

# SUSTAINABLE ROCHESTER

## BUILDING ENERGY BENCHMARKING

### REPORT 2018

#### MEASUREMENT FOR BETTER MANAGEMENT

The City of Rochester seeks to help buildings limit energy waste and reduce greenhouse gas emissions. By tracking building energy use through the Building Energy Benchmarking Program, Rochester building owners are taking the first step to improve building energy management and efficiency.

In this first year, the following organizations voluntarily submitted whole building energy performance data for commercial, multifamily, and public buildings for calendar year 2018. These pioneers have gained insight into the efficiency of their buildings and the relative performance to peers that can drive energy-saving actions.

Ability Building Center  
Alliance Property Management  
Benike Construction  
Castle Community LLC  
City of Rochester  
Mayo Clinic  
Olmsted County  
Rochester Area Builders, Inc.  
Rochester Area Foundation  
Rochester Athletic Club, Inc.  
Rochester Community & Technical College  
Rochester Public Schools  
Rocket Restaurant Group

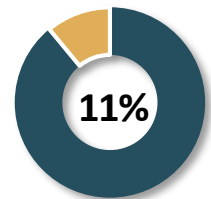
# 90

 Benchmarked properties

using in total 1.7 million MMBtu equal to



13,900 households



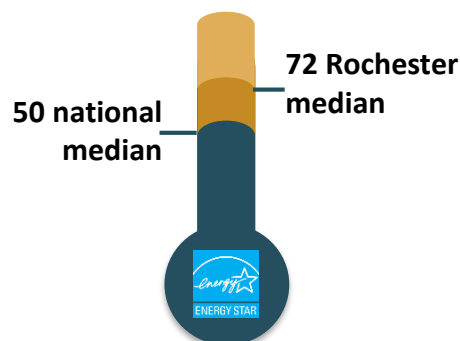
11%

of citywide building energy

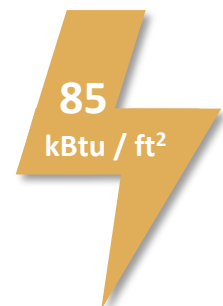


5.6% of  
citywide GHG  
emissions

The buildings had the following performance:



ENERGY STAR  
Score



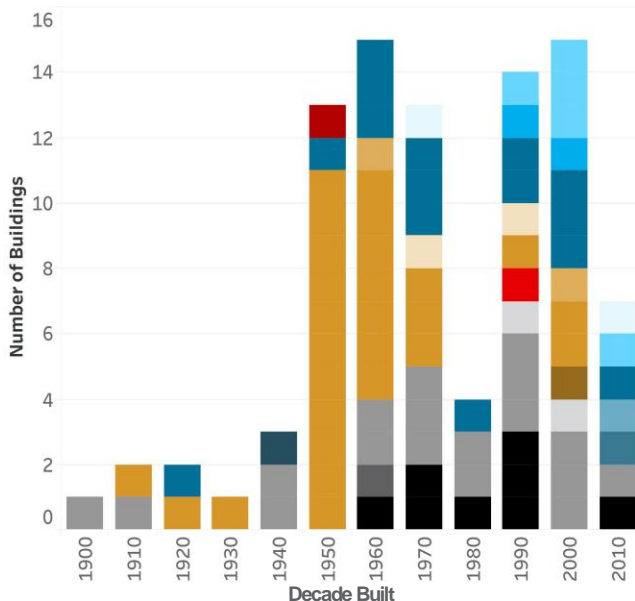
Site Energy Use  
Intensity

# WHAT IS BUILDING BENCHMARKING?

Benchmarking is the ongoing review of building energy and water performance to ensure a building is using energy and water as anticipated -- performance compared to its own anticipated performance over time or the performance of peers. Benchmarking combines two silos of information that have never been merged before: utility meter consumption and building characteristics. When used together, this information provides new insight to building owners, occupants, and efficiency resource providers that is valuable in building management, investment, sale, and lease decisions. On average buildings that benchmark see a 1-3% reduction in energy use annually.

