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## **ENERGY STAR BUILDINGS: A MINNESOTA MARKET REPORT**

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## About the Great Plains Institute

As a non-partisan, non-profit organization, the Great Plains Institute takes a pragmatic approach to energy and climate change challenges – working with diverse interests to transform the way we produce, distribute, and consume energy to be both environmentally and economically sustainable. Through research and analysis, consensus policy development, and technology acceleration, we are leading the transition to clean, efficient and secure energy. To achieve its mission, GPI works in seven areas: energy efficiency, energy infrastructure, fossil energy/CCS, renewable energy & fuels, transportation, international collaboration, and sustainable communities.

# ENERGY STAR Buildings: A Minnesota Market Report

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## EXECUTIVE SUMMARY

Buildings with an ENERGY STAR certification use 35 percent less energy on average than typical buildings, and cumulatively achieve over \$2 billion in annual cost savings. Over 300,000 buildings across the country, representing over 40 percent of the commercial market, measure and track their energy use with ENERGY STAR Portfolio Manager—the tool that identifies potential eligibility for certification.

The purpose of this report is to characterize the market uptake of the ENERGY STAR certification for buildings in Minnesota, which has grown from three buildings in 1999 to 561 certified buildings as of September 15<sup>th</sup>, 2013. Collectively, certified buildings in Minnesota represent nearly 105 million square feet of floor space.

This report offers the following key insights about the market for certifying ENERGY STAR buildings in Minnesota:

***Activity is on the rise:*** The cumulative number of ENERGY STAR certifications earned by Minnesota buildings has more than doubled since 2010.

***Uptake is concentrated in a few sectors:*** Office, K-12, and retail buildings comprise over 85 percent of the ENERGY STAR certifications earned in the state. A dozen different sectors make up the remaining 15 percent.

***Uptake varies across buildings of different sizes:*** Minnesota's ENERGY STAR buildings range from 5,000 to over 1.9 million square feet. Buildings larger than 200,000 square feet represent slightly over 25 percent of all certified buildings, and buildings smaller than 50,000 square feet represent around 16 percent.

***Activity encompasses a mix of old and new buildings:*** Minnesota's oldest ENERGY STAR certified building was built in 1860. Over 35 percent of all certified buildings were built before 1980, and 21 percent were built in the 2000s.

***Buildings with certifications over multiple years tend to be more efficient:*** In Minnesota, the average ENERGY STAR score for buildings with one certification is 84.69, and the most recent score for buildings with six or more certifications averaged 92.31 on a scale of 1 - 100.

***Institutional commitment drives uptake in certain areas:*** In the retail sector, six companies own over 85 percent of all certified building. SUPERVALU owns 90 percent of all certified supermarket and grocery buildings in the state; and in the city of Eagan, 45 percent of all the certified buildings belong to Independent School District 196.

## BACKGROUND

### About ENERGY STAR Buildings

Efficient buildings hold the key to significant cost savings and environmental benefits. In the United States, buildings consume over \$400 billion of energy per year, 39 billion gallons of water per day, and are responsible for 40 percent of carbon dioxide emissions.<sup>i</sup>

The energy costs of commercial buildings nationwide exceeded \$170 billion dollars in 2010,<sup>ii</sup> and estimates suggest that cost-effective energy efficiency measures can reduce energy use in the commercial sector by nearly 30 percent.<sup>iii</sup>

Nationwide ENERGY STAR Buildings by the Numbers <sup>iv</sup>	
As of December, 2012	
Buildings certified:	Over 20,000
Square footage certified:	Over 3 billion
Average energy use:	35 percent less than typical buildings
Total energy cost savings:	\$2.3 billion/year <sup>v</sup>
Average score:	86 /100

The ENERGY STAR program provides a variety of tools to help achieve this potential. Since 1999, the U.S. Environmental Protection Agency has recognized the most efficient buildings in the country with an ENERGY STAR certification. Buildings can earn a certification each year by entering basic information about the property and 12 months of energy bills into Portfolio Manager, a free tool to track and manage energy and water use in buildings.

For 20 different types of buildings, Portfolio Manager will generate a score of 1 – 100. The score benchmarks buildings against a national database and adjusts for differences in climate, hours of operation, and several other factors. Buildings with a score of 75 or higher perform more efficiently than 75 percent of similar buildings across the country and may be eligible for an ENERGY STAR certification.<sup>vi</sup>

## Building Types Eligible for an ENERGY STAR Certification<sup>vii</sup>

- |   |   |
|---|---|
| • Bank Branch                           | • Non-Refrigerated Warehouse            |
| • Courthouse                            | • Office                                |
| • Data Center                           | • Refrigerated Warehouse                |
| • Distribution Center                   | • Retail Store                          |
| • Financial Office                      | • Residence Hall / Dormitory / Barracks |
| • Hospital (General Medical & Surgical) | • Senior Care Community                 |
| • Hotel                                 | • Supermarket/Grocery Store             |
| • K- 12 School                          | • Wholesale Club/Supercenter            |
| • Medical Office                        | • Worship Facility                      |

**Energy Management:** Nationwide, over 300,000 properties, collectively representing over 30 billion square feet and over 40 percent of the commercial market, use ENERGY STAR Portfolio Manager to measure, benchmark and manage their energy use as of December 2012.<sup>viii</sup> In Minnesota, over 5,700 buildings representing over 663 million square feet have received an ENERGY STAR score through December 2012. Nearly half of those buildings are located in the Twin Cities metropolitan area.<sup>ix</sup> Nationwide, buildings that benchmarked their energy use between 2008 through 2011 in Portfolio Manager achieved an average of 7 percent energy savings in that time period.<sup>x</sup>

**ENERGY STAR Certification:** Over 20,000 buildings across the country, representing over 3 billion square feet, have earned an ENERGY STAR certification as of December 2012. Approximately a third of the certified buildings improved their scores in order to earn a certification. On average, ENERGY STAR buildings use 35 percent less energy than typical buildings and further reduced their greenhouse gas emissions by 10 percent since beginning to use Portfolio Manager.<sup>xi</sup>

**Minnesota's Goal:** In 2007, Minnesota adopted the Next Generation Energy Act, a comprehensive package of legislation that established a renewable energy standard, energy efficiency performance goals, and greenhouse gas reduction targets for the state. The new law also set a statewide goal of 1,000 ENERGY STAR commercial buildings by the end of 2010, and directed utilities to include incentives for certifying ENERGY STAR buildings in their energy efficiency programs.

## Public Building Benchmarking in Minnesota

Energy use benchmarking is widespread among public entities in Minnesota. The state of Minnesota's B3 energy management tool provides energy use benchmarks relative to the state building code, and also generates ENERGY STAR scores for eligible public buildings. Buildings in Minnesota that receive state bonding dollars or participate in state assistance programs are required to use B3.

