Seattle
Municipal
Buildings

2013-2014 ENERGY PERFORMANCE REPORT

September 3, 2015

City of Seattle

Acknowledgments

The 2013-2014 City of Seattle Benchmarking Report for City-owned buildings was prepared by the Office of Sustainability & Environment based on the benchmarking results provided by each of the City's capital departments. We would like to acknowledge the efforts of facility management staff from each department who compiled data for their buildings and participated in the process.

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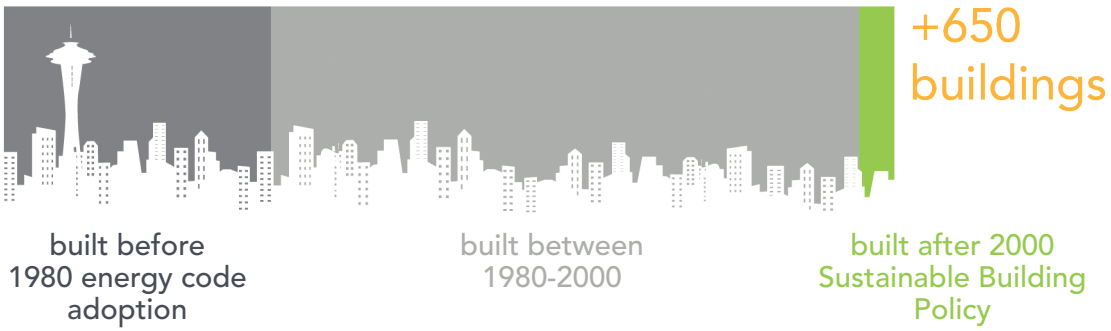
01 Introduction

The City of Seattle has set an ambitious target to be a carbon neutral community by 2050. To get there, the entire community needs to reduce its environmental impact and City government must be a leader and an active participant. This report demonstrates that leadership by publicly sharing the results of the City's work to rate the energy efficiency, or "energy performance" of City-owned facilities.

The City of Seattle has an excellent track record of reducing the environmental impact of City operations, among them: a Commute Trip Reduction Program to reduce miles employees travel to and from work, Green Fleets to reduce emissions from on-the-job travel, and a Sustainable Buildings and Sites Policy to ensure that new construction and renovations meet strict energy performance criteria. The City also recognizes the critical importance of improving the efficiency of existing buildings—and has the goal of reducing energy use across City-owned buildings 20% by 2020 (from 2008).

Most of the buildings that will shape Seattle in 2050 have already been built. This is equally true for City-owned buildings. Of the approximately 650 City-owned buildings, only 34[1]—those built since the Sustainable Buildings Policy was implemented in 2000—were constructed to green building standards. In fact, 30% of the City's buildings were built before 1980, the year the first Washington State Energy Code was adopted.

The first step toward reducing energy consumption is effectively tracking energy use to understand existing conditions. Monitoring the energy and water use of City-owned buildings is not new. City departments track utility bills, and those departments with many buildings



City-owned building stock consists primarily of buildings built prior to the launch of City green building standards.
(Source: City of Seattle, Graphic: GGLO)

1 As of December 2014

use resource tracking software. In addition, greenhouse gas (GHG) emissions from municipal buildings and facilities are reported in the City of Seattle Municipal GHG Emissions Inventory, which is a summary of GHG emissions from all municipal operations. At 31% of total emissions, buildings are the City's second largest source of emissions after vehicle fleets.

The City of Seattle Energy Benchmarking and Reporting Program requires owners of non-residential and multifamily buildings 20,000 square feet or larger to track and annually report whole-building energy efficiency, or "energy performance" to the City. The program also requires building owners to disclose the results to any current or prospective tenant, buyer, or lender upon request. Like many other building owners, the City is benchmarking the energy use of its facilities to understand, at a portfolio-wide scale, where it is doing well, and where improvement is needed. Energy benchmarking sets the baseline for a road map to significantly increase City-owned building energy efficiency and reduce GHG emissions by 2020. Improvements to existing facilities will help the City meet its environmental goals and reduce operating costs.

The City believes energy benchmarking is an important best management practice and public disclosure of building energy performance promotes transparency and accountability. To lead by example, the City is going beyond the minimum requirements of the benchmarking law by publicly sharing the energy performance of City-owned buildings. As a member of the Seattle 2030 District, an organization seeking to create a high performance building district in the heart of Seattle, the City is also sharing information to support collaboration among building owners. In addition, because the City values the energy performance of all its buildings, it is tracking and reporting as many City facilities as is feasible, by setting its own minimum reporting requirement at 10,000 square feet and by including all public service facilities — community centers, libraries, fire stations, and police stations — regardless of size. All told, the City is benchmarking and reporting the energy performance of 8.2 million square feet of building area. The benchmarking data presented here will help building owners learn from the City's efforts and further public understanding of how to achieve more energy-efficient buildings.

This report covers City-owned building energy use for calendar years 2013-2014. It includes:

- Background on the Energy Benchmarking and Reporting Program
- An overview of the City's building stock and how it has performed
- Benchmarking results, reported by building type
- A comprehensive table of all benchmarked City-owned buildings

For the year prior, see the 2012-2013 report here; and the 2011-2012 report here.

02 Energy Benchmarking & Reporting Program

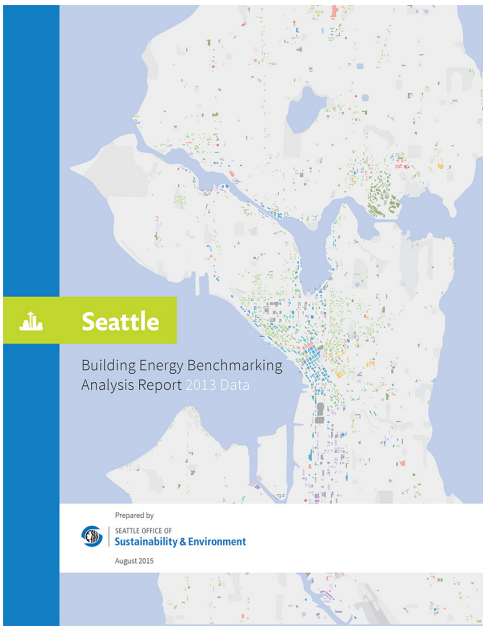
SEATTLE ENERGY BENCHMARKING & REPORTING

99% of Non-Residential & Multifamily building owners
(representing about 281 million sq ft)
reported 2014 energy performance to the City of Seattle
the highest compliance rate of any U.S. City.

The City of Seattle Energy Benchmarking and Reporting Program was enacted into law in 2010 through Ordinance 123226 (updated in 2012 via Ordinance 123993). Non-residential and multifamily building owners of facilities 20,000 square feet or larger are required to track whole-building energy performance (benchmark) using the Environmental Protection Agency's (EPA) ENERGY STAR Portfolio Manager. Results for the prior year must be reported annually on April 1st to the City of Seattle. In addition, upon request, building owners must provide the building's energy performance results to any current or prospective tenant, buyer, or lender involved with a real estate or financing transaction.

The results of Seattle's benchmarking analysis are available at www.seattle.gov/energybenchmarking.

Seattle's benchmarking law aims to help building owners manage energy resources, reduce energy costs and lower carbon emissions. Benchmarking establishes a baseline of energy performance for each property that can be used to guide energy efficiency investments. Annual reports of building energy performance will help the City monitor progress towards citywide energy efficiency goals, identify market sectors with the greatest needs and opportunities, and guide the development of future policies and incentive programs. Lastly, energy performance disclosure allows an informed market to compare energy efficiency and future operating costs between similar properties and guide purchasing, leasing and financing decisions.



The 2013 analysis of Seattle's private-sector benchmarked buildings is available at www.seattle.gov/energybenchmarking.

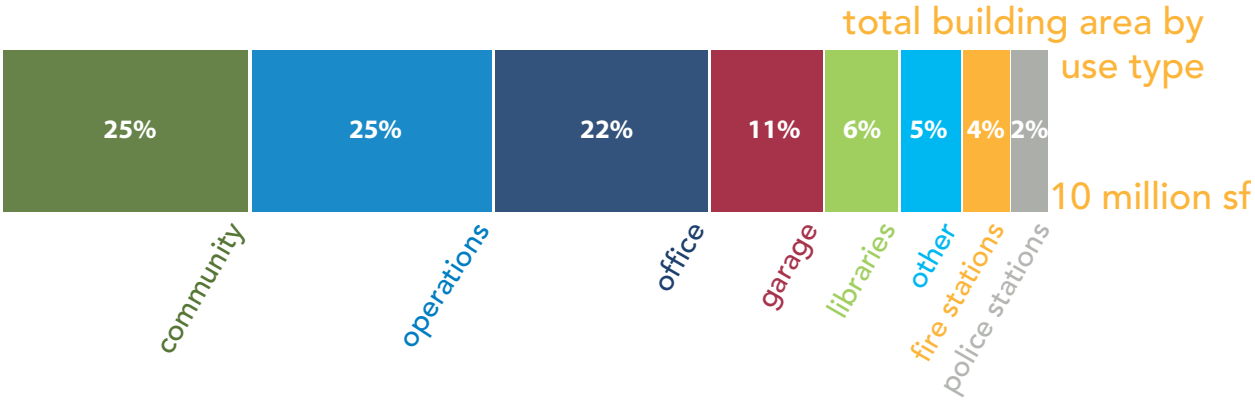
Seattle's benchmarking policy builds on Washington State Law (RCW 19.27A.170) that requires State and non-residential building owners and operators to disclose benchmarking results to potential buyers, renters or lenders. Seattle is one of fourteen cities nationwide that have commercial building energy benchmarking requirements. Learn more at www.buildingrating.org.

The City offered free services in 2014 to help building owners understand the requirement and benchmark, including a call center, workshops, and technical support. To learn more, visit www.seattle.gov/energybenchmarking or contact energybenchmarking@seattle.gov or 206.727.8484.

Benchmarking, or tracking a building's energy performance, gives owners and managers a better sense of how their buildings are using—and wasting—energy and also helps identify cost-effective opportunities to lower energy use and save money.

Benchmarking City-Owned Buildings

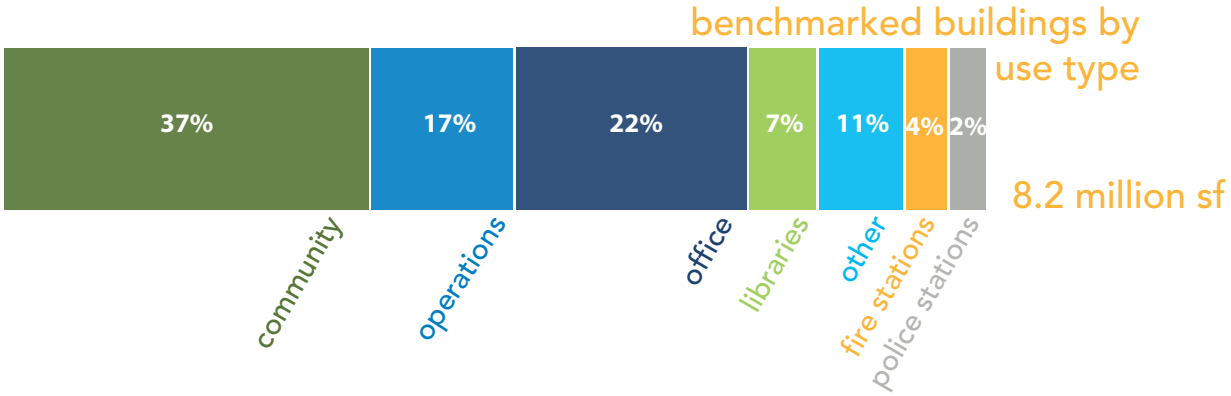
The City owns more than 650 buildings, totaling approximately 10 million square feet. These range from small storage sheds, to libraries, to the Seattle Municipal Tower, an office building of more than one million square feet. Offices, community facilities (e.g. performance halls and community centers), and operations support buildings make up the majority of the square footage. Libraries, police stations, and fire stations are numerous but each building is relatively small, so they account for a smaller percentage of the total building area.



City Building Area by Use Type

This chart was compiled from several sources with the assignment of each building to a single category based on its predominate use. Because many of the City's buildings are multi-use, some use types may be over or under-represented. (Source: City of Seattle; Graphic: GGLO)

Of the 10 million square feet of City buildings, 8.2 million square feet have been benchmarked to date. This accounts for more than 80% of the City's total building area. While tracking energy use is not new to the City, as part of the benchmarking program, the City is using Portfolio Manager as a consistent reporting tool for energy performance across its buildings, with a focus on medium and larger buildings and on building types with multiple facilities, such as libraries and fire stations. However, the energy use of the City's smallest buildings—for example, unconditioned storage sheds and park restrooms—cannot be usefully tracked with Portfolio Manager.

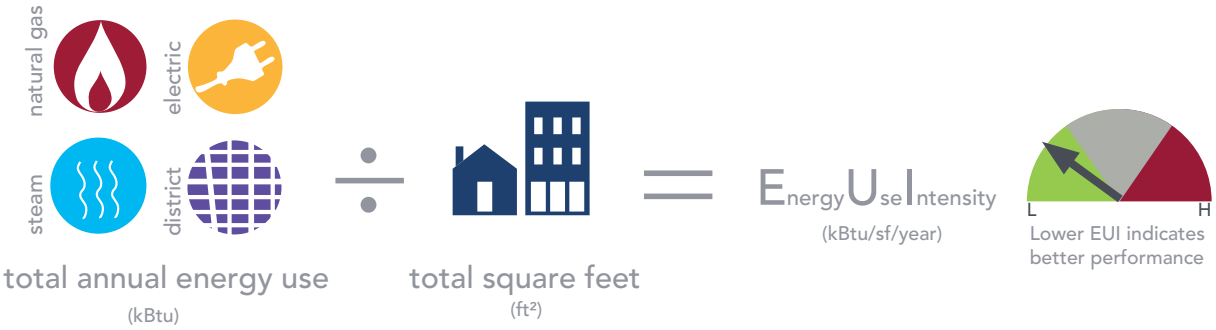


Benchmarked City Building Area by Use Type
(Source: City of Seattle; Graphic: GGLO)

About Benchmarking Energy Performance

Energy Use Intensity[1] – One of the most basic ways to benchmark a building's energy efficiency or performance is to calculate the amount of energy used for each square foot, known as its Energy Use Intensity (EUI). The EUI is determined by totaling the annual energy used by all utilities that serve the building, such as electric and natural gas, and dividing that number by the total floor space of the building. It is typically measured in kBtu/sf (one thousand British thermal units per square foot). EUIs normalize for building size, which allows buildings of various sizes to be compared to each other. **Higher EUIs show greater energy use, whereas lower EUIs indicate more energy efficient buildings.**

What is an EUI?



