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Capital Facilities Appendix

The following sections contain the inventory and anticipated needs for various capital facilities. Information for utilities, such as drinking water, drainage and sewer, solid waste, and electricity, is included in the Utilities Appendix. Information for transportation facilities is included in the Transportation Appendix.

A Fire Department

Inventory

The Seattle Fire Department (SFD) provides fire protection and emergency medical services throughout the City from 33 fire stations, marine facilities, and Harborview Medical Center. Headquarters for the department is located in a historic building in Pioneer Square. The department shares the Joint Training Facility with Seattle Public Utilities. Each station provides a full range of fire protective services including fire suppression, emergency medical, and rescue. Each station is equipped with at least one fire engine. Many stations include other equipment and special units. The Fire Department has 33 engine companies, 12 ladder truck companies, four fire boats, five aid units, eight paramedic units and other specialized units including heavy rescue, hazardous materials, and tunnel rescue that provide a broad range of emergency services. Information on existing fire facilities is shown in Capital Facilities Figure A-1 and A-2.

Planning Goals

The Department evaluates emergency medical capabilities and staffing or equipment additions and institutes operation changes each year as a part of the budget process. State law requires that fire departments report yearly on established emergency response standards. The Seattle Fire Department reports response time for fire response and emergency medical services (EMS), which includes basic life support (BLS) and advance life support (ALS). SFD response standards are:

- Call Processing Time: 60 seconds for phone answered to first unit assigned, for 90% of calls
- Fire Response Time: Arrival within 4 minutes for first arriving engine at a fire for 90% of calls, and arrival within 8 minutes of the full first alarm assignment of 15 fire fighters, for 90% of calls
- Basic Life Support: Arrival within 4 minutes of the first medical unit with 2 EMT, for 90% of calls
- Advanced Life Support: Arrival within 8 minutes with 8 minutes, for 90% of calls

Response time is influenced directly by the availability of fire personnel, equipment, traffic conditions, and the number and location of fire stations. Firefighter and equipment requirements indirectly affect station requirements.

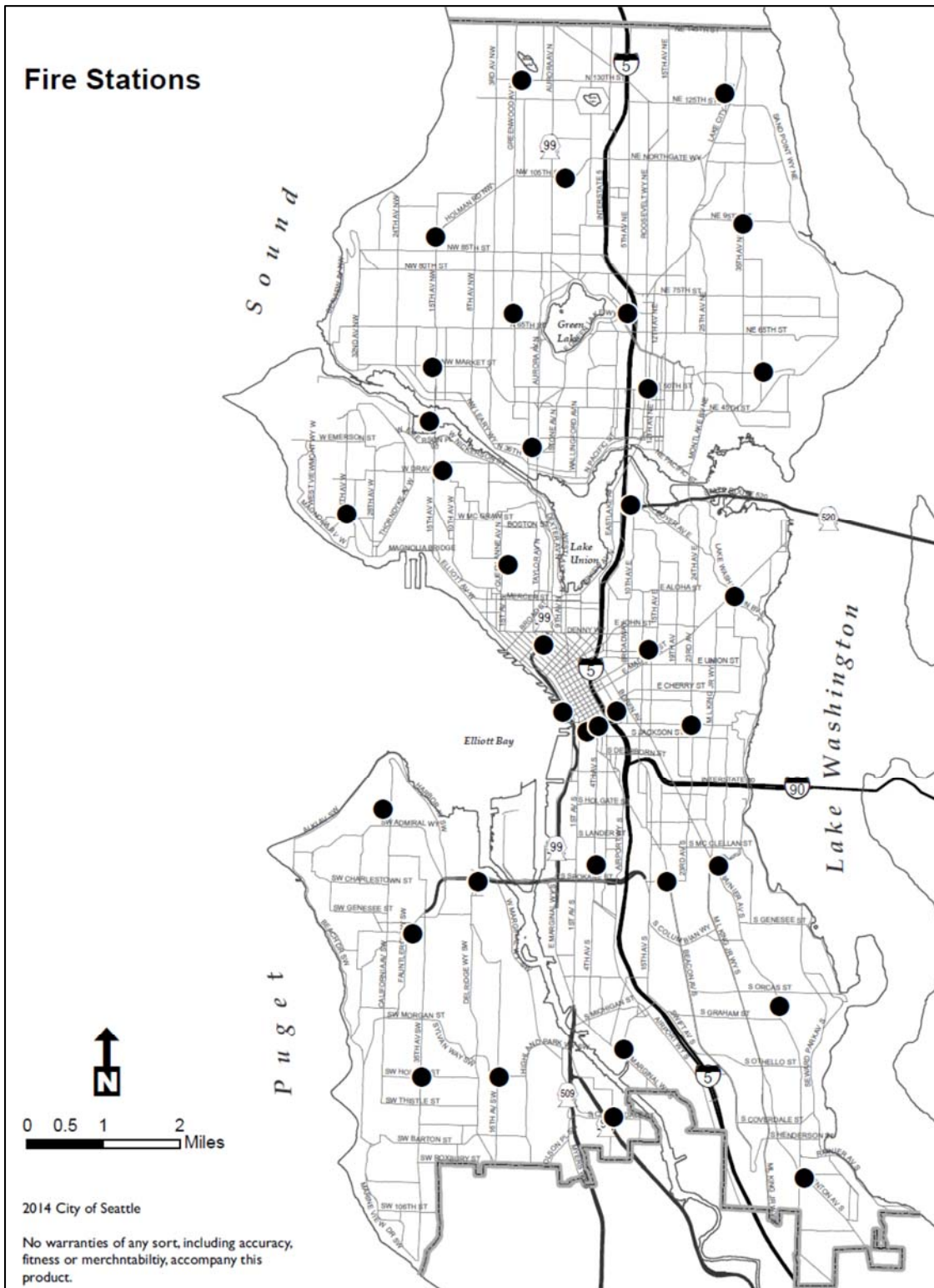
The City plans for asset preservation through a capital maintenance program. Minor and major capital facility projects are included in the City's six-year Capital improvement program.

Forecast of Future Needs

The City has added capacity and renovated or replaced many of the fire stations in the past ten years as part of the 2003 Fire Facilities levy, which provided about \$167 million to upgrade, renovate or replace 32 neighborhood fire stations, construct a new training facility and upgrade the Department's Fire Alarm Center among other things. The new facilities have been built with excess physical capacity.

The City anticipates it will need to replace Fire Station No. 3 and the Fire Marshall office, and replace or expand the commissary and fire garage, as well as continue maintenance on the remaining existing buildings. To support existing operations, a new fire administration building and expanded training facilities are needed. To support the SFD's desired goal of timely emergency response in all areas of the city, a new South Lake Union fire station and a freshwater marine fire suppression facility are desired under existing conditions.

**Capital Facilities Figure A-1
Map of Fire Department Facilities**



**Capital Facilities Figure A-2
Table of Fire Department Facilities**

Facility Name (* indicates a historic building)	Year Built/ updated	Building Square foot	Area Served	Address
Headquarters*	1908	55,952	Citywide	301 2nd Ave. S
Fire Station 2*	1922 2010	37,740	Belltown	2334 4th Ave.
Fire Station 3	1960	2,760	Ballard	1735 W Thurman
Fire Station 5*	1963 2016	5,688	Waterfront	925 Alaskan Way
Fire Station 6	2013	11,003	Central District	405 Martin Luther King Jr. Way S
Fire Station 8	1964 2013	5,450	Queen Anne	110 Lee St.
Fire Station 9	2013	8,804	Fremont	3829 Linden Ave. N
Fire Station 10	2006	61,156	International District	400 S Washington St.
Fire Alarm Control	2006	Portion of FS10	City wide	105 5th Ave. S
Fire Station 11	1971 2015	5,610	Highland Park	1514 SW Holden St.
Fire Station 13*	1928 2012	4,329	Beacon Hill	3601 Beacon Ave. S
Fire Station 14*	1927 2013	16,831	SoDo District	3224 4th Ave. S
Fire Station 16*	1927 2013	3,995	Green Lake	6846 Oswego Pl. NE
Fire Station 17*	1929 2010	23,537	University	1020 NE 50th St.
Fire Station 18	1974 2015	16,624	Ballard	1521 NW Market St.
Fire Station 20	2014	6,229	Inter bay	2800 15 th Ave. W
Fire Station 21	2011	8,783	Greenwood	7304 Greenwood Ave. N
Fire Station 22	1965 2016	4,110	Roanoke	901 E Roanoke St.
Fire Station 24	1977 2014	3,630	Bitter Lake	401 N 130TH St.
Fire Station 25	1969 2014	20,824	Capitol Hill	1300 E Pine St.

Facility Name (* indicates a historic building)	Year Built/ updated	Building Square foot	Area Served	Address
Fire Station 26	1970 2014	5,960	South park	800 S Cloverdale St.
Fire Station 27	1970 2014	5,960	Georgetown	1000 S Myrtle St.
Fire Station 28	2010	13,638	Rainer Valley	5968 Rainer Ave. S
Fire Station 29	1970 2014	5,049	Admiral District	2139 Ferry Ave. SW
Fire Station 30	2011	9,100	Mount Baker	2931 S Mount Baker Blvd.
Fire Station. 31	1974 2009	12,452	Northgate	1319 N Northgate Way
Fire Station 32	2016	6,646	West Seattle	3715 SW Alaska St.
Fire Station 33	1971 2010	5,061	Rainer Beach	9645 Renton Ave. S
Fire Station 34	2014	4,625	Madison Park	633 32nd Ave. E
Fire Station 35	2010	11,532	Crown Hill	8729 15th Ave. NW
Fire Station 36	1971 2014	4,676	Delridge/ Harbor Island	3600 23rd Ave. SW
Fire Station 37	2010	9,000	West Seattle/ High point	7700 35th Ave. SW
Fire Station 38	2011	8,700	Hawthorne Hills	4004 NE 55th St.
Fire Station 39	2010	9,593	Lake City	2806 NE 127th St.
Fire Station 40	1965 2013	6,500	Wedgewood	9401 35th Ave. NE
Fire Station 41	1936 2010	6,146	Magnolia	2416 34th Ave. W
Fire Marshall	2000	9,462	Downtown	220 3rd Ave. S
Training Facility	2009	53,402	Citywide	9401 Myers Way S
Commissary	1985	37,606	Citywide	3601 21nd Ave. S
Fire Garage	1975	15,000	Citywide	815 Dearborn St.
Harbor View Medical Center		1,000	Citywide	325 9th Ave.
South Lake Union Station			South Lake Union	Not Determined

B Police Department

Inventory

The Seattle Police Department currently provides law enforcement patrol services to the city from five precincts and the Harbor Patrol Unit which covers 59 square miles of waterways. The SPD also provides for parking and traffic enforcement as well as specialized units including SWAT, gang unit, mounted patrol, and canine. Information on these precincts and facilities is shown in Capital Facilities Figures A-3 and A-4.

Planning Goals

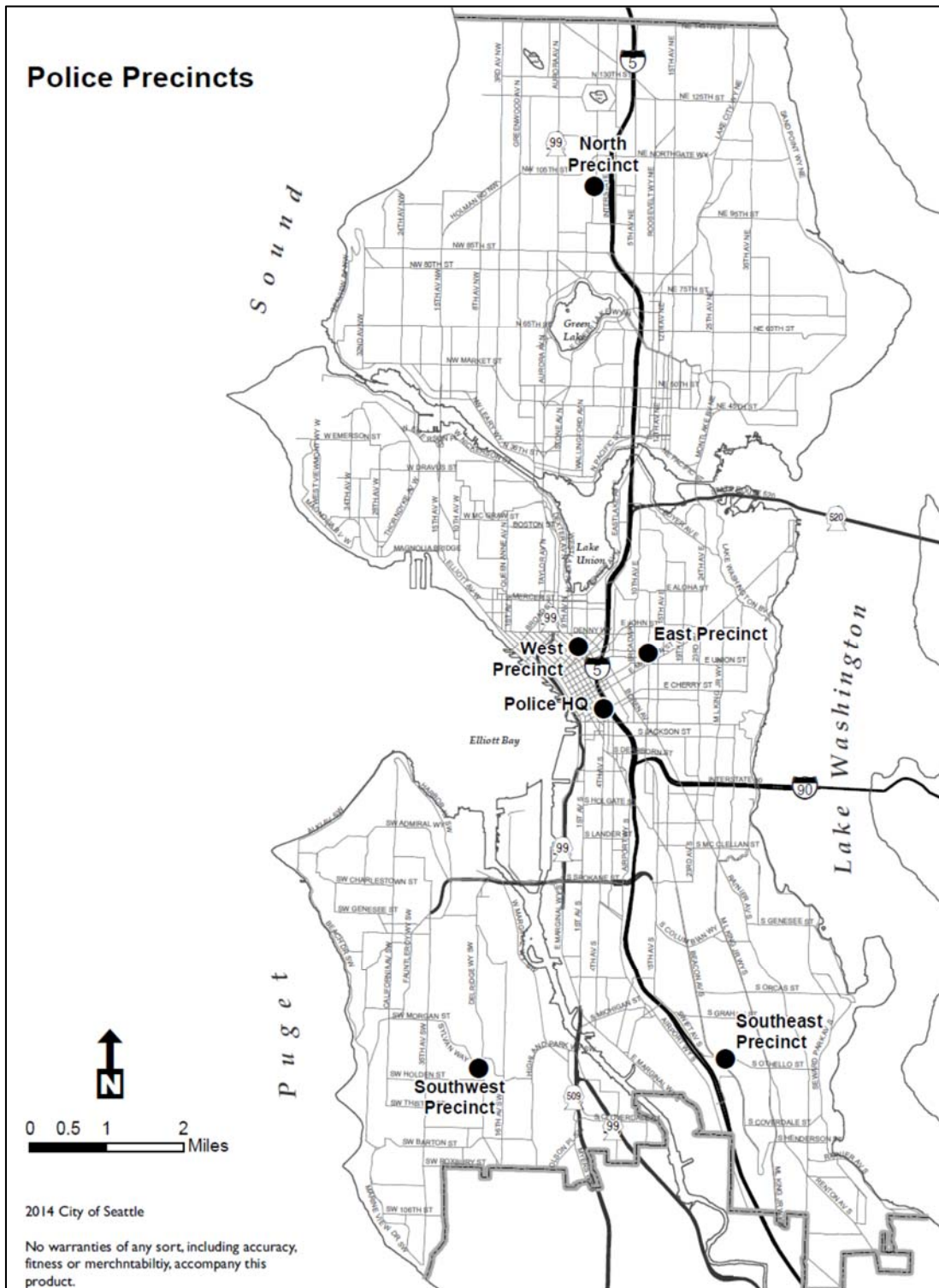
Uniform patrol law enforcement services are generally allocated based on workload, time, and location. The exact location of facilities is usually not critical to the provision of uniform patrol services since police officers are on patrol in the various sectors and calls for service are dispatched by radio. The location of facilities can be important because the distance traveled at shift change time impacts the availability of officers and because locations can enhance interaction with the community. Because of the many, changing factors that affect staffing and space objectives of police departments, there are no universally accepted planning goals for the location and distribution of police facilities.

The City plans for asset preservation through a capital maintenance program. Minor and major capital facility projects are programmed in the City's six-year capital improvement program.

Forecast of Future Needs

The City is expected to maintain, replace, or expand some police facilities as shown in Capital Facilities Figure A-4. To support existing police operations citywide, SPD expects that it may upgrade, expand, or replace Harbor Patrol, rifle range, and training facilities. The existing North Precinct is currently overcrowded and does not meet the needs of precinct personnel; therefore, a new consolidated facility is proposed to be built. The City has purchased property for a new North Precinct. In the next 20 year period, the City may also elect to build its own correctional facility, rather than to continue leasing space from King County at its jail.

Capital Facilities Figure A-3
Map of Current Police Department Facilities



**Capital Facilities Figure A-4
Table of Police Department Facilities**

Facility Name	Year Built/ updated	Size in square feet	Description	Area served	Address
Police Headquarters	2002		Police Headquarters shares Justice Center building	Citywide	610 5 th Ave.
Justice Center	2005	310,490	Justice Center includes municipal courts	Citywide	600 5 th Ave.
Professional Accountability	1970	6,300	Leased space in Pacific Building	Citywide	712 3 rd Ave.
North Precinct	1984	16,434	Serves the area north of the Ship Canal to the City limits	Northgate	10049 College Way N
Emergency Operations Center/ 911 Call center	2006	61,156	Shared facility with Fire Alarm Center and FS 10	Citywide	400 S Washington St.
North Precinct Annex	1983	4,474	Leased office space	Northgate	10303 Meridian Ave. N
West Precinct	1999	50,960	Serves Queen Anne, Magnolia, the downtown core, and the area west of I-5	Downtown	810 Virginia St.
West Precinct Garage	1948	53,336	Condo garage located in adjacent building	Capitol Hill	2021 9 th Ave.
East Precinct	1926 1985	61,580	Serves the area north of I-90 to the Ship Canal and east of I-5, Eastlake Community	East Precinct	1519 12 th Ave.
East Precinct Garage	2014	29,058	Garage located under 12 th Avenue Arts building	Capitol Hill	1624 12 th Ave.
South Precinct	1983	13,688	Serves area south of I-90 to City limits and west of Duwamish	Beacon Hill	3001 S Myrtle St.
South West Precinct	2002	28,531	Serves West Seattle and Duwamish Industrial area	Delridge	2300 SW Webster
Mounted Patrol	2001	39,041	12 full time horse stalls and related equipment	Citywide	9200 8 th Ave. SW
Police Training Center			Practice range is an open air range.	Citywide	11026 E Marginal Way S
K-9 Kennel		6,464	Houses 6 dogs and 2 pups and related equipment and supplies.	Citywide	11026 E Marginal Way S
SPD Parking Enforcement		10,268	Office and Warehouse (leased)	Northwest	1330 N 131 st St.

Facility Name	Year Built/ updated	Size in square feet	Description	Area served	Address
Harbor Patrol	1928 1986	3,706	Offices, shops, docks and maintenance buildings	Citywide	1717 Northlake Pl.
Warehouse		5,400	Vehicle storage	Citywide	923 S Bay S
Police Support Facility	1985	145,158	Airport Way Center Police Support Facility	Citywide	2203 Airport Way S
Warehouse		21,800	Storage	Citywide	4735 E Marginal Way S
Correctional Facilities	NA		City leases space from King County Jail	Citywide	

C Parks and Recreation

Inventory

Seattle Parks and Recreation (Parks) manages a 6,200-acre park system, including 465 parks and extensive natural areas. Parks provides athletic fields, tennis courts, play areas, specialty gardens, and more than 25 miles of boulevards and 120 miles of trails. The system comprises about 11% of the City of Seattle's land area. Parks also manages many facilities, including community centers, swimming pools, environmental education centers, small craft centers, golf courses, an outdoor stadium, skateparks, and more. Parks and open areas owned by the City and their capacities are summarized below in Capital Facilities Figures A-5 through A-7.

**Capital Facilities Figure A-5
Table of Parks by Type**

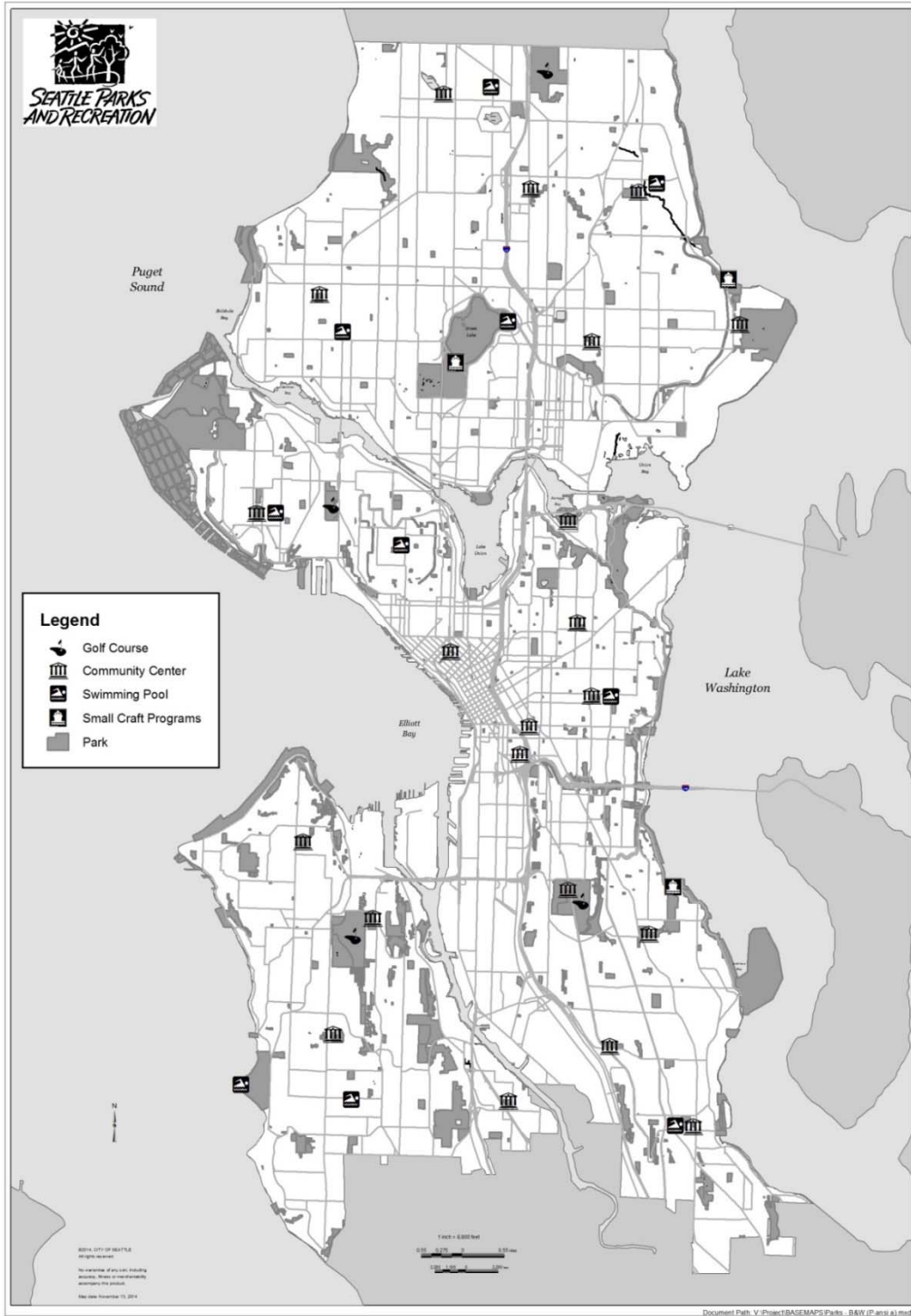
Park Type	Size of Facility
Boulevards/Green Streets/Greenways	348 acres
Community Parks	606 acres
Downtown Parks	23 acres
Greenbelts/Natural Areas	1,285 acres
Mini Parks/Pocket Parks	58 acres
Neighborhood Parks	717 acres
Regional Parks/Large Urban Parks	1,446 acres
Special-Use Parks/Specialty Gardens	1,366 acres

**Capital Facilities Figure A-6
Table of Recreational Facilities by Type**

Number	Facility Type
26	Community Centers
10	Swimming pools, including 2 outdoor pools
32	Wading Pools and Spray Parks
1	Aquarium
1	Zoo, including 45 major exhibits, 145 buildings and structures on 92 acres
1	Stadium
1	Indoor tennis center
144	Outdoor tennis courts, 17 of which have lighting, plus two multi-use courts for dodgeball, bike polo and roller hockey
207	Athletic fields, including 19 sites with synthetic fields and lighting
11	Skateparks, comprised of district parks, skatespots and skatedots
4	Golf courses, including 3 driving ranges and 1 pitch/putt facility
2	Rowing, Sailing, and Small Craft Centers
4	Environmental Learning Centers
6	Performing and visual art facilities
54	Landmarked buildings (there is some overlap with other categories, since this category includes some Community Centers, the Asian Art Museum, concessions, a bathhouse and other structures)
118	Comfort stations
40	Rentable Picnic shelters
20	Administrative offices and headquarters

Number	Facility Type
2	Museums
5	Amphitheaters
90	Miscellaneous – storage, maintenance, warehouses

Capital Facilities Figure A-7 Map of Parks and Recreation Facilities



Forecast of Future Needs

The City of Seattle has a robust citywide park system which is available and accessible for use by all of the City's residents. To enhance Seattle's quality of life, the City seeks to add parks and open space to the City's system as additional amenities for all of the City's residents. To that end, the City continues to fund Park's acquisition with the primary goals of:

1. pursuing usable open space acquisition in areas where the acreage and distribution of parks is lowest on a per capita basis. These are mostly found within urban centers and villages; and
2. acquiring properties that can complete or expand existing parks.

Parks acquisitions are opportunity-driven, but are informed by UV 46 and Urban Village Appendix Figures A-1 and A-2. Additions to the park facilities would enhance the City's quality of life. However, such additions are not necessary to accommodate new households in urban centers or citywide.

Planned investments in the maintenance of existing facilities are provided in the Capital Improvement Program and are updated on an annual basis according to asset management priorities and available funds.

D General Government

Inventory

The Department of Finance and Administrative Services provides facility management and planning for general government facilities. These facilities include vehicle repair shops, office space, warehouses, communication facilities, social services facilities, and the animal shelter. The City also owns property which is leased to social service organizations. Capital Facilities Figures A-8 and A-9 inventory existing General Government capital facilities.

Planning Goals

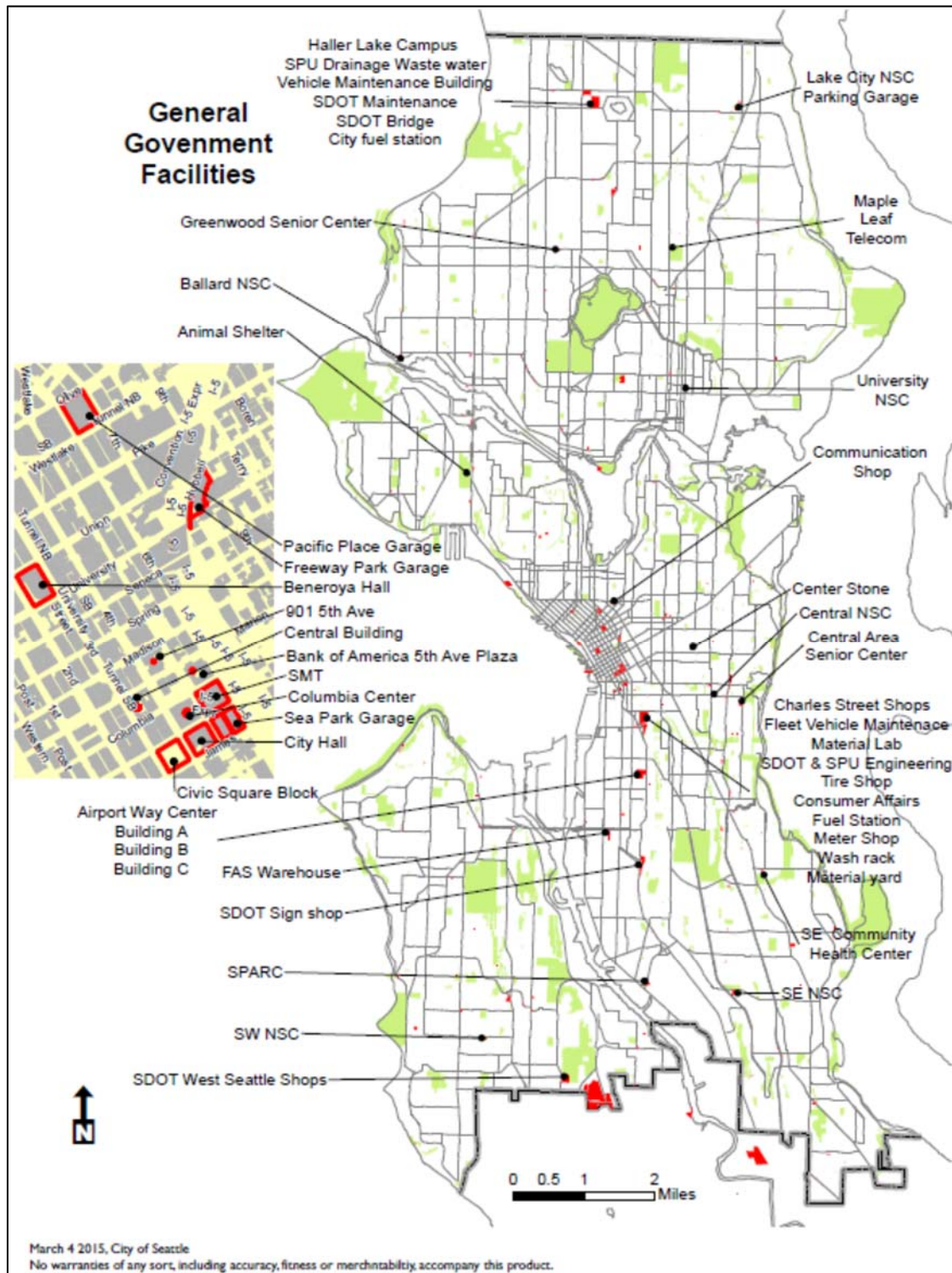
The City does not have general planning goals for general government facilities, which are instead driven by the needs of specific departments and programs. These governmental facilities are not related or necessary for future growth. The City plans for asset preservation through a capital maintenance program. Minor and major capital facility projects are programmed in the City's six year Capital improvement program.

Forecast of Future Needs

The Department of Finance and Administrative Services Department has identified a need for expanded facilities that support vehicle maintenance and department operations over the 20 year planning horizon. Additional warehouse and office space may be needed as the City grows, however, this need

will be driven primarily by budget revenue and departmental priorities. Additional space needs can be accommodated through leasing as well as building new space. General facilities that support citywide functions such as the Animal Shelter and Consumer Affairs are in need of new and expanded facilities to enhance the quality of life in the community.

