

2016 Energy Benchmarking Report

By harnessing whole-building efficiency information, Minneapolis Energy Benchmarking is accelerating energy and water efficiency improvements in the city's largest buildings.

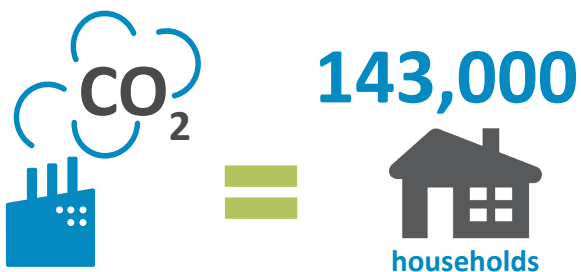
MASSIVE IMPACT POTENTIAL



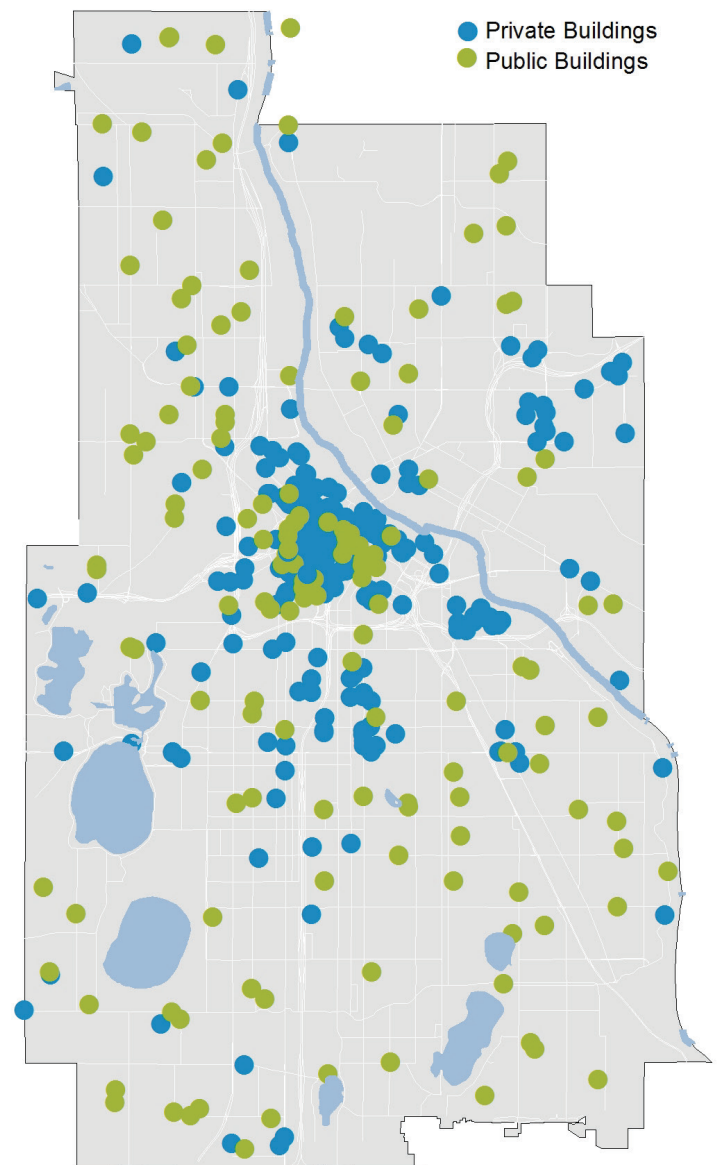
80% of commercial
building square footage

OVER  \$170 Million 
in annual energy costs

16% of city's
greenhouse gas emissions



BENCHMARKED BUILDINGS



Key Findings

2016 marks the end of a five-year phase-in process for the commercial building energy disclosure policy, known as energy benchmarking, in the City of Minneapolis. For this policy, property owners are required to report high-level, whole-building energy and water performance data. The results of benchmarking are providing new insight to building owners and efficiency resource providers that is valuable in building management, investment, sale, and lease decisions in buildings throughout the city.

Energy and Water Use Trend Down

Energy performance is improving in consistently benchmarked buildings, demonstrated by a total weather-normalized energy use intensity (EUI) reduction of 1.7% from 2014 to 2016. Although the square footage in these properties has risen, total energy use decreased from 7,754,416,521 kBtu to 6,909,210,105 kBtu annually (weather variation not included). Over three years, consumption reductions have led to cumulative utility bill savings of an estimated \$21 million.

