City of Minneapolis

2013 Energy Benchmarking Report

May 2015

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More information on the Commercial Building Rating and Disclosure Policy available at:
http://www.ci.minneapolis.mn.us/environment/energy/

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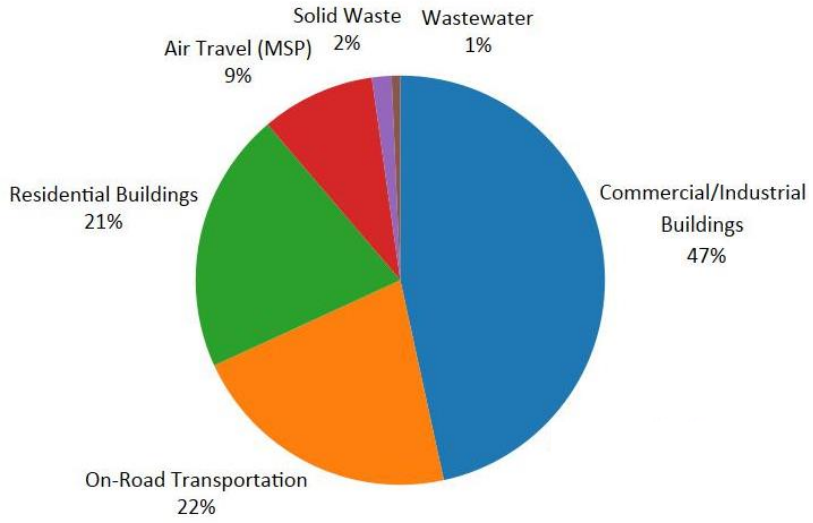
Executive Summary

The City of Minneapolis is emerging as a national leader in sustainability. The Obama administration recently recognized the City as a Climate Action Champion for its ambitious Climate Action Plan and targeted strategies for reducing community-wide greenhouse gas emissions. Because energy use from the built environment is a major driver of emissions (Figure 1), the Minneapolis City Council, in an effort to stem emissions from buildings, unanimously adopted ordinance 47.190 in February 2013 requiring commercial buildings 50,000 square feet and larger and public buildings 25,000 square feet and above to annually benchmark their energy and water use and report this information to the City. Minneapolis was the first city in the Midwest to adopt a benchmarking and disclosure policy, and 7th in the nation. Building energy disclosure is intended to increase building owner and public awareness of building energy performance, and spur action to increase efficiency. Increasing energy efficiency provides tremendous benefits for Minneapolis building owners and residents alike, including lowering energy costs, increasing property values, creating jobs, and reducing air pollution.

This second annual report includes benchmarking results from calendar year 2013 for public buildings greater than 25,000 square feet and private commercial buildings 100,000 square feet and above. Energy and water performance for individual public buildings is available at the end of this report, and such information for individual private buildings greater than 100,000 square feet will be publicly reported for calendar year 2014 in 2015. Buildings greater than 50,000 square feet were required to begin benchmarking in 2015, with individual building results to be disclosed for 2016 energy and water performance in 2017.

Figure 1. Community-wide Greenhouse Gas Emissions, 2013



According to the 2013 Minneapolis greenhouse gas emissions inventory, energy use in commercial and industrial buildings accounts for 47% of community-wide emissions in the city. In 2012 the City Council adopted goals to reduce citywide greenhouse gases 15 percent by 2015 and 30 percent by 2025, from a 2006 baseline. The City also has a goal to reduce greenhouse gas emissions from municipal operations by 1.5 percent annually. The commercial building benchmarking and disclosure ordinance was among a set of strategies aimed at increasing energy efficiency in buildings that was part of the Minneapolis Climate Action Plan, adopted in June of 2013. The plan provides a roadmap for meeting those emissions reductions goals, and outlines a 20% reduction target through energy efficiency in commercial/industrial buildings by 2025.

Benchmarking results for 2013 reveal a large range in building types and energy usage patterns, often reflecting the unique uses, operating conditions, and schedules found in public and private buildings. This data will be useful as organizations analyze opportunities for energy efficiency improvements and, in the case that an entity has an energy efficiency or climate protection goal, help them track progress.

Benchmarking a building for the first time can be challenging, due to the learning curve of the process as well as the relationship-building required, and scores for some buildings that have benchmarked for the first time can reflect this. However, the expanded use of benchmarking and public accountability means that opportunities to improve these scores and increase the energy efficiency of buildings can be pursued.

The results of this report can be used to save taxpayers, building owners, and building tenants money on energy costs in large buildings. Research has shown that benchmarking can result in cost savings for building owners, managers and tenants, and frees money to be injected back into the local economy.

Key Findings

Of the 258 private commercial buildings greater than 100,000 square feet in the City, data for 194 buildings was submitted and 30 buildings were granted exemptions, thus resulting in an 87% compliance rate with the benchmarking ordinance. Another 171 public buildings greater than 25,000 square feet also submitted data, thereby giving a total of 365 large benchmarked buildings included in this report.

The energy use of the buildings analyzed in this report represents 26% of the City's commercial and industrial greenhouse gas emissions. Energy use reduction efforts in this small number of buildings could have a substantial impact on city-wide emissions.

Modest energy improvements could lead to significant emission and cost savings. If all 365 buildings reduced their energy use 10 percent, they would save over $11 million in energy costs and avoid over 62,000 metric tons of greenhouse gas emissions.

About ENERGY STAR Scores

The 1 – 100 ENERGY STAR score shows how a building's energy consumption measures up against similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 or better indicates a building is a top performer and is therefore eligible for ENERGY STAR certification.

The U.S. Department of Energy conducts a national survey to gather data on building characteristics and energy use from thousands of buildings across the United States. This survey data is used to develop ENERGY STAR scores.

Based on the information entered about a building, such as its size, location, number of occupants, number of computers, etc., the score's algorithm estimates how much energy the building would use if it were the best performing, the worst performing, and every level in between. It then compares the actual energy data entered to the estimate to determine where the building ranks relative to its peers.

All of the calculations are based on source energy and account for the impact of weather variations, as well as changes in key property use details.

Improvements in public building data quantity and quality were observed. The number of buildings public organizations benchmarked rose 43% from 2012. At the same time, data quality improved as participants better understood how to enter accurate information to obtain ENERGY STAR scores. Of the buildings that were benchmarked in both years, 13 new buildings obtained scores in 2013.

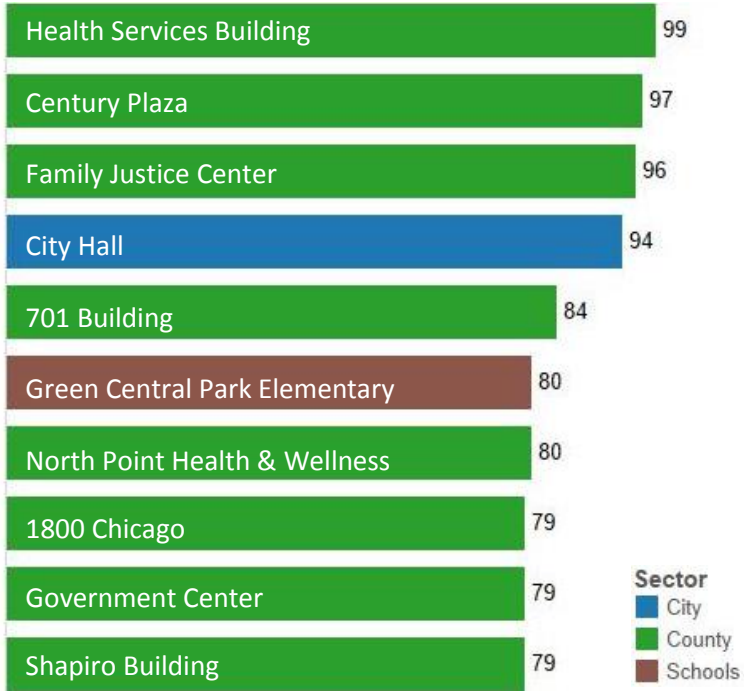
A high reporting rate of 87% for private commercial buildings validates outreach strategies. This rate falls within the range of compliance rates seen by other US cities that have benchmarking requirements (74-93%). Another important outcome is that high submission resulted without a specific penalty for the first year of non-participation.