ENERGY STAR Scores – Portfolio Manager is a powerful tool for calculating EUIs for all types of buildings, and for calculating a more robust metric—the ENERGY STAR Score—for about 21 building types, such as offices, courthouses and warehouses. The 1 – 100 score shows how the building's energy efficiency compares to similar buildings in the United States. The EPA uses the Commercial Building Energy Consumption Surveys (CBECS) data to generate ENERGY STAR scores, which also account for differences in local climate, yearly weather variations, number of occupants, and operating hours. Learn more at www.energystar.gov/benchmark. **In contrast to EUIs, higher ENERGY STAR scores represent better energy efficiency.**

The 1 – 100 ENERGY STAR score represents the percentile ranking of the building's energy performance:

- A score of 50 is average performance.
- A score of 75 means the building outperforms 74% of other buildings. This is the threshold for EPA's ENERGY STAR certification.
- A score of 1 means the building is among the very poorest performers.
- A score of 100 indicates the best relative performance.

Higher ENERGY STAR Score indicates better performing buildings

1 This report uses the "Site EUI" metric, which represents the total on-site energy use—the most relevant metric for facility managers. Site EUI, however, does not account for the environmental impacts of energy sources. Another metric, "Source EUI" that includes energy source impacts, is also available through Portfolio Manager. Energy sources for City-owned buildings include electricity, natural gas, and steam.

03 City Building Portfolio Overview

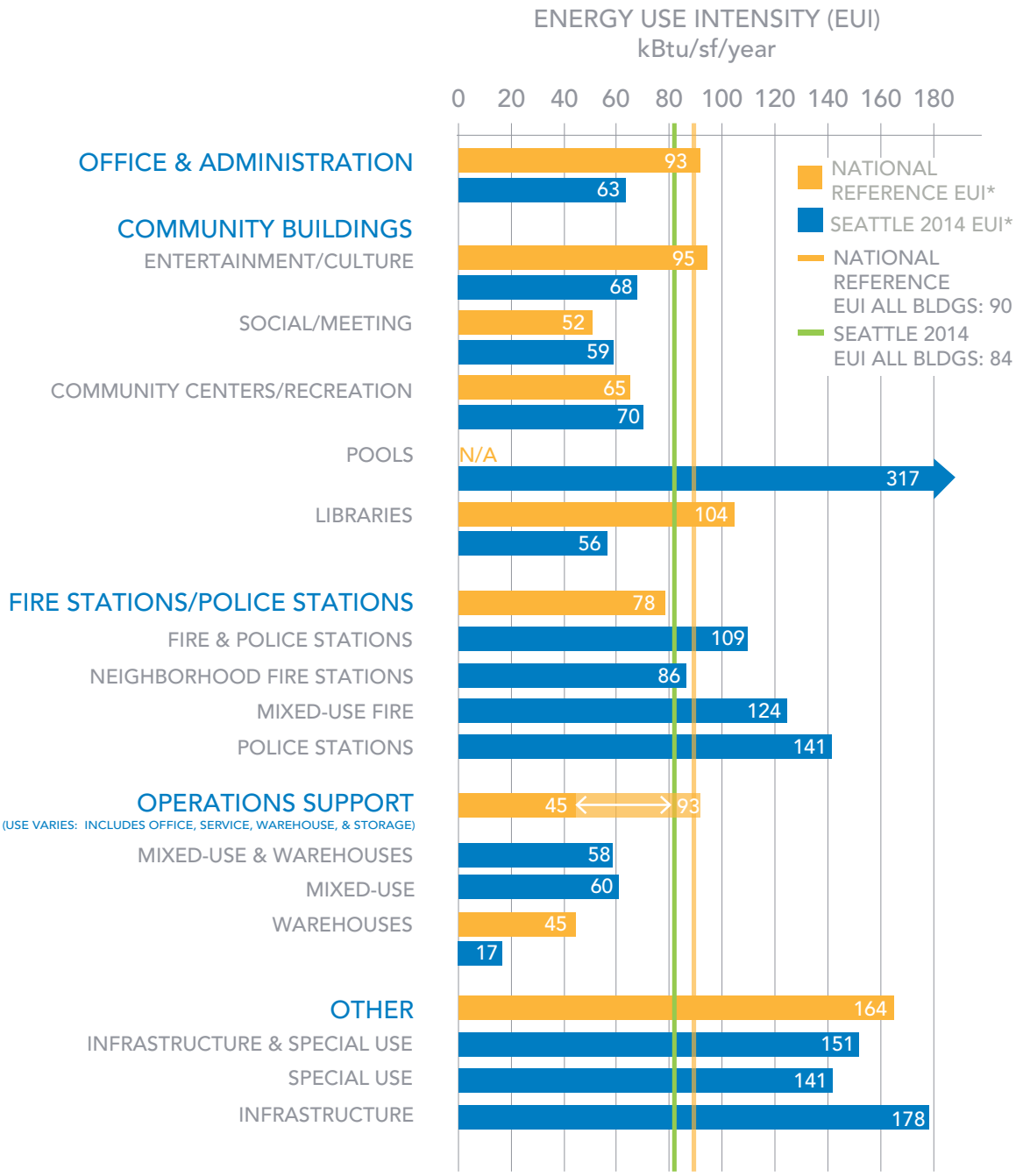
Overall Performance of City-Owned Buildings

City buildings in this report have been grouped into categories based on type of use, which allows the City to tap into one of the most powerful aspects of benchmarking—comparing energy performance across buildings in a portfolio. Even within a building type that is doing well overall, such as libraries, there is a wide range of energy performance. Examining the energy efficiency and characteristics of buildings based on type of use can help to identify opportunities for energy savings. Best practices may be learned from the efficient buildings and applied to those that need improvement.

A building's EUI and ENERGY STAR score (if available) can also be used to compare buildings to other similar buildings in the United States. Good national references for EUIs are the Energy Information Agency's Commercial Building Energy Consumption Surveys (CBECS) 2003 dataset of commercial buildings in the United States, and the 2030 Challenge Targets, which are derived from CBECS data. Comparing a particular building's EUI to these national EUI values provides a rough idea for how a building's energy efficiency stacks up to similar buildings across the country, however, the specific characteristics and uses of the buildings are not always a good match for CBECS data.

The National Reference and City EUI graph on page eight identifies the CBECS and 2030 Challenge EUI means (averages) most relevant to City-owned building types, and compares them to the City's 2014 benchmarking results. Additional information is provided in Table 1: National Reference and City EUIs, in the Appendix.

Overall Performance of City-Owned Buildings



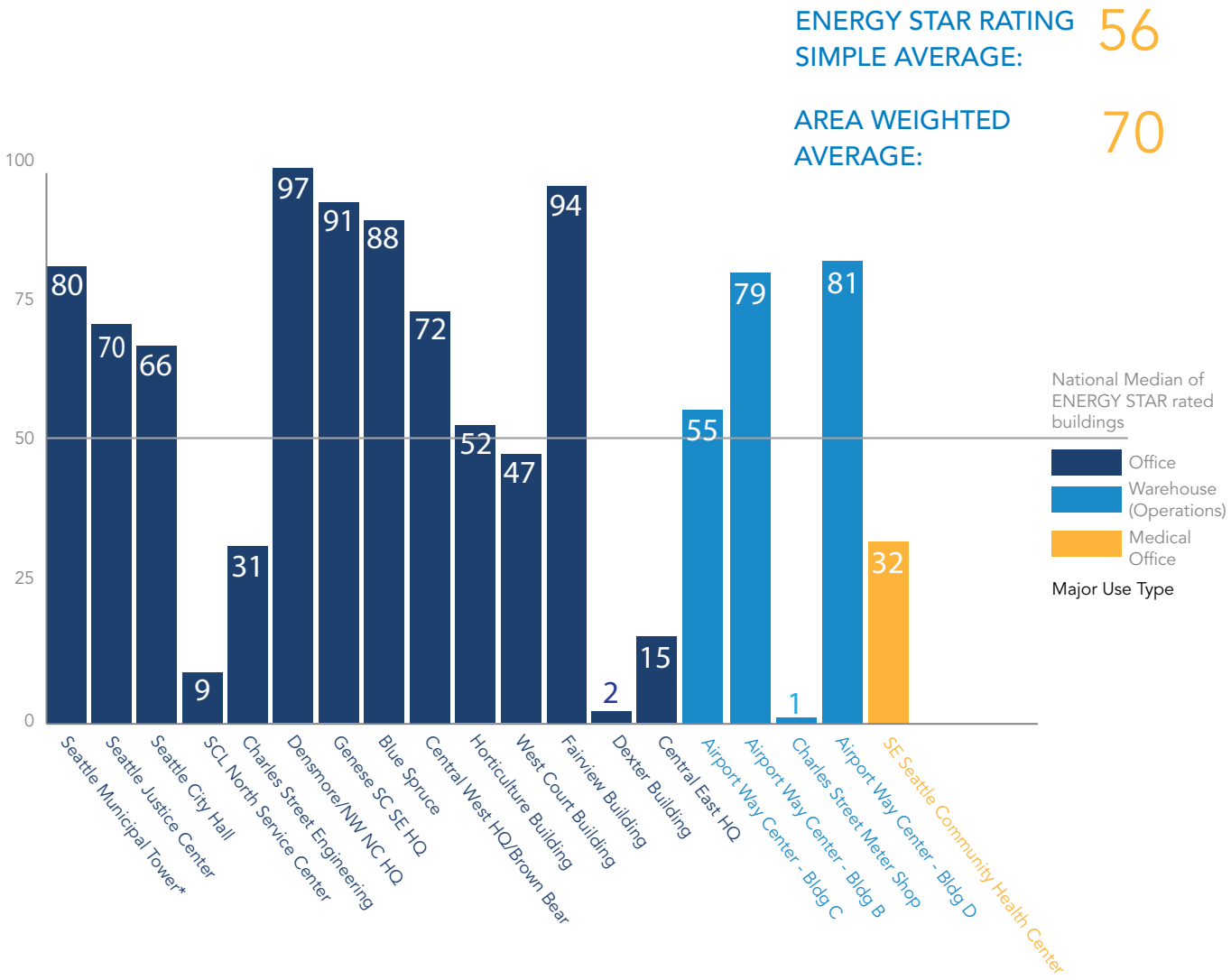
National Reference & City EUIs

Lower EUI indicates better performing buildings
*Mean Site EUI - See Appendix for Table 1: National Reference & City EUI
(Source: 2003 CBECS and City of Seattle, Graphic: GGLO)

03 City Building Portfolio Overview

Overall Performance of City-Owned Buildings

Of the 201 buildings the City has benchmarked in Portfolio Manager, only 19 are types eligible for an ENERGY STAR score. The majority of City-owned buildings—including police and fire stations, libraries and community centers and buildings with multiple uses—are not eligible for the ENERGY STAR score. Private building owners with diverse building types often face similar challenges.



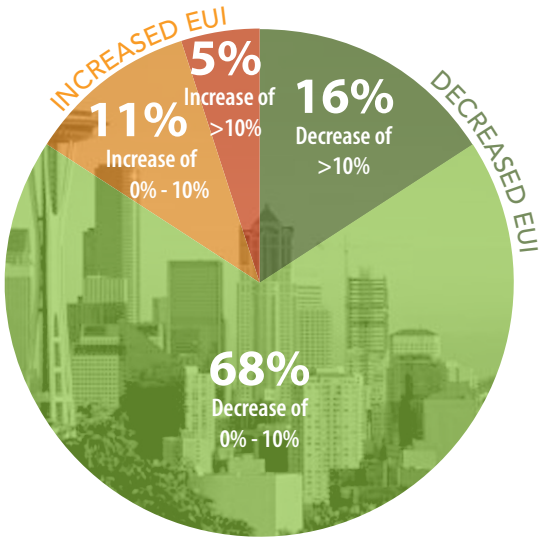
City of Seattle 2014 ENERGY STAR Performance Ratings
See Appendix for detailed table (Source: City of Seattle; Graphic: GGLO)

* The 2014 ENERGY STAR score for the Seattle Municipal Tower (SMT) is significantly lower than the previously reported 2013 ENERGY STAR score of 94. The change, however, does not represent a significant change in building energy use (EUI), but is instead the result of new ENERGY STAR reporting guidelines for data center space uses. From an ENERGY STAR scoring perspective, SMT is no longer recognized as having a distinct data center space use. The 2014 ENERGY STAR score calculation incorporates the data center energy load into the energy use of the building's office space, which results in a different score.

Overall Performance of City-Owned Buildings

The energy performance of Seattle's municipal buildings is similar to private building stock—some buildings are doing very well, while others have the opportunity to improve. City buildings that were targeted for energy efficiency improvements highlight the value of intervention. Energy efficiency efforts at three operations support facilities at the Airport Way complex yielded a combined 11.2% energy savings from 2013 to 2014 (8.9% weather normalized). These projects focused on operational and controls optimization, plus a major shell upgrade for one of the buildings. For the second year, operational and mechanical control sequencing improvements at branch libraries have led to an aggregate energy use reduction of 16.8% from 2012 to 2014 (8.2% weather normalized). A mix of boiler and lighting upgrades at four community centers and one pool resulted in a combined 14.7% energy savings of from 2013 to 2014 (7.4% weather normalized).