Capital Facilities Figure A-8
Map of General Government Facilities



**Capital Facilities Figure A-9
Table of General Government Facilities**

Facility Name	Year Built/ updated	Size in square feet	Description	Area Served	Address
SMT Municipal Tower	1989	1,223,577	Seattle Municipal Tower	Citywide	700 5th Ave.
SMT \ Parking Garage	1989	193,891	Municipal Tower Parking	Citywide	700 5th Ave.
City Hall	2003	153,502	Council, Mayor, and City Attorney offices	Citywide	600 4th Ave.
Sea Park Garage	1993	213,346	Parking garage for City Campus	Downtown	609 6th Ave.
Leased Office		9,294	Columbia Center	Citywide	400 4th Ave.
Leased Office		28,523	Central Building	Citywide	810 3rd Ave.
Leased Office		42,578	Bank of America Building 5th Ave Plaza	Citywide	800 5th Ave.
Leased Office		28,721	901 5th Ave Building	Citywide	901 5th Ave.
Leased Office		6,800	Pacific Building	Citywide	720 3rd Ave.
FAS Warehouse		21,898	Records and surplus	Citywide	3807 2nd Ave.
Airport Way Center Bldg. A	1944 1981	102,075	Office Building	Citywide	2203 Airport Way S
Airport Way Center Bldg. B	1985	16,800	FAS shop space	Citywide	2203 Airport Way S
Airport Way Center Bldg. D	1985	22,803	FAS paint shops	Citywide	2203 Airport Way S
Seattle Animal Shelter	1981	1,567	Animal Shelter and spay and neuter clinic	Citywide	2189 15th Ave. W
West Seattle Shops	1956	5,122	SDOT Street Maintenance	Citywide	9200 8th Ave. SW
	1980	1,200	SDOT Urban Forestry trailer	Citywide	9200 8th Ave. SW

Haller Lake Campus	1975	2,436	SPU Drainage Waste Water buildings	North	12600 Stone Ave. N
	1958	24,588	Vehicle Maintenance Building A	North	12555 Ashworth Ave. N
	1998	5,979	SPU Hazardous waste buildings	North	12550 Stone Ave. N
	1996	6,7250	SDOT Street Maintenance Building B	North	12599 Ashworth Ave. N
	1973	3,640	SDOT equipment storage	North	12535 Ashworth Ave. N
	1973	3,724	SDOT Bridge maintenance and paint shop buildings	Citywide	1328 & 1324 N 125 th St.
	1975	1,991	Fuel Station	North	12600 Stone Ave. N
Charles Street Campus	1950 2008	67,356	Fleet Vehicle Maintenance	Citywide	805 Charles St.
	1973	7,400	Materials Testing Lab (SPU)	Citywide	707 S Plummer
	1974	21,315	SPU and SDOT Engineering	Citywide	714 Charles St.
	1967	5,450	Fleet Tire Shop	Citywide	814 8 th Ave. S
	1950	1,624	Weights and Measures	Citywide	805 Charles St.
		2,000	Equipment wash rack	Citywide	1011 8 th Ave. S
	1994	200	Fuel Station	Citywide	1040 7 th Ave. S
	1967	22,058	Meter Shop, Bridges	Citywide	1010 8 th Ave.
	1960	20,000	Material Yard	Citywide	717 S Plummer St.
	185,046	Yard and Parking	Citywide	1099 S Airport Way	
SDOT Sign shop	1960 1970	45,036	SDOT Sign Shop	Citywide	4200 Airport Way S
DOIT Com. Shop	1951	4,964	Communications Shop	Denny Triangle	1933 Minor Ave.
NE Telecom building	2014	6,00	Communications building	Northeast	8526 Roosevelt Way NE
Ballard Service Center	2005	3,100	Neighborhood Service Center	Ballard	5604 22 nd Ave. NW
Lake City Service Center and garage	2005	12,409	Neighborhood Service Center and parking garage	Lake City	12525 and 12509 28 th Ave. NE

Central Service Center	1980	2,235	Central Area Service Center	Central	2301 S Jackson St.
SW Service Center	1975	400	Neighborhood Service Center	Junction	2801 SW Thistle St.
SE Service Center	2003	1,500	SE Neighborhood Services Center	Southeast	3815 S Othello St.
University Service Center		1,400	University Neighborhood Service Center	University	4534 University
Pacific place Garage	1999	526,850	Condo ownership of garage portion of Pacific Place	Downtown	600 Pine St.
Freeway Park Garage	1975	63,750	Leased to Washington State Convention Center	Downtown	609 9 th Ave.
Central Area Senior Center	1959	9,478	Central Area Senior Center	Central	500 30th Ave. S
Greenwood Senior Center	1950	9,587	Green wood Senior center	Greenwood	525 N 85 th St.
Northwest Senior Center	1950	8,400	Northwest Senior Center	Ballard	5431 32 nd Ave. NW
Center Stone	1908	15,360	Lease to social services agency	Central	722 18 th Ave.
SPARC	1919	5,848	South Park Community Center	South Park	8201 10 th Ave. S
Benaroya Hall			Ground Lease	Citywide	200 University

E Public Library

Inventory

The Seattle Public Library (SPL) operates the Central Downtown Library, 26 neighborhood libraries, and a fleet of four book mobiles. The State-funded Washington Talking Book and Braille Library (WTBBL) is also administered by the SPL. The SPL rents space for three of the facilities it does not own. Information on library facilities is shown in Capital Facilities Figures A-10 and A-11.

Planning Goals

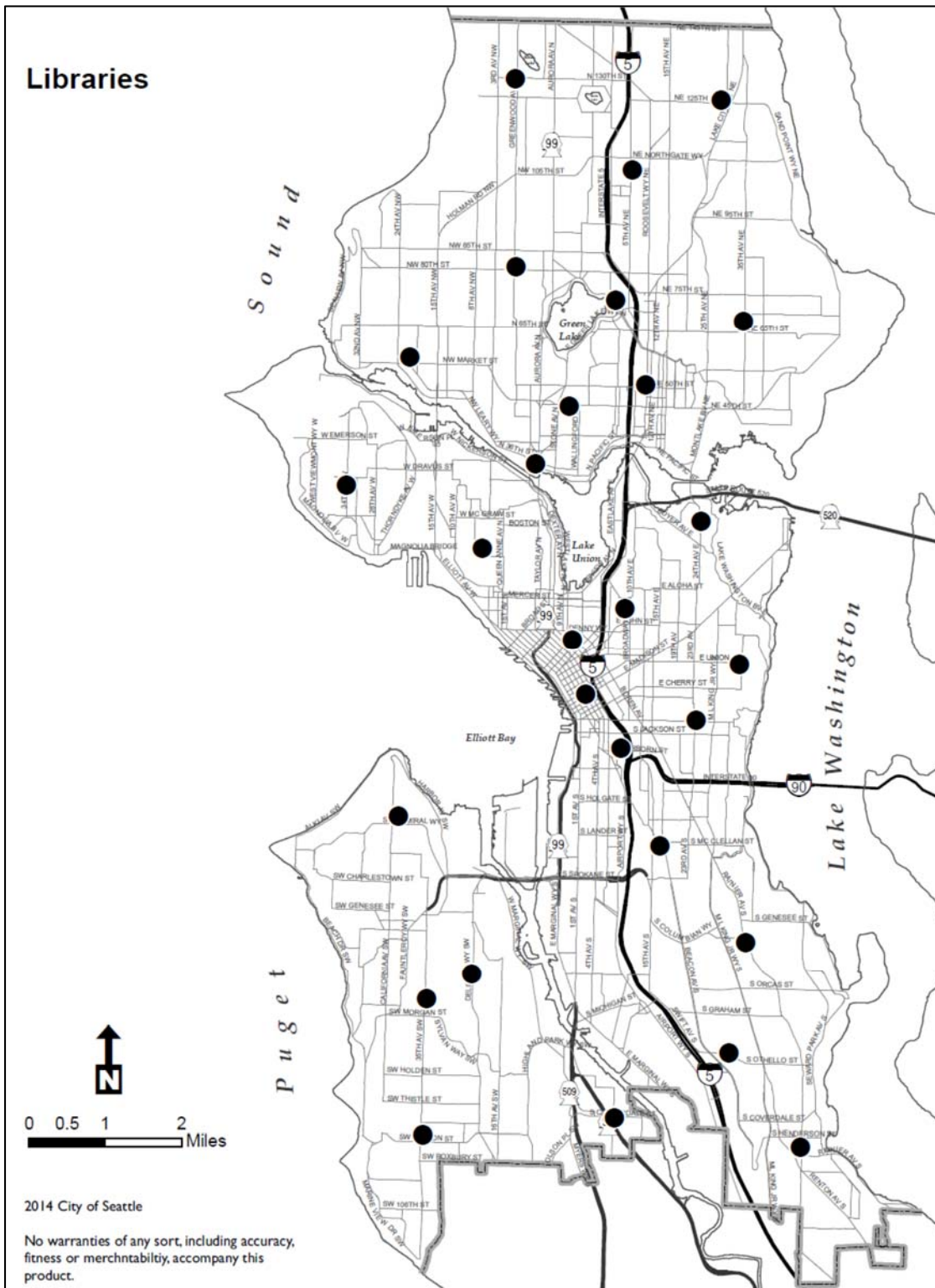
In 2009, SPL completed a decade of building renewal and expansion. The voter-approved "Libraries for All" capital program renovated or replaced all 22 branches that were in the system as of 1998, added four new branch libraries, and built the new Central Library. The expansion also allowed for an increase

in the number of public access computers, large community meeting areas, and study rooms. The focus now shifts from buildings to services as was adopted in the 2011 Library Strategic Plan.

Forecast of Future Needs

The Seattle Public Library will need maintenance and support facilities to support the existing library facilities.

Capital Facilities Figure A-10 Map of Library Facilities



**Capital Facilities Figure A-11
Table of Library Facilities**

Branch Name	Address	Square footage
Ballard	5711 24th Ave. NW	7,296
Beacon Hill	2519 15th Ave. S	10,800
Broadview	12755 Greenwood Ave. N	8,405
Capitol Hill	425 Harvard Ave. E	11,615
Central	1000 4th Ave.	363,000
Columbia*	4721 Rainier Ave. S	12,420
Delridge	5423 Delridge Way SW	5,600
Douglass-Truth*	2300 E Yesler	8,008
Fremont*	731 N 35th St.	6,060
Green Lake*	7364 E Green Lake Dr. N	8,090
Greenwood	8016 Greenwood Ave. N	7,085
High Point	6302 35th Ave. SW	7,000
Lake City*	12501 28th Ave. NE	9,013
Madrona-Sally Goldmark‡	1134 33rd Ave.	1,701
Magnolia*	2801 34th Ave. W	5,859
Mobile Services	2025 9th Ave.	5,056
Montlake	2300 24th Ave. E	1,574
New Holly	7058 32nd Ave. S	4,000
Northeast*	6801 35th Ave. NE	15,000
Queen Anne*	400 W Garfield St.	7,931
Rainier Beach	9125 Rainier Ave. S	15,000
Southwest	9010 35th Ave. SW	7,557
University*	5009 Roosevelt Way NE	8,104
Wallingford	1501 N 45th St.	2,000
Wash. Talking Book and Braille Library‡	2021 9th Ave.	10,000
West Seattle*	2306 42nd Ave. SW	8,970

*City of Seattle Landmark or located in City landmark/special review district.

‡ City historic resource survey properties.

F Seattle Center

Inventory (see Figure A-12)

Seattle Center serves as an extraordinary arts, civic, and public family gathering place for our region, located on a 74-acre campus in the middle of the Seattle urban core. The more than 30 cultural, educational, sports and entertainment resident organizations at Seattle Center, together with a broad range of public and community programs, offer 5,000 events attracting 12 million visits each year. Seattle Center's Purpose is "to create exceptional events, experiences, and environments that delight and inspire the human spirit to build stronger communities". Activities at Seattle Center generate \$1.15 billion in business activity and \$387 million in labor income annually.

The Center is home to 12 theater spaces ranging in capacity from 200 seats in the Center Theatre to 2,900 at Marion Oliver McCaw Hall and totaling nearly 6,000 seats for theatrical performances. Sports facilities include the Key Arena with a capacity of 17,000 and Memorial Stadium with a capacity of 12,000 for field events. There are three schools on the campus – a ballet school, a school for 3-D animation and gaming, and a public high school. There are 10 fountains on the grounds and approximately 40 acres of landscaped and green open space and pedestrian ways. There are also active outdoor spaces, including a children's playground and a skate park. Seattle Center's outdoor open spaces, gardens, and fountains are a major urban oasis for active or passive and individual or group enjoyment.

The Center owns and manages two surface parking lots and three parking garages totaling more than 3,500 spaces. The Seattle Center is also served by multiple King County/METRO bus routes and also the Seattle Center Monorail which runs between downtown and Seattle Center. The Monorail carries more than 2 million riders a year over a 0.9 mile route.

Notable buildings and facilities on the Seattle Center campus include: Seattle Center Armory; Key Arena; the Space Needle; International Fountain; Chihuly Garden and Glass; Experience Music Project; Memorial Stadium; Pacific Science Center; KCTS; McCaw Hall; Phelps Center and Ballet School; Seattle Children's Theatre; Seattle Repertory Theatre; Cornish Playhouse ; Seattle Children's Museum; Fisher Pavilion; SIFF Film Center; The VERA Project; Pottery Northwest; the Northwest Rooms; Center Playground; Mercer Arena; and the Seattle Center Pavilion.

**Capital Facilities Figure A-12
Table of Seattle Center Facilities**

Facility	Address	Size in Square Feet
Armory (formerly Center House)	305 Harrison St.	278,500
Blue Spruce	158 Thomas St.	14,036
Central Plant	324 Republican St.	10,072
Chihuly Garden and Glass	305 Harrison St.	30,000
EMP	200 2 nd Ave. N	283,324
Exhibition Hall	225 Mercer	52,000
Fifth Ave N Garage	516 Harrison St.	356,390
First Ave N Garage	220 First Ave. N	173,000
Fisher Pavilion	200 Thomas St.	21,018
International Fountain		122,000
International Fountain Pavilion	2 nd Ave. N & Republican	4,681
KCTS	401 Mercer St.	
Key Arena	334 First Ave. N	368,000
Kobe Bellhouse		600
Maintenance Shop – Leased (5.5 Building)	621 2nd Ave. N	30,720
Marion Oliver McCaw Hall	321 Mercer St.	295,000
Memorial Stadium		238,920
Memorial Stadium Parking Lot		101,489
Mercer Arena	363 Mercer St.	108,000
Mercer Street Garage	300 Mercer St.	511,424
Monorail Office and Gift Shop	370 Thomas St.	4,592
Monorail Terminal		19,563
Mural Stage		3,200
NASA Building	102 Thomas St.	8,400
Next 50 Pavilion		5,285
Northwest Rooms	354 First Ave. N	35,240
Pacific Science Center		141,681
Park Place	232 First Ave. N	7,200
Phelps Center/Pacific NW Ballet	225 Mercer St.	49,680
Playhouse Theatre (w/out courtyard)	201 Mercer St.	33,424
Playhouse Theatre Rehearsal Hall		4,333
Pottery Northwest	226 First Ave. N	7,200
Restroom Pavilion	303 2 nd Ave. N.	1,219
Seattle Center Pavilion		7,580
Seattle Center Skatepark		18,825
Seattle Center Warehouse (under N. Stadium Stands)	369 Republican St.	20,774
Seattle Children's Theatre	240 Thomas St.	46,300
Seattle Children's Theatre Tech Pavilion		29,112
Seattle Repertory Theatre	151 Mercer St.	65,000

Facility	Address	Size in Square Feet
SIFF (Seattle International Film Festival)		11,776
Space Needle		4,400
VERA		9,536
West Court Building	312 First Ave. North	10,596

G Public Schools

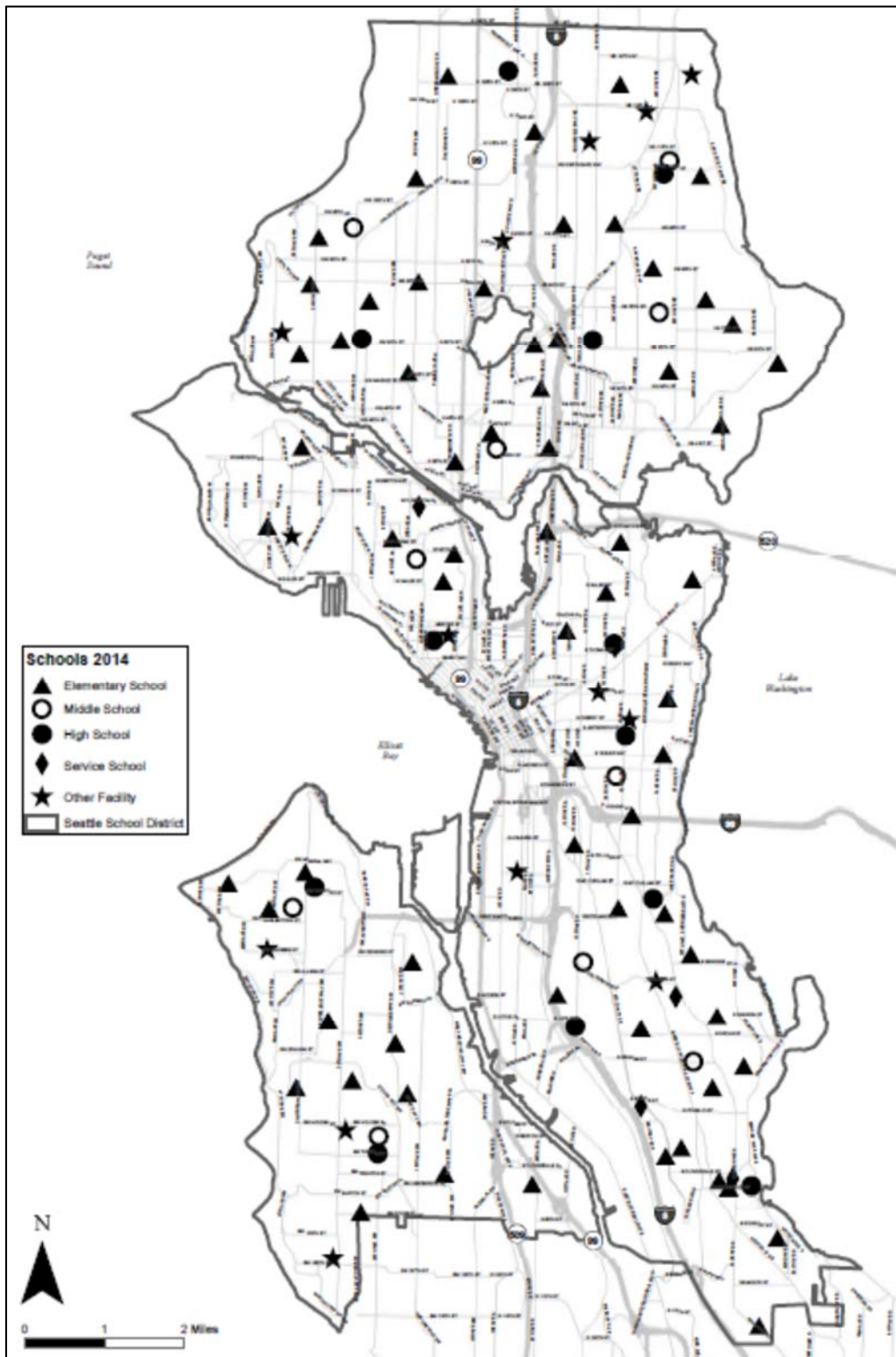
Inventory

Seattle Public Schools include 12 high schools, 9 middle schools, 10 K-8 schools, and 57 elementary schools. In addition, Seattle Public Schools has a number of closed or vacated schools sites that could potentially be reactivated as well as various athletic, administrative, and support buildings. All in all, the District owns 119 schools and sites. School locations are shown in Capital Facilities Figure A-14.

Planning Goals

Capital Facility planning is driven by projected student population as well as curriculum goals, educational specification (including class room size and types of room facilities need), and the need for facilities to address specialized needs of specific students and administration of the district overall. The goals are detailed in the Seattle Public School's Facilities Master Plan which is updated periodically (most recently in 2012) and has a ten year time horizon.

Capital Facilities Figure A-13
Public School Locations



Forecast of Future Needs

The School District's Facilities Master Plan (FMP) provides planning information for a period of 10 years, to school year 2021 including detailed analysis of needs by individual school service area. Overall, student enrollment is projected to grow to over 57,000 students by 2022. This would exceed the estimated 2012 capacity of approximately 51,700.

The Building Excellence (BEX) IV levy provides the funding necessary to address existing capacity needs through 2021. It includes the following projects, which along with portable classrooms, are anticipated to accommodate the projected students population:

- Fairmount Park Elementary improvements
- Schmitz Park Elementary replacement
- North East School development (new school)
- Jane Addams K-8 replacement
- Olympic Hills Elementary replacement
- Wilson Pacific K-8 development (new school)
- Loyal Heights Elementary addition
- Arbor Heights Elementary replacement
- Queen Anne Elementary addition
- Wing Luke Elementary replacement
- Bagley Elementary addition
- Meany Middle reconfiguration
- Mann High addition
- World School modernization
- Lincoln High modernization
- Interim downtown elementary school
- Support of various interim schools

Seattle Public Schools does not forecast student populations beyond a 10-year horizon due to the challenges of predicting demographic trends over a longer period and the historic lack of relationship between population and employment numbers and student population (since 1960 the student population has fallen by half while overall population and employment have grown).

The Seattle Public School District is currently planning for their BEX V levy, which is planned to start in 2021 and run for 6 years. This levy will seek to make investments to ensure that sufficient capacity is available in the future.

H Public Health

Public Health – Seattle & King County (Public Health) is a joint enterprise of the City of Seattle and King County and is responsible for the supervision and control of all public health and sanitation affairs in Seattle and King County. Public Health maintains a system of personal health, environmental health, health promotion, and disease prevention services through health centers/clinics and other service sites located in Seattle. The capacity and ownership of individual facilities are listed below.

**Capital Facilities Figure A-14
Table of Public Health Facilities**

Health Facility	Size in Square Feet	Tenancy
Chinook Building (Administration)	114,839	Owned
Columbia Health Center	28,094	Owned
Downtown Clinic	25,497	Lease
Harborview: STD Clinic	13,197	Owned by King County
Harborview: Medical Examiner	34,147	Owned by King County
Harborview: Public Health Laboratory	5,003	Owned by King County
Harborview: TB Clinic	4,205	Owned by King County
Lake City Dental Clinic	3,370	Lease
North District Health Center*	16,067	Owned by King County
Rainier Beach Teen Clinic	800	Lease

* Scheduled for demolition in 2016.

I Facilities Serving Urban Centers

Following is an inventory of facilities that serve Urban Centers. Facilities do not have to be located within the boundaries or potential boundaries of the Centers or Villages in order to serve those areas.

Downtown Urban Center

Facility Type	Name	Location
Fire Station	Headquarters	301 2nd Ave. S
Fire Station	Fire Station 5	925 Alaskan Way
Fire Station	Fire Station 2	2334 4th Ave.
Fire Station	Fire Station 25	1300 E Pine St.
Police Station	East Precinct	1519 12th Ave.
Library	Central Library	1000 4th Ave.
Parks	Alaskan Way Blvd	Alaskan Way Blvd.
Parks	Bell Street Boulevard	Bell Street Blvd. from 1 st Ave. to 5 th Ave.
Parks	Belltown Cottages	2520 Elliott Ave.
Parks	Boren-Pike-Pine Park	Boren Ave. & Pike St.
Parks	City Hall Park	450 3rd Ave.
Parks	Denny Park	100 Dexter Ave.
Parks	Denny Playfield	Westlake Ave. & Denny Way
Parks	Dr. Jose Rizal Park	1008 12th Ave. S
Parks	East Duwamish Greenbelt	2799 12th Ave. S
Parks	Freeway Park	700 Seneca St.
Parks	Harborview Park	778 Alder St.
Parks	Hing Hay Park	423 Maynard Ave. S
Parks	International Children's Park	700 S Lane St.
Parks	Kobe Terrace	221 6th Ave. S
Parks	McGraw Square	Stewart St. & Westlake Ave. N
Parks	Myrtle Edwards Park	3130 Alaskan Way W
Parks	Occidental Square	Occidental Ave. S & S Main St.
Parks	Plymouth Pillars Park	Boren Ave. & Pike St.
Parks	Piers 62 and 63	1951 Alaska Way
Parks	Pioneer Square	100 Yesler Way
Parks	Prefontaine Place	3rd Ave. & Yesler Way
Parks	Regrade Park	2251 3rd Ave.
Parks	Seattle Aquarium	Pier 59

Facility Type	Name	Location
Parks	Seattle Center	Denny Way and Republican St. from 1 st Ave. N to 5 th Ave. N
Parks	Sturgus Park	904 Sturgus Ave. S
Parks	Tillicum Place	5th Ave. & Denny Way
Parks	Union Station Square	Jackson & 3rd Ave. S
Parks	Victor Steinbrueck Park	2001 Western Ave.
Parks	Waterfront Park	1301 Alaskan Way
Parks	Westlake Park	401 Pine St.
Parks	Westlake Square	1900 Westlake Ave. N
Parks	Yesler Terrace Community Center grounds	Yesler Way and Broadway Ave.
Schools	Gatzert and Lowell Elementary Schools	
	McClure and Washington Middle Schools	
	Garfield High School	

Overall, fire, police, library facilities, parks and schools are sufficient to accommodate expected 20 year growth.

A replacement of the Fire Department's headquarters building is expected for reasons other than as a result of development (the SFD headquarters is located in the urban center).

The City may seek to increase park space in the urban center to meet desired goals. While additions to the park facilities would enhance the City's quality of life, such additions are not necessary to accommodate new households in urban centers or citywide.

Some of the schools serving this urban center are projected to exceed their capacity, given existing attendance area boundaries. Given that Seattle Public Schools has planned investments to meet citywide capacity needs, capacity issues could potentially be solved by modifying attendance area boundaries or allowing more students to transfer to other schools. Seattle Public Schools is also evaluating the creation of a downtown elementary school. This school could help create a local school option as well as assist with capacity issues.

First Hill/Capitol Hill Urban Center

Facility Type	Name	Location
Fire Station	Fire Station 25	1300 E Pine St.
Fire Station	Fire Station 10	301 2nd Ave. S

Facility Type	Name	Location
Fire Station	Fire Station 22	901 E Roanoke St.
Fire Station	Fire Station 6	101 23rd Ave. S
Library	Capitol Hill Branch	425 Harvard Ave. E
Library	Central Library	1000 4th Ave.
Library	Douglass Truth Branch	2300 E Yesler Way
Community Center	Yesler Playfield & Community Center	903 Yesler Way
Parks	12th and E James Court Park	12 th Ave. and E James St.
Parks	Bellevue Place	Bellevue Pl. E & Bellevue Ave. E
Parks	Belmont Place	Belmont Pl. E & Belmont Ave. E
Parks	Boren Place	Broadway & Boren Ave. S
Parks	Boren-Pike-Pine Park	Boren Ave. & Pike St.
Parks	Boylston Place	Broadway Ave. & Boylston Ave. E
Parks	Cal Anderson Park	1635 11th Ave.
Parks	Federal & Republican	Federal Ave. & Republican St.
Parks	First Hill Park	University St. & Minor Ave. E
Parks	Freeway Park	700 Seneca St.
Parks	Harborview Park	778 Alder St.
Parks	Horiuchi Park	156 Boren Ave.
Parks	Kobe Terrace	221 6th Ave. S
Parks	McGilvra Place	E Madison St. & Pike St.
Parks	Miller Playfield	400 19th Ave. E
Parks	Plymouth Pillars	Boren Ave. & Pike St.
Parks	Seven Hills	1514 E Howell St.
Parks	Spring Street Mini Park	E Spring St. & 15th Ave.
Parks	Spruce & Squire Park	156 Boren Ave.
Parks	Summit Place	Belmont Ave. E & Bellevue Pl. E
Parks	Tashkent Park	511 Boylston Ave.
Parks	Thomas Street Mini Park	306 Bellevue Ave. E
Parks	Volunteer Park	1247 15th Ave. E
Parks	Volunteer Parkway	14th Ave. E from E Prospect St. to E Roy St.
Parks	Williams Place	15th Ave. E & E John St.
Police Station	East Precinct	1519 12th Ave.
Schools	Gatzert, Lowell, Madrona, and Stevens Elementary Schools	
	Meany and Washington Middle Schools	
	Garfield High School	

Overall, fire, police, library facilities, parks and schools are sufficient to accommodate expected 20 year growth.

The City may seek to increase park space in the urban center to meet desired goals. While additions to the park facilities would enhance the City's quality of life, such additions are not necessary to accommodate new households in urban centers or citywide.

Some of the schools serving this urban center are projected to exceed their capacity, given existing attendance area boundaries. Meany Middle School is proposed to be reconfigured to accommodate more students. Given that Seattle Public Schools has planned investments to meet citywide capacity needs, capacity issues could potentially be solved by the Meany reconfiguration and modifying attendance area boundaries or allowing more students to transfer to other schools. Seattle Public Schools is also evaluating the creation of a downtown elementary school. This school could help create a local school option as well as assisting with capacity issues.

University Community Urban Center

Facility Type	Name	Location
Fire Station	SFD 17	1050 NE 50th St.
Fire Station	SFD 38	5503 33rd Ave. NE
Library	Northeast Branch	6801 35th Ave. NE
Library	University Branch	5009 Roosevelt Way NE
Parks	17th Ave NE Centerstrip	17th Ave. NE from NE 45th St. to NE Ravenna Blvd.
Parks	Burke-Gilman Trail	8th Ave. NW to NE 145th St.
Parks	Christie Park	NE 43rd St. & 9th Ave. NE
	Cowen Park	5849 15th Ave. NE
Parks	North Passage Point Park	600 NE Northlake Way
Parks	Ravenna Boulevard	NE Ravenna Blvd. from E Green Lake Way N to 20th Ave. NE
Parks	Ravenna Park	5520 Ravenna Ave. NE
Parks	University Heights	University Way NE and NE 50th St.
Parks	University Playground	9th Ave. NE & NE 50th St.
Police Station	North Precinct	10049 College Way N
Schools	Greenlake and Bryant Elementary Schools	
	Eckstein and Hamilton Middle Schools	
	Roosevelt High School	

Overall, fire, police, library facilities, parks and schools are sufficient to accommodate expected 20 year growth. Construction of a new north precinct is planned to deal with existing overcrowding.

Some of the schools serving this urban center are projected to exceed their capacity given existing attendance area boundaries. Given that Seattle Public Schools has planned investments to meet citywide capacity needs, capacity issues could potentially be solved by modifying attendance area boundaries or allowing more students to transfer to other schools.