75% of submitted buildings provided sufficient data for energy performance analysis. Unanalyzable buildings were most often affected by issues of missing or suspect data for square footage, fuel units, and fuel sources. As this was the first year of private commercial building reporting, the City learned valuable lessons about the amount and types of information and training that are necessary for ensuring high data quality.

Based on property type, 68% of private and 51% public buildings in the report are eligible for an ENERGY STAR score. ENERGY STAR Portfolio Manager, the benchmarking tool used for reporting, does not provide scores for properties such as the malls, libraries, gyms, parking ramps, fire stations, or maintenance facilities, among others.

The median ENERGY STAR Score for all buildings was 64. Broken down into public and private building categories, the median scores were 38 and 81 respectively. The most common property type of all buildings, office with 84 buildings, earned a median score of 87.

Figure 2. Top Performing Public Buildings by ENERGY STAR Score



Hospitals, hotels, and schools generally have the greatest potential for energy savings. Lower median scores of 35, 57, and 35, respectively for these property types, indicate significant room for improvements.

Results showed that building age does not relate to the amount of energy benchmarked buildings used. The age of a building accounts for none of the variability in energy intensity in public and private buildings. Older buildings that have been retrofitted with modern systems can obtain high ENERGY STAR ratings and low EUI values. For example, City Hall scores a 94, with an energy use intensity of 66 kBtu/ft^2. Energy codes that have been updated in the last twenty years have enabled higher performance for newer buildings that manage their energy use.

Background on Building Benchmarking and Disclosure

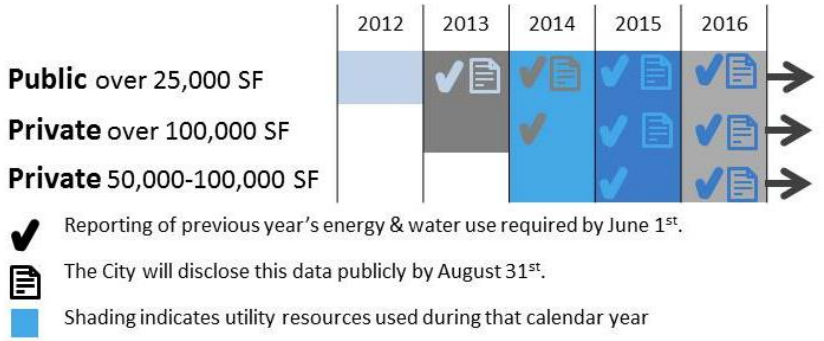
In February of 2013 the Minneapolis City Council unanimously adopted ordinance 47.190 requiring commercial buildings over 50,000 square feet and city-owned buildings over 25,000 square feet to annually benchmark their energy and water consumption and report this information to the City. The purpose of the ordinance is to use market forces – not performance or design mandates – to build energy performance awareness and motivate building owners and tenants to invest in energy efficiency improvements. As buildings are the largest source of greenhouse gas pollution in Minneapolis, the City expects the largest return on investment in terms of emissions by focusing on this sector. Promoting the benefits of energy efficiency improvements to building owners and connecting them to resources can reduce energy use and air pollution. Cities where rating and disclosure policies are already in place are motivating investment in existing buildings and showing an increased demand for energy efficiency services, creating more local green jobs.

Timeline

This ordinance required public buildings to benchmark and disclose their energy use before any private buildings. The City of Minneapolis sought partnerships with Hennepin County, the Minneapolis Park & Recreation Board, and the Minneapolis Public Schools, who all voluntarily submitted benchmarking results for many of their buildings for public disclosure. Disclosure of these scores is helping these public entities show how they are stewarding public resources.

Following public buildings, private buildings greater than 100,000 square feet were required to report energy and water data to the City beginning in 2014 for 2013 performance while buildings between 50,000 and 100,000 square feet will not report until 2015 (Figure 3). The City does not publicly disclose the data until the second year of reporting for each of the two private building groups. By 2016, the phase-in of benchmarking reporting and disclosure for public and private buildings will be complete, and benchmarking and disclosure will continue for all three building groups each year thereafter.

Figure 3. Benchmarking Timeline



Benefits of Benchmarking

Green Jobs. A Rating and Disclosure Policy has the potential to motivate investment in existing buildings and create jobs in the energy management, benchmarking, auditing and installation/retrofit industries. Examples from cities such as New York where policies are in place show increased demand for energy services and growth in energy management companies. Minneapolis has adopted specific targets for increasing green jobs and green companies in the city, and green building policies may help the city reach these goals.

Environmental Benefit. The Minneapolis City Council has adopted targets for community-wide greenhouse gas reduction of 15% by 2015 and 30% by 2025. In 2010, energy use in commercial and industrial buildings accounted for over 44% of Minneapolis' community-wide emissions. Policies focused on these building types, like Rating and Disclosure, are critical to achieving the City's goals.

Benefits to the local economy. While most of the dollars spent on energy leave the community (to pay for energy resources), savings realized for energy efficiency mean dollars can be redirected to other purposes, like reinvesting in businesses or hiring more workers. The energy efficiency retrofit industry also cannot be "outsourced", energy efficiency investments can provide local jobs.

Energy savings in existing buildings. In any given year, existing buildings represent over 90% of the building stock in Minneapolis, and a similar amount of the energy consumption from the buildings sector. Rating and disclosure is a tool that can promote energy efficiency in the existing building sector.

Outreach and Training

Significant outreach and training were necessary to obtain high compliance rates, especially among private buildings. Key strategies for ensuring success included:

- Partnering with existing organizations such as Minneapolis BOMA to increase awareness among building owners
- Maintaining a phone and email helpline
- Offering face-to-face training when deemed necessary
- Hosting two 2-hour in-depth workshops on how to comply with the city's benchmarking ordinance
- Sending out three notifications to building owners within 4 months of the deadline

Building Characteristics

365 buildings are included in the 2013 report. These consist of 194 private buildings as well as 171 public buildings owned by the City of Minneapolis, Hennepin County, Minneapolis Public Schools, and the Minneapolis Park and Recreation Board.

An increase in benchmarked public buildings was observed from 2012 to 2013 rising from 120 to 172 buildings. This growth stemmed primarily from 42 additions by the Minneapolis Park and Recreation Board with the other three public entities each adding a few more buildings to their benchmarking portfolio as well.

Among all public and private buildings, offices make up the greatest percentage of buildings in the report at 26% while also representing the largest footprint, 38%, of the benchmarked buildings by property type (Figure 4, Figure 5). The second most common property type is the Other category.* By square footage however, parking ramps represent the second largest property type in the city.

Because ENERGY STAR scores are available for 21 common property types, not all buildings are eligible to receive a score. As a result, 60% of all buildings have the potential to qualify for an ENERGY STAR score based on their property type. Because ENERGY STAR scores were developed with the country's most common property types in mind, more commercial private buildings, 68%, have property types eligible for scores, whereas fewer public buildings, 51%, with their unique property types are eligible for scores.

