



# City of Ann Arbor Energy and Water Benchmarking and Disclosure Ordinance

## Annual Report

Summarizing energy and water consumption statistics, trends observed in consumption over time, changes in the portfolio of Covered Properties over time, and assessing data quality and accessibility.

Revised January 8, 2025



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# Introduction

## Report Summary

This report summarizes the results for properties required to comply ("Covered Properties") with the City of Ann Arbor's Energy and Water Benchmarking and Disclosure Ordinance ("Benchmarking Ordinance"). The report includes summaries of energy and water consumption statistics, compliance rates, data accuracy, data accessibility, changes across the portfolio over time, and trends observed across Covered Properties who have submitted reports. Note that the term property can refer to a single building or multiple buildings.

Under the ordinance, both City properties and private properties are required to comply. Due to the differences in scale between City properties and private properties, both in the number of each and gross square footage, they are compared separately in this report.

While the report will detail compliance rates, property demographics, data accuracy, and data accessibility across all Covered Properties by compliance calendar year, the summary of energy and water consumption statistics will only discuss properties compliant with the Benchmarking Ordinance. While some compliant properties may have data accuracy issues, their data is generally more complete and more accurate than properties that are not compliant.

## Background

The City of Ann Arbor has adopted a city-wide goal of achieving a just transition to carbon neutrality by 2030. [A<sup>2</sup>ZERO](#) is the plan to achieve this goal, adopted by City Council in 2020. The A<sup>2</sup>ZERO Plan covers seven strategies to reduce emissions in Ann Arbor, including those from operating buildings, such as increasing the energy efficiency of buildings, converting gas-burning appliances to electric ("electrification"), and generating that electricity with renewable sources.

As of the City's 2023 Greenhouse Gas Inventory, emissions from buildings account for 65% of Ann Arbor's greenhouse gas emissions, with commercial and residential buildings accounting for 38% of the total. To target these emissions, the City of Ann Arbor runs programs focused on decarbonizing single-family homes and residential buildings with four or fewer units. For commercial properties and multifamily properties with more than four units, the Benchmarking Ordinance assists the City of Ann Arbor, building owners, and tenants with understanding and improving energy and water usage.

Benchmarking and disclosing energy and water use is included in the A<sup>2</sup>ZERO Plan, and is intended to promote the safety, health, welfare, and comfort of Ann Arbor residents and businesses by accomplishing the following:

- Allow business and property owners to make informed choices and motivate improvements in building energy and water performance. Building owners can access aggregated whole-building or property data, even when their building or property has tenants with their own utility accounts.
- Promote the efficient use of energy and water and reduce greenhouse gas emissions.
- Inform the design of new resources to support different building types to improve energy and water performance.

- Allow potential and current renters or lessees to compare the true cost of housing or commercial spaces, including utility costs.

In October 2021, Ann Arbor City Council unanimously passed the Energy and Water Benchmarking and Disclosure Ordinance, requiring certain commercial and multifamily properties in the city to track and report their energy and water use each year. The ordinance set initial reporting deadlines as indicated below. After these dates, enforcement action could begin for out-of-compliance properties.

<b>Property Size</b>	<b>Initial Reporting Deadline</b>
Covered City Properties ≥ 10,000 sq. ft.	December 31, 2021
Covered Non-City Properties ≥ 100,000 sq. ft.	June 1, 2022
Covered Non-City Properties ≥ 50,000 sq. ft.	June 1, 2023
Covered Non-City Properties ≥ 20,000 sq. ft.	June 1, 2024

To assist property owners or their representatives in benchmarking, the City of Ann Arbor Office of Sustainability and Innovations (OSI) dedicated 0.5 FTE to managing the implementation of the Benchmarking Ordinance and providing direct support to Covered Properties completing their reports. This staff member conducts outreach to Covered Properties, provides direct support with the ENERGY STAR Portfolio Manager (ESPM) benchmarking tool, assists in accessing data from utilities serving Ann Arbor, and reviews benchmarking reports to identify and communicate issues that must be addressed for compliance.

In building these processes for the first time, there were hurdles to Covered Properties successfully becoming compliant. These challenges included finding the right property representative to work with, property staff turnover, utility data access, utility data quality, and limited capacity in OSI to move the ordinance closer to a maintenance phase. Enforcement was intended to start after June 1, 2024, after all Covered Properties' initial reporting deadlines had passed. However, due to the challenges described above and to give Covered Properties a fair opportunity to be compliant, the date after which enforcement could take place was postponed to the schedule below.

<b>Property Size</b>	<b>New Enforcement Deadline</b>
Covered Non-City Properties ≥ 100,000 sq. ft.	September 1, 2024
Covered Non-City Properties ≥ 50,000 sq. ft.	June 1, 2025
Covered Non-City Properties ≥ 20,000 sq. ft.	June 1, 2025

Postponing enforcement deadlines gave OSI staff the opportunity to significantly increase compliance rates, address past gaps in outreach, streamline utility data access processes, and fix issues with utility data access and quality. The result was a nearly 10-fold increase in compliance rates from May 2024 to December 2024, with compliance continuing to increase. While 2024 saw a significant increase in compliance and reduction of data accessibility and accuracy issues, this required about 0.75 FTE capacity. OSI plans to carry the success of 2024 into 2025 to increase compliance, continue to reduce barriers to data access, and to build out the next steps for Covered Properties that have submitted benchmarking reports and want to explore improvements to their buildings.

This report details consumption statistics for calendar years 2021, 2022 and 2023. However, any trends in data between 2021 and 2023 may not be representative of any city-wide changes to building performance as Covered Properties were phased in across these years by gross floor area. Due to the phase-in, property uses and sizes changed significantly between 2021 and 2023. Trends from 2023-onward are likely more representative of any changes to the broader Covered Property portfolio.

## Key Findings

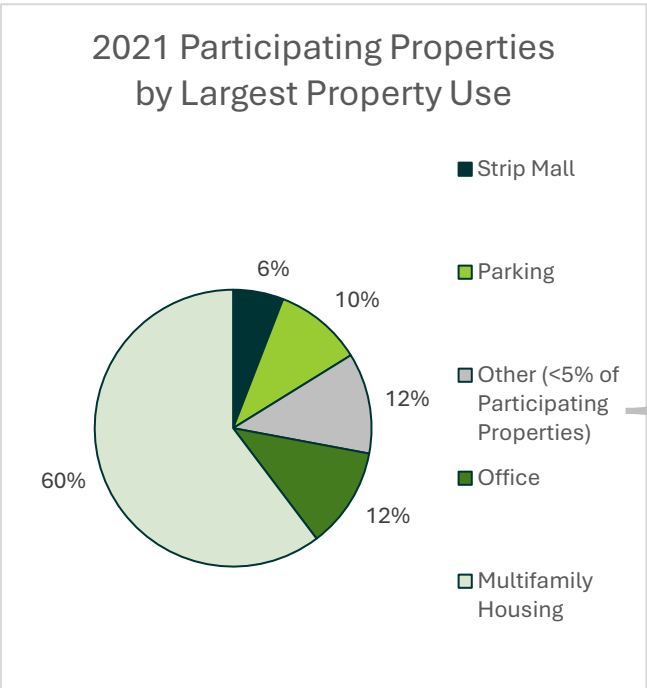
1. Multifamily properties account for the majority of the gross floor area of properties complying with the benchmarking ordinance. As of the 2023 calendar year, multifamily properties also account for a plurality of the total number of properties complying with the benchmarking ordinance. Office properties are the second most common property type, accounting for nearly the same number of properties as multifamily properties. However, the gross floor area of office properties is about 20% of the total gross floor area of multifamily properties.
2. Property uses with the highest site and source energy use intensity (EUI) are ambulatory surgical centers, laboratories, and restaurants. Properties with the lowest site EUI are parking garages, non-refrigerated warehouses, and non-strip malls. Properties with the lowest source EUI are parking garages, non-refrigerated warehouses, and worship facilities. Larger properties tend to have lower EUIs, but this could be attributed to property types, not inherent to larger properties.
3. Properties with the highest greenhouse gas intensities are laboratories, restaurants, and ambulatory surgical centers. Properties with the lowest greenhouse gas intensities are non-refrigerated warehouses, worship facilities, and parking garages. Larger properties tend to have lower greenhouse gas intensities, but this could be attributed to property types, not inherent to larger properties. While multifamily housing and office properties have lower greenhouse gas intensities, it is important to note that due to their overall gross floor areas representing about 75% the gross floor area of properties compliant in the 2023 calendar year cycle, they produce a significantly higher number of total greenhouse gas emissions.
4. Properties with the highest water use intensity are fitness centers/health clubs/gyms, hotels, and residence halls/dormitories. Properties with the lowest water use intensity are non-refrigerated warehouses, parking garages and “other – technology/science” properties. Larger properties tend to have higher water use intensity, but this could also be attributed to property type, not inherent to property size.
5. Parking garages, laboratories, and hotels have the highest percentage of their energy use coming from electricity. K-12 schools, worship facilities and residence halls/dorms have the lowest percentage of their energy use coming from electricity. Further investigation is needed to determine the cause of these trends.
6. Data is generally accurate with variation across utilities. Constellation Energy has the most accurate data, followed by the City of Ann Arbor water data and then DTE Energy data. However, inaccuracies and missing data in DTE data tend to be concentrated in specific properties instead of a portfolio-wide issue. DTE data is still generally accurate, and DTE has successfully filled in initially incomplete data in many properties.

7. Data accessibility varies widely. DTE Energy and City of Ann Arbor water data can be automated, but enrolling in DTE's automated data portal can be difficult. Constellation Energy has no data automation, but the data required to benchmark is easy and quick to obtain.
8. Difficulty increasing compliance is a common issue for jurisdictions implementing benchmarking ordinances. Robust and repeated outreach through multiple channels to multiple property representatives helps with participation and compliance. Data automation also helps property representatives complete their benchmarking report and increase the sustainability of benchmarking in an organization.
9. Moving forward, OSI looks to increase compliance, increase data access and accuracy, benchmark Covered City Properties beyond those required by the Benchmarking Ordinance, and identify granular trends among benchmarking properties to guide the creation of future commercial and multifamily decarbonization programs.

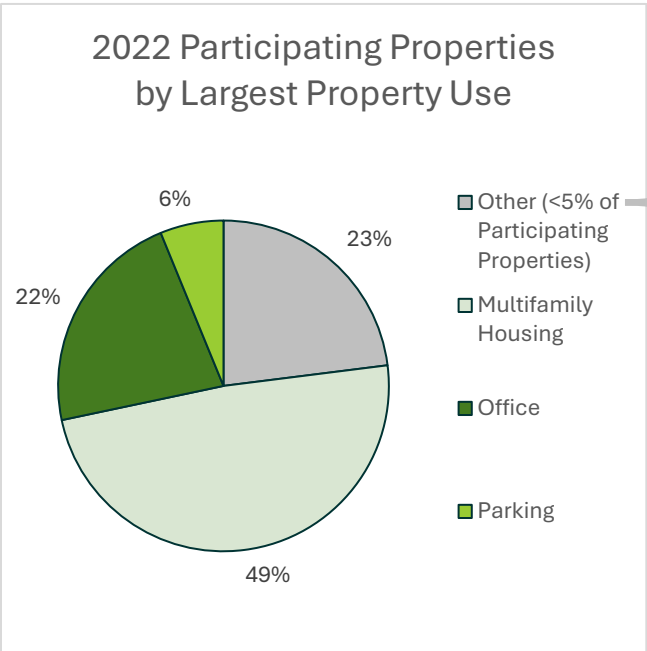
# Consumption Statistics

## Participating Properties by Use

Covered Properties using Energy Star Portfolio Manager (ESPM) self-report the gross floor area utilized for different property uses on their property. ESPM rarely recommends listing multiple property uses, so most Covered Properties only report one property use, with parking being a common second largest property use. The data below shows which properties are participating in the ordinance, meaning they have started benchmarking in ESPM, sectioned by the properties' largest property use.



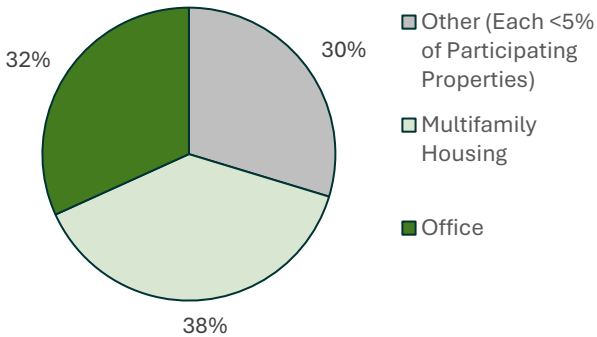
Other (Each <5% of Participating Properties)	
Largest Property Use	Percent of Total Participating Properties
K-12 School	1%
Enclosed Mall	2%
Other - Mall	2%
Senior Living Community	3%
Retail Store	4%



Other (Each <5% of Participating Properties)	
Largest Property Use	Percent of Total Participating Properties
Manufacturing/Industrial Plant	1%
Ambulatory Surgical Center	1%
Enclosed Mall	1%
Other	1%
Other - Technology/Science	1%
Other - Mall	1%
Mixed Use Property	2%
K-12 School	2%
Senior Living Community	2%
Strip Mall	3%
Retail Store	4%
Hotel	4%



### 2023 Participating Properties by Largest Property Use

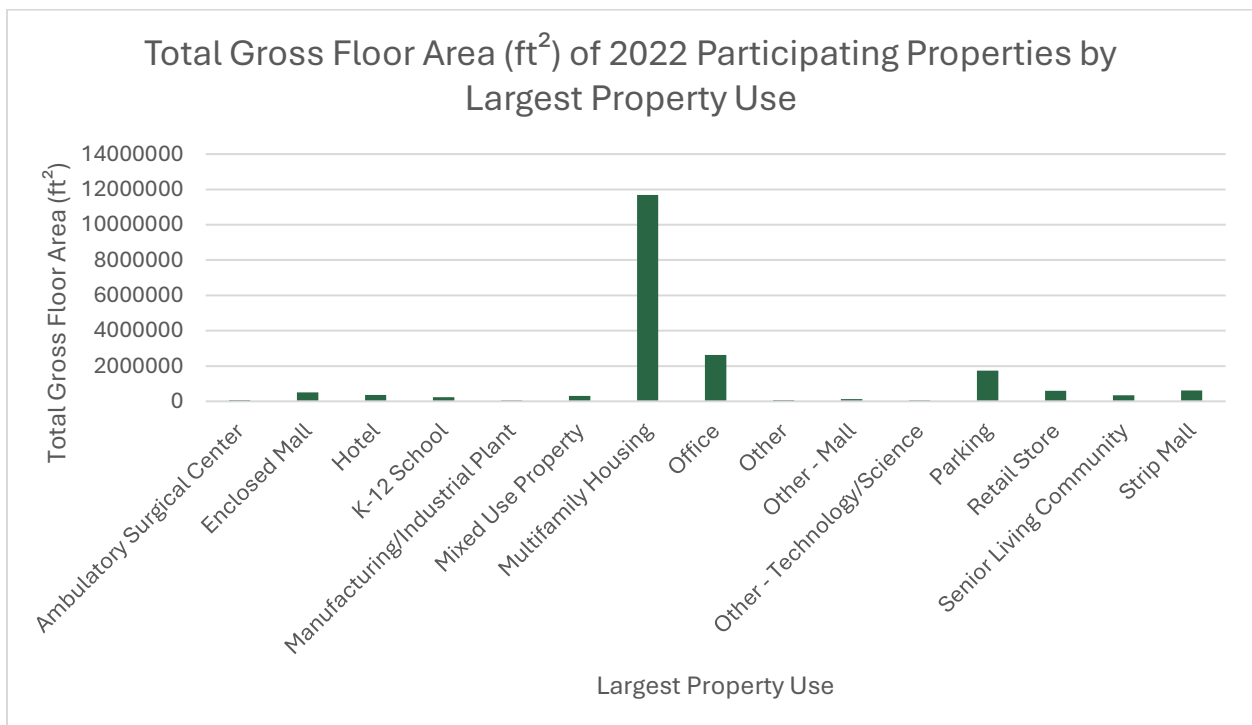
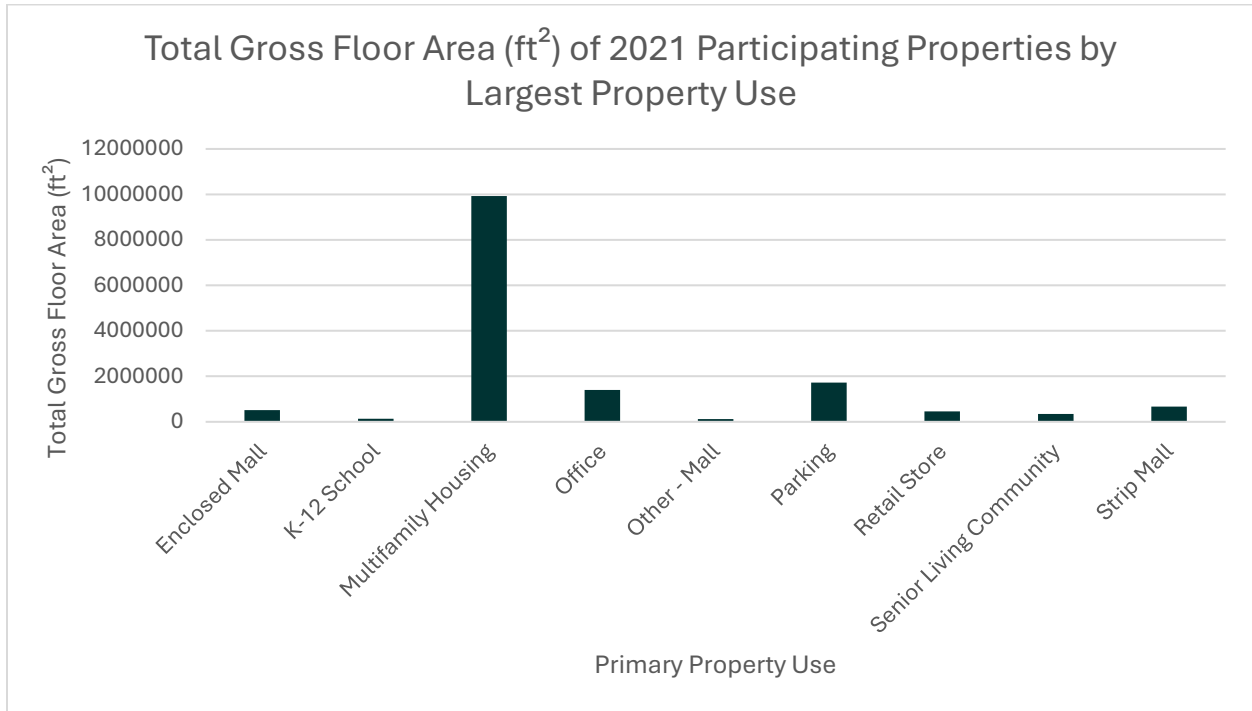


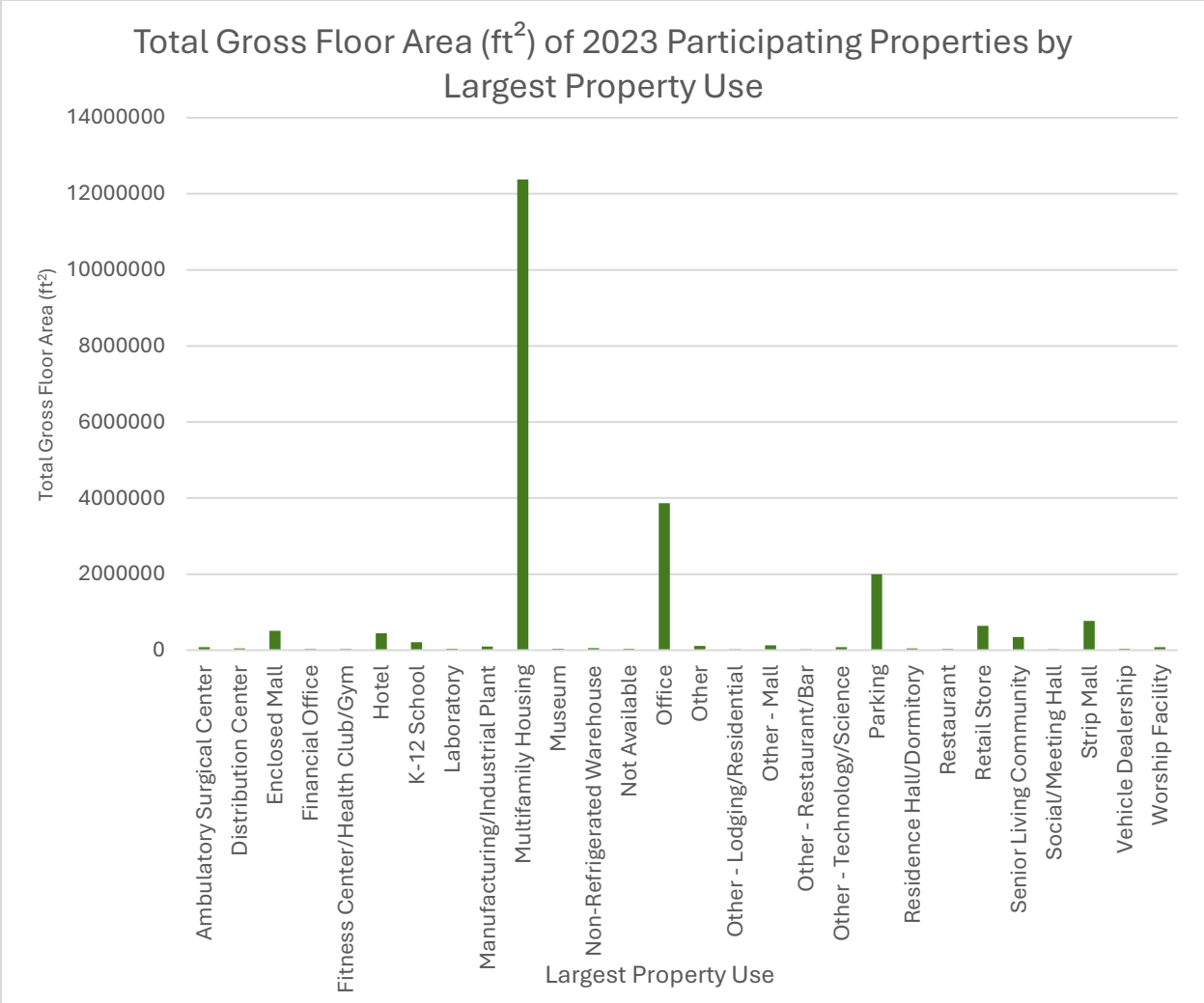
#### Other (Each <5% of Participating Properties)

Largest Property Use	Percent of Total Participating Properties
Not Available	1%
Vehicle Dealership	1%
Ambulatory Surgical Center	1%
Financial Office	1%
Other - Lodging/Residential	1%
Laboratory	1%
Other - Mall	1%
Non-Refrigerated Warehouse	1%
Other - Restaurant/Bar	1%
Fitness Center/Health Club/Gym	1%
Residence Hall/Dormitory	1%
Enclosed Mall	1%
Restaurant	1%
Museum	1%
Social/Meeting Hall	1%
Other	1%
Senior Living Community	1%
Other - Technology/Science	1%
Distribution Center	1%
Manufacturing/Industrial Plant	1%
Worship Facility	2%
K-12 School	2%
Strip Mall	3%
Retail Store	3%
Hotel	4%
Parking	4%

## Property Use by Gross Floor Area (GFA)

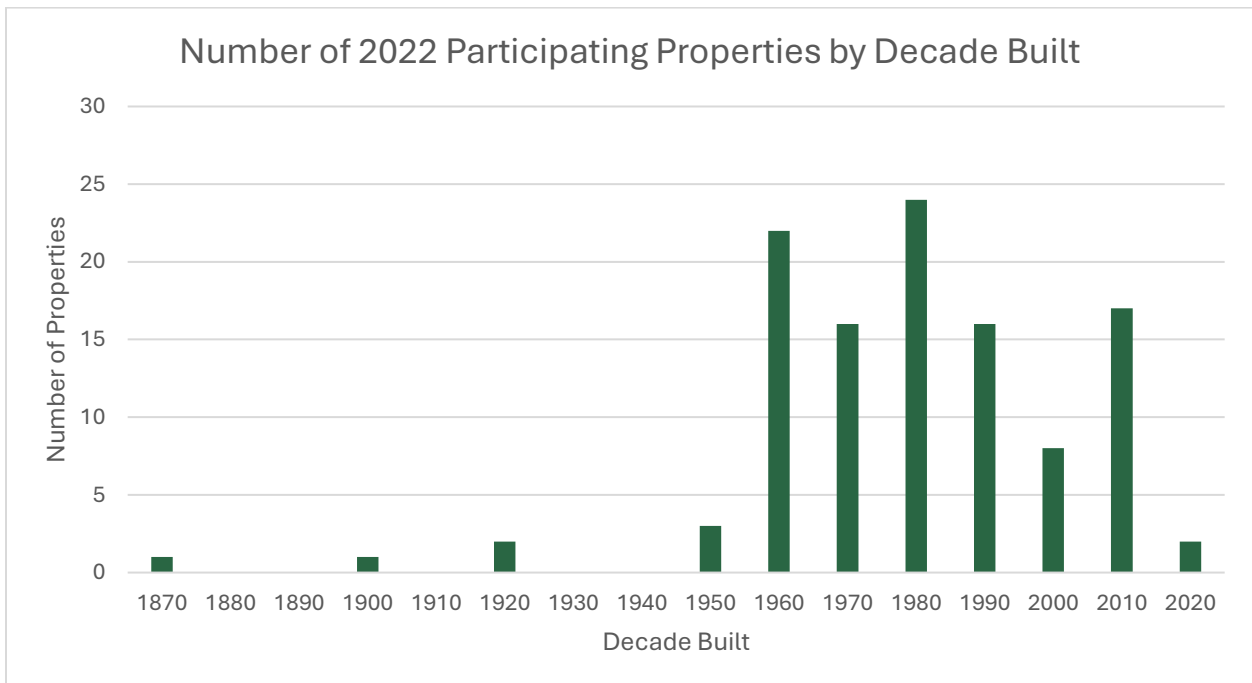
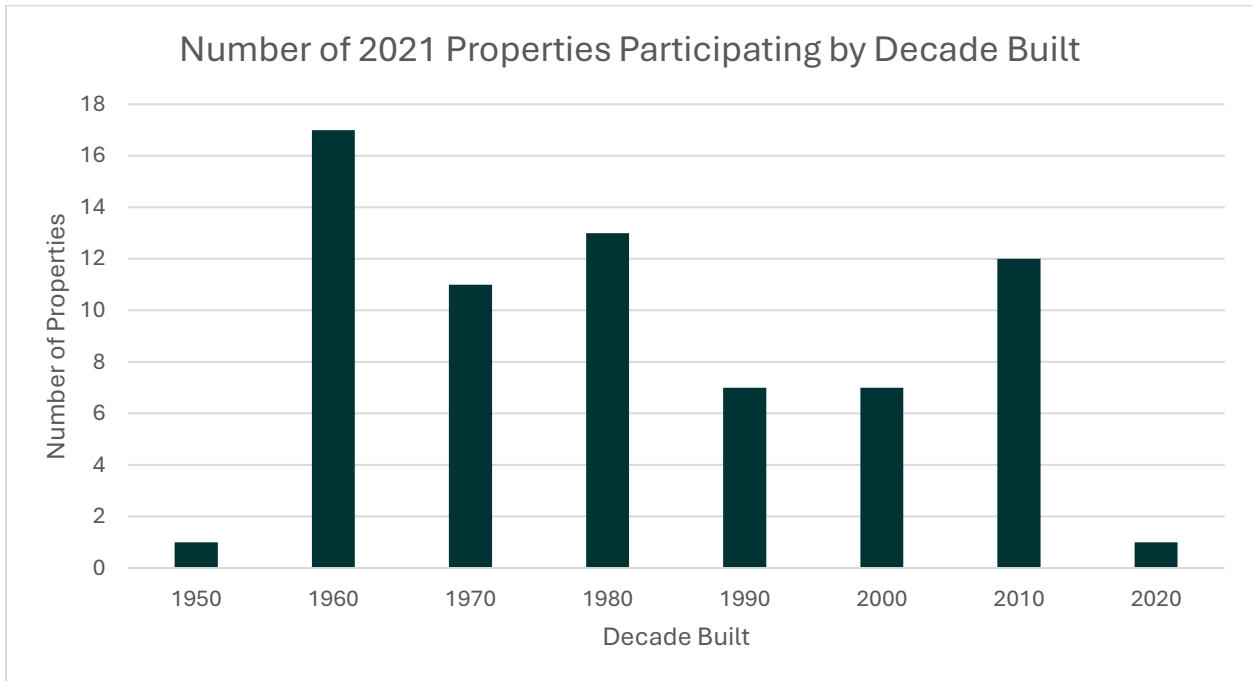
ESPM identifies a property's largest property use and the gross floor area it represents. The data below shows the total gross floor area of properties based on their largest property use. While some properties' total gross floor area may include multiple property uses (e.g., a store on the first floor of an apartment building), due to ESPM best practice recommendations, the percentage of a property's total gross floor area accounted for by an additional property use is usually small.