Total water consumption dropped 5.9% in consistently benchmarked buildings, despite a slight median water use increase from 1,662 kGal in 2015 to 1,680 kGal in 2016. This was made possible by significant water use reductions at a number of individual properties.

Energy Awareness Leads to Real Cost Savings and Reputational Gains

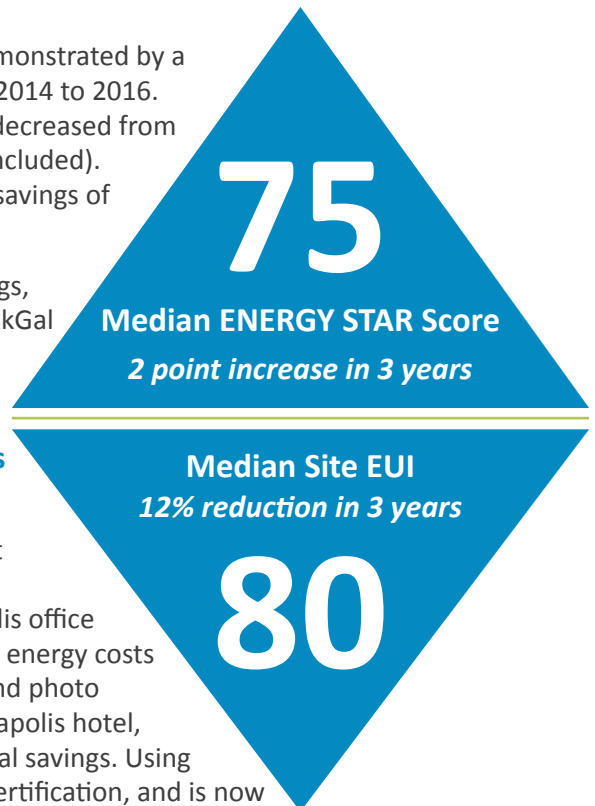
Developing awareness of whole-building performance is the first step in managing efficiency. The next is making improvements by optimizing current operations and/or updating equipment. Savings from these changes can be substantial. A recent recommissioning study at a large downtown Minneapolis office tower identified efficiency strategies that could result in an 18% reduction in energy costs equivalent to over \$500,000. Lighting control installs, including occupancy and photo sensors, as well as LED upgrades completed at the Courtyard Marriot Minneapolis hotel, spurred an 8% electricity reduction equivalent to \$20,000 in estimated annual savings. Using benchmarking as a springboard, the Colwell Building earned ENERGY STAR certification, and is now enjoying the marketing advantage of an efficient building.

Building Operators Use Data in Various Ways

Interviews of building owners and operators indicate a range of use of the benchmarking data. Though a few indicated minor use of the data, many claimed high value in having whole-building efficiency metrics. Most of the described value can be segmented into two categories: efficiency awareness and reputational benefit. Building operators utilize the benchmarking data to understand year-over-year trends, compare to peer medians, and make decisions on areas for investment. One hotel operator said, “We’ve used the information gathered to make choices about which areas to focus on.” The information is also being leveraged in communication for the value of efficiency to tenants and the public and as a marketing tool for business.

Collaboration is Key to Program’s Success

The program benefits from the expertise of multiple partners. Two City departments, Environmental Services and the Sustainability Office, lead regulatory processes and facilitate energy efficiency engagement activities. In addition, contractor Don Bailey develops and supports the program-specific software, while the Center for Energy and Environment assists with data analysis and outreach to properties.