*Buildings with the Other property type mostly consist of Minneapolis Park and Recreation Buildings

Figure 4. Most Common Property Types

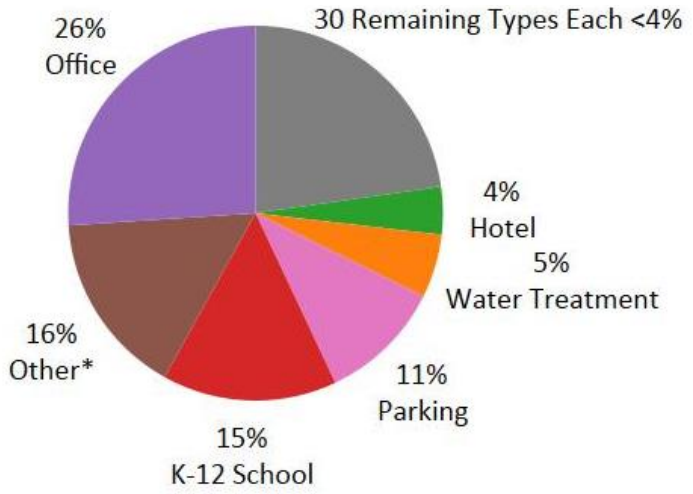
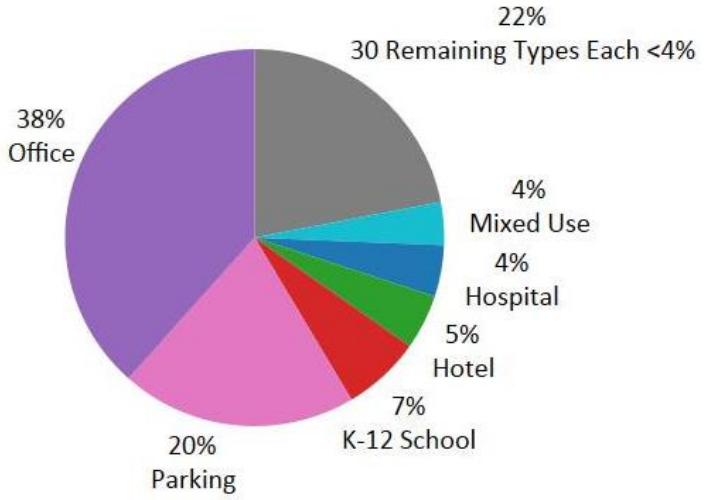


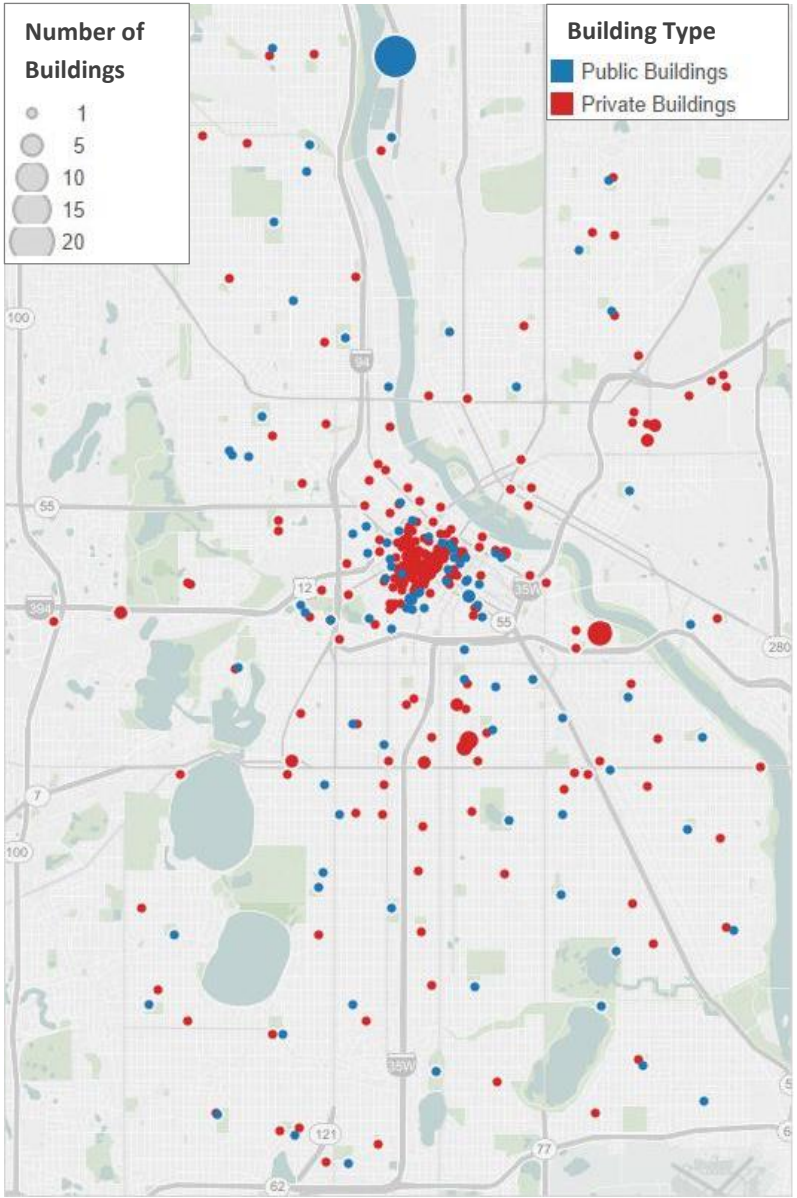
Figure 5. Most Common Property Types Largest Area by Property Type



With regards to geographic location, Minneapolis Public Schools and Minneapolis Park and Recreation Board buildings are the most geographically dispersed, while the remaining property types are clustered in and near Downtown (Figure 6).

Concerning building age, the majority of benchmarked buildings were built during the latter half of the 20th century. The median building build year is 1973.

Figure 6. Map of 2013 Benchmarked Buildings



Results

Public Buildings

This report contains information on the energy and water use of public covered buildings for the report year 2013 including site and source energy use intensity (EUI) and total greenhouse gas emissions. This data is analyzed and compared to information collected for the report year 2012.

In public buildings, energy use intensity can vary substantially. Public buildings often contain unique uses, such as drinking water treatment, ice rinks, or jails. Many facilities operate around the clock, unlike office buildings, which see significantly less use at night.

Many public facilities are also not eligible for ENERGY STAR scores given their unique usage types. Convention centers, libraries, parking ramps, and public safety facilities are examples of buildings in this report that did not receive a score.

Regarding ENERGY STAR performance, 63 buildings earned scores, including those new to benchmarking in 2013, which is a 26% increase over 2012. Of these, a total of 10 buildings earned scores greater than 75, which is 3 more high performing buildings than in 2012. From these, the majority belong to Hennepin County with the Health Services Building (99), Century Plaza (97), and Family Justice Center(96) being the top performers. Other noteworthy top performers include City Hall, a facility managed jointly by the City and Hennepin County, scoring 94 and Green Central Park Elementary, which earned a score of 80. In general, Office and office-like building types were more likely to earn high ENERGY STAR scores, while K-12 schools showed the greatest range of performance from 1-80 (Figure 7).

Figure 7. Cumulative Public Building Property Type Area Obtaining ENERGY STAR Scores

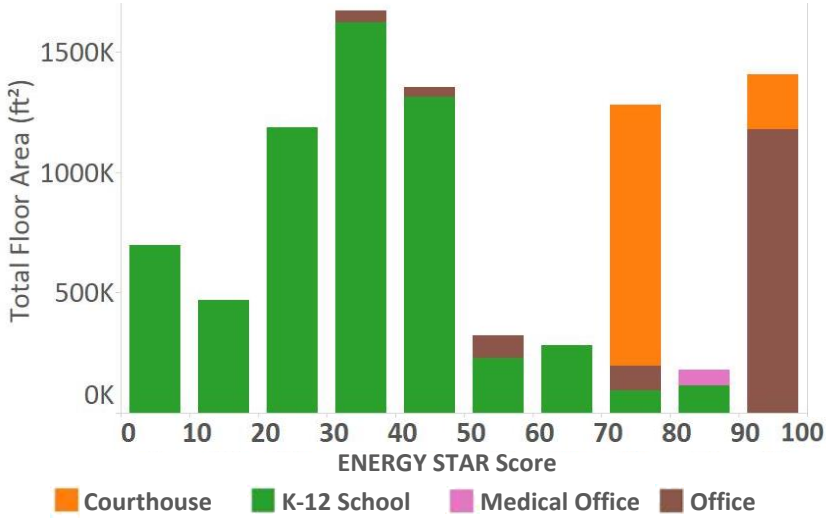
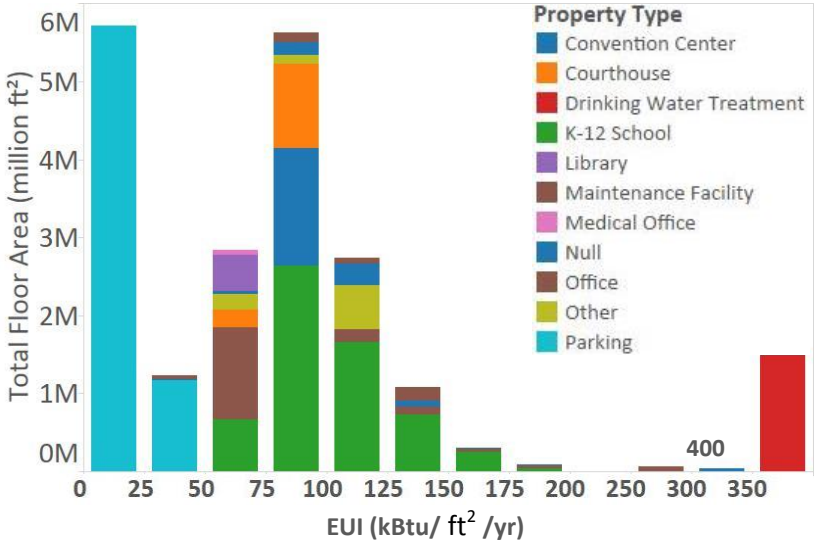