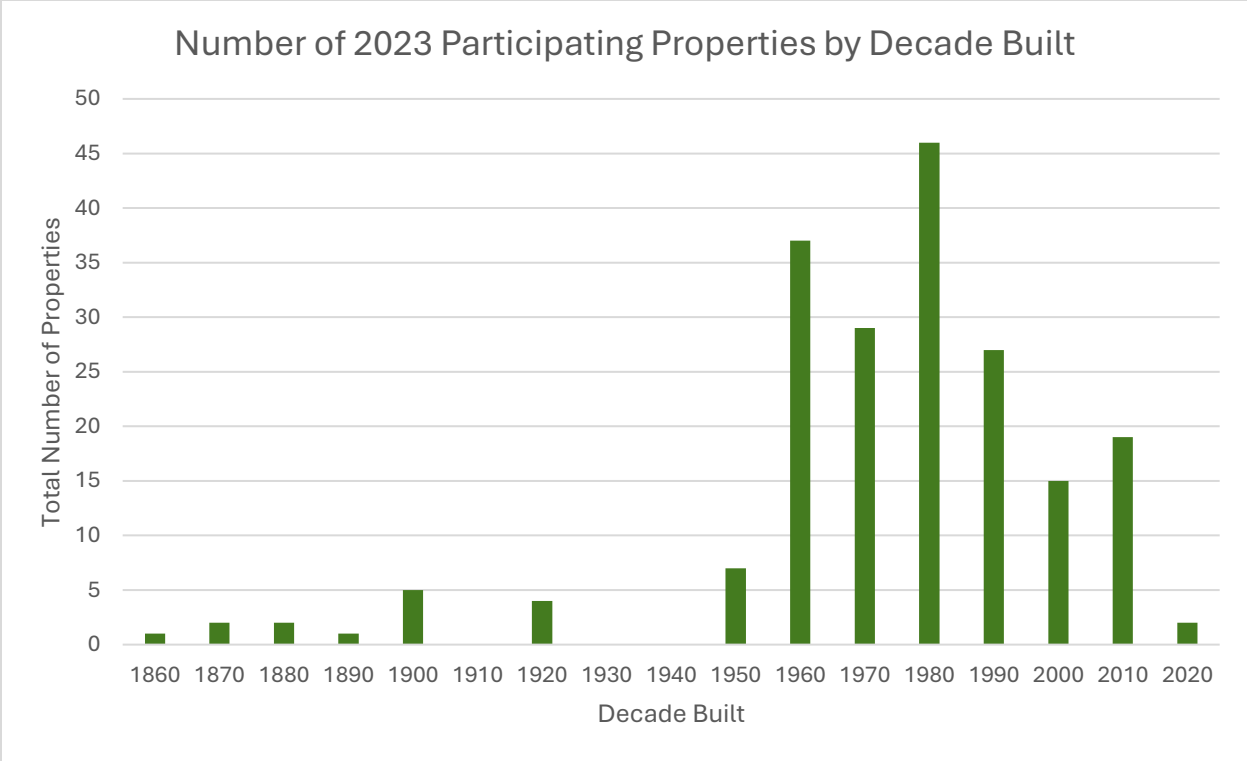




## Years Built

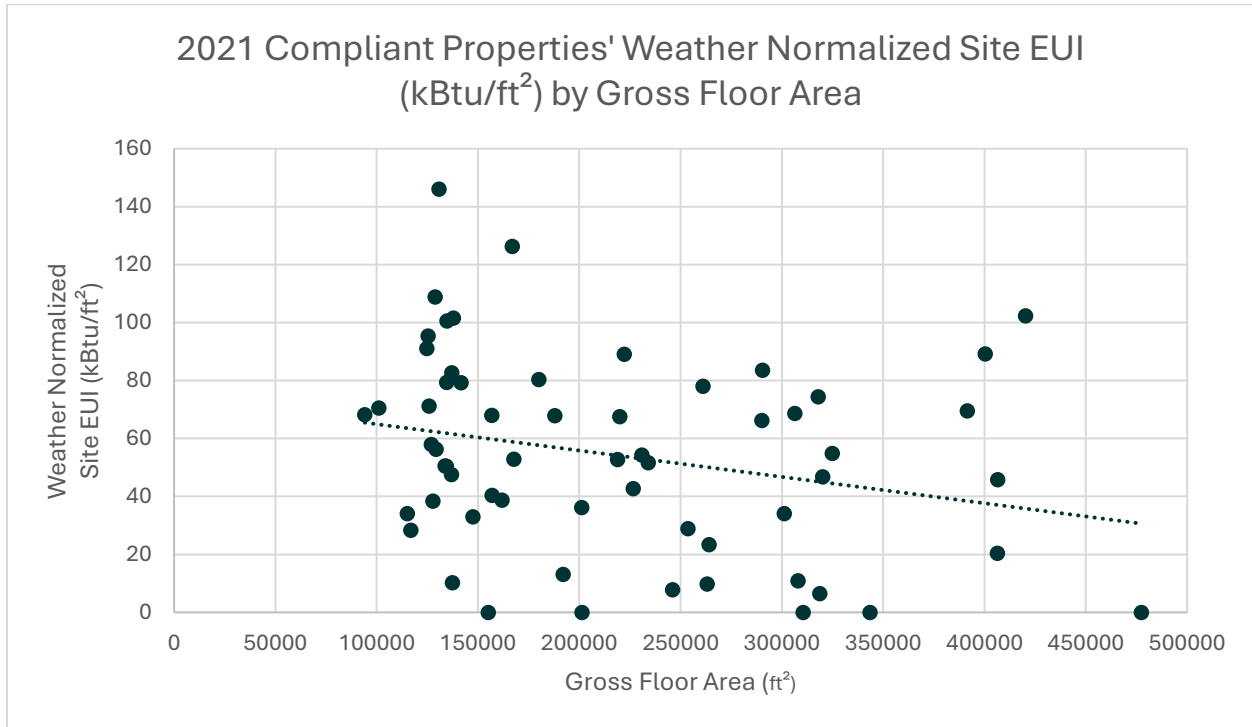
Properties report the year they were built when setting up their profile in ESPM. For ease of interpretation, the data is grouped below by the decade built, rather than the individual year.



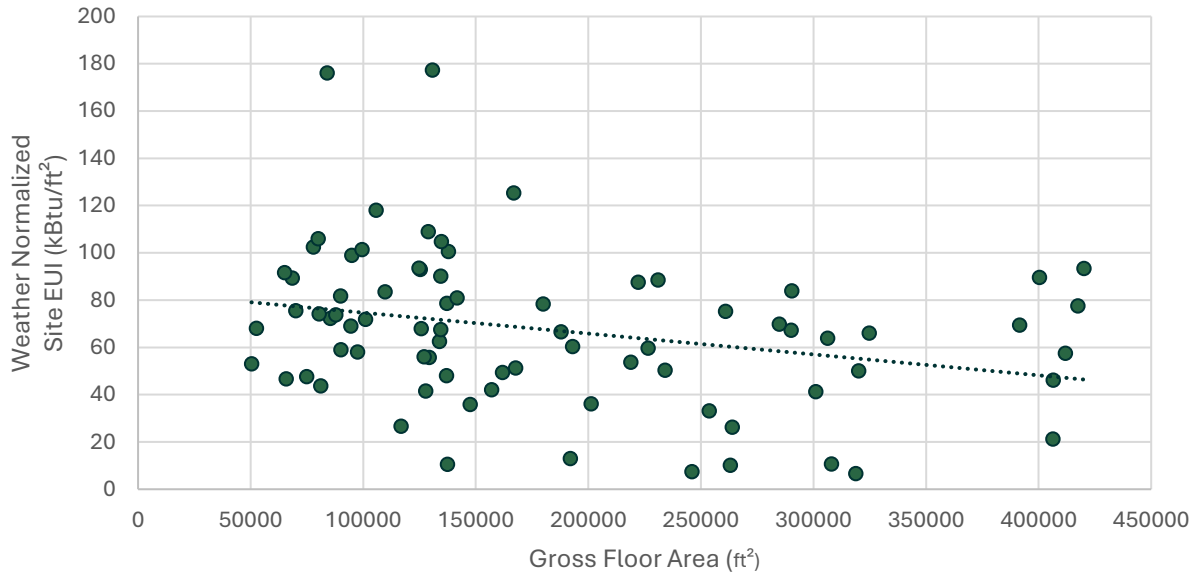


## Weather Normalized Site Energy Use Intensity (EUI)

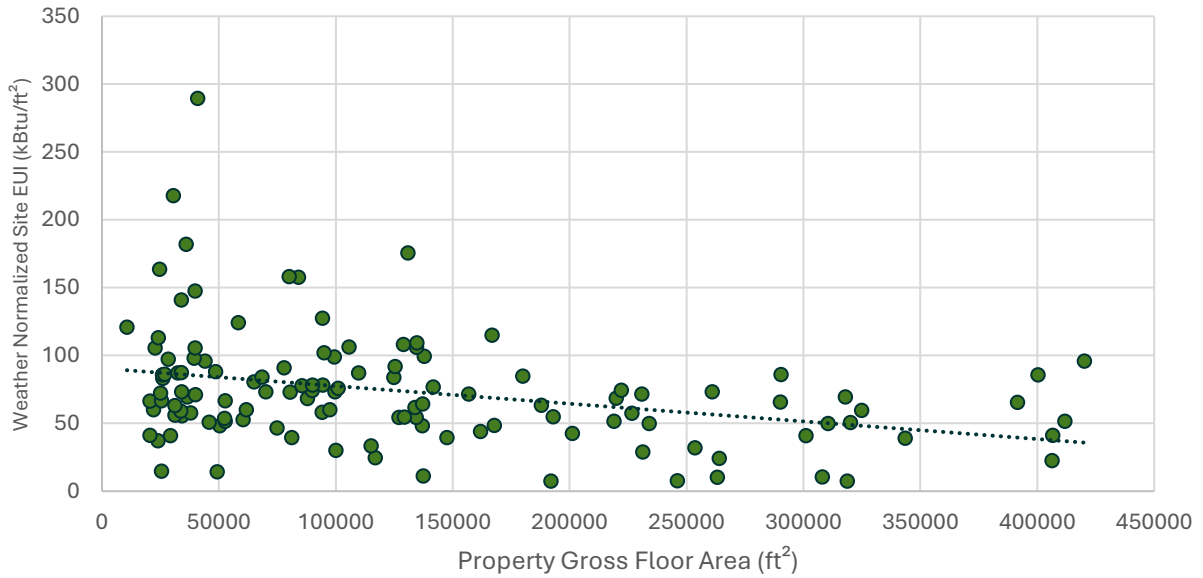
Energy use intensity (EUI) is the quantity of energy a property uses per unit of area in the property. The total site energy usage is divided by the property's gross floor area. Weather normalized site energy is the energy use a property would have consumed during 30-year average weather conditions. For example, if 2012 was a very hot year, then a property's weather normalized site EUI may be lower than its site EUI because the property may have used less energy if it had not been as hot. Using weather normalized values helps better understand changes in energy across years regardless of differences in weather.



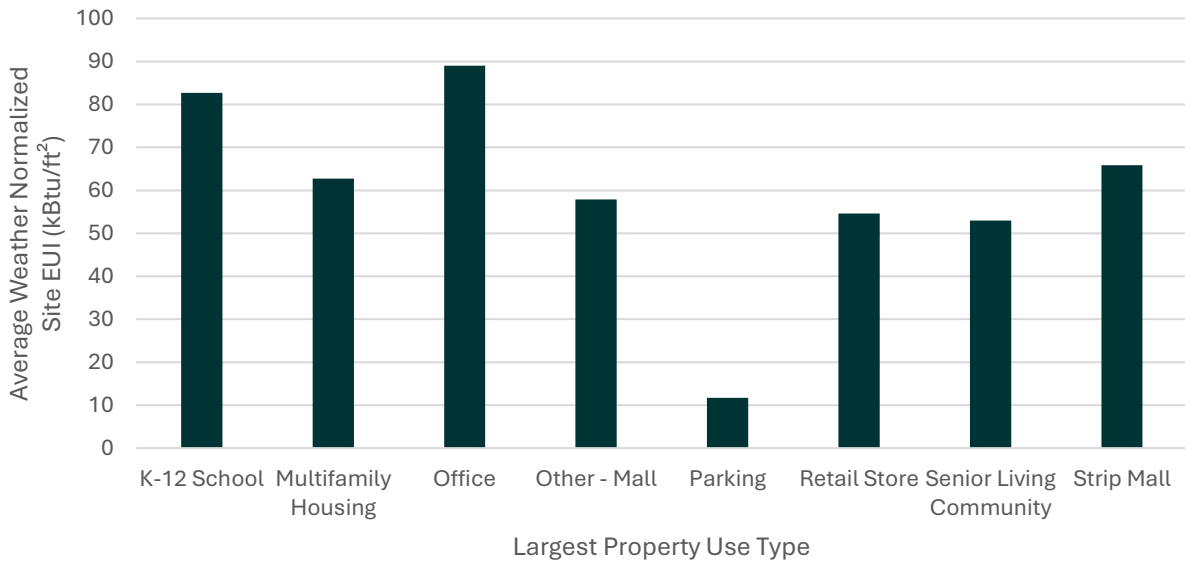
2022 Compliant Properties' Weather Normalized Site EUI (kBtu/ft<sup>2</sup>) by Gross Floor Area



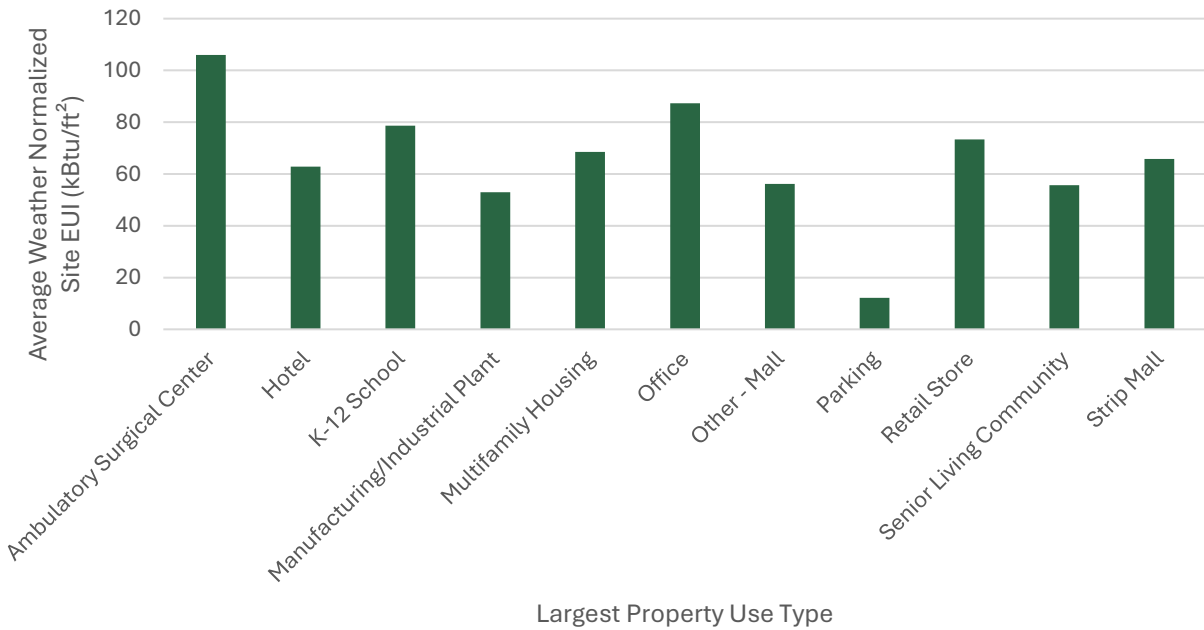
2023 Compliant Properties' Weather Normalized Site EUI (kBtu/ft<sup>2</sup>) by Gross Floor Area



2021 Compliant Properties' Average Weather Normalized Site EUI (kBtu/ft<sup>2</sup>) by Primary Property Use Type

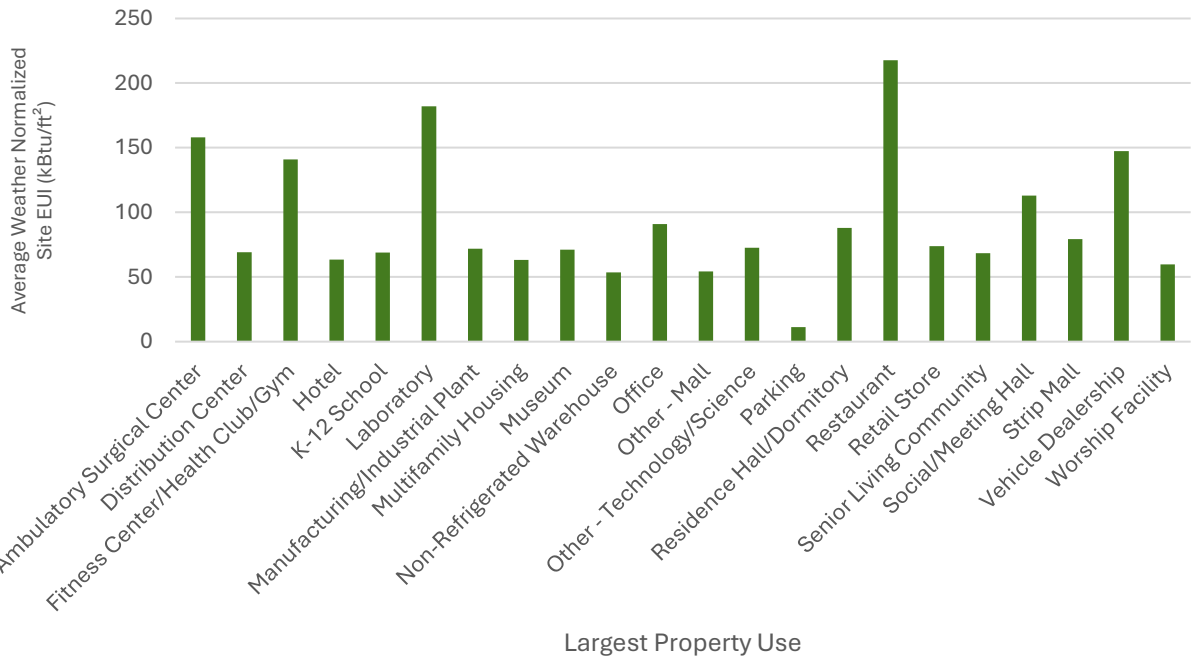


2022 Compliant Properties' Average Weather Normalized Site EUI (kBtu/ft<sup>2</sup>) by Primary Property Use Type



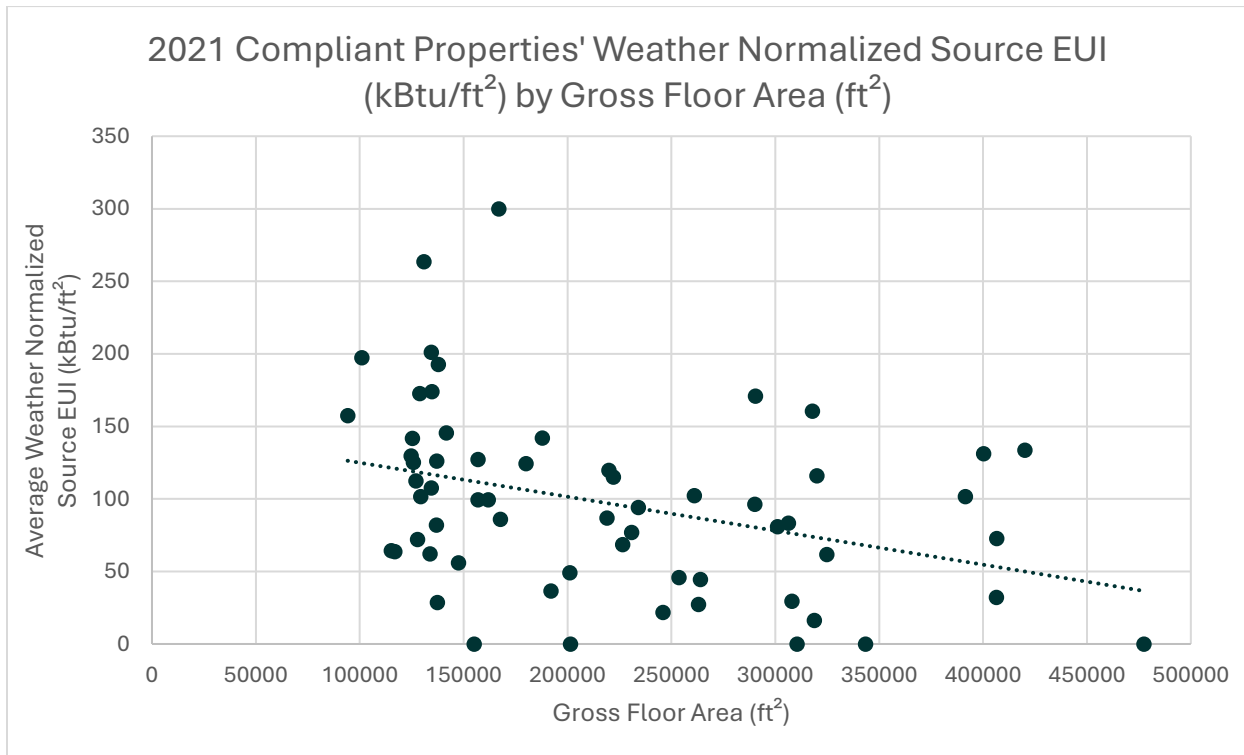


## 2023 Compliant Properties' Average Weather Normalized Site EUI (kBtu/ft<sup>2</sup>) by Primary Property Use Type

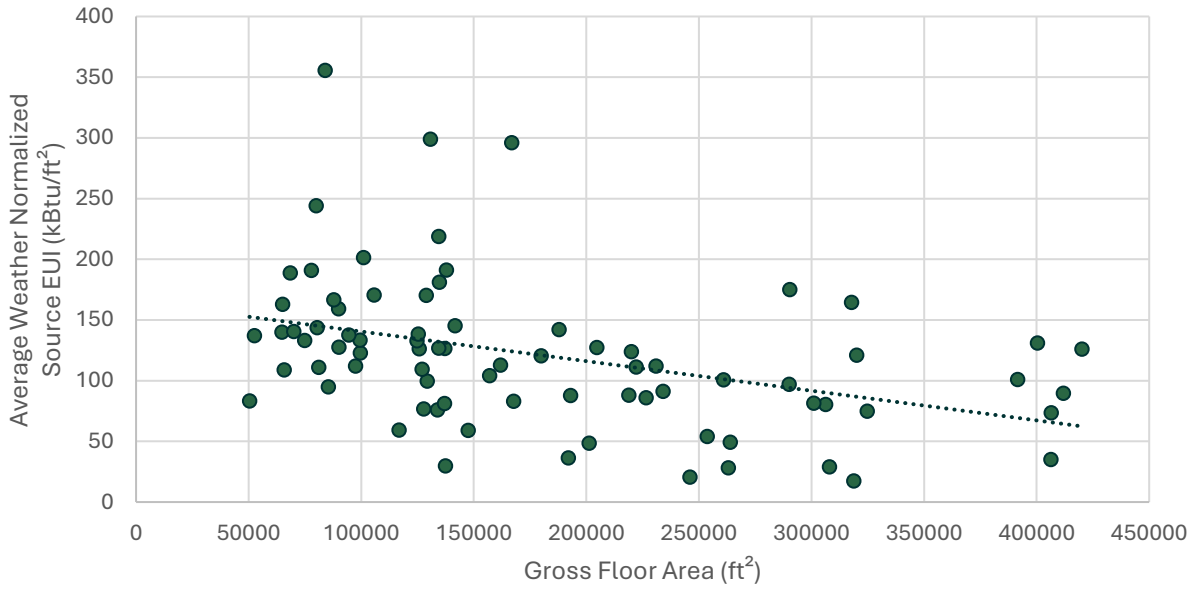


## Weather Normalized Source Energy Use Intensity (EUI) by property type

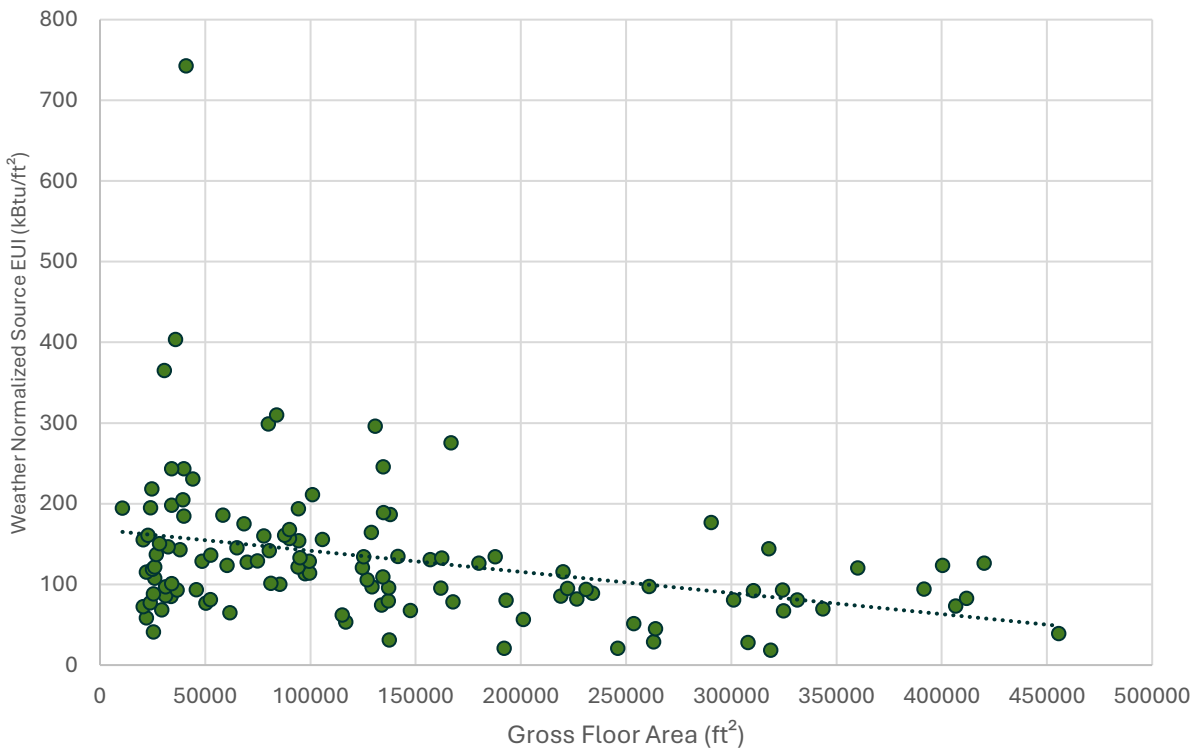
Source Energy Use is the total amount of raw fuel that is required to operate a property. Source EUI is a property's total source energy use divided by the property's gross floor area. In addition to site energy, source energy includes losses that take place during generation, transmission, and distribution of the energy. For this reason, ESPM considers source EUI to be the best way to quantify the energy performance of commercial properties.



