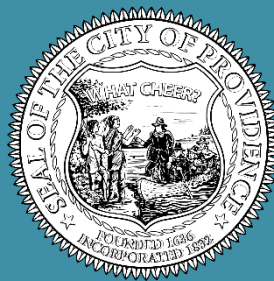




Setting the Baseline for Carbon Neutrality

City of Providence 2024 Building Energy Report



Department of Sustainability

December 2024

Setting the Baseline for Carbon Neutrality

This first annual report for the City of Providence's Building Energy Reporting Program (BERO) sets the stage for tracking progress toward carbon neutrality in Providence buildings. A foundational principle of sustainability is that "you can't manage what you don't measure." By beginning this comprehensive approach to tracking building energy use and efficiency, together the City can work with owners of large buildings to identify strategic opportunities to reduce our carbon footprint and improve climate resiliency.

Building Energy Reporting

The Smiley Administration and the Providence City Council partnered in establishing the Building Energy Reporting Ordinance ([ORD-2024-41](#)) in July 2024. The program requires property owners of large buildings to report their energy usage to the City on an annual basis. The City then publicly discloses the data to permit the building owners to understand how their building's performance compares to others in the City with the goal of encouraging building owners to invest in energy efficiency measures to reduce their energy usage and costs. The City will also use the data gathered by BERO to inform future energy conservation and decarbonization policies.

In the program's first year, only the energy usage of City-owned properties greater than 10,000 square feet were required to be reported. In 2025, all privately-owned buildings greater than 50,000 square feet will require reports. In 2026, the report will expand to include all privately-owned buildings greater than 20,000 square feet.

The Baseline for Public Buildings

During the first year of the BERO program, the City of Providence identified and successfully reported on 64 city-owned properties with 10,000 or more gross square feet that were occupied in 2023 or received energy services for that entire calendar year. Energy consumption data was uploaded to ENERGY STAR® Portfolio Manager® (ESPM) for each of

these properties establishing a 2023 energy use baseline. The City has achieved a full reporting compliance rate. With this being the first year of the program, only baseline data was collected. In future years, comparative analysis between reporting years can be performed. Additionally, the City moved forward with energy audits and the planning of electrification and new construction projects, and Providence Public School District (PPSD) continued with their 4-phased school improvement project timeline. These activities, along with the City's ongoing decarbonization efforts will benefit from this baseline year data.

Throughout the first year of the program, the Department of Sustainability laid the administrative foundation of the program. It secured grant funding to utilize two U.S. Department of Energy sponsored building energy analysis manager platforms: SEED and BEAM. Both platforms take data from ESPM to 1) perform comprehensive analytics and 2) provide enhanced reporting capabilities and customer relationship management (CRM) functionality. The department contracted with ClearlyEnergy, who is the service provider for BEAM, to provide enhanced help desk support for first-time benchmarking participants. The department also populated the BEAM platform with a covered properties list consisting of 886 properties taken from data provided by the Assessors and the Planning Departments.

2024 Report and BERO Program Development Highlights

The Covered Property Reporting Matrix (Appendix A) provides reporting data for all properties required to report this year. The below program highlights and Providence specific portfolio and energy metric analyses compare the City's properties to the national median. The Sustainability Department also regularly publishes a detailed report on municipal energy usage, costs, and greenhouse gas emissions, which can be found on the Department's [website](#).

- The Department of Sustainability worked with Public Property, Parks, Roger Williams Park Zoo, and PPSD to identify the 64 City-owned properties and to collect their 2023 baseline year data. This interdepartmental approach resulted in the reporting of 100% of required municipal buildings. The Department of Sustainability successfully integrated its ENERGY STAR® Portfolio

Manager® (ESPM) properties and data with BEAM, the building energy analysis platform supported by ClearlyEnergy that the BERO program will use to manage the programs data.

- Using data provided by the City Assessor and the Planning Department, Sustainability has developed a comprehensive city-wide covered property list (CPL) to guide property owner outreach and reporting efforts.
- Working with Public Property in coordination with the Parks Department, the Recreation Department, and PPSD, the Department of Sustainability conducted whole-building energy audits at 6 high-priority municipal buildings, and electrification efforts are planned or completed at 6 municipal buildings.

City of Providence Portfolio and Energy Metric Analysis

The data below show the vast majority of City-owned properties are K-12 public school buildings. These properties represent 77.1% of the building square footage owned by the City and consume 74.3% of the energy used to operate the City's buildings.

Knowing the percentage of energy consumed by Providence's K-12 school buildings, it is important to remember that the State reimburses municipalities for 91% of the costs for school construction projects and major renovations, and that the school district is required to build to the New England Coalition for High Performance Schools (NE CHPS) standard which includes a low energy use performance threshold.

This combination of policies enables the City to build or completely renovate three to four schools per year, which facilitates building decarbonization at a pace that could allow the City to meet the carbon emission reduction

mandates set by the State's Act on Climate legislation and the City's newly adopted Energy Efficiency and Carbon Neutral Goals for Municipal Buildings ordinance ([ORD-2024-41](#)).