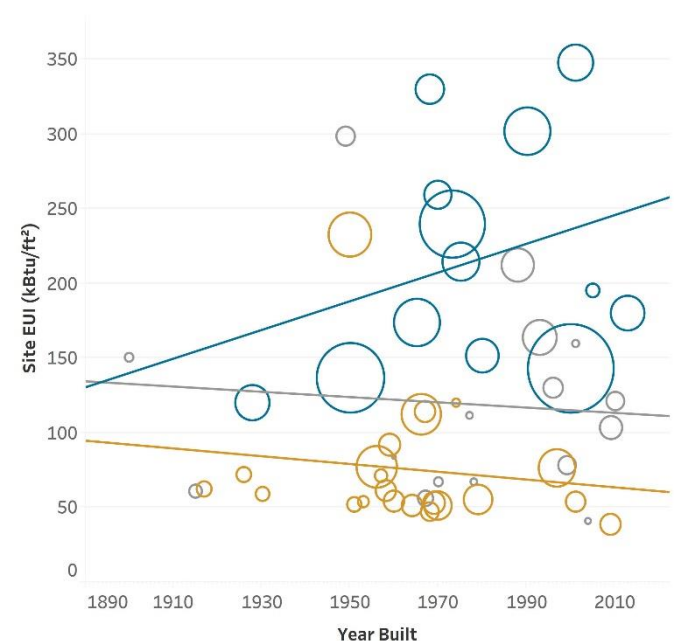
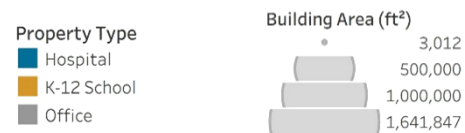
## Building Characteristics

Rochester building owners and managers benchmarked over 13 million square feet. Of the 90 participating large buildings in the city, the majority, 90%, belong to five entities: the Mayo Clinic, the City, Olmsted County, Rochester Community and Technical College, and Rochester Public Schools. The graph below presents building count by the decade built and shows that 90% of the buildings were built after World War II and nearly half, 49%, were constructed after the first state energy code was adopted in 1980.



## Building Age and Energy Efficiency

A common expectation of buildings is that the older the building is the less energy efficient it must be. The graph below tests this theory by plotting the energy use intensity (EUI) of the three most common property types by their year built. Since EUI is heavily dependent upon property type, regression trend lines are drawn for each. As displayed in the poor fit of the lines, the analysis shows no statistically significant result. Therefore, in Rochester there is likely little to no direct linear relationship between building age and energy performance.



## HOW IS ENERGY EFFICIENCY OF A BUILDING MEASURED?

Three main metrics are used to understand the energy performance of a building. The first, energy use intensity (EUI), gives a raw value of total building energy use normalized by area (low = efficient). EUI is useful for tracking energy in absolute terms and comparing buildings of differing sizes. The second, weather-normalized EUI takes into account the unique weather conditions between years for efficiency comparison, which is valuable for tracking efficiency over time. The last, the ENERGY STAR Score, provides a 1-100 metric (high = efficient) that uses weather-normalizes EUI and accounts for other building attributes such as type and age - thereby giving the ability to compare to compare wholly different buildings. \*