Over 7,500 public buildings containing over 302 million square feet in total have used the B3 Benchmarking program. For each building, the B3 tool estimates the potential annual cost savings if it were to perform 10 percent more efficiently than the current state energy code. If all public buildings performed to that level, annual cost savings would exceed \$26.6 million dollars.<sup>xii</sup>

## About this Report

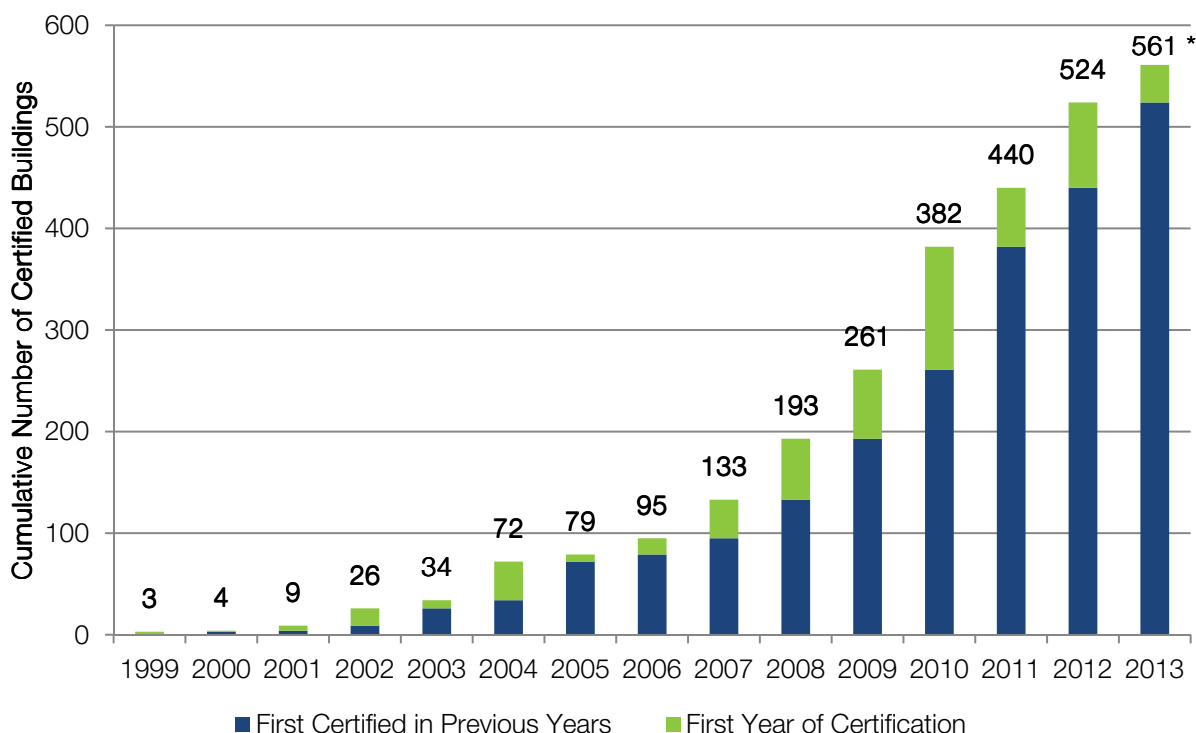
This report draws on publically available data to describe the ENERGY STAR **certification** activity for buildings in Minnesota. All of the chart data derive from the ENERGY STAR buildings locator referenced at the end of this report. Energy performance **benchmarking** is an important tool to track and control energy costs and one of the major steps to earning an ENERGY STAR certification. Granular data about the characteristics of commercial buildings that complete energy performance benchmarking is not as publically available. As a result, this report acknowledges the importance of benchmarking but does not offer detailed information on the commercial market activity.

# MINNESOTA MARKET SNAPSHOT

## Number of ENERGY STAR Certifications Earned by Buildings

ENERGY STAR certifications have increased significantly in Minnesota over the last several years. Since 2010, the number of ENERGY STAR certified buildings in Minnesota has more than doubled. As of September 15, 2013, 561 buildings in Minnesota have earned an ENERGY STAR certification. Eligible buildings can apply for a new certification each year that reflects their energy performance over the last 12 months. Minnesota's ENERGY STAR buildings have earned a cumulative total of 962 certifications.

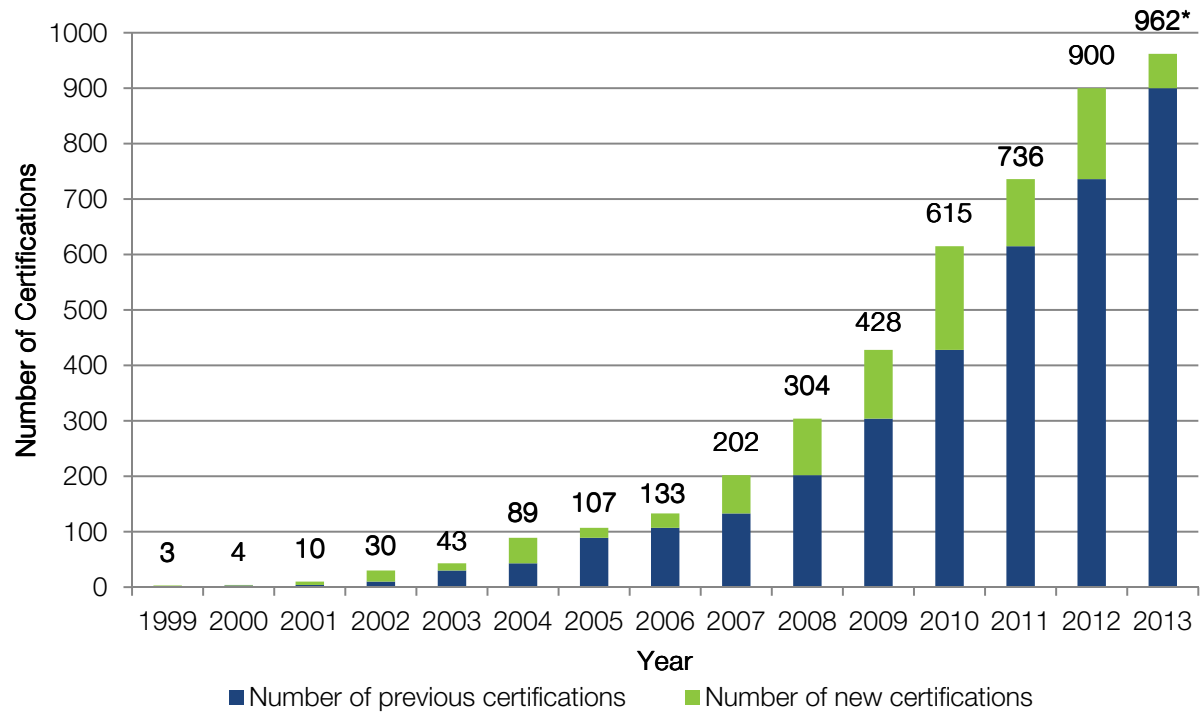
Figure 1: Cumulative Growth of ENERGY STAR Certified Buildings in Minnesota



\* 2013 data is through September 15.