Northgate Urban Center

Facility Type	Name	Location
Fire Station	Fire Station 31	1319 N Northgate Way
Police Station	North Precinct	10049 College Way N
Schools	Olympic View Elementary	
	Jane Addams Middle School	
	Nathan Hale High School	
Library	Lake City Branch	12501 28th Ave. NE
Parks	Hubbard Homestead Park	11203 5th Ave. NE
Parks	Mineral Springs Park	10556 Meridian Ave. N
Parks	Northgate Park	10510 5th Ave. NE
Parks	Thornton Creek Park #6	5th Ave. NE & NE 103rd St. & Roosevelt Way NE & NE 107th St.
Parks	Victory Creek Park	1059 Northgate Way

Overall, fire, police, library facilities, parks and schools are sufficient to accommodate expected 20 year growth. Construction of a new north precinct is planned to deal with existing overcrowding.

Some of the schools serving this urban center are projected to exceed their capacity given existing attendance area boundaries. Seattle Public Schools is developing a new Wilson Pacific Elementary school nearby this area. While the school is not planned to serve this urban center directly, its development will directly increase local capacity. Given that Seattle Public Schools has planned investments to meet citywide capacity needs, capacity issues could potentially be solved by modifying attendance area boundaries or allowing more students to transfer to other schools.

South Lake Union Urban Center

Facility Type	Name	Location
Fire Station	Fire Station 2	2334 4th Ave.
Fire Station	Fire Station 22	901 E Roanoke St.
Police Station	East Precinct	1519 12th Ave.
Police Station	West Precinct	810 Virginia St.
Library	Capitol Hill Branch	425 Harvard Ave. E
Library	Central Library	1000 4th Ave.

Parks	Cascade Playground	333 Pontius Ave. N
Parks	Denny Park	Westlake Ave. & Denny Way
Parks	Denny Playfield	Westlake Ave. & Denny Way
Parks	Eastlake Triangle	Eastlake Ave. E & E Prospect St.
Parks	Fairview Walkway	Fairview Ave. N & E Galer St.
Parks	South Lake Union Parks	1000 Valley St.
Parks	Bellevue Place	Bellevue Pl. E & Bellevue Ave. E
Parks	NE Queen Anne Greenbelt	1920 Taylor Ave. N
Schools	Lowell Elementary School	
	McClure Middle School	
	Garfield and Ballard High Schools	

Overall, fire, police, library facilities, parks and schools are sufficient to accommodate expected 20 year growth. To support the SFD's desired goal of timely emergency response in all areas of the city, a new South Lake Union fire station is needed under existing conditions.

Some of the schools serving this urban center are projected to exceed their capacity given existing attendance area boundaries. Given that Seattle Public Schools has planned investments to meet citywide capacity needs, capacity issues could potentially be solved by modifying attendance area boundaries or allowing more students to transfer to other schools. Seattle Public Schools is also evaluating the creation of a downtown elementary school. This school could help create a local school option as well as assisting with capacity issues.

Uptown Urban Center

Facility Type	Name	Location
Fire Station	Fire Station 8	110 Lee St.
Fire Station	Fire Station 2	2334 4th Ave.
Police Station	West Precinct	810 Virginia St.
Library	Queen Anne Branch	400 W Garfield
Library	Central Library	1000 4th Ave.
Community Center	Queen Anne Community Center	1901 1st Ave. W
Parks	Alaskan Way Blvd	Alaskan Way Blvd
Parks	Counterbalance Park	Queen Anne Ave. N & Roy St.
Parks	Elliot Bay Park	Pier 86
Parks	Kinnear Park	899 W Olympic Pl.
Parks	Bhy Kracke	1215 5th Ave. N

Facility Type	Name	Location
Parks	Kerry Park	211 W Highland Dr.
Parks	Myrtle Edwards Park	3130 Alaskan Way W
Parks	Northeast Queen Anne Greenbelt	1920 Taylor Ave. N
Parks	Seattle Center	Denny Way and Republican St. from 1 st Ave. N to 5 th Ave. N
Parks	SW Queen Anne Greenbelt	W Howe St. & 12th Ave. W
Parks	Ward Springs Park	Ward St. & 4th Ave. N
Schools	Hay Elementary School	
	McClure Middle School	
	Ballard High School	

Overall, fire, police, library facilities, parks and schools are sufficient to accommodate expected 20 year growth.

Some of the schools serving this urban center are projected to exceed their capacity given existing attendance area boundaries. Given that Seattle Public Schools has planned investments to meet citywide capacity needs, capacity issues could potentially be solved by modifying attendance area boundaries or allowing more students to transfer to other schools. Seattle Public Schools is also evaluating the creation of a downtown elementary school. This school could help create a local school option as well as assisting with capacity issues.

J Potential Future Discretionary Projects

Besides the facilities that are included in the City's Capital Improvement Program (CIP), there are a number of prospective capital projects that the City might undertake or fund in the future. They are listed below to provide a broad view of the City's potential future capital spending. Projects are not listed in any priority order. Funding for these projects may not yet be identified and decisions may not yet have been made to go forward with funding these projects.

Fire:

- South Lake Union Fire Station development
- Freshwater Marine Station relocation
- Fire Administration Building relocation
- Fire Marshall's Office relocation
- Warehouse Space replacement
- Training Facilities expansion

Police

- North Police Precinct replacement
- Harbor Patrol Building replacement
- Parking Enforcement facilities
- Police Training Center
- Municipal Correctional Facility
- Airport Way Center parking expansion

General Facilities

- City building maintenance facilities upgrades
- City vehicle maintenance facilities replacement
- Animal Shelter replacement
- Weights and Measures building replacement
- Communications Shop relocation
- Consumer Protection Division facility upgrades
- Office space consolidation
- Social Services facilities
- Civic Square development
- Energy efficiency improvements
- Urban Forestry facilities expansion
- Roadway Structures facility consolidation
- Street Maintenance facility improvements
- Streetcar Maintenance facility improvements
- King Street Station improvements
- BNSF property acquisition at SDOT sign shop
- Material storage facilities

Seattle Center

- Blue Spruce site redevelopment
- Memorial Stadium relocation*
- Memorial Stadium site redevelopment
- Key Arena enhancement
- North Parking Lots redevelopment

Parks

- Seattle Aquarium Master Plan implementation
- Washington Park Arboretum improvements
- Downtown parks improvements
- Warren G Magnuson Park building and site improvements
- Seattle Park District implementation
- Regional and Neighborhood park improvements
- Waterfront improvements

Library

- Facility shops relocation

At the time of publication, projects with an * are owned or sponsored by another government agency or private organization. The City might participate in funding these projects.

Housing Appendix

A Introduction

Broad Policy Framework and Context

The state Growth Management Act requires each local jurisdiction to include an inventory and analysis of existing and projected housing needs in its Comprehensive Plan. King County's Countywide Planning Policies (CPPs) provide additional direction and guidance for the inventory and analysis of local housing supply and housing needs.

The information in this appendix addresses the requirements of GMA and the CPPs. As required, the analysis provided in the Housing Appendix addresses existing and projected housing needs for all economic segments in Seattle as well as for the special needs populations in the community. The first sections of the appendix describe the City's projections for the total amount of housing needed to accommodate growth in Seattle and the amount of capacity within the city for future residential development at a range of housing densities.

The next sections of this appendix provide information on the characteristics of Seattle's population and households. This includes data on the extent of housing cost burdens and other indicators of housing-related needs experienced by Seattle's extremely-low, very-low, and low-income households. Information is also presented on Seattle's special needs populations, including homeless persons. Information on disparities in housing cost burdens and homelessness by race and ethnicity is presented in order to support planning consistent with the City's Race and Social Justice Initiative (RSJI) and the Seattle Comprehensive Plan core value of social equity.

Subsequent sections in this appendix describe recent growth and characteristics of Seattle's existing housing market, and present information on the affordability of the existing rental and owner housing supply. An analysis is included on the gaps between existing housing need and the amount of rental housing affordable and available at low income levels. Projections are then provided on the amount of housing needed to accommodate growth by income level.

Sections near the end of the appendix describe the City's strategies for addressing affordable housing, inventory rent- and income-restricted housing within Seattle, and provide rough projections for continued production of income and rent-restricted housing. The Housing Appendix concludes with a summary of key findings on existing and projected affordable Housing Needs.

Data Sources

Findings presented in this appendix regarding housing supply and housing needs in Seattle are based on a variety of data sources. One of the main sources used is the “CHAS” special tabulation of American Community Survey (ACS) prepared by the U.S. Census Bureau for the U.S. Department of Housing and Urban Development (HUD), otherwise known as the Consolidated Housing Affordability Strategy (CHAS) data.

Certain aspects of the ACS CHAS data are important to note. As sample-based estimates, the ACS CHAS estimates carry margins of error. These margins of error can be substantial, particularly for small groups of households. Margins of error are not reported on the ACS CHAS tabulations. To provide reasonably reliable statistics at the local level, HUD obtains CHAS tabulations based on ACS data pooled over a period of five years.

The 5-year CHAS estimates from the 2006-2010 American Community Survey (ACS) provide the main data source for analyses in this appendix regarding household income, housing cost burden, and affordability of Seattle’s housing supply. These were the most recent CHAS data available at the time the analysis for this appendix began. The CHAS data, like other ACS data, do not distinguish whether housing units are income- and rent-restricted.

Other key sources of data reported and analyzed in this appendix include the following.

- Standard tabulations of Decennial Census and American Community Survey (ACS) published by the U.S. Census Bureau.
- Rental market data from Dupre+Scott Apartment Advisors, Inc. and home sales data from the Northwest Multiple Listing Service.
- Department of Planning and Development’s permit database and development capacity model provide information on recent housing growth and estimated capacity for additional residential growth under current zoning.
- Seattle’s Consolidated Plan for Housing and Community Development.
- Information from the Office of Housing on income- and rent-restricted housing.

Data reported from these sources vary with respect to time periods covered due to availability and other considerations.

Housing Needed to Accommodate Growth

The King County Countywide Planning Policies, which are prepared by the Growth Management Planning Council and ratified by local jurisdictions in the county, provide cities in the county with a common set of policies and guidelines for developing local comprehensive plans. The CPPs also facilitate coordinated planning for growth through a collaborative process to allocate expected housing and employment growth to local jurisdictions within the county.

Every five years, the Washington state Office of Financial Management (OFM) provides forecasts of population growth for each county. (In King County, the population forecast is converted to housing units because local governments can more reliably track housing units on a frequent basis.) In 2010, the Countywide Planning Policies were updated to include new 25-year housing and employment growth allocations for all jurisdictions in the county. For Seattle, the 25-year housing growth allocation was 86,000 housing units.

Compared with the previous growth estimates, the updated estimates in the CPPs reflect greater residential growth rates in the county as a whole as forecast by OFM. The allocation of 20-year growth estimates was also based on the Puget Sound Regional Council's regional growth strategy, which emphasizes growth in "Metropolitan Cities," which in King County comprise the cities of Seattle and Bellevue. The allocation was further informed by other factors such as demographic and development trends, zoned capacity, and local policy and market factors.

To correspond with the 20-year planning period in Seattle's Comprehensive Plan, the City of Seattle translated the 25-year housing and employment growth allocations for Seattle into a 20-year growth estimate of 70,000 housing units. The amount of housing needed to satisfy affordability needs for low-income households is discussed later in the appendix. The 20-year estimate for employment growth in Seattle during the Comprehensive Planning period is 115,000 jobs. (These 20-year growth estimates are for net increases in the numbers of housing units and jobs.)

B Residential Capacity

The City's Department of Planning & Development (DPD) maintains a development capacity model to estimate the amount of development that could be added within Seattle under current land use zoning and given certain assumptions about likelihood of redevelopment and ultimate development densities achievable in these zones. The City uses development capacity estimates to inform regional and countywide growth planning and to determine potential outcomes of planning efforts conducted for areas of the city.

Housing Figure A-1 contains residential estimates generated from DPD's Development Capacity Model. This figure shows the amount of residential development capacity for Seattle as a whole, and also shows

how these estimates are distributed by major zoning classification within the city, and by areas inside and outside the city's urban centers and villages.

Overall, Seattle has under current zoning the development capacity to accommodate 220,000 additional housing units, which provides ample development capacity for accommodating the City's residential growth estimate of 70,000 units between 2015 and 2035. Together, the city's mixed-use and residential zones are intended to provide Seattle with development capacity to accommodate a wide range of housing types in a spectrum of densities.

About 75 percent of Seattle's capacity for the development of additional housing units is in zones that allow a mix of residential and commercial uses. Land zoned Commercial or Neighborhood Commercial accounts for 60 percent of the city's total residential development capacity. Downtown zones account for another 15 percent of total residential development capacity.

The remaining 25 percent of Seattle's residential development capacity is in residential zones, with 20 percent of the total in zones allowing multifamily structures and 5 percent of the city's residential development capacity in single-family zones.

The number of units that the development capacity model estimates could be built with current zoning totals 220,000, which is more than two-thirds the number of housing units that currently exist in the city. The large amount of development capacity provided by Seattle zoning is consistent with Seattle's role as a metropolitan city in the Puget Sound Regional Growth Strategy.

Housing Figure A-1 also shows capacity estimates for land within individual urban centers and hub urban villages and within residential urban villages in aggregate. More than three-quarters (77 percent) of the development capacity for new housing is found within the city's urban centers and villages, consistent with the policies in the Comprehensive Plan to concentrate development within those areas.

About 43 percent of the city's overall residential development capacity is within urban centers, with Downtown having the largest share of the city's six urban centers. Hub urban villages contribute about 16 percent of Seattle's total residential development capacity, and residential urban villages contribute about 18 percent.

Housing Figure A-1
Seattle Residential Development Capacity Model Estimates

	Existing Single-Family Housing Units*	Existing Multifamily Housing Units*	Total Existing Housing Units*	Residential Development Capacity (Housing Units)**	Share of City's Total Residential Growth Capacity
TOTAL:	133,982	174,075	308,057	223,713	100.0%
By zoning classification					
Single-Family	125,164	9,383	134,547	10,959	4.9%
Lowrise 1	2,931	9,382	12,313	4,791	2.1%
Lowrise 2	2,575	19,873	22,448	8,547	3.8%
Lowrise 3	1,753	52,693	54,446	14,397	6.4%
Midrise	216	16,766	16,982	10,328	4.6%
Highrise	0	5,326	5,326	8,740	3.9%
Neighborhood Commercial	522	26,903	27,425	66,872	29.9%
Commercial	302	13,012	13,314	65,567	29.3%
Downtown	327	18,532	18,859	33,512	15.0%
Master Planned Community	0	561	561	0	0.0%
Major Institution	46	1,386	1,432	0	0.0%
Industrial	146	258	404	0	0.0%
By location inside or outside of Seattle's Urban Center and Villages					
Urban Centers:	1,007	64,405	65,412	96,862	43.3%
Downtown	327	18,532	18,859	33,512	15.0%
First Hill/Capitol Hill	370	26,265	26,635	19,009	8.5%
Northgate	31	4,346	4,377	10,966	4.9%

	Existing Single-Family Housing Units*	Existing Multifamily Housing Units*	Total Existing Housing Units*	Residential Development Capacity (Housing Units)**	Share of City's Total Residential Growth Capacity
South Lake Union	0	2,692	2,692	20,277	9.1%
Uptown	39	5,917	5,956	4,165	1.9%
University	240	6,653	6,893	8,933	4.0%
Hub Urban Villages:	1,877	19,009	20,886	36,227	16.2%
Ballard	515	6,653	7,168	5,314	2.4%
Bitter Lake Village	89	2,970	3,059	10,521	4.7%
Lake City	34	2,277	2,311	4,282	1.9%
North Rainier	720	1,748	2,468	9,276	4.1%
West Seattle Junction	326	2,994	3,320	5,157	2.3%
Residential Urban Villages (in aggregate)	8,556	29,821	38,377	39,386	17.6%
Manuf. Industrial Centers	136	209	345	31	0.0%
Outside Villages	122,406	60,631	183,037	51,207	22.9%
Sources: Seattle City Department of Planning & Development, Development Capacity Model (Model Run Date: January 2014).					
* Existing housing units from King County Assessor's database, January 2014. (Yields somewhat lower estimates than other sources.)					
** These are adjusted residential capacity estimates from the model: in all mixed-use zones, commercial, neighborhood commercial and most downtown zones, all future development is considered mixed-use with the mix of residential and other uses varying by zone based on completed projects from 1995-2005.					

C Broad Trends in Seattle's Population and Households

This section contains a summary of recent trends in the basic characteristics of Seattle's population and households.

This summary uses estimates from the 2000 and 2010 decennial censuses and the most recent three-year tabulation of American Community Survey (ACS) data, which is from 2011 to 2013. This summary is

intended to provide broad context for the more detailed analysis of household characteristics and housing needs provided in subsequent sections of the appendix.

Seattle has seen substantial growth in population, households, and housing units since the 2010 Census. The Washington State Office of Financial Management (OFM) produces official population estimates for cities and counties on an annual basis. As of April 2014, OFM estimates that Seattle contained approximately 640,500 residents, 302,100 households, and 323,400 housing units.

Population Characteristics

Seattle has the largest population of cities in King County and the broader Seattle-Tacoma-Bellevue Metro Area. Seattle is the 23rd most populous city in the U.S. The 2010 Census counted Seattle's population at 608,660. From 2000 to 2010, Seattle's population grew by 8 percent.

The 2010 Census results showed that more than a third (33.7 percent) of Seattle residents are persons of color, up from 32.1 percent in 2000.¹ The three-year estimates from the 2011-2013 ACS indicate that the number and share of Seattle's population who are persons of color has continued to increase. However, decennial census and the recent ACS estimates show that the increase in the population of color has occurred much more slowly in Seattle than in the balance of King County. (See Housing Figure A-2.)

Between 2000 and 2010, the number of people of color declined in many of the census tracts located in the central and southeast portions of Seattle.

The 2010 Census indicates that children under 18 make up roughly 15 percent of the city's population. Between 2000 Census and 2010, the number of children in Seattle increased, but at a pace slightly slower than the overall population growth rate. However, the number of young children (under age 5) increased much more quickly.

Families with children are substantially underrepresented in Seattle compared with the balance of King County. Recent data indicate that this is starting to change, but trends differ greatly by race. Recent increases in Seattle's population of children have mainly been from the growing numbers of white, non-Hispanic children living in the city. In the balance of King County, increases in the child population have, in contrast, been driven by a rapid rise in the number of children of color.

¹ The Census collects information on Hispanic/Latino ethnicity in a separate question from race. "Persons of color" encompass Hispanics and Latinos of any race as well as persons who are any race other than White alone.

Housing Figure A-2
Growth in Total Population and Population Under 18
Including Detail for the Population of Color and for the White, Non-Hispanic Population

Growth in Total Population and Population Under 18				
Including Detail for the Population of Color and for the White, Non-Hispanic Population				
	Seattle		Remainder of King County	
	2000 to 2010	2010 to 2011-2013 ACS	2000 to 2010	2010 to 2011-2013 ACS
Total population	8.0%	4.5%	12.7%	3.7%
Population of color	13.4%	5.4%	69.0%	8.4%
White, not-Hispanic population	5.5%	4.1%	-5.0%	1.1%
Population under 18 years of age	6.5%	7.4%	5.7%	1.5%
Population of color under 18	2.1%	3.2%	63.8%	6.7%
White, non-Hispanic pop. under 18	10.7%	11.2%	-19.9%	-3.2%
Sources: Census 2000 and 2010 estimates; 2011-2013 American Community (ACS) 3-year period estimates.				

The 2010 Census indicates that young adults (i.e., adults between 18 and 34 years of age) comprise about one-third of Seattle's population.

The 2010 Census found that seniors (persons age 65 and over) comprise about 11 percent of Seattle's population. The number of seniors in Seattle, as well as the percentage share of the city's population who are seniors, declined between 2000 and 2010. However, the 2011-2013 ACS estimates suggest that the number of seniors in the city is starting to increase as individuals in the baby boom generation begin reaching their senior years.

Household Characteristics

The 2010 Census tallied 283,510 households in Seattle. This represents an increase of roughly 25,000 households, or 9.7 percent, since the 2000 Census.

Between 2000 and 2010, the average number of persons per household in Seattle declined from 2.08 to 2.06. This slight decline reflects the continuation, but marked slowing, of a long-term trend toward smaller household sizes both locally and nationally.²

The 2010 Census found that about 43 percent of households in Seattle are family households, less than half of which are families with children. About 19 percent of Seattle's households are families with related children.³ The majority (57 percent) of Seattle's households are non-family households, and most of these non-family households are persons living alone. In 2010, one-person households comprised 41 percent of Seattle's total households. The increasing number of one-person households has been a key driver contributing to the broader decline in the city's household size.

In Seattle, renter households outnumber households who own their home. Of Seattle households counted in the 2010 Census, 51.9 percent were renter households and 48.1 percent were owner households. The trend in recent decades has been one of gradually declining homeownership rates.⁴ The most recent three-year American Community Survey estimates show that the share of Seattle households who rent has continued to increase: per the 2011-2013 ACS, approximately 54 percent of Seattle's households rent. The share of households in Seattle who are renters is likely to increase as multifamily housing units (which are more commonly renter-occupied than owner-occupied) continue to increase as a share of the city's housing stock.

Population in Group Quarters

The 2010 Census found that one in twenty Seattle residents lived in group quarters such as college/university student housing (with about 11,800 persons), nursing facilities (2,600 persons), and correctional facilities (2,000 persons).

² The most recent three-year period estimates available from the Census Bureau's American Community Survey indicate that the average household size in Seattle is now about 2.12 persons, which is higher than the household size in 2010. The recent increase in Seattle's household size reflects a decrease in the rate of household formation that occurred in the U.S. as a whole in the wake of the recent recession. It is likely that the increase in household size will be temporary.

³ These figures on family households with children refer to households in which there is at least one child under 18 years of age who is related to the householder.

⁴ Annual estimates from the Census Bureau's American Community Survey indicate that the downward trend in homeownership rates was interrupted temporarily during the housing bubble that occurred in the later half the last decade. However, estimated homeownership rates in the city began to decline toward the end of the decade after the housing bubble burst and the effects of the recent recession took hold.

D Analysis of Key Household Characteristics

The CHAS special tabulations provide local communities with a set of ACS data specially designed to facilitate the analysis of housing needs. The analysis provided below is based CHAS data from ACS surveys conducted over course of five years between 2006 and 2010.

The 2006-2010 CHAS data reflect an estimated 280,470 total households in Seattle. The household totals in the CHAS estimates are lower than currently exist in Seattle. Today, Seattle contains more than 300,000 households.⁵

Tenure refers to whether a household owns or rents the housing unit in which they live. As indicated in Housing Figure A-3, approximately 51 percent of households in the 2006-2010 CHAS estimates rent. It is important to view these estimates in the context of the period in which they were collected. The 2006-2010 CHAS estimates include the housing boom in the mid-2000s, the Great Recession, and the steep downturn in the housing market in the wake of that recession. As noted in the previous section of the appendix, the share of Seattle households who rent is now closer to 54 percent.

Housing Figure A-3
Total Households and Household by Tenure, Seattle

Total households	280,470	100.0%
Owner households	137,090	48.9%
Renter households	143,380	51.1%
Source: American Community Survey (ACS) 2006-2010 5 Year Estimates, Comprehensive Housing Affordability Strategy (CHAS) Special Tabulation produced by the U.S. Census Bureau for the Department of Housing and Urban Development. Notes: CHAS estimates, like other estimates from the ACS, are sample estimates and carry margins of error.		

Income Distribution

There is a wide distribution of incomes among Seattle households as shown in the pie chart in Housing Figure A-4.

⁵ The previous section of the appendix summarizes more recent data available from other sources. The state Office of Financial Management estimates that Seattle contained 302,100 as of April 2014.

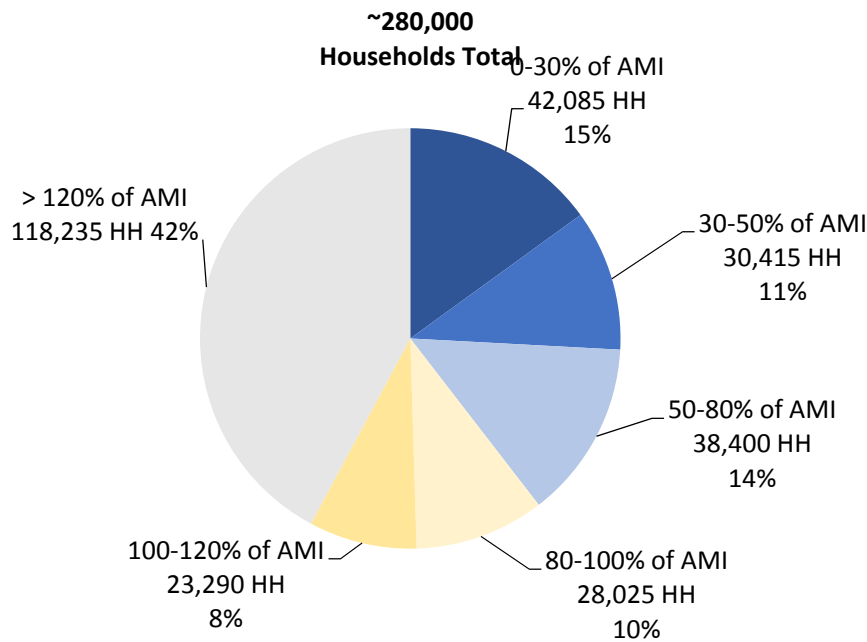
Households with incomes below 80 percent of AMI comprise almost 40 percent of total households in Seattle.

About 26 percent of all Seattle households fall below 50 percent of AMI.

Households in the middle income categories above 80 percent of AMI and up to 120 percent of AMI comprise about 18 percent of Seattle households.

Roughly 42 percent of households in Seattle have incomes above 120 percent of AMI.

Housing Figure A-4
Seattle Households by Household Income Category



Source: CHAS special tabulation of ACS 2006-2010 5-year estimates.

Notes: CHAS estimates, like other estimates from the ACS, are sample estimates and carry margins of error. Income ranges are expressed as a percentage of Area Median Income (AMI), calculated based on the annual median income for a family of four for the Seattle area, as published by HUD, with adjustments according to household size.

The distribution of household incomes varies a great deal by tenure. Compared with owner households, renter households are much more likely to have incomes lower than 80 percent of AMI. A majority of renter households, but only about 1 in 5 owner households, are in the extremely low- to low-income categories. About 40 percent of renter households have incomes of no higher than 50 percent of AMI, in contrast with an 11 percent share of owner households.

Households with Unaffordable Housing Cost Burdens

A broadly used standard for housing affordability regards housing costs that consume up to 30 percent of a household's income to be affordable. This standard evolved as a general indicator of the share of income that a household can spend on housing and still have enough income left over for other essentials such as food, clothing, and transportation.

Based on the 30 percent standard, the U.S. Department of Housing and Urban Development considers households to be cost-burdened if they spend more than 30 percent of their household income on housing costs, and severely cost burdened if they spend more than 50 percent of their household income on housing costs. (This appendix refers to households as “moderately” cost burdened if the households spend more than 30 percent but not more than 50 percent of their income on housing.) Approximately 38 percent of all households in Seattle, or roughly 105,000 households, are cost burdened at either a moderate or a severe level. About 21 percent of all Seattle households are “moderately” cost-burdened. Approximately 47,000 households, or 17 percent of all Seattle households, are severely cost-burdened.

Cost Burdens by Tenure and Household Income

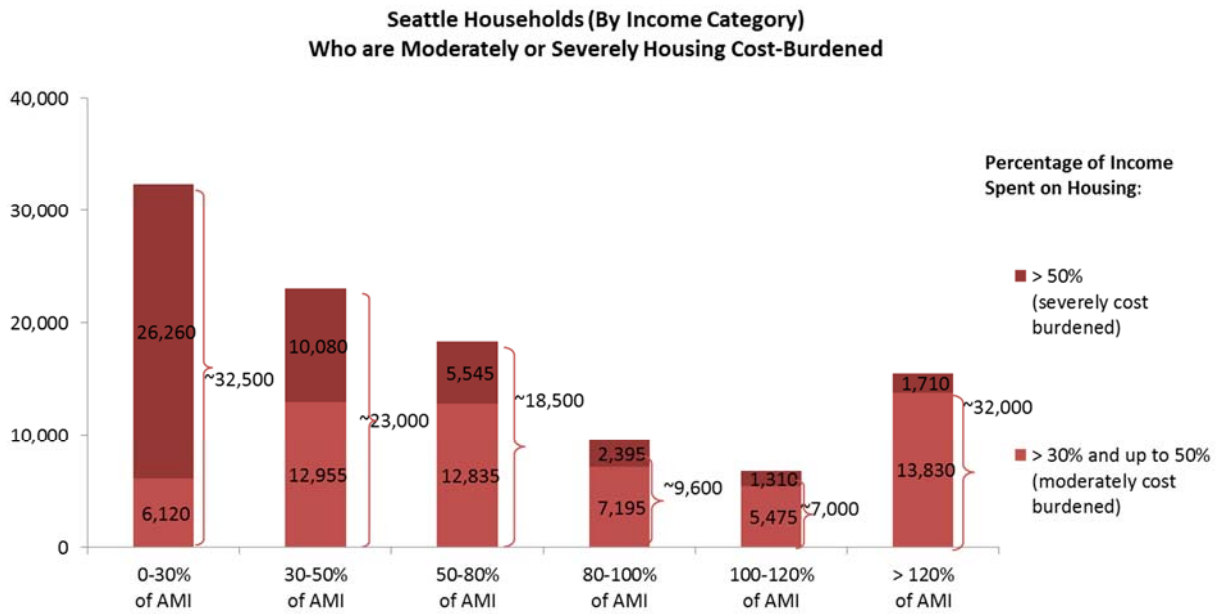
Renter households are more likely than owner households to be burdened by housing costs they cannot afford.

- About 42 percent of renter households are cost burdened.
- A lower but still sizable 33 percent share of owner households are also cost burdened.

The greater prevalence of cost burdens among renter households is primarily due to the higher prevalence of severe burdens among these households: roughly 21 percent of renter households, compared to 13 percent of owner households, are severely cost burdened.

Housing Figure A-5 shows that more than three-quarters of households in both the extremely low-income and very low-income categories spend more than 30 percent of income on housing and that more than 60 percent of households with extremely low incomes spend more than half of their income on housing.