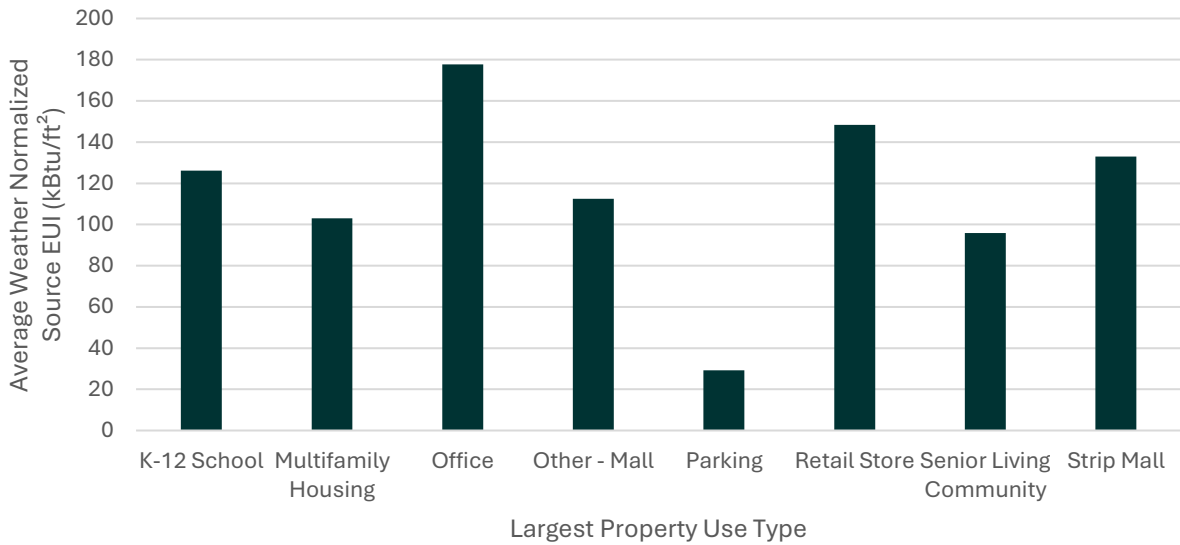
2022 Compliant Properties' Weather Normalized Source EUI (kBtu/ft<sup>2</sup>) by Gross Floor Area (ft<sup>2</sup>)



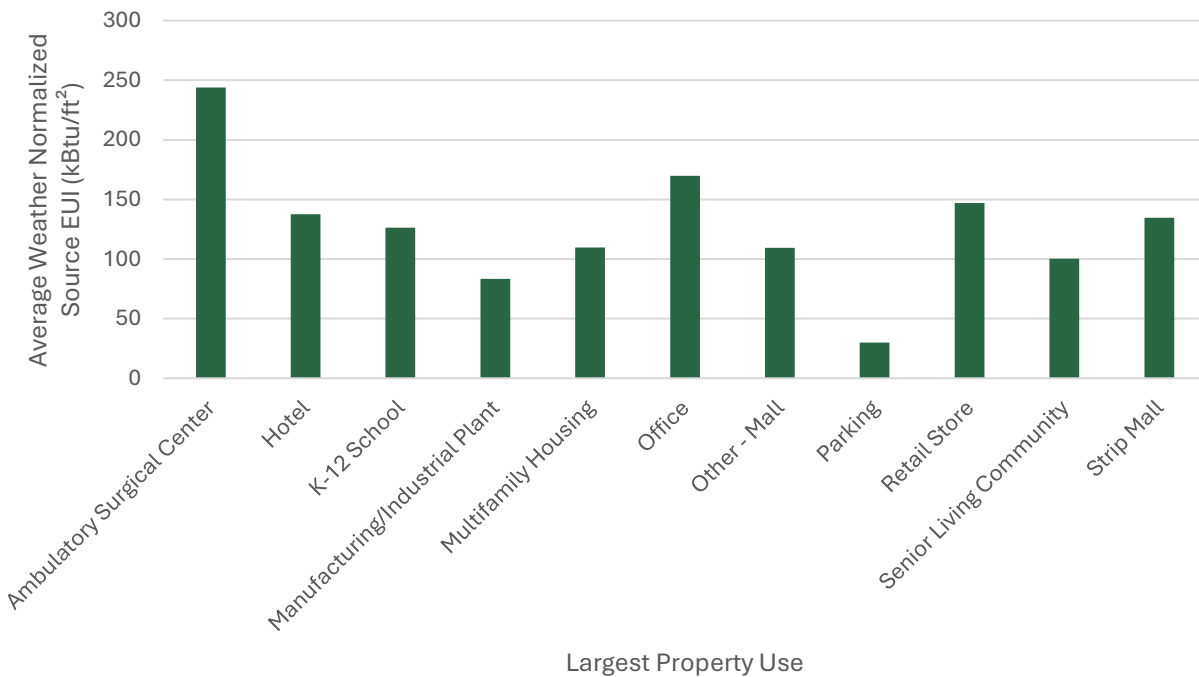
2023 Compliant Properties' Weather Normalized Source EUI (kBtu/ft<sup>2</sup>) by Gross Floor Area (ft<sup>2</sup>)



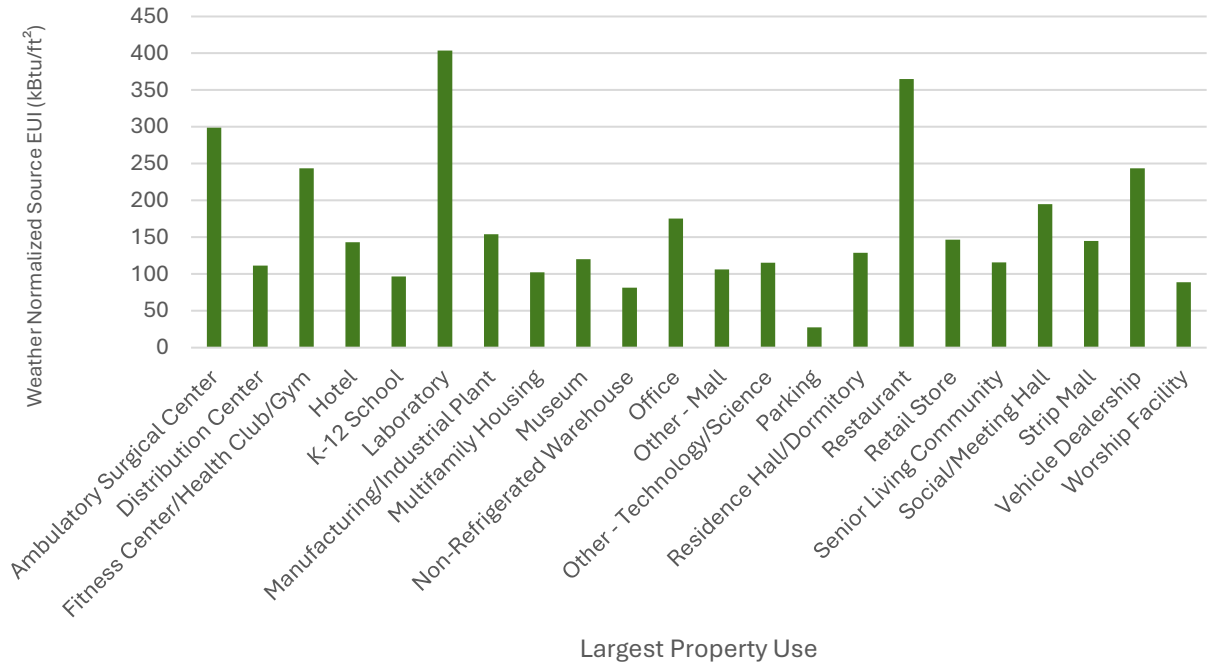
2021 Compliant Properties' Average Weather Normalized Source EUI (kBtu/ft<sup>2</sup>) by Largest Property Use



2022 Compliant Properties' Average Weather Normalized Source EUI (kBtu/ft<sup>2</sup>) by Largest Property Use

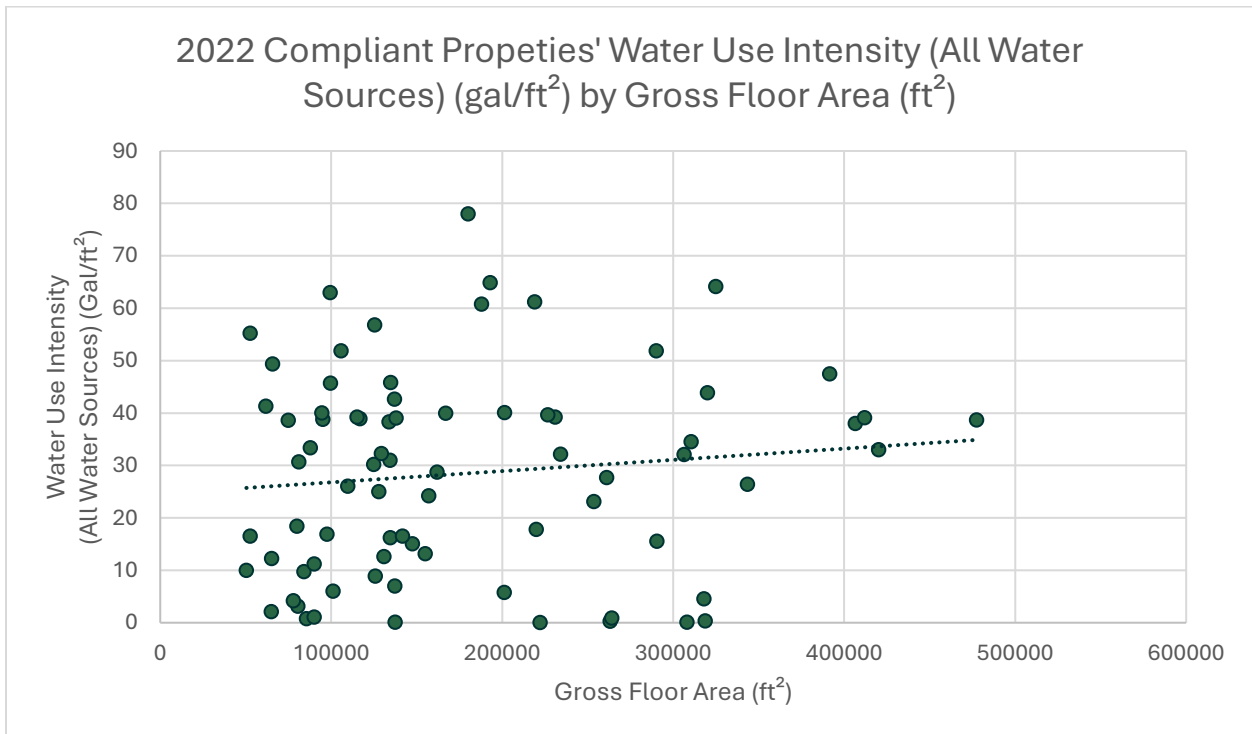
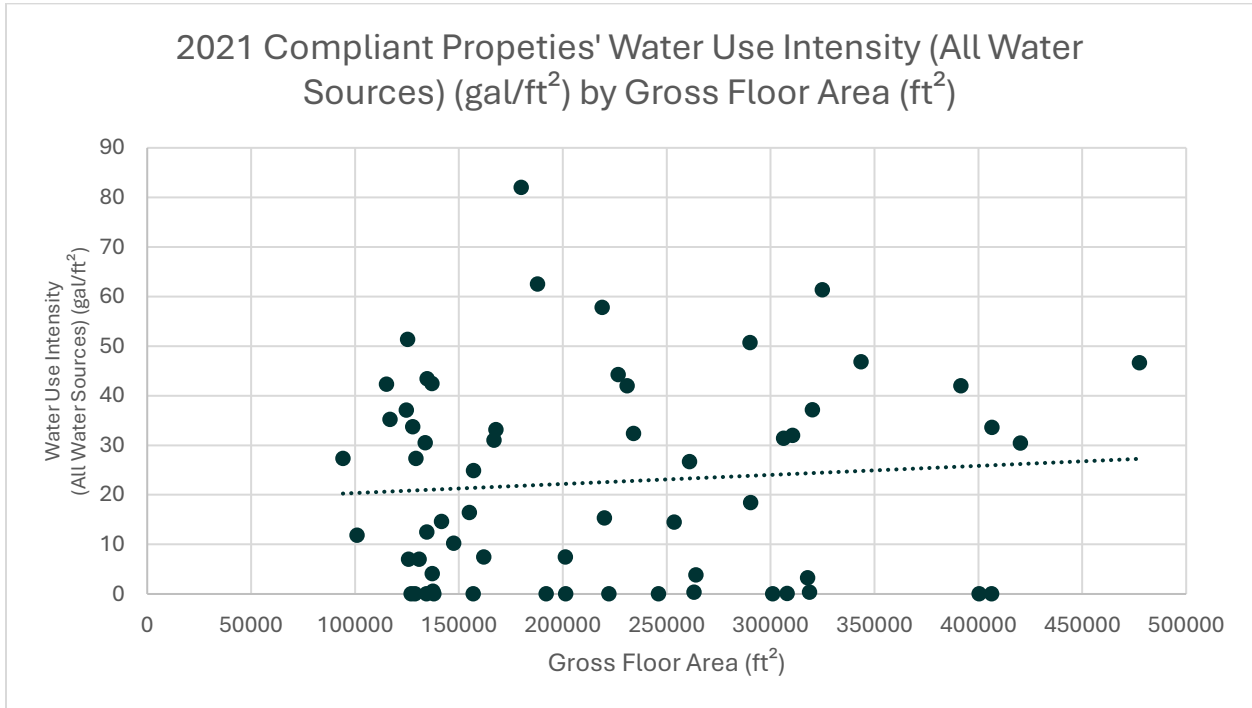


## 2023 Compliant Properties' Average Weather Normalized Source EUI (kBtu/ft<sup>2</sup>) by Largest Property Use

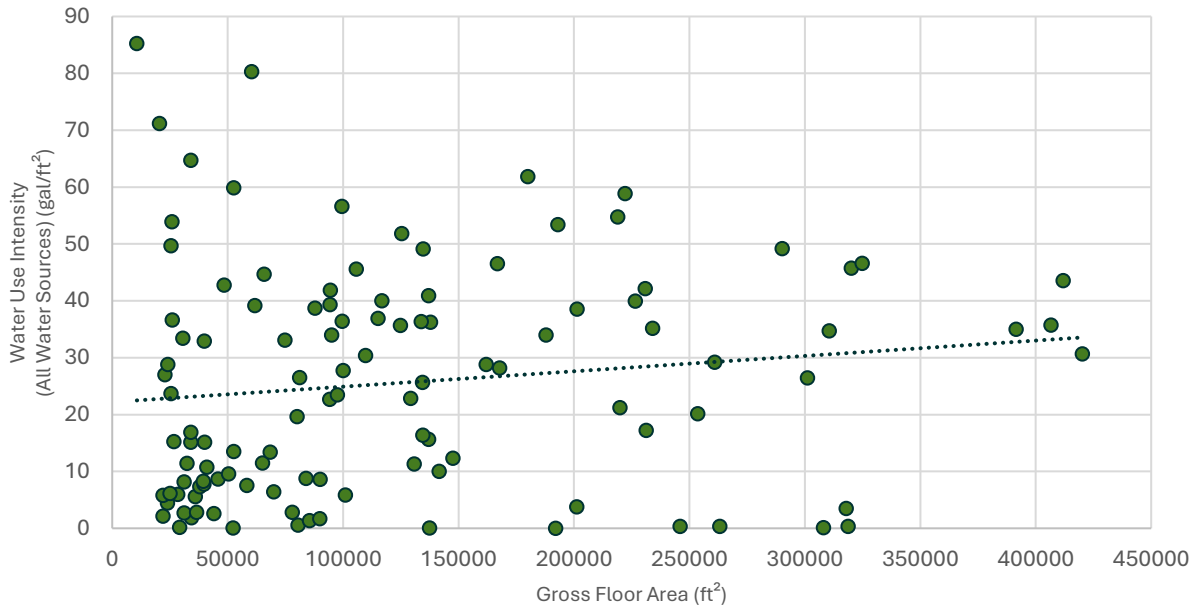


## Water Use Intensity (WUI)

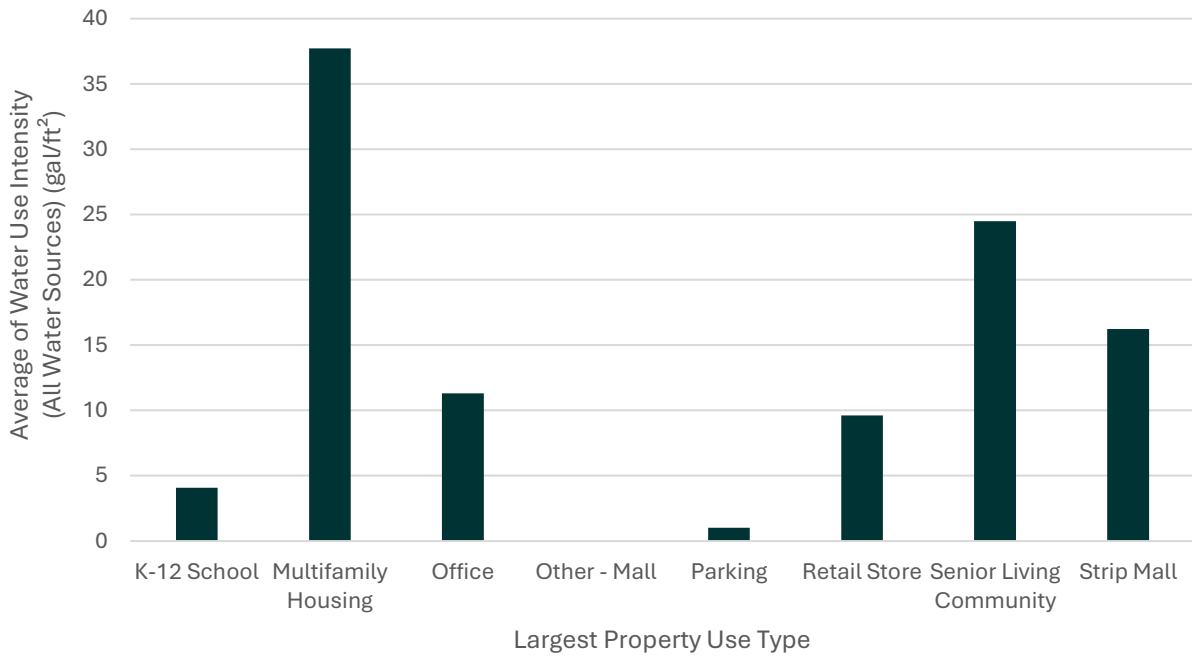
Water use intensity is the total water usage at a property divided by the property's gross floor area.



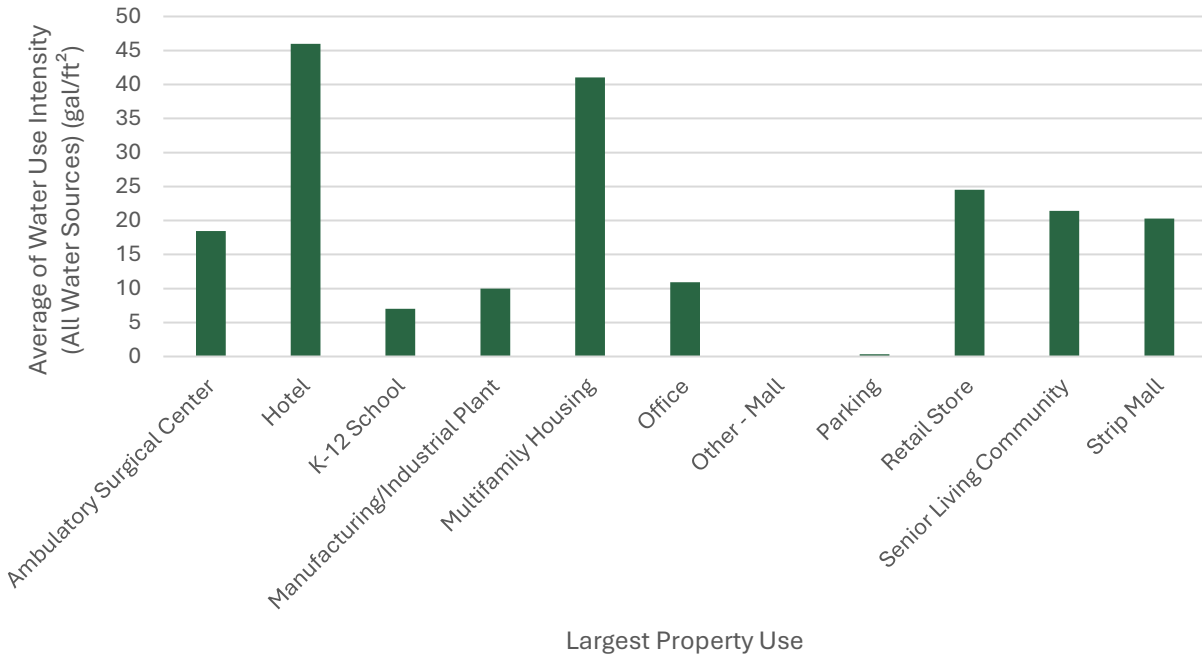
2023 Compliant Properties' Water Use Intensity (All Water Sources) (gal/ft<sup>2</sup>) by Gross Floor Area (ft<sup>2</sup>)



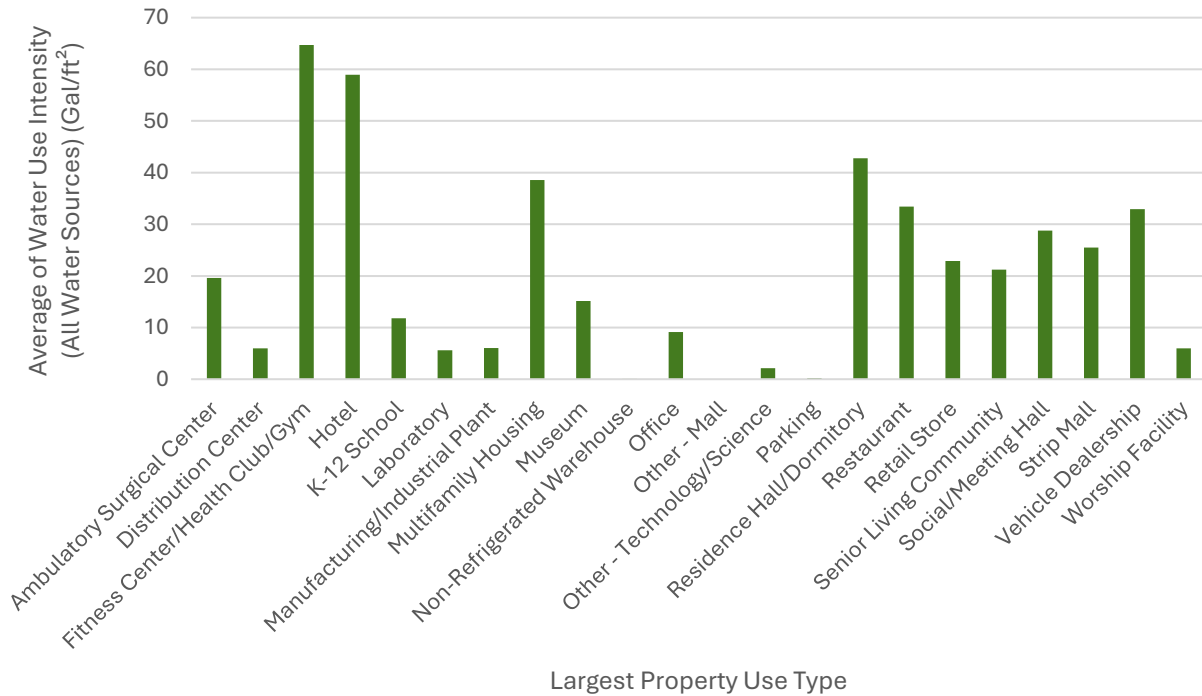
2021 Compliant Properties' Average of Water Use Intensity (All Water Sources) (gal/ft<sup>2</sup>) by Largest Property Use Type



2022 Compliant Properties' Average of Water Use Intensity (All Water Sources) (gal/ft<sup>2</sup>) by Largest Property Use Type



2023 Compliant Properties' Average of Water Use Intensity (All Water Sources) (gal/ft<sup>2</sup>) by Largest Property Use Type

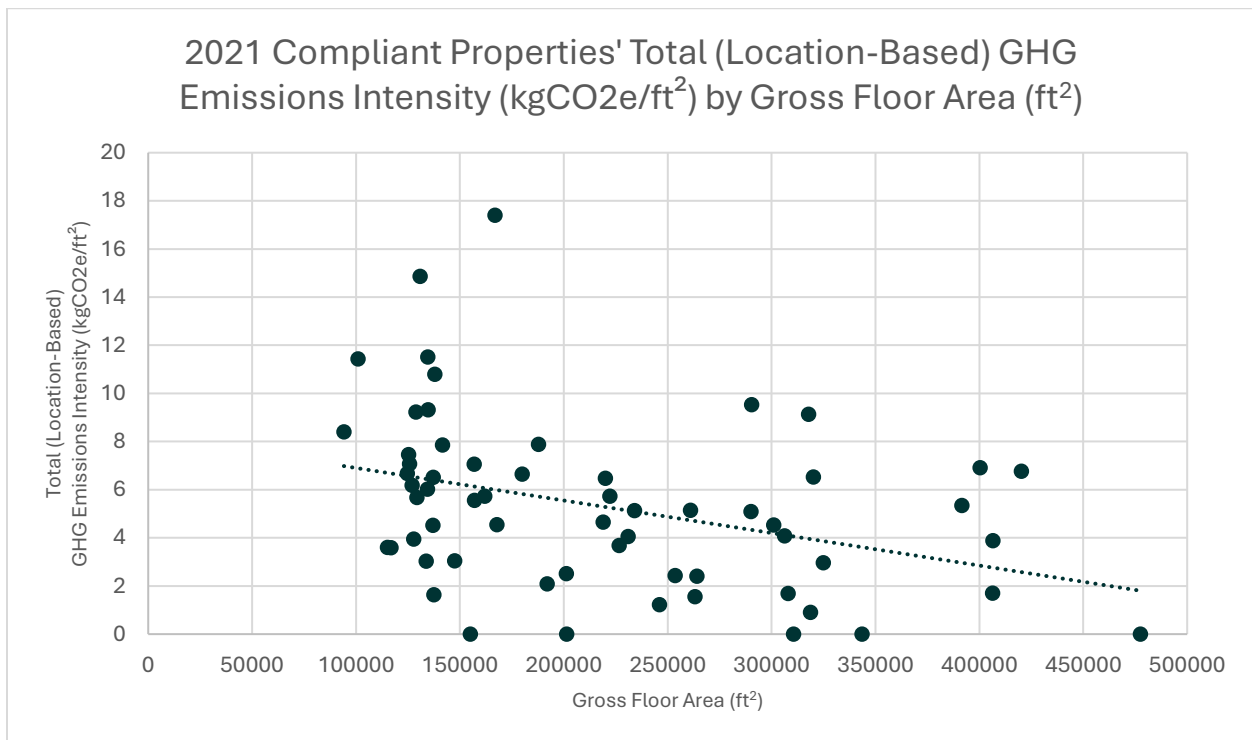




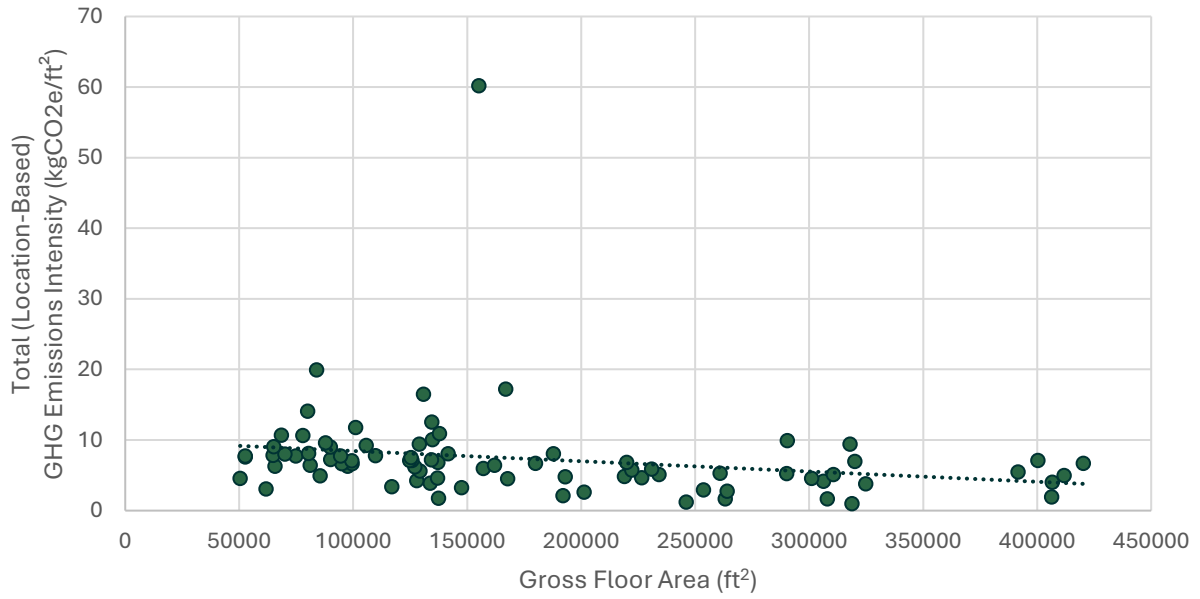
# Greenhouse Gas Emissions

## Total Greenhouse Gas Emission Intensity

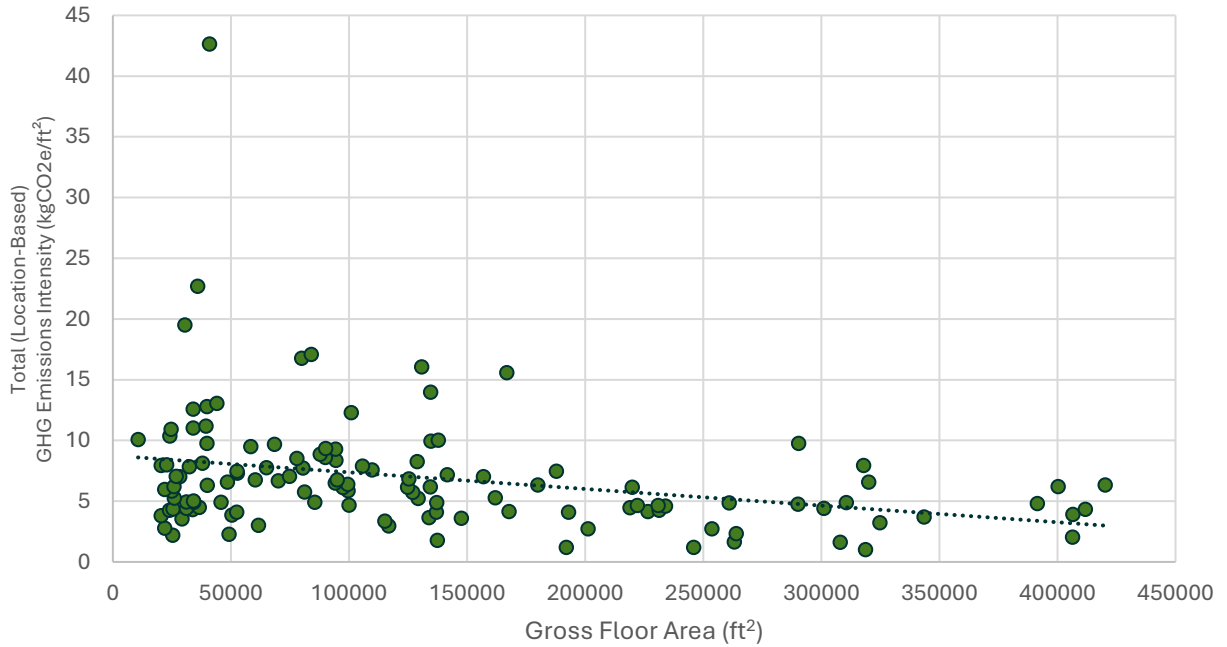
Total (Location-Based) Greenhouse Gas (GHG) Emissions include direct and indirect emissions. This includes indirect emissions calculated using a location-based factor relying on grid-average emissions factors. Indirect emissions can also be calculated using market-based factors, which are energy supplier-specific emissions factors. ESPM does not currently offer market-based factors. Market-based factors were supposed to be offered in 2024, but as of the writing of this report, they are not yet available. Total GHG Emission Intensity is the total GHG emissions, direct and indirect, produced by the property divided by the property's gross floor area.