Figure 2: Cumulative Growth of Annual ENERGY STAR Certifications Achieved by Buildings in Minnesota



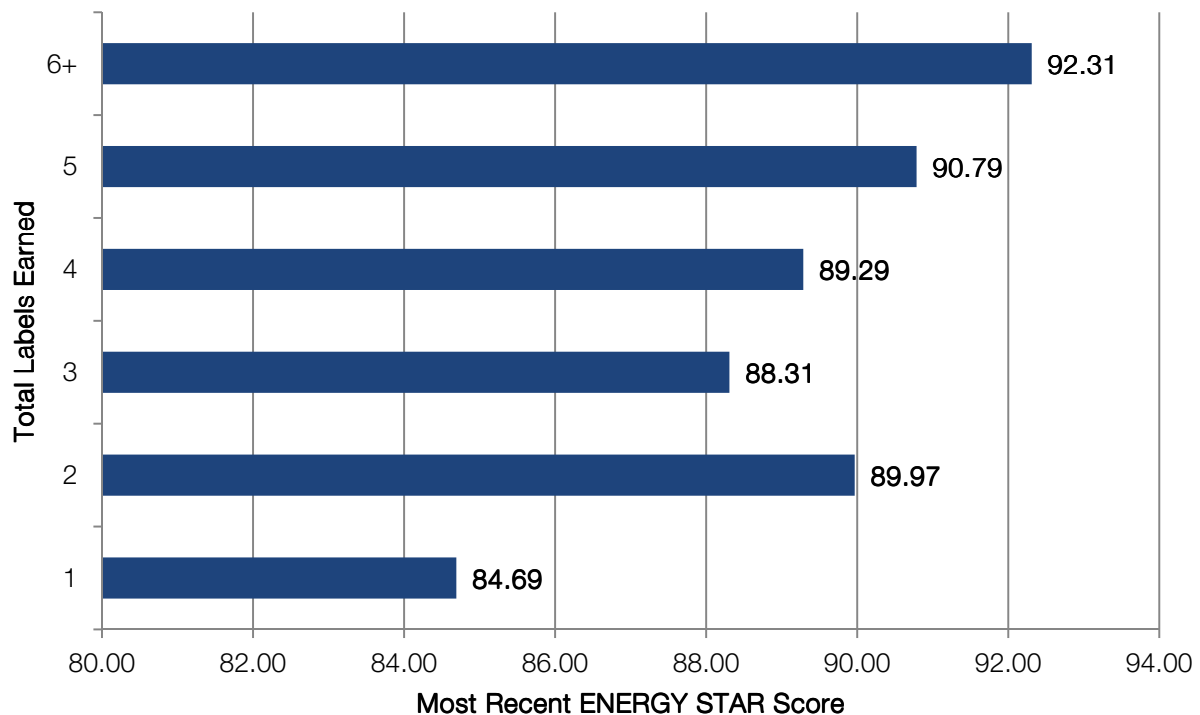
\* 2013 data is through September 15.

## Average Score by Number of Years Certified

Buildings that earned certifications over several years tend to be more energy efficient. Nationwide, buildings that benchmarked their energy use for each year between 2008 – 2011 achieved 7 percent in average energy savings, and buildings that earned the ENERGY STAR certification over multiple years have higher average scores.<sup>xiii</sup>

In Minnesota, buildings that earned certifications over multiple years tend to perform more efficiently than buildings with only one ENERGY STAR certification. Buildings with only one certification in Minnesota scored an average of 84.69, while the most recent score for buildings that earned an ENERGY STAR certification in six or more years averaged 92.31.

Figure 3: Average Score by Number of Years Certified

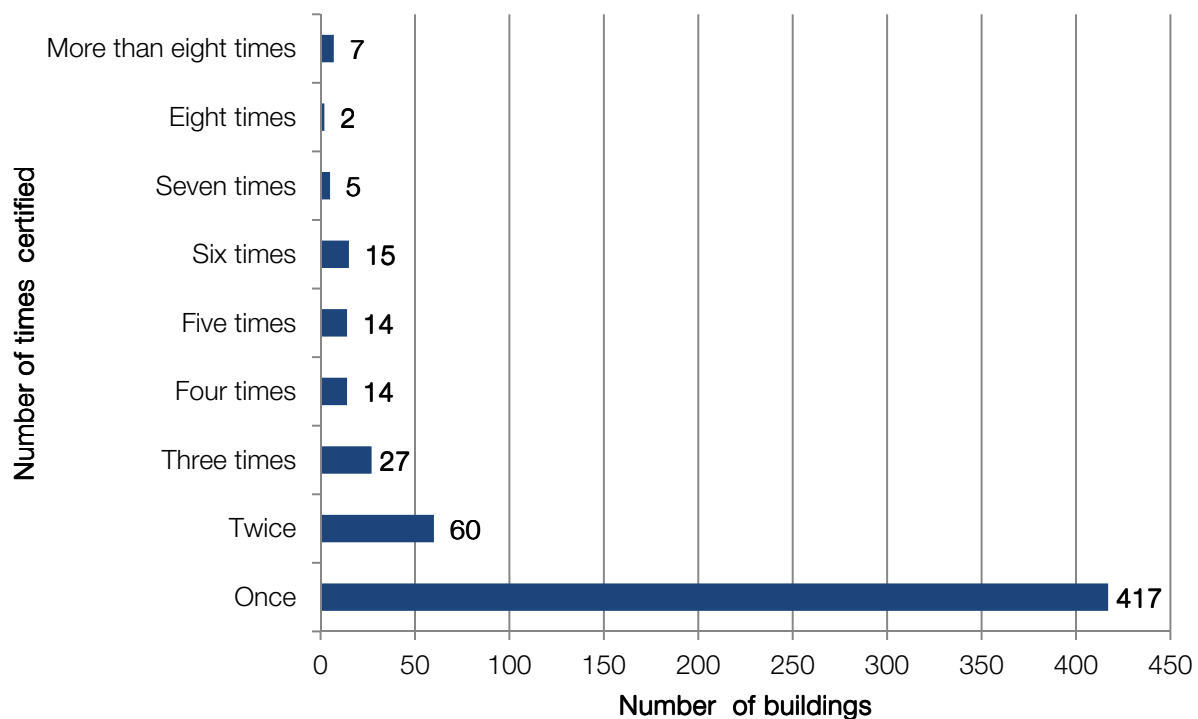


## Number of Annual Certifications Earned Per Building

The ENERGY STAR certification signifies that a building performed more efficiently than 75 percent of other similar buildings across the country over a 12 month period. Buildings can therefore apply for a new ENERGY STAR certification each year. Nearly 75 percent of the ENERGY STAR buildings in Minnesota earned one certification.

