 50% by 2050 over base year 2018. In the three years since the plan has been utilized the city has completed ASHRAE Level 2 energy audits and retro-commissioning studies at 1.5M square feet of office space and 1.3M square feet of water treatment and wastewater industrial space. Over \$4M of energy efficiency measures, including LED lighting and building automation system work, has been approved and is completed or under construction. This plan aggressively targets the largest, most energy-intensive sites and provides guidance to the respective department for how to prioritize and procure energy upgrades. To date, these upgrades have resulted in a 17% improvement in overall municipal building portfolio energy efficiency. The plan provides guidance for existing building stock retrofits as well as new construction. The City of Columbus has been utilizing energy benchmarking through ENERGY STAR® Portfolio Manager® since 2016. Currently, 214 municipal sites have energy data tracked on a monthly basis. Of these, the City of Columbus submits over 60 Benchmarking Reports every year to comply with the Ordinance.


Below are graphs that show the Energy Use Intensity (EUI) of the entire City of Columbus Municipal Building Portfolio over a ten year period. EUI is the amount of energy a given space uses over a period of time and is the most common metric to evaluate the efficiency of buildings. Site EUI refers to the energy used at the building site where Source EUI includes energy losses that occur through transmission.



Below are screenshots taken from Columbus' profile in the ENERGY STAR® Portfolio Manager® tool. Scores range from 1-100 with 100 representing the most efficient building. Most building types are eligible to receive an ENERGY STAR® Score however some buildings such as industrial centers and campuses are not eligible for this score. Total Greenhouse Gas (GHG) Emissions Intensity is the combined carbon dioxide, methane, and nitrous oxide gases released as a result of the building's energy consumption and is expressed in carbon dioxide equivalent (CO2e).

CEMP

Progress—DPS Morse Rd/Lennon Refuse Center



Metrics Summary

Metric	Dec 2018 (Energy Baseline)	Dec 2022 (Energy Current)	Change
ENERGY STAR Score (1-100)	Not Available	Not Available	N/A
Source EUI (kBtu/ft²)	213.0	144.6	-68.40 (-32.10%)
Site EUI (kBtu/ft²)	138.5	97.7	-40.80 (-29.50%)
Energy Cost (\$)	86,727.61	73,464.59	-13263.02 (-15.30%)
Total (Location-Based) GHG Emissions Intensity (kgCO2e/ft²)	11.3	7.1	-4.20 (-37.20%)

CEMP

Progress—CRPD Willis Athletic Complex



Metrics Summary

Metric	Dec 2018 (Energy Baseline)	Jun 2023 (Energy Current)	Change
ENERGY STAR Score (1-100)	Not Available	Not Available	N/A
Source EUI (kBtu/ft²)	114.7	79.8	-34.90 (-30.40%)
Site EUI (kBtu/ft²)	58.7	34.8	-23.90 (-40.70%)
Energy Cost (\$)	31,442.47	34,732.96	3290.49 (10.50%)
Total (Location-Based) GHG Emissions Intensity (kgCO2e/ft²)	6.2	3.8	-2.40 (-38.70%)

CEMP

Progress—DPU Jackson Pike WWTP



Metrics Summary

Metric	Dec 2018 (Energy Baseline)	Apr 2023 (Energy Current)	Change
ENERGY STAR Score (1-100)	68	75	7.00 (10.30%)
Source EUI (kBtu/ft ²)	1,706.4	1,135.8	-570.60 (-33.40%)
Site EUI (kBtu/ft ²)	612.4	426.4	-186.00 (-30.40%)
Energy Cost (\$)	3,494,450.09	3,295,970.24	-198,479.85 (-5.70%)
Total (Location-Based) GHG Emissions Intensity (kgCO ₂ e/ft ²)	95.1	53.6	-41.50 (-43.60%)