Figure 8. Cumulative Public Building Property Type Area by Energy Use Intensity



Because scores are not available for all property types, buildings are analyzed based on their energy use intensity as well (Figure 8). The City's water treatment and distribution campus was one of the highest users of energy per square foot along with the Park Board's Parade Ice Garden. Treating and pumping water and maintaining ice rinks are very energy-intensive actives – ones that are more industrial in nature than are representative of the building's performance. The buildings using the lowest amount of energy per square foot were parking garages and ramps. This is to be expected, because these are generally unconditioned spaces. Regarding conditioned buildings, the Hennepin County's Health Services building (53 kBtu/ft^2), Pratt Community Center (59 kBtu/ft^2), and Lyndale Elementary (59 kBtu/ft^2) were high performers. The City's LEED platinum-certified Hiawatha Maintenance Facility also performed well maintaining a EUI of 49 Btu/ft^2 during each of the two reporting years.

Overall, public building energy use was statistically consistent from 2012 to 2013 for buildings that reported in both years. Median weather-normalized site energy use intensity rose just slightly from 91 to 94, and regression analysis of 2012 and 2013 weather normalized EUI shows that energy use is generally unchanged. Energy use was steady between the two years, and building energy performance seems to have remained so as well; average ENERGY STAR scores fell from 51 to 47, but with a standard error of 2.8 and 3.2, the means are not statistically different. Median scores from 2012 and 2013 were also close at 46 and 42, respectively.

Private Buildings

This report contains aggregate analysis for the 145 private commercial buildings that submitted sufficient data for calendar year 2013 analysis. Individualized building performance information will be made available for 2014 performance in 2015.

Of these buildings, 70% earned ENERGY STAR scores (Figure 9). The highest performing property type was Office with a median score of 87 for the 68 buildings. Medical Office and Hospital property types were on the lower end of the spectrum at scoring 15 and 35 respectively.

Energy use among private buildings varied greatly with EUI ranging from 5 to 320 kBtu/ft^2/year, and as with public buildings, private commercial building energy use is tightly associated with a building's property type (Figure 10). On one end of the range, hospitals used large amounts of energy (median EUI: 246 kBtu/ft^2) as may be expected with their energy intensive machines and laboratories along with 24/7 operating hours.

Figure 9. Cumulative Private Building Property Type Area by ENERGY STAR Score

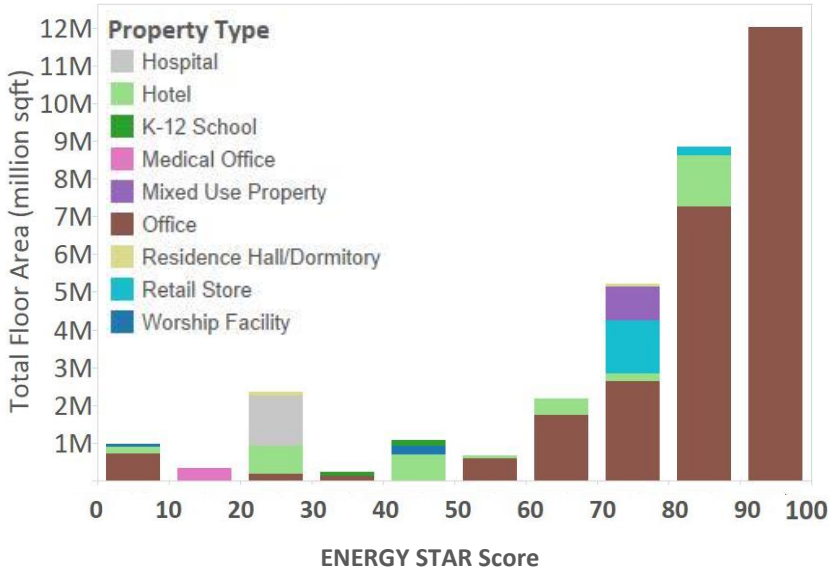
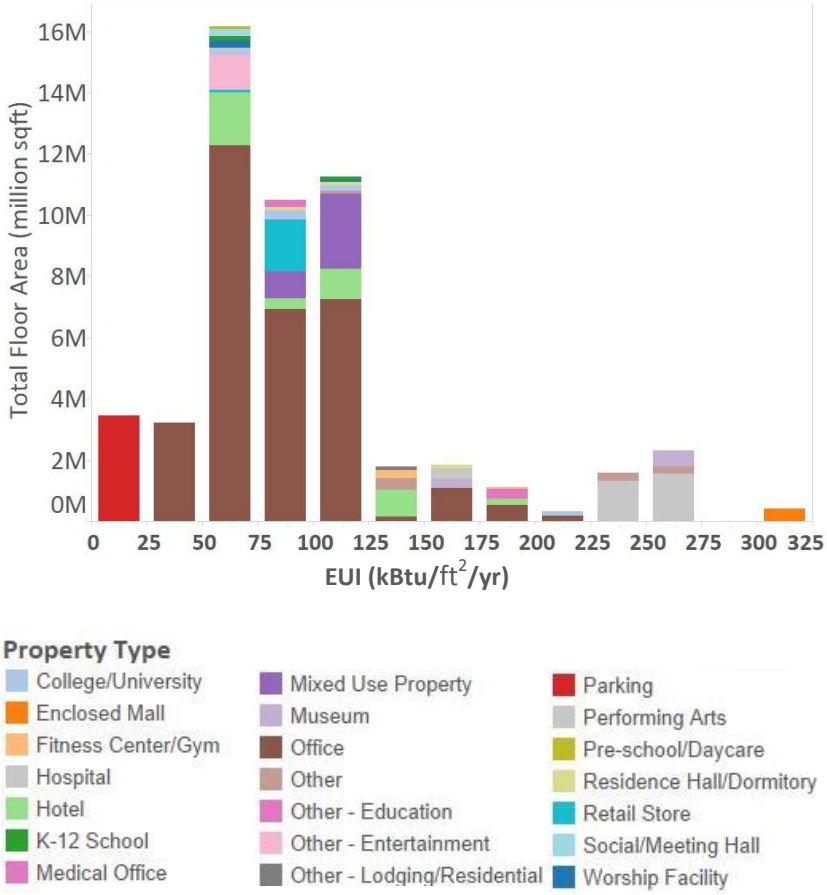


Figure 10. Cumulative Private Building Property Type Area by Energy Use Intensity



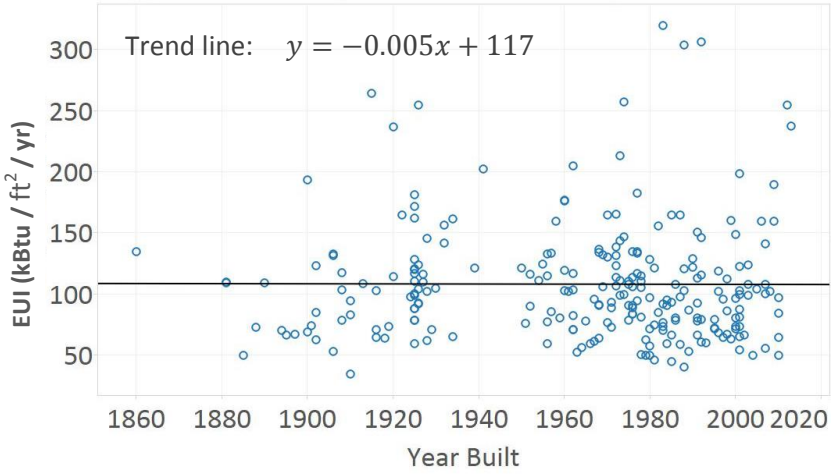
Other users such as enclosed malls and museums also consume significant amounts of energy on a square foot basis (median EUIs respectively: 320 and 214 kBtu/ft^2). It is speculated that this is due to the substantial display lighting that both require, and that museums in particular have sensitive climate control needs. On the other end of the spectrum, parking garages and ramps use little energy - less than 25 kBtu/ft^2 - since they generally require only lighting electricity. The most common property type, Office, falls in the middle of the field, with office buildings using a median 87 kBtu/ ft^2.