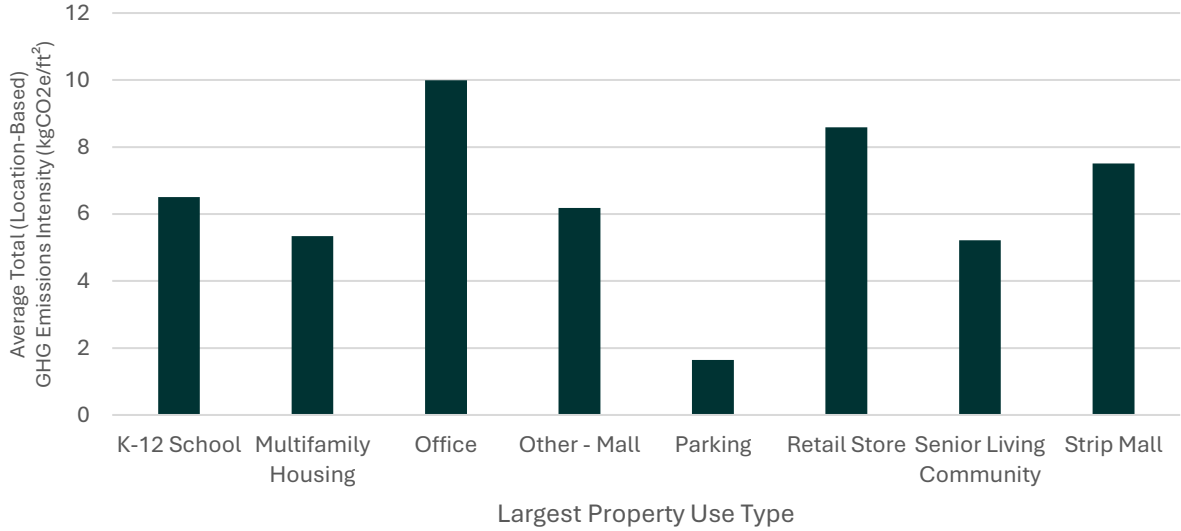
2022 Compliant Properties' Total (Location-Based) GHG Emissions Intensity (kgCO<sub>2</sub>e/ft<sup>2</sup>) by Gross Floor Area (ft<sup>2</sup>)



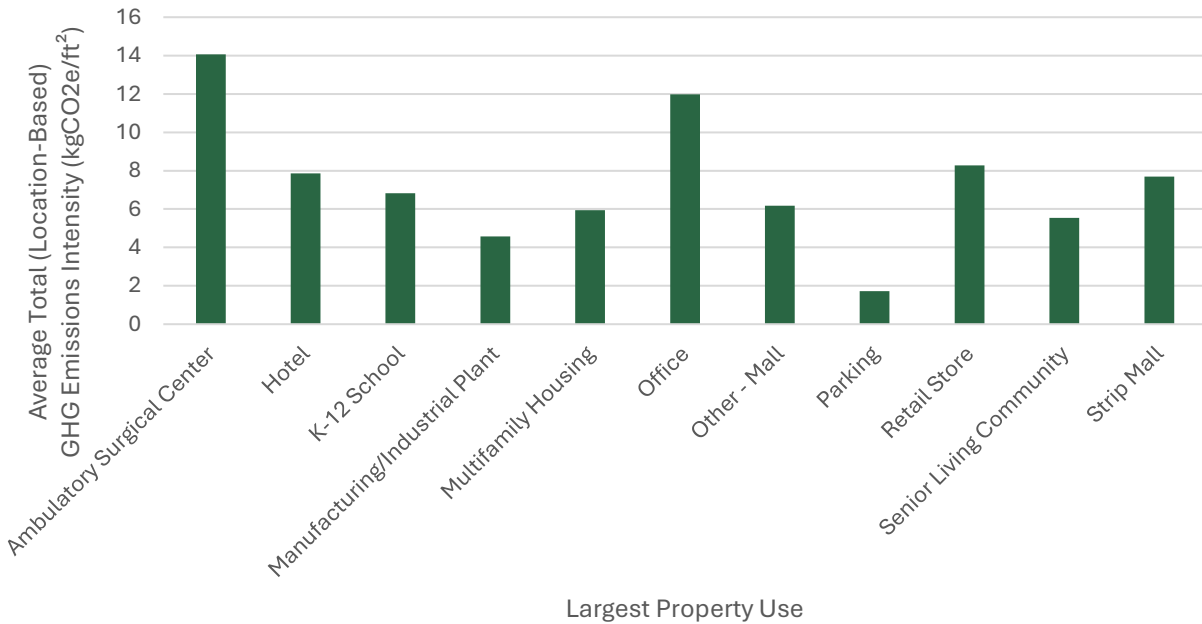
2023 Compliant Properties' Total (Location-Based) GHG Emissions Intensity (kgCO<sub>2</sub>e/ft<sup>2</sup>) by Gross Floor Area (ft<sup>2</sup>)



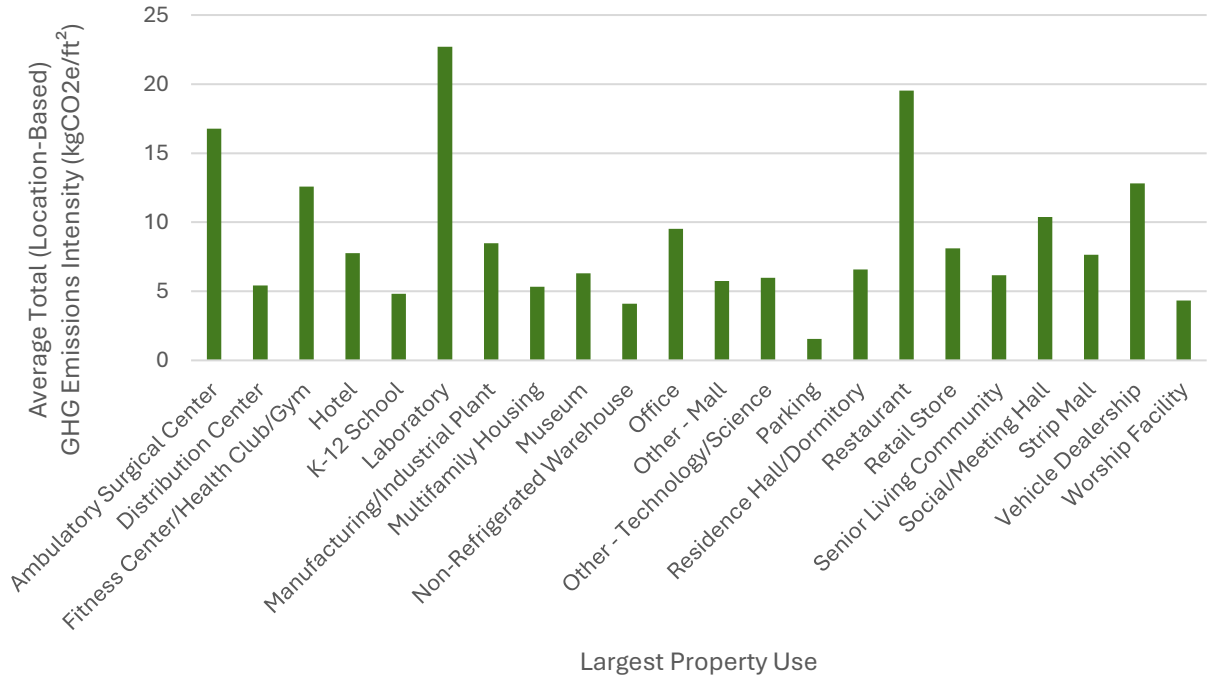
2021 Compliant Properties' Average Total (Location-Based) GHG Emissions Intensity (kgCO<sub>2</sub>e/ft<sup>2</sup>) by Largest Property Use Type



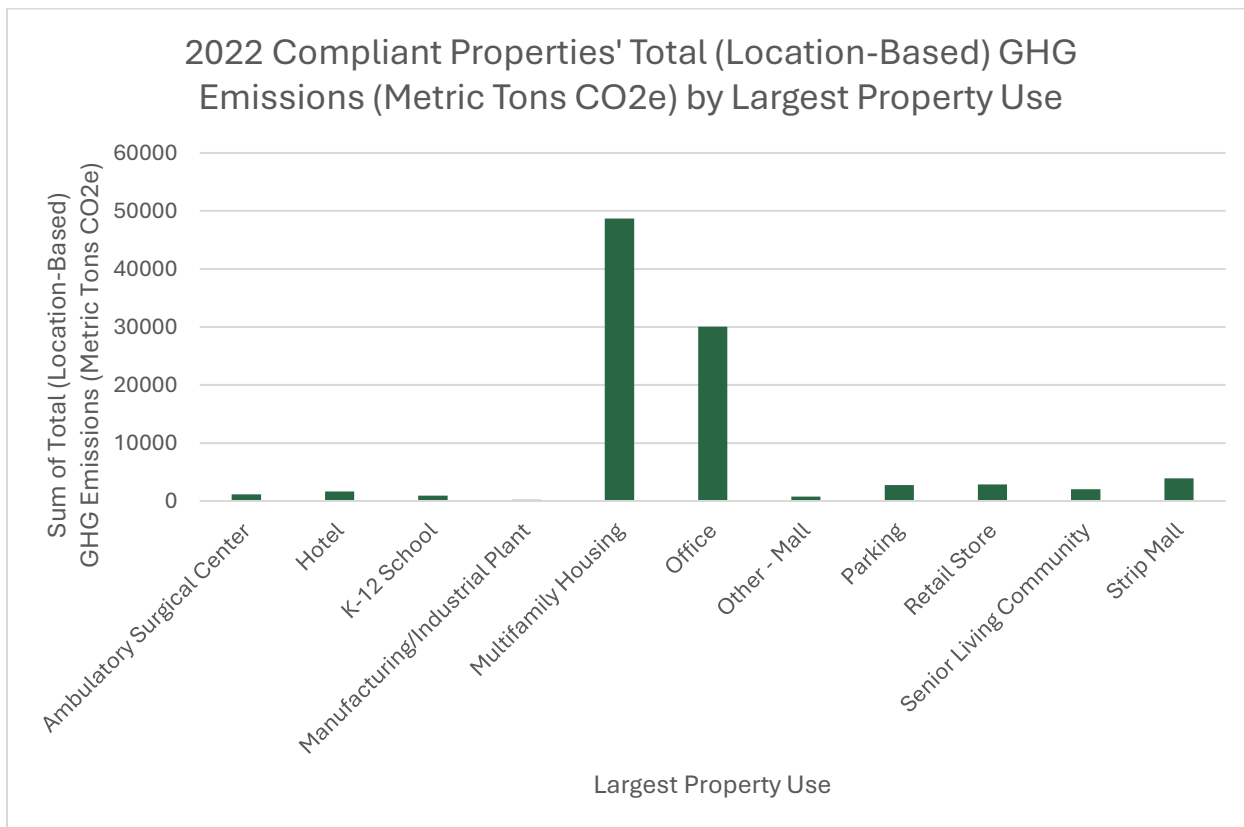
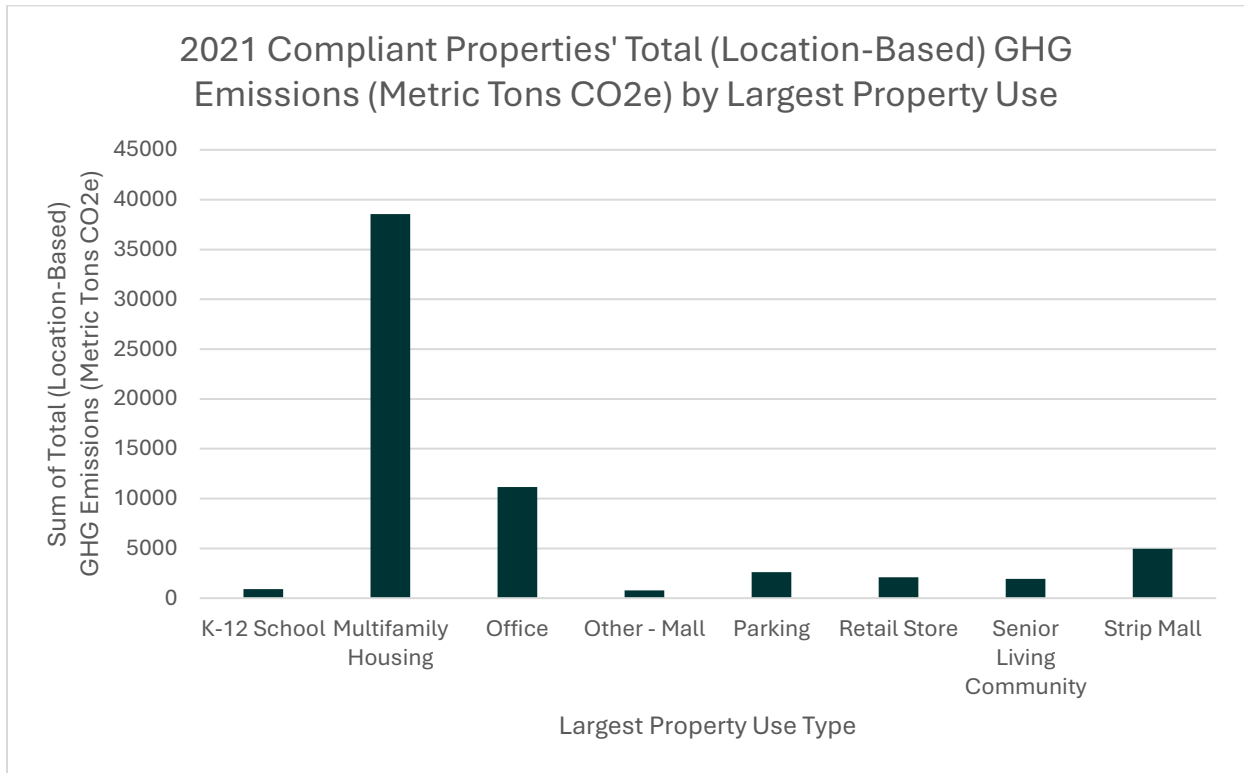
2022 Compliant Properties' Average Total (Location-Based) GHG Emissions Intensity (kgCO<sub>2</sub>e/ft<sup>2</sup>) by Largest Property Use Type



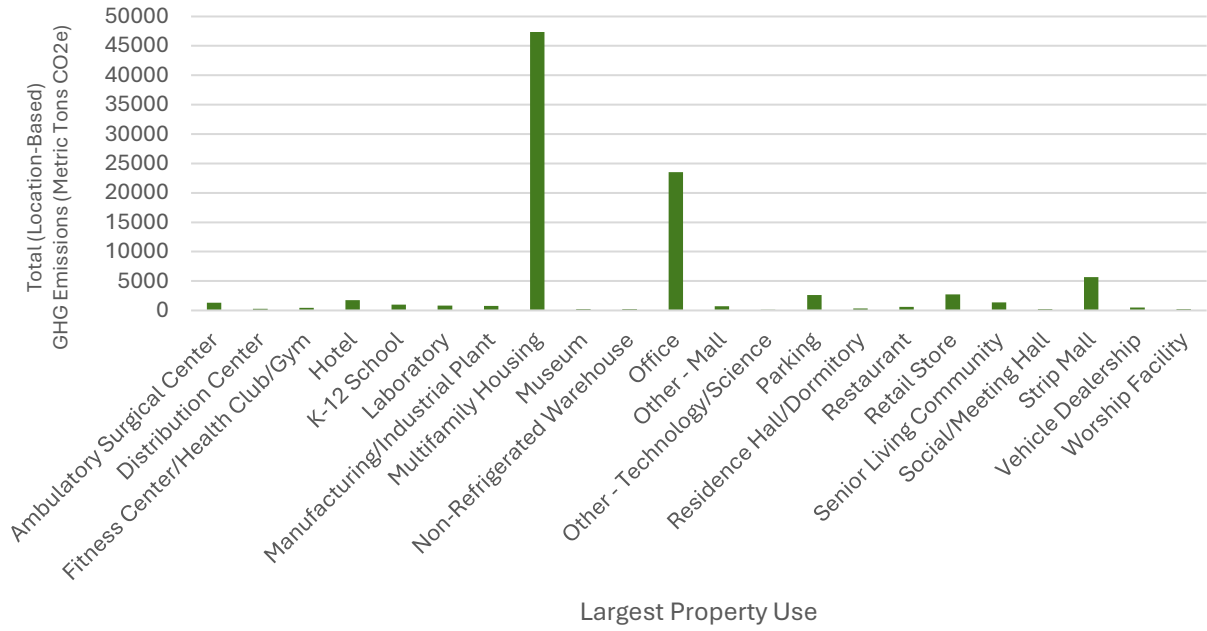
### 2023 Compliant Properties' Average Total (Location-Based) GHG Emissions Intensity (kgCO<sub>2</sub>e/ft<sup>2</sup>) by Largest Property Use Type



## Total Greenhouse Gas Emissions



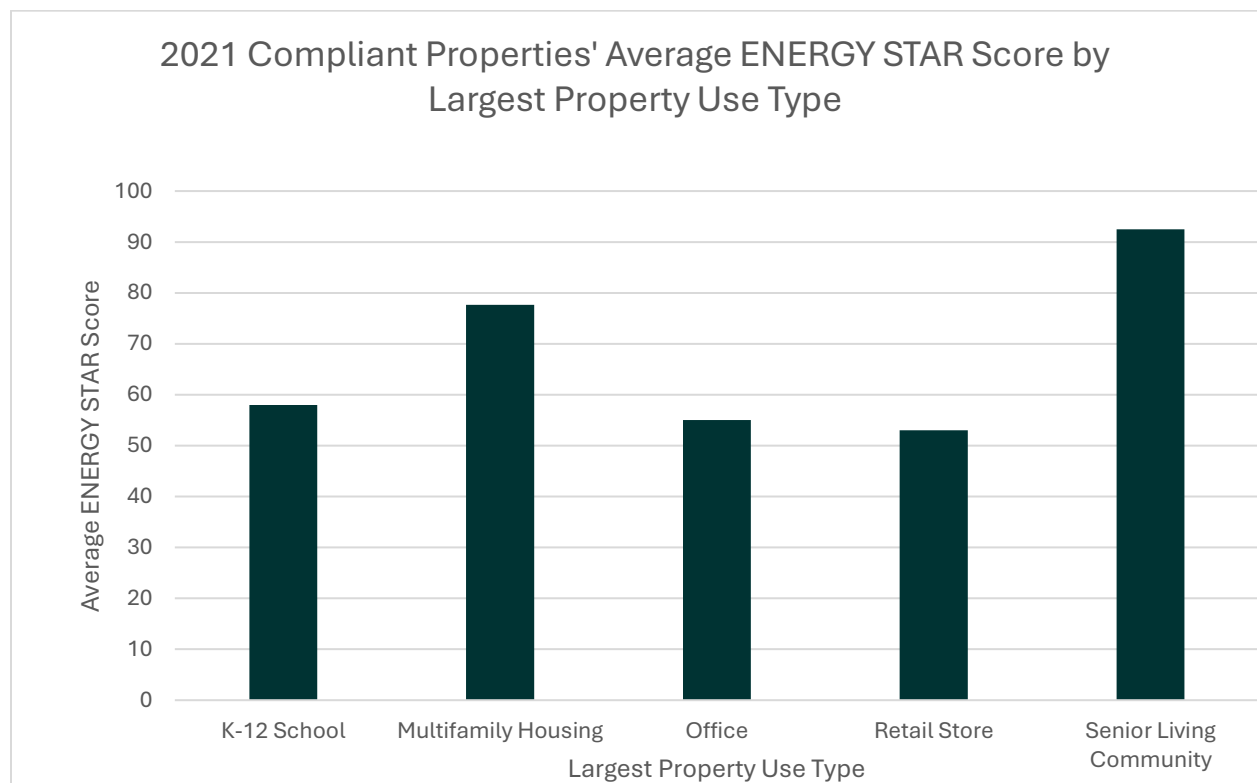
### Total (Location-Based) GHG Emissions (Metric Tons CO2e) by Largest Property Use

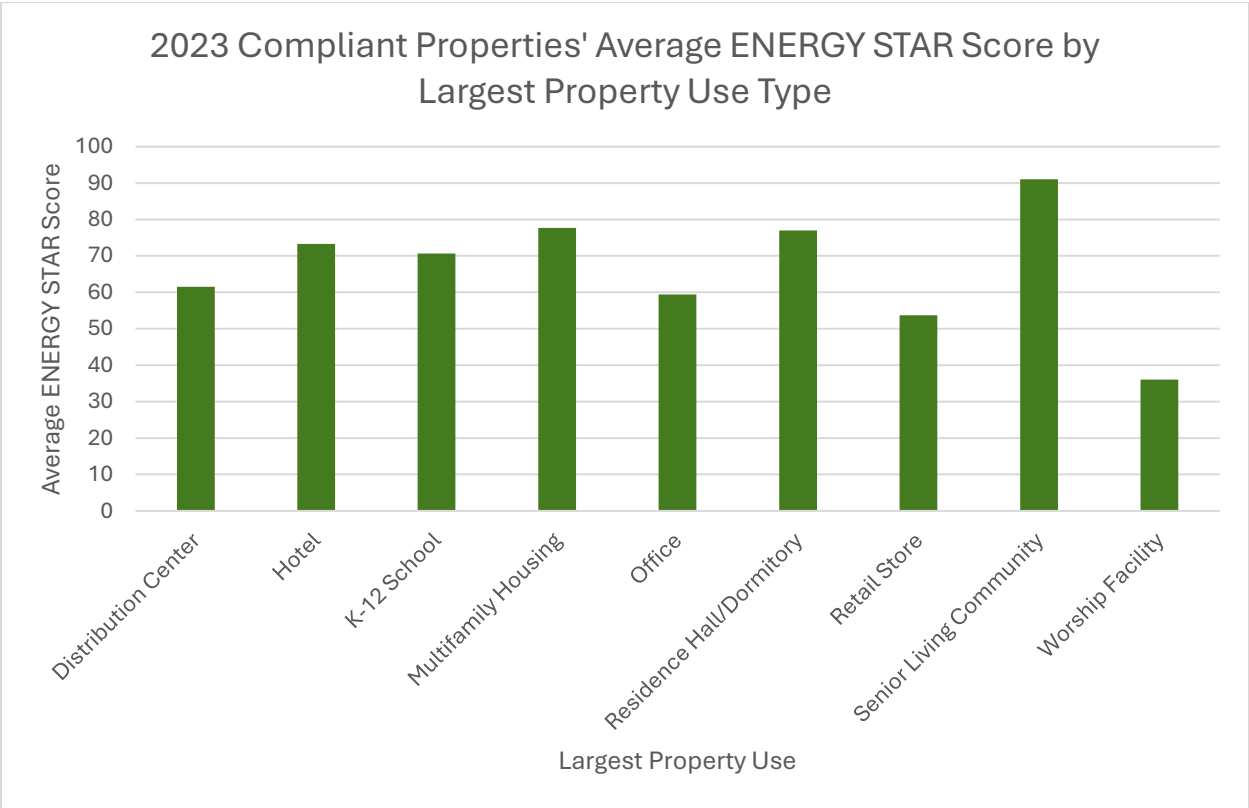
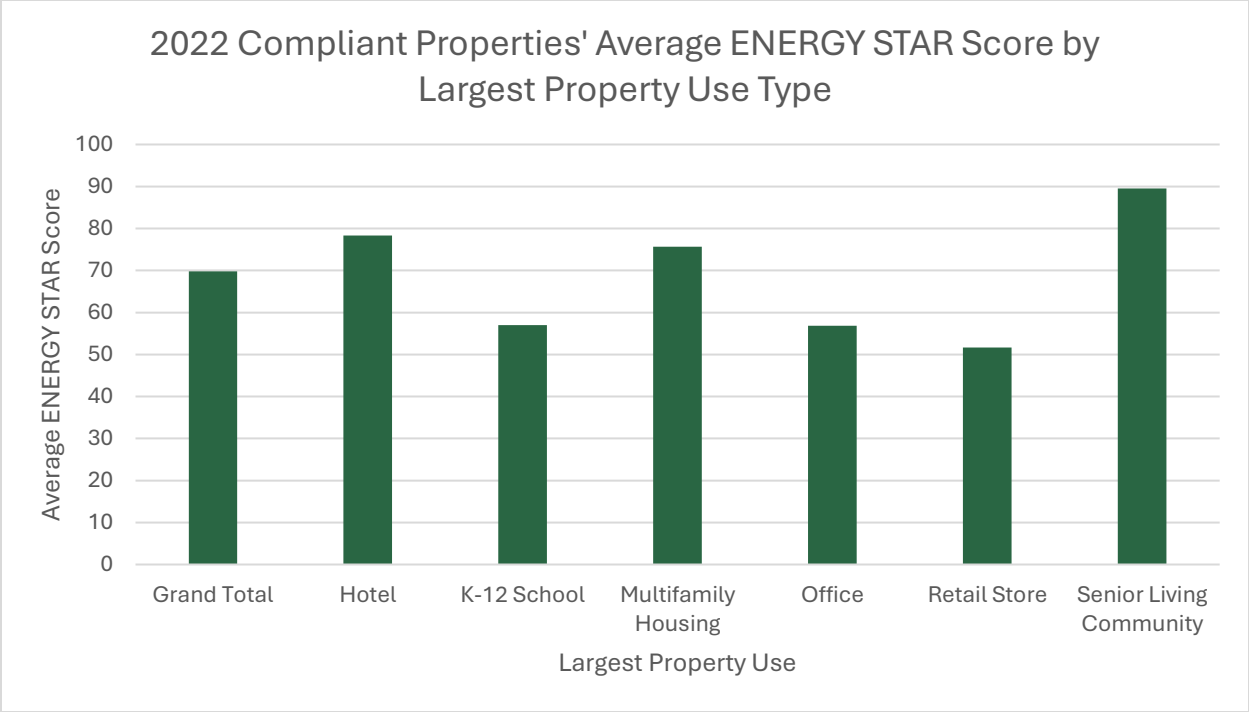


## ENERGY STAR Score Distribution

An ENERGY STAR Score is a measure of how well a property performs relative to similar properties, when normalized for climate and operational characteristics. ENERGY STAR scores are based on data from national building energy consumption surveys, allowing ESPM to control for key variables affecting a property's energy performance, including climate, hours of operation, and building size.

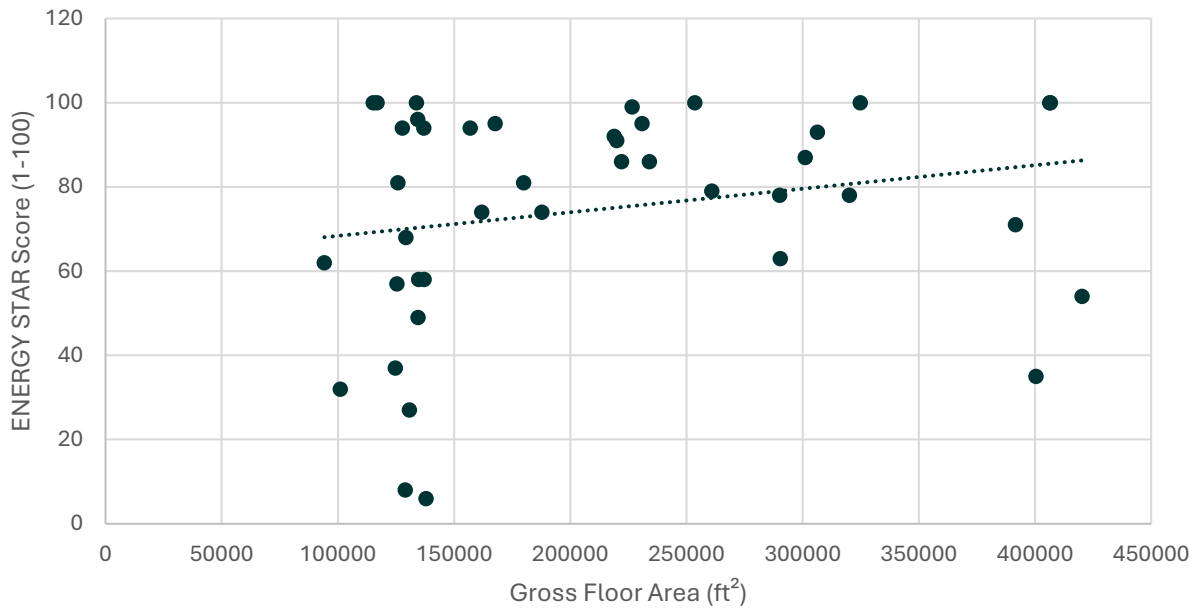
ENERGY STAR Scores range from 1-100 where one represents the worst performing properties and 100 represents the best performing properties. A score of 50 indicates that a property is performing at the national median, taking into account its size, location, and operating parameters. A score of 75 indicates that a property is performing in the 75<sup>th</sup> percentile and may be eligible to earn [ENERGY STAR Certification](#).