Housing Figure A-5 Seattle Households (by Income Category)



Source: 2006-2010 5-Year Estimates from the American Community Survey CHAS Dataset.

Housing Figure A-6 provides additional detail on the prevalence of cost burdens by tenure and household income category.

Housing Figure A-6 Housing Costs as a Percentage of Household (HH) Income with Detail by Tenure and Income Category, Seattle

	0-30% of AMI	30-50% of AMI	50-80% of AMI	80-100% of AMI	100-120% of AMI	>120% of AMI	TOTAL
Estimated numbers of owner-households with housing costs who are:	7,265	8,400	12,585	11,390	11,580	85,855	137,090
up to 30% of HH income (not cost burdened)	780	2,830	5,130	5,355	6,150	71,165	91,420
not computed (no/negative income)	570	-	-	-	-	-	570
>30% of HH income (total cost burdened):	5,915	5,570	7,455	6,035	5,430	14,690	45,100

	0-30% of AMI	30-50% of AMI	50-80% of AMI	80-100% of AMI	100- 120% of AMI	>120% of AMI	TOTAL
>50% of HH income (severely cost burdened)	4,865	3,840	3,795	2,055	1,270	1,600	17,425
30-50% of HH income (moderately cost burdened)	1,050	1,730	3,660	3,980	4,160	13,090	27,675
Estimated percent of owner households with housing costs who are:							
up to 30% of HH income (not cost burdened)	10.7%	33.7%	40.8%	47.0%	53.1%	82.9%	66.7%
not computed (no/negative income)	7.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
>30% of HH income (total cost burdened):	81.4%	66.3%	59.2%	53.0%	46.9%	17.1%	32.9%
>50% of HH income (severely cost burdened)	67.0%	45.7%	30.2%	18.0%	11.0%	1.9%	12.7%
30-50% of HH income (moderately cost burdened)	14.5%	20.6%	29.1%	34.9%	35.9%	15.2%	20.2%
Estimated number of renter households with housing costs who are:							
up to 30% of HH income (not cost burdened)	6,000	4,550	14,890	13,080	10,355	31,530	80,410
not computed (no/negative income)	2,355	-	-	-	-	-	2,360
>30% of HH income (total cost burdened):	26,465	17,465	10,925	3,555	1,355	850	60,610
>50% of HH income (severely cost burdened)	21,395	6,240	1,750	340	40	110	29,875
30-50% of HH income (moderately cost burdened)	5,070	11,225	9,175	3,215	1,315	740	30,735
Estimated percent of renter households with housing costs who are:							
up to 30% of HH income (not cost burdened)	17.2%	20.7%	57.7%	78.6%	88.4%	97.4%	56.1%

	0-30% of AMI	30-50% of AMI	50-80% of AMI	80-100% of AMI	100- 120% of AMI	>120% of AMI	TOTAL
not computed (no/negative income)	6.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%
>30% of HH income (total cost burdened):	76.0%	79.3%	42.3%	21.4%	11.6%	2.6%	42.3%
>50% of HH income (severely cost burdened)	61.4%	28.3%	6.8%	2.0%	0.3%	0.3%	20.8%
30-50% of HH income (moderately cost burdened)	14.6%	51.0%	35.5%	19.3%	11.2%	2.3%	21.4%

Source: CHAS special tabulation of ACS 2006-2010 5-year estimates.

Notes: CHAS estimates, like other estimates from the ACS, are sample estimates and carry margins of error. Margins of error associated with ACS estimates may be substantial especially for small population and household groups.

Household Characteristics by Race and Ethnicity

Shortly after taking office, Mayor Murray issued Executive Order 2014-02 to reaffirm and further detail the City's commitment to RSJI. This executive order declared that the City will incorporate a racial equity lens in citywide initiatives including those to those related to affordable housing and planning for equitable growth and development.

Data are presented and in the following pages to identify the extent of disparities in housing needs and opportunities by race and ethnicity. Consideration of these disparities is vital to informing planning for housing consistent with RSJI.

Tenure by Race and Ethnicity

While a slight majority (53 percent) of White, non-Hispanic households own their homes, most households of color⁶ (63 percent) are renters. The share of Asian households who rent is only slightly more than half, but renting is much more prevalent for households in which the householder is Hispanic or Latino, Native American, Pacific Islander, or Black or African American. Close to or more than 70 percent of these households rent.

⁶ Households of color are households in which the householder is of Hispanic origin or a race other than White alone. (The Census Bureau considers race and ethnicity to be separate concepts and tabulates Hispanic origin separately from race. The Bureau tabulates race and ethnicity of households based on the characteristics of the householder. This does not imply that all household members are of the same race/ethnicity as the householder.)

Household Income Distribution by Race and Ethnicity

Seattle’s households of color are disproportionately likely to have incomes that are extremely low or very low, a pattern that applies not only to households of color overall, but also to each of the individual racial and ethnic groups of color for which the CHAS data are tabulated.

- Households of color, as a group, are twice as likely as White, non-Hispanic households to have a household income that is extremely low: about 24 percent of households of color compared to 12 percent of White, non-Hispanic households. Furthermore, about 16 percent of households of color compared to 13 percent of White, non-Hispanic households have very low incomes.
- Over half of Black households have incomes no higher than 50 percent of AMI: about 35 percent of Black households have extremely low incomes, and 17 percent have very low incomes.
- Having an extremely low or very low income is almost as common for Native American households and Pacific Islander households: over 40 percent of households in each of these groups have incomes at or below 50 percent of AMI.

Racial and ethnic disparities in income levels exist for both renters and owners. Disparately low incomes are especially evident for Black or African American households—both renter and owner, and for Asian renter households. (See Housing Figure A-7.)

Housing Figure A-7
Household Income Distribution by Race and Ethnicity of Householder by Tenure, Seattle

	Broad Categories		Specific Racial and Ethnic Groups of Color				Totals
	White alone, not Hispanic	Of Color	Asian alone, not Hispanic	Black or African-American	Other (incl. Native American, Pacific Islander, and multiple race)	Hispanic or Latino, any race	
Total owner households	109,100	28,015	14,995	5,900	3,870	3,250	137,115
Owner Household Income Percent of HUD Area Median Family Income							
less than or equal to 30%	5%	7%	6%	12%	6%	4%	5%

	Broad Categories		Specific Racial and Ethnic Groups of Color				Totals
	White alone, not Hispanic	Of Color	Asian alone, not Hispanic	Black or African-American	Other (incl. Native American, Pacific Islander, and multiple race)	Hispanic or Latino, any race	
greater than 30% but less than or equal to 50%	6%	9%	7%	12%	6%	11%	6%
greater than 50% but less than or equal to 80%	8%	13%	14%	15%	9%	10%	9%
greater than 80% but less than or equal to 100%	8%	11%	11%	12%	10%	8%	8%
greater than 100%	74%	61%	62%	49%	68%	67%	71%
% of HUD Area Median Family Income—Cumulative							
less than or equal to 50%	10%	15%	13%	24%	13%	15%	11%
less than or equal to 80%	19%	29%	27%	39%	22%	25%	21%
Total renter households	95,575	47,785	16,975	13,390	7,570	9,850	143,360
Renter Household Income % of HUD Area Median Family Income							
less than or equal to 30%	19%	34%	36%	45%	25%	23%	15%
greater than 30% but less than or equal to 50%	14%	18%	16%	19%	18%	18%	18%
greater than 50% but less than or equal to 80%	18%	17%	16%	14%	22%	21%	12%
greater than 80% but less than or equal to 100%	13%	9%	8%	7%	12%	13%	31%
greater than 100%	36%	21%	23%	15%	23%	24%	24%

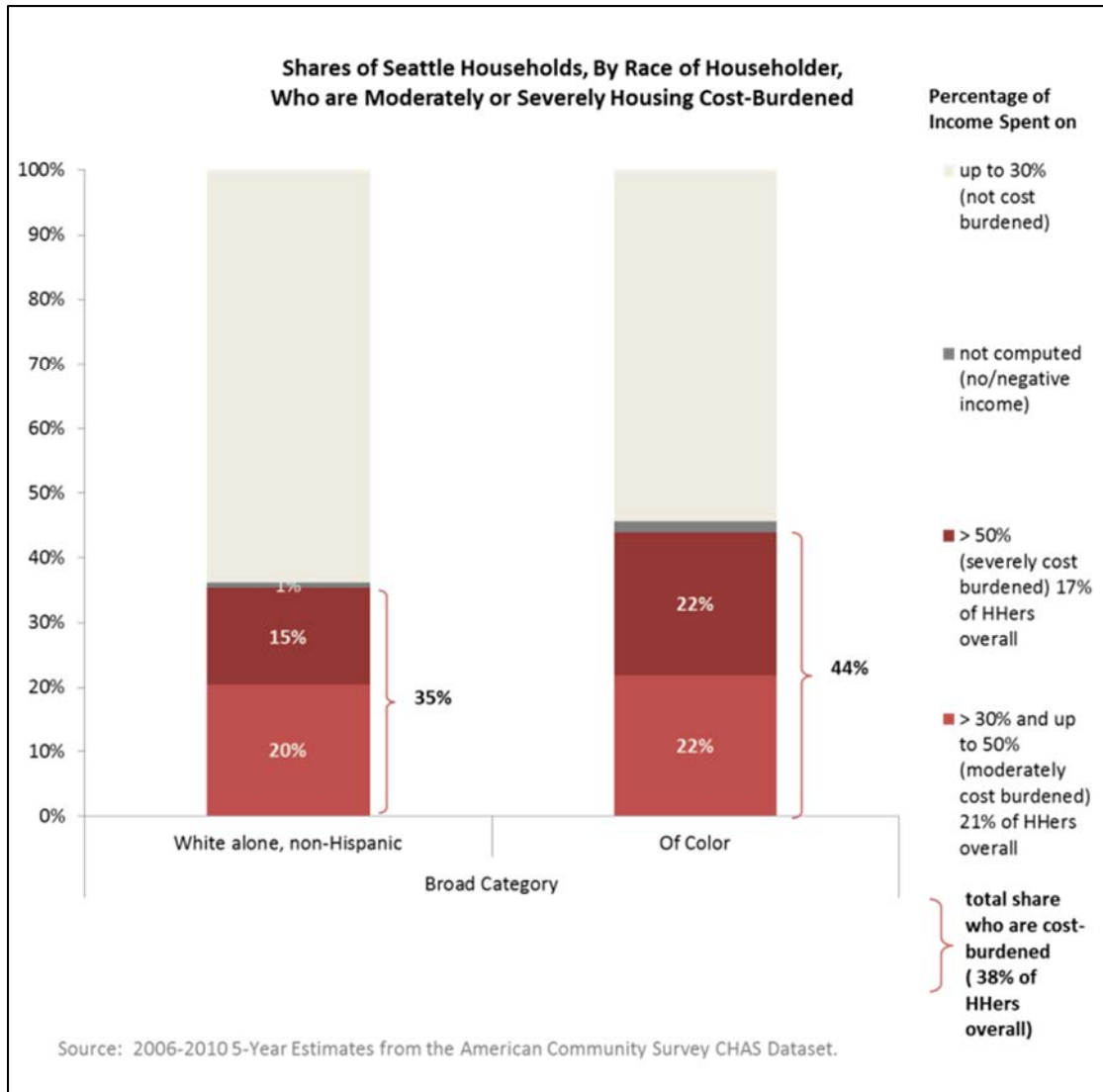
	Broad Categories		Specific Racial and Ethnic Groups of Color				Totals
	White alone, not Hispanic	Of Color	Asian alone, not Hispanic	Black or African-American	Other (incl. Native American, Pacific Islander, and multiple race)	Hispanic or Latino, any race	
% of HUD Area Median Family Income—Cumulative							
less than or equal to 50%	33%	52%	53%	65%	42%	42%	33%
less than or equal to 80%	52%	70%	69%	79%	65%	63%	45%
Source: CHAS special tabulation of ACS 2006-2010 5-year estimates.							
Notes: CHAS estimates, like other estimates from the ACS, are sample estimates and carry margins of error. Margins of error associated with ACS estimates may be substantial especially for small population and household groups. Households of color have a householder who is of Hispanic origin or a race other than White alone. Due to their small numbers, Native American and Pacific Islander households are included in the “other” category.							

Prevalence of Housing Cost Burdens by Race and Ethnicity

Unaffordable housing cost burdens fall disproportionately on households of color. This is the case among both owners and renters. Housing Figure A-8 provides additional detail.

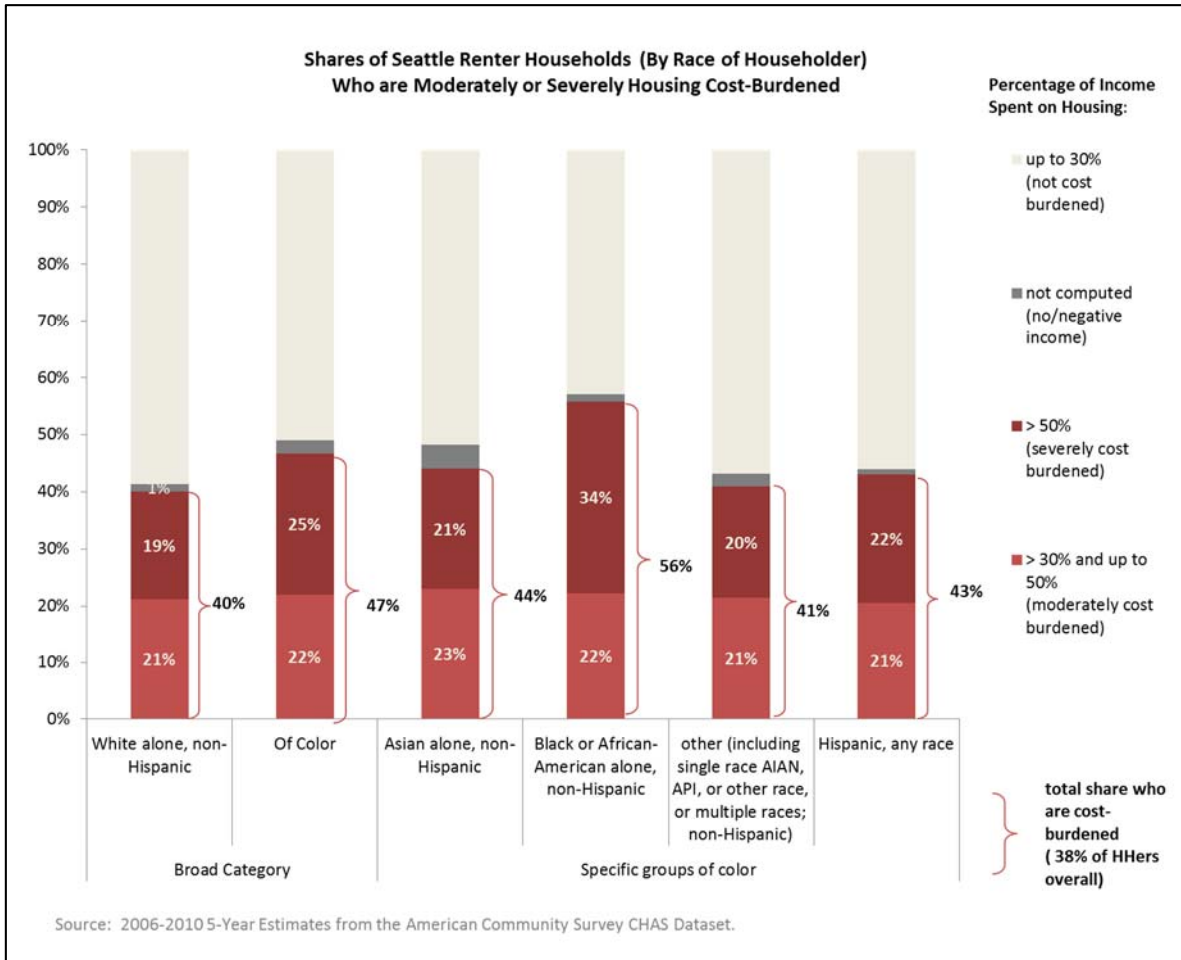
- Overall, as shown in Housing Figure A-8, about 44 percent of households of color are moderately or severely cost-burdened compared with 35 percent of White, non-Hispanic households. About 22 percent of householders of color are severely cost burdened, compared to roughly 15 percent of White, non-Hispanic households.
- Among most racial and ethnic groups analyzed, cost burdens are more common for renter households than owner households. Data for Hispanic households suggest a potential exception to this pattern.
- Overall, about 47 percent of renter households of color are burdened by unaffordable housing costs compared with 40 percent of White, non-Hispanic renter households.

Housing Figure A-8
Shares of Seattle Households



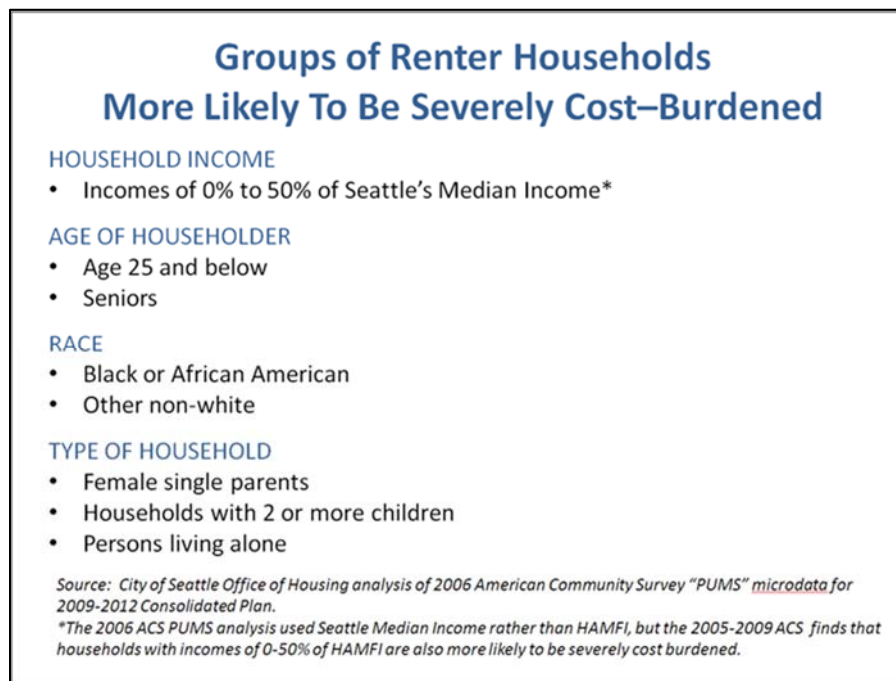
Housing Figure A-9 shows that rates of cost burden vary among renter households by race and ethnicity.

Housing Figure A-9
Shares of Seattle Renter Households (By Race of Householder)



A separate and earlier analysis performed for the 2009-2012 Consolidated Plan for Housing and Community Development used 2006 ACS micro data to identify the characteristics of households who were more likely to be severely cost burdened. Highlights are summarized in Housing Figure A-10.

Housing Figure A-10 Groups of Renter Households More Likely to be Severely Cost-Burdened



Maps Showing Selected Household Characteristics

HUD’s Community Planning and Development (CPD) Office provides an online set of mapping tools for analyzing housing needs at the local and neighborhood level. Screenshots of selected “CPD Maps” for Census Tracts in and around Seattle are included in this appendix. Maps showing household characteristics are on pages 21 to 23 and maps about the affordability of the housing supply are on pages 39 to 41.

The shading for the CPD maps in this appendix was generated using the default “natural breaks” setting for highlighting variation within a region. The resulting data ranges are different from one map to the other and are shown in the legend accompanying each map.

These maps are based on the ACS CHAS data collected from 2007 to 2011, which is a slightly later time-period than other ACS CHAS data analyzed in this appendix.⁷

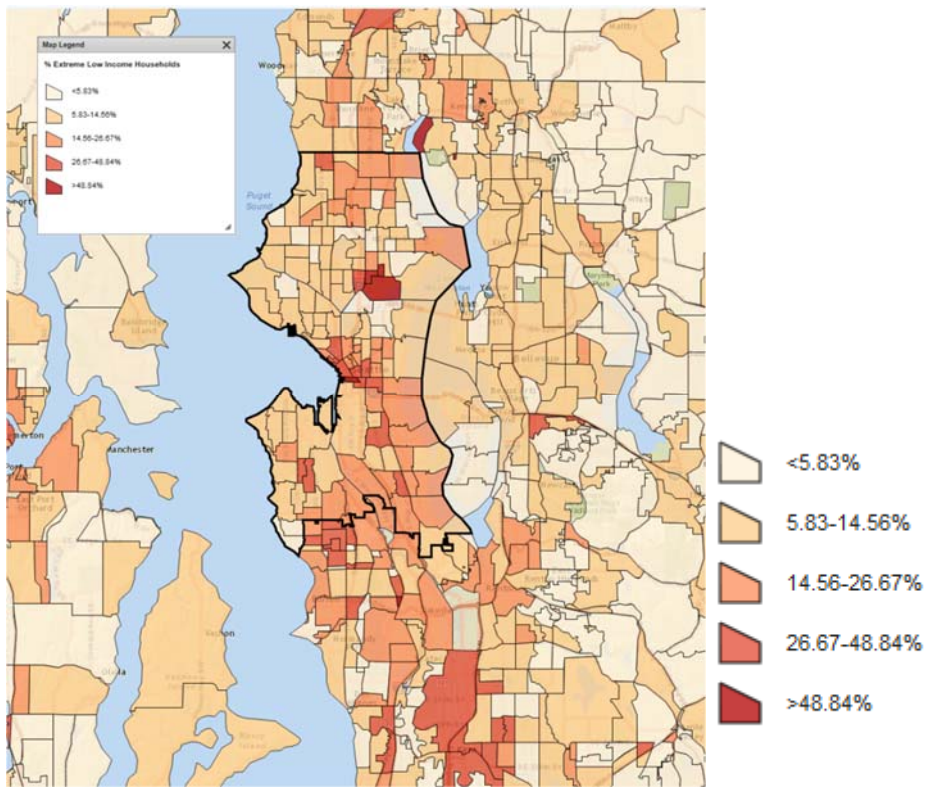
⁷ The interactive CPD mapping tool is online at <http://egis.hud.gov/cpdmaps/>. More information about the tool and the data that populate the maps is available in the [CPD Maps Desk Guide](#).

Shares of Households by Income Category

The trio of maps (Housing Figures A-11, A-12, and A-13) that follow show estimated shares of households in Census Tracts who have incomes equal to or below three AMI-based income thresholds: 30 percent of AMI, 50 percent of AMI, and 80 percent of AMI (As elsewhere in this appendix, AMI is adjusted by household size and other factors and is synonymous with HUD's Area Median Family income.)

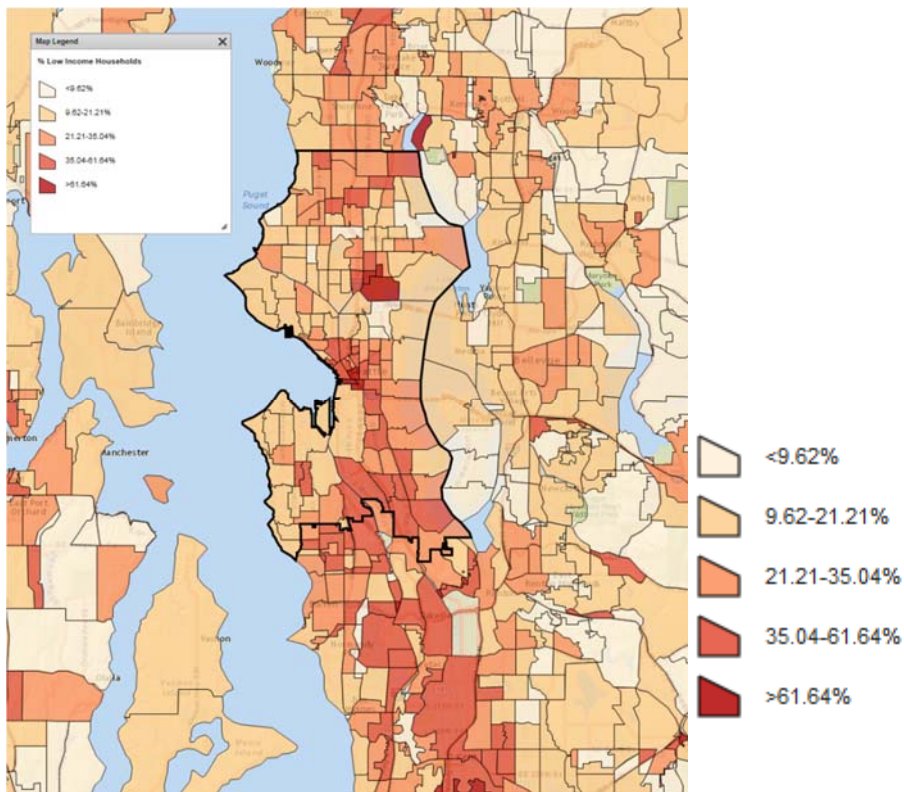
These maps reveal a great deal of variation between Census Tracts. In Seattle, the shares of households who have low incomes tend to be largest in and around Seattle's Downtown, the University District, and in portions of South Seattle in Delridge and along Rainier Valley. This pattern also includes neighborhoods south and slightly southeast of Seattle's city limits where more than half of the households in many census tracts have incomes below 80 percent of AMI. There are also some census tracts in North Seattle where relatively large shares of households have low incomes, i.e., in the Broadview/Bitterlake area and in a diagonal grouping of tracts that runs from the Aurora Licton Springs neighborhood through Northgate and into Lake City. Concentrations of extremely low-income households are more distinct and found in a smaller number of tracts in and around Seattle than are concentrations of households below 80 percent of AMI.

Housing Figure A-11
Share of Households with Income At or Below 30 Percent of AMI:



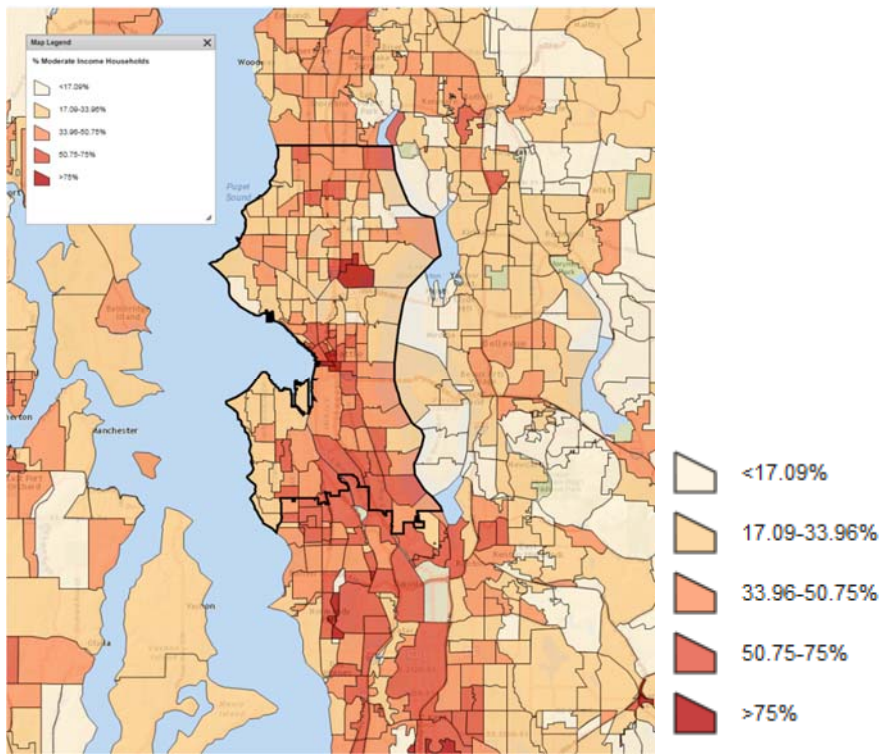
Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Housing Figure A-12
Share of Households with Income At or Below 50 Percent of AMI:



Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Housing Figure A-13
Share of Households with Income At or Below 80 Percent of AMI:

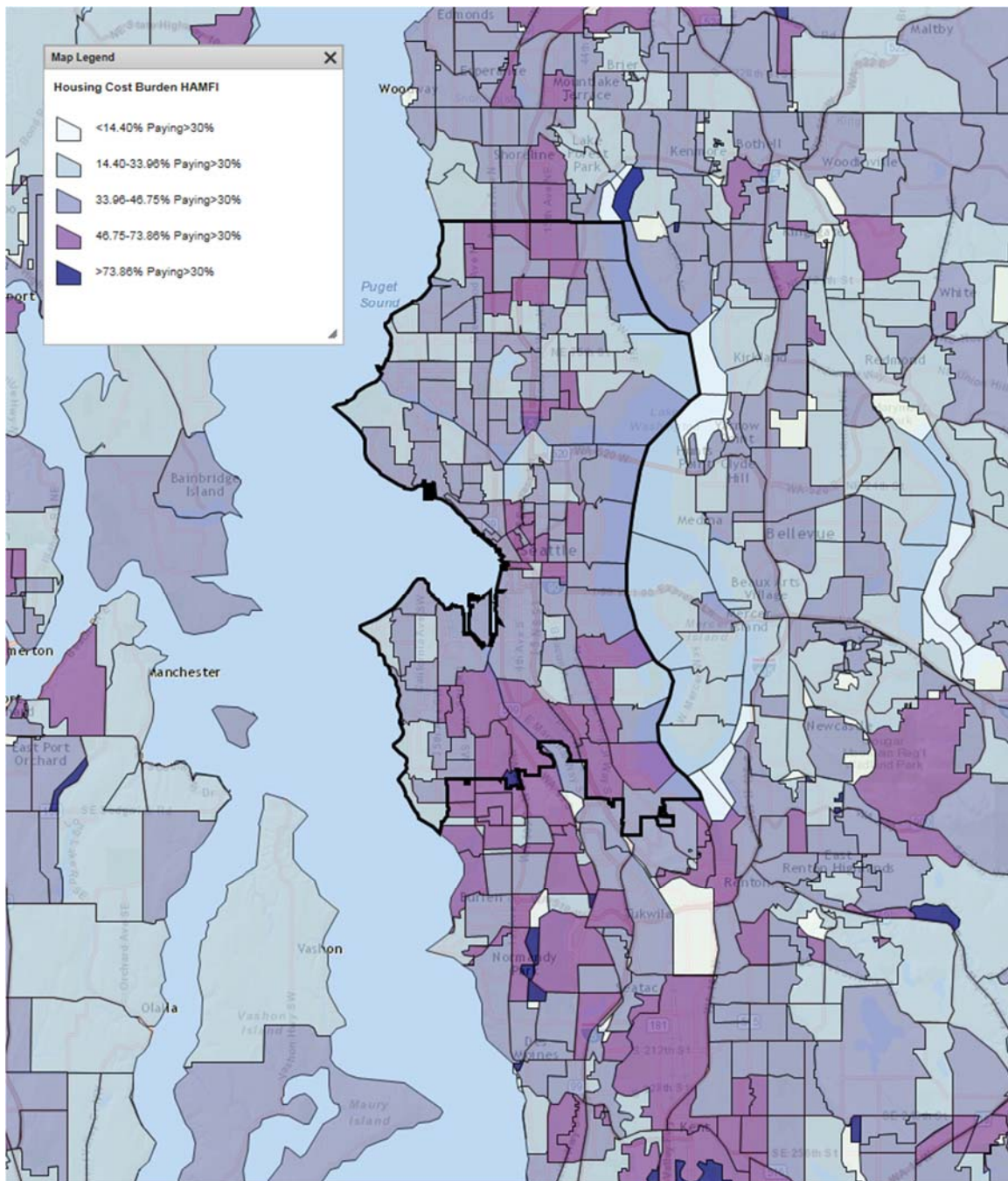


Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Prevalence of Housing Cost Burdens

Housing Figure A-14 shows the estimated percentages of households in each census tract who are shouldering monthly housing costs that are more than 30 percent of their income. Not surprisingly, high concentrations of cost-burdened households are found in many of the census tracts where there are large shares of households with low incomes.