The City's 2014 municipal benchmarking results indicate an overall decrease of 4.0% in measured energy use, based on results for buildings benchmarked in both 2013 and 2014. Energy consumption trends also show a dynamic portfolio. More buildings (84%) than not have decreased energy use, and improved performance in specific buildings can be attributed to focused efforts to improve their efficiency, or in some cases to occupancy reduction.



City Portfolio Measured Energy Use Intensity Trends
Over 80% of Seattle's benchmarked municipal building square footage had a lower EUI in 2014.
(Source: Table 3: Benchmarked City-Owned Buildings, page 27; Graphic: GGLO)

However, on a portfolio wide basis, the overall reduction in energy use can be primarily attributed to the effects of a warmer winter in 2014. Based on the weather normalized performance calculated by Portfolio Manager, results show no change in overall energy use for the City's building portfolio. On a weather normalized basis, 70% of the City portfolio showed energy use reductions, but those reductions were offset by increases in the remaining 30%. The most likely causes for the increases are growing employee counts (the City added 559 staff in 2014), increasing plug loads from equipment (such as dual computer monitors and other electronic devices) and the ever present challenge of maintaining optimal control settings.

04 Detailed Building Performance

This chapter, Detailed Building Performance, provides the 2013 and 2014 site EUI for each City-owned building benchmarked and compares it to national averages based on building type. The change in EUI from 2013 by building type (not adjusted for weather[1]) is also included.

OFFICE: Buildings in this category principally consist of office space (more than 80%), lobbies, conference, meeting and training rooms. They may also include small amounts of other spaces, such as data centers, courtrooms, retail shops, restaurants, and storage

OFFICE
CHANGE IN EUI
FROM 2013:
-3.9% (decrease)

COMMUNITY BUILDINGS: Performance of this single largest category of the City's benchmarking efforts are best understood by using the following sub-categories:

COMMUNITY
CHANGE IN EUI
FROM 2013:
-6.5% (decrease)

Performance Venues: Buildings typically consist of performance and rehearsal halls, sporting event venues, and administrative and support spaces.

Public Assembly, Social/Meeting: Buildings house multiple uses—high school, retail, and administrative spaces, in addition to meeting and conference rooms that accommodate trade shows, dances, receptions and meetings.

Community Centers: Buildings typically consist of gyms, sport courts, public meeting rooms and administrative areas. Some have kitchens and many have extensive outdoor lighting for sports fields and courts, both of which are included on the building electric meter.

Pools: Buildings have public swimming pools and locker rooms and may be co-located with community centers.

LIBRARIES: Libraries have traditional library and reading room spaces, quiet public work rooms, office and administrative spaces, data centers and public meeting rooms.

LIBRARIES
CHANGE IN EUI
FROM 2013:
-7.3% (decrease)

1 The detailed results are not adjusted, or "normalized," for weather. This should be kept in mind when comparing changes from 2013 to 2014. 2014 was about 20% warmer than 2013 as measured by Heating Degree Days at Boeing Field (60 degree base). The 2014 cooling load was approximately 25% more than in 2013. For small buildings, reductions in energy use of less than 3-6% are likely attributed to the warmer weather in 2014, not improvements in energy efficiency. Reductions of greater than 3-6% may reflect actual improvements in overall energy efficiency. For air conditioned buildings over 50,000 square feet, the cooling and heating impacts tend to partially cancel each other out and reductions of greater than 2-4% likely reflect efficiency improvements.

FIRE STATIONS CHANGE IN EUI FROM 2013:
1.6% (increase)

FIRE STATIONS:

Neighborhood Fire Stations: – Buildings are lived in by Seattle Fire Department personnel while on extended shifts and include offices, meeting rooms, dormitories, locker rooms, and exercise spaces. They also house an apparatus (fire truck) bay that is somewhat heated. The kitchen or "beanery" is generally more extensive than a typical lunch room with the equivalent of a light commercial kitchen.

Mixed-Use Fire: Buildings have functions beyond those of a basic fire station such as data centers, alarm and emergency operations centers, or office and meeting spaces. They also house a neighborhood fire station.

POLICE STATIONS CHANGE IN EUI FROM 2013:
-5.2% (decrease)

POLICE STATIONS: City police stations have 24 hour operations and consist of office and administrative spaces, holding cells, data and communication centers, locker rooms, meeting rooms, and training ranges.

OPERATIONS CHANGE IN EUI FROM 2013:
-2.4% (decrease)

OPERATIONS SUPPORT:

Mixed-Use: Facilities combine many uses within each building, such as offices, warehouses, distribution centers, data centers, service areas (vehicle maintenance and other repair and fabrication shops), locker rooms, and other miscellaneous uses.

Non-Refrigerated Warehouses: Building are dominated by material storage, although they may include some office and shop space.

OTHER CHANGE IN EUI FROM 2013:
-3.9% (decrease)

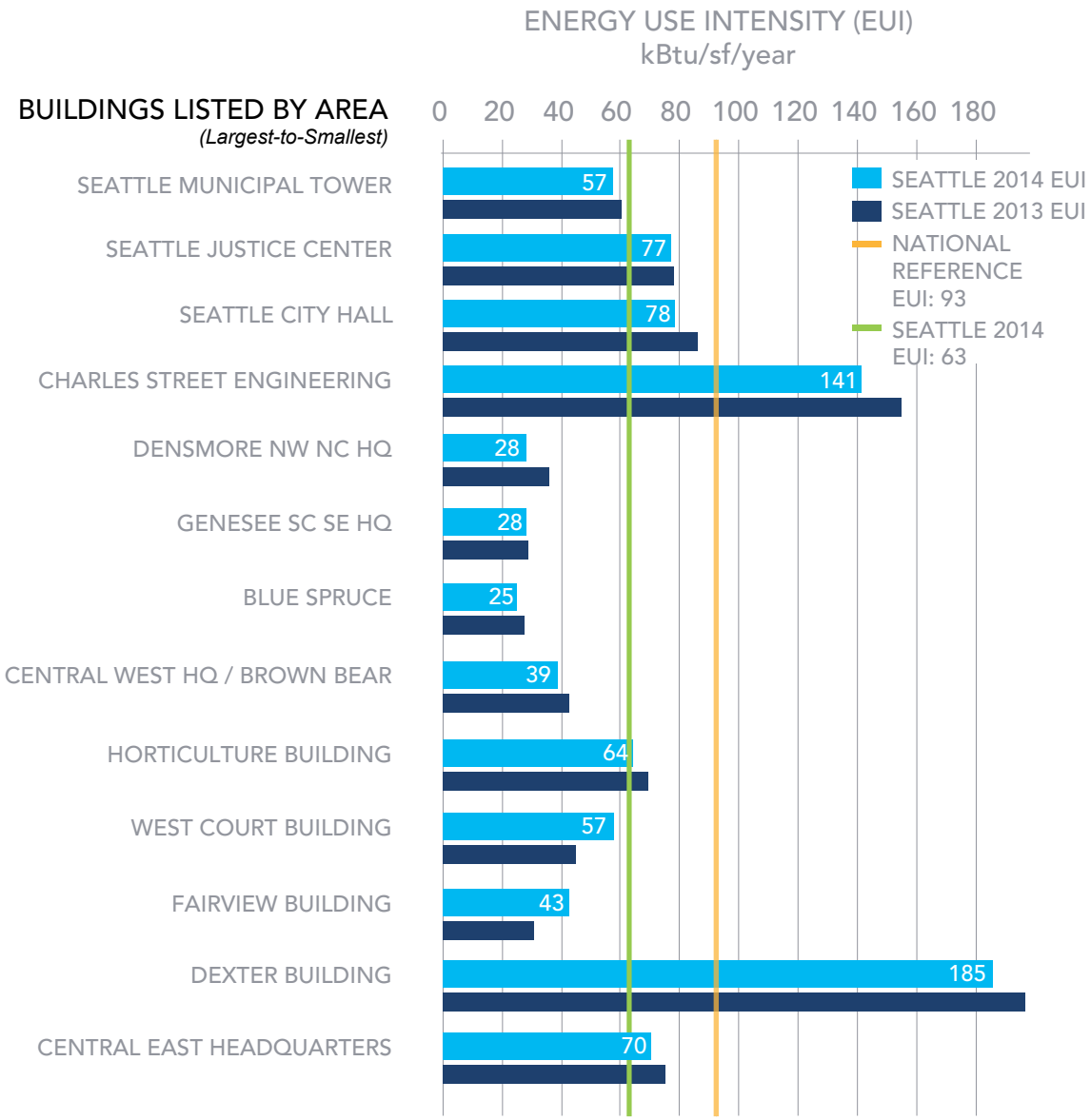
OTHER: This is an eclectic category split between "Special Use" and "Infrastructure" that can't be well classified elsewhere.

Special Use: Several unique space types, such as laboratory, medical office, specialty control room, transit station, aquarium, and an animal shelter.

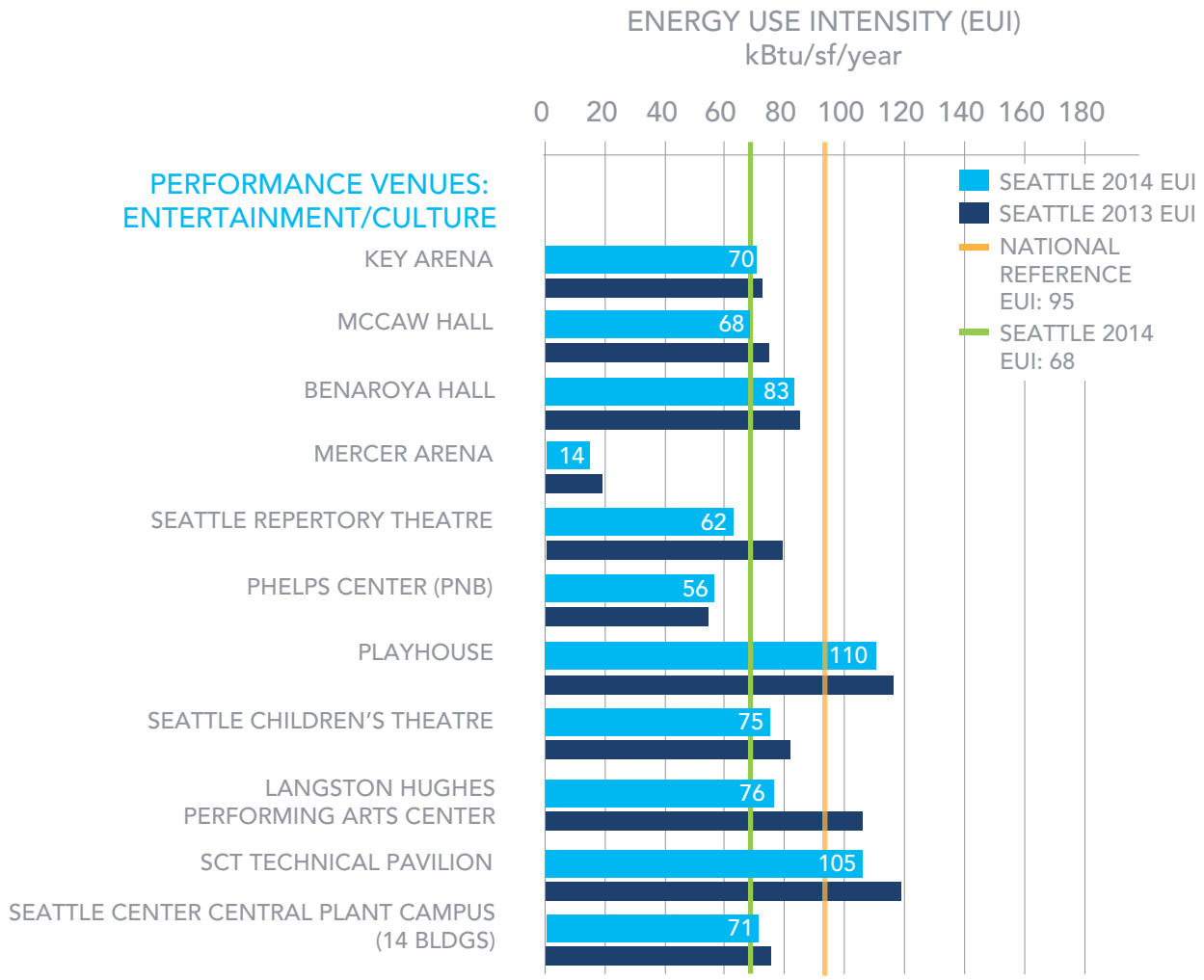
Infrastructure: Buildings that typically have a unique function as part of the provision of a city service. They include substations, power houses, treatment plants and some control centers.