The 25 percent of ENERGY STAR buildings in Minnesota that pursued certifications for more than one year collectively earned over 55 percent of the certifications granted to buildings in the state. In Minnesota, office buildings represent the vast majority of buildings that have earned a certification three times or more.

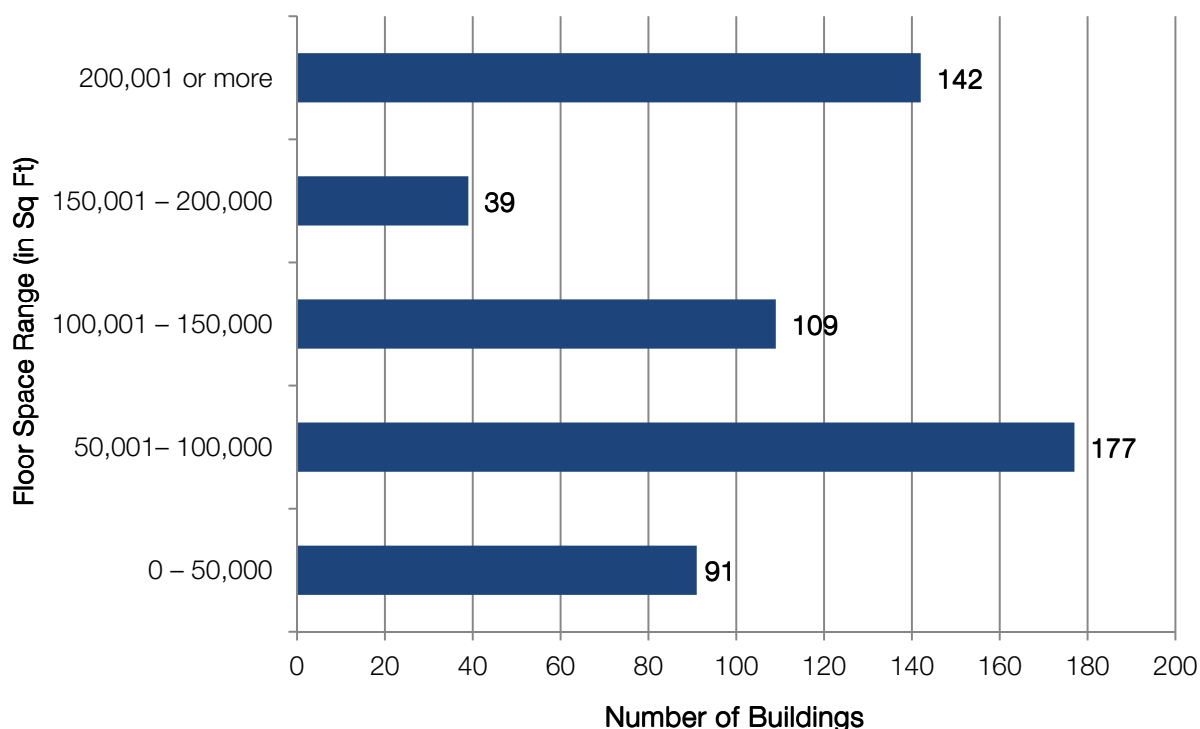
Figure 4: Number of Certifications per Building



## Number of ENERGY STAR Certified Buildings by Floor Space

ENERGY STAR buildings in Minnesota range in size from Energy Management Solution's 5,000 square foot office building in Chanhassen to the 1.92 million square foot Target Plaza in downtown Minneapolis. Approximately 50 percent of the ENERGY STAR buildings in Minnesota are larger than 100,000 square feet. The average size of an ENERGY STAR building in Minnesota is 188,000 square feet, slightly larger than a typical SuperTarget.<sup>xiv</sup> The 78 largest ENERGY STAR buildings account for almost 14 percent of all the certified buildings in the state and nearly 50 percent of the statewide square footage of buildings with a certification.

Figure 5: Number of ENERGY STAR Buildings by Floor Space<sup>1</sup>



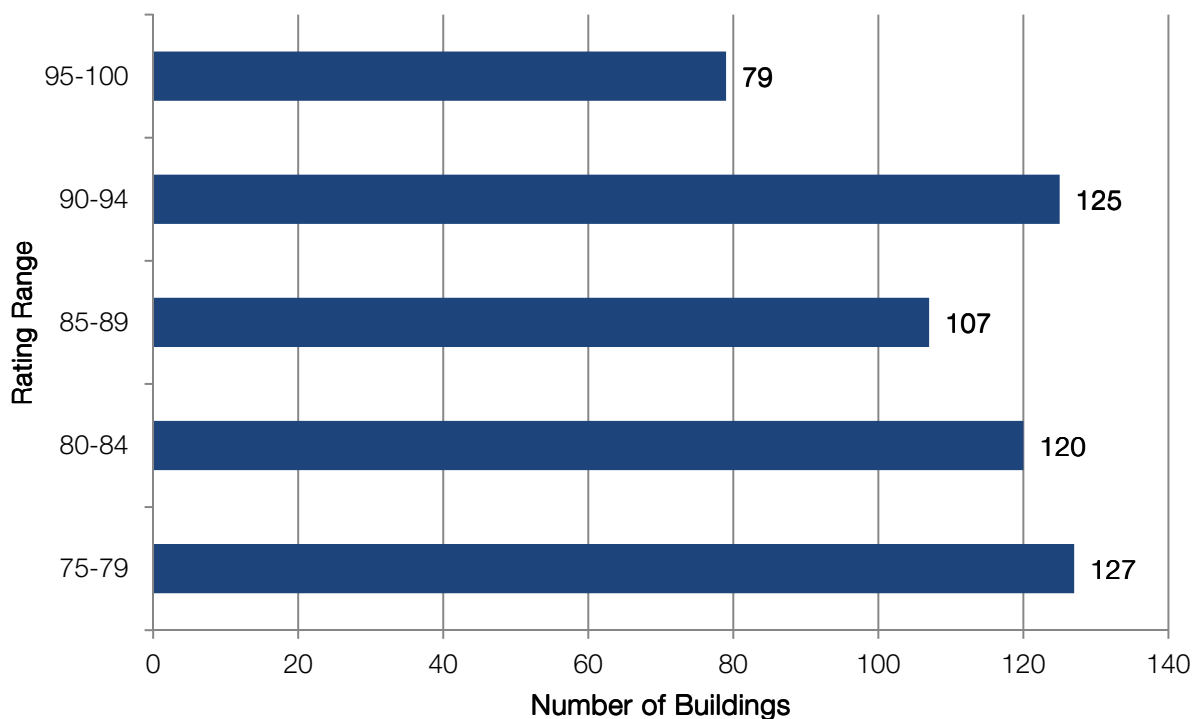
<sup>1</sup> Data in this chart adds up to 558. Floor space is not available for 3 industrial facilities.