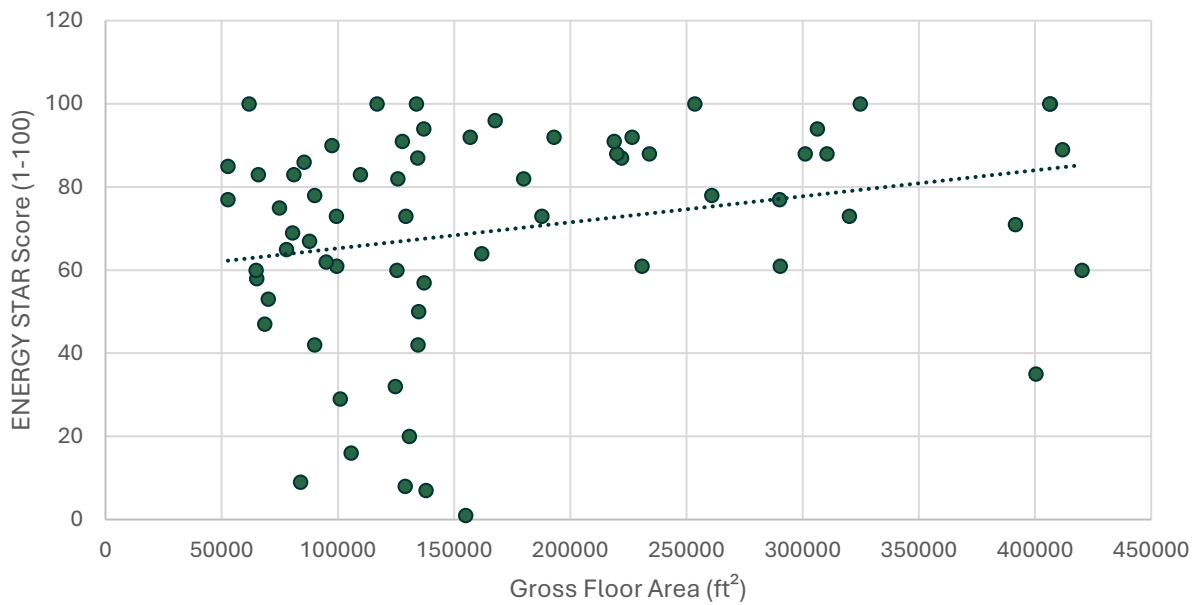


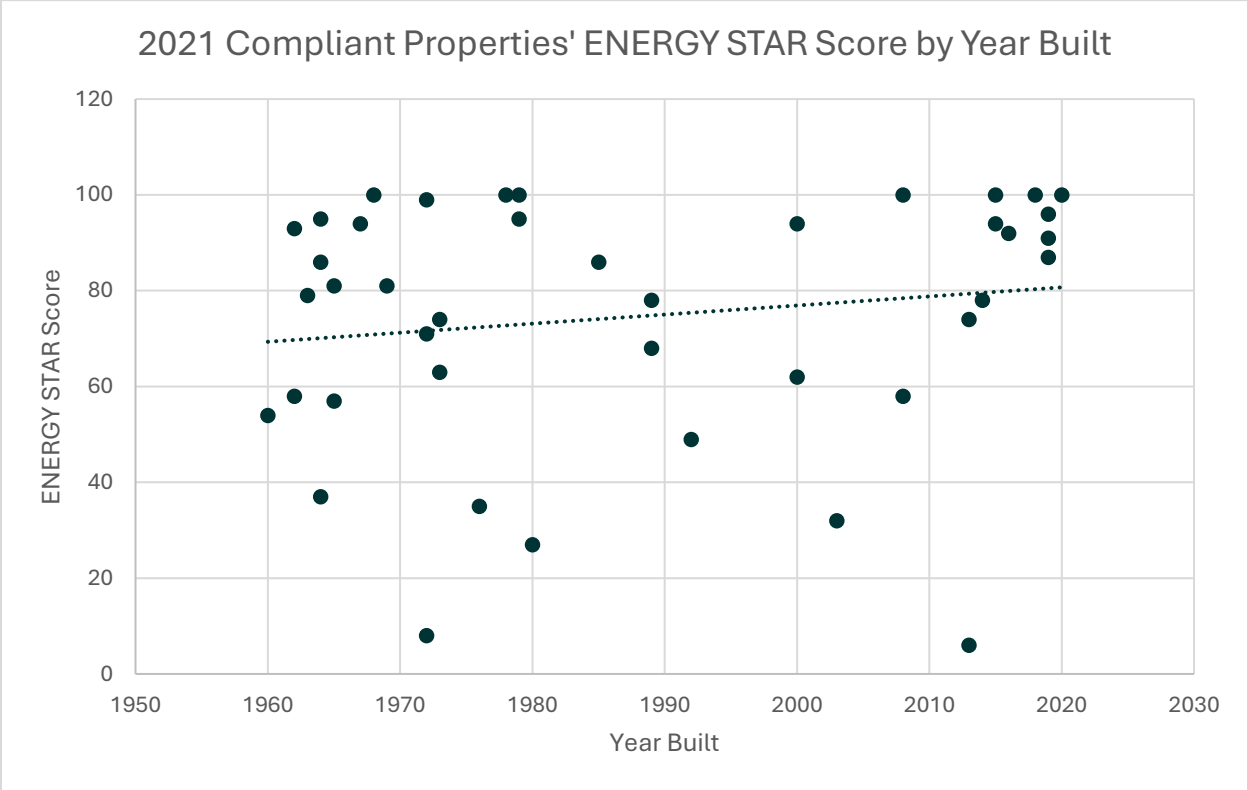
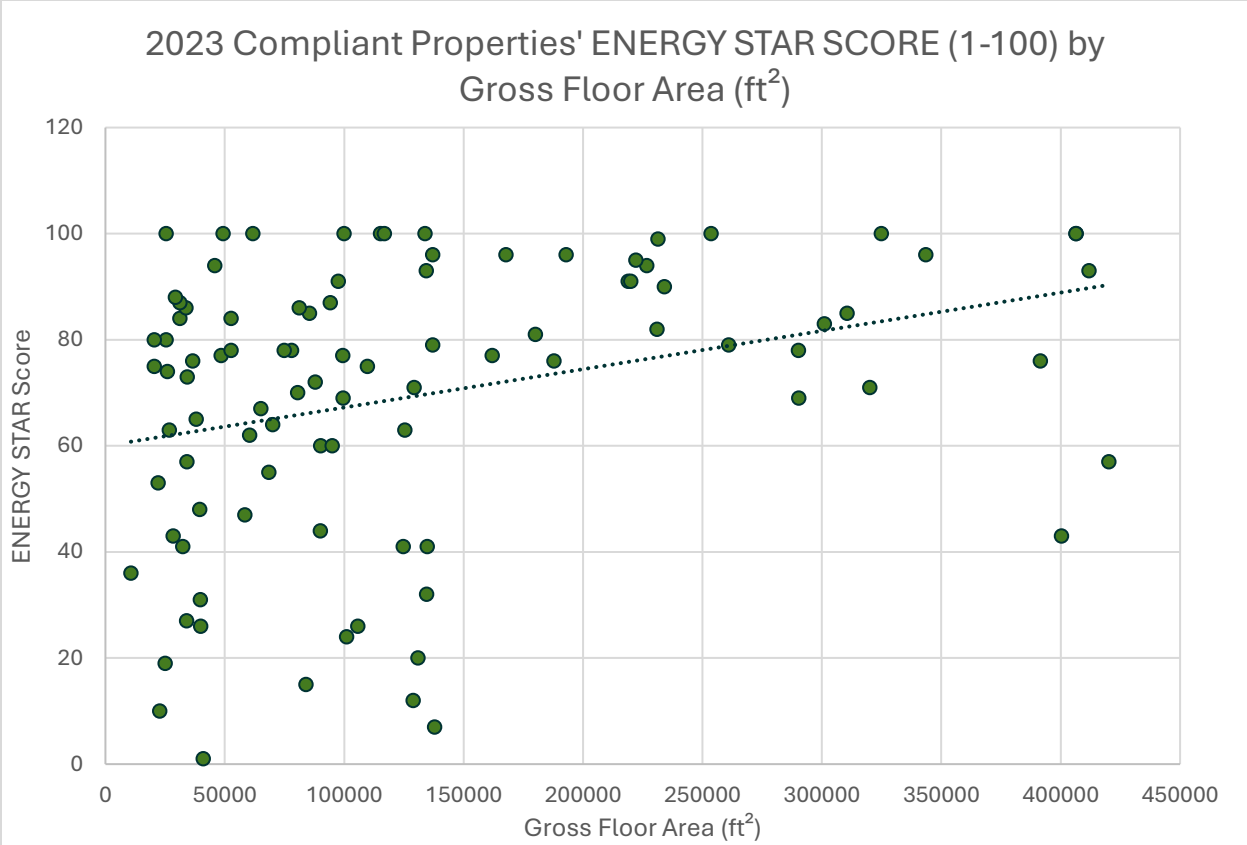


2021 Compliant Properties' ENERGY STAR SCORE (1-100) by Gross Floor Area (ft<sup>2</sup>)

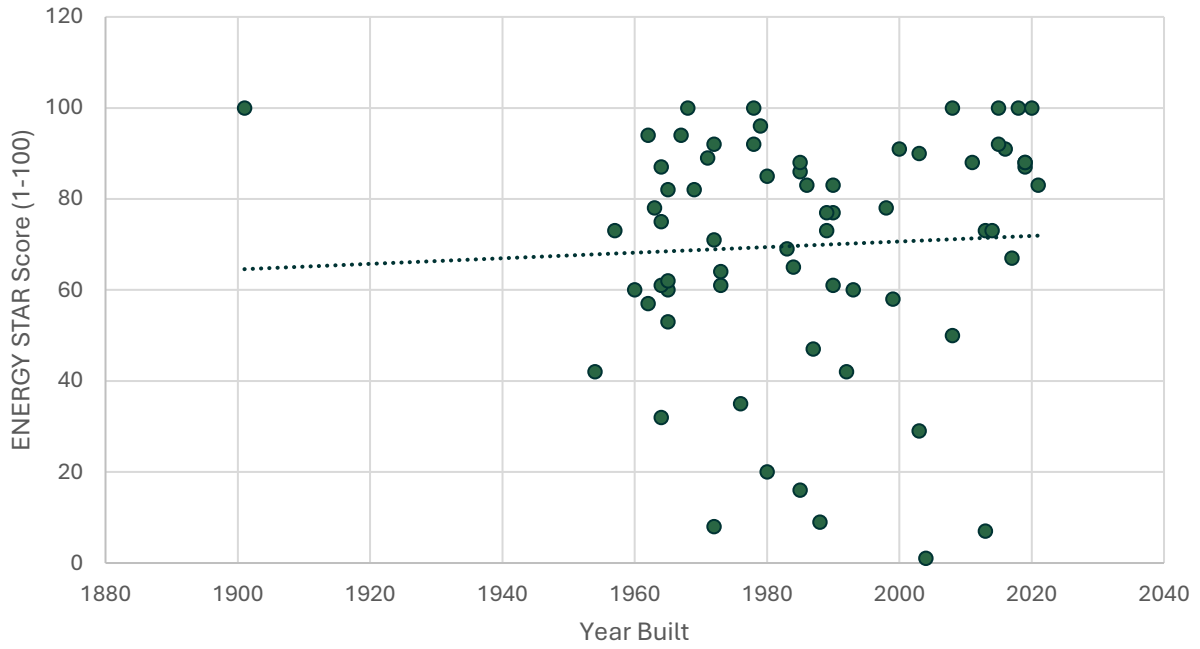


2022 Compliant Properties' ENERGY STAR SCORE (1-100) by Gross Floor Area (ft<sup>2</sup>)

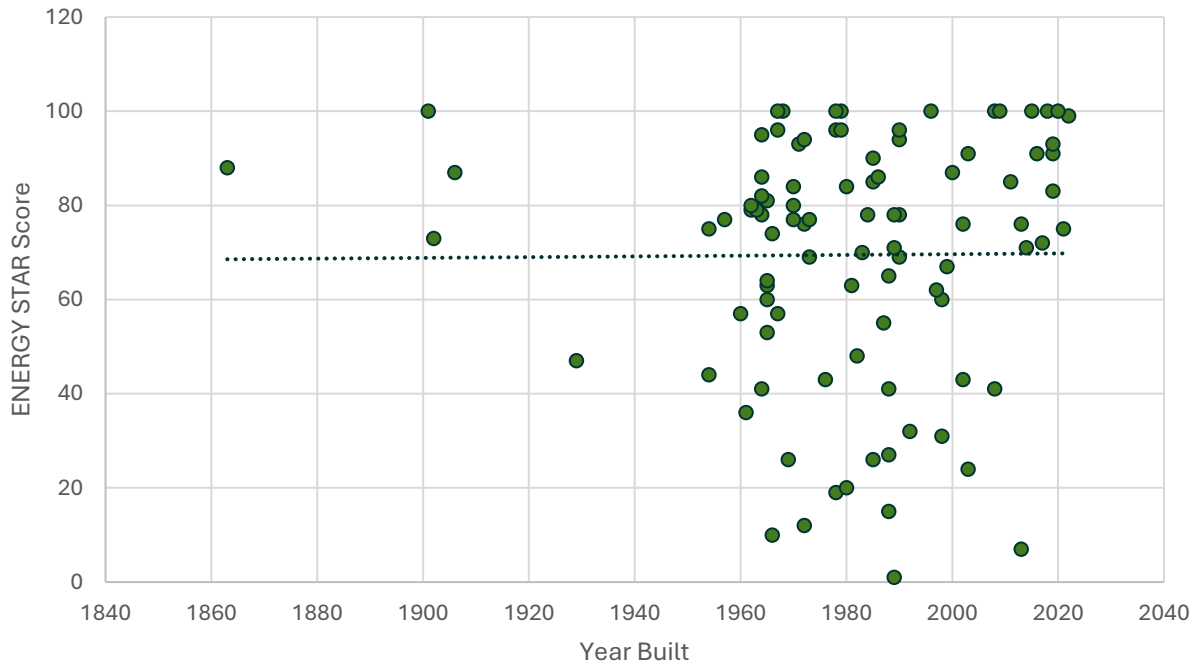




2022 Compliant Properties' ENERGY STAR Score by Year Built

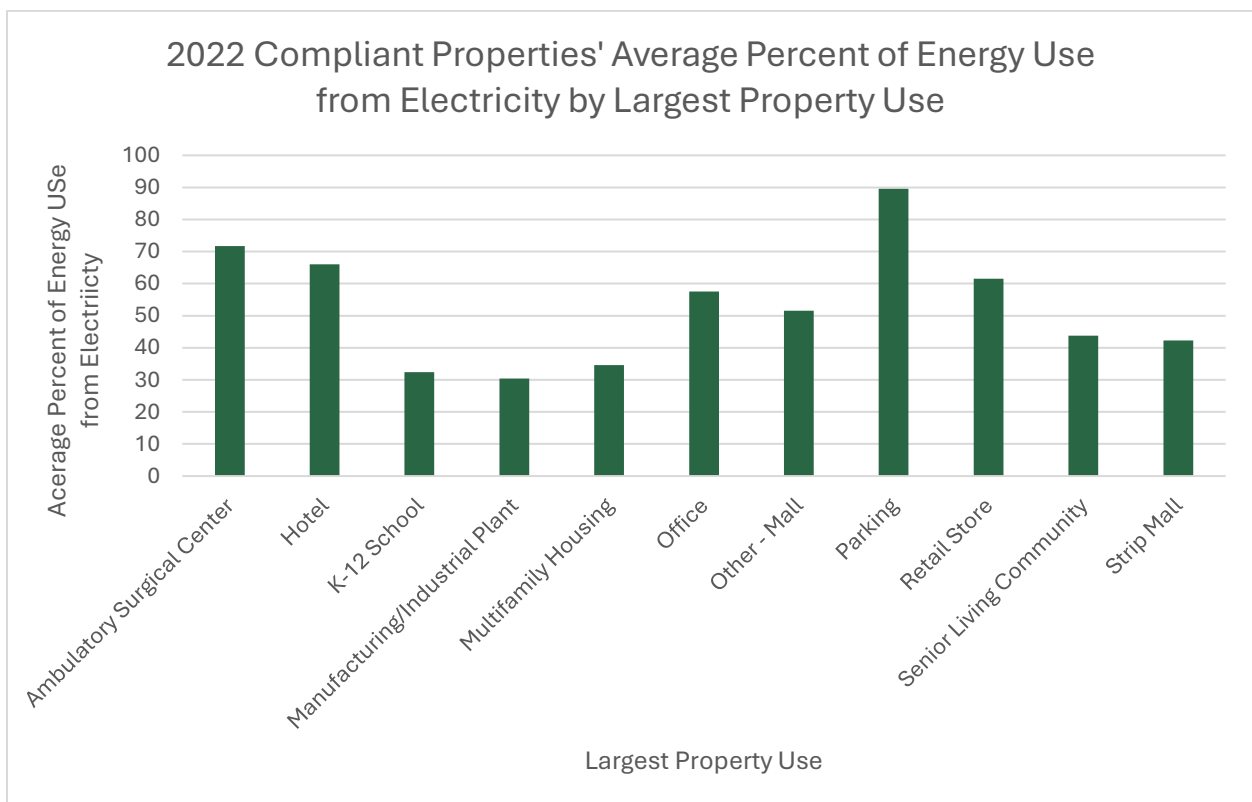
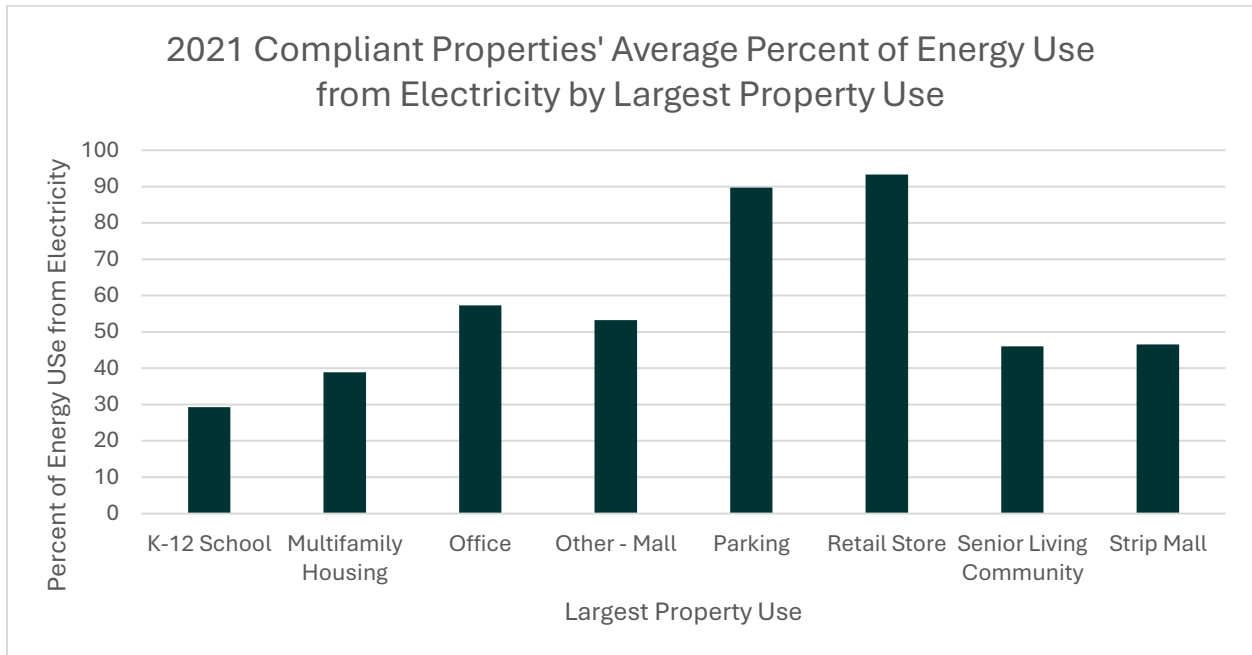


2023 Compliant Properties' ENERGY STAR Score by Year Built

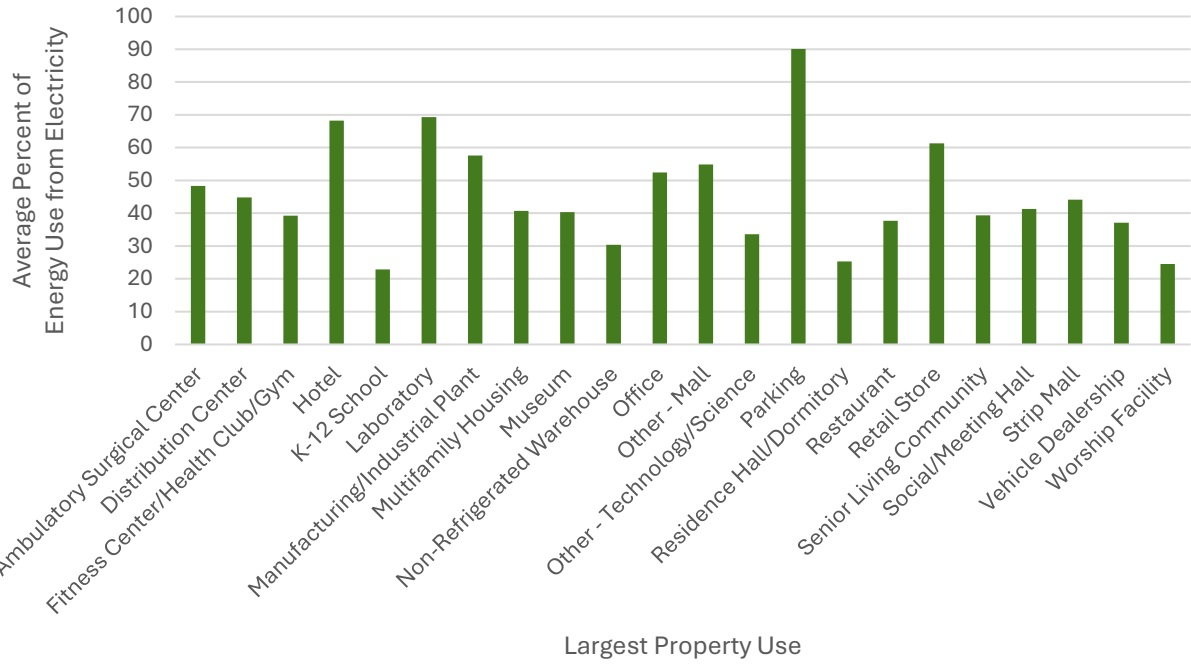


## Percent of Energy Use from Electricity

ESPM also tracks the percentage of a property's energy use that comes from electricity. This is a key metric to track as part of Strategy 2 in the A<sup>2</sup>ZERO plan: Switch our Appliances and Vehicles from Gasoline, Diesel, Propane, Coal, and Natural Gas to Electric.



## 2023 Compliant Properties' Average Percent of Energy Use from Electricity by Largest Property Use



## Trends in Key Metrics

### Average Weather Normalized Site EUI

Weather normalized site EUI increased portfolio-wide between 2021 and 2023. This is likely due to the changing property demographics in the portfolio as smaller properties began to comply with the benchmarking ordinance.

- 2021 cycle: 59.01 kBtu/ft<sup>2</sup>
- 2022 Cycle: 67.58 kBtu/ft<sup>2</sup>
- 2023 Cycle: 73.37 kBtu/ft<sup>2</sup>

### Average Weather Normalized Source EUI

Weather normalized source EUI also increased portfolio-wide between 2021 and 2023. This, again, is likely due to the changing property demographics in the portfolio as smaller properties began to comply with the benchmarking ordinance.

- 2021 cycle: 105.87 kBtu/ft<sup>2</sup>
- 2022 Cycle: 121.00 kBtu/ft<sup>2</sup>
- 2023 Cycle: 130.81 kBtu/ft<sup>2</sup>

### GHG Emissions Intensity

Total GHG Emissions intensity increased from 2021 to 2022 but decreased from 2022 to 2023. This was due to a decrease in indirect GHG emissions intensity. Further investigation is needed to determine the root cause of this change, but it is possible the change was due to changing utility fuel mixes.

#### *Average Indirect (Location-Based) GHG Emissions Intensity*

- 2021 Cycle: 3.99 kgCO<sub>2</sub>e/ft<sup>2</sup>
- 2022 Cycle: 5.28 kgCO<sub>2</sub>e/ft<sup>2</sup>
- 2023 Cycle: 4.92 kgCO<sub>2</sub>e/ft<sup>2</sup>

#### *Average Direct GHG Emissions Intensity*

- 2021 Cycle: 1.60 kgCO<sub>2</sub>e/ft<sup>2</sup>
- 2022 Cycle: 1.99 kgCO<sub>2</sub>e/ft<sup>2</sup>
- 2023 Cycle: 1.99 kgCO<sub>2</sub>e/ft<sup>2</sup>

#### *Average Total (Location-Based) GHG Emissions Intensity*

- 2021 Cycle: 5.67 kgCO<sub>2</sub>e/ft<sup>2</sup>
- 2022 Cycle: 7.34 kgCO<sub>2</sub>e/ft<sup>2</sup>
- 2023 Cycle: 6.97 kgCO<sub>2</sub>e/ft<sup>2</sup>

### Average Water Use Intensity (All Sources)

Water use intensity increased from 2021 to 2022 but decreased from 2022 to 2023. Further investigation is needed to determine the root cause of this change.

- 2021 Cycle: 25.93 gal/ft<sup>2</sup>
- 2022 Cycle: 28.44 gal/ft<sup>2</sup>
- 2023 Cycle: 25.56 gal/ft<sup>2</sup>

## Consumption Trends

The demographics of Covered Properties submitting benchmarking reports in 2021, 2022 and 2023 vary significantly, as properties were phased-in to compliance by gross floor area over those three years. Trends from 2021-2023 should not be interpreted as real trends across all properties in the City of Ann Arbor, or as real trends across the portfolio of Covered Properties compliant with the Benchmarking Ordinance. Starting in 2025, annual reports will have more comparable data, summarizing statistics and trends across all Covered Properties. However, within the data from the 2023 calendar year data, some trends begin to emerge about the portfolio of properties covered by the ordinance.

### Site and Source EUI

There appears to be a slight correlation between larger properties and lower site and source EUI. The difference is more apparent between properties 20,000 sq. ft. to 100,000 sq. ft. and properties larger than 100,000 sq. ft. However, this may simply show that multifamily properties are disproportionately represented among properties over 100,000 sq. ft., as multifamily properties, on average, have one of the lower site EUIs of all Covered Properties.

Multifamily properties account for about 57% of the total gross floor area currently participating in the Benchmarking Ordinance. However, multifamily properties have relatively low site and source EUI, resting in the lowest quartile of site and source EUI. Office properties are the second largest property use of the total gross floor area currently participating in the Benchmarking Ordinance, about 17%. Office properties, unlike multifamily properties, have relatively high site and source EUIs, resting in the highest tercile of site and source EUI.

### GHG Emission Intensity

There appears to be a slight correlation between larger properties and lower GHG emission intensity. The difference is more apparent between properties 20,000 sq. ft. to 100,000 sq. ft. and properties larger than 100,000 sq. ft. However, this may simply show that multifamily properties are disproportionately represented among properties over 100,000 sq. ft., as multifamily properties, on average, have one of the lower GHG emission intensities of all Covered Properties.

Following the trend in site and source EUI, multifamily properties have relatively low GHG emission intensities, resting in the lowest quartile of GHG emission intensity. Like site and source EUI, office properties have relatively high GHG emission intensities.

### Total GHG Emissions

While multifamily properties have relatively low average site and source EUI and GHG emission intensities, they account for the majority of GHG emissions from Covered Properties – more than double the emission of the second largest GHG emitter office properties. Conversely, office properties' gross floor area total is about 25% of the gross floor area that multifamily properties represent, but office properties emit about half of the emissions multifamily properties emit. While further evaluation by OSI is needed, this indicates opportunities for decarbonization in both types of properties, one being the largest GHG emission producer, the other being the second highest GHG emission producer at a higher GHG emission intensity.

This does not mean that properties which account for a small amount of gross floor area are not important when addressing commercial and multifamily decarbonization and the broader A<sup>2</sup>ZERO plan. For example, restaurants account for a small percentage of the total gross floor area represented by Covered Properties, but they have one of the highest EUIs of all properties and have unique challenges to decarbonization.

## **Water Use Intensity**

Breaking from the trends in EUI and GHG emissions, there appears to be a slight correlation between larger gross floor area and water use intensity. However, like the trends among EUI and GHG emissions, this is likely due to multifamily properties being disproportionately represented among properties over 100,000 sq. ft., as multifamily properties, on average, have one of the higher water use intensities of all Covered Properties.

Also breaking from the trends in EUI and GHG emissions, office properties have relatively low water use intensity, about one-third of the average water use intensity across all properties and about one-quarter of the water use intensity of multifamily properties.

## **ENERGY STAR Score**

Properties currently complying with the benchmarking ordinance who are eligible for an ENERGY STAR Score achieve an average score of 70. This varies across property uses, but this average is higher than expected. Given some of the data quality issues some properties experience, it is possible that some scores are higher than they should be due to missing pieces of data in property usage as provided by utilities. However, as data quality issues vary greatly across individual properties, assessing the impact of data quality issues on scores must be evaluated on a property-by-property basis.