04 Detailed Building Performance

Office & Administration

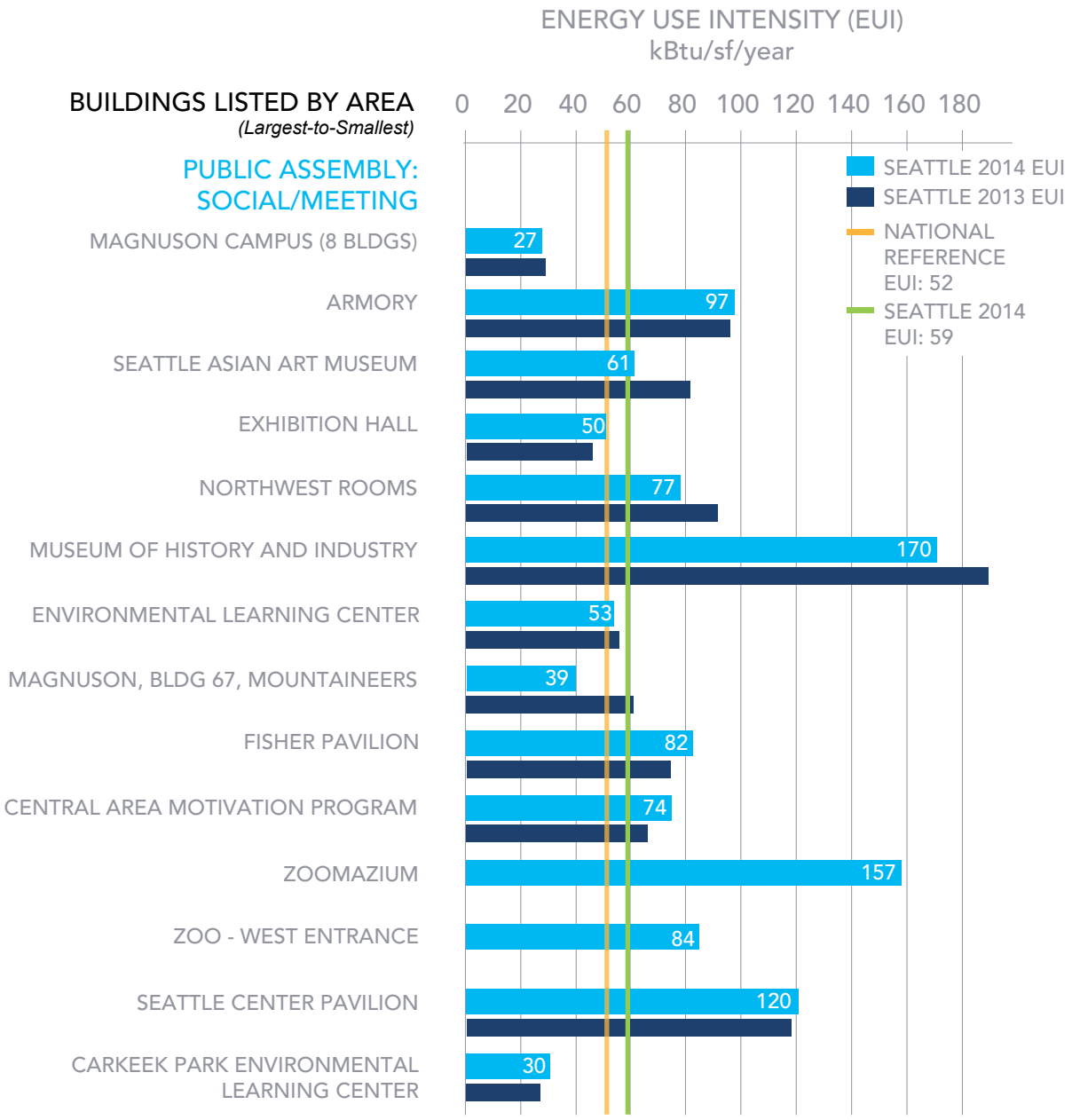


Community Buildings

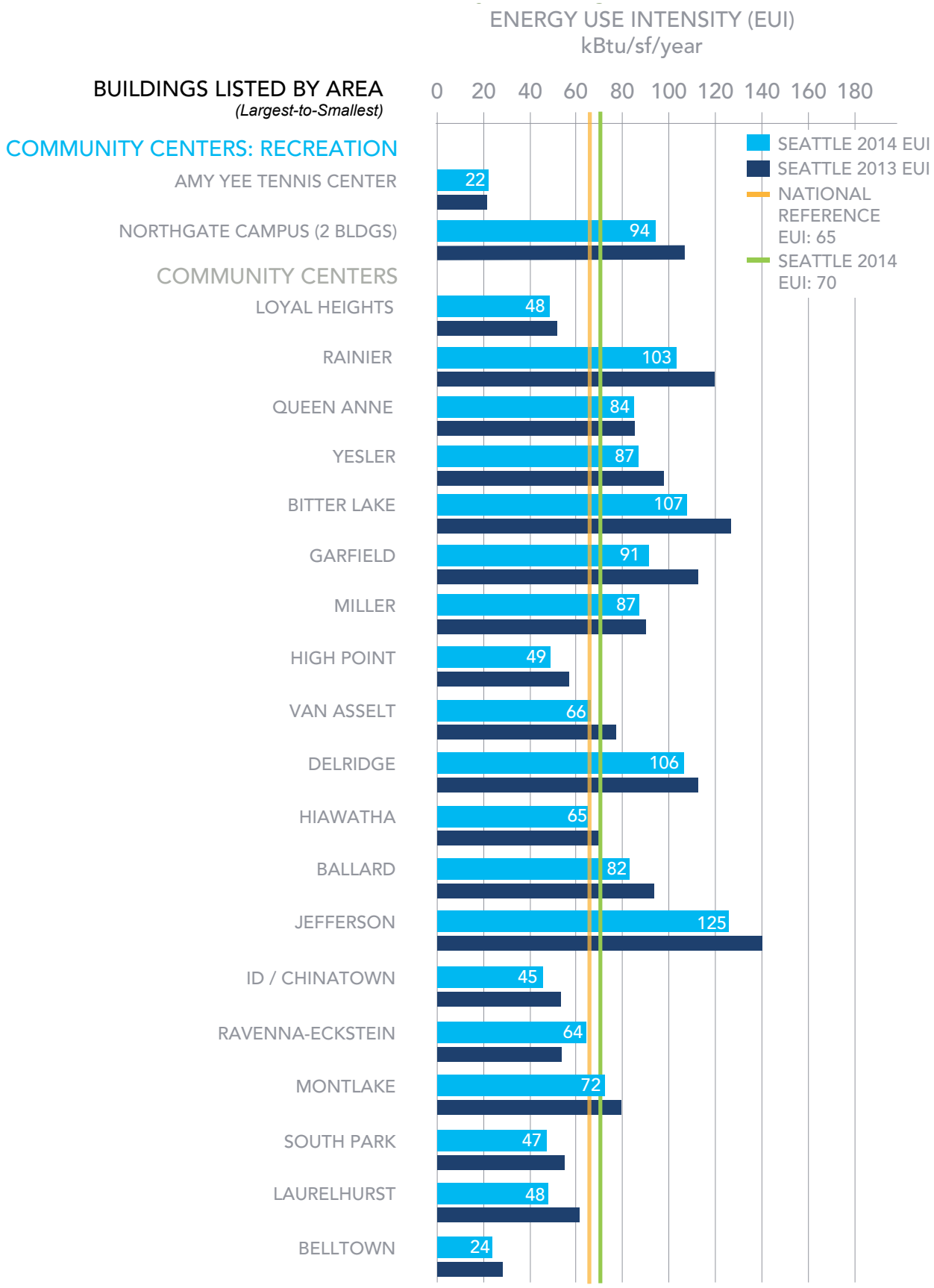


04 Detailed Building Performance

Community Buildings

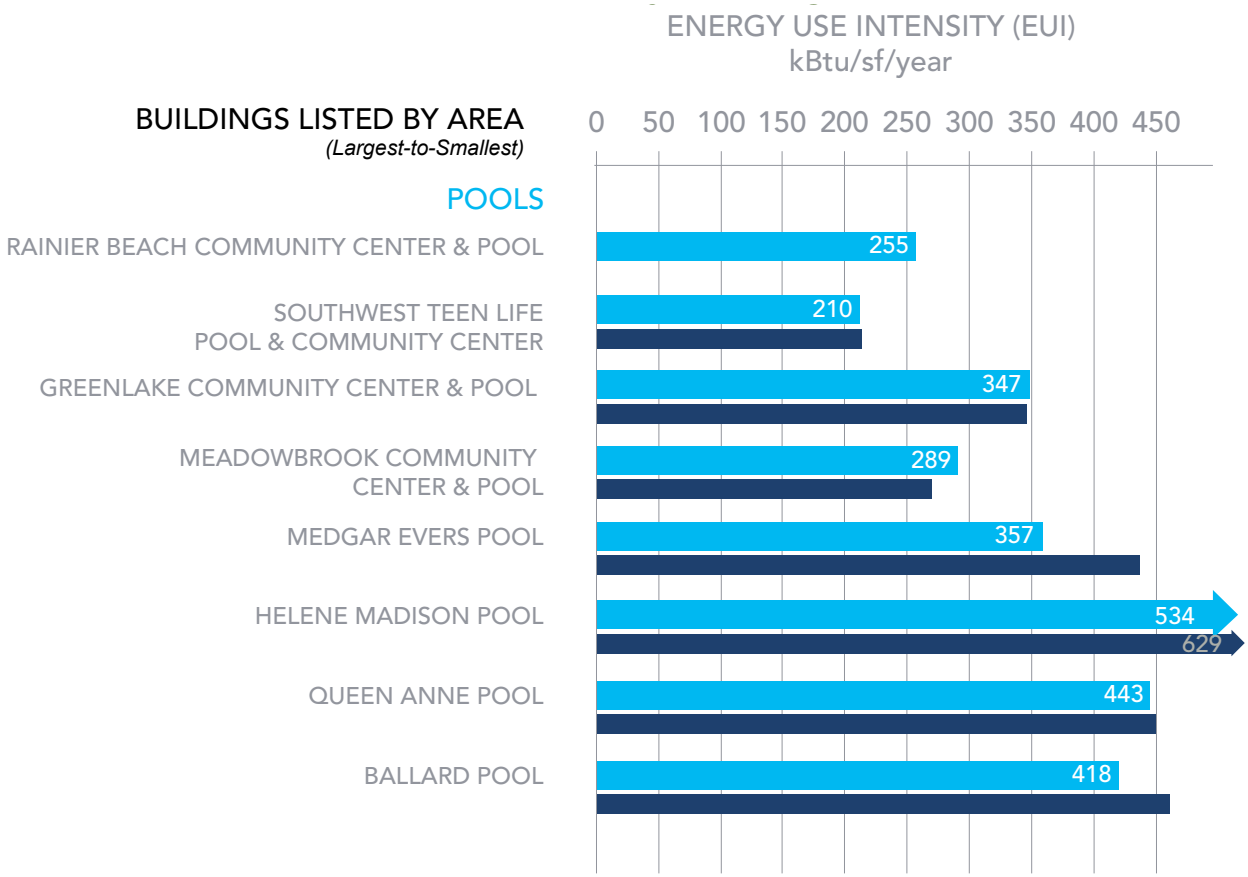


Community Buildings

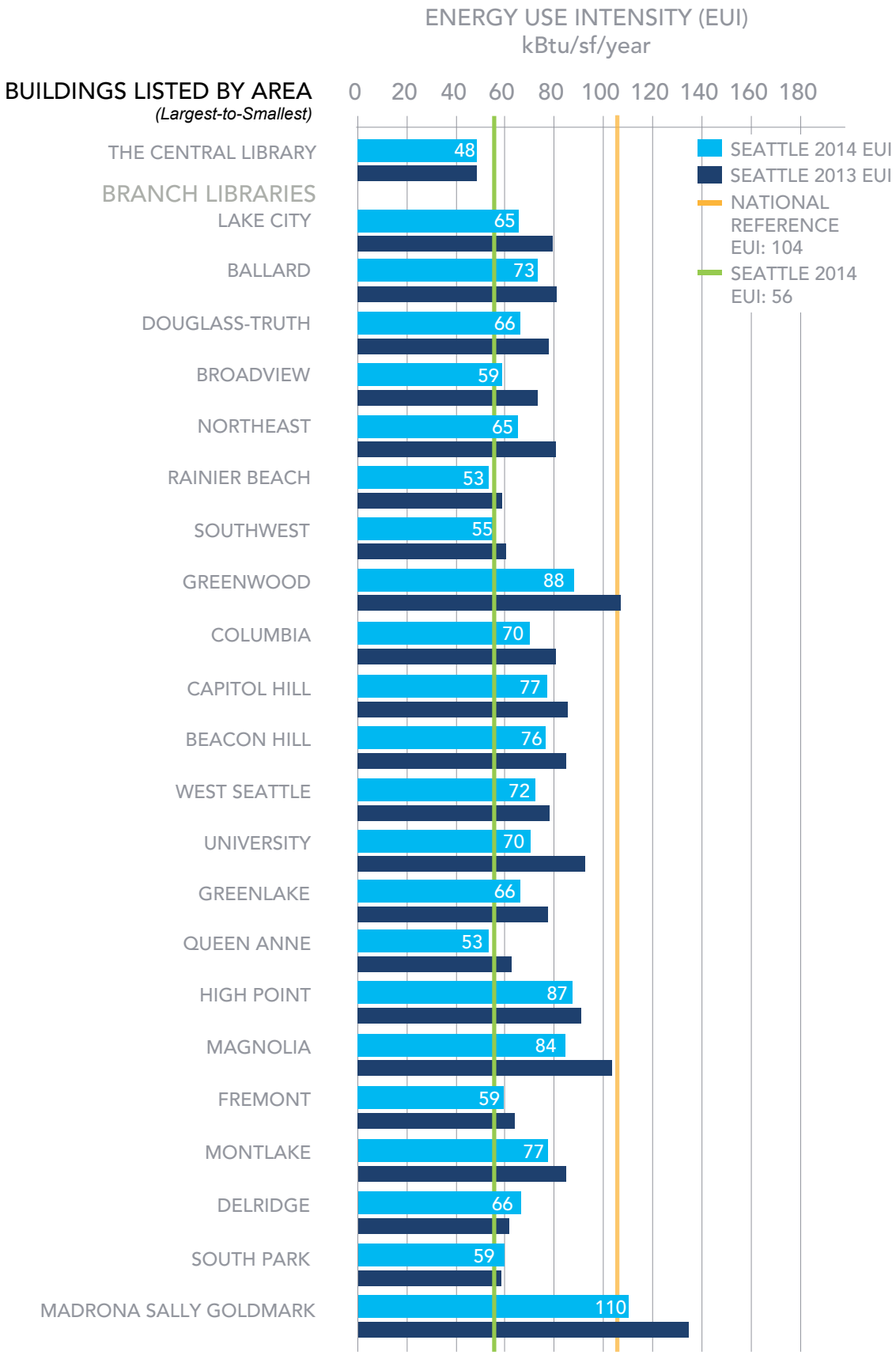


04 Detailed Building Performance

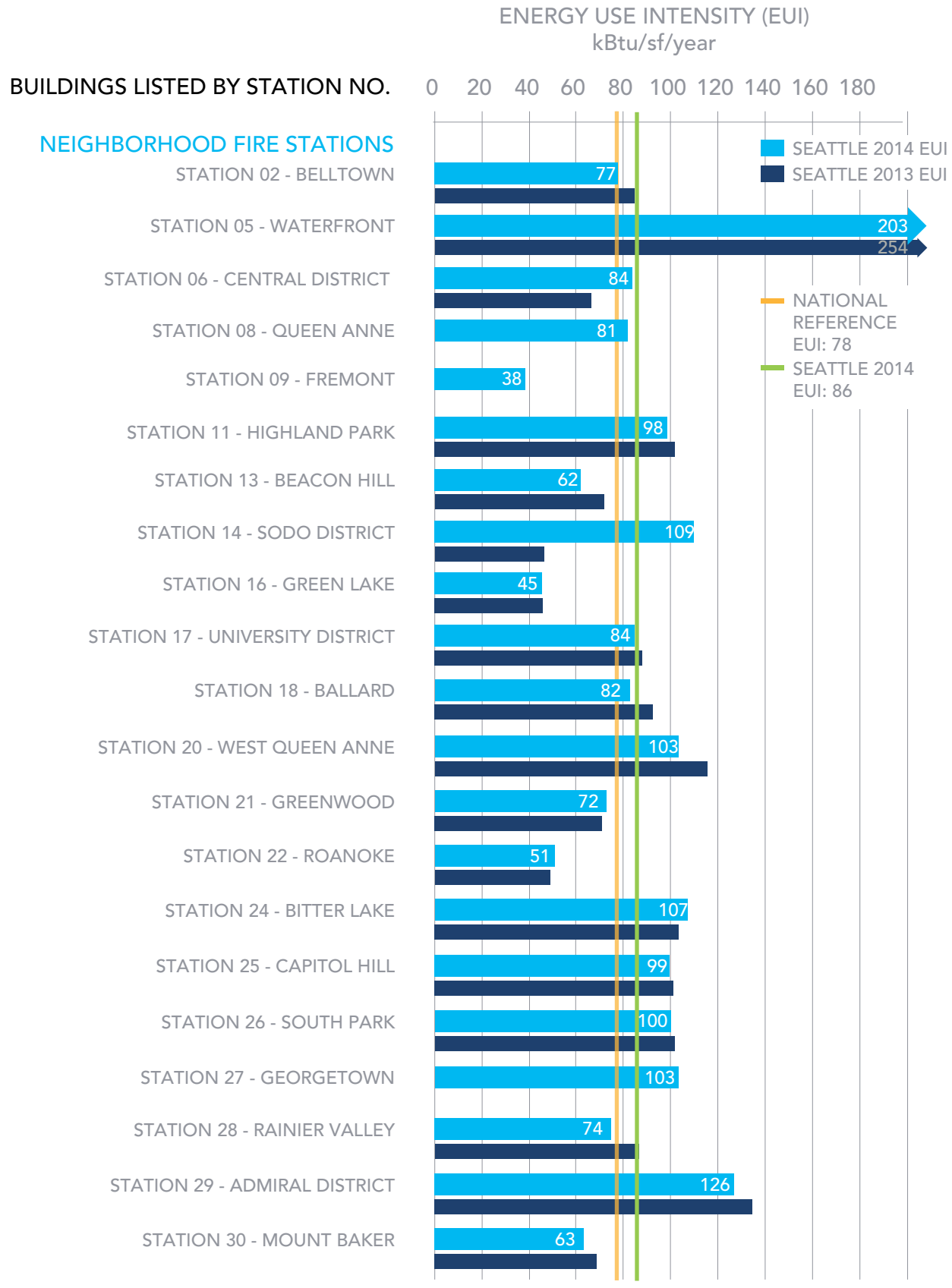
Community Buildings



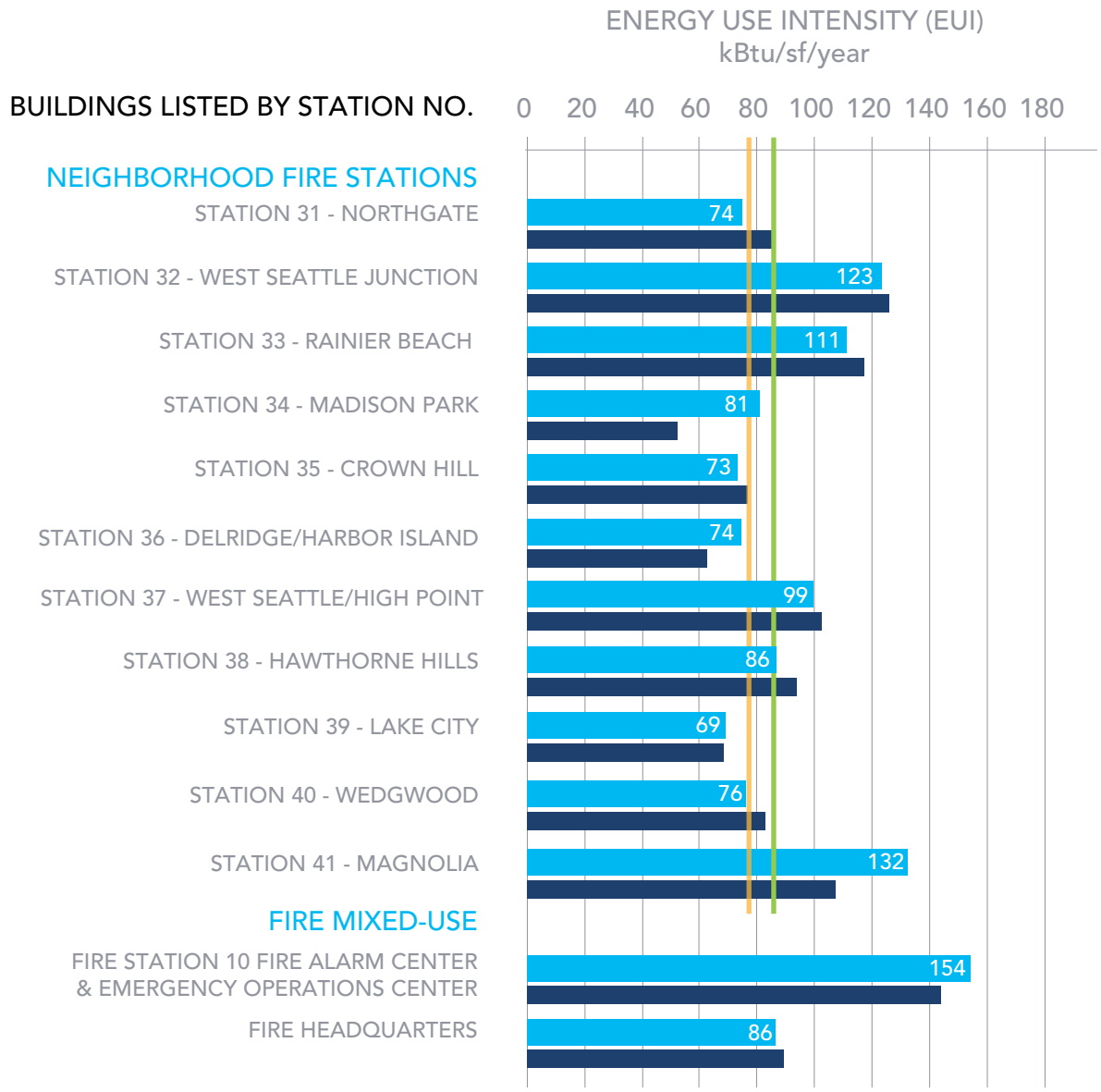
Community Buildings



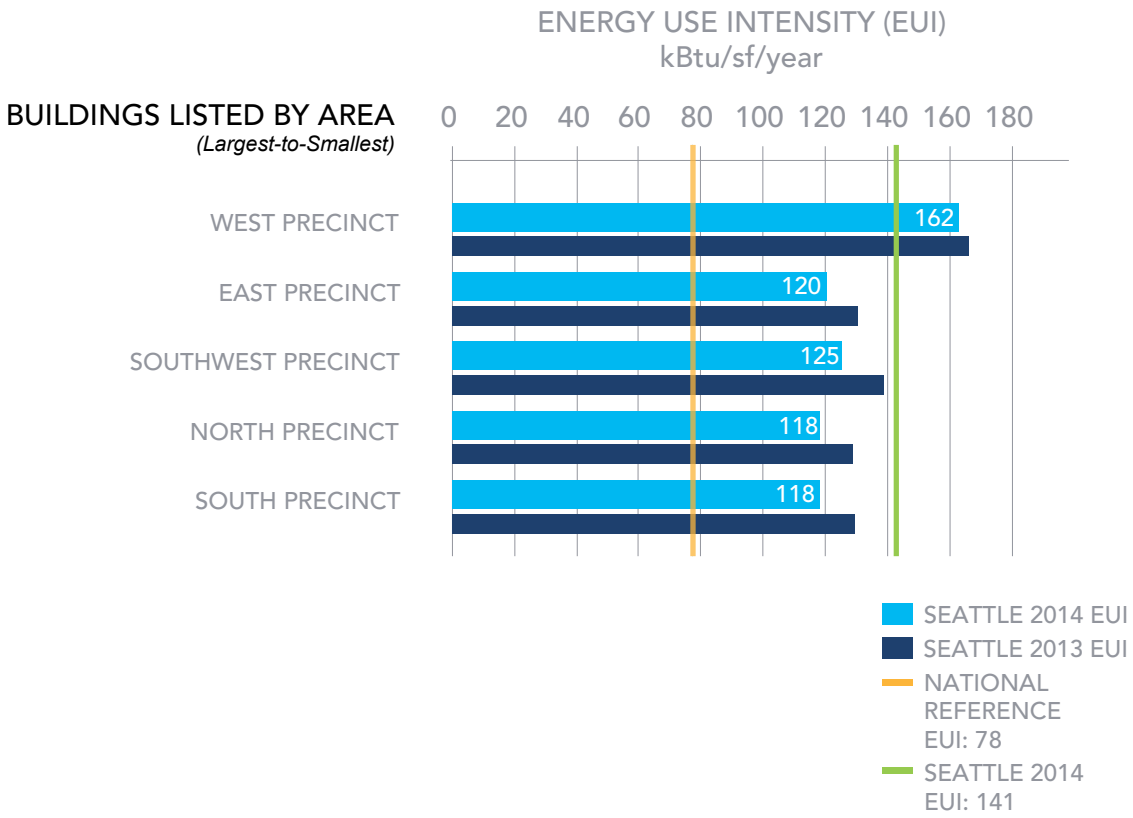
Fire Stations



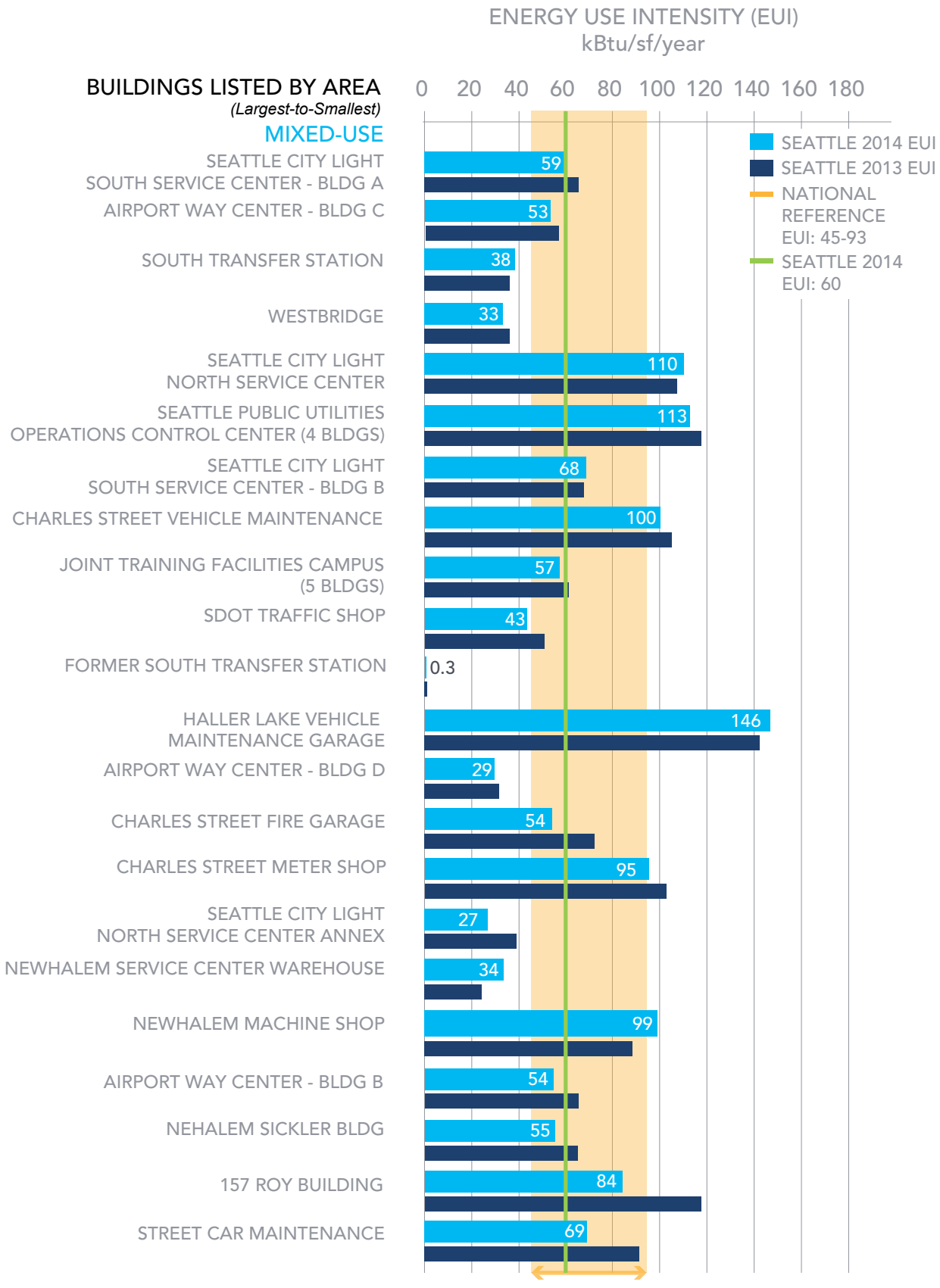
Fire Stations
Continued



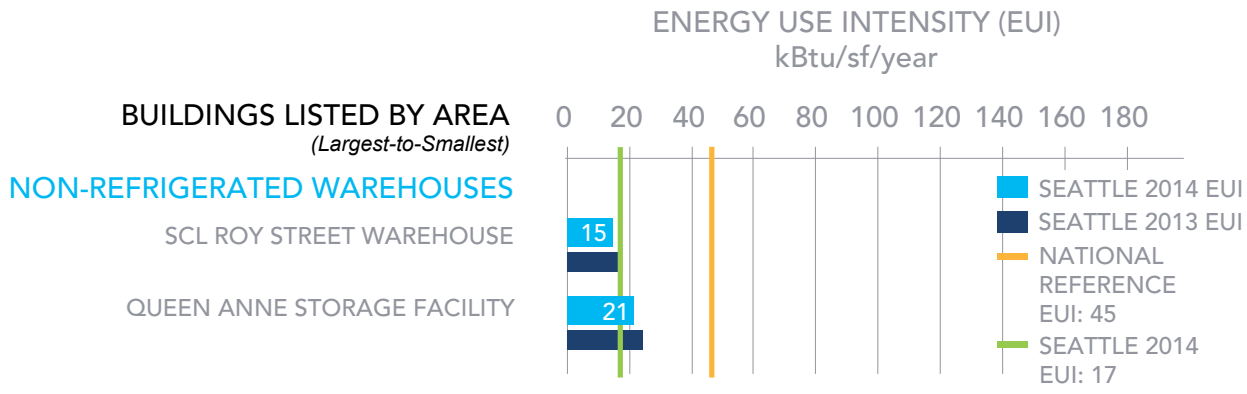
Police Stations



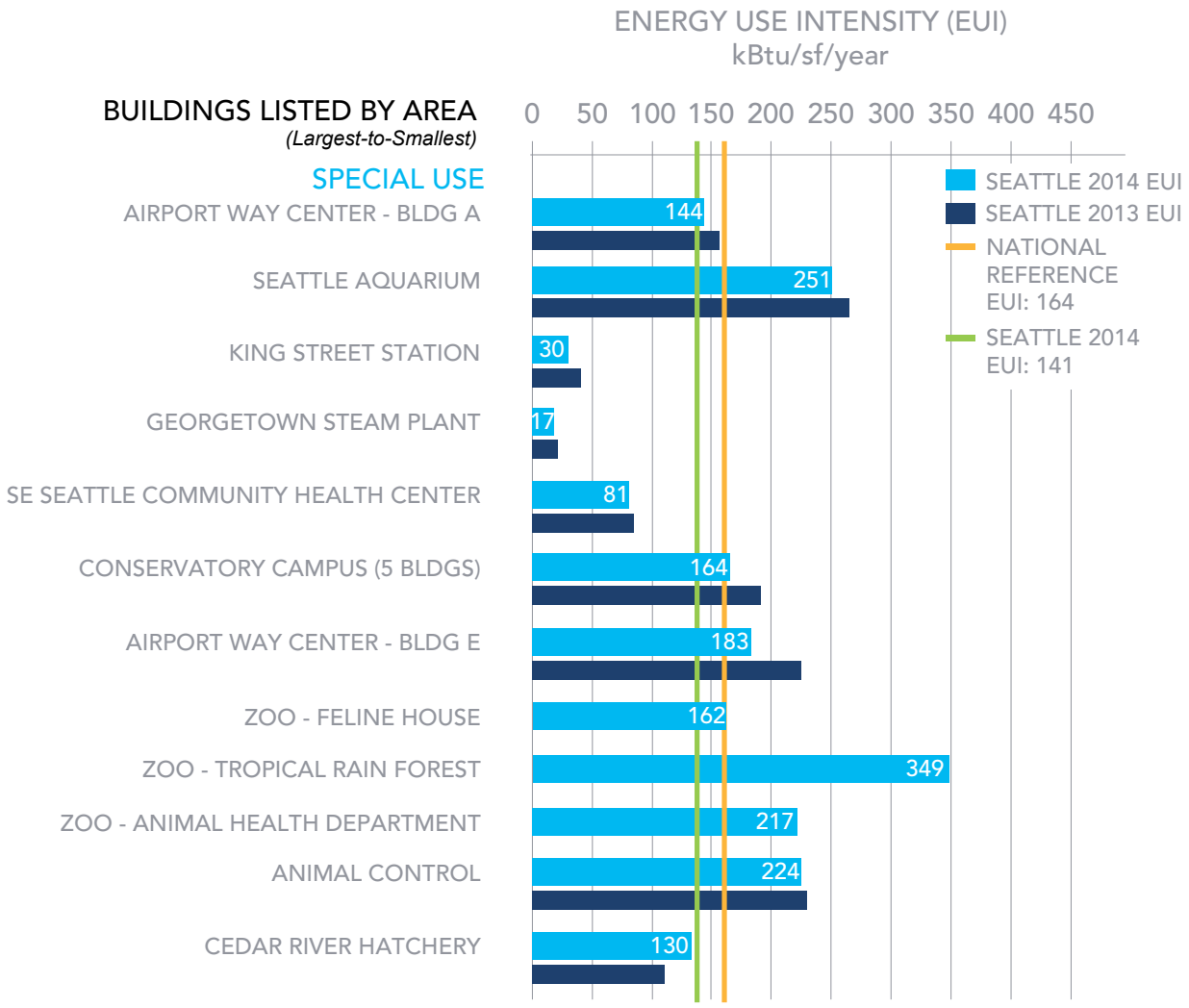
Operations Support



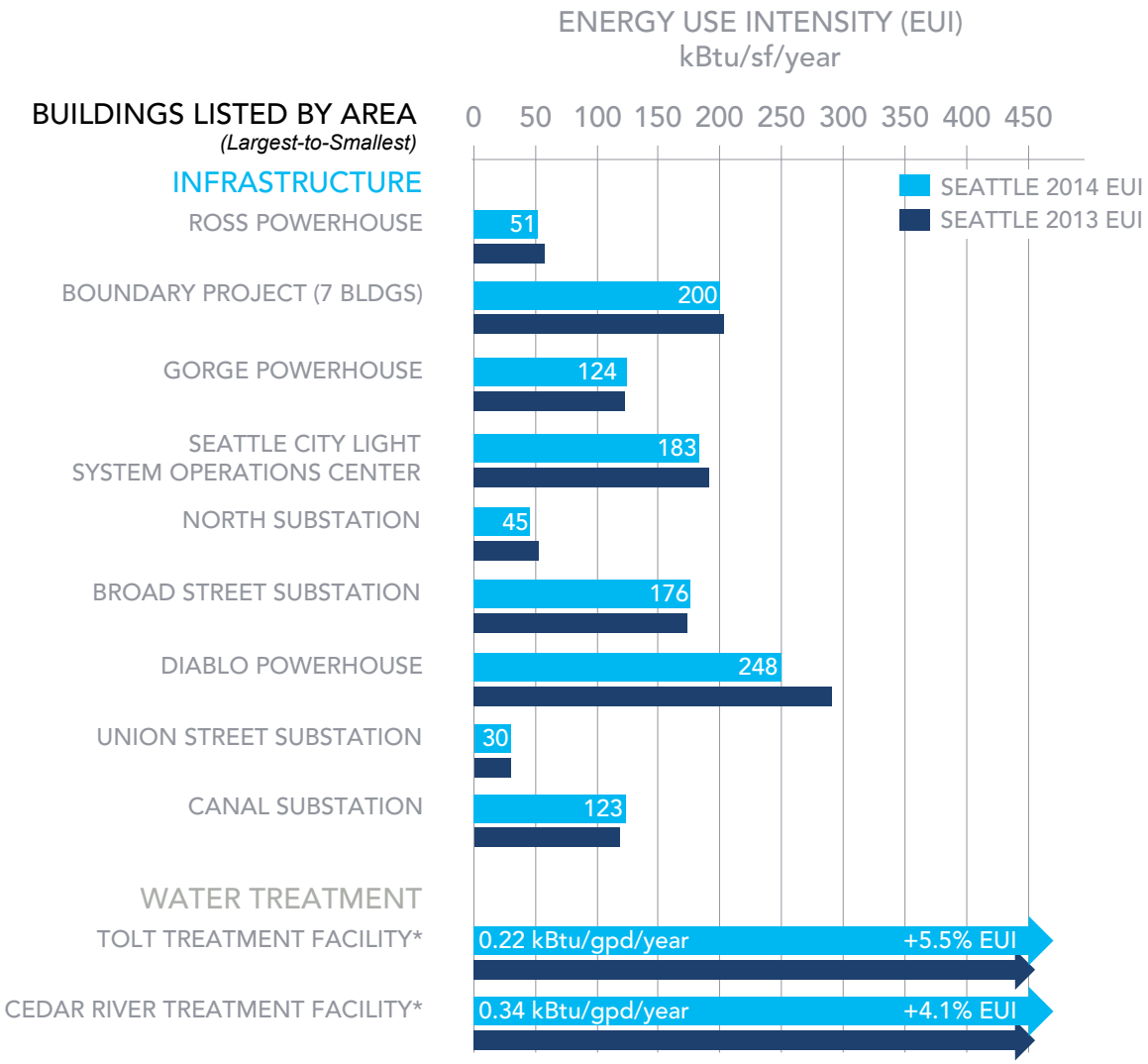
Operations Support



Other


ENERGY USE INTENSITY (EUI)
kBtu/sf/year
BUILDINGS LISTED BY AREA
(Largest-to-Smallest)
SPECIAL USE
AIRPORT WAY CENTER - BLDG A
SEATTLE AQUARIUM
KING STREET STATION
GEORGETOWN STEAM PLANT
SE SEATTLE COMMUNITY HEALTH CENTER
CONSERVATORY CAMPUS (5 BLDGS)
AIRPORT WAY CENTER - BLDG E
ZOO - FELINE HOUSE
ZOO - TROPICAL RAIN FOREST
ZOO - ANIMAL HEALTH DEPARTMENT
ANIMAL CONTROL
CEDAR RIVER HATCHERY
0 50 100 150 200 250 300 350 400 450
144
251
30
17
81
164
183
162
349
217
224
130
SEATTLE 2014 EUI
SEATTLE 2013 EUI
NATIONAL REFERENCE EUI: 164
SEATTLE 2014 EUI: 141

Other



* Tolt Treatment Facility EUI: 544 kBtu/sf/year. Cedar River Treatment Facility EUI: 4517 kBtu/sf/year. A better energy performance metric for water and waste water treatment plants is energy use per volume of water treated or kBtu/gpd/year. Seattle water treatment plant energy use is 85% better than the national median for water and wastewater treatment facilities.