## Most Recent ENERGY STAR Scores of Certified Buildings

ENERGY STAR scores compare a building's energy performance over one year to the performance of other similar buildings across the country and adjust for a variety of factors such as weather, square footage and operating hours. In order to earn a certification, a building must receive a score of 75 or higher, signifying that it performs more efficiently than 75 percent of similar buildings across the country.

The average ENERGY STAR building in Minnesota received a score of 86, which mirrors the national average.<sup>xv</sup> Minnesota has 7 buildings that received a score of 100; they are listed on page 20 of this report. Among Minnesota's 79 most efficient buildings with a score of 95 or higher, over 50 percent had received an ENERGY STAR certification in the past.

Figure 6: Most Recent ENERGY STAR Scores of Minnesota's Certified Buildings<sup>2</sup>



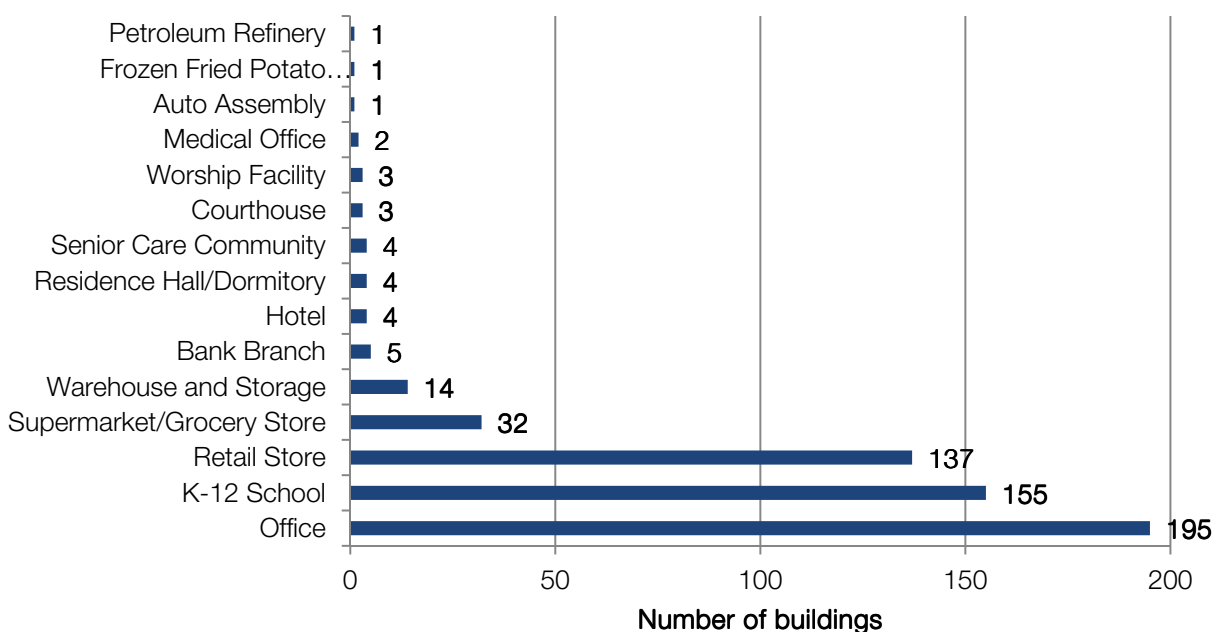
<sup>2</sup> Data in this chart adds up to 558. Ratings are not available for 3 industrial facilities.

## Number of Buildings by Facility Type

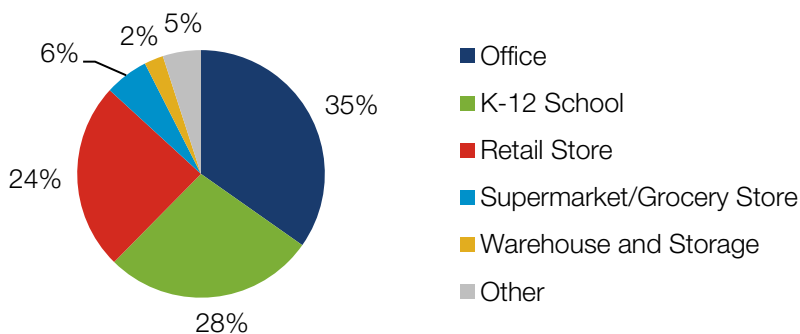
ENERGY STAR certifications in Minnesota are highly concentrated in three sectors: office, K-12, and retail buildings. These three sectors account for 87 percent of all ENERGY STAR buildings in the state. The percentage of ENERGY STAR certified office and K-12 buildings in Minnesota is similar to the national average, although the percentage of ENERGY STAR retail buildings in Minnesota exceeds the national average by 10 percent.

A dozen different categories of buildings account for the remaining 13 percent of ENERGY STAR buildings in Minnesota. The majority of these buildings are supermarkets or warehouses. The remaining categories each have 5 or fewer ENERGY STAR buildings in the state.