## **Percent of Energy Use from Electricity**

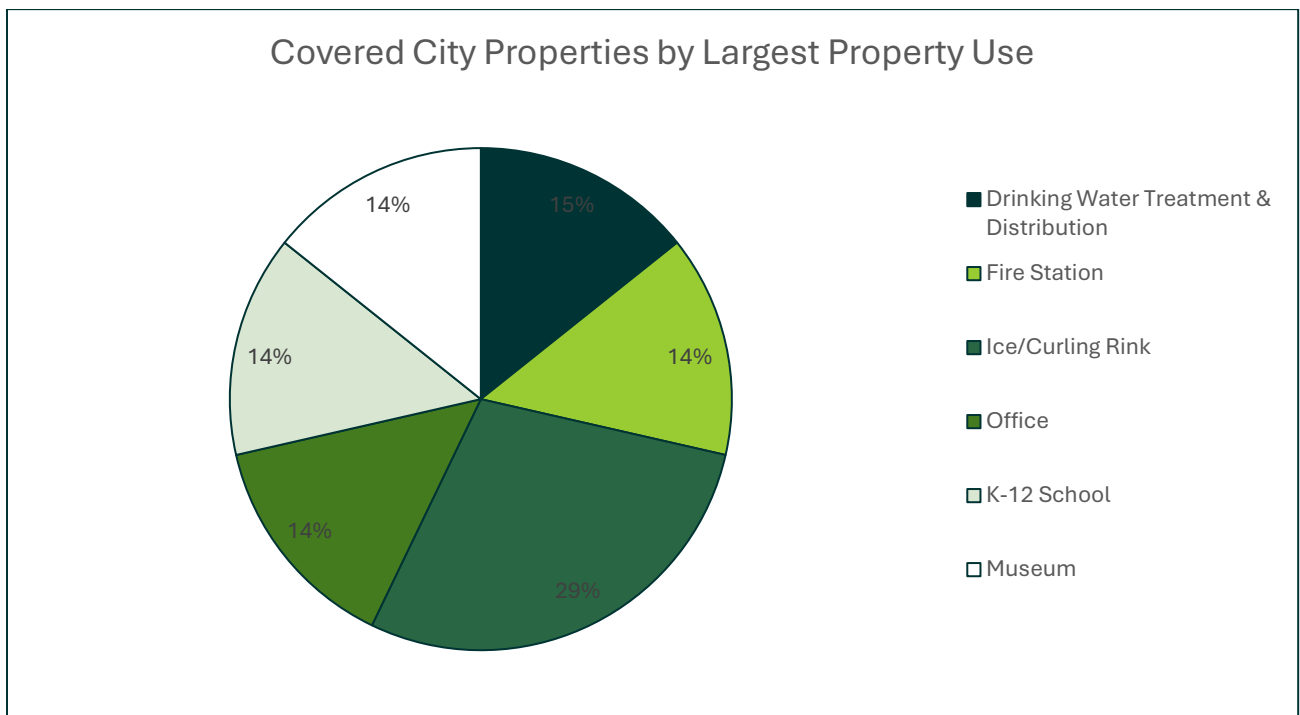
On average, across all Covered Properties currently compliant with the benchmarking ordinance, about 48% of all energy use comes from electricity. This varies dramatically across property uses. Looking at the property uses with the largest volume of GHG emissions, multifamily properties get about 41% of their energy from electricity, office properties about 52%, hotels about 68%, and strip malls about 44%. Looking at the property uses with the highest EUI and GHG emission intensities, laboratories get about 69% of their energy use from electricity, restaurants about 38%, and ambulatory surgical centers 48%.



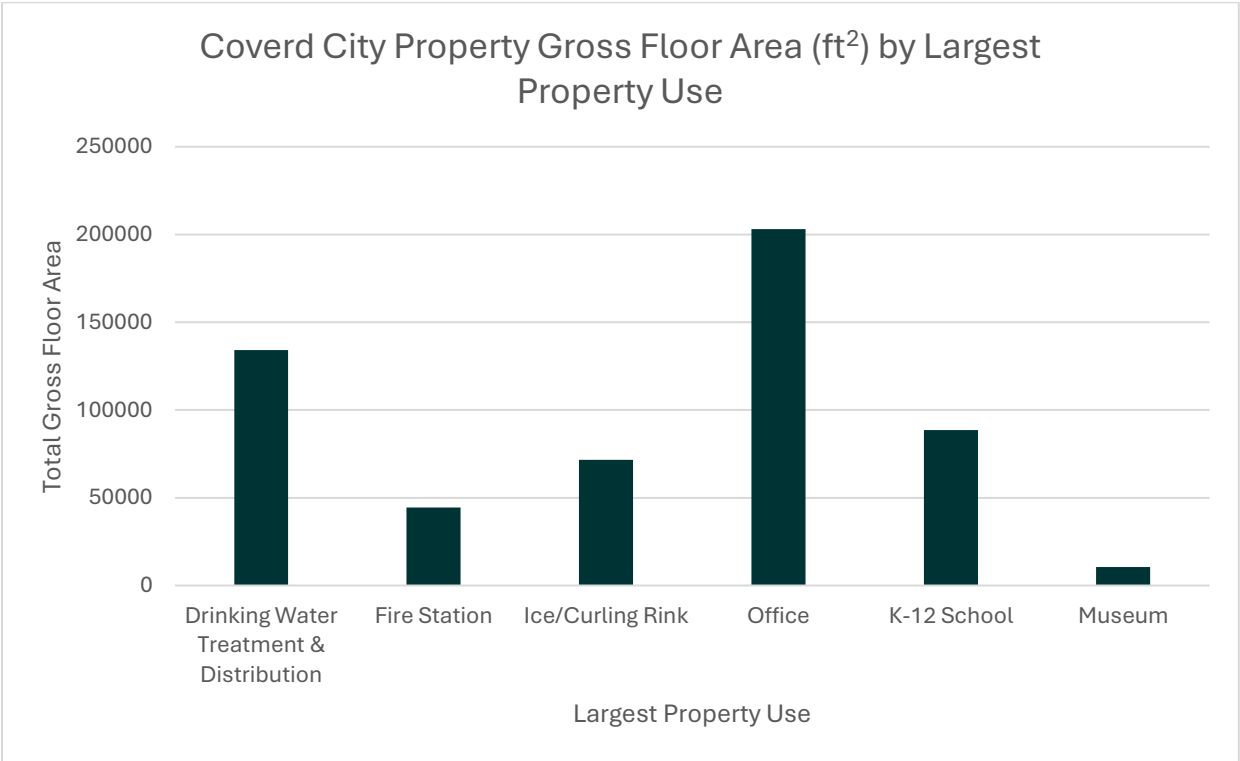
## Covered City Properties

The Energy and Water Benchmarking and Disclosure Ordinance required properties exceeding 10,000 sq. ft. that are owned, leased, or managed by the City of Ann Arbor such that the City regularly pays all or part of the annual energy and/or water bills to comply with the ordinance. Only seven City-owned properties meet these criteria. As of December 2024, all seven City Covered Properties are compliant with the ordinance, and OSI plans to benchmark all city properties over 5,000 sq. ft. by December 2025, regardless of whether they are required to comply with the ordinance. In the meantime, OSI tracks GHG emissions across all City-owned properties and conducts GHG emission inventories for municipal properties. The benchmarking reports for City Covered Properties are summarized below.

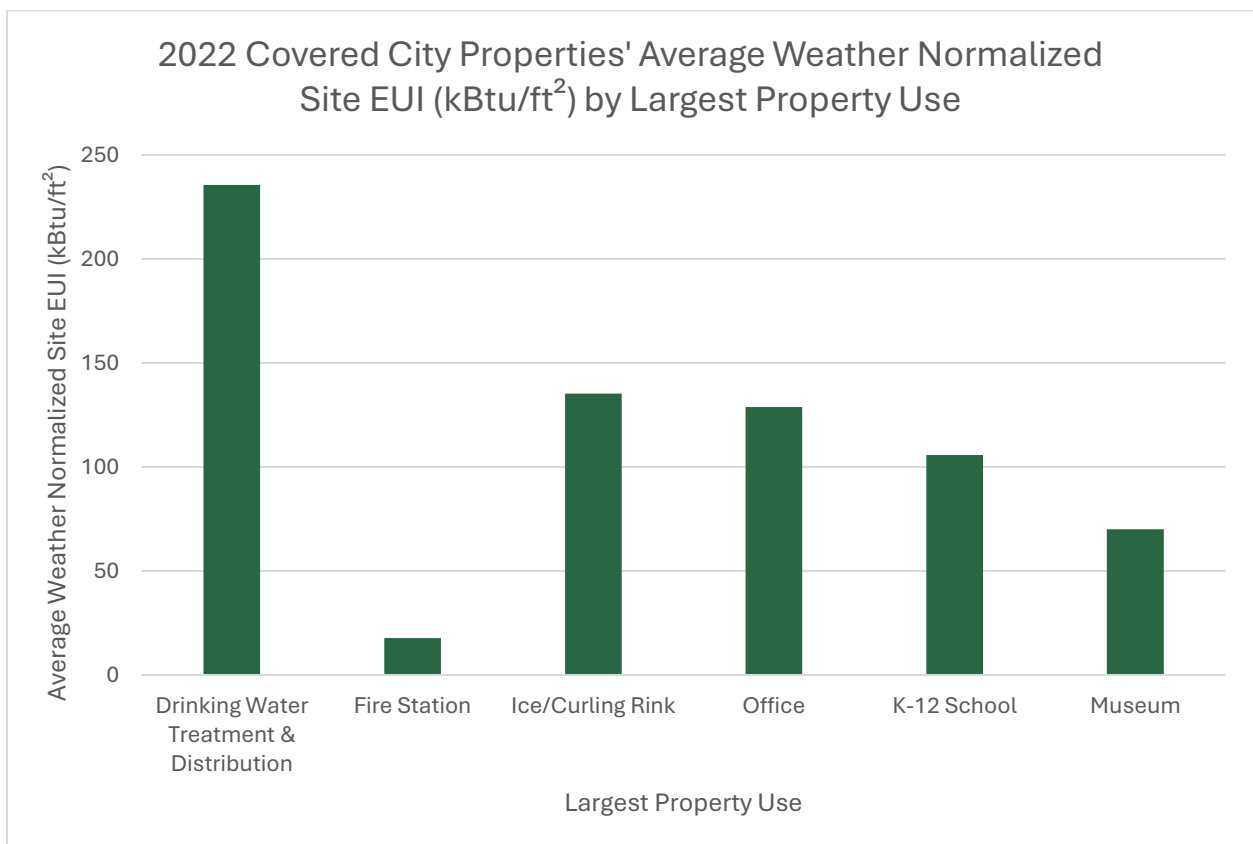
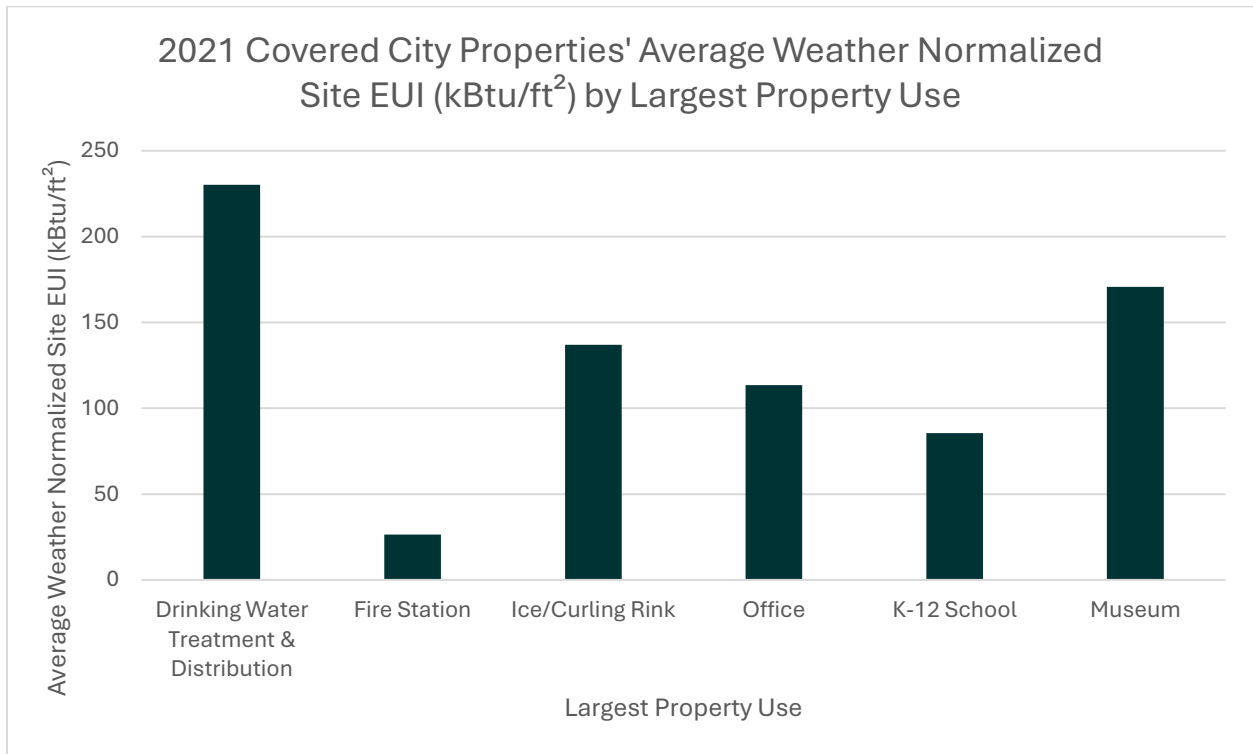
### Percentage of Properties by Property Use

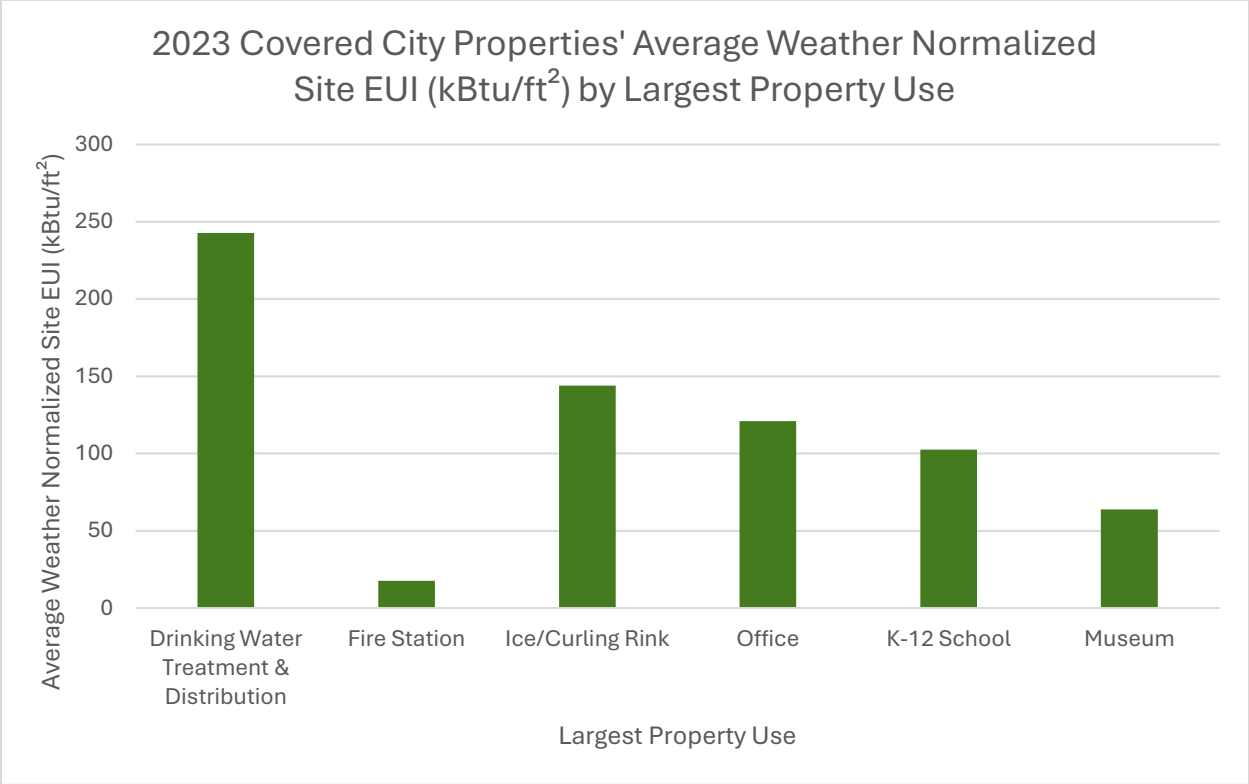


# Use Types by Gross Floor Area



## Weather Normalized Site EUI

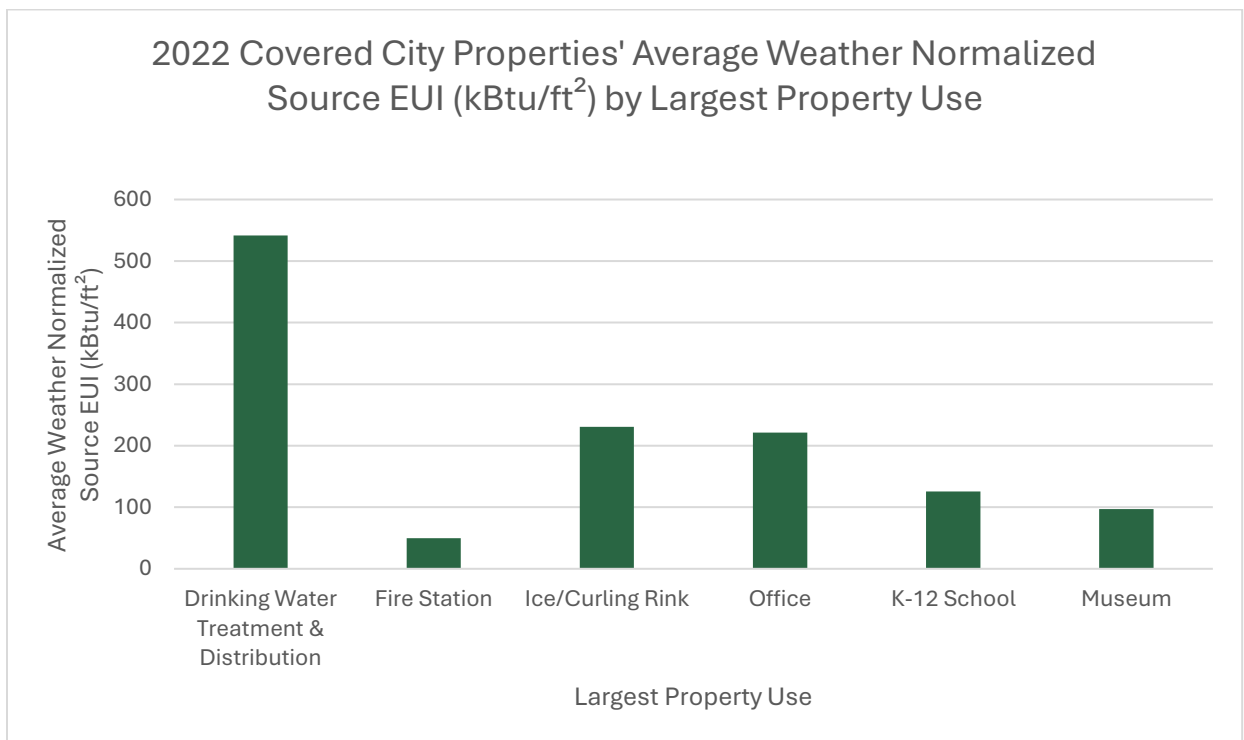
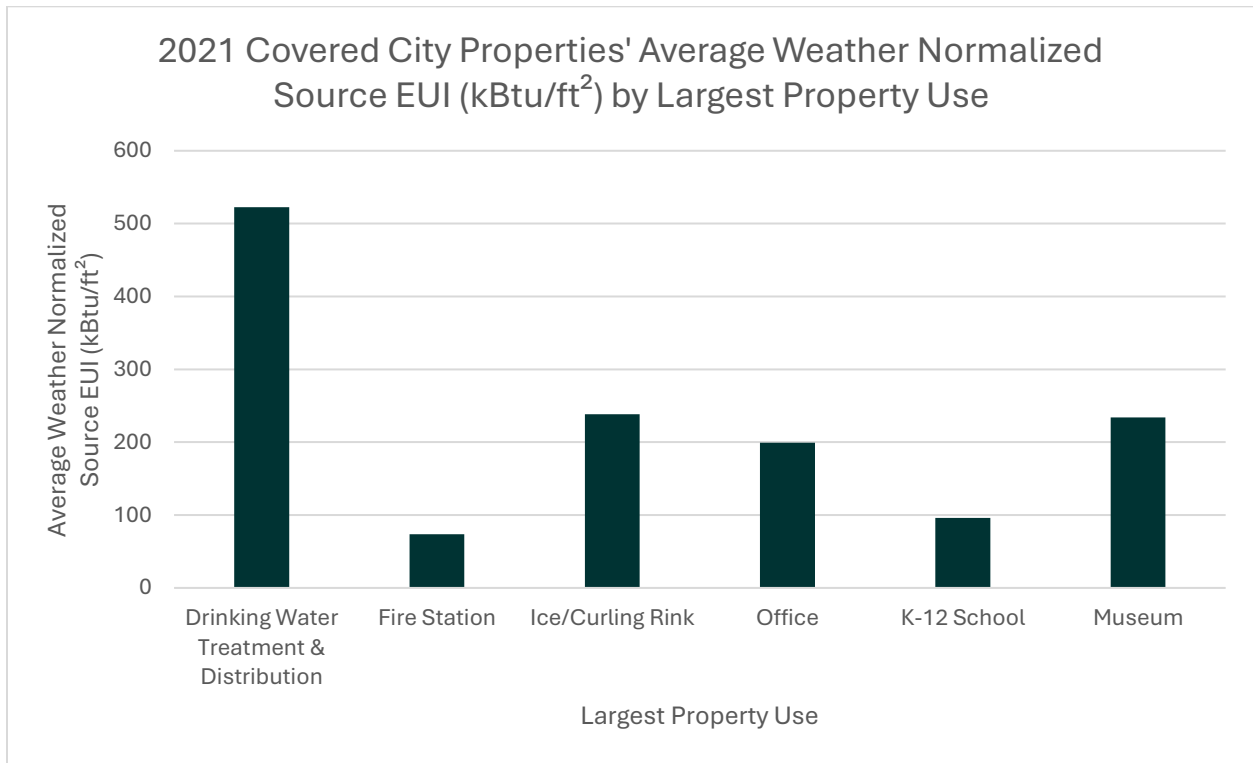


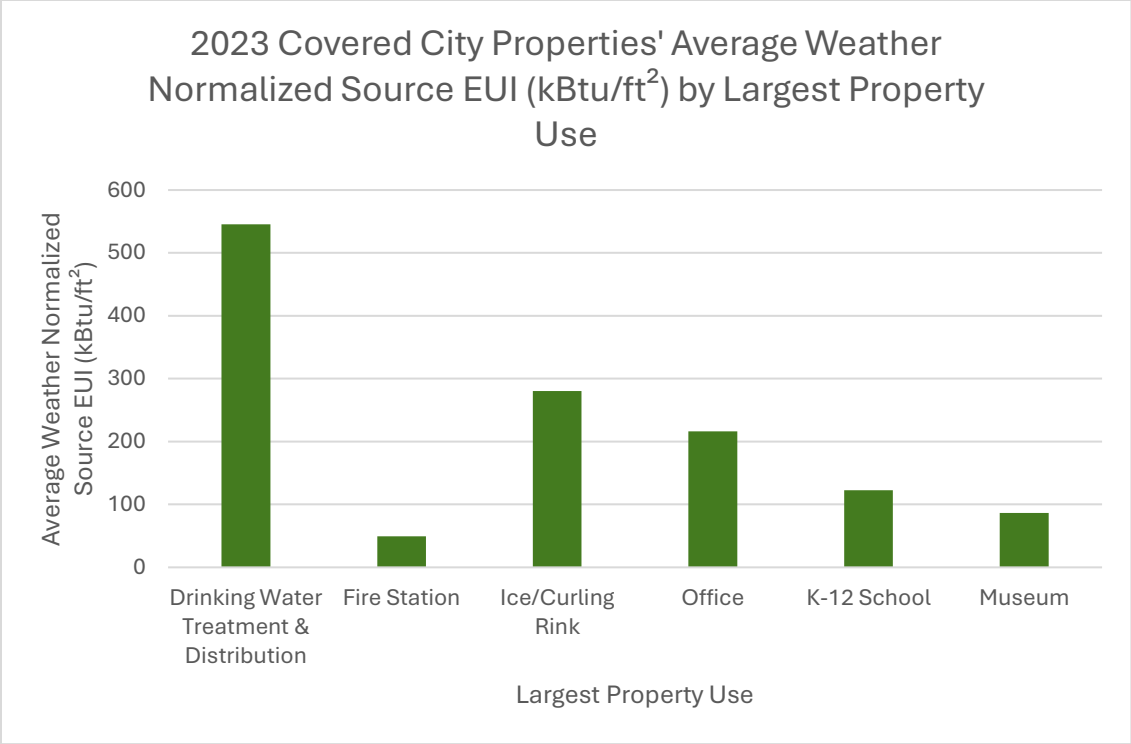


Average Weather Normalized Site EUI (kBtu/ft<sup>2</sup>) of Covered City Properties

- 2021: 128.59 (kBtu/ft<sup>2</sup>)
- 2022: 118.37 (kBtu/ft<sup>2</sup>)
- 2023: 115.30 (kBtu/ft<sup>2</sup>)

## Weather Normalized Source EUI





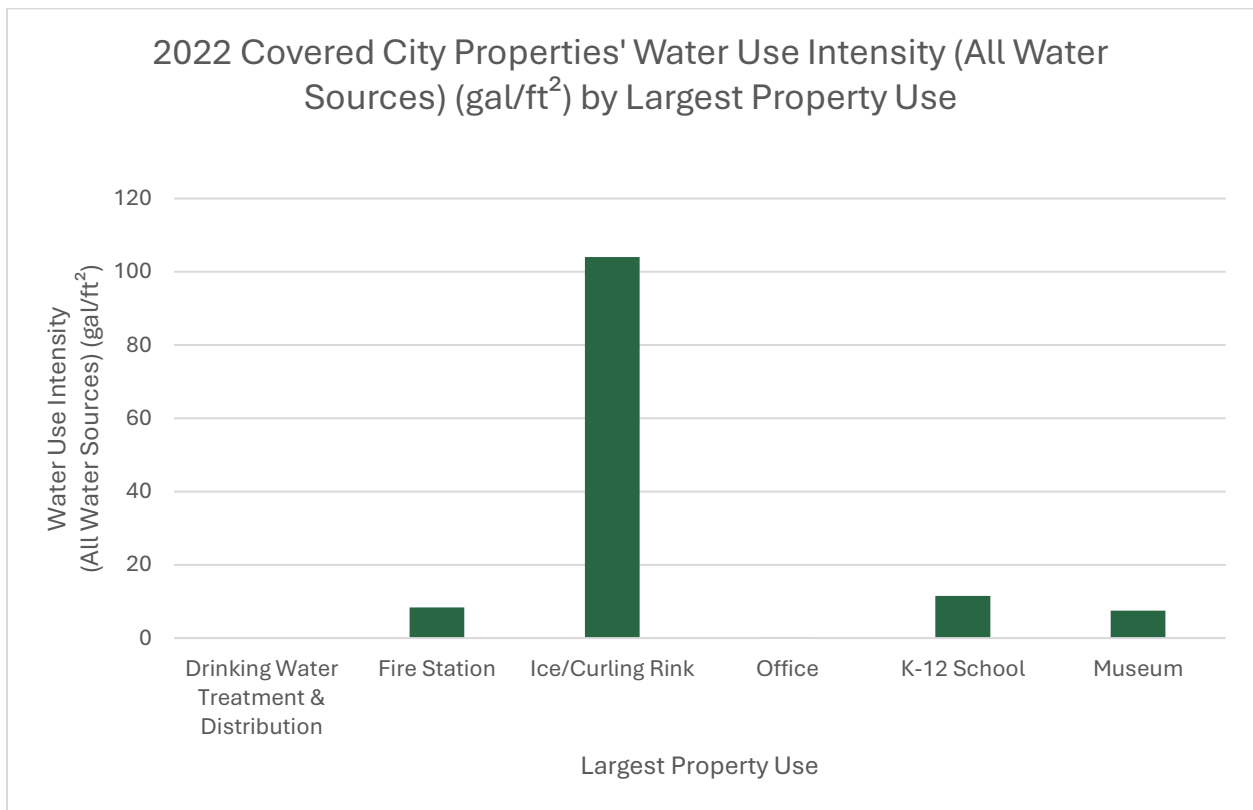
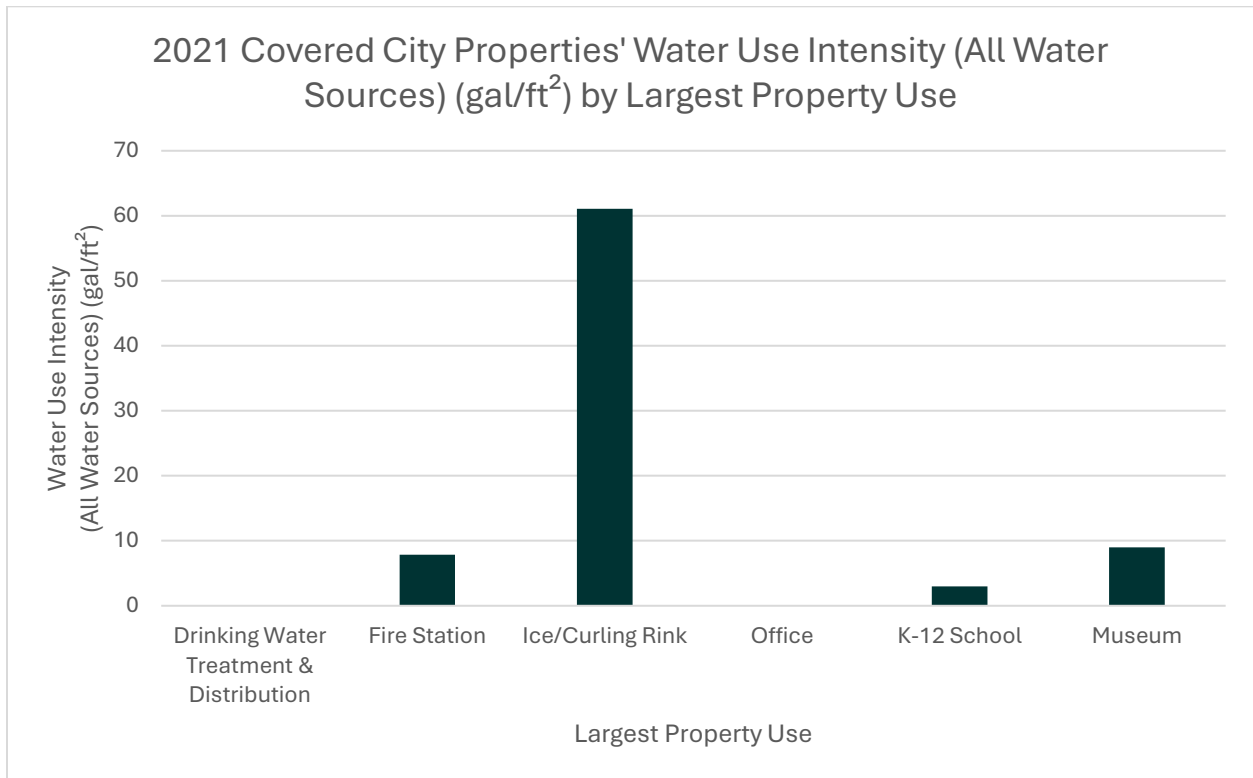
Average Weather Normalized Source EUI (kBtu/ft<sup>2</sup>)