Table 1: National Reference & City EUIs

Reference Building Category	Site EUI (kBtu/sf)	City Building Category	2014 Site EUI (kBtu/sf)
Office*	93	Office & Administrative	63
Public Assembly**		Community Buildings	
Entertainment/Culture	95	Entertainment/Culture Performance Venue	68
Social/Meeting	52	Social / Meeting Public Assembly	59
Recreation	65	Community Center / Recreation	70
	N/A	Pools (and Community Centers with Pools)	317
Library	104	Library	56
Fire Station / Police Station**	78	Fire Station + Police Station	109
		Fire Stations	97
		Mixed Use Fire	124
		Neighborhood Fire Stations	86
		Police Stations	141
Use Varies: office, service, warehouse, storage	45 - 93	Operations Support	58
		Mixed-use	60
Storage / Shipping / Non-Refrigerated Warehouse*	45	Non-Refrigerated Warehouse	17
Other *	164	Other	151
		Special Use	141
		Infrastructure	178
All Buildings*	90	All Benchmarked City Buildings	84

Reference Mean EUI's from:

*Energy Information Administration 2003 Commercial Building Energy Consumption Survey (CBECS, Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003 (http://www.eia.gov/consumption/commercial/data/archive/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003html/c3.html).

**2030 Challenge Targets: U.S. National Averages (http://www.architecture2030.org/files/2030_Challenge_Targets_National.pdf)

Table 2: ENERGY STAR Ratings

Building	ENERGY STAR Category	City Building Category	Area (sf)	2013 ENERGY STAR Rating	2014 ENERGY STAR Rating	Change from 2013
Seattle Municipal Tower[1]	Office	Office and Administration	1,205,716	79	80	1
Seattle Justice Center[1]	Office	Office and Administration	298,278	70	70	0