CEMP

Progress—Central Safety



Metrics Summary

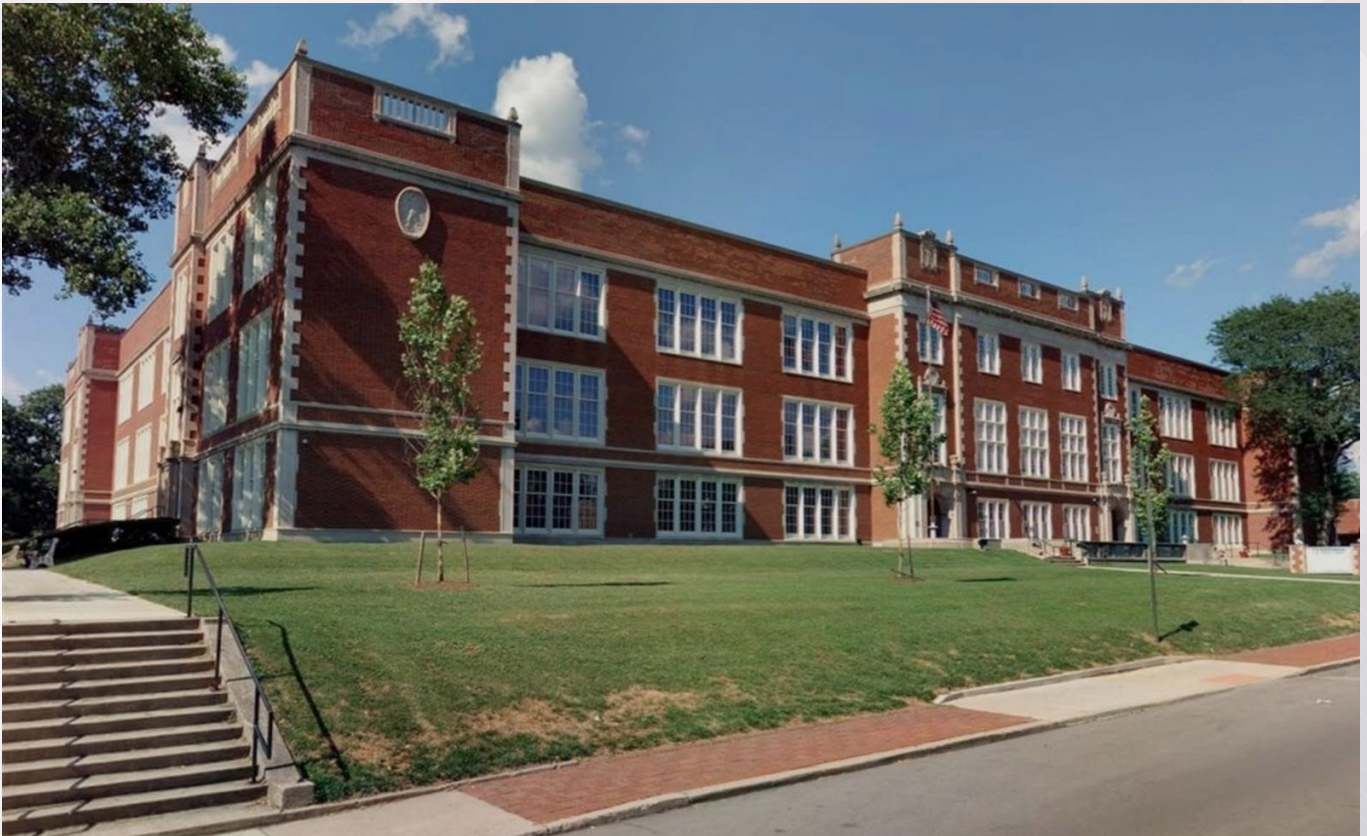
Metric	Dec 2018 (Energy Baseline)	May 2023 (Energy Current)	Change
ENERGY STAR Score (1-100)	58	70	12.00 (20.70%)
Source EUI (kBtu/ft ²)	187.8	156.0	-31.80 (-16.90%)
Site EUI (kBtu/ft ²)	92.5	72.5	-20.00 (-21.60%)
Energy Cost (\$)	284,579.16	253,263.21	-31,315.95 (-11.00%)
Total (Location-Based) GHG Emissions Intensity (kgCO ₂ e/ft ²)	10.3	7.4	-2.90 (-28.20%)

Organizational Spotlight – Columbus City Schools

Columbus City Schools (CCS) operates at 131 sites that have discreet utilities. Many of the district's sites include buildings that are very similar to each other. Energy Star® Benchmarking helps CCS determine outlier performance so that limited resources can be directed toward the best bang for the buck.

The voters' support has allowed CCS to recently complete a major HVAC refreshment project at dozens of the district's unrenovated pre-1980 buildings. This project brought air conditioning to tens of thousands of students and modernized heating as well. Energy Star® Benchmarking is especially helpful by showing the overall energy impact when fuel switching from gas to electric heat. This is done by looking at the source energy utilization index trend instead of just the site usage. The site also allows more fair comparisons by using weather normalization.

CCS is proud to announce that any way energy consumption is looked at the overall consumption is down even as services are improved!



Dominion Middle School, Columbus City Schools