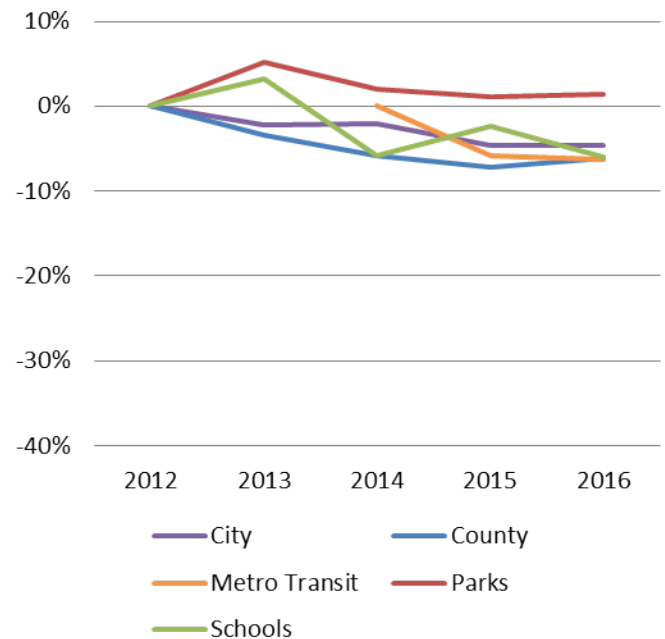


Public Properties

Energy consumption is generally trending down in publicly owned buildings. **Consistently benchmarked buildings collectively show a reduced weather-normalized EUI reduction of 3% over five years.** Hennepin County and Minneapolis Public Schools lead the group with declines of over 6%, followed by the City properties' drop of 4%. Minneapolis Park and Recreation Board properties display a modest increase of 2% since 2012, though a decline since 2013. Metro Transit's three years of data show a 6% decrease over that same period.

Public buildings show a nearly 12% decline in water consumption from 2015 to 2016. Large individual contributions came from the Minneapolis Convention Center (70% reduction) and Ramsey Elementary - Washburn Senior High School (66% reduction).

Weather-normalized EUI Trends

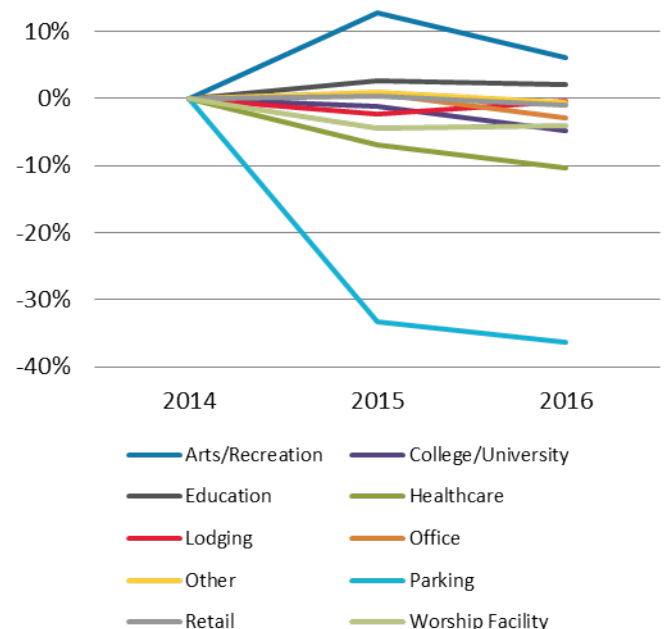


Private Properties

As a whole, consistently benchmarked private properties used 3.4% less energy in 2016 than in 2014. However, energy use changes vary among individual properties, and trends are visible at the property type level. The largest change is displayed by parking garages, which show a 36% drop in use over three years. This is largely due to LED conversions and controls equipment changes in lighting, the major source of energy consumption in such facilities. At the other end of the spectrum, arts/recreation facilities show an increase of 6% over three years, mostly owing to a large change in use by a single museum.

Water use in privately owned properties declined nearly 5% from 2015 to 2016.

Weather-normalized EUI Trends



Opportunities

Building Energy Challenge

From lighting to controls, opportunities for energy and greenhouse gas (GHG) emission savings abound in large commercial buildings. As such, the City is challenging buildings to capture those savings and reduce GHG emissions 15% by 2020. Participants are recognized at an annual award ceremony for progress toward the goal.

Green Business Energy Efficiency & Solar Cost Shares

With pollution prevention a major City goal, this program provides matching funds to businesses for energy and water efficiency and solar energy investments which decrease greenhouse gas and other emissions. Funding of up to a 30% match, up to \$50,000 is available for qualifying businesses.

Customized Building Assistance

Benchmarking buildings is the first step in the process of improving energy and water efficiency. Moving forward from there often depends on a building's unique circumstances. As such, direct one-on-one assistance is offered to operators to understand their data and evaluate next steps.

Savings Spotlight: Saint Mary's Basilica

The iconic Basilica of Saint Mary has seen a tremendous 21% drop in weather normalized energy use since 2014. Facilities Assessment and Ecological Stewardship volunteer committees have worked with staff and contractors to identify energy saving solutions in the historic building. Over the past three years, the team replaced the original 1913 boilers with new efficient ones, replaced 35 window AC units with central air, and installed LED lights throughout the campus, the bell towers, church sanctuary, and lower level. Dave Laurent, the building operator, said the payback of their LED retrofits has been great and that "everything we do now is LED." Converting lights to LEDs saved even more energy, because the church now requires less cooling in the summer. The Basilica's future energy saving plans include investing \$80,000 in converting 24-30 100W lamps to LED next year and replacing all lights by 2021.



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