Housing Figure A-14
Share of Households with Housing Cost Burden



Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

E Special Needs Populations

The Growth Management Act and the King County Countywide Planning Policies direct cities to address special needs populations in their Comprehensive Plan housing needs analyses.⁸

Special Needs Populations in Group Quarters

The Decennial Census includes a tabulation of the population residing in group quarters. The 2010 Census enumerated 24,925 persons living in group quarters in the city of Seattle.

Many group quarters categories are devoted to serving, or mostly serve, persons who can be broadly regarded as special needs populations. Housing Figure A-15 shows 2010 Census data for the subset of group quarters categories that have a primary function of serving special needs populations. As shown in Housing Figure A-15, this is almost 10,400 persons. About 2,800 of these persons were counted in institutional facilities, primarily in nursing facilities; and about 7,600 were counted in non-institutional facilities. A large majority of the population in nursing facilities were seniors age 65 and over.

The largest non-institutional category (2,550 persons) was in emergency and transitional shelters. A 2010 Census Special Report on the Emergency and Transitional Shelter Population found that Seattle had the seventh largest emergency and transitional shelter populations among places in the U.S. with a population of 100,000 or more. The Census counted 2,900 persons under “other non-institutional facilities.” A large portion of the persons counted in this category may be homeless.

⁸ The Puget Sound Regional Council’s Housing Element Guide (July 2014) indicates that special needs housing “refers broadly to housing accommodations for individuals with physical and mental disabilities, seniors, veterans, individuals with mental illness, individuals with chronic and acute medical conditions, individuals with chemical dependency, survivors of domestic violence, and adult, youth, and families who are homeless.”

Housing Figure A-15
Population in Special-Needs Associated Group Quarters Categories (2010 Census)

Special-Needs Associated Group Quarters Categories	Estimated Population in Seattle
Total:	10,371
Institutionalized persons:	2,823
Juvenile facilities:	115
Group homes for juveniles (non-correctional)	58
Residential treatment centers for juveniles (non-correctional)	57
Nursing facilities/Skilled-nursing facilities	2,588
Other institutional facilities:	120
Mental (Psychiatric) hospitals and psychiatric units in other hospitals	53
Hospitals with patients who have no usual home elsewhere	2
In-patient hospice facilities	65
Noninstitutionalized persons :	7,548
Other noninstitutional facilities:	7,548
Emergency and transitional shelters (with sleeping facilities) for homeless persons	2,550
Group homes intended for adults	1,387
Residential treatment centers for adults	637
Workers' group living quarters and Job Corps centers	70
Other noninstitutional facilities:	2,904
<ul style="list-style-type: none"> • Soup Kitchens • Regularly Scheduled Mobile Food Vans • Targeted Non-Sheltered Outdoor Locations • Living Quarters for Victims of Natural Disaster • Religious Group Quarters and Domestic Violence Shelters 	

Source: 2010 Decennial Census.

Homeless Persons from One Night Count and Agency Data

A homeless needs assessment is contained in Seattle's 2014-2017 Consolidated Plan for Housing and Community Development.

One night each January a count of homeless persons is conducted at locations in Seattle and elsewhere in King County in an effort to identify the extent and nature of homelessness. The One Night Count has two components: a count of unsheltered homeless, which is conducted by the Seattle/King County Coalition on Homelessness, and a count and collection by agency staff of information on people being served during that the same night in emergency shelters and transitional housing programs.

Unsheltered Homeless

Information about the unsheltered homeless from the 2014 One Night Count is shown in Housing Figure A-16. This Housing Figure A-16 summarizes the gender, age, and location of unsheltered homeless persons counted in locations within Seattle and in King County as a whole. Almost three-quarters (74 percent) of the more than 3,100 unsheltered homeless persons counted in King County were in Seattle.

Housing Figure A-16
One Night Count: Unsheltered Homeless Persons (January 2014)

	Seattle	King County as a Whole (including night owl buses)
Total	2,303	3,123
Age and gender		
Men	619	944
Women	143	213
Gender unknown	1,527	1,942
Minor (under 18)	14	24
Location		
Benches	51	56
Parking Garages	14	15
Cars/Trucks	730	993
Structures	357	409
Under roadways	228	249
Doorways	206	228
City Parks	54	88
Bushes/undergrowth	64	118
Bus stops	22	26
Alleys	43	47
Walking Around	244	302
Other	290	592

Source: Seattle/King County Coalition on Homelessness, <http://www.homelessinfo.org/onc.html>.

Sheltered Homeless

The King County Community Services Division tabulates information for the portion of the One Night Count focusing on the sheltered population. The two largest demographic segments of the sheltered homeless population in King County are 1) persons in families with children and 2) single adult men age 25 years or older. While members of families with children comprise the majority (69 percent) of the transitional housing population, single adult men are the majority (57 percent) in emergency shelters. A substantial number of persons identified as veterans. Reporting on issues such as disabilities and health conditions is voluntary. The most commonly reported disabilities and health conditions reported were mental illness, alcohol or substance abuse, and physical disability.

Additional information and analysis on Seattle's homeless is included in the Homeless Needs Assessment section in the City's [2014-2017 Consolidated Plan for Housing and Community Development](#). During the course of the 2012 Annual Homeless Assessment Report (AHAR) reporting year, Seattle shelters participating in the "Safe Harbors" system assisted more than 7,486 people in single-individual shelters (for households without children) as well as more than 1,072 people within families with one or more children.

The Consolidated Plan highlights a number of key findings regarding the characteristics of the sheltered homeless population, including:

- Over half (58 percent) of the individuals in shelters for adults without children report having a disability.
- There were more than 643 children under the age of 18 served in emergency shelters in Seattle, and over 43 percent of these were less than 5 years old.
- More than a third of the persons in transitional housing programs for families with children were in a household with five or more people.
- People of color, particularly Black/African Americans, are disproportionately represented among those who are homeless in the shelter/transitional housing system, representing 28 percent of people served in single adult emergency shelters and 71 percent of people served in family shelters.

F Seattle Housing Market

The Comprehensive Plan underwent its previous substantial update in 2004. The total number of housing units in Seattle grew by 42,870 between the beginning of 2005 and the end of 2014. Annual housing production in Seattle varied greatly over that 10-year period, influenced by broader economic trends including the 18-month Great Recession of December 2007 to June of 2009.

Within the 10 years from 2005 to 2014, an initial peak in Seattle's annual housing growth was reached in 2009 with production that year totaling nearly 7,000 net new units. This was followed by a precipitous

drop in housing production due to the Great Recession. Annual production accelerated rapidly between 2011 and 2014. In 2014, over 7,500 net new housing units were built in Seattle, the highest figures recorded over the past 20 years. (See Housing Figure A-17.)

Housing Figure A-17
Housing Units Built, Demolished, and Net New Units by Year (2005-2014)

Year	Units Built	Units Demolished	Net New Units
2005	3,669	(551)	3,118
2006	3,456	(575)	2,881
2007	4,531	(882)	3,649
2008	4,937	(985)	3,952
2009	7,334	(341)	6,993
2010	3,943	(309)	3,634
2011	2,305	(169)	2,136
2012	3,252	(577)	2,675
2013	6,621	(337)	6,284
2014	8,308	(760)	7,548

Source: Citywide Residential Permit Report, Department of Planning & Development, 2015.

Consistent with Seattle’s Urban Village Strategy, the large majority of the net new housing units added in the city from 2005 to 2014 were built in urban centers and urban villages. Specifically, an estimated 33,401 units (78 percent of all housing units added in the city during that period) were built in urban centers and urban villages. This includes the addition of 19,344 units (45 percent of the city’s total growth) in urban centers), and the addition of another 14,081 units (33 percent of the city’s total growth) in urban villages outside of centers.⁹

⁹ Figures for 2005 to 2014 from the “Urban Center / Village Residential Growth Report,” City of Seattle Department of Planning & Development.” (Report generated on April 6, 2015 from DPD Permit Data Warehouse.)

Owner Housing Market

Housing Figure A-18 identifies the eight Northwest Multiple Listing Service (NWMLS) market areas located within Seattle which are referred to in Housing Figures A-19, A-20, and A-21.

Housing Figures A-19 to A-21 provide data on median sales prices for closed sales from 2005 through 2014 for these areas. The home sales reflected in these Housing Figures include condominiums as well as other homes. Note that in the Downtown submarket area (#701), condominiums comprise 100 percent of home sales. Prices in these Housing Figures are inflation adjusted to 2014 dollars.

Housing Figure A-18

Key to Northwest Multiple Listing Service (NWMLS) Market Areas within Seattle

#	Area
140	West Seattle
380	Central Seattle SE, Leschi, Mt Baker, Seward Park
385	Central Seattle SW, Beacon Hill
390	Central Seattle, Madison Park, Capitol Hill
700	Queen Anne, Magnolia
701	Downtown Seattle
705	Ballard, Greenlake, Greenwood
710	North Seattle

Source: Northwest Multiple Listings Service, 2014.

As reflected in Housing Figure A-19, home prices in all but one of the eight NWMLS areas in Seattle peaked in either 2006 or 2007. The median sales price for homes in the Central Seattle (area #390) reached a record high in 2014; however, median sales prices in other market areas were still 4 percent to 21 percent lower in 2014 than they were in 2006/2007. Post-recession median sale prices have increased more slowly in South Seattle and Downtown compared to the rest of the city, with the Downtown market area 11 percent lower, West Seattle (area #140) and Southeast Seattle (market area #380) 15 percent lower, and Beacon Hill (area #385) 21 percent lower than their previous peak highs in 2007/2006.

Housing Figure A-19**Median Sales Price by Seattle NWMLS Submarket for Residential Sales, including Condominiums**

NWMLS Submarket Area	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
140	\$385K	\$367K	\$329K	\$312K	\$366K	\$364K	\$413K	\$439K	\$450K	\$414K
380	\$380K	\$356K	\$307K	\$298K	\$338K	\$370K	\$400K	\$448K	\$438K	\$403K
385	\$335K	\$315K	\$258K	\$265K	\$309K	\$337K	\$383K	\$422K	\$403K	\$374K
390	\$493K	\$459K	\$446K	\$422K	\$445K	\$408K	\$455K	\$470K	\$492K	\$455K
700	\$534K	\$517K	\$464K	\$449K	\$488K	\$495K	\$527K	\$559K	\$556K	\$543K
701*	\$430K	\$423K	\$437K	\$415K	\$407K	\$445K	\$455K	\$485K	\$483K	\$436K
705	\$479K	\$447K	\$409K	\$396K	\$431K	\$414K	\$460K	\$487K	\$499K	\$466K
710	\$475K	\$436K	\$412K	\$403K	\$443K	\$435K	\$466K	\$514K	\$504K	\$478K

Source: Northwest Multiple Listings Service King County Statistical Report (December) 2005 through 2014. Inflation adjusted to 2014 dollars based on Consumer Price Index, All Urban Consumers, Seattle-Tacoma-Bremerton, Base Period 1982-84 = 100, Annual for 2005-2014.

* All sales in the Downtown submarket area (#701) are condominiums.

Housing Figure A-20 shows how median sale prices for new construction homes compare to the median sale prices for all residential sales in Seattle's submarkets. Based on NWMLS data for sales that closed in 2014, median sales prices for new construction homes are substantially higher compared to median sales prices for total residential sales. (New construction homes comprised 9 percent of Seattle's total closed sales in 2014 and averaged 13 percent of total sales in 2005 through 2013, peaking in 2008 at 19 percent of total sales.)

Housing Figure A-21 displays median sales prices for new construction homes (again, including condominiums). Median sales prices for new construction homes dipped after the great recession in all submarkets, but have increased substantially in recent years. With respect to new construction homes, all eight Seattle submarkets registered year 2014 median sales prices that were higher than pre-recession median sales prices.

Housing Figure A-20
New Construction Residential Sales Relative to All Residential Sales

NWMLS Submarket Area	2014 Median Sale Price for New Construction Residential Compared to 2014 Median Sale Price for All Residential	Share of Total Residential Sales for New Construction Homes in 2014
140	14% higher	12%
380	32% higher	10%
385	58% higher	10%
390	33% higher	17%
700	28% higher	10%
701*	191% higher	4%
705	28% higher	14%
710	37% higher	8%

Source: Northwest Multiple Listings Service King County Statistical Report, (December) 2014.

* All sales in the Downtown submarket area (#701) are condominiums.

Housing Figure A-21
Median Sales Price by Seattle NWMLS Submarket for New Construction Residential Sales, Including New Construction Condominiums

NWMLS Submarket Area	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
140	\$440K	\$414K	\$315K	\$321K	\$364K	\$348K	\$405K	\$406K	\$422K	\$402K
380	\$500K	\$474K	\$350K	\$322K	\$358K	\$376K	\$394K	\$411K	\$427K	\$449K
385	\$528K	\$407K	\$313K	\$370K	\$422K	\$381K	\$471K	\$456K	\$474K	\$461K
390	\$654K	\$523K	\$546K	\$431K	\$440K	\$444K	\$452K	\$501K	\$520K	\$448K
700	\$685K	\$611K	\$490K	\$421K	\$469K	\$514K	\$546K	\$590K	\$613K	\$522K
701*	\$1.25M	\$906K	\$551K	\$478K	\$447K	\$450K	\$460K	\$527K	\$548K	\$454K
705	\$613K	\$546K	\$490K	\$339K	\$374K	\$370K	\$438K	\$468K	\$486K	\$412K
710	\$650K	\$682K	\$425K	\$351K	\$380K	\$408K	\$432K	\$456K	\$473K	\$407K

Source: Northwest Multiple Listings Service King County Statistical Report (December) 2005 through 2014. Inflation adjusted to 2014 dollars based on Consumer Price Index, All Urban Consumers, Seattle-Tacoma-Bremerton, Base Period 1982-84 = 100, Annual for 2005-2014.

* All sales in the Downtown submarket area (#701) are condominiums.

Rental Housing Market

This section provides an overview of Seattle’s rental housing market based on average rents for market-rate apartment units within apartment complexes containing 20 or more units. The average rents are courtesy of Dupre+Scott Apartment Advisors based on the market surveys they conduct.

Average rents in Seattle have increased and are substantially higher than they were ten years ago. Although they dipped slightly following the Great Recession, average rents resumed rising between 2010 and 2011. Average rents then rose at an accelerated pace from 2011 to 2014.

One-bedroom apartments are the most common size of apartment unit in Seattle. Between 2005 and 2014, the average rent for one-bedroom apartments increased an estimated 35 percent. In these units, the average rent as measured per net rentable square foot (NRSF) increased an estimated 27 percent (see Housing Figure A-22).

Housing Figure A-22
Seattle Average Rent per Unit and per Net Rentable Square Foot –
1 Bedroom Apartment Units, Fall 2014

Year	Average Rent Per Unit	Average Rent Per NRSF
2005	\$1,045	\$1.55
2006	\$1,047	\$1.54
2007	\$1,147	\$1.65
2008	\$1,148	\$1.66
2009	\$1,130	\$1.65
2010	\$1,135	\$1.62
2011	\$1,160	\$1.64
2012	\$1,206	\$1.70
2013	\$1,302	\$1.83
2014	\$1,412	\$1.97

Source: Dupre+Scott Apartment Advisors, Apartment Vacancy Report, units in 20+ unit complexes, fall 2014, Seattle – 14 market areas; inflation adjusted to 2014 dollars based on Consumer Price Index, All Urban Consumers, Seattle-Tacoma-Bremerton, Base Period 1982-84 = 100, August for 2005-2014.

Housing Figure A-23 shows estimated average market rents for apartment units in 14 Seattle neighborhood market areas. For each market area, the Housing Figure A-23 shows overall average rents as well as average rents by number of bedrooms. At approximately \$1,070 per unit, average rents are most affordable in the Dupre+Scott “Beacon Hill” market area, followed by the “Rainier Valley” and “North Seattle” (generally north of 85th street) market areas at approximately \$1,130 per unit. Average market rents in the Downtown and South Lake Union market areas are approximately 28 percent higher than the estimated average market rent of \$1,488 for Seattle as a whole.

Housing Figure A-23
Average Market Rents by Unit Type and Market Area, Fall 2014

Dupre+Scott Market Area	All Units	Studio	1-BR	2-BR/1 B	2 BR/2 B	3 BR/3 B
SEATTLE (city as a whole)	\$1,488	\$1,169	\$1,412	\$1,605	\$2,156	\$2,411
NORTH SEATTLE						
Ballard	\$1,563	\$1,244	\$1,489	\$1,696	\$2,345	\$1,850
Greenlake, Wallingford	\$1,557	\$1,347	\$1,444	\$1,599	\$2,170	\$2,115
North Seattle	\$1,130	\$988	\$1,020	\$1,252	\$1,407	\$1,749
University	\$1,361	\$1,094	\$1,240	\$1,441	\$1,968	\$1,963
CENTRAL SEATTLE						
Belltown, Downtown, South Lake Union	\$1,906	\$1,301	\$1,841	\$2,265	\$2,918	\$4,116
Capitol Hill, Eastlake	\$1,462	\$1,149	\$1,430	\$1,836	\$2,285	\$2,835
Central	\$1,446	\$1,131	\$1,380	\$1,534	\$1,934	\$2,191
First Hill	\$1,395	\$1,088	\$1,409	\$1,764	\$2,339	\$2,728
Madison, Leschi	\$1,370	\$930	\$1,284	\$1,577	\$1,694	
Magnolia	\$1,396	\$1,216	\$1,248	\$1,541	\$1,681	\$2,144
Queen Anne	\$1,525	\$1,117	\$1,469	\$1,767	\$2,309	\$2,579
SOUTH SEATTLE						
Rainier Valley	\$1,128	\$1,202	\$1,042	\$1,174	\$1,727	
Beacon Hill	\$1,071	\$890	\$1,055	\$1,318	\$1,226	
West Seattle	\$1,283	\$1,188	\$1,211	\$1,283	\$1,843	\$2,079

Source: Dupre+Scott Apartment Advisors, Apartment Vacancy Report, units within 20+ unit complexes, 14 D+S-defined market areas within Seattle, fall 2014.

In the 14 Dupre+Scott rental market areas within Seattle, the 5-year average vacancy rate has been less than 5 percent. (A vacancy rate of 5 percent is commonly recognized as the equilibrium point signaling relative balance between supply and demand). As of fall 2014, market vacancy rates were averaging between 0.4 percent and 3.8 percent of units in complexes with 20 or more units. In Seattle's three most affordable rental market areas – Beacon Hill, Rainier Valley, and North Seattle – vacancy rates were averaging an estimated 2.2 percent.

Housing Figure A-24 shows average rents per unit for apartment units in Seattle by the age of the apartment complex. Average rents are markedly higher for the newest cohorts of units. Seattle's most affordable rents are in complexes that were built over a century ago and in the 1970s.

Housing Figure A-24
Average Rent (Fall 2014) Per Unit by Age of Housing

Period in Which Built	Average Rent
2010-2015	\$1,822
2000-2009	\$1,731
1990-1999	\$1,550
1980-1989	\$1,230
1970-1979	\$1,083
1960-1969	\$1,117
1940-1959	\$1,174
1920-1939	\$1,137
1900-1919	\$1,060

Source: Dupre+Scott Apartment Advisors, Apartment Vacancy Report, units in 20+ unit complexes, 14 D+S-defined market areas within Seattle.

G Affordability of Seattle's Overall Housing Supply

In an earlier section, this appendix examined ACS CHAS data on housing cost burdens to provide insights into the challenges that households in Seattle experience in affording the housing in which they live. CHAS data can also be used to describe the affordability of a community's housing supply independently of the households who currently live in the housing units. This section uses the 2006-2010 5-year CHAS data in this manner in order to describe the affordability of Seattle's housing supply. The CHAS data summarized here categorize the affordability of each housing unit based on the income level that a household would need in order to afford the monthly housing costs associated with the unit. The analysis to produce these tables takes into account the fact that housing needs vary by household size.¹⁰

The ACS is designed to provide estimates from a representative sample of all households and housing units in communities. Like other ACS data, the CHAS data do not distinguish between housing units that are rent- and income-restricted and housing units that are market-rate (i.e., those without regulatory agreements or covenants). The estimates from the ACS CHAS data on the affordability of Seattle's housing supply refer to affordability in a broad sense; units tabulated as affordable to households at specified income levels may include market-rate as well as rent- and income-restricted units.

¹⁰ For details on the methodology used to generate the relevant 2006-2010 CHAS tabulations, see "CHAS Affordability Analysis," by Paul Joice, U.S. Department of Housing and Urban Development, Office of Policy Development and Research, Program Evaluation Division, May 20, 2013, <http://www.huduser.org/portal/>.

Affordability of Owner Units

In order to represent the monthly costs associated with an owner-housing unit in a way that is independent of any household currently in the unit, the CHAS tabulations simulate a situation in which a household has recently purchased the unit and is making payments on an FHA-insured, 30-year mortgage under prevailing interest rates.¹¹ In the CHAS tabulations, monthly mortgage payments are regarded as affordable at a certain income level when these payments consume no more than 31 percent of monthly income. The analytical approach reflected in these tabulations provides a useful, but limited picture of ownership housing affordability in Seattle.¹²

For owner units, the CHAS data give estimates for the number of owner units affordable with household incomes of 0-50 percent of AMI, 50-80 percent of AMI, 80 to 100 percent of AMI, and above 100 percent of AMI. Housing Figure A-25 shows the estimated number of owner units in Seattle that are affordable within each of these affordability categories. Cumulative estimates are also shown for units affordable with incomes at or below 80 percent AMI, and units affordable at or below 100 percent of AMI. Occupied owner units and vacant for-sale units are shown in separate columns and summed in the third column.

The analysis shows that very small numbers of owner units are affordable within the income categories of 0-50 percent of AMI and 50-80 percent of AMI. On a cumulative basis, only about 4,500 owner units, or 3 percent of the total owner units are estimated to be affordable at or below 80 percent of AMI. Another 5 percent are estimated to be affordable at 80-100 percent of AMI.

¹¹ The CHAS data on affordability of owner units use the home value that respondents provided on the ACS questionnaire. To categorize owner units by affordability, the CHAS tabulations assume that the hypothetical owner has purchased the home at a sales price equal to the home value provided in the ACS, and--as noted--and is currently paying making payments on the mortgage for the home.

¹²CHAS tabulations on the affordability of owner housing supply do not capture the ways that accumulation of equity in a home after purchase can affect a home's affordability over time. These tabulations also ignore the question of whether the down payments involved would be affordable to households on the lower side of the economic spectrum.

Housing Figure A-25
Affordability of Owner Units

	Occupied owner units	Vacant-for-sale units	Total owner units
Owner units:	136,304	2,955	139,259
By affordability category:			
Affordable with income of 0-50% of AMI	2,410	0	2,410
Affordable with income of 50-80% of AMI	1,939	15	1,954
Affordable with income of 80%-100% of AMI	6,920	205	7,125
Affordable with income above 100% of AMI	125,035	2,735	127,770
By affordability level (cumulative):			
Affordable with income at or below 80% of AMI	4,349	15	4,364
Affordable with income at or below 100% of AMI	11,269	220	11,489

Source: ACS CHAS 2006-2010 5-Year Estimates.

Notes: Income categories are based on AMI, as estimated and adjusted for household size by HUD, for the Seattle-Bellevue HUD Metro Fair Market Rent Area.

The CHAS tables summarized in this Housing Figure A-25 exclude an estimated 750 owner-occupied and 50 vacant, for-sale housing units in Seattle that lack complete plumbing and kitchen facilities.

ACS CHAS data do not distinguish between housing units with rent restrictions and/or income restrictions and market-rate units (those without regulatory agreements or covenants). Units estimated to be affordable at specified levels may be either market-rate units or rent- and income-restricted units.

CHAS estimates, like other estimates from ACS, are sample estimates and carry margins of error. Margins of error associated with ACS estimates may be substantial especially for small population and household groups.

Affordability of Rental Units

Rental units are regarded as affordable at a given income level if monthly “gross rent,” defined as contract rent plus tenant-paid basic utilities, equals no more than 30 percent of monthly gross income.

Housing Figure A-26 shows the estimated numbers of rental units that are affordable by income category. (The housing affordability categories included in the CHAS for rental housing differ somewhat from those for owner housing and include more detail in the lowest part of the income spectrum.)

Only 11 percent of the total rental units in Seattle have gross rents that are affordable with an income at or below 30 percent of AMI. About 22 percent of rental units in the city are affordable in the 30-50 percent of AMI category. Another 42 percent of rental units are affordable in the 50-80 percent of AMI category.

Housing Figure A-26
Affordability of Rental Units

	Occupied rental units	Vacant-for-rent units	Total rental units
Rental units	139,625	5,305	144,930
By affordability category:			
Affordable with income of 0-30% of AMI	16,325	340	16,665
Affordable with income of 30-50% of AMI	31,060	1,495	32,555
Affordable with income of 50-80% of AMI	59,355	1,790	61,145
Affordable with income above 80% of AMI	32,885	1,680	34,565
By affordability level (cumulative):			
Affordable with income at or below 50% of AMI	47,385	1,835	49,220
Affordable with income at or below 80% of AMI	106,740	3,625	110,365

Source: ACS CHAS 2006-2010 5-Year Estimates.

Notes: Unit is affordable if rent and basic utilities together cost no more than 30% of household income.

Analysis assumes household size to unit size ratios that HUD uses to administer the Low Income Housing Tax Credit program.

The CHAS tables summarized in this Housing Figure A-26 exclude the estimated 3,760 occupied rental-housing units that lack complete plumbing and kitchen facilities.

ACS CHAS data do not distinguish between housing units with rent and/or income restrictions and market-rate units (those without regulatory agreements or covenants). Units estimated to be affordable at specified levels may include market-rate units or rent/income restricted units.

Margins of error associated with ACS estimates may be substantial especially for small population and household groups.

See prior tables for general notes on the ACS CHAS 2006-2010 5-Year Estimates.

Maps Showing Affordability Levels of Existing Housing

Following are maps showing shares of housing units within Census Tracts in and around Seattle estimated to be affordable at specified household income levels. These maps are based on ACS CHAS data, which—as noted previously—do not distinguish between market rate and subsidized units.

These maps on housing affordability, like the previous census tract level maps in this appendix, are based on 2007 to 2011 ACS CHAS data and were generated using HUD’s “CPD maps” tool. The census tracts in these maps are shaded based on “natural breaks” in the distribution of data in order to highlight variation in and around Seattle. As the map legends indicate, the data categories vary from one map to another; this is important to keep in mind when viewing these maps.

The maps in this series were generated separately for owner housing units and renter housing units. They include:

- Estimated shares of owner housing units within Census Tracts that are:
 - Affordable at or below 80 percent of AMI (Housing Figure A-27)
 - Affordable at or below 100 percent of AMI (Housing Figure A-28)
- Estimated shares of rental housing units within Census Tracts that are:
 - Affordable at or below 30 percent of AMI (Housing Figure A-29)
 - Affordable at or below 50 percent of AMI (Housing Figure A-30)
 - Affordable at or below 80 percent of AMI (Housing Figure A-31)

As reflected in these maps, the affordability of housing varies a great deal between areas within Seattle and between areas in Seattle and surrounding cities.

Shares of Owner Housing Units by Affordability Level

Owner units affordable at or below 80 percent of AMI are very scarce within Seattle and in neighboring cities on the eastside of Lake Washington. The vast majority of Census Tracts in Seattle and these Eastside cities are tracts where only 6 percent or fewer units are affordable at or below 80 percent of AMI.

Owner units affordable at or below 100 percent of AMI are also scarce in tracts within Seattle and Eastside cities, but to a somewhat lesser degree. Census Tracts to the south of Seattle and to the northeast of Seattle have larger proportions of owner units affordable at or below these income thresholds.