**Figure 7: Number of ENERGY STAR Certified Buildings by Facility Type**



**Figure 8: Percentage of ENERGY STAR Certified Buildings by Facility Type<sup>3</sup>**



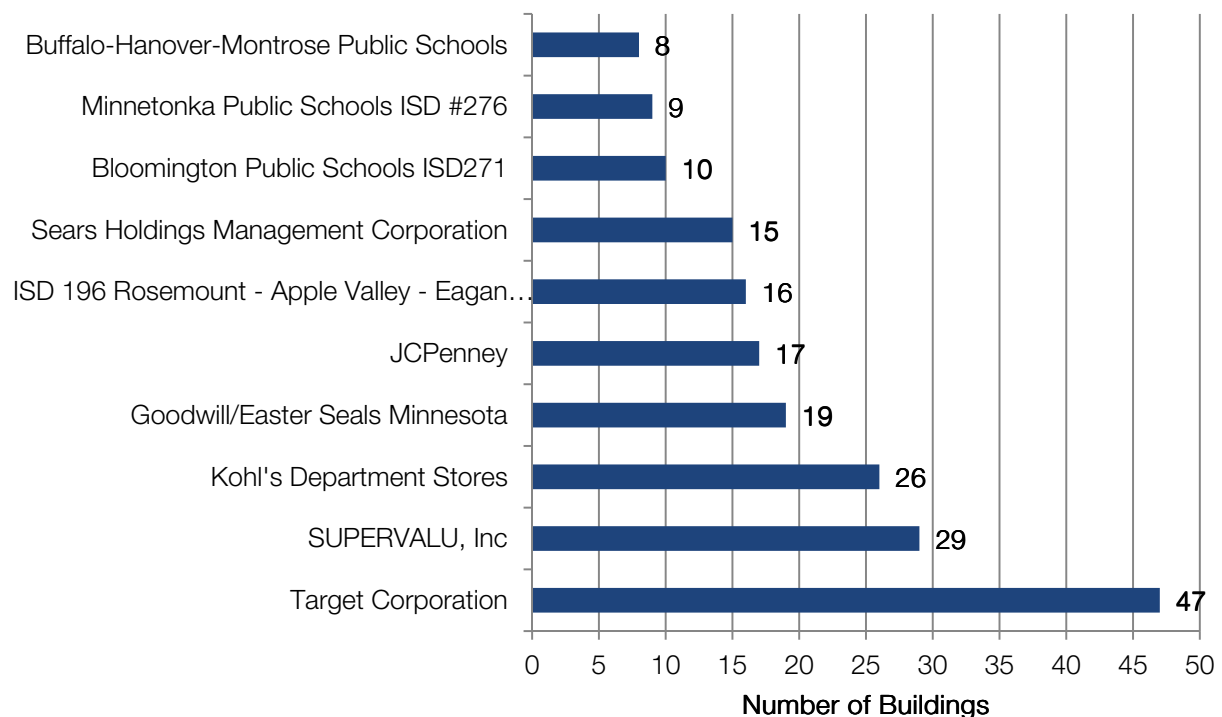
<sup>3</sup> Buildings in the “other category” include: Bank Branch, Hotel, Residence Hall/Dormitory, Senior Care Community, Courthouse, Worship Facility, Medical Office, Frozen Fried Potato Processing, Auto Assembly and Petroleum Refinery

## Top ENERGY STAR Certified Building Owners

Several institutions are responsible for a large number of ENERGY STAR certified buildings. Collectively, the ten organizations in Figure 8 own nearly 35 percent of all ENERGY STAR buildings in Minnesota. Notably, Kohl's has certified 100 percent of its department stores in Minnesota, Target has the most ENERGY STAR buildings in the state, and SUPERVALU owns over 90 percent of all ENERGY STAR buildings in the supermarket and grocery sector in Minnesota.

A few companies account for over 85 percent of the certified buildings in Minnesota's retail sector: Target, Kohl's, JC Penny, Goodwill/Easter Seals of Minnesota and Sears.

**Figure 9: Top ENERGY STAR Building Owners**



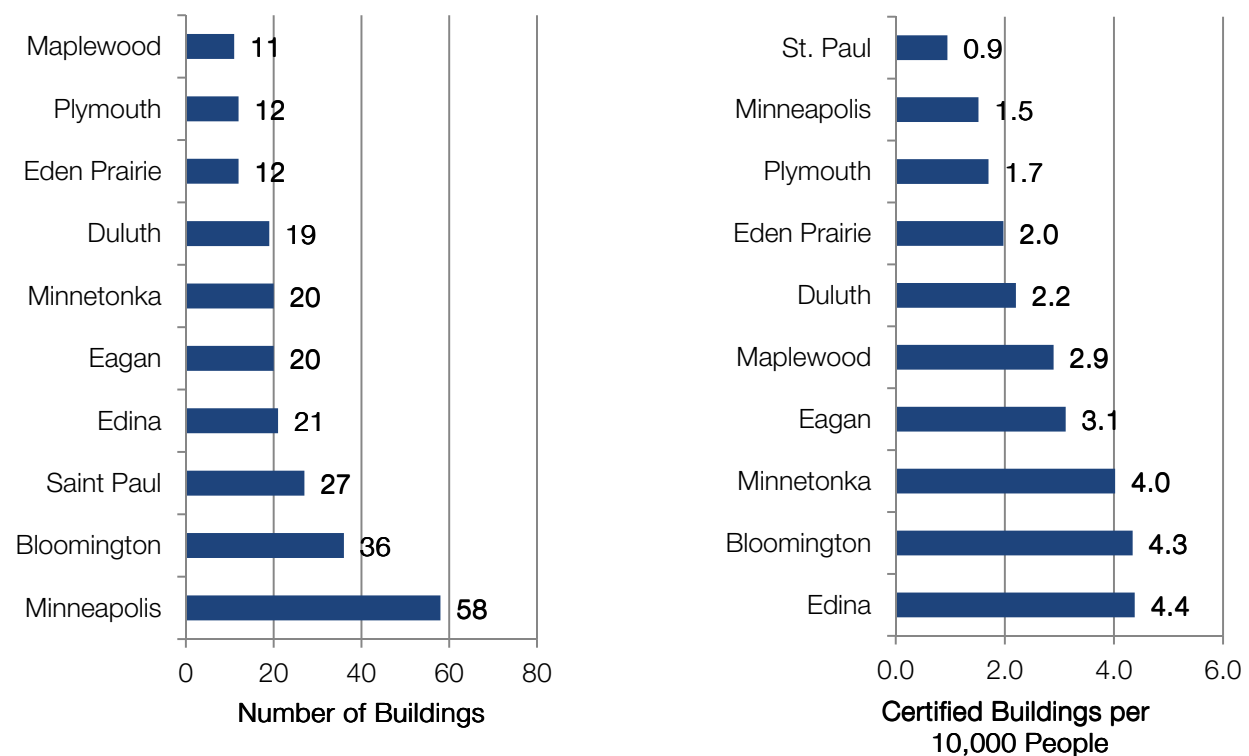
## Cities with the Most ENERGY STAR Buildings

Whether through voluntary energy saving competitions, incentives, recognition, assistance, permitting processes, or regulations, cities across the country play a unique role in supporting the energy efficiency of buildings. 15 cities in the state are home to nearly 50 percent of all the ENERGY STAR certified buildings. The ranking of cities with the most ENERGY STAR buildings generally follows city population; although Edina, Minnetonka and Maplewood are not included in the state's top 10 most populous cities.

Local companies and institutions can play a significant role in influencing the number and type of ENERGY STAR certified buildings in a city. In Edina, office buildings comprise over 85 percent of all certified buildings, whereas in Eagan 50 percent of all certified buildings are public schools.