All Buildings

Other significant results stem from all buildings. First, benchmarked public and analyzable private buildings accounted for 7% and 19% respectively of commercial/industrial building greenhouse gas emissions. Consequently, there is substantial opportunity for greenhouse gas emission reductions among just a few hundred buildings. In fact, a 10% reduction in energy consumption could lead to a decrease of 67,000 metric tons of greenhouse gas emission annually as well as a savings of $11 million in energy costs.

Another important finding is that no relationship could be established between energy use and age of the building (Figure 11)This is consistent with findings from other benchmarking cities as well, and there are

Figure 11. Energy Use Intensity Related to Building Build Year



some theories as to why. Potential reasons for good performance of century old buildings is that prior to widespread electric lighting and central heating such structures were more passively designed to take advantage of natural daylighting and had thick masonry walls with less exterior glazing, which provided better insulation. Since the 1970s, energy codes have brought renewed attention to efficiency, thus bringing technological advances as well as passive techniques into minimum construction standards.

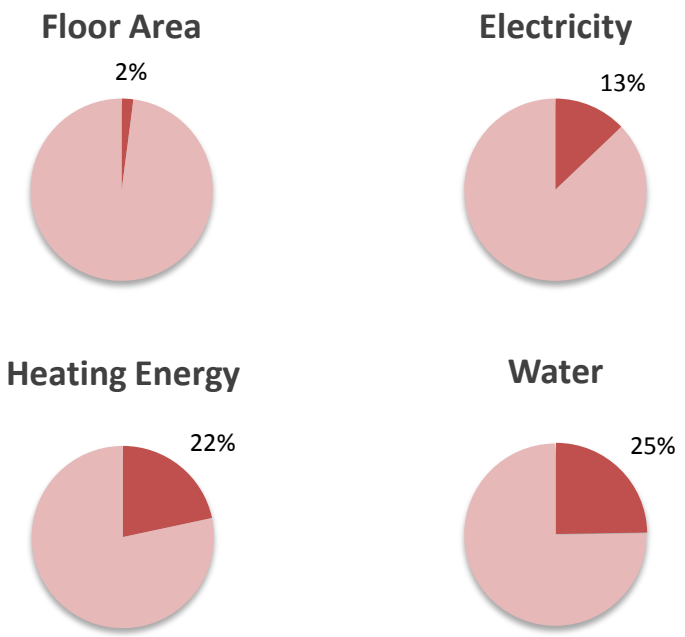
Compliance and Data Quality

The primary goal in the first year of benchmarking for private buildings was a high rate of awareness and participation. Significant efforts were put towards communicating the ordinance requirement and the process for submitting data. This endeavor resulted in a high rate of compliance at 87%.

Compliance was defined as having submitted data or an exception request by the deadline. As this was the lead-in year, no monetary or other penalties from the City were assessed for non-compliance. Buildings that did not submit data by the deadline or that had not filed an extension request were mailed violation notices of non-compliance. These notifications specified that although no fines will be levied in the first year of compliance, they would be assessed in year two.

In 2014, significant efforts were undertaken to reach building operators and help them submit data. In future years, more emphasis will likely be placed on checking data quality. For calendar 2013 data, 145 of the 194 private commercial buildings passed a basic check for data quality which required all submissions except those with a Parking property type to have an Energy Use Intensity within a reasonable range from 25 to 400 kBtu/ ft^2/yr.

Figure 12. Percentage of Private Buildings Submitting No Data for Specific Fields



Some of the non-existent and unrealistic private building EUIs stemmed from a lack of data on floor area or for specific resource meters (Figure 12). Ninety-eight percent of buildings furnished building and parking area; though many of the provided square footages were more than 10% different that the City's Tax Assessors had on file. In some cases, the absence of electric and heating energy, assumed as supplied by natural gas, steam, or hot water, inhibited energy analysis. Thirteen percent and twenty-two percent of buildings supplied no electric or heating data, respectively. Meanwhile, it is suspected that others may be missing some meter data from tenants or parts of the building based on performance results that varied significantly from accepted norms.

Lastly, also among buildings within the reasonable EUI range, performance of some buildings may be questionable due to the possibility of partial missing meter data.

It was anticipated that the submission rate for water meter data would be high, given that water meter data is available online from the city and is easy to obtain. However, only 75% of the buildings reporting included water meter data. In the future, more emphasis will be placed on ensuring complete and accurate water meter data in submissions.

Conclusion

This report provides a snapshot of the energy and water performance of public and private buildings in Minneapolis for the year 2013. As the second full year of the implementation of the Commercial Building Benchmarking and Disclosure Policy, this will provide a baseline of data from which to improve data collection techniques and compare future results. In addition to complying with city ordinance, the intention of the report is to bring more transparency to energy use in the building sector and to help inform building owners, managers, and decision makers about the greatest opportunities for cost and energy savings. Those public entities who've reported their energy data will continue to refine their scores and identify opportunities to make their buildings more energy efficient.

In this first year of reporting for private buildings, there were some challenges in collecting and interpreting data. In some cases, best estimates were necessary for inputs like square footage and in others it is suspected that some buildings may be missing building or utility information. ENERGY STAR scores were not available for all buildings due to the unique nature and uses of some buildings. The City will continue to refine and verify data about buildings for future reports, as well as work with partner entities and organizations to fill in the gaps and make corrections to the data where necessary.

This policy is part of comprehensive strategy by the City of Minneapolis to reduce greenhouse gas emissions and improve the efficiency of public and private buildings. Minneapolis will continue to implement energy-saving strategies in city buildings and operations to make progress towards adopted goals. Subsequent reports and multiple years of data will allow the tracking of performance over time, in publicly- and privately-owned buildings across the city.