Shares of Rental Housing Units by Affordability Level

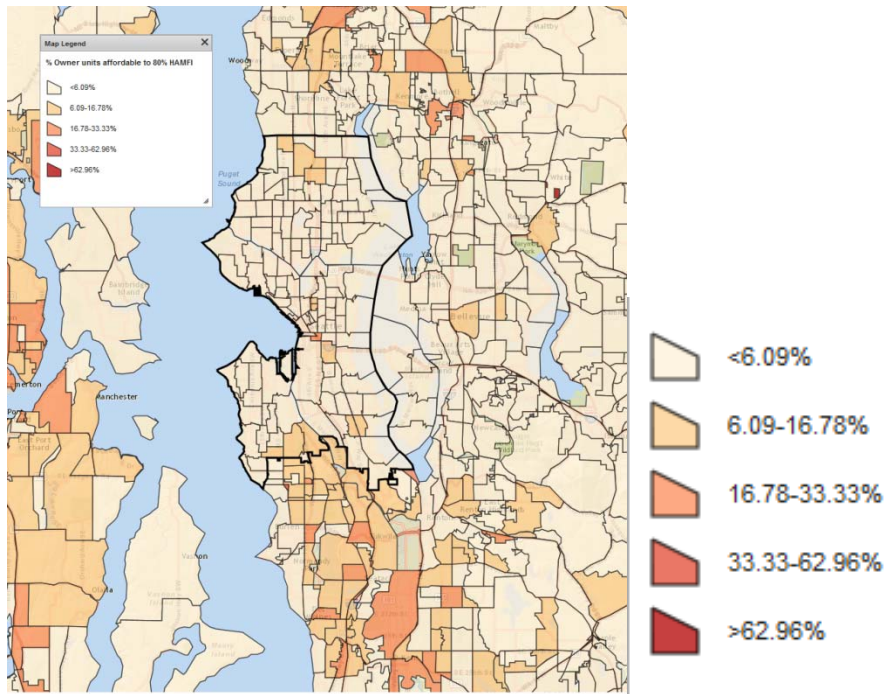
The large majority of census tracts in and around Seattle have very low shares of rental units affordable at or below 30 percent of AMI. However, within the mapped area, Seattle contains many of the Census Tracts where more than 20 percent of rental units are affordable at this income level.

Rental units affordable at or below 50 percent of AMI make up 21 percent or less of the residential rental units in most Seattle census tracts. Within the mapped area, the largest shares of rental units affordable at or below 50 percent of AMI are primarily found in Southeast Seattle and south of Seattle.

Rental units affordable at or below 80 percent of AMI are notably more common in and around Seattle than are rental units affordable at lower income thresholds. However, rental units affordable at or below 80 percent of AMI make up well below half of the rental units in portions of Seattle and in large

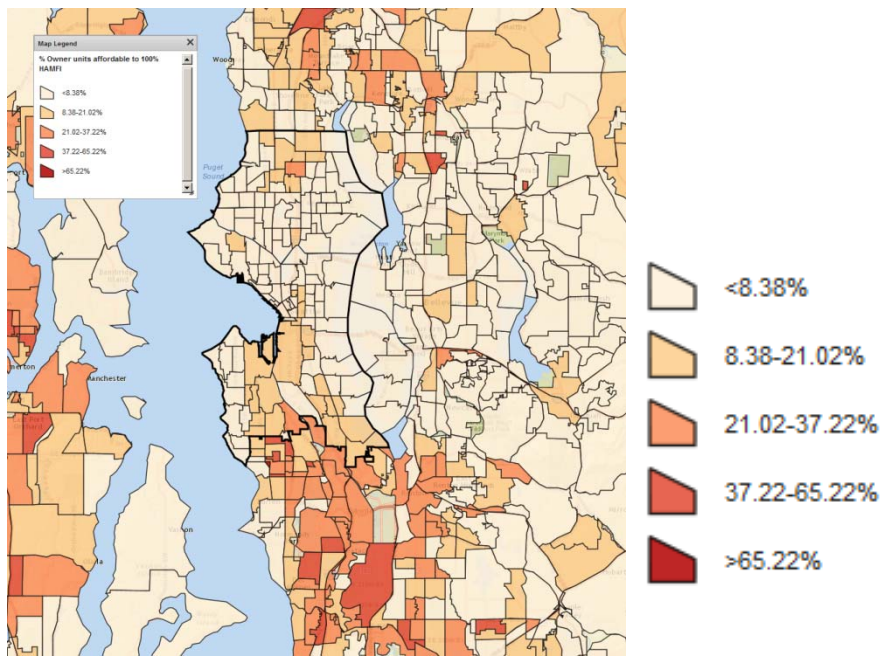
areas of neighboring cities to the east. Furthermore, units affordable at or below 80 percent of AMI make up large majorities of rental units in a small number of census tracts, most of which are south of Seattle's city limits.

Housing Figure A-27
Share of Owner Units Affordable at or Below 80 Percent of AMI



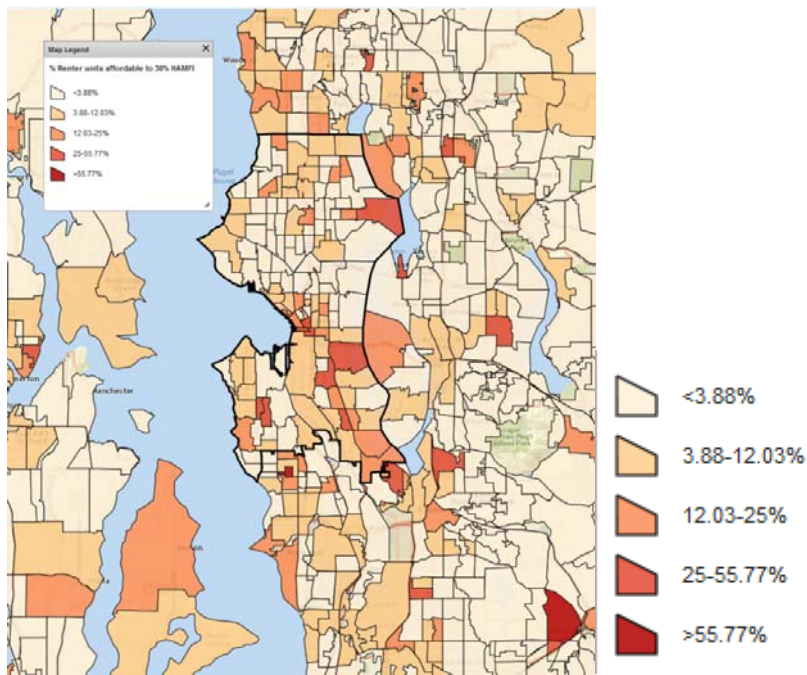
Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Housing Figure A-28 Share of Owner Units Affordable at or Below 100 Percent of AMI



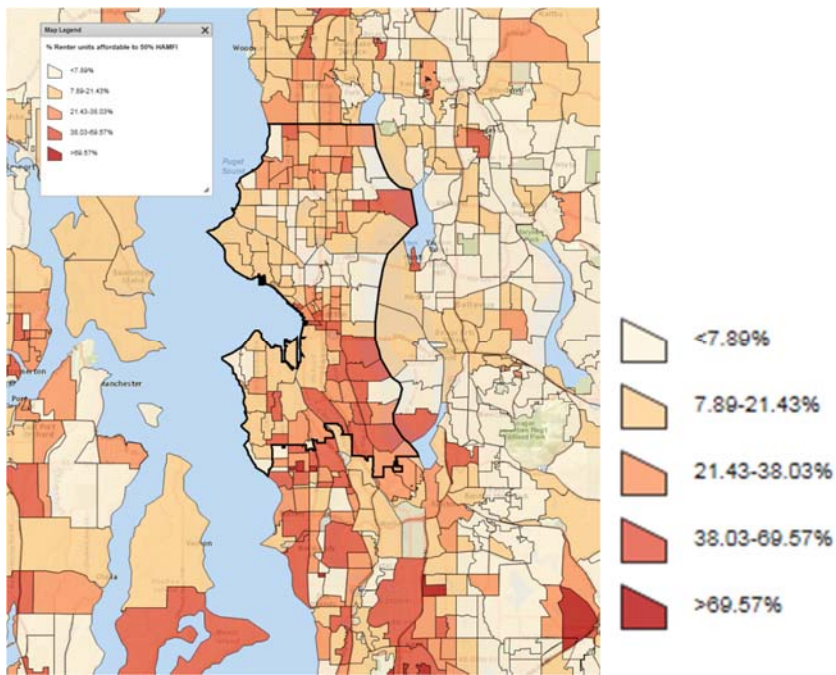
Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Housing Figure A-29 Share of Rental Units Affordable at or Below 30 Percent of AMI



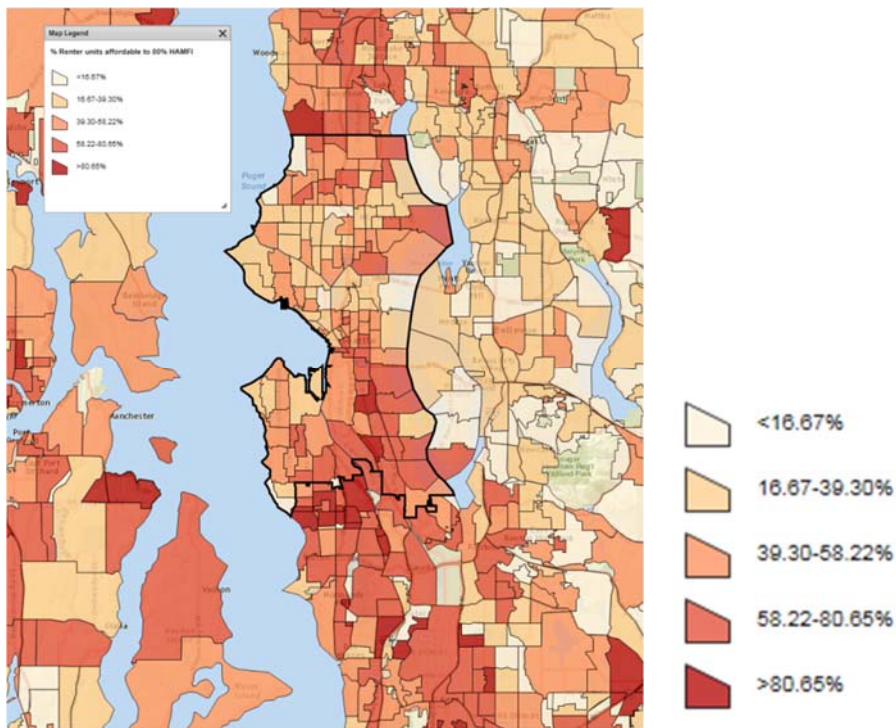
Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Housing Figure A-30
Share of Rental Units Affordable at or below 50 Percent of AMI



Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Housing Figure A-31
Share of Rental Units Affordable at or below 80 Percent of AMI



Source: HUD CPD maps (ACS CHAS 2007-2011 estimates).

Affordability and Availability of Rental Units in Seattle

The city-level analysis of affordability presented earlier in this appendix used the ACS CHAS data to estimate how much of Seattle's overall rental housing supply is affordable within different low-income categories. Those findings provide useful but incomplete information about the degree to which the current affordability profile of rental housing in Seattle meets existing needs.

As previously described, both market-rate and rent- and income-restricted units are included the CHAS data used to analyze affordability. This helps provide a broad picture of the affordability of rental housing in the city. At the same time, it is important to consider that market-rate rental units affordable at or below a given income threshold can be occupied by households with incomes higher than that threshold.

Gaining a more useful understanding of how well the affordability profile of rental housing in Seattle is meeting the needs of renters in the city requires finding out if the housing units affordable with household incomes at or below the 30 percent, 50 percent, and 80 percent of AMI thresholds are actually *available* to households with incomes at or below these thresholds.

This section dives deeper into the CHAS data to present an analysis of the overall number of rental units that are both affordable *and available* to households at these income levels. In this analysis, units that are affordable are also considered "available" if they are either vacant or are occupied by a household whose income is at or below the specified threshold.¹³

Housing Figure A-32 shows the total number of renter households in each income category, the number of rental units with rents that are affordable in that category, and the number of those units that are occupied by households in that category. These numbers are used to estimate the effective shortage or surplus of affordable and available rental units that exists at or below each of the specified income levels.

For example, 5,300 of the roughly 16,000 units "affordable" at or below 30 percent of AMI are *occupied* by a household with an income that is higher than 30 percent of AMI. The 5,300 units occupied by households with incomes higher than 30 percent of AMI are estimated to be affordable—but not available—to households with incomes at or below 30 percent of AMI.

The affordability and availability analysis findings can also be expressed in ratios. For example, for every 100 Seattle renter households who have incomes at or below 30 percent of AMI, there are 48 affordable units. However, 15 of these affordable units are occupied by households with incomes above 30 percent

¹³ This analysis for Seattle is based on the affordability and availability methodology described in "Measuring Housing Affordability," By Paul Joice, U.S. Department of Housing and Urban Development, *Cityscape: A Journal of Policy Development and Research*, Volume 16, Number 1, 2014. A variety of other entities, including the Philadelphia Federal Reserve bank and the Washington State Affordable Housing, have employed similar analyses to assess housing needs at the local and state levels.

AMI. Thus, for every 100 renter households with incomes at or below 30 percent of AMI, there are estimated to be only 33 rental units that are affordable and available.

Housing Figure A-32
Affordability and Availability of Rental Units at Specified Income Levels

		0-30% of AMI	0-50% of AMI	0-80% of AMI
A	Total renter households with household incomes at or below income level	34,820	56,835	82,650
B	Occupied rental units that are affordable <i>and available</i> at or below income level (i.e., units with rent affordable to households at specified income level and occupied by renters at or below that income level)	11,025	30,050	69,685
C	Occupied rental units that are affordable, but <i>not available</i> , at or below income level (i.e., rental units with rents that are affordable at or below the specified income level but occupied by households above that income level)	5,300	17,335	37,055
D	All occupied rental units that are affordable (i.e., occupied rental units that have rents affordable at specified income level, ignoring income of current occupant HH) (B+C)	16,325	47,385	106,740
E	Vacant for-rent units that are affordable <i>and available</i> at or below income level	340	1,835	3,625
F	Total rental units that are affordable (i.e., total units—occupied or vacant—with rents affordable to households at specified income level) (D+E)	16,665	49,220	110,365
G	Total rental units that are affordable <i>and available</i> at or below income level (B + E)	11,365	31,885	73,310
H	Nominal shortage or surplus of affordable rental units at or below income level (A – F)	Shortage: 18,155	Shortage: 7,615	Surplus: 27,715
I	Effective shortage or surplus of affordable and available rental units at or below income level (A – G)	Shortage: 23,455	Shortage: 24,950	Shortage: 9,340
J	Affordable rental units per 100 renter households at or below income level (F / A * 100)	48	87	134
K	Affordable and available rental units per 100 renter households at or below income level (G / A * 100)	33	56	89
Source: ACS CHAS 2006-2010 5-Year Estimates. Notes: ACS CHAS data do not distinguish between housing units with rent and/or income restrictions and market-rate units without such restrictions. Units estimated to be affordable at specified levels may include market-rate units as well as rent/income restricted units. Housing unit estimates in this Housing Figure A-32 exclude an estimated 3,760 occupied rental housing units and 300 vacant for-rent units that lack complete plumbing and kitchen facilities. The household estimates, however, encompass all renter households, including those who live in rental units lacking complete plumbing. See prior tables for additional notes on the ACS CHAS 2006-2010 5-Year Estimates.				

Examining availability in tandem with affordability reveals that gaps between existing rental supply and the need for housing at low income levels are substantially larger than the gaps found when considering affordability alone.

However, even this affordability and availability analysis in some ways underestimates unmet needs in Seattle for affordable housing.

- The estimated shortages of rental housing at each income threshold do not reveal the likely variation in the size of shortages within each of the constituent income ranges under the threshold. For example, the size of the shortage confronted by households at 60 percent of AMI is likely closer to the shortage found at 50 percent of AMI than it is to the shortage at 80 percent of AMI; and this is likely the case even though 60 percent of AMI is under the same income range as 80 percent of AMI.¹⁴
- Rents in Seattle have risen substantially since the 2006-2010 period captured in this analysis.
- This affordability and availability analysis *only* addresses rental housing and renter households.¹⁵ The information presented in earlier sections on the affordability of owner housing and the high prevalence of housing cost burdens among low-income owner households are indicators that there is scant availability of owner housing affordable to low income households.
- The households in the analysis are limited to those living in housing units; as a result, the estimated shortages do not factor in the housing needs of homeless people in Seattle who are living on the streets or in temporary shelters.
- Furthermore, the data used for this analysis—like much of the other data analyzed in this appendix—only reflects households who live in Seattle. The analysis does not include households, such as households whose members work in Seattle, who may desire to live inside of Seattle but live in surrounding areas. It is likely that some households living outside of Seattle are doing so in order to access more affordable housing.

¹⁴ Tabulations needed to estimate shortages at finer income increments are not provided in the CHAS dataset. However, other tabulations in the CHAS show that the estimated prevalence of cost burdens and other housing problems tends to be higher for households closer to the bottom than the top of the 30% to 50% of AMI range as well as closer to the bottom than the top of the 50% to 80% of AMI income range.

¹⁵ Results from a similar analysis of owner housing affordability and availability would be difficult to interpret due to the way that households pay for and consume owner-occupied housing over time, which is very different than the way renters pay for housing.

Estimated Household Growth and Projected Housing Needs by Income Level

As described earlier in this appendix, the City is planning for the net addition of 70,000 households in next 20 years. In order to project the amount of housing that will be needed by income level within the planning period, this analysis makes some simplifying assumptions.

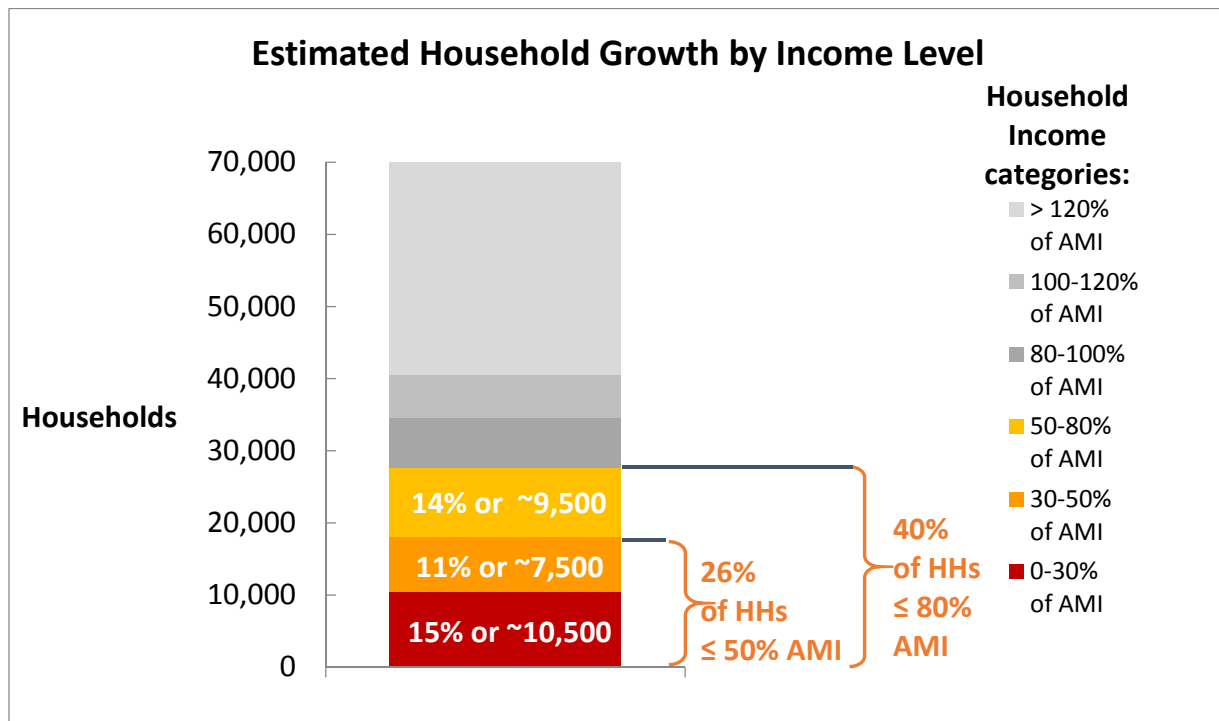
The chart shown in Housing Figure A-33 takes the income distribution of Seattle's existing households (based on HUD CHAS 2006-2010 5-year ACS estimates) and overlays this income distribution on the household growth for which the city is planning.

Based on the assumption that the income distribution for the net additional households would be the same as for existing households in Seattle:

- Approximately 15 percent (or about 10,500) of the 70,000 of the additional households would have incomes of 0-30 percent of AMI
- An additional 11 percent of the 70,000 (about 7,500) would have incomes of 30-50 percent of AMI
- 14 percent (about 9,500) would have incomes of 50-80 percent of AMI

On a cumulative basis, 26 percent (or 18,000) of the net new households would have incomes under 50 percent of AMI, and 40 percent (or 28,000) would have incomes under 80 percent of AMI.

Housing Figure A-33
Estimated Household Growth by Income Level



Projecting the amount of housing needed to be affordable at each income level also requires analytical assumptions about how need could be met.

- If affordability needs are met *entirely* with rent- and income-restricted affordable housing, the amount of housing needed for households with incomes in the 0-30 percent, 30-50 percent, and 50-80 percent of AMI income categories will be essentially the same as the number of households in each of these low-income categories.
- If affordability needs within these low-income categories are met with a *combination* of rent- and income- restricted units and non-restricted (i.e., market-rate) units, the amount of housing needed to be affordable at or below income thresholds will be higher than the corresponding number of households. This is to account for the fact some of the affordable market-rate units will be occupied by households above income thresholds. Findings from the affordability and availability analysis conducted for Seattle’s existing housing supply can provide insight for projecting future need. At each income level analyzed, that analysis found that there are about one and a half affordable units for every affordable and available unit.¹⁶

¹⁶ See Housing Figure A-32 rows F and G. Figures in Housing Figure A-32 reflect the existing combination of rent/income restricted units and market-provided units. (The ACS CHAS data include both rent/income restricted and market rate units but do not distinguish these units.)

Based on the assumptions and considerations above, the amount of housing needed to be affordable to the subset of the 70,000 net new households in low-income categories, can be expected to be at least the same as the household numbers shown in Housing Figure A-33, and could potentially be up to one and a half times those numbers.

Following are the estimated numbers of units at each income level that would be needed in order to address affordability needs associated with the addition of 70,000 households.¹⁷

- *For households with incomes of 0-30 percent of AMI:* 10,500 rent- and income-restricted affordable units (assumes that all units affordable within this category would be rent- and income-restricted given that it would be extremely unlikely that the market would produce new units affordable at this income level without subsidy or regulatory intervention).
- *For households with incomes of 30-50 percent of AMI:* 7,500 rent- and income-restricted affordable units (if need met entirely with rent/income restricted units) or an additional 11,500 affordable units (if need met with a combination of rent/income restricted- and non-restricted units).
- *For households with incomes of 50-80 percent of AMI:* 9,500 rent- and income-restricted affordable units (if need met entirely with rent/income restricted units) or 14,500 affordable units (if need met with a combination of rent/income restricted- and non-restricted units).

Summing these figures together indicates that addressing the affordability needs of the 70,000 new households would require production of roughly 27,500 to 36,500 housing units affordable at or below 80 percent of AMI. This is in addition to existing unmet need.

The foregoing discussion underscores the vital role that subsidized housing and other forms of rent- and income-restricted affordable housing will continue to play in addressing the affordability needs of low-income households.

The following section describes the City's strategies for addressing affordable housing needs. Through these strategies, Seattle responds to local needs within our city and helps address countywide need as required by the CPPs. Over the next 20 years, the production of rent- and income-restricted affordable units will continue to be essential, especially at the lowest income levels, which the housing market—particularly newly built market-rate housing—rarely addresses.

H Strategies for Addressing Housing Needs

The City of Seattle's Office of Housing administers several affordable housing programs, which all help low-income families and individuals to thrive, and enable neighborhoods to provide a full range of housing choice and opportunity. The City's housing programs help build strong, healthy communities.

¹⁷ Figures given for the units needed in each income category assume needs in previous categories are met.

The rent- and income-restricted housing units achieved through production and preservation of affordable housing, both through capital subsidies and through developer incentives, both help to stabilize lower income residents in their neighborhoods and increase opportunities for people to live in our City. These strategies are informed by knowledge of local needs as well as an understanding of the needs in King County as a whole.

Seattle Office of Housing Programs Rental Housing Program

The Office of Housing’s Rental Housing Program provides capital funding for the development of affordable rental housing in Seattle using funds from the Seattle Housing Levy, payments contributed by developers through the incentive zoning program, and federal grants. The Office of Housing coordinates with other public and private funders to leverage these resources 3 to 1, with the largest sources of leverage coming from low-income housing tax credits and tax-exempt bond investment. Funding is generally provided in the form of low interest, deferred payment loans and is awarded on a competitive basis. It is available to parties from both the non-profit and for-profit sectors, although the former have been the most active in the development and ownership of Seattle’s low-income housing to date.

- **2013 Funding:** \$27.1 million, including \$14 million in Housing Levy, \$6.6 million in federal grants, \$4.7 million of incentive zoning funds, and \$1.8 million in other funding
- **2013 Production:** 432 low-income housing units, including 310 new construction units, 80 acquisition-rehab units, and rehab of 42 units in the existing portfolio
- **Total Portfolio:** Cumulative production of over 11,000 low-income housing units since 1981, largely funded by voter-approved housing levies
- **Affordability Term:** Minimum 50 years
- **Income Limits:** Generally ≤ 60 percent AMI, with over half of all units rent/income restricted at ≤ 30 percent AMI. Of actual households served, 76 percent have incomes 0 to 30 percent AMI, 17 percent > 30 and ≤ 50 percent AMI, and 6 percent > 50 and ≤ 80 percent AMI.
- **Populations Served:** General priorities include formerly homeless individuals and families, seniors and people with disabilities, and low-wage working households. Racial/ethnic makeup of households served is 43 percent White non-Hispanic, 29 percent Black/African American non-Hispanic, 12 percent Asian non-Hispanic, 3 percent Native American non-Hispanic, 7 percent Multi-Racial non-Hispanic, and 6 percent Hispanic,.
- **Weblink:** <http://www.seattle.gov/housing/development>

Incentive Zoning for Affordable Housing

In certain zones, Seattle’s incentive zoning program enables development to achieve extra floor area beyond a base limit when affordable units are provided (“performance option”) or when a fee is paid to support the development of affordable housing (“payment option”). With the latter option, the affordable units can be built either in that same neighborhood or in other neighborhoods with light rail or other direct frequent transit connections to areas experiencing employment and residential growth.

- **2013 Production:** 16 units produced on-site in 5 projects, and \$2.8 million of in-lieu payments
- **Total Portfolio:** 106 rent/income restricted units in 16 projects since 2010, and \$48.5 million of in-lieu payments since 2001
- **Affordability Term:** Minimum 50 years
- **Income Limits:** Up to 80 percent AMI for rental and 100 percent AMI for owner-occupied housing; In-lieu payments support the Rental Housing and Homeownership Programs
- **Incentive Zoning areas:**
http://www.seattle.gov/housing/incentives/IncentiveZoning_Housing_Map.pdf
- **Weblink:** <http://www.seattle.gov/housing/incentives/LandUseCode.htm>

Multifamily Tax Exemption

Multifamily Tax Exemption is a voluntary program that allows developers to receive a property tax exemption on the residential improvements of a development for up to 12 years. While the tax exemption is in effect, 20 percent of the housing units in the building must be rent-restricted for income-eligible households. The tax exemption is available in 39 target areas in Seattle, which constitute 73 percent of the land zoned for multifamily development. Approximately 40 percent of all projects currently in development in Seattle have opted to participate in the program. The program complements a separate State tax exemption for projects with 75 percent of units serving households ≤ 50 percent AMI.

- **2013 Production:** 693 rent/income restricted units in 41 projects approved
- **Total Portfolio:** 3,133 rent/income restricted units in 87 projects since 1998, with another 1,686 units in 83 projects expected to be complete by 2017
- **Affordability Term:** Up to 12 years
- **Incomes Served:** Up to 65-85 percent AMI, depending on number of bedrooms
- **MFTE Areas:** http://www.seattle.gov/housing/incentives/MFTE_RTMap.pdf
- **Weblink:** <http://www.seattle.gov/housing/incentives/mfte.htm>

Homeownership Program

The Office of Housing provides up to \$45,000 per household in down payment assistance to low-income first time home buyers, typically in the form of low-interest, deferred payment second mortgages. For resale restricted homes, Office of Housing will provide up to \$55,000. The program is marketed through partner nonprofits and lending institutions, who often supplement City funds with subsidies from additional federal and local sources. The Office of Housing also provides annual funding for homebuyer counseling, and has recently launched a foreclosure prevention outreach campaign to connect homeowners with needed resources.

- **2013 Funding:** \$2.3 million awarded, including \$1.6 million in Housing Levy and \$490,000 in federal grants, and \$147,000 in other funding
- **2013 Production:** 51 homebuyers assisted
- **Total Portfolio:** 932 homebuyers assisted since 2004, largely funded through voter-approved Housing Levies
- **Affordability Term:** Nearly 17 percent of loans are through a land trust/resale restricted model, with provisions to ensure long-term affordability for future buyers; no ongoing affordability requirement for the remainder of loans
- **Incomes Served:** Up to 80 percent AMI. Of actual households, 19 percent have incomes \leq 50 percent AMI, 19 percent >50 percent and \leq 60 percent AMI, and 62 percent > 60 and \leq 80 percent AMI.
- **Populations Served:** To date, the program has largely served families with children (40 percent) and single adults (52 percent). Racial/ethnic makeup of households served is 57 percent White non-Hispanic, 18 percent Black/African American non-Hispanic, 17 percent Asian non-Hispanic, 1 percent Native American non-Hispanic, 3 percent Other/Multi-Racial non-Hispanic, and 4 percent Hispanic.
- **Weblink:** <http://www.seattle.gov/housing/buying/programs.htm>

HomeWise Weatherization

The HomeWise program provides energy efficiency, and health and safety improvements to houses and apartment buildings with low-income households. Typical investment ranges from \$6,000 to \$12,000 per unit.

- **2013 Funding:** \$5.1 million total, including \$2.3 million from the State, \$1.8 million from utilities, and \$1 million in other funds
- **2013 Production:** 1,038 units, including 200 single-family and 838 multifamily units
- **Total Portfolio:** 14,103 units since 2000
- **Affordability Term:** 3 years for rental housing weatherization; no ongoing affordability requirement for homeowners
- **Incomes Served:** Eligibility varies depending on source of funding. Of actual households served, 60 percent have incomes \leq 30 percent AMI, 36 percent > 30 and \leq 60 percent AMI, and 4 percent > 60 and \leq 80 percent AMI.
- **Populations Served:** Racial/ethnic makeup of households served is 44 percent White, 22 percent Black/African-American, and 20 percent Asian residents. A third of residents served are over 60 years of age.
- **Weblink:** <http://www.seattle.gov/housing/HomeWise/default.htm>

Home Repair Loan Program

The Home Repair Loan Program helps low- to moderate-income homeowners finance critical home repairs. Eligible homeowners apply for a zero percent or 3 percent loan of up to \$24,000 (with a maximum life time benefit of \$45,000) for a term of up to 20 years. The goals for the program are to identify and make health, safety and code-related repairs, increase home energy-efficiency, and help revitalize neighborhoods.