In February 2013, Minneapolis became the first city in the state to require benchmarking with ENERGY STAR Portfolio Manager and public disclosure for municipal buildings over 25,000 square feet and private buildings over 50,000 square feet. The ordinance applies to nearly 550 buildings in the city. In 2015, the city will begin to provide public disclosure of the ENERGY STAR score, energy use intensity, water use per square foot, and greenhouse gas emissions of large commercial buildings.<sup>xvi</sup>

**Figure 10: Minnesota Cities with the Most Certified Buildings<sup>4</sup>**



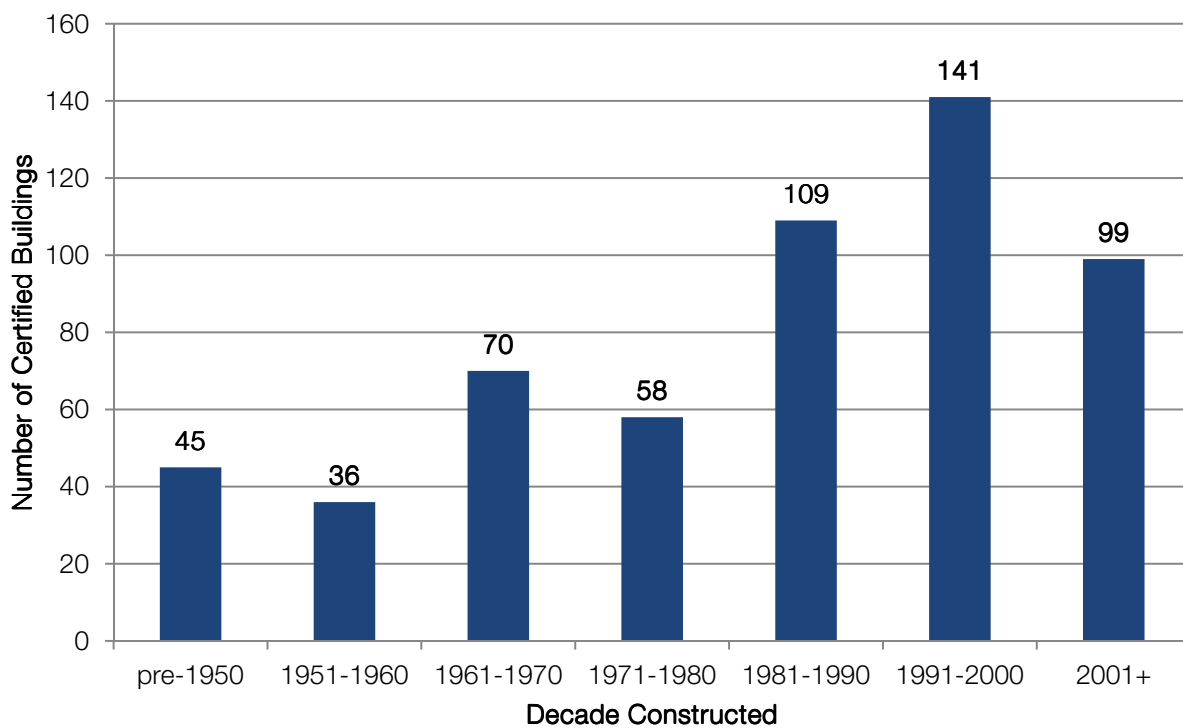
<sup>4</sup> The right-hand chart sorts the ten cities with the most certified buildings on a per capita basis. Other Minnesota cities may have more certified buildings a per capita.



## ENERGY STAR Buildings by Year Built

Minnesota's ENERGY STAR buildings are both old and new. Constructed in 1860, the building that now houses Donald's Apparel & Uniform in St. Paul is the oldest in the state to earn an ENERGY STAR certification. Seven buildings in Minnesota with an ENERGY STAR certification were built before 1900, and over 35 percent of all certified buildings in the state were built before 1980. Based on scores from the most recent certification earned, the average score for ENERGY STAR buildings constructed in 2000 or later is 86.29 and the average score of certified buildings constructed before 1950 is 85.79.

Figure 11: Number of ENERGY STAR buildings by Year Built <sup>5</sup>



<sup>5</sup> Data in this chart adds up to 558. Construction years are not available for 3 industrial facilities.

## Minnesota's Leaders & Notable ENERGY STAR Buildings

As of September 15, 2013 Minnesota had 561 ENERGY STAR certified buildings, representing a total of 104.9 million square feet.

### Companies with the Most ENERGY STAR Buildings

Company	# Certified Buildings	Total Square Footage Certified
Target Corporation	47	8,946,589
SUPERVALU, Inc	29	2,181,233
Kohl's Department Stores	26	2,446,815

### Public Institutions with the Most ENERGY STAR Buildings

Institution	# Certified Buildings	Total Square Footage Certified
Rosemount - Apple Valley - Eagan Public Schools	16	2,266,598
Bloomington Public Schools	10	1,642,453
Minnetonka Public Schools	9	1,481,049

### Most Common Facility Types with ENERGY STAR Certifications

Facility Type	# of Certified Buildings	Total Square Footage Certified
Office	195	61,553,144
K-12 School	155	21,882,852
Retail Store	137	12,738,547

#### Buildings with the most ENERGY STAR certifications

Building	City	Number of years certified	Total Square Footage	Highest score received (year)
Capella Tower	Minneapolis	13	1,636,050	99 (2007)
U.S. Bank Plaza	Minneapolis	12	1,467,832	99 (2009)
Wells Fargo Center	Minneapolis	12	1,340,572	95 (2008, 2007)

#### Buildings that have received a score of 100 (ENERGY STAR's most efficient)

Building	Facility Type	City	Total Square Footage	Year(s) Achieved
Sunrise Cottages Rochester	Senior Care Community	Rochester	102,800	2012
Sunrise Cottages of Mankato	Senior Care Community	Mankato	8,700	2012, 2011
Empire Storage Building	Warehouse and Storage	Farmington	30,000	2009
Heritage Middle School	K-12 School	West St Paul	163,093	2008
Main Office	Office	Centerville	30,000	2010
Jefferson School	K-12 School	Red Wing	36,325	2010
Travelers St Paul South	Office	Saint Paul	740,448	2012, 2011

#### Minnesota's Largest Buildings with an ENERGY STAR Label

Building	Facility Type	City	Total Square Footage	Highest score received
Target Plaza	Office	Minneapolis	1,922,619	95 (2012)
IDS Tower & Annex	Office	Minneapolis	1,637,803	86 (2012)
Capella Tower	Office	Minneapolis	1,636,050	99 (2007)

### Minnesota's Smallest Buildings with an ENERGY STAR Certification

Building	Facility Type	City	Total Square Footage	Highest score received
Energy Management Solutions	Office	Chanhassen	5,000	98 (2012)
SM Engineering	Office	Hopkins	5,150	83 (2012)
M and I Bank Snelling Avenue	Bank Branch	Saint Paul	6,420	82 (2011)