Appendix A: Individual Public Building Results

City of Minneapolis Buildings											
Property Name	ENERGY STAR Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft^2)	Year Built	Total GHG Emissions (MtCO2e)	Site EUI (kBtu/ft^2)	Weather Normalized Site EUI (kBtu/ft^2)	Source EUI (kBtu/ft^2)	Weather Normalized Source EUI (kBtu/ft^2)
10th and Hennepin Ramp	Not Available	Parking	935 Hennepin Avenue	55403	0	1998	966.8	0	0	0	0
10th and LaSalle Ramp	Not Available	Parking	915 LaSalle Avenue	55403	720000	2001	550.1	9.6	9.2	21.7	21.3
City Hall	94	Office	350 South 5th Street	55415	680000	1895	6032.2	66.1	65.2	130.3	129.3
City of Lakes	39	Office	309 2nd Avenue South	55401	47833	1958	893	159.1	152.1	296.8	288.4
Currie Maintenance Facility	Not Available	Repair Services	1200 Currie Ave North	55403	171200	1980	1987.7	127.8	119.7	198.6	190.1
Emergency Operations Training Center	Not Available	Office	25 37th Avenue NE	55421	32150	2010	341.3	84.1	78.9	166.4	160.9
Federal Courthouse Ramp	Not Available	Parking	333 3rd Avenue South	55415	210000	1997	469.4	29.2	27.8	63.4	60.9
Fire Station # 06	Not Available	Fire Station	121 E 15TH ST	55403	27160	1980	256.1	96.9	92	156.2	150.9
Government Center Ramp	Not Available	Parking	415 south 3rd Street	55401	700000	1974	589.1	12.8	12.3	26.2	25.5
Haaf Ramp	Not Available	Parking	424 4th Street South	55415	520000	1993	2104.5	49.3	0	114	0
Hamilton School (Police Training)	46	Office	4131 Dupont Avenue North	55412	41326	1960	706	176.3	167.9	283.2	272.8
Harmon Ramp	Not Available	Parking	25 South 11th Street	55403	350000	2003	433.4	14.2	13.7	36.8	36.2
Harriet Maintenance Facility	Not Available	Repair Services	6036 Harriet Avenue South	55419	53364	1959	413.2	80	75.1	128.4	123.1
Hawthorne Ramp	Not Available	Parking	31 North 9th Street	55403	1260000	1999	1715.1	19.9	19.5	40.3	39.8
Hiawatha Maintenance Facility	Not Available	Repair Services	1901 East 26th Street	55404	70071	2010	632	49.4	49	133.1	132.7
Hilton Ramp	Not Available	Parking	1030 2nd Avenue South	55403	800000	1992	945.2	10.9	10.6	34.1	33.3
Leamington Ramp	Not Available	Parking	1001 2nd Avenue South	55403	1400000	1991	1112.9	13.5	12.7	22.6	21.6
Mill Quarter Ramp	Not Available	Parking	711 South 2nd Street	55403	240000	2005	232.4	8.9	8.8	27.9	27.8
Minneapolis Convention Center	Not Available	Convention Center	1301 second Avenue South	55403	1500000	1989	17725.2	86.6	84.5	169.7	167.3
Orchestra Hall Ramp #1	Not Available	Parking	1111 Marquette Avenue South	55403	478000	1976	717.5	26.1	24.4	47.9	45.8
Orchestra Hall Ramp #2	Not Available	Parking	1111 Marquette Avenue South	55403	296000	1989	198.6	6.2	6	19.4	18.7
Police Precinct #3	Not Available	Police Station	3000 Minnehaha Avenue	55406	33761	2005	493.6	103.8	99.5	224.6	217.7

City of Minneapolis Buildings											
Property Name	Energy Star Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft²)	Year Built	Total GHG Emissions (MtCO2e)	Site EUI (kBtu/ft²)	Weather Normalized Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)	Weather Normalized Source EUI (kBtu/ft²)
Police Precinct 4	Not Available	Police Station	1925 Plymouth Avenue North	55411	25319	1988	368.6	102.9	99.4	223.5	219.6
Plaza Ramp	Not Available	Parking	117 South 12th Street	55403	638000	1989	968.2	20.5	19.4	46.2	44.5
Public Service Center	54	Office	250 South 4th Street	55401	93010	1957	1609.8	133.1	128	244.1	238
Riverfront (Guthrie) Ramp	Not Available	Parking	212 9th Avenue South	55403	500000	2005	569.1	10.5	10.4	32.8	32.6
Royalston Maintenance Facility	Not Available	Repair Services	661 5th Avenue North	55405	71029	1998	631.7	112.1	0	158.4	0
TAD 4 and 4 to 5 Skyway	Not Available	Repair Services	661 5th Avenue North	55405	71029	1998	631.7	112.1	0	158.4	0
TAD 5 and 5-7 Skyway	Not Available	Parking	318 2nd Avenue North	55403	900000	1993	2048.1	34.6	32.9	70.8	68.6
TAD 7 and C/L Skyway	Not Available	Parking	516 2nd Avenue North	55403	1236000	1989	2007.2	22.4	21.6	49.7	48.8
Traffic Maintenance Facility (300 Border)	Not Available	Other - Public Services	300 Border Avenue	55405	61416	1962	567.1	82.4	79.6	148.2	145.3
Vineland (Walker) Ramp	Not Available	Parking	727 Vineland	55403	230000	2004	537.8	29.6	29.2	70.5	70
Water Treatment and Distribution Campus	Not Available	Drinking Water Treatment	4500 Marshall Street NE	55421	650000	1930	31974.3	306.1	299.6	739.6	733

Hennepin County Buildings											
Property Name	Energy Star Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft^2)	Year Built	Total GHG Emissions ($MtCO_2e$)	Site EUI ($kBtu/ft^2$)	Weather Normalized Site EUI ($kBtu/ft^2$)	Source EUI ($kBtu/ft^2$)	Weather Normalized Source EUI ($kBtu/ft^2$)
1800 Chicago	79	Office	1800 Chicago S.	55404	102815	1996	1033.2	101.7	99.6	170.6	168.2
701 Building	84	Office	701 4th Avenue South	55415	286596	1983	3128.9	91.9	89.8	177.5	174.9
Central Library	Not Available	Other	300 Nicolet Mall	55401	559507	2004	3040.3	49.9	47.6	113.2	110.4
Century Plaza	97	Office	330 south 12th st	55404	492121	1934	2629.2	65	62.1	142.1	137.8
Family Justice Center	96	Courthouse	110 S. 4th St.	55415	227422	1956	1675.8	59.3	57.5	120.2	118.2
Forensic Sciences Building	Not Available	Office	530 Chicago Avenue South	55415	65673	1974	0	256.8	247.8	382.2	371.6
Government Center	79	Courthouse	300 S. Sixth	55487	1255134	1974	0	99.2	96.2	195.9	191.8
Health Services Building	99	Office	525 Portland Ave South	55415	198739	1989	0	52.5	50.5	103.8	101.4
Hennepin County Medical Center	Not Available	Hospital (General Medical & Surgical)	701 Park Avenue	55415	775760	1976	0	0	0	0	0
Juvenile Justice Center/Detention Center	Not Available	Prison/ Incarceration	626 S. Sixth	55415	199219	1983	0	73.1	71	142.9	140.4
North Point Health and Wellness	80	Medical Office	1313 Penn Ave N	55411	67205	1995	704.4	72	70.6	167	165.6
North Regional Library	Not Available	Other	1315 Lowry Avenue North	55411	38993	1971	303.7	72.6	66.8	130.2	123.3
Public Safety Facility	Not Available	Prison/ Incarceration	401 4 Ave South	55415	432776	2001	0	122.4	119.7	217.6	214.3
Shapiro Building	79	Medical Office	914 8th St. South	55415	227642	1967	2843.3	60.8	60.7	191	190.7
Whittier Clinic	Not Available	Medical Office	2810 Nicollet Ave. South	55415	92691	2008	0	0	0	0	0

Minneapolis Public School Buildings

Property Name	Energy Star Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft²)	Year Built	Total GHG Emissions (MtCO2e)	Site EUI (kBtu/ft²)	Weather Normalized Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)	Weather Normalized Source EUI (kBtu/ft²)
Andersen Elementary	18	K-12 School	2727 10th Ave S	55407	233252	1976	567.4	83.4	79.6	166.2	162.1
Anishinabe Elementary	Not Available	Other - Education	2225 East Lake Street	55407	51000	1975	139	107.8	103.8	231.2	227
Anthony Middle School	25	K-12 School	5757 Irving Ave S	55419	139806	1957	999	85.2	81.3	122.8	118.6
Anwatin Middle School	Not Available	K-12 School	256 Upton Ave S	55405	144157	1960	0	0	0	0	0
Armatage Elementary	44	K-12 School	2501 West 56th Street	55410	91500	1952	686.8	89.7	84.4	129	123.3
Bancroft Elementary	43	K-12 School	1315 East 38th Street	55407	72176	1925	602	100.3	96.6	143.6	139.6
Barton Elementary	49	K-12 School	4237 Colfax Ave S	55409	80464	1925	737.5	88.1	85.3	149.5	146.6
Bethune	64	K-12 School	919 Emerson Ave	55411	75430	1968	524.5	63.5	59.3	112.2	107.8
Bryn Mawr Elementary	33	K-12 School	252 Upton Avenue South	55405	102658	1962	964.3	103.1	97.9	158	152.6
Burroughs Elementary	60	K-12 School	1601 West 50th Street	55419	162320	2002	1158.7	66	62.8	115.5	112.1
City View Elementary	41	K-12 School	3350 4th Street North	55412	132372	1999	1012.2	63.3	59.9	120.9	117.3
Dowling Elementary	33	K-12 School	3900 West River Parkway	55406	90776	2007	1079.8	140.6	133.9	203.9	196.6
Edison Senior High	48	K-12 School	700 22nd Ave NE	55418	257922	1925	2016.6	87.9	83.6	132.3	127.8
Emerson Elementary	38	K-12 School	1421 Spruce Place	55403	61333	1925	647.2	127.8	120	182	173.7
Field Elementary	21	K-12 School	4645 4th Ave South	55409	69530	1925	742.7	120.6	116.2	181	176.2
Green Central Park Elementary	80	K-12 School	3416 4th Ave S	55408	112715	1993	554	59.7	58.2	84.8	83.2
Hale Elementary	38	K-12 School	1220 East 54th Street	55417	81807	1930	356.4	104.8	98.1	157.6	150.5
Hall Elementary	34	K-12 School	1601 Aldrich Ave N	55411	79840	1960	776.4	102.4	97.4	162	156.7
Harrison -other	Not Available	Other	501 Irving Ave N	55405	52802	1998	502.5	86.2	81.5	153.2	148.3
Henry Senior High	50	K-12 School	4320 Newton Ave N	55412	227525	1926	1832	91.9	83.7	136.8	127.9
Hiawatha Elementary	5	K-12 School	4201 42nd Ave S	55406	39042	1925	445	181.1	169.3	212.9	200.3
Jefferson Elementary	38	K-12 School	1200 West 26th Street	55405	156450	1925	1008.3	78.2	72.6	111.2	105.1
Jenny Lind	52	K-12 School	5025 Bryant Avenue North	55413	95662	1995	808.7	71.6	67.4	134.2	129.4