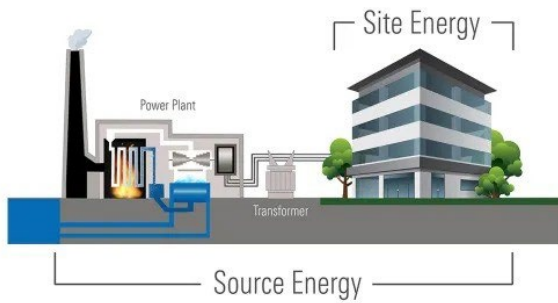
Square Footage Analysis			
Use Group	Property Count	Square Footage	Percentage
K-12 School	35	4,121,332	77.1%
*Misc. Building Types	15	566,243	10.6%
Office	5	302,712	5.7%
Public Safety Buildings	8	217,809	4.1%
Zoo	1	137,319	2.6%
Total	64	5,345,415	100.0%

**Site Energy Use Analysis			
Use Group	Property Count	Site Energy Use (kBtu)	Percentage
K-12 School	35	222,967,840	74.3%
Misc. Building Types	15	24,577,341	8.2%
Office	5	18,177,907	6.1%
Public Safety Buildings	8	18,609,775	6.2%
Zoo	1	15,747,732	5.2%
Total	64	300,080,595	100%

Comparing Providence to the National Median

One way to track Providence's progress in building efficiency is to compare their energy consumption with similar buildings. To be able to effectively measure the impacts of building's energy use, the calculation includes both the "site energy" used at the building (for instance in a gas boiler for heating) and the "source energy" such as the electricity produced off-site that the building uses.

Source energy provides the most equitable way to combine on-site and off-site energy types into a single unit, ensuring that no building receives a credit, or a penalty based on its energy source. Source energy is also an indicator of the greenhouse gas emissions (GHG) of a building. ENERGY STAR® provides this illustration to explain the distinction between site energy and source energy.



To be able to compare buildings of different sizes, the source energy or the site energy are divided by a building's square footage to determine the energy use intensity.

The Energy Use Intensity (EUI) Comparative tables below present a comparison between

Providence and the national median in both Site EUI (Energy Use Intensity) and Source EUI.

The national median Source EUI is a recommended benchmark metric for all buildings. The median value is the middle of the national population – half of buildings use more energy, half use less.

The national median is compiled by the DOE Energy Information Administration every 5 years via a commercial building energy consumption survey (CBECS). Buildings with a negative percentage difference are generally viewed as performing poorly compared to the national median. While older buildings without central air-conditioning and ventilation systems will perform better in this type of comparison, they are not as healthy and comfortable to occupy.

Site EUI Comparative Analysis - Providence vs. National Median				
Use Group	Property Count	Providence Median	U.S. National Median	Percentage Difference
K-12 School	35	54.1	48.5	-12%
Misc. Building Types	15	67.5	40.1	-68%
Office	5	53.6	52.9	-1%
Public Safety Buildings	8	89.7	63.5	-41%
Zoo	1	114.7	56.2	-104%

**Source EUI Comparative Analysis - Providence vs. National Median				
Use Group	Property Count	Providence Median	U.S. National Median	Percentage Difference
K-12 School	35	79.8	104.4	24%
Misc. Building Types	15	102.4	89.3	-15%
Office	5	80.8	116.4	31%
Public Safety Buildings	8	172.5	124.9	-38%
Zoo	1	249.3	112.0	-123%

Misc. Building Types includes the following building use groups: Public Assembly, Public Service, Recreation Facilities, Museums, and Non-Refrigerated Warehouses.

2025 Program Development for Private Property Owners

While the Sustainability Department is preparing to launch 2025 benchmarking efforts, the City is challenged by RI Energy's inability to automatically transfer data to ESPM. After the acquisition by PPL, the application programming interface (API) with ESPM was disconnected, eliminating the ability to seamlessly transfer billing data. Until RI Energy re-establishes this connection, the rollout of BERO to the 307 properties identified to date (buildings greater than 50,000 square feet) slated to report their 2024 energy data will undoubtedly be impacted.

Notably, the City circumvented this problem for its own properties because the City uses an energy management information system from a third-party vendor, PowerOptions. PowerOptions collects billing data from RI Energy and enters it into the energy management system, from which it can be transferred to ESPM. While this is a viable workaround for the City, private building owners should not need to invest in these types of energy management services to comply with the ordinance.

Though RI Energy is working to remedy this situation, a permanent resolution is not

expected until mid-2025 – after the May 15, 2025, reporting deadline. However, RI Energy is still expected to make complete utility energy usage data for calendar year 2024 available to building owners by March 2025 and has agreed to co-host an educational webinar with the Department of Sustainability to ensure property owners have the support they need to complete building energy reporting and successfully access energy efficiency cost savings.

Another important consideration is that nationally, energy benchmarking programs in their early years are expected to have approximately a 14% compliance rate for building energy reporting. Therefore, the primary goal in the first year of successfully launching the program is to continue building an accurate covered property list and identify complete contact information for building owners by working with energy partners and providers. Through these partnerships, we will amplify targeted outreach efforts to create awareness about 1) the program, 2) the support available for benchmarking reporting, and 3) the cost saving benefits of energy efficiency tied to building energy reporting.

Conclusion

The Smiley Administration and the Providence City Council are committed to building a healthier, more sustainable and climate resilient city for generations to come. This first annual report sets the stage to achieve the City's critical climate pollution reduction goals and live up to our commitments of being a Climate Jobs City and implementing Providence's Climate Justice Plan. We are proud to collaborate in this whole of government approach with collaboration across the Departments of Sustainability, Public Property, Recreation, Parks, Public Works, the Providence Public School District and the Finance Department. We look forward to tracking the progress of City and privately owned buildings in the coming years.