Seattle City Hall	Office	Office and Administration	180,495	65	66	1
SCL North Service Center	Office	Office and Administration	94,288	12	9	-3
Charles Street Engineering	Office	Office and Administration	20,424	28	31	3
Densmore/NW NC Headquarters	Office	Office and Administration	19,246	95	97	2
Genesee/SC SE Headquarters	Office	Office and Administration	15,398	92	91	-1
Blue Spruce	Office	Office and Administration	14,036	86	88	2
Central West Headquarters / Brown Bear	Office	Office and Administration	13,661	67	72	5
Horticulture Building	Office	Office and Administration	12,294	48	52	4
West Court Building	Office	Office and Administration	10,596	74	47	-27
Fairview Building	Office	Office and Administration	8,488	94	94	0
Dexter Building	Office	Office and Administration	7,381	2	2	0
Central East Headquarters	Office	Office and Administration	6,238	10	15	5
Airport Way Center - BLDG C	Warehouse (Operations)	Operations Support	160,447	52	55	3
Airport Way Center - BLDG D	Warehouse (Operations)	Operations Support	22,803	81	79	-2
Charles Street Meter Shop	Warehouse (Operations)	Operations Support	19,930	1	1	0
Airport Way Center - BLDG B[1]	Warehouse (Operations)	Operations Support	16,725	75	81	6
SE Seattle Community Health Center	Medical Office	Medical Office	27,492	29	32	3

1. There have been a number of changes since last year's report, and some of the results for 2014 are different than previously reported. These changes arise from Portfolio Manager algorithm updates, revised building floor areas as a result of on-going audits, and meter data issues. As revisions are made, Energy Star scores for the previous year are revised to allow for a more meaningful year-to-year comparison.