- **2013 Funding:** \$251,000 total, with \$239,000 from CDBG and \$12,000 from the Housing Levy
- **2013 Production:** 16 loans
- **Total Portfolio:** ~2,900 loans to date
- **Affordability Term:** No ongoing affordability requirement
- **Incomes Served:** Up to 80 percent AMI. Of actual households served, over half have incomes \leq 30 percent AMI, a quarter have incomes $>$ 30 and \leq 50 percent AMI, and a quarter have incomes $>$ 50 and \leq 80 percent AMI
- **Populations Served:** Over half of households are elderly, nearly a quarter of households are families with children, and remaining households are non-elderly adults. Racial/ethnic makeup of households served is 59 percent White non-Hispanic, 21 percent Black/African American non-Hispanic, 12 percent Asian non-Hispanic, 4 percent Native American non-Hispanic, 2 percent Hispanic.
- **Weblink:** http://www.seattle.gov/housing/buying/repair_loans.htm

I Seattle's Rent and Income Restricted Housing Inventory

The Office of Housing estimates that Seattle has over 27,000 rent- and income-restricted rental housing units for extremely low- to low-income households. The middle columns in Housing Figure A-34 provide a summary of Seattle's approximate rental housing inventory with housing covenants, agreements, or other restrictions by rent/income limit and location of the housing by type of urban center/urban village. This 27,000 unit estimate does not include portable tenant-based Section 8 vouchers.

Housing Figure A-34
Estimated Rent/Income Restricted Housing Units by Income Category and Location

	Rent/Income Restricted Housing Units by Income Category				Estimated Total Housing Units
	≤ 30% AMI	>30 to 60% AMI	>60 to 80% AMI	Total ≤80% AMI	
Urban Centers/Villages					
Outside of Urban Center/Village	2,642	1,357	712	4,711	183,037
Urban Centers	6,403	4,101	1,087	11,591	65,412
Hub Urban Villages	976	2,677	364	4,017	20,886
Residential Urban Villages	2,507	3,318	1,031	6,856	38,377
Manufacturing Industrial Centers	41	1	0	42	345
Grand Total	12,569	11,454	3,194	27,217	308,057

Sources: Office of Housing Survey of Rent/Income Restricted Housing 2008; Office of Housing Multifamily Database 2014; DPD Development Capacity Report 2014.

Based on Office of Housing rent/income restricted housing and DPD total housing unit estimates, slightly less than 9 percent of Seattle's total housing units are rent/income restricted. Specifically, 4.1 percent are rent restricted for households with incomes ≤ 30 percent of AMI, 3.7 percent are rent restricted for households with incomes ≤ 60 percent of AMI, and 1.0 percent are rent restricted for households with incomes ≤ 80 percent of AMI. Over 80 percent of Seattle's 27,000-plus rent/income restricted units are located in urban centers and villages to help extremely low- to low-income households better access services, retail, transit, and other amenities.

Seattle's estimated rent/income restricted housing inventory of over 27,000 units includes approximately 15,000 rental units in the City of Seattle's portfolio of housing funded in part through Office of Housing's Rental Housing Program, provided by residential building owners through incentive zoning or the Multifamily Tax Exemption Program, or provided in accordance with other agreements.

An inventory from the U.S. Department of Housing and Urban Development identifies roughly 75 buildings totaling 3,500 rent/income restricted units with regulatory agreements that could expire between now and 2035. However, it is important to note that the actual universe of units in Seattle that may be at risk of loss of affordability is smaller for a number of reasons. The actual universe is smaller because the HUD list includes buildings that (a) are located outside of the city of Seattle; (b) have been funded by the Seattle Office of Housing (OH), which routinely monitors the long term affordability restrictions for OH-funded housing; (c) have mortgage loans insured under Section 221(d)(4), for which affordable housing set asides are not required; and (d) are owned by entities with a mission of providing long-term affordable housing for low-income households.

Rental Housing Program: Profile of Households Served

The data shown in the following three Housing Figures (Housing Figures A-35 to A-37) provide a profile of 13,690 households as reported in 2013 annual reports submitted to Office of Housing via the State's Combined Funders Annual Reporting System (WBARS). The information describes households who benefitted from a 10,850 unit subset of the Office of Housing's estimated 11,400 unit Rental Housing Program portfolio. Totals in Housing Figures A-22 to A-24 differ from total rent/income restricted units in previous tables given the differences in the timeframe and reporting parameters for the data.

Housing Figure A-35

Seattle Rental Housing Program Units by Income Limit & Households by Income

Projects in Operation and Reporting as of 12/31/13	Number of Households by Income	Percent of Households	Units by Income Restriction	Percent of Units
≤ 30% AMI	10,375	75.8%	5,630	51.9%
>30 to ≤ 50% AMI	2,253	16.5%	3,286	30.3%
> 50 to ≤ 80% AMI	853	6.2%	1,560	14.4%
> 80% AMI	209	1.5%	374	3.4%
Total	13,690	100%	10,850	100%

Source: Combined Funders Annual Reporting System (WBARS), Office of Housing Annual Reports, 2013

Notes: "> 80 percent AMI" represents units in Office of Housing-funded projects that have restrictions for income and rent by other funders.

Nearly 60 percent of the Office of Housing's Rental Housing Program serves households of color. An estimated 4,100 units in the Office of Housing's Rental Housing Program portfolio are specifically regulated to serve households who have experienced homelessness. Based on annual report data the Office of Housing received in 2013, 4,829 single-person households and 821 two-plus person households were served by 4,122 homeless units. This housing is integrated with on- or off-site support services.

Housing Figure A-36

Seattle Rental Housing Program Households by Race/Ethnicity

Race/Ethnicity	Number of Households	Percent of Total
White, non-Hispanic	5,595	42.9%
Black/African American, non-Hispanic	3,817	29.2%
Asian/Pacific Islander, non-Hispanic	1,587	12.2%
American Indian or Alaska Native, non-Hispanic	378	2.9%
Multi-Racial, non-Hispanic	935	7.2%
Hispanic	741	5.7%

Total Households Reporting Race/Ethnicity in 2013	13,053	100.0%
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Source: Combined Funders Annual Reporting System (WBARS), Office of Housing Annual Reports, 2013

Housing Figure A-37

Seattle Rental Housing Program Average Household Size and Household Income

Unit Type	Average Size of Households	Average Annual Income of Households	Income of Households as Percent of Area Median Income
Studio	1.04	\$10,536	17%
1-Bedroom	1.29	\$16,841	26%
2-Bedroom	2.71	\$22,980	30%
3-Bedroom	4.09	\$22,859	29%
4-Bedroom	5.99	\$30,235	31%
5-Bedroom	8.17	\$26,243	22%

Source: Combined Funders Annual Reporting System (WBARS), Office of Housing Annual Reports, 2013.

Continued Production

Based on historic program production, the City's Office of Housing (OH) estimates that roughly the following numbers of rent- and income-restricted housing units would continue to be produced or newly preserved annually under existing affordable housing programs:

With long-term affordability covenants of 50 years' duration:

- Rental Housing Program: approximately 400 affordable units per year (funded by the Seattle Housing Levy, incentive zoning fees and subsidies from federal, state, and local sources)
- Incentive Zoning on-site performance: approximately 25 affordable units per year
- There is potential for more units to be produced through the City's existing Incentive Zoning program if the program is changed and/or expanded to new areas.

With shorter-term affordability covenants of 12 years' duration:

- Multifamily Tax Exemption: approximately 325 to 375 affordable units per year

These figures are for rent- and income-restricted housing funded and incentivized by the City; affordable units created without such involvement by the City are not included. These figures also do not account for the loss of rent- and income-restricted units, including the loss of Multifamily Tax Exemption units due to expiration of 12-year housing affordability covenants.

As described previously, the Rental Housing Program operated by the City's Office of Housing provides capital funding for the production and preservation of low-income housing using funds from the Seattle Housing Levy, incentive zoning payments, and subsidies from other governmental sources. The production estimates above are based on a continuation of programs in place in 2014 and assume stable state, county and federal resources. However, it is important to note that many sources of outside government funds have been shrinking and that there is a significant risk that affordable housing resources from county, state, and federal agencies will decline.

In September 2014, the City Council and Mayor Murray approved Resolution 31546 calling for the creation of a Housing Affordability and Livability Agenda (HALA) and convening a HALA Advisory Committee. The purpose of the HALA is to chart a course for the next 10 years for ensuring the development and preservation of housing that addresses the wide diversity of housing needs of people across the income spectrum. As stated in the resolution, "existing programs and policies alone are unlikely to provide and preserve the number of affordable units that will be required to meet the future affordable housing needs of households across the City." The HALA will include "recommendations for

new or revised programs and policies designed to meet the City's projected housing needs; and estimate gaps in meeting housing needs that may remain.”¹⁸

J Concluding Summary: Key Findings on Existing and Projected Affordable Housing Needs

This Housing Appendix includes an analysis of Seattle’s existing and projected affordable housing needs. Key findings based on these analyses are summarized below.

There are currently an estimated 27,200 rent/income restricted housing units in Seattle. Even with these units and the low-cost units provided by the market, large gaps remain between the demand for and supply of housing affordable to households at low income levels. Substantial shares of low-income households are shouldering unaffordable housing cost burdens. The shortages of affordable housing and the percentage shares of households who are cost-burdened are the largest for households in the lowest income categories.

The analysis of existing needs includes an examination of the affordability and availability of rental housing. Described on pages 42-44, that analysis provides a useful but partial picture of existing unmet housing needs. That analysis finds that the numbers of renter households in Seattle with incomes at or below extremely low-income (30 percent of AMI) and very low-income (50 percent of AMI) thresholds greatly exceed the numbers of rental units that are affordable and available to households with incomes at or below these thresholds. Gauged at 80 percent of AMI, the estimated shortage in affordable and available units is lower, but is still substantial.

- The existing shortage in rental housing affordable and available at or below 30 percent of AMI is an estimated 23,500 units.
- The existing shortage in rental housing affordable and available at or below 50 percent of AMI is an estimated 25,000 units.
- The existing shortage in rental housing affordable and available at or below 80 percent AMI is an estimated 9,300 units.

Seattle is expecting residential growth in the next 20 years to total 70,000 households. This appendix provides a rough projection of housing affordability needs associated with these households. (See pages 45 to 47.) Meeting the affordability needs associated with these new households would require production of an additional 27,500 to 36,500 housing units affordable at or below 80 percent of AMI, including 10,500 rent/income restricted housing units for extremely low-income households. This is in addition to units to address existing unmet affordability needs.

¹⁸ Seattle City Council Resolution Number: 31546, Adopted by Full Council: September 22, 2014 and signed by Mayor Murray, September 23, 2014.

The City's Office of Housing estimates that, based on historic production, roughly 750 to 800 rent- and income-restricted units could be produced annually with the City's existing programs. (See page 54.)

This includes:

- Roughly 425 units per year through programs providing for long-term affordability (the Rental Housing Program and Incentive Zoning Program)
- Approximately 325-375 units through the Multifamily Tax Exemption Program, which has shorter-term affordability covenants

Over the course of 20 years, this could total as many as 16,500 rent- and income-restricted units. This total could be higher if the existing incentive zoning program is changed and/or expanded to new areas. However, also of note is that expirations of affordability covenants—in some existing buildings and in a portion of new projects with short-term affordability requirements—will occur over the next 20 years.

The data analyzed in this appendix indicate that in order to make substantial progress in addressing existing unmet affordability needs and address the affordability needs of new households, it will be necessary to increase production of affordable housing to rates that are much higher than those achieved historically. Additional strategies and resources will also be needed for preservation of quality, low-cost housing for longer-term affordability.

As this appendix is being written, City of Seattle policymakers, staff and stakeholders are engaged in crafting a Housing Affordability and Livability Agenda and are pursuing additional efforts to more fully address affordability challenges that limit households' ability to come to, and remain in, Seattle. The City is also engaging the public to help identify how best to mitigate potential risks of displacement and foster equitable development and access to opportunity as the city grows. The outcomes of these processes will guide the strategies necessary for addressing Seattle's housing needs into the future.

Land Use Appendix

Land Use Figure A-1
Existing Land Area occupied by Specific Uses by Urban Centers and Urban Villages

Location	Gross Acres	Rights-of-Way	Net Acres*	Single Family	Multi-Family	Commercial/Mixed-Use	Industrial	Major Institution And Public Facilities/Utilities	Open Space**	Vacant	Other***
Belltown	219	96	123		19	85	4	3	6	5	11
Denny Triangle	143	66	77		4	64	0	6	0	1	18
Commercial Core	275	120	156		11	107	1	21	9	3	15
Pioneer Square	141	50	91		4	63	4	7	2	10	10
Chinatown-International District	172	76	96	1	7	66	10	3	3	7	15
Downtown Urban Center	950	408	542	1	46	385	20	40	20	26	70
Capitol Hill	397	152	245	22	145	43	1	15	14	6	8
Pike/Pine	131	53	78	0	18	42	6	6	4	1	8
First Hill	228	93	135	1	43	47		19	5	10	26
12th Avenue	160	47	113	6	21	25	7	46	0	6	12
First Hill/Capitol Hill Urban Center	916	345	571	29	227	157	14	85	23	23	53
Ravenna	123	26	97	4	34	48	6	0	3	1	3
University Campus	342	54	288		9	11	2	261	1	0	8
University District Northwest	287	111	177	18	71	61		17	4	5	10
University Community Urban Center	752	190	562	22	115	120	8	278	8	6	20

Location	Gross Acres	Rights-of-Way	Net Acres*	Single Family	Multi-Family	Commercial/Mixed-Use	Industrial	Major Institution And Public Facilities/Utilities	Open Space**	Vacant	Other***
Northgate	411	111	300	6	72	177	1	23	16	4	17
South Lake Union	339	145	194	0	8	127	25	7	14	13	19
Uptown	333	112	221	4	41	150	6	8	7	5	18
Urban Centers Total	3,701	1,312	2,389	62	509	1,116	73	442	88	76	197
Ballard	425	150	274	47	113	74	11	15	6	7	7
Bitter Lake Village	352	62	290	14	55	135	38	31	10	7	4
Fremont	213	81	133	14	41	47	18	5	4	4	2
Lake City	142	40	103	5	38	42	4	5	5	4	4
North Rainier	455	147	308	82	37	68	43	14	34	30	7
West Seattle Junction	226	88	138	38	34	47	2	10	1	7	4
Hub Urban Villages Total	1,814	568	1,246	199	318	413	115	80	59	59	27
23rd & Union-Jackson	516	167	350	129	81	39	8	40	32	21	7
Admiral	98	30	68	12	11	17		13	14		1
Aurora-Licton Springs	327	95	232	54	76	40	23	25	9	5	7
Columbia City	313	95	217	68	49	32	4	14	17	32	6
Crown Hill	173	50	123	75	18	22	1	4	2	1	1
Eastlake	200	91	109	13	48	36	2	2	5	3	1
Green Lake	109	49	60	11	25	12	0	9	2	0	1
Greenwood-Phinney Ridge	94	31	63	4	12	40	1	2	0	2	2
Othello	375	94	281	87	58	27	5	27	9	64	4
Madison-Miller	145	50	95	27	36	15	0	5	8	4	3
Morgan Junction	114	39	75	40	18	11	0	4	0	0	0
North Beacon Hill	131	51	80	35	25	9	0	4	3	3	0
Upper Queen Anne	53	21	32	1	13	13	0	4		0	0

Location	Gross Acres	Rights-of-Way	Net Acres*	Single Family	Multi-Family	Commercial/Mixed-Use	Industrial	Major Institution And Public Facilities/Utilities	Open Space**	Vacant	Other***
Rainier Beach	290	70	219	48	43	34	4	44	16	30	2
Roosevelt	158	61	97	51	9	18	1	13	0	6	2
South Park	263	80	184	116	20	6	5	5	15	15	1
Wallingford	257	99	158	79	29	31	2	12	4	1	2
Westwood-Highland Park	275	81	194	99	40	37	2	11		6	1
Residential Urban Villages Total	3,891	1,254	2,638	949	611	440	58	240	139	193	40
Ballard-Interbay-Northend	932	218	713	4	2	154	166	283	5	97	9
Greater Duwamish	4,928	1,126	3,802	13	4	283	1,457	1,493	30	502	82
Manufacturing Industrial Centers Total	5,859	1,344	4,515	17	6	436	1,624	1,776	35	599	91
Outside Villages	37,886	9,676	28,210	17,592	1,715	667	121	1,561	5,377	1,108	110
City Total	53,151	14,153	38,998	18,818	3,159	3,072	1,991	4,099	5,698	2,035	465

*Net acres = Gross acres minus rights-of-way.

** Some acreage may be also counted in Rights-of-Way as City-Owned Open Space includes boulevards.

*** Other Includes Parking, Easements, Unspecified uses.

Source: King County Department of Assessments, 2014.

**Land Use Figure A-2
Population and Housing per acre by Urban Center and Urban Village**

Location	Total Population (2010)	Population / Acre	Housing Units (2010)	Housing Units / Acre
Belltown	11,961	55.2	9,984	46.0
Denny Triangle	3,248	21.8	2,971	19.9
Commercial Core	5,917	21.6	3,651	13.3

Location	Total Population (2010)	Population / Acre	Housing Units (2010)	Housing Units / Acre
Pioneer Square	2,252	16.2	1,023	7.3
Chinatown-International District	3,466	22.0	2,393	15.2
Downtown Urban Center Total	26,844	28.7	20,022	21.4
Capitol Hill	18,279	45.6	13,474	33.6
Pike/Pine	4,413	36.7	3,442	28.6
First Hill	8,681	37.4	6,592	28.4
12th Avenue	4,519	28.4	1,972	12.4
First Hill/Capitol Hill Urban Center Total	35,892	39.4	25,480	27.9
University District Northwest	13,654	47.1	6,426	22.1
Ravenna	3,323	26.7	1,617	13.0
University Campus	5,727	16.9	226	0.7
University Community Urban Center Total	22,704	30.1	8,269	11.0
Northgate	6,369	14.3	4,238	9.5
South Lake Union	3,774	10.7	2,781	7.9
Uptown	7,300	21.5	5,799	17.1
Urban Centers Total	102,883	27.5	66,589	17.8
Ballard	10,078	24.5	6,963	16.9
Bitter Lake Village	4,273	10.8	3,074	7.8
Fremont	3,960	18.6	2,558	12.0
Lake City	3,899	25.2	2,419	15.6
North Rainier	4,908	10.6	2,201	4.7
West Seattle Junction	3,788	17.0	2,544	11.4
Hub Urban Villages Total	30,906	16.6	19,759	10.6
23rd & Union-Jackson	9,468	18.3	5,058	9.8
Admiral	1,528	13.8	1,054	9.5
Aurora-Licton Springs	6,179	19.3	3,267	10.2
Columbia City	3,937	14.1	1,885	6.8
Crown Hill	2,459	14.6	1,193	7.1
Eastlake	5,084	26.3	3,543	18.3
Green Lake	2,904	27.0	2,008	18.7
Greenwood-Phinney Ridge	2,927	20.6	1,729	12.1
Othello	7,267	19.1	2,435	6.4
Madison-Miller	4,066	27.9	2,414	16.6
Morgan Junction	2,046	18.2	1,267	11.3
North Beacon Hill	2,900	23.2	1,380	11.0
Upper Queen Anne	2,143	26.9	1,570	19.7

Location	Total Population (2010)	Population / Acre	Housing Units (2010)	Housing Units / Acre
Rainier Beach	3,583	14.0	1,486	5.8
Roosevelt	2,384	14.0	1,198	7.0
South Park	3,448	10.7	1,282	4.0
Wallingford	5,350	20.3	2,940	11.2
Westwood-Highland Park	4,606	14.0	2,123	6.5
Residential Urban Villages Total	72,279	18.0	37,832	9.4
Ballard-Interbay-Northend	1,658	1.8	667	0.7
Greater Duwamish	1,064	0.2	415	0.1
Manufacturing Industrial Centers Total	2,722	0.5	1,082	0.2
Outside Villages	399,870	10.6	183,254	4.8
City Total	608,660	11.5	308,516	5.8

Source: U.S. Census Bureau, Decennial Census 2010.

Land Use Figure A-3
Jobs per acre by Urban Center and Urban Village

Location	Jobs* (2010)	Jobs / Acre
Belltown	17,988	83.0
Denny Triangle	16,120	108.1
Commercial Core	84,080	307.0
Pioneer Square	10,454	75.0
Chinatown-International District	7,739	49.1
Downtown Urban Center Total	136,381	145.6
Capitol Hill	5,444	13.6
Pike/Pine	5,033	41.8
First Hill	26,106	112.6
12th Avenue	5,054	31.8
First Hill/Capitol Hill Urban Center Total	41,637	45.7
University District Northwest	4,696	16.2
Ravenna	2,708	21.7
University Campus	25,568	75.3
University Community Urban Center Total	32,972	43.7
Northgate	11,430	25.7
South Lake Union	19,644	55.7
Uptown	13,911	41.0

Location	Jobs* (2010)	Jobs / Acre
Urban Centers Total	255,975	68.4
Ballard	5,447	13.2
Bitter Lake Village	3,100	7.8
Fremont	7,468	35.0
Lake City	1,600	10.3
North Rainier	3,614	7.8
West Seattle Junction	2,695	12.1
Hub Urban Villages Total	23,924	12.8
23rd & Union-Jackson	4,269	8.3
Admiral	1,400	12.7
Aurora-Licton Springs	2,334	7.3
Columbia City	1,902	6.8
Crown Hill	847	5.0
Eastlake	5,065	26.2
Green Lake	1,456	13.5
Greenwood-Phinney Ridge	1,705	12.0
Othello	1,378	3.6
Madison-Miller	1,065	7.3
Morgan Junction	430	3.8
North Beacon Hill	559	4.5
Upper Queen Anne	1,556	19.5
Rainier Beach	1,088	4.2
Roosevelt	1,496	8.8
South Park	1,035	3.2
Wallingford	2,784	10.6
Westwood-Highland Park	1,367	4.2
Residential Urban Villages Total	31,736	7.9
Ballard-Interbay-Northend	14,205	15.2
Greater Duwamish	58,744	12.6
Manufacturing Industrial Centers Total	72,949	13.0
Outside Villages	77,591	2.0
City Total	462,175	8.7

* Jobs are reported "covered employment," which refers to positions covered by the Washington Unemployment Insurance Act.

Source: Washington State Employment Security Department Quarterly Census of Employment and Wages and Puget Sound Regional Council. March 2010.

Land Use Figure A-4
Employment by Industry Sector 1995-2010

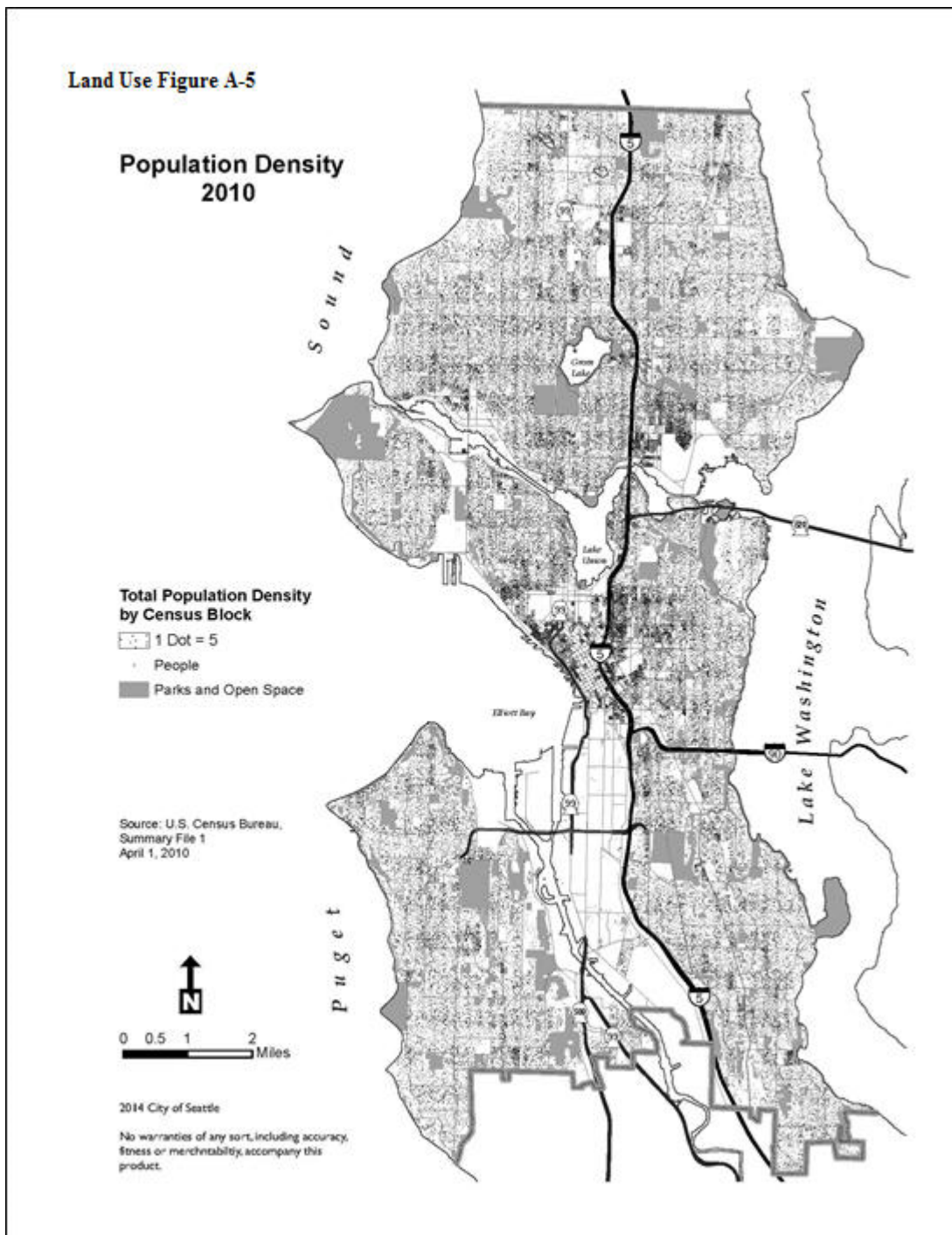
Sector	1995	% Share	2000	% Share	2010	% Share	% Change 1995- 2010 *	% Change 2000-2010
Construction, Resources	15,282	3.6%	22,645	4.5%	16,748	3.6%		-35.2%
Finance, Insurance, Real Estate	35,253	8.3%	42,471	8.4%	31,970	6.9%		-32.8%
Manufacturing	38,050	8.9%	37,104	7.4%	26,417	5.7%		-40.5%
Retail	31,504	7.4%	41,984	8.3%	36,921	8.0%		-13.7%
Services	185,899	43.6%	235,336	46.8%	237,882	51.5%		1.1%
Warehousing, Transportation , Utilities	40,545	9.5%	43,636	8.7%	29,206	6.3%		-49.4%
Government	51,571	12.1%	47,565	9.5%	48,468	10.5%		1.9%
Education	28,625	6.7%	32,094	6.4%	34,570	7.5%		7.2%
Total	426,729	100%	502,835	100%	462,180	100%	7.7%	-8.8%

Jobs are a report of "covered employment," which refers to positions covered by the Washington Unemployment Insurance Act. The Act exempts the self-employed, proprietors and corporate officers, military personnel, and railroad workers, so those categories are not included in the dataset. Covered Employment accounts for approximately 90% of all employment.

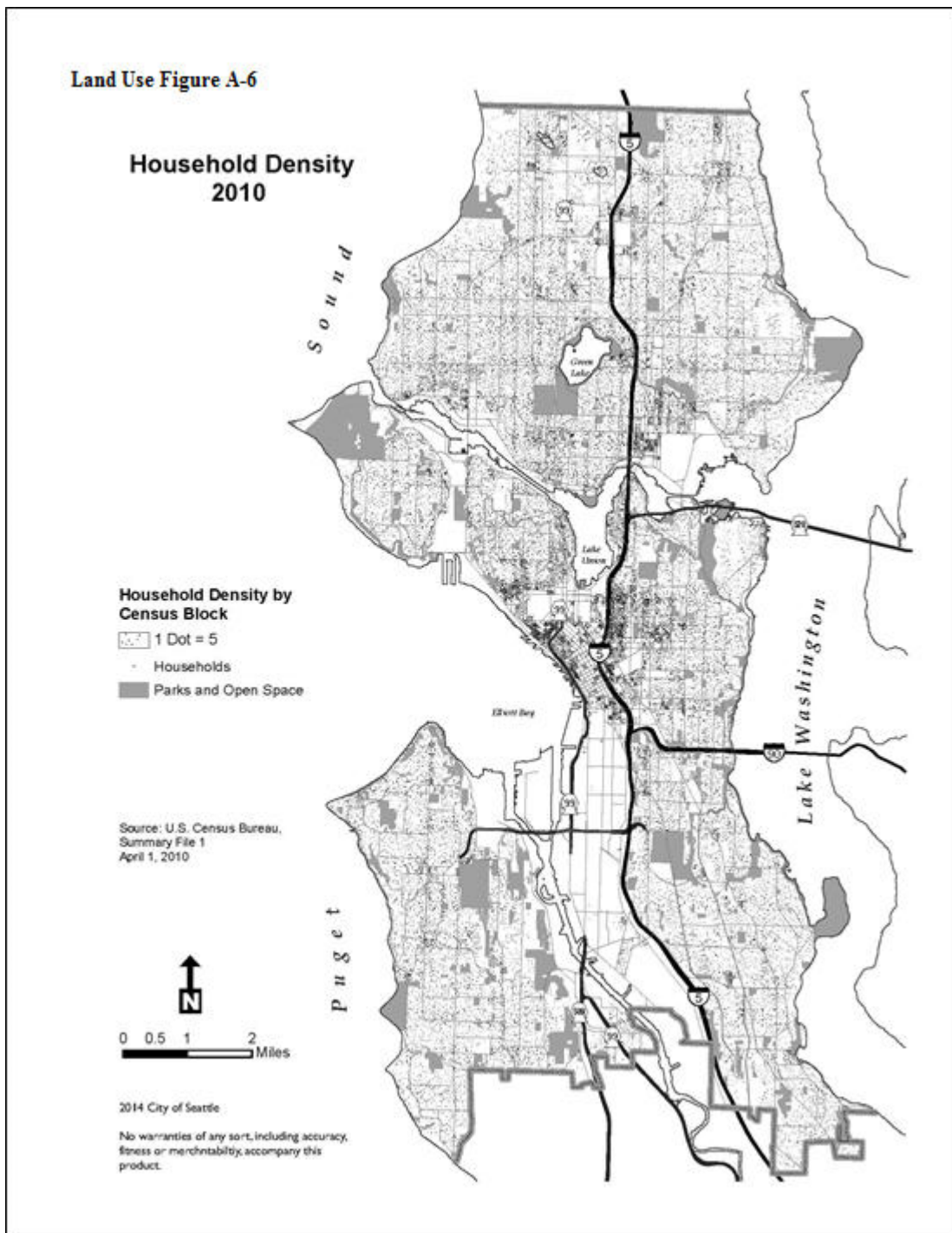
**The method of identifying jobs by sector has changed since 1995, and it is not practical to compare employment by sector between 1995 and later years.*

Source: Washington State Employment Security Department Quarterly Census of Employment and Wages and Puget Sound Regional Council. March, 1995 and 2010.