Minneapolis Public School Buildings

Property Name	Energy Star Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft²)	Year Built	Total GHG Emissions (MtCO2e)	Site EUI (kBtu/ft²)	Weather Normalized Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)	Weather Normalized Source EUI (kBtu/ft²)
Keewaydin Elementary	6	K-12 School	5209 30th Ave S	55417	47500	1934	637.2	161.4	153.6	231	222.9
Kenny Elementary	35	K-12 School	5720 Emerson Ave S	55419	61776	1954	543.5	111.2	107.2	153.5	149.3
Kenwood Elementary	44	K-12 School	2013 Penn Ave S	55405	61300	1925	464.3	78.3	74.2	125.6	121
Lake Harriet Lower Campus (Audubon)	9	K-12 School	4030 Chowen Ave S	55410	37540	1925	560.5	161.8	155.6	250.4	243.9
Lake Harriet Upper Campus (Fulton)	36	K-12 School	4912 Vincent Ave S	55410	77238	1925	812.9	120.1	112.1	178.8	170.4
Longfellow Elementary	1	K-12 School	3017 E 31st Street	55406	42733	1925	534.3	171.8	165.1	223.4	216.4
Loring Elementary	41	K-12 School	2600 44th Ave N	55412	60096	1928	499.1	102.2	93.9	143.9	135
Lucy Laney Elementary	30	K-12 School	3333 Penn Ave N	55412	111726	2000	1239.1	96.1	92.1	176.9	172.2
Lyndale Elementary	70	K-12 School	3333 Grand Ave S	55408	91786	1966	582.8	59.2	57.1	102.9	100.7
Marcy Elementary	47	K-12 School	415 4th Ave SE	55414	76906	1992	713.7	78.7	74.8	147.4	143.3
Nellie Stone Johnson Elementary	33	K-12 School	807 27th Ave N	55411	123000	2001	1170.7	81.1	76.8	151.3	146.8
North Senior High	3	K-12 School	1500 James Ave N	55411	283568	1972	3912.9	131	127.7	224.5	221
Northeast Middle	13	K-12 School	2955 Hayes Street NE	55418	176336	1956	1983.6	132.4	128.5	192.6	188.5
Northrop at Ericsson	14	K-12 School	4315 31st Ave S	55406	57874	2007	488	99.8	95.8	144.6	140.4
Olson Middle School	24	K-12 School	1607 51st Ave N	55430	114959	1962	1237.5	116.6	110.9	180.5	174.6
Pillsbury Elementary	38	K-12 School	2250 Garfield Street NE	55418	83906	1991	749.5	78	73.3	142.7	137.9
Pratt Community Center	62	K-12 School	66 Malcom Street SE	55414	42032	1925	235.6	59.1	55.6	93.4	89.7
Ramsey Elem / Washburn Senior	24	K-12 School	201 West 49th Street	55409	403234	1925	4634.7	116.8	113	189.9	185.8
Roosevelt Senior High	49	K-12 School	4029 28th Ave S	55406	307029	1925	2576.1	98.9	95.1	143.7	139.7
Sanford Middle School	22	K-12 School	3524 42nd Ave S	55406	122380	1926	1123.6	123.9	118.8	163.2	157.7
Seward Elementary	68	K-12 School	2309 28th Ave S	55406	77300	1965	689.9	77.7	74.2	142.5	138.8
Sheridan Elementary	3	K-12 School	1201 University Ave NE	55413	126286	1932	1358.8	141.6	132.5	189.8	180.3
South Senior High	33	K-12 School	3131 19th Ave S	55407	278843	1968	2991.3	90.9	89.6	170.4	169

Minneapolis Public School Buildings											
Property Name	Energy Star Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft²)	Year Built	Total GHG Emissions (MtCO2e)	Site EUI (kBtu/ft²)	Weather Normalized Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)	Weather Normalized Source EUI (kBtu/ft²)
Southwest Senior High	36	K-12 School	3414 West 47th street	55410	254560	1939	2735.9	121	114.6	182	175.1
Sullivan Elementary	22	K-12 School	3100 E 28th Street	55406	204925	1991	2026.6	92.1	90.5	160.2	158.5
W. Harry Davis Academy Elementary	33	K-12 School	1510 Glenwood Ave	55405	94282	1995	745.5	78.7	74.3	130	125.3
Waite Park Elementary	26	K-12 School	1800 34th Ave S	55418	59085	1950	698.5	121.4	115.2	195.7	188.6
Wenonah Elementary	42	K-12 School	5625 23rd Ave S	55417	42648	1952	436.7	115.7	111.2	173.5	168.8
Whittier Elementary	47	K-12 School	315 West 26th Street	55404	129998	1997	1000.7	64.1	61.9	121.8	119.5
Wilder / Transition Plus	Not Available	Other	3345 Chicago Ave	55407	193000	1975	1819.8	110.4	103.9	161.2	154.4
Windom Elementary	29	K-12 School	5821 Wentworth Ave S	55419	67466	1925	739.3	110	103.2	180.5	173.3