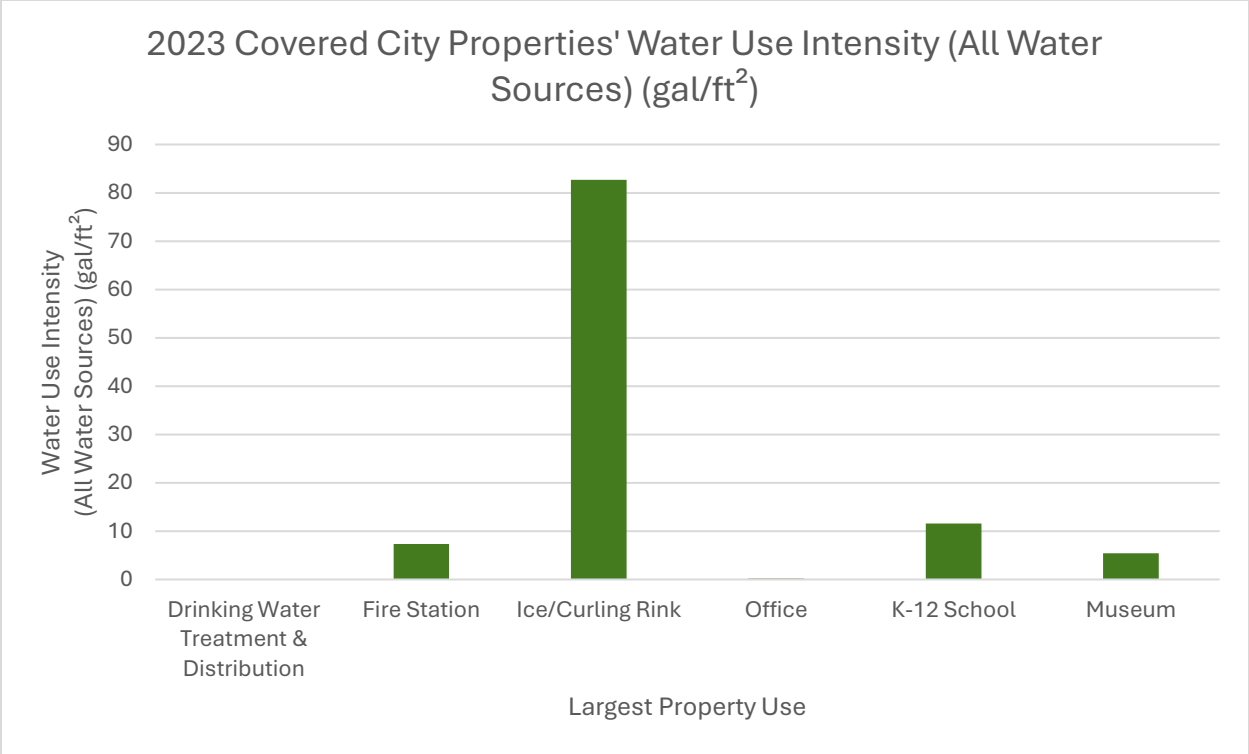
2021: 213.81 (kBtu/ft<sup>2</sup>)

2022: 228.86 kBtu/ft<sup>2</sup>)

2023: 216.72 (kBtu/ft<sup>2</sup>)

## Water Use Intensity (gal/ft<sup>2</sup>)





**Average Water Use Intensity (gal/ft<sup>2</sup>)**

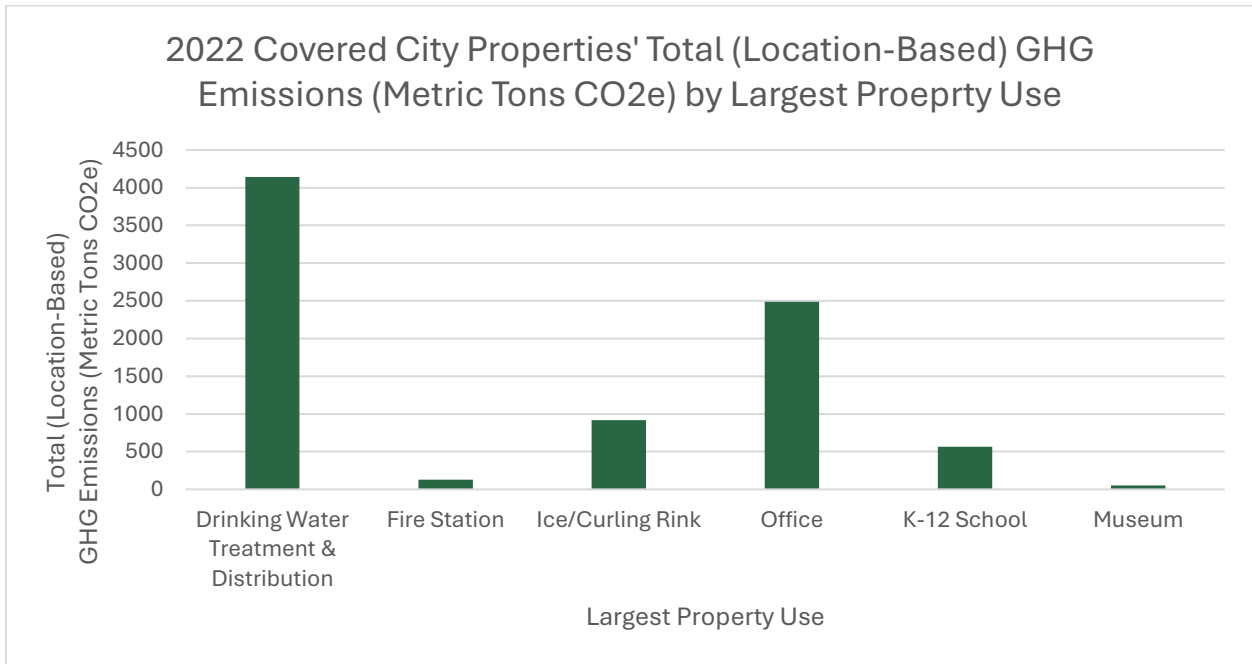
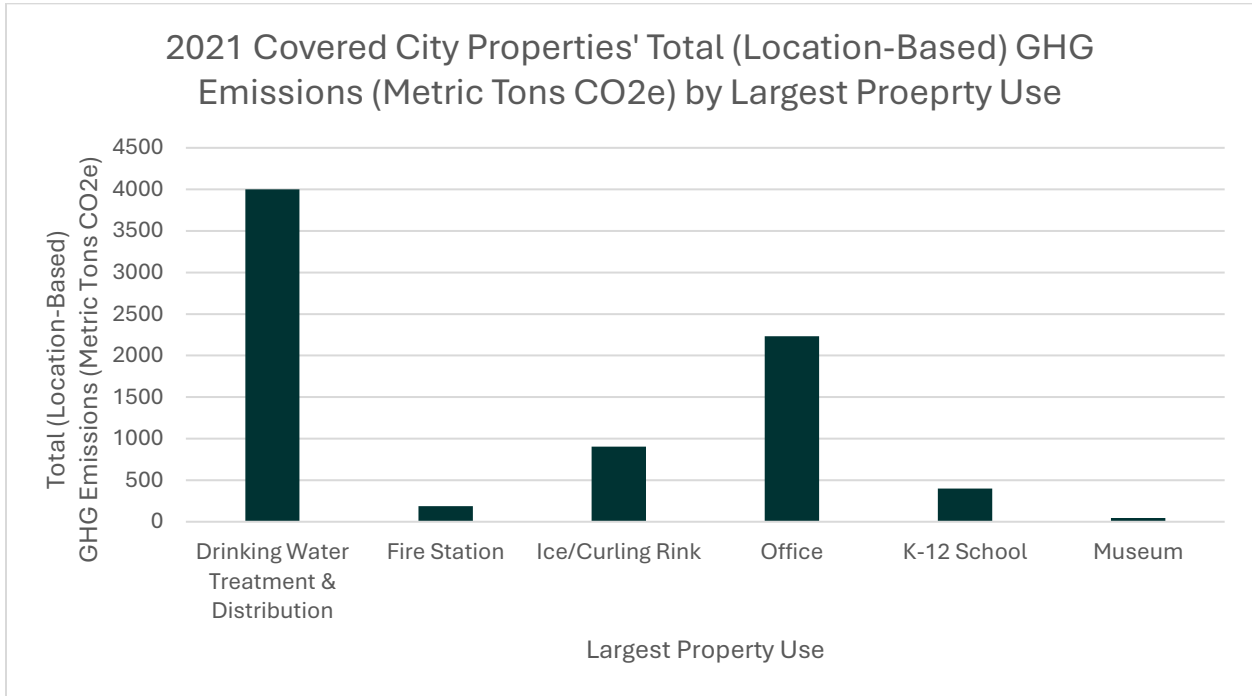
2021: 23.67 (gal/ft<sup>2</sup>)

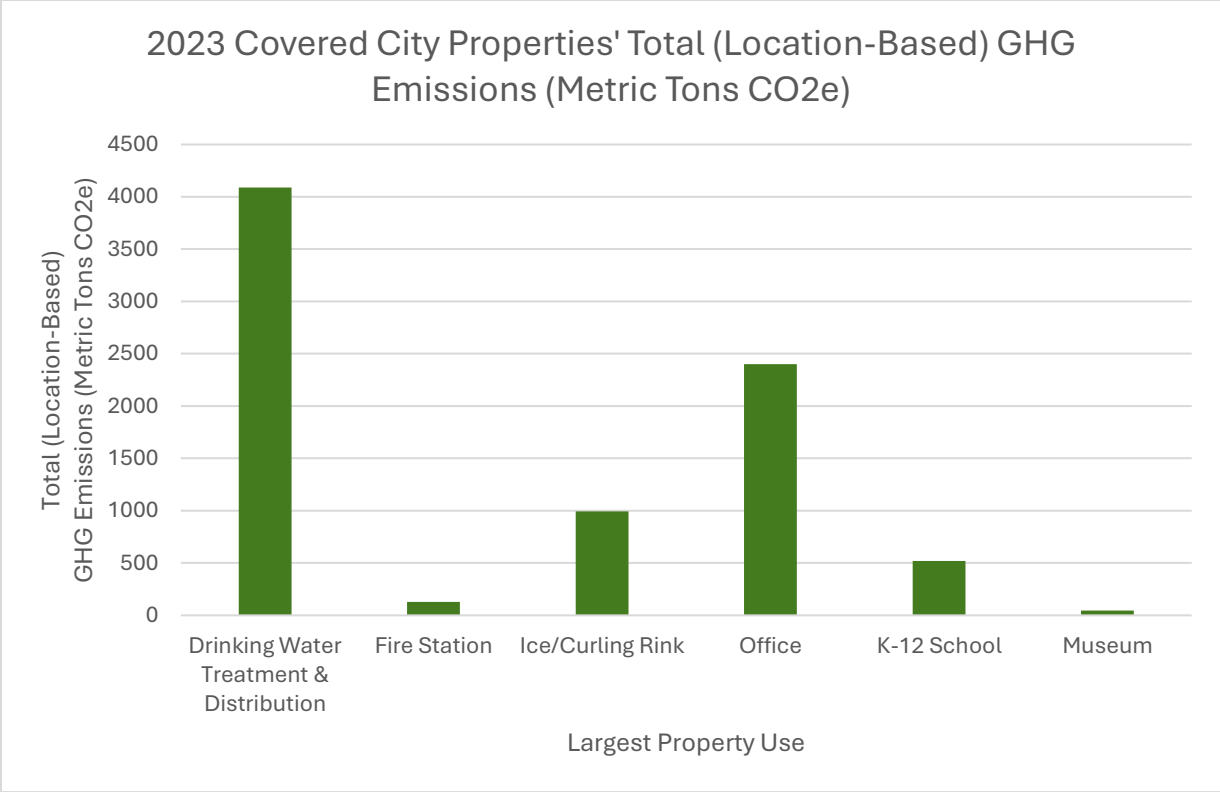
2022: 39.26 (gal/ft<sup>2</sup>)

2023: 31.64 (gal/ft<sup>2</sup>)



## Total GHG Emissions





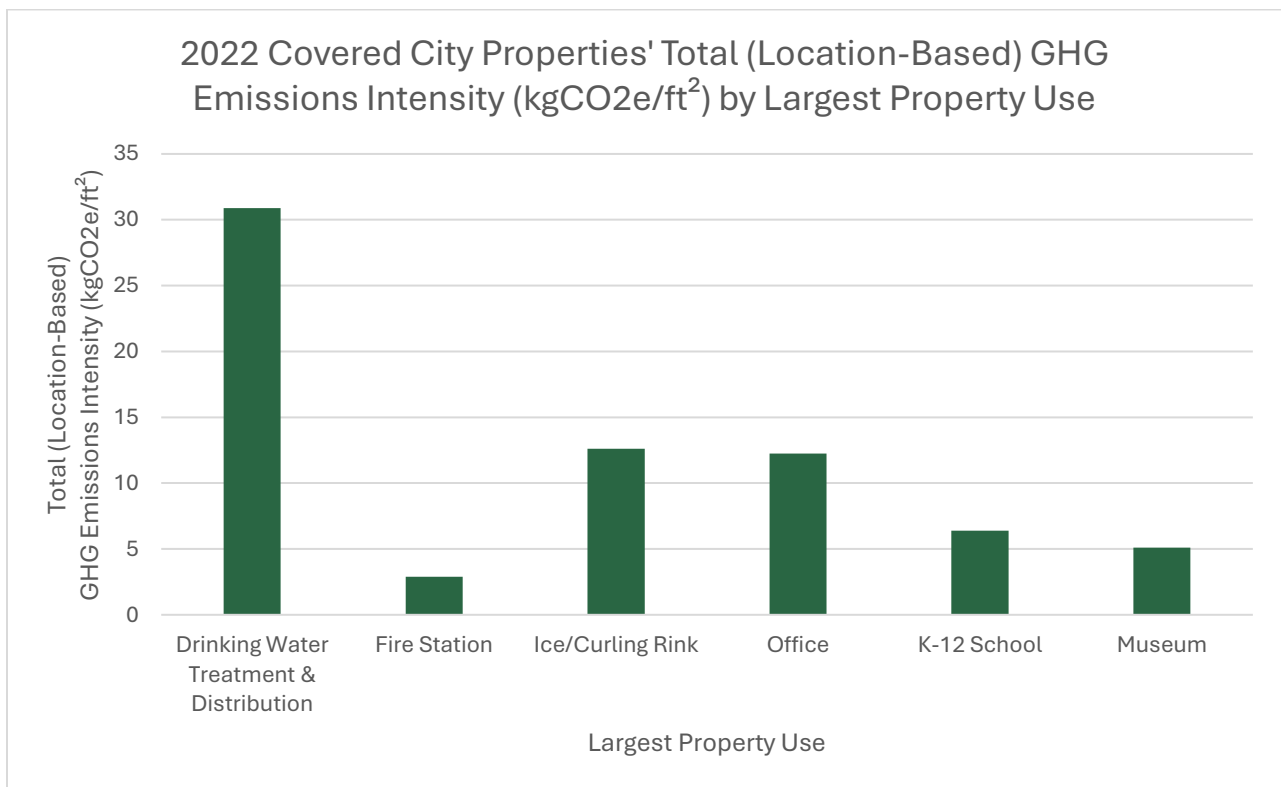
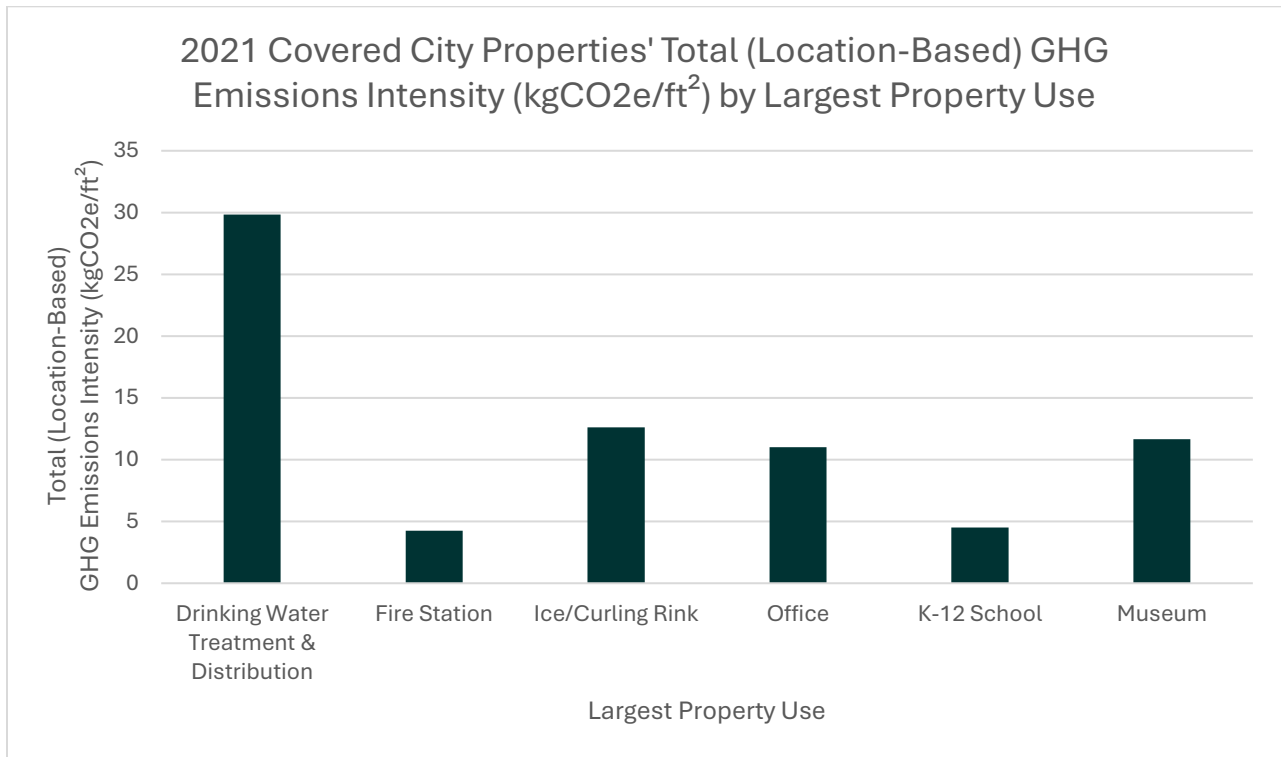
Total GHG Emissions (Metric Tons CO2e)

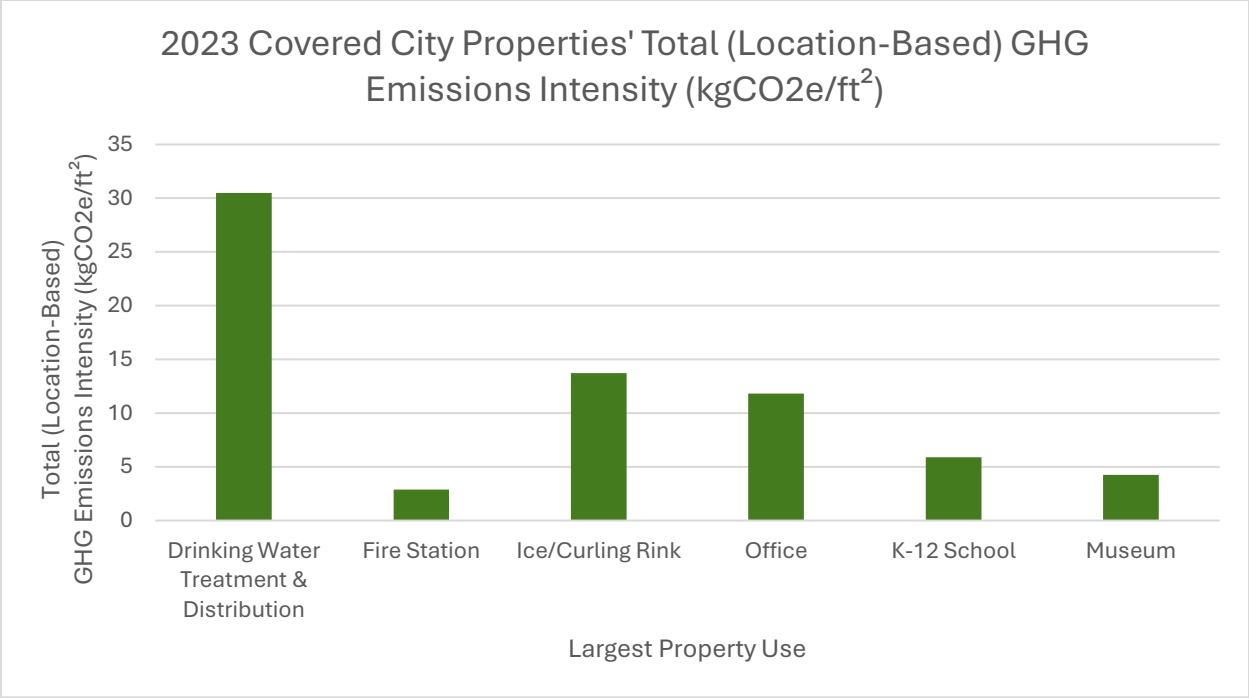
2021: 7771.5 (Metric Tons CO2e)

2022: 8193.1 (Metric Tons CO2e)

2023: 8175.2 (Metric Tons CO2e)

## GHG Emissions Intensity





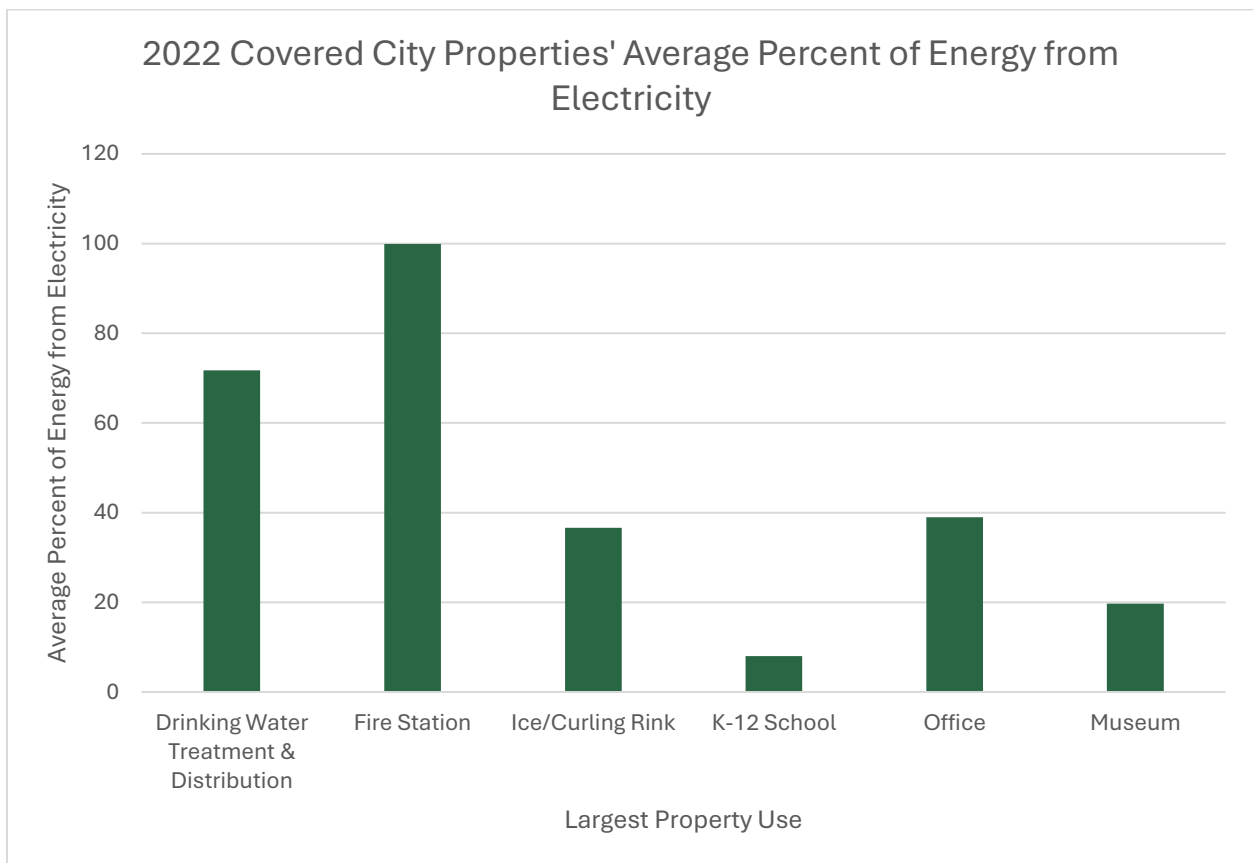
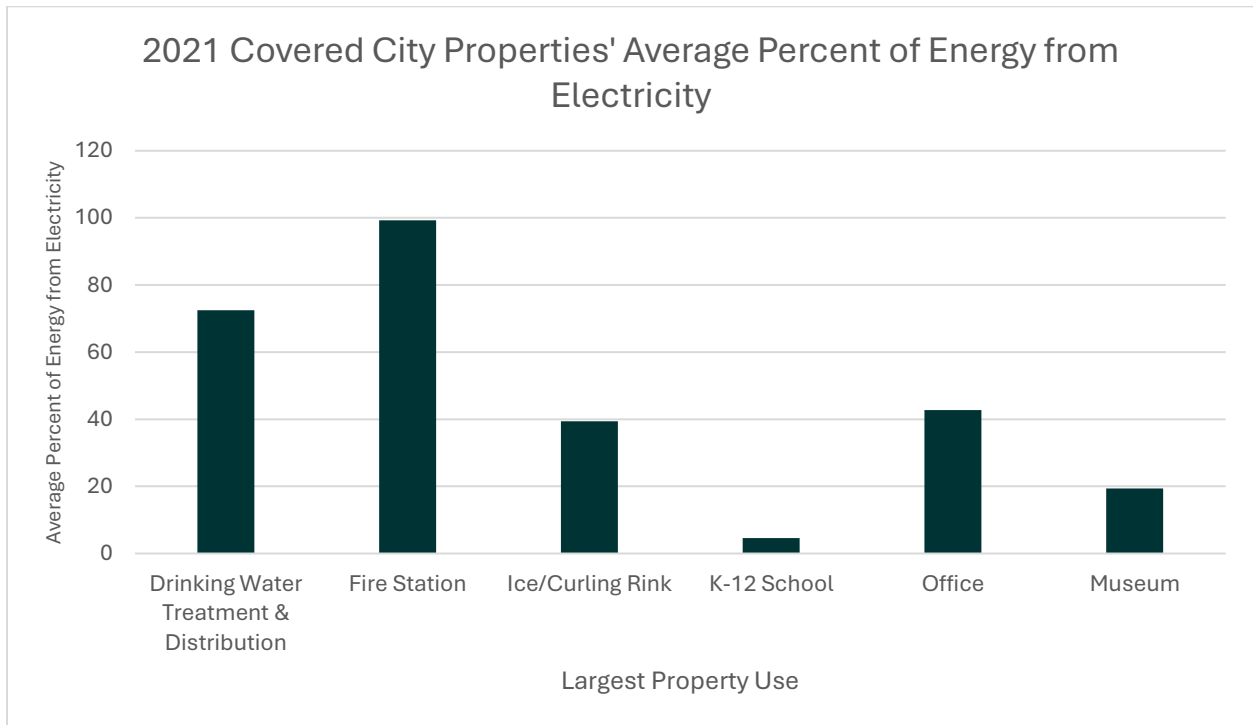
Total (Location-Based) GHG Emission Intensity (kgCO<sub>2</sub>e/ft<sup>2</sup>)