Table 3: Benchmarked City-Owned Buildings

Management Group & Tenant Key

CEN - Seattle Center
FAS - Financial and Administrative Services
Parks - Seattle Parks and Recreation
SCL - Seattle City Light
SDOT - Seattle Department of Transportation
SFD - Seattle Fire Department
SPD - Seattle Police Department
SPL - Seattle Public Libraries
SPU - Seattle Public Utilities

Mixed - Multiple City Departments
Other - Multiple Non-City Tenants

OFFICE & ADMINISTRATION							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
Seattle Municipal Tower[1]	FAS	Multiple	1,205,716	57.3	-4.7%	1989	
Seattle Justice Center[1]	FAS	Multiple	298,278	76.8	-1.3%	2001	
Seattle City Hall	FAS	Multiple	180,495	78.2	-8.8%	2003	
Charles Street Engineering	FAS	SDOT/ SPU	20,424	140.9	-8.6%	1972	
Densmore/NW NC Headquarters	Parks	Parks	19,246	27.9	-22.1%	1929	2013 Boiler upgrade
Genesee/SC SE Headquarters	Parks	Parks	15,398	28.2	-1.4%	1960	
Blue Spruce	CEN	CEN	14,036	24.7	-9.5%	1955	
Central West Headquarters / Brown Bear	Parks	Parks	13,661	38.5	-9.6%	1952	
Horticulture Building	Parks	Parks	12,294	64.0	-7.2%	1990	
West Court Building	CEN	CEN	10,596	57.4	28.1%	1962	Additional tenant
Fairview Building	SDOT	SDOT	8,488	42.6	39.7%	1959	Increased occupancy/ use
Dexter Building	Parks	Parks	7,381	185.1	-5.6%	1948	
Central East Headquarters	Parks	Parks	6,238	69.9	-6.7%	1950	

Benchmarked City-Owned Buildings

COMMUNITY							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
PERFORMANCE VENUES: ENTERTAINMENT / CULTURE							
KeyArena	CEN	CEN	368,000	70.1	-2.4%	1995	
McCaw Hall	CEN	Arts Group	296,000	67.9	-8.5%	2003	
Benaroya Hall	FAS	Arts Group	189,750	82.6	-2.1%	1998	
Mercer Arena	CEN	Arts Group	108,000	14.4	-23.4%	1927	Reduced occupancy/ use
Seattle Repertory Theatre	CEN	Arts Group	65,000	62.3	-20.6%	1982	
Phelps Center (PNB)	CEN	Arts Group	49,680	55.9	3.5%	1962	
Playhouse	CEN	Arts Group	36,314	110.0	-5.0%	1962	
Seattle Children's Theatre (SCT)	CEN	Arts Group	33,000	74.5	-8.1%	1992	Reduced occupancy - fewer shows
Langston Hughes Performing Arts Center	Parks	Arts Group	30,890	75.9	-27.9%	1913	
SCT Technical Pavilion	CEN	Arts Group	25,100	105.3	-10.9%	1999	Fewer Productions, Improved O&M
Seattle Center Central Plant Campus (14 Bldgs)[1, 2]	CEN	CEN	1,386,736	70.5	-5.6%	2000	

Benchmarked City-Owned Buildings

PUBLIC ASSEMBLY: SOCIAL / MEETING							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
Magnuson Campus (8 Bldgs)[1, 2]	Parks	Mixed	564,258	27.4	-4.9%	1929	Metering issue - partial estimates for Q 4 2014
Armory	CEN	CEN	278,500	96.9	1.6%	1939	
Seattle Asian Art Museum	Parks	Arts Group	53,776	60.6	-25.0%	1933	
Exhibition Hall	CEN	CEN	52,000	50.4	10.8%	1962	Additional occupancy- ~20% more bookings
Northwest Rooms	CEN	CEN	49,847	77.4	-14.9%	1962	Renovation preparation
Museum of History and Industry	Parks	Community Group	43,000	170.0	-9.8%	1941	
Environmental Learning Center	SCL	SCL	34,992	53.4	-3.4%	2005	
Magnuson, Building 67, Mountaineers	Community Group	Community Group	29,275	39.4	-34.7%	1941	
Fisher Pavilion	CEN	CEN	21,018	81.9	11.1%	2002	
Central Area Motivation Program[1]	FAS	Community Group	15,085	74.1	13.3%	1925	
Zoomazium	WPZ	WPZ	8,500	157.3	NA	2006	
Zoo - West Entrance	WPZ	WPZ	7,998	84.0	NA	2010	
Seattle Center Pavilion	CEN	CEN	7,580	120.1	2.4%	1962	
Carkeek Park Environmental Learning Center	Parks	Parks	1,756	30.3	13.1%	2003	

Benchmarked City-Owned Buildings

COMMUNITY (CONTINUED)							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
COMMUNITY CENTERS: RECREATION							
Amy Yee Tennis Center	Parks	Parks	66,597	22.0	3.3%	1978	
Northgate Civic Center Campus (2 Bldgs)[2]	Parks	Parks/SPL	30,498	93.6	-12.0%	2005	
COMMUNITY CENTERS							
Loyal Heights	Parks	Parks	29,732	48.1	-6.8%	1950	
Rainier	Parks	Parks	28,384	102.7	-13.8%	1995	2013 Gym lighting upgrade
Queen Anne	Parks	Parks	25,809	84.3	-0.5%	1948	
Yesler	Parks	Parks	22,347	86.5	-11.0%	1940[1]	
Bitter Lake	Parks	Parks	20,595	107.3	-14.8%	1965	
Garfield	Parks	Parks	20,050	90.9	-18.8%	1994	2013 Gym lighting upgrade
Miller	Parks	Parks	19,273	86.8	-3.1%	1957	
High Point	Parks	Parks	18,261	48.5	-14.3%	1982[1]	
Van Asselt	Parks	Parks	18,258	65.9	-14.3%	1938	
Delridge	Parks	Parks	17,693	105.9	-5.4%	1985	
Hiawatha	Parks	Parks	17,190	64.5	-8.9%	1949	
Ballard	Parks	Parks	16,795	82.4	-11.5%	1911	
Jefferson	Parks	Parks	16,447	125.1	-10.5%	1929	2013-14, Boiler & DHW upgrade
International District/ Chinatown	Parks	Parks	16,000	45.3	-14.7%	2004	
Ravenna-Eckstein	Parks	Parks	15,814	63.8	19.3%	1986	
Montlake	Parks	Parks	14,174	72.0	-9.0%	2006	
South Park	Parks	Parks	14,101	46.9	-14.1%	1912	2013 Boiler upgrade
Laurelhurst	Parks	Parks	11,003	47.7	-21.7%	2007	
Belltown	Parks	Parks	6,480	23.6	-15.4%	1919	

Benchmarked City-Owned Buildings

COMMUNITY (CONTINUED)							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
POOLS							
Rainier Beach Community Center & Pool	Parks	Parks	53,775	254.9	NA	2013	2014 first full year of operation
Southwest Teen Life Center & Pool	Parks	Parks	39,333	210.0	-1.1%	1975	
Green Lake Community Center & Pool	Parks	Parks	35,143	346.5	0.6%	1929	
Meadowbrook Community Center & Pool	Parks	Parks	34,639	288.9	7.7%	1957	
Medgar Evers Pool	Parks	Parks	20,740	356.8	-18.0%	1971	Temporary Closure
Helene Madison Pool	Parks	Parks	17,407	533.8	-15.1%	1970	2014 Boiler upgrade
Queen Anne Pool	Parks	Parks	13,157	442.8	-1.0%	1974	
Ballard Pool	Parks	Parks	12,769	417.7	-8.9%	1972	

Benchmarked City-Owned Buildings

LIBRARIES							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
The Central Library	SPL	SPL	365,987	48.3	-0.2%	2004	
Branch Libraries							
Lake City	SPL	SPL / FAS	20,017	65.1	-17.6%	2005	O&M controls optimization
Ballard	SPL	SPL / FAS	18,100	72.8	-9.8%	2005	O&M controls optimization
Douglass-Truth	SPL	SPL	16,493	65.8	-15.1%	2006	O&M controls optimization
Broadview	SPL	SPL	15,000	58.5	-19.9%	2007	O&M controls optimization
North East	SPL	SPL	15,000	64.9	-19.1%	2004	O&M controls optimization
Rainier Beach	SPL	SPL	15,000	53.2	-9.2%	2004	O&M controls optimization
Southwest	SPL	SPL	15,000	55.2	-8.3%	2007	O&M controls optimization
Greenwood	SPL	SPL	12,806	87.8	-17.6%	2005	O&M controls optimization
Columbia	SPL	SPL	12,420	69.7	-13.2%	2004	O&M controls optimization
Capitol Hill	SPL	SPL	11,615	76.7	-9.8%	2003	O&M controls optimization
Beacon Hill	SPL	SPL	10,800	76.1	-9.9%	2004	O&M controls optimization
West Seattle	SPL	SPL	9,460	72.0	-7.2%	2004	O&M controls optimization
University	SPL	SPL	8,140	69.9	-24.3%	2007	O&M controls optimization
Green Lake	SPL	SPL	8,090	65.8	-14.5%	2004	O&M controls optimization
Queen Anne	SPL	SPL	7,931	53.1	-15.0%	2007	O&M controls optimization
High Point	SPL	SPL	7,100	87.0	-4.1%	2004	O&M controls optimization
Magnolia	SPL	SPL	7,000	84.2	-18.4%	2008	O&M controls optimization
Fremont	SPL	SPL	6,840	59.1	-7.1%	2005	O&M controls optimization
Montlake	SPL	SPL	5,652	76.8	-15.9%	2006	O&M controls optimization
Delridge	SPL	SPL	5,600	65.9	7.9%	2002	
South Park	SPL	SPL	5,019	59.1	1.9%	2006	
Madrona Sally Goldmark	SPL	SPL	1,701	109.6	-18.1%	1919	Corrective O&M actions

Benchmarked City-Owned Buildings

FIRE STATIONS							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments Note: All Facilities 24 Hour Operations/Occupancy
NEIGHBORHOOD FIRE STATIONS							
Station 02 - Belltown	FAS	SFD	38,939	77.4	-8.1%	1925	
Station 05 - Waterfront	FAS	SFD	6,182	203.4	-19.8%	1963	Vacated for Fire Levy Project
Station 06 - Central District	FAS	SFD	11,685	83.5	26.1%	2013	First full year in operation
Station 08 - Queen Anne	FAS	SFD	8,273	81.3	NA	1963	
Station 09 - Fremont	FAS	SFD	9,424	38.3	NA	2014	
Station 11 - Highland Park	FAS	SFD	6,191	98.2	-3.1%	1971	
Station 13 - Beacon Hill	FAS	SFD	14,440	61.7	-13.6%	2007	Improved O&M and control tuning
Station 14 - SoDo District[1]	FAS	SFD	17,916	109.3	137.1%	2012	Reoccupied after 2013 Fire Levy Project
Station 16 - Green Lake	FAS	SFD	7,441	45.2	-1.1%	1927	
Station 17 - University District	FAS	SFD	21,886	84.3	-3.7%	1927	
Station 18 - Ballard[1]	FAS	SFD	16,319	82.3	-10.6%	1974	2013 Exterior Lighting upgrade, Corrective Maintenance, Improved O&M
Station 20 - West Queen Anne	FAS	SFD	2,933	102.8	-10.6%	1949	Vacated for a portion of the year prior to a Fire Levy Project
Station 21 - Greenwood	FAS	SFD	8,654	72.4	2.5%	2011	
Station 22 - Roanoke	FAS	SFD	3,830	50.6	3.9%	1964	
Station 24 - Bitter Lake	FAS	SFD	4,936	106.7	3.6%	1977	
Station 25 - Capitol Hill[1]	FAS	SFD	17,984	99.1	-1.7%	1969	
Station 26 - South Park	FAS	SFD	5,427	99.6	-1.6%	1973	
Station 27 - Georgetown	FAS	SFD	6,570	102.8	NA	1970	
Station 28 - Rainier Valley[1]	FAS	SFD	14,209	74.4	-13.6%	2009	O&M and controls optimization
Station 29 - Admiral District	FAS	SFD	5,022	126.4	-5.7%	1970	
Station 30 - Mount Baker	FAS	SFD	9,417	63.0	-7.9%	2011	

Benchmarked City-Owned Buildings

FIRE STATIONS (CONTINUED)							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments Note: All Facilities 24 Hour Operations/Occupancy
NEIGHBORHOOD FIRE STATIONS							
Station 31 - Northgate	FAS	SFD	12,187	74.4	-12.5%	1973	
Station 32 - West Seattle Junction	FAS	SFD	8,732	122.9	-2.1%	1967	
Station 33 - Rainier Beach	FAS	SFD	5,974	110.7	-5.3%	1971	
Station 34 - Madison Park	FAS	SFD	5,861	80.6	54.7%	1971	Reoccupied after Fire Levy Project
Station 35 - Crown Hill	FAS	SFD	11,968	72.8	-5.0%	2010	
Station 36 - Delridge/Harbor Island	FAS	SFD	5,876	74.3	19.1%	1972	Fire Levy project 2013 - 1st Q 2014
Station 37 - West Seattle/High Point	FAS	SFD	9,375	99.2	-2.9%	2010	
Station 38 - Hawthorne Hills	FAS	SFD	9,137	86.3	-7.6%	2011	
Station 39 - Lake City	FAS	SFD	11,285	68.7	0.7%	2010	
Station 40 - Wedgwood	FAS	SFD	6,639	75.9	-8.0%	1965	
Station 41 - Magnolia	FAS	SFD	5,664	131.8	23.3%	1936	Equipment/control issue - resolved
FIRE MIXED - USE							
Station 10 - Fire Alarm Center / Emergency Operations Center	FAS	SFD/ SPD	71,974	153.7	7.3%	2008	
Fire Headquarters	FAS	SFD	56,074	85.9	-3.3%	1928	