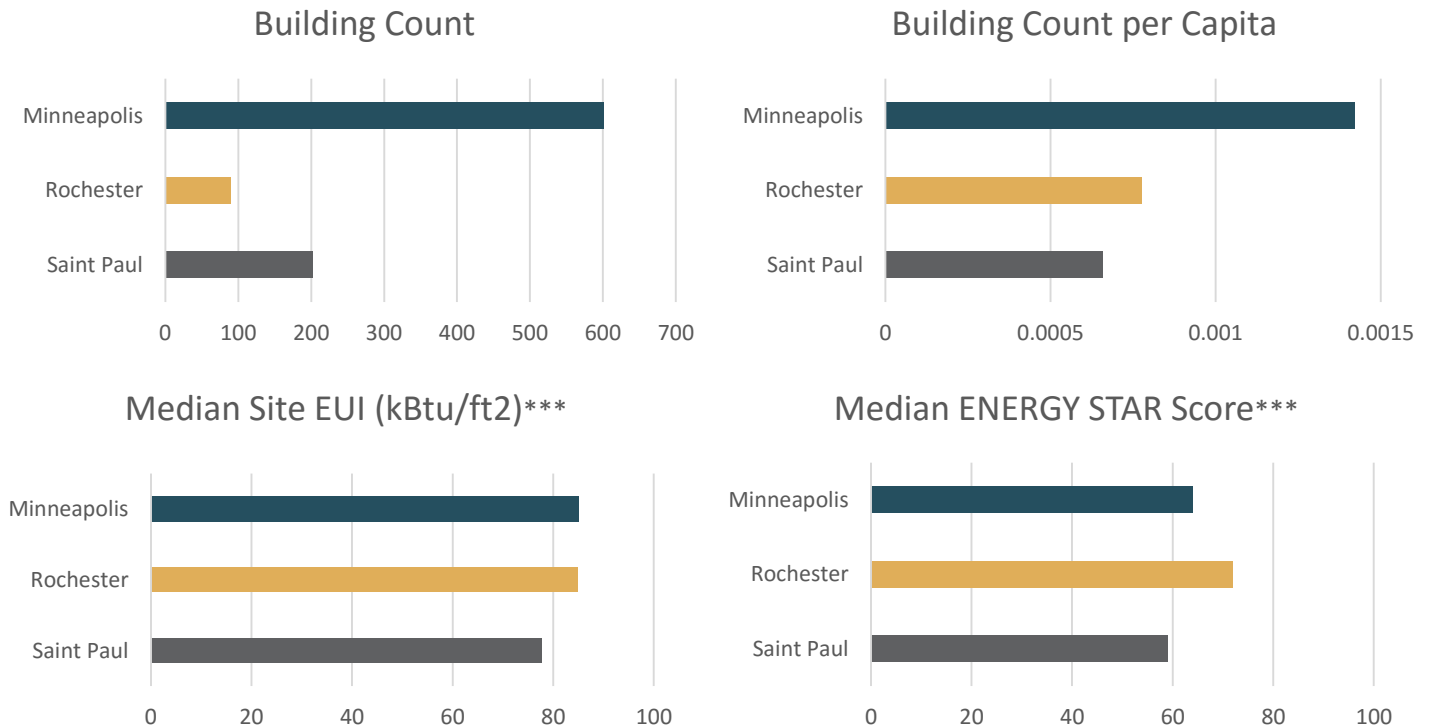
### Top 10 Most Efficient Buildings by ENERGY STAR Score

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| 1. Longfellow Elementary: 98        | 6. Baldwin-MRI Connolly Building: 86 |
| 2. Winston Churchill Elementary: 91 | 7. George Gibbs Elementary: 86       |
| 3. Elton Hills Elementary: 90       | 8. Burr Oak School: 84               |
| 4. Hoover Elementary: 89            | 9. Lincoln Elementary: 84            |
| 5. Bishop Elementary: 88            | 10. John Adams Middle: 81            |



### Comparison to Other Benchmarking Cities

Three Minnesota cities hosted benchmarking programs for calendar year 2018. The City of Minneapolis required benchmarking of commercial and multifamily buildings 50,000 ft<sup>2</sup> and greater via ordinance, while the Cities of Rochester and Saint Paul both hosted voluntary programs for large buildings. \*\* The graphs below compare summary metrics for the benchmarked buildings from the three cities.



\*Many, but not all buildings are may earn an ENERGY STAR Score. This is due largely to the fact that only the 20 most common building types in the US are eligible for a score.  
 \*\*The Cities of Saint Paul, St. Louis Park, & Edina recently adopted benchmarking ordinances, which will add to the benchmarked buildings set for calendar year 2019.  
 \*\*\*Metrics include only non-residential buildings for more consistent comparisons.

**KNOW OF A BUILDING THAT WANTS TO BE SMARTER ABOUT ENERGY EFFICIENCY?**  
**Learn more about Rochester's Energy Benchmarking Program**

Contact the City of Rochester's Sustainability Director, Kevin Bright: [kevinbright@dmceda.org](mailto:kevinbright@dmceda.org)  
[www.rochestermn.gov/departments/sustainability/benchmarking](http://www.rochestermn.gov/departments/sustainability/benchmarking)