### Minnesota's Oldest Buildings with an ENERGY STAR Certification

Building	Facility Type	City	Total Square Footage	Highest score received (year)	Year Constructed
Donald's Apparel & Uniform	Retail Store	Saint Paul	13,500	87 (2010)	1860
Colonial Warehouse	Office	Minneapolis	180,387	91 (2011)	1885
ARI Duluth	Office	Duluth	17,280	81 (2007)	1889

### Minnesota's First Buildings with an ENERGY STAR Certification

Building	Facility Type	City	Total Square Footage	Highest score received (year)	First Year Certified
Piper Jaffray Plaza	Office	Saint Paul	227,717	78 (1999)	1999
Wells Fargo Center	Office	Minneapolis	1,340,572	95 (2008, 2007)	1999
Capella Tower	Office	Minneapolis	1,636,050	99 (2007)	1999

## FURTHER INFORMATION

- Featured Research and Reports on Energy Star: <http://www.energystar.gov/buildings/about-us/research-and-reports>
- How to Apply for Energy Star Certification: <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1>
- Energy Star Buildings Locator: [http://www.energystar.gov/index.cfm?fuseaction=labeled\\_buildings.locator](http://www.energystar.gov/index.cfm?fuseaction=labeled_buildings.locator)
- Minnesota Next Generation Energy Act of 2007: <https://www.revisor.mn.gov/laws/?doctype=Chapter&year=2007&type=0&id=136>
- City of Minneapolis Commercial Building Rating & Disclosure Policy: <http://www.minneapolismn.gov/environment/energy/index.htm>
- Minnesota B3 Benchmarking Reports: <https://mn.b3benchmarking.com/Statistics.aspx?r=1>

## ENDNOTES

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<sup>i</sup> U.S. Department of Energy, *2011 Buildings Energy Data Book*. March 2012. <http://buildingsdatabook.eren.doe.gov/> (see tables 1.2.3, 1.4.1 and 8.1.1)

<sup>ii</sup> U.S. Department of Energy, *2011 Buildings Energy Data Book: 1.2.3 Buildings Aggregate Energy Expenditures, by Year and Major Fuel Type*, March 2012. <http://buildingsdatabook.eren.doe.gov/TableView.aspx?table=1.2.3>

<sup>iii</sup> McKinsey and Company, *Electric Power and Natural Gas Practice: Unlocking Energy Efficiency in the U.S. Economy*, July 2009. [http://www.mckinsey.com/Client\\_Service/Electric\\_Power\\_and\\_Natural\\_Gas/Latest\\_thinking/Unlocking\\_energy\\_efficiency\\_in\\_the\\_US\\_economy](http://www.mckinsey.com/Client_Service/Electric_Power_and_Natural_Gas/Latest_thinking/Unlocking_energy_efficiency_in_the_US_economy) (see full report page 55)

<sup>iv</sup> U.S. Environmental Protection Agency, *Portfolio Manager Data Trends: ENERGY STAR Certification*, March 2013. <http://www.energystar.gov/buildings/tools-and-resources/datatrends-energy-star-certification>

<sup>v</sup> U.S. Environmental Protection Agency, *Ten Reasons to Pursue ENERGY STAR Certification*. <http://www.energystar.gov/buildings/about-us/how-can-we-help-you/build-energy-program/business-case/10-reasons-pursue-energy-star>, accessed September 18, 2013.

<sup>vi</sup> The scores benchmark performance against national data. The data source and its year vary for different building types, although the most common is the 2003 Commercial Building Energy Consumption Survey. U.S. Environmental Protection Agency, *ENERGY STAR Plan for the Next Generation of Performance Benchmarking*, September 23, 2013. <http://www.energystar.gov/buildings/sites/default/uploads/tools/ENERGY%20STAR%20Plan%20for%20the%20Next%20Generation%20of%20Performance%20Benchmarking.pdf>

<sup>vii</sup> U.S. Environmental Protection Agency, *How to Apply for an ENERGY STAR Certification*, June 2013. [http://www.energystar.gov/buildings/sites/default/uploads/tools/PortfolioManager\\_ApplyforES.pdf](http://www.energystar.gov/buildings/sites/default/uploads/tools/PortfolioManager_ApplyforES.pdf)

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- <sup>viii</sup> U.S. Environmental Protection Agency, *Energy STAR Snapshot: Measuring Performance in the Commercial and Industrial Buildings Sector*, Spring 2013. [http://www.energystar.gov/buildings/sites/default/uploads/tools/ENERGY\\_STAR\\_Snapshot\\_Spring\\_2013.pdf](http://www.energystar.gov/buildings/sites/default/uploads/tools/ENERGY_STAR_Snapshot_Spring_2013.pdf), accessed October 3, 2013.
- <sup>ix</sup> U.S. Environmental Protection Agency, *ENERGY STAR Certification*, March 2013. [http://www.energystar.gov/buildings/sites/default/uploads/tools/DataTrends\\_Certification.pdf](http://www.energystar.gov/buildings/sites/default/uploads/tools/DataTrends_Certification.pdf)
- <sup>x</sup> U.S. Environmental Protection Agency, *Portfolio Manager DataTrends: Benchmarking and Energy Savings*, October 2012. <http://www.energystar.gov/buildings/tools-and-resources/datatrends-benchmarking-and-energy-savings>
- <sup>xi</sup> U.S. Environmental Protection Agency, *supra* note iv.
- <sup>xii</sup> Savings figure as of October 7, 2013. The Weidt Group, Inc., *State of Minnesota B3 Benchmarking: Potential Savings by Sector*. <https://mn.b3benchmarking.com/Potential-Savings.aspx?ReportType=PotentialSavings>, accessed October 7, 2013.
- <sup>xiii</sup> U.S. Environmental Protection Agency, *supra* note ix.
- <sup>xiv</sup> Target, *Fast Facts*, January 13, 2009. <http://pressroom.target.com/news/fastfacts>
- <sup>xv</sup> U.S. Environmental Protection Agency, *ENERGY STAR Certification*, March 2013. [http://www.energystar.gov/buildings/sites/default/uploads/tools/DataTrends\\_Certification.pdf](http://www.energystar.gov/buildings/sites/default/uploads/tools/DataTrends_Certification.pdf); to calculate the average in Minnesota, the most recent score was used for buildings that received multiple certifications.
- <sup>xvi</sup> Impact of the ordinance on nearly 550 buildings comes from e-mail communication with Brendon Slotterback, City of Minneapolis Sustainability Program Coordinator, October 1, 2013; City of Minneapolis, *Minneapolis Building rating and Disclosure Policy: A Review of the Ordinance*, May 15, 2013. <http://www.minneapolismn.gov/www/groups/public/@regservices/documents/webcontent/wcms1p-102210.pdf>