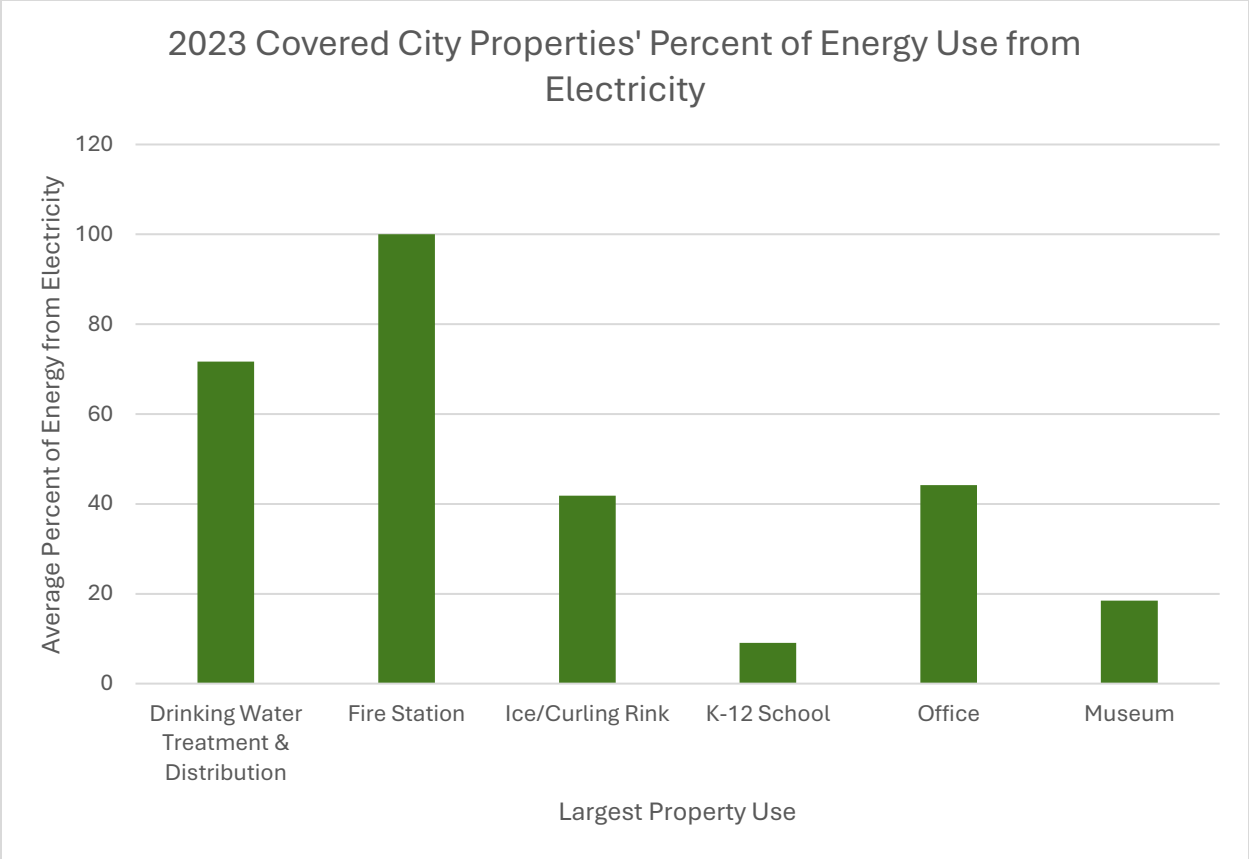
2021: 12.36 (kgCO<sub>2</sub>e/ft<sup>2</sup>)

2022: 11.82 (kgCO<sub>2</sub>e/ft<sup>2</sup>)

2023: 11.82 (kgCO<sub>2</sub>e/ft<sup>2</sup>)

## Percent of Energy Use from Electricity





Percent of Energy Use from Electricity

- 2021: 45.3%
- 2022: 44.5%
- 2023: 46.7%

## Assessing Covered City Property Data and Trends

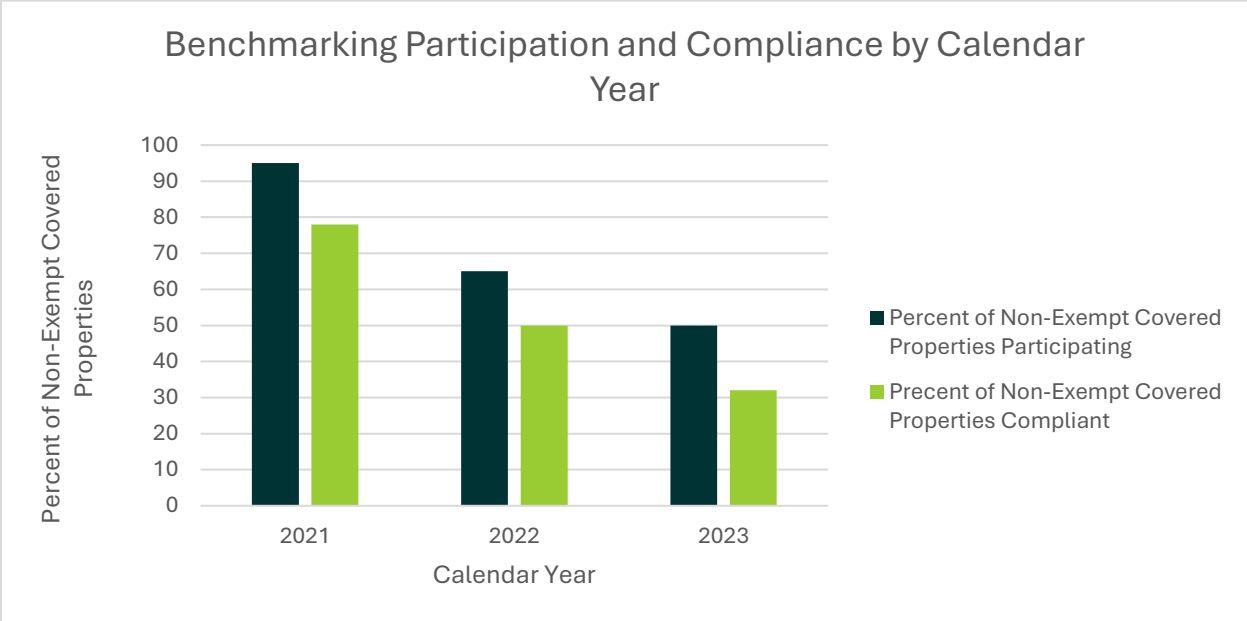
Assessing trends across Covered City Properties is difficult due to the types of properties covered and certain aspects of their energy and water usage. Regarding energy usage, benchmarking Fire Station 1 revealed that one gas meter for the property has transmitted usage since 2019, meaning that most of the station's natural gas consumption is not captured in this report. Ann Arbor Open is included in this report, as the City of Ann Arbor pays for one gas bill for Mack Pool, a Parks and Recreation Facility. The school is therefore considered a City Covered Property. However, Ann Arbor Public Schools (AAPS) is benchmarking all their school properties themselves, so OSI is supplying the gas usage for Mack Pool to AAPS so they can complete their benchmarking report. Changes to Ann Arbor Open's metrics are likely to be due to effort on the part of AAPS. Water data for the water treatment plant does not produce a usable water use intensity score because the plant does not track water usage in plant buildings themselves, such as restroom use. All data is included in the main Flow Meter tracking the total volume of water processed at the plant.

It is important to restate that one benefit of benchmarking is for property owners, managers or representatives to better understand their property data. While Covered City Properties have data quality issues, discovering these issues prompted internal discussions on how to better track this data and are resulting in more accurate usage data at these seven facilities. Due to the clear benefits of benchmarking and with expected expanded capacity in 2025, OSI set a goal to benchmark 2021-2024 calendar year energy and water usage for all city properties over 5,000 sq. ft. by December 2025. If capacity is available, facilities under 5,000 sq. ft. will also benchmark. While OSI tracks GHG emissions from utility data separately, the granularity of benchmarking and the process of obtaining, entering and evaluating utility data will help OSI better understand the municipal data being tracked.

Finally, trends among Covered City Properties from 2021-2023 are likely impacted by more than just property performance. Specifically, due to the COVID-19 pandemic, City Offices had much lower occupancy in 2021 and 2022 than in 2023, and the City's two ice rinks and swimming pools reporting under the ordinance had significant operational disruptions through 2022. Trends from 2023 onward may be more indicative of changes in the municipal benchmarking portfolio. Changes from 2024 onward are likely to be even more indicative of municipal property performance, as OSI plans to benchmark almost all city properties by December 2025.

# Compliance Rates

Compliance rates currently vary significantly across the 2021, 2022 and 2023 calendar year cycles due to staggered enforcement deadlines and OSI’s prioritization of direct support aligning with these deadlines.



## 2021 Calendar Year

### Percent covered vs exempt

The total number of properties over 100,000 sq. ft. considered Covered Properties by the ordinance and required to report calendar 2021 data is 228. This includes properties that are exempt.

The total number of Covered Properties required to report 2021 calendar year data, excluding those with annual exemptions such as condominiums, the University of Michigan and Ann Arbor Public Schools, is 109.

The total number of properties required to report 2021 calendar year data, excluding all currently exempt properties, is 78.

### Compliance of non-exempt properties

As of December 2024, 54 properties are compliant for the calendar 2021 cycle, a compliance rate of about 78%.

### Participation of non-exempt properties (defined as connected in ESPM or manually reported)

As of December 2024, 71 properties required to report calendar 2021 data are participating, meaning they have started benchmarking in ESPM and are connected with the City of Ann Arbor



in EPSM, for a participation rate of 95%. OSI is working through technical and data challenges to bring participating but not yet compliant properties into compliance.

## **2022 Calendar Year**

### **Percent covered vs exempt**

The total number of properties over 50,000 sq. ft. considered Covered Properties by the ordinance and required to report calendar 2022 data is 394. This includes properties that are exempt.

The total number of Covered Properties required to report 2022 calendar year data, excluding those with annual exemptions like condominiums, the University of Michigan and Ann Arbor Public Schools, is 184.

The total number of properties required to report 2022 calendar year data, excluding all currently exempt properties, is 173.

### **Compliance of non-exempt properties**

As of December 2024, 87 properties are compliant for the calendar 2022 cycle, a compliance rate of about 50%.

### **Participation of non-exempt properties (defined as connected in ESPM or manually reported)**

As of December 2024, 113 properties required to report 2022 calendar year data are participating, meaning they have started benchmarking in ESPM and are connected with the City of Ann Arbor in EPSM, for a participation rate of 65%. OSI is working through technical and data challenges to bring participating but not yet compliant properties into compliance.

## **2023 Calendar Year**

### **Percent covered vs exempt**

The total number of properties over 20,000 sq. ft. considered Covered Properties by the ordinance and required to report calendar 2023 data is 677. This includes properties that are exempt.

The total number of Covered Properties required to report 2023 calendar year data, excluding those with annual exemptions like condominiums, the University of Michigan and Ann Arbor Public Schools, is 383.

The total number of properties required to report 2023 calendar year data, excluding all currently exempt properties, is 371.

### **Compliance of non-exempt properties**

As of December 2024, 120 properties are compliant, a compliance rate of about 32%.

## **Participation of non-exempt properties (defined as connected in ESPM or manually reported)**

As of December 2024, 185 properties required to report 2023 calendar year data are participating, meaning they have started benchmarking in ESPM and are connected with the City of Ann Arbor in ESPM, for a participation rate of 50%. OSI is working through technical and data challenges to bring participating but not yet compliant properties into compliance.

## **Data Accessibility**

### **DTE Energy**

#### **Overall Data Accessibility:**

DTE is the largest energy utility serving the City of Ann Arbor, and nearly every Covered Property must report usage of natural gas, electricity, or both energy sources from DTE as part of their benchmarking report. A Covered Property complying with the Benchmarking Ordinance is always permitted to track energy and water use from the usage detailed in their monthly bills. However, most Covered Properties have tenant spaces in which tenants hold their own utility accounts. DTE offers four ways to obtain the aggregated whole building or property data, including tenant data, as required by the Benchmarking Ordinance.

1. Tracking energy usage manually via bills, an option only available to Covered Properties whose owner or manager pay all bills directly, then bill tenants for the cost. This is an uncommon method for Covered Properties and is more common in smaller properties that have simpler metering arrangements, and/or where all utility accounts are held by one owner, manager or tenant.
2. Requesting data directly from DTE by email. To the best of OSI's knowledge, no property has obtained their DTE usage data this way.
3. Downloading property usage from a property's online Landlord Account. This is an option for properties that have Landlord Accounts, which is not always the case for commercial properties. This is an uncommon method for Covered Properties, as it relies on access and familiarity with DTE's Landlord Portal. Few Covered Property owners or managers use their DTE landlord account, if they have one, and fewer are familiar with the account.
4. Enrolling in DTE's Energy Data Hub, a free data portal that provides aggregated whole-building or property data that can automatically upload data to the benchmarking tool properties use to comply with the Benchmarking Ordinance. Most Covered Properties complying with the benchmarking ordinance use the Energy Data Hub to obtain their data, as it offers data automation and an enrollment process that is guided by the Ann Arbor/Washtenaw 2030 District, rather than the property representative obtaining data on their own.

Enrolling in the DTE Energy Data Hub is the recommended way to obtain a property's energy data from DTE. Once enrolled in the program, the Energy Data Hub offers precisely the data required to complete benchmarking in software designed to connect to ESPM. Data can be obtained through other methods, but the Energy Data Hub provides data in a better format and has two dedicated DTE staff members that run the program who can assist with enrollment and data quality issues. This assessment focuses on the Energy Data Hub, as it is the recommended and best option for obtaining DTE energy usage data to comply with the Benchmarking Ordinance. It is also the most common method used by Covered Properties to obtain their usage data.

#### **DTE's Energy Data Hub - Automation**

The Energy Data Hub not only offers the aggregated whole-building or property data required to comply with the Benchmarking Ordinance, but the aggregated data in the Energy Data Hub can also link to a specific building or property in ESPM. Linking these programs automatically uploads

data from the Energy Data Hub to ESPM monthly, significantly reducing the work required to comply with the ordinance in the future. This also benefits the new owner of a Covered Property when the property's owner, manager, or representative who completes the benchmarking report changes. DTE's data will continue to upload automatically, and the ESPM account can simply change ownership without affecting this automation. New owners and managers can easily continue to benchmark and can access historical data for their property's performance.

## **DTE Energy Data Hub - Enrollment**

While the Energy Data Hub itself has been a significant help to properties complying with the ordinance, properties face challenges enrolling in the program in the first place. Navigating the consent form process is the primary accessibility barrier to obtaining DTE usage data from the Energy Data Hub.

Due to the costs associated with operating the Energy Data Hub through DTE's third party vendor managing the software, DTE has limited enrollment to properties who are members of the Ann Arbor/Washtenaw and Detroit 2030 Districts. For properties in the City of Ann Arbor covered by the ordinance, joining the Ann Arbor/Washtenaw 2030 District is free, and they offer free benchmarking support to its members, from setting up their profile in ENERGY STAR Portfolio Manager and enrolling in DTE's Energy Data Hub to correcting issues in their benchmarking report itself. While there are certainly benefits to joining the Ann Arbor/Washtenaw 2030 District, and joining is free, it is an extra step for properties to go through.

To enroll in the Energy Data Hub itself, a property owner or representative completes an enrollment form and consent form. The enrollment form is relatively straight-forward, requiring basic property and contact information. The consent form is a privacy requirement by DTE and is the biggest challenge to obtaining DTE usage data. The consent form verifies that the person requesting the aggregated energy data from DTE is authorized to do so and is an important protection for consumer privacy.

Consumer privacy is important, though the consent form process can be a barrier to a property representative obtaining their own DTE usage data. DTE requires that the person who signs the consent form is someone listed, by name, as an authorized user in the property's online DTE Landlord Account. Most multifamily properties have a DTE Landlord Account, but the person listed as an authorized user in the account is rarely the representative benchmarking a property and is sometimes someone who no longer represents the property in any capacity.

If the property representative's name is not already listed as an authorized user on the online DTE Landlord Portal, the representative must add their name to this account. If another representative has access to the DTE Landlord Portal, that representative can add the representative benchmarking the property quickly and easily through the online Landlord Portal. If another current property representative is listed as an authorized user in the Landlord Portal, that representative can also sign the consent form, and the representative benchmarking the property can submit the consent form on their behalf.

If neither the property representative nor anyone else in their organization has access to the online Landlord Portal, the representative benchmarking the property cannot be added as an authorized user, nor can they confirm who, if anyone, is already listed as an authorized user in

the Landlord Portal. To add their name as an authorized user, the property representative benchmarking the covered property must contact DTE by phone with the property's Employer Identification Number (EIN) or Taxpayer Identification Number (TIN) and account number for the Landlord Account or a common area. The property representative then requests that the DTE customer service representative add their name as an authorized user, or "delegate" on the online account. If the DTE representative is new or unfamiliar with this process, this can be difficult to complete by phone in just one phone call. In some cases, the DTE representative does not understand the request and is unable to add the property representative to the account. In others, the property representative is listed as an authorized representative, but not specifically in the online DTE Landlord Portal and cannot access the needed information. When a property enrolls in the Energy Data Hub, only the names listed in a property's online DTE account are checked. Once added to the online account, the consent form can be accepted by DTE, and the property is enrolled in the Energy Data Hub.

## Constellation

Constellation Energy is the most frequently used choice energy provider in Ann Arbor but supplies energy to a significantly smaller number of properties than DTE. Constellation offers no data automation for properties receiving energy from the company. However, properties can obtain data manually in two ways, which are relatively easy.

First, Constellation customers can use their online Constellation account to generate reports for their property, including monthly usage reports for all meters associated with their account. Apart from the challenge of having no data automation, the main issue with the usage reports generated from online Constellation accounts is that usage is recorded in different units than those used by OSI across all platforms. OSI has created a template Excel spreadsheet in which property owners can paste copied usage information from Constellation's reports, and the spreadsheet converts the units prior to being uploaded to ENERGY STAR Portfolio Manager. This spreadsheet is available on [the City of Ann Arbor's Benchmarking Ordinance webpage](#).

The second method of obtaining data is to request usage reports directly from Constellation Energy through one of the company's representatives. OSI and the Ann Arbor/Washtenaw 2030 District have worked with a Constellation representative to obtain data for properties required to comply with the benchmarking ordinance, and the representative can generate a slightly simpler usage report in the preferred units for gas consumption. Differing from DTE's privacy process, Constellation requires the person requesting the data to include a copy of one bill for the property, and to copy a representative of the property on the email to Constellation, if the person requesting the data is not a representative from the property. The Constellation representative will then ask the property representative to confirm that they authorize the usage information to be shared with the person requesting the data. Third Party Benchmarking support providers can obtain Constellation usage data this way.

The data obtained from Constellation representatives is provided in an easy-to-use format in the units OSI uses for natural gas consumption. The process is relatively easy and quick. However, between DTE, Constellation Energy, and City of Ann Arbor's Water Utility, Constellation Energy is the only utility serving Ann Arbor that does not offer data automation. Data automation from Constellation would make data more accessible, reliably available for benchmarking, and would

reduce data accessibility issues from changes in owner or management, at least for the purposes of benchmarking.

While Constellation Energy does not offer data automation, the Ann Arbor/Washtenaw 2030 District is creating an API to upload Constellation Energy usage data to ESPM. This API will be publicly available on the Ann Arbor/Washtenaw 2030 District's website and can upload data to any number of meters and properties in ESPM. This will be helpful for some Covered Properties, but the data must be in the format provided by requesting data directly from a Constellation Energy representative, not the format from online usage reports. Additionally, as this API is being created by the Ann Arbor/Washtenaw 2030 District and hosted on their website, its availability and longevity is dependent on the Ann Arbor/Washtenaw 2030 District. The better long-term solution would be for Constellation Energy to develop an in-house automation solution.

## City Water Data

The City of Ann Arbor is the water utility for all Covered Properties required to comply with the benchmarking ordinance. Prior to the benchmarking ordinance passing, the City offered AquaHawk to all water utility customers in the city. AquaHawk is an online portal that shows water usage down to the hour, meter by meter. In AquaHawk, property representatives can also download monthly water usage reports to upload to ESPM. To access their water meter data, property representatives need the water account holder name and the six digit customer number, both of which are available on their water bill.

To ease obtaining water usage data, City IT, Customer Service, and OSI staff set up a process to automatically upload water usage data to ESPM. To automate this data, property representatives set up water meter profiles in ESPM labeled with certain information obtained from AquaHawk. The property then connects their ESPM account to an ESPM account the City operates, and an API uploads water usage data to the property's account, meter by meter.

While this process is now running smoothly, it involves several different programs and City areas working together, and there are many moving parts to coordinate. Each City Water customer is linked to a water billing account in Cogsdale, the utility billing software The City uses for water billing. Each account is linked to any number of physical water meters installed on-site at a property. Physical water meters have their own meter serial number and are linked with a meter transmission unit (MTU) which records meter readings on a periodic basis and transmits this data to Aclara, the advanced metering infrastructure (AMI) solution the City uses. Each meter/MTU pair is also programmed with a "radio" number that links them together and is used as an Account number in Aclara. A meter or MTU or both can be replaced on a customer's "radio" number.

The API that uploads water usage data to ESPM uploads correct usage by pulling data from Aclara based on specific sets of Cogsdale account numbers, physical water meter numbers, and Aclara radio numbers that are entered in Covered Property meters in ESPM. However, the data available through the API may be limited depending on the current status of a replaced meter or MTU. In addition, during periods in which an MTU hasn't transmitted reads to Aclara, which can happen for various reasons, there also won't be any data to upload for that timeframe through the API.

There are also challenges with the physical water meters. In terms of accessibility, properties 100,000 sq. ft. or greater had an extra hurdle to accessing and uploading water usage data.

Starting in January 2020, almost all water meters in the city were replaced with upgraded units. For the 100,000 sq. ft. properties complying with the ordinance, this means that almost all had two sets of meters for the 2021 calendar year data, doubling the work to upload this data. While the City's water data automation process works for almost every active water meter, inactive meter data is unable to be automated, so all inactive meter data must be uploaded manually, meter by meter. Manually uploading inactive water meter data will continue to be a barrier to benchmarking water usage, but the frequency of the issue should be significantly lower, and the data itself is generally easily accessible in AquaHawk.

Commercial properties have experienced more issues obtaining water data. While many multifamily properties' water accounts are held by the owner or property manager, it is more common for commercial tenants to hold their own water accounts. This means that if a commercial property owner or manager obtained water bills from current tenants to access their water usage in AquaHawk, the owner would not have access to previous tenant data, as the current bill would not have the account information necessary to access that data. This issue is mitigated by OSI staff having access to all AquaHawk data.

While it can consume significant staff capacity and is not feasible for every property complying with the ordinance, OSI staff can pull information from AquaHawk for properties that are having trouble obtaining the information necessary to record all water use on the property. OSI staff finding the property's meter information, manually, expedites benchmarking and compliance, while still providing a property representative with the information needed to access water meter data through AquaHawk in the future.

## Data Accuracy

### DTE

OSI assesses the accuracy of energy usage provided by DTE to be generally accurate with moderate to severe data quality issues in a small number of enrolled properties. While many properties have what appears to be mostly complete data for all meters, tenants, and units for the required calendar years, there are multiple instances of properties having a significant number of gaps in data or a small number of long gaps in data.

OSI has attempted to spot-check some of these gaps with mixed results. In some cases, a gap exists between tenants. For example, a gap in data could appear as shown below.

- 1/1/2021-6/30/2021: tenant 1 holds DTE account; DTE Energy Data Hub has usage
- 7/1/2021-7/31/2021: tenant's lease ends, DTE account reverts to landlord; DTE Energy Data Hub has usage.
- 8/1/2021-8/31/2021: landlord still holds account; DTE Energy Data Hub has no usage.
- 9/1/2021-12/31/2021: tenant 2 takes over DTE account; DTE Energy Data Hub has usage

In some of these cases, OSI was able to work with property management to confirm that some of the gaps in the Energy Data Hub correspond to billing periods in which the unit in question was billed for zero usage. This lack of usage could be legitimate for some units. However, due to the number of gaps in data present for the number of properties whose data contains gaps, it is not feasible to assess every gap for every property. The type of gap like the one shown above could appear hundreds of times in one property's Energy Data Hub data.

In one case, a property manager used their online DTE Landlord Account to download monthly usage and compare it to the DTE Energy Data Hub usage, finding similar usage. While the Landlord Account offers limited usage reports, it is connected to the landlord's bills, offering an opportunity to compare data with the DTE Energy Data Hub. This similar usage indicates that the data provided by the Energy Data Hub is accurate to the extent that DTE has data to provide.

One of the more extreme cases was a large multifamily property that cannot obtain data prior to June 2023. DTE was unable to find the missing data for about five months, but eventually found and uploaded almost all the missing data. While some gaps in DTE data can be explained or confirmed by bills for zero usage, outlying examples like multiple years of data missing indicate that, for some properties, there are significant issues with the source usage data DTE maintains. How often this impacts Energy Data Hub data is difficult to determine, currently. Therefore, for some properties, it is difficult to determine the data accuracy, how missing data may impact a property's benchmarking report, and the overall benchmarking analysis.

DTE dedicates one staff member to managing enrollment in the Energy Data Hub and addressing data quality issues. While it can take time to find missing data, especially residential data, DTE staff continue to work to solve and understand outstanding data quality issues. Having a specific DTE staff member to work with to solve data quality issues is helpful when data quality issues take weeks or months to resolve.



## Constellation

OSI assesses Constellation Energy's data to be generally accurate and complete. Multiple properties that obtain their data from Constellation Energy have found gaps in their data, but gaps are rarely more than one month in length, and a property rarely has more than one gap over three years of data.

Some factors that could contribute to the relative completeness and accuracy of Constellation Energy's data compared to DTE are: much fewer properties use Constellation Energy, most only use Constellation Energy for natural gas, and gas is generally metered at the property level, meaning there are fewer units, tenants, and accounts to track. For example, one large multifamily property with over 200 units and a significant number of gaps in DTE electric data has one Constellation natural gas meter for the entire property's natural gas usage that spans three tax parcels.

## City Water Data

OSI assesses water usage data provided by the City of Ann Arbor to be generally accurate and complete. The water usage data provided by the City is generally accurate, but there are consistent issues with periods of missing data related to the physical meters themselves.

Water usage by meter and as granular as by the hour is already available through AquaHawk, a free online tool the City of Ann Arbor offers to its customers to view and track water consumption. Through AquaHawk, customers can view and download water usage data, which will show specific meter readings. This data is generally accurate. However, there can be gaps in usage data when a physical water meter is unable to take a reading or transmit a reading to the City, or when a reading is taken incorrectly. Incorrect or missing readings will appear in AquaHawk as a gap, zero usage, or in rare cases, a negative reading. Usually, the usage is captured or corrected in the next meter read. However, sometimes, meters can go without readings for months, and usage must be estimated to bill customers. Most issues like this occur when a physical meter is swapped out, although readings can be missed during regular operations. Missed readings or negative readings appear in ESPM as a gap in usage, which OSI staff can spot-check in AquaHawk when determining compliance.

The recommended way to obtain water usage data for the purposes of benchmarking is to set up a property in ESPM to receive automatic water usage data. This involves connecting a property's ESPM account to a City of Ann Arbor-run ESPM account which automatically uploads water usage data meter-by-meter based on custom readable fields in the ESPM meters. The data uploaded is the actual usage reads from a property's meters. If a meter has an issue and/or misses a read, this is reflected correctly as a gap in ESPM's usage. While a gap is a missing meter read, the missing usage is usually captured in the next read, so the overall data accuracy is generally maintained when looking at water usage over the span of a calendar year.

Lastly, as detailed already, starting in January 2020, the City of Ann Arbor began replacing all water meters with upgraded units. This mainly affected Covered Properties 100,000 sq. ft. or larger. While the upgraded units provide more accurate readings than the old units, some Covered Properties have gaps in readings during the time their meters and Measuring Transmitting Units (MTUs) were replaced or shortly thereafter. These gaps and issues were

generally resolved in a few months or less, but some gaps existed for over a year or crossed calendar years, affecting year-to-year comparisons of water usage.

While there are real issues with some data quality in the City of Ann Arbor's water usage data, the usage data ultimately reported in ESPM is generally accurate. As the City of Ann Arbor is the water utility for all Benchmarking Covered Properties, any questions or concerns about data can be more easily explored and remedied than those from other utilities. Gaps or questionable data can usually be quickly and easily explained by Customer Service staff who manage water utility billing and are knowledgeable about how the meters function and are replaced.

## **Overall Data Accuracy Assessment**

Overall, data utilities serving Ann Arbor provide are generally accurate and complete, with data quality issues being more common from DTE and egregious issues being concentrated in specific properties rather than being a systematic issue across all properties or being an issue specific to the DTE Energy Data Hub. In some cases, gaps in DTE data can be explained, and in many of the gaps that cannot be explained, DTE claims that the data is not available to share, up to years-worth of data.

While Constellation Energy data sometimes has gaps, the gaps are rarely more than one billing cycle across three years. City water data has fewer gaps than DTE and more than Constellation Energy. However, the gaps in usage data from City water data can almost always be explained by physical changes to a property's meters or from a meter simply skipping a meter read.

Lastly DTE, Constellation, and the City of Ann Arbor provide usage data at different levels of specificity. Constellation Energy and the City of Ann Arbor provide usage data meter-by-meter, while DTE only aggregates data at the building or property level. While all methods are acceptable to comply with the Benchmarking Ordinance, meter-by-meter data is more helpful for property owners and is easier to evaluate when identifying the cause of usage gaps.

Altogether, the majority of Covered Properties have generally accurate and useful aggregated utility data. The data provided by DTE, Constellation Energy and the City of Ann Arbor are accurate enough for most property owners to make broad decisions about their properties and for OSI to broadly assess performance trends of Covered Properties. Given the uncertainty as to the accuracy of some data provided by utilities, namely data from DTE, the data is not accurate enough for granular property analysis and specific recommendations for all properties. However, finding these data quality issues is, in and of itself, helpful, as identifying issues with the data that utilities track, maintain and share with customers improves the accuracy of the data used by properties to make decisions. DTE continues to improve its data quality of new properties enrolled in the Energy Data Hub and properties already enrolled that had data quality issues in their initial upload. Properties with outstanding data quality issues may still achieve compliance with the Benchmarking Ordinance while their utilities work to resolve the data quality issues.

# Contact

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