Benchmarked City-Owned Buildings

POLICE STATIONS							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments Note: All Facilities 24 Hour Operations/Occupancy
West Precinct	FAS	SPD	88,830	162.2	-1.9%	1999	
East Precinct	FAS	SPD	36,280	120.0	-7.7%	1927	
Southwest Precinct	FAS	SPD	28,303	124.8	-9.8%	2003	
North Precinct	FAS	SPD	16,434	117.8	-8.2%	1984	
South Precinct	FAS	SPD	12,603	117.8	-8.6%	1983	

Benchmarked City-Owned Buildings

OPERATIONS SUPPORT							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
MIXED - USE							
SCL South Service Center - BLDG A	SCL	SCL	180,725	59.1	-9.5%	1952	
Airport Way Center - BLDG C	FAS	SPD	160,447	52.9	-6.2%	1985	
South Transfer Station	SPU	SPU	138,602	38.2	26.5%	2011	Increased use w/ North Station closure
Westbridge	Parks	Parks	113,780	33.1	-8.3%	1955	
SCL North Service Center	SCL	SCL	94,288	109.7	2.5%	1978	
SPU Operations Control Center Campus (4 Bldgs)[2]	SPU	SPU	87,459	112.5	-4.1%	1960	
SCL South Service Center - BLDG B	SCL	SCL	70,320	68.3	-1.3%	1952	
Charles Street Vehicle Maintenance	FAS	FAS	68,359	99.6	-4.5%	1975	
Joint Training Facilities Campus (5 Bldgs)[2]	FAS	SFD/ SPD	57,952	57.0	-6.6%	2007	
SDOT Traffic Shop	FAS	SDOT	41,939	43.2	-14.5%	1970	Reduced heating setpoint/ heated area
Former South Transfer Station	SPU	SPU	38,732	0.3	-65.9%	1966	Reduced occupancy/ use
Haller Lake Vehicle Maintenance Garage	FAS	FAS/ SDOT	26,994	146.1	3.1%	1958	
Airport Way Center - BLDG D	FAS	FAS	22,803	29.3	-7.0%	1944	
Charles Street Fire Garage[3]	FAS	FAS	20,000	53.8	-25.1%	1975	
Charles Street Meter Shop	FAS	SDOT/ SPU	19,930	94.7	-7.2%	1966	
SCL North Service Center Annex	SCL	SCL	18,854	26.7	-31.5%	1969	2014 renovation
Newhalem Service Center Warehouse	SCL	SCL	17,747	33.6	39.4%	1963	
Newhalem Machine Shop	SCL	SCL	17,600	98.5	12.1%	1968	
Airport Way Center - BLDG B	FAS	Multiple	16,725	54.4	-16.3%	1985	O&M and controls optimization
Newhalem Sickler Building	SCL	SCL	14,400	55.1	-14.8%	1978	
157 Roy Building	SCL	SCL	12,122	83.6	-28.4%	1964	
Street Car Maintenance	SDOT	Transit Agency	9,428	68.7	-24.3%	2008	Controls issue
NON - REFRIGERATED WAREHOUSES							
SCL Roy Street Warehouse	SCL	SCL	53,944	14.7	-10.4%	2000	
Queen Anne Storage Facility	SPL	SPL	23,040	21.4	-11.2%	1975	

Benchmarked City-Owned Buildings

OTHER							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
SPECIAL USE							
Airport Way Center - BLDG A	FAS	SPD/Other	99,122	144.3	-8.6%	1944	Major building shell renovation
Seattle Aquarium	Seattle Aquarium	Seattle Aquarium	69,400	251.1	-5.9%	1977	
King Street Station	SDOT	Transit/ Vacant	65,490	29.6	-26.2%	2008	Major construction completed
Georgetown Steam Plant	SCL	SCL	39,212	16.9	-20.3%	1906	Reduced use
SE Seattle Community Health Center	FAS	Community Group	27,492	80.5	-4.3%	2007	
Conservatory Campus (5 Bldgs)[2]	Parks	Parks	23,445	164.1	-13.5%	1912	Construction closure, no holiday lights
Airport Way Center - BLDG E	FAS	SPU	23,100	183.0	-18.2%	1985	O&M and controls optimization
Zoo - Feline House	WPZ	WPZ	12,600	161.8	NA	1949	
Zoo - Tropical Rain Forest	WPZ	WPZ	12,044	348.6	NA	1992	
Zoo - Animal Health Department	WPZ	WPZ	11,802	216.5	NA	1994	
Animal Control	FAS	FAS	10,868	223.6	-2.0%	1981	
Cedar River Hatchery	SPU	SPU	10,000	129.6	20.4%	2011	

Benchmarked City-Owned Buildings

OTHER							
Building	Mgmt Group	Tenant	Area (sf)	2014 EUI (kBtu/sf)	Change from 2013	Year Built/ Renovated	Comments
INFRASTRUCTURE							
Ross Powerhouse	SCL	SCL	121,630	51.2	-9.9%	1948	
Boundary Project (7 Bldgs)[2]	SCL	SCL	111,858	199.8	-1.0%	1963	
Gorge Powerhouse	SCL	SCL	29,369	123.6	1.6%	1923	
SCL System Operations Center	SCL	SCL	27,744	183.1	-3.8%	1993	
North Substation	SCL	SCL	25,978	45.2	-13.1%	1923	
Broad St. Substation	SCL	SCL	23,802	175.6	1.3%	1950	
Diablo Powerhouse	SCL	SCL	22,695	248.4	-14.1%	1934	
Union St. Substation	SCL	SCL	16,728	29.6	1.0%	1968	
Canal Substation	SCL	SCL	13,914	123.2	4.1%	1928	
WATER TREATMENT							
Tolt Treatment Facility	SPU	SPU	20,000	544.3	5.5%	2001	0.22 kBtu/gpd/year 4.8% change from 2013[4]
Cedar River Treatment Facility	SPU	SPU	5,480	4517.2	4.1%	2004	0.34 kBtu/gpd/year 3.0% change from 2013[4]

1. There have been a number of changes since last year's report, and some of the results for 2014 are different than previously reported. These changes arise from Portfolio Manager algorithm updates, revised building floor areas as a result of on-going audits, and meter data issues. As revisions are made, Energy Star scores for the previous year are revised to allow for a more meaningful year-to-year comparison.

2. Campus properties are reported at the "rolled-up" campus level. Single buildings that are a part of a campus may be reported individually if there are complete and meaningful metrics for that property. The only campus reporting individual buildings in this report is Seattle Center.

3. No longer eligible for an ENERGY STAR rating.

4. A better energy performance metric for water and waste water treatment plants is energy use per volume of water treated or kBtu/gpd/year. Seattle water treatment plant energy use is 85% better than the national median for water and wastewater treatment facilities.

Glossary

Btu - British Thermal Unit
The amount of energy required to raise one pound of water one degree Fahrenheit. It takes about 300 Btus to raise the temperature of one quart of cold tap water from 50 to 200 degrees F. Nominal Btu content of common units of energy:

1 kWh of electricity = 3413 Btu
1 gallon of No. 2 fuel oil = 140,000 Btu
1 therm of natural gas = 100,000 Btu

CBECS
The Commercial Building Energy Consumption Survey is a national sample survey that collects information on U.S. commercial buildings, their energy-related building characteristics, and their energy consumption and expenditures.

EIA
The Energy Information Administration. An independent agency within the U.S. Department of Energy that develops surveys, collects energy data, and analyzes and models energy issues. The Agency must meet the requests of Congress, other elements within the Department of Energy, Federal Energy Regulatory Commission, the Executive Branch, its own independent needs, and assist the general public, or other interest groups, without taking a policy position. See more information about EIA at http://www.eia.gov/about.

ENERGY STAR Score
A numeric 1 – 100 score developed by the EPA that reflects the comparable performance of the rated building to other representative buildings across the country, while accounting for differences in climate, occupancy and operating hours. A high score represents high efficiency. An ENERGY STAR score of 75 denotes that the rated building performs in the 75th percentile of buildings within its category.

EPA
Environmental Protection Agency

Energy Audit
A performance evaluation of current energy use and energy conservation potential typically involving both a site visit to the building and a review of energy consumption history.

Energy Benchmark
The measurement of energy use according to specified standards which is compared to reference measurements. Typically an EUI is used but other metrics may be more appropriate for some buildings. These include energy per unit produced or energy per unit processed or pumped.

05 Appendix

Glossary

Energy Signature Analysis
An analysis technique where billing data is converted to an average hourly value and plotted against average daily temperature for the billing period. When used in segment analysis it can identify differences in heating, cooling and base load consumption between buildings.

EUI
Energy Use Intensity (EUI) is a unit of measurement that describes a building's energy use. EUI represents the energy consumed by a building relative to its size. It is calculated by taking the total energy consumed in one year (measured in kBtu) and dividing it by the total floor space of the building (measured in square feet).

Facility Action Plan
A written action plan, based on a walk through or audit outlining operations and maintenance issues to be addressed to reduce building energy use.

Heating Degree Day
A measure of weather intensity as it affects heating loads. Heating Degree Days (HDD) are calculated with respect to a base temperature with the base temperature reflecting the average temperature at which the building requires no active heating. This temperature is less than the thermostat setting due to solar and internal gains. For a 60 degree base temperature, a day with an average temperature of 52 degrees would have 8 HDD_{60}.

kBtu
One thousand Btus

Plug Load
The amount of energy consumed by electrical devices that are plugged into outlets, such as computers and task lights.

Sources:
EIA Glossary
Energy Star website
City of Seattle Website
Assessing and Reducing Plug and Process Loads in Office Buildings NREL

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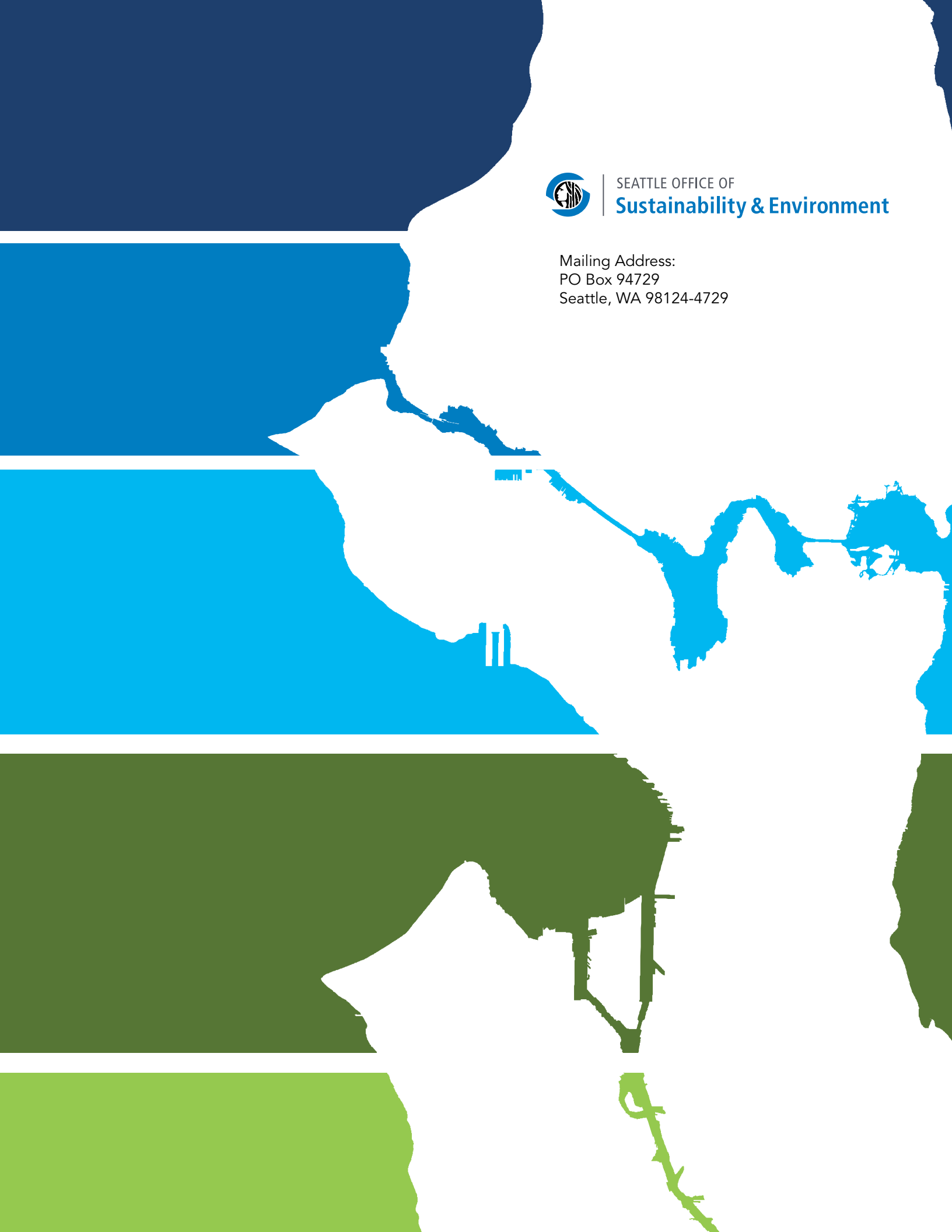

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