Minneapolis Park and Recreation Buildings											
Property Name	Energy Star Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft^2)	Year Built	Total GHG Emissions ($MtCO_2e$)	Site EUI ($kBtu/ft^2$)	Weather Normalized Site EUI ($kBtu/ft^2$)	Source EUI ($kBtu/ft^2$)	Weather Normalized Source EUI ($kBtu/ft^2$)
Armatage Park	Not Available	Other	2500 57th St W	55410	7097	1978	73.2	110.3	102.9	172.4	162.6
Audubon Park	Not Available	Other	1320 29th Ave NE	55418	6177	1978	68.2	114.9	108.8	183.4	175.8
Bottineau Park	Not Available	Other	2000 2nd St NE	55418	13760	2001	130.1	99.2	90.1	157.3	147.8
Brackett Park	Not Available	Other	2728 39th Ave S	55406	5300	1979	44.4	62.6	60.5	129.7	127.2
Bryant Square Park	Not Available	Other	3101 Bryant Ave S	55408	6300	1970	62.5	76.7	72	155	147.7
Corcoran Park	Not Available	Other	3332 20th Ave S	55407	5855	1977	77.2	133.2	124.3	217.5	207.2
Creekview Park	Not Available	Other	5001 Irving Ave N	55430	6068	1976	55.5	90.2	83	150	141.5
East Phillips Park	Not Available	Other	2307 17th Ave S	55404	14564	2010	145.6	97	89.8	163.4	153.3
Elliot Park	Not Available	Other	1000 14th St E	55404	7215	1961	79.6	101.9	94.5	178.3	167.9
Fairview Park	Not Available	Other	621 29th Ave N	55411	18688	1976	227.8	105.7	97.9	194.5	186.3
Folwell Park	Not Available	Other	1615 Dowling Ave N	55412	13370	2001	162.1	73.3	70.7	181.4	178.8
Fuller Park	Not Available	Other	4800 Grand Ave S	55419	6357	1976	58.1	88.7	85.3	149.3	144.1
Hiawatha School Park	Not Available	Other	4305 42nd St E	55406	6613	1978	78.9	104.9	98.3	190.9	181.4
Keewaydin Park	Not Available	Other	3030 53rd St E	55417	6314	1972	110.1	165.1	155.6	283.5	272.6
Kenny Park	Not Available	Other	1328 58th St W	55419	2456	1962	50.3	204.6	193.7	336.6	325.2
Kenwood Park	Not Available	Other	2101 Franklin Ave W	55405	5956	1983	46	76.2	70.3	126.5	119.4
Lake Hiawatha	Not Available	Other	2701 44th St E	55406	3970	1977	69.8	134.3	126.1	273.7	256.3
Lake Nokomis	Not Available	Other	2401 E Minnehaha Pkwy	55417	13769	1975	106.8	90.5	84.4	132.5	125.8
Linden Hills Park	Not Available	Other	3100 43rd St W	55410	7930	1972	110.3	138.4	130.8	228.6	220.6
Logan Park	Not Available	Other	690 13th Ave NE	55413	14294	1971	142	92.9	86.6	161.1	154.5
Longfellow Park	Not Available	Other	3435 36th Ave S	55406	16396	1962	159.3	70.8	66.2	149.9	142
Loring Park	Not Available	Other	1382 Willow St	55403	5164	1906	93.4	132.8	128.9	279.4	272
Luxton Park	Not Available	Other	112 Williams Ave SE	55414	15400	1969	196.7	132.2	124.1	211.9	203.4
Lyndale Farmstead Park	Not Available	Other	3900 Bryant Ave S	55409	2785	1977	48.7	182.3	170.3	290.2	276.1
Lynnhurst Park	Not Available	Other	1345 West Minnehaha Pkwy	55419	15446	1971	127.1	88.3	81.3	137.6	129
Matthews Park	Not Available	Other	2318 29th Ave S	55406	7846	1968	136.7	133.7	127.2	271.4	264.5
Mcrae Park	Not Available	Other	906 47th St E	55407	7839	1955	99.8	124.2	116	208.3	197.8

Minneapolis Park and Recreation Buildings											
Property Name	Energy Star Score 2013	Property Type	Address	Postal Code	Floor Area (Buildings & Parking) (ft²)	Year Built	Total GHG Emissions (MtCO2e)	Site EUI (kBtu/ft²)	Weather Normalized Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)	Weather Normalized Source EUI (kBtu/ft²)
Morris Park	Not Available	Other	5531 39th Ave S	55417	4593	1956	37	76.8	71.5	131.2	123.8
MPRB Headquarters	Not Available	Office	2117 W River Rd	55411	75327	2001	0	0	0	0	0
North Commons Park	Not Available	Other	1801 James Ave N	55411	13810	1972	194.3	113.7	107.5	221.4	214.8
Northeast Ice Arena	Not Available	Other	1306 Central Ave N	55411	32772	1996	468.2	118.3	115.5	225.9	222.9
Painter Park	Not Available	Other	620 34th St W	55408	5787	1976	56.3	113.2	109.9	166.2	162.7
Parade Park Ice - North	Not Available	Other	610 Kenwood Parkway	55403	40195	1988	586.5	120.2	0	230.5	0
Parade Park Ice - South	Not Available	Other	600 Kenwood Pkwy	55403	34351	1988	1105.4	303.6	295.5	522.7	514.2
Pearl Park	Not Available	Other	414 Diamond Lake Rd E	55419	11934	1967	142.7	95.8	90.5	187.9	181.5
Peavey Park	Not Available	Other	730 22nd St E	55404	1865	1992	102.1	306.5	300.5	810.2	803.9
Pershing Field Park	Not Available	Other	3523 48th St W	55410	7287	1975	67	78.1	75.3	146.1	143.2
Phillips Pool & Gym Park	Not Available	Other	2323 11th Ave S	55404	41395	1978	463	80.6	78.5	172.3	170.2
Powderhorn Park	Not Available	Other	3400 15th Ave S	55407	20363	1972	276.4	106.7	100.2	212.5	204
Rev. Dr. Martin Luther King	Not Available	Other	4055 Nicollet Ave S	55409	20261	1969	209.8	105.9	98.8	171.3	163.6
Sibley Park	Not Available	Other	1900 40th St E	55407	7732	1973	110.6	143.6	134.8	235.7	226.4
Southside Operations Center	Not Available	Other	3800 Bryant Ave S	55409	58683	1986	697.9	107.5	101	191.4	183.3
Stewart Park	Not Available	Other	2700 12th Ave S	55407	6081	1976	87.7	134.2	125.5	233.6	223.1
Van Cleve Park	Not Available	Other	901 15th Ave SE	55414	13266	1970	181.3	129.9	124.6	222.3	214.2
Waite Park	Not Available	Other	1810 34th Ave NE	55418	6212	1979	44.3	49.6	47.5	109.2	107.1
Webber Park	Not Available	Other	4400 Dupont Ave N	55412	7016	1977	81.4	94.4	87.1	182.9	171.9
Whittier Park	Not Available	Other	2600 Grand Ave S	55408	7549	1974	134.7	146.9	139	281.8	273.5

Appendix B: Glossary of Terms

Btu - British Thermal Unit
A unit of energy, which can represent both thermal energy and electricity. One BTU is the amount of energy required to raise one pound of water one degree Fahrenheit. These are some Btu conversions for other units of energy: 1 kWh of electricity = 3413 Btu, 1 therm of natural gas = 100,000 Btu, kBtu = 1,000 Btus, 1 mmBtu = 1,000,000 Btus

ENERGY STAR Rating
The 1-100 ENERGY STAR score was developed by the Environmental Protection Agency (EPA) and provides a metric for comparison with other similar buildings across the country. The score accounts for differences in climate, occupancy and operating hours. A score of 50 represents median energy performance, while a score of 75 or better indicates a building is a top performer. For more information, read How the 1-100 ENERGY STAR score is calculated.

Energy Auditing
An evaluation of a building's energy performance, to assess how much energy is being used and to identify opportunities to improve efficiency. The process typically involves a review of energy bills as well as a site visit to examine the building shell and mechanical systems.

Energy Benchmarking
The process of comparing a building's energy performance to other similar properties, based on a standard metric. ENERGY STAR Portfolio Manager was the software used to benchmark the public buildings in this report, and the metric for comparison is Energy Use Intensity (EUI).

Energy Use Intensity (EUI)
The metric used for comparing buildings in Energy Star, EUI expresses a building's energy use relative to its size. In this report it is expressed as kBtu/ft², and is calculated by taking the total energy consumed in a year (in kBtu) and dividing it by the floor area of the building (in ft²).

Source EUI
Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses. By taking all energy use into account, the metric provides a complete assessment of energy efficiency in a building.

Site EUI
Site energy represents the amount of heat and electricity consumed by a building as reflected in your utility bills. This is a relevant metric for facility managers, to understand how a building's energy use has changed over time. Site EUI does not, however, account for the environmental impacts of transmission and delivery of energy. Site energy sources for public buildings in this report include: electricity, natural gas, chilled water and steam. This report includes both the Site and Source EUI for all buildings reported.

Total GHG Emissions (MtCO2e)
The metric used in this report for greenhouse gas emissions, which represent a million metric tons of carbon dioxide equivalents. Equivalent CO2 (CO2e) is a universal standard measurement for greenhouse gasses such as and their ability to trap heat in the atmosphere. These greenhouse gasses include carbon dioxide, methane, nitrous oxide, and chloroflouro-carbons. Greenhouse gas emissions for buildings are calculated using the ENERGY STAR Portfolio Manager Methodology for Greenhouse Gas Inventory and Tracking Calculations.

Weather normalized
When energy use is adjusted to account year-to-year weather differences, allowing for comparison of a building to itself over time. Through this procedure, the energy in a given year is adjusted to express the energy that would have been consumed under 30-year average weather conditions.