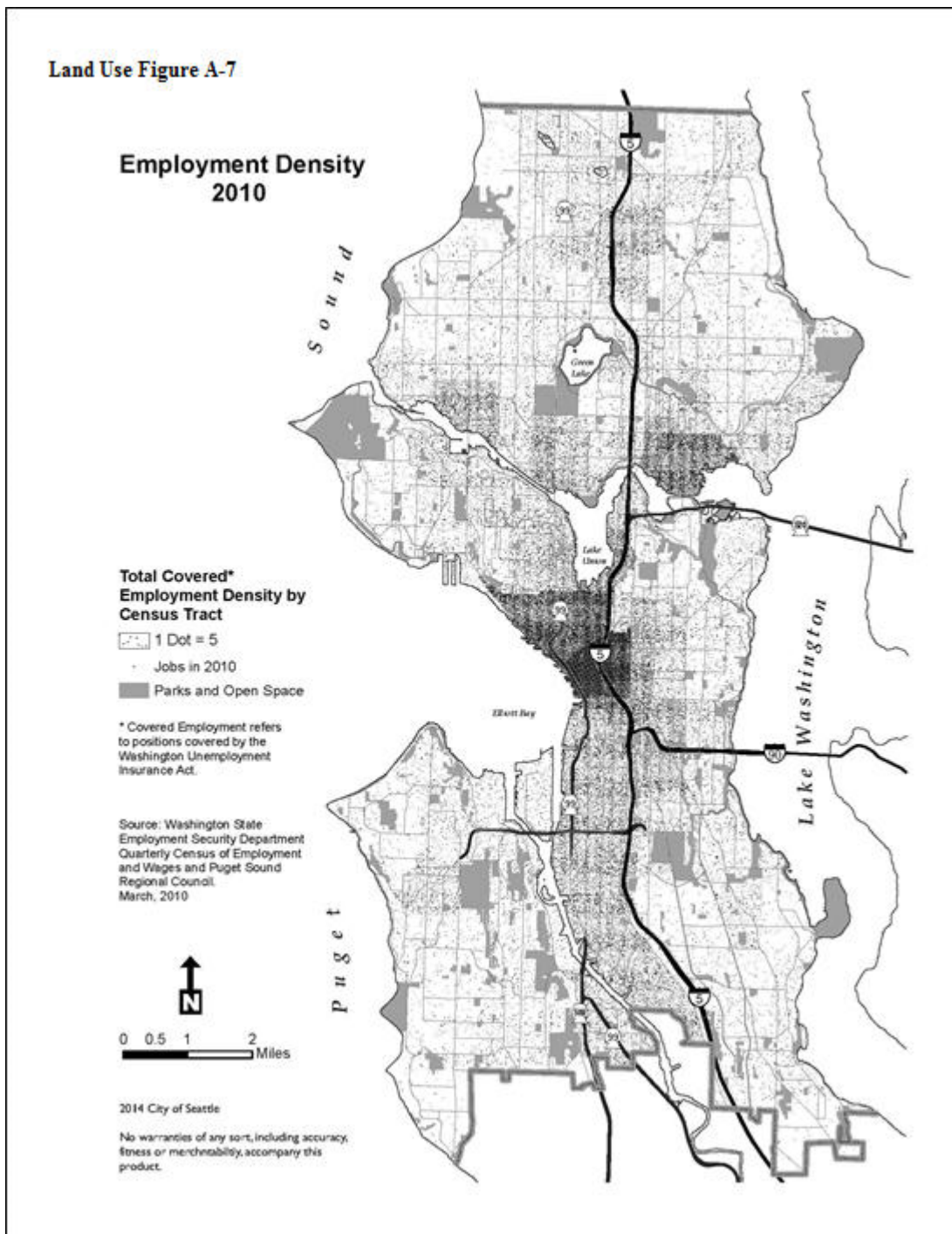
Land Use Figure A-5 Population Density 2010



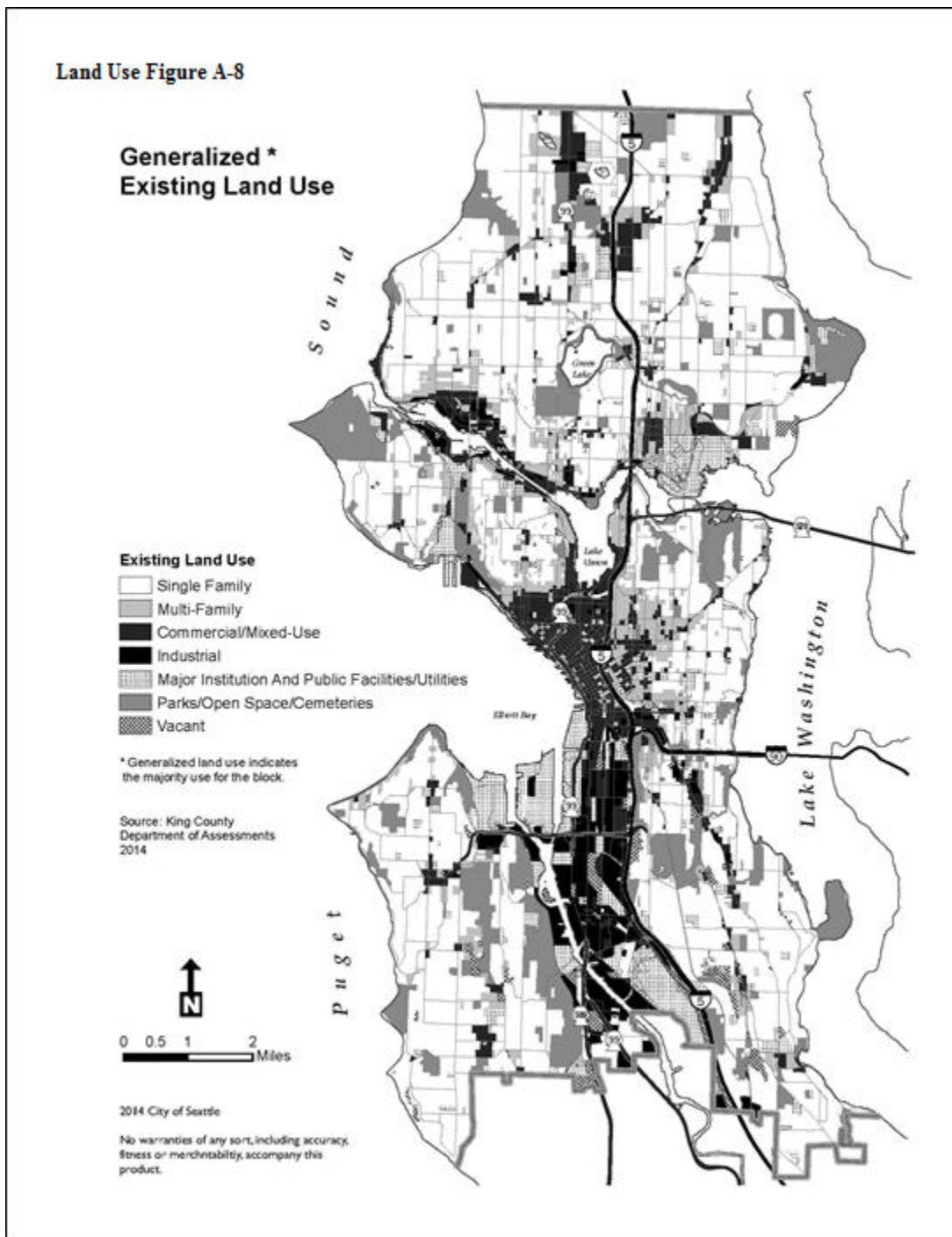
Land Use Figure A-6 Household Density 2010



Land Use Figure A-7 Employment Density 2010



Land Use Figure A-8 Generalized Existing Land Use



Transportation Appendix

Many of the terms used in the Transportation Element and Appendix may be unfamiliar to the casual reader. There are useful glossaries in the State of Washington Department of Commerce's Transportation Guidebook (<http://www.commerce.wa.gov/Documents/GMS-Transportation-2012.pdf>) and the state Department of Transportation's website titled Growth Management Act (GMA) Comprehensive Plan Resources (<http://www.wsdot.wa.gov/planning/community/GMA.htm>) and also on WSDOT's website, (<http://www.wsdot.wa.gov/Publications/Manuals/index.htm>). Additional glossaries can be found at <http://www.fhwa.dot.gov/planning/glossary/index.cfm> and <http://trblist.org/subjectglossaries>.

The purpose of providing the information in this Appendix, and related information in the Transportation Element, is to comply with the requirements of RCW Chapter 36.70A (Growth Management Act) by showing land use assumptions used in estimating travel; estimated traffic impacts to state-owned transportation facilities based on those assumptions; facilities and service needs, including level of service standards for local arterials and state highways; forecasts of traffic; and the availability of financing and a financing plan to show how these identified needs will be met.

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- Figure A-2: Transit High-Occupancy Vehicle Lanes
- Figure A-3: Bus Routes
- Figure A-4: Rail and Ferry Routes
- Figure A-5: Park & Ride Facilities
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A Land Use Assumptions Used in Estimating Travel¹⁹

To estimate future travel levels, assumptions were made for a variety of factors related to future population, employment, and transportation facilities. These include the number and geographic distribution of both households and employment in Seattle and the region, characteristics of households and jobs (e.g., number of residents per household, household income), and the transportation network (e.g., streets, transit routes). Then, a computer model was used to predict the total number of person-trips between various zones, the number of trips that would use various modes (e.g., car, bus, bike, walk), and the resulting vehicle traffic volumes on various streets throughout the city.

Existing Conditions

In 2010, the census counted 608,660 people living in Seattle; 2014 City estimates place the current number at about 640,500 people. But many other people visit Seattle for a range of purposes, such as working, shopping, education, tourism, medical appointments, pass-through travel, and other reasons.

Seattle covers about 53,113 acres of land. Most areas of the city are of predominantly one type of land use (e.g., residential, commercial, or industrial). About 40 percent of the city's land area is occupied by residential uses. In 2010, there were approximately 308,500 housing units in the city. Estimates in 2012 placed the total number of housing units in the city at about 312,850 units. The area north of the ship canal has more of its land area occupied by housing than mid-Seattle (south of the ship canal to I-90) or south Seattle (south of I-90).

Street rights-of-way take up the next largest amount of land, almost 27 percent. Commercial and industrial areas, where most of the jobs in the city are located, occupy about 13 percent of the land area. Parks occupy slightly more than nine percent; cemeteries, reservoirs, and other uses occupy six percent; and the remainder of land is vacant.

Regional Land Use Assumptions

The Puget Sound Regional Council (PSRC) conducts regional planning for the four-county (Snohomish, King, Pierce, and Kitsap) central Puget Sound region. The PSRC's Vision 2040 Growth Strategy and Transportation Plan presents a vision and array of strategies designed to achieve goals of growth management, transportation demand management, and improved transportation investment decisions. The PSRC provides population and employment forecasts for the region, and encourages growth in ways that focus future population and employment growth into urban centers, which formally include the Urban Centers that are defined in this Comprehensive Plan.

¹⁹ (RCW 36.70A.070 (6) (a) (i))

Seattle Land Use Assumptions

Seattle's growth assumptions for the period from 2015 through 2035 are 70,000 new housing units and net growth in employment of 115,000 jobs. This is the City's share of the region's projected housing and employment growth between 2015 and 2035, identified through the countywide process conducted by the Growth Management Planning Council.

The growth assumptions for the Urban Centers are as follows:

Urban Center	Housing Units	Jobs
Downtown	10,000	30,000
First Hill/Capitol Hill	7,000	4,000
South Lake Union	4,700	20,000
Uptown	3,500	3,500
University District	2,700	8,000
Northgate	1,600	5,000
Greater Duwamish Manuf./Industrial Center	NA	3,000
BINMIC	NA	1,500

B Facilities and Services Needs²⁰

Seattle's street network consists of approximately 1,534 miles of arterials, including some that are designated state routes, and more than 2,400 miles of non-arterials (see Transportation Figure A-1). In the arterial system there are 620 miles of principal arterials, 566 miles of minor arterials, and 348 miles of collector arterials. High-occupancy vehicle (HOV) lanes exist on some arterials and limited access facilities as shown in Transportation Figure A-2.

Transit

Public transit in Seattle is provided by three agencies. King County Metro provides bus, trolley and streetcar services that cover most of King County. Community Transit and Sound Transit operate express bus services to Seattle from King, Snohomish and Pierce Counties. As of 2014, King County Metro serves a population of more than 2 million people in a service area greater than 2,000 square miles. It operates more than 1,800 vehicles on about 214 bus, trolley and dial-a-ride routes. Included are 159 electric trolley buses serving 14 routes along almost 70 miles of two-direction overhead wires. Its 2012 ridership was more than 114 million passengers. Transportation Figure A-3 shows bus routes in Seattle.

King County Metro operates a 1.3-mile long tunnel under Third Avenue and Pine Street from the International District to 9th Avenue and Pine Street. The tunnel has four operational stations, and

²⁰ (RCW 36.70A.070 (6) (a) (iii))

connects to I-90 at the south end and to the I-5 express lanes at the north end. The tunnel supports joint bus and light rail service until such time as light rail train service is too frequent to safely operate joint services in the tunnel.

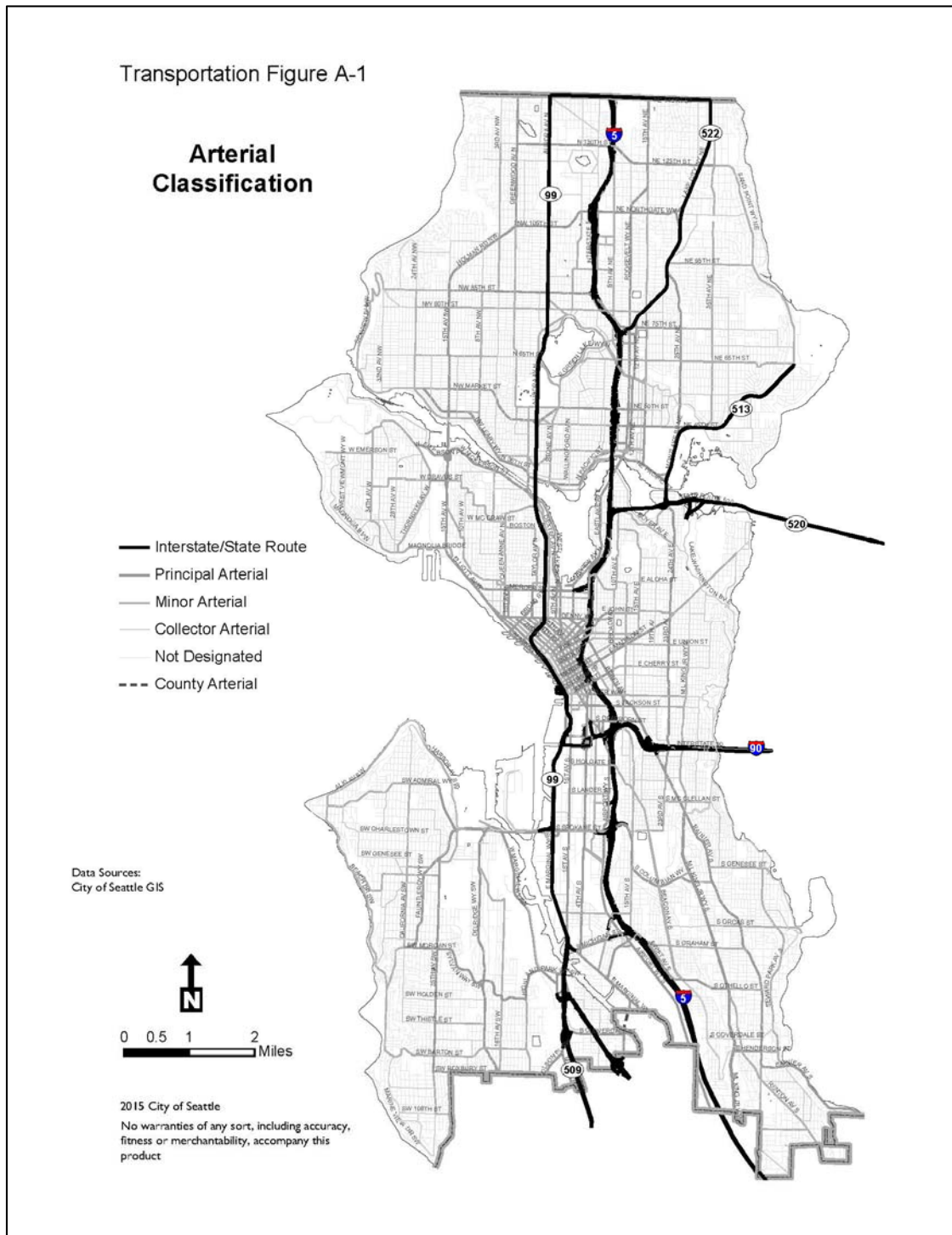
Sound Transit is the regional transit authority for the Puget Sound area (which includes portions of King, Snohomish and Pierce Counties.) Sound Transit operates light rail service connecting Downtown Seattle with SeaTac Airport and has construction underway to extend service northward to Lynnwood. That construction will deliver light rail service to Capitol Hill and Husky Stadium by 2016, and to the University District, Roosevelt and Northgate by 2021. Routing is shown on Transportation Figure A-4.

There are 11 Link light rail stations currently in Seattle: in the Rainier Beach, Othello, Columbia City, North Rainier/Mt. Baker, Beacon Hill, SODO/Lander Street, and SODO/Royal Brougham Way neighborhoods; and four in the Downtown transit tunnel. Weekday average ridership averages more than 37,000 passengers (2014).

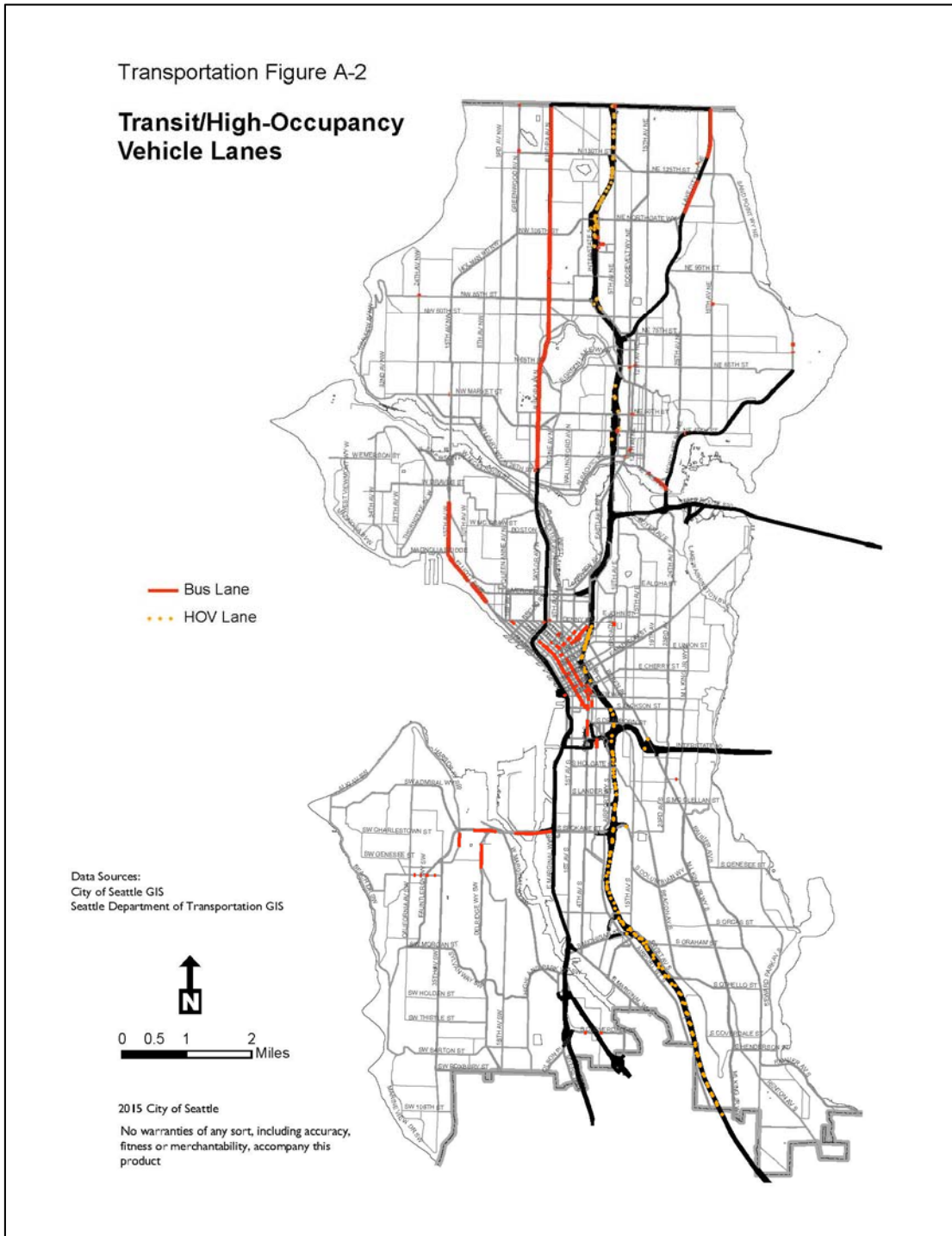
Sound Transit also provides Sounder commuter rail services during peak hours along existing rail lines from Downtown Seattle northward to Everett and southward to Tacoma and Lakewood.

Metro, Sound Transit and WSDOT operate approximately 18 park and ride facilities with approximately 2,262 parking spaces in Seattle. (See Transportation Figure A-5.)

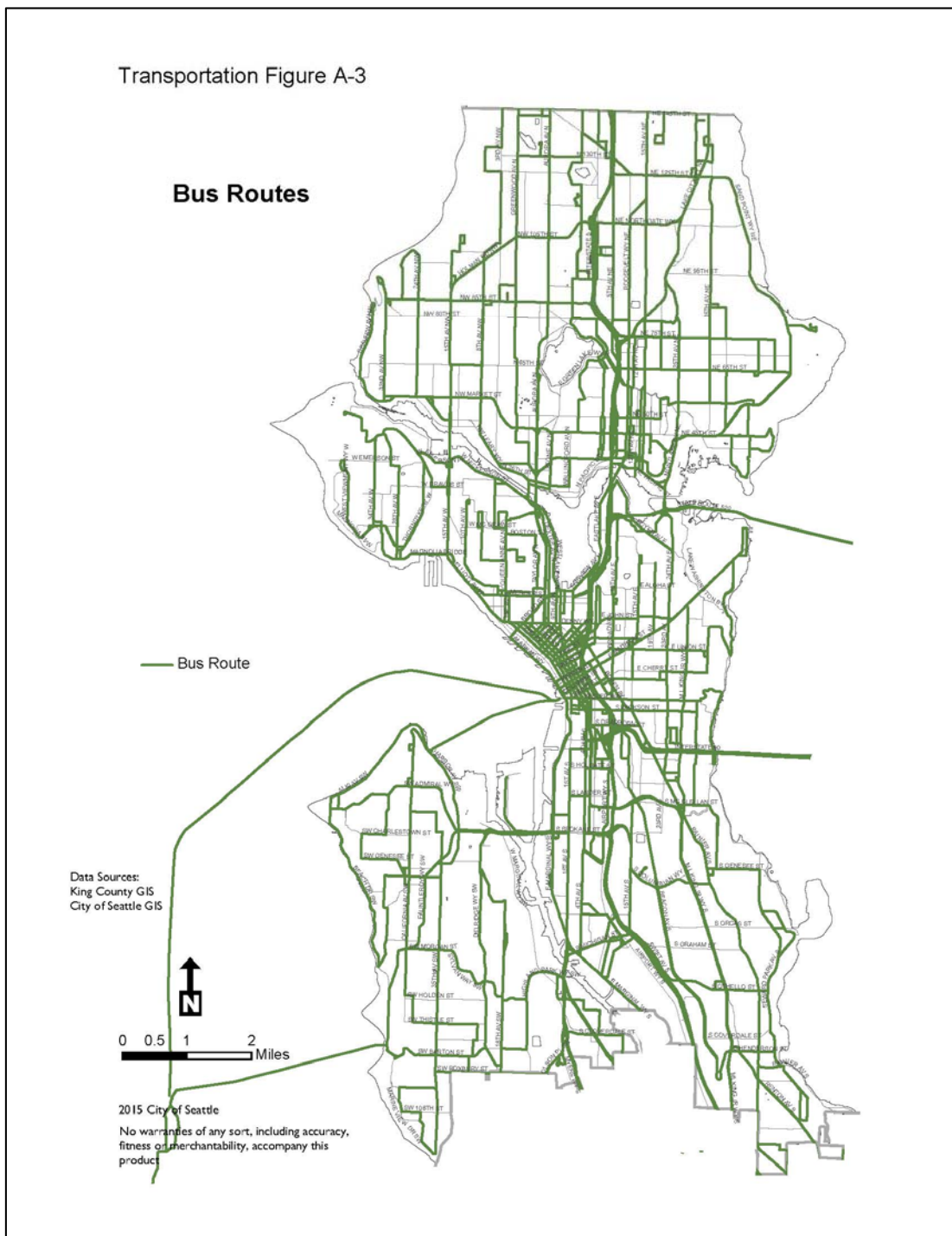
Transportation Figure A-1 Arterial Classification



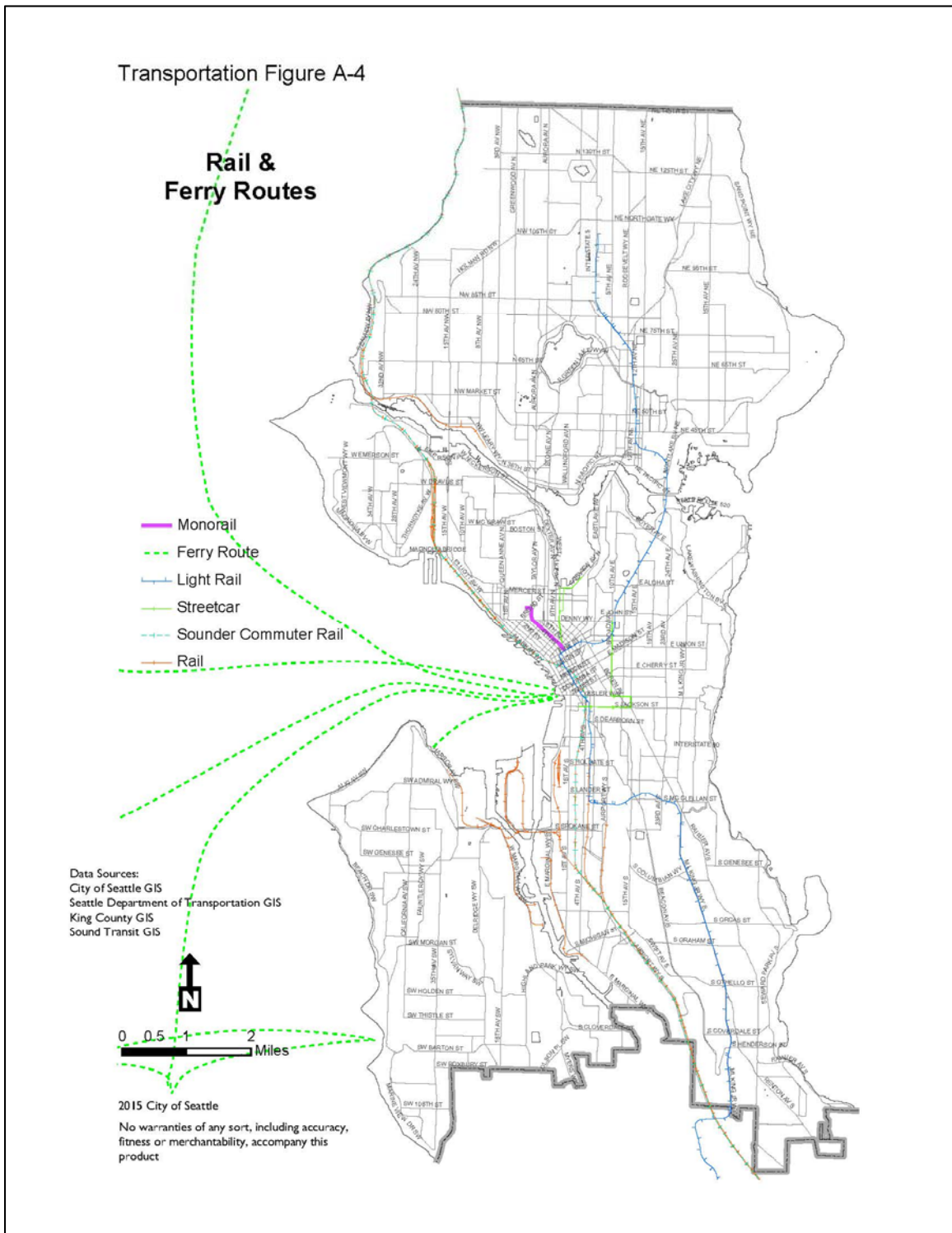
Transportation Figure A-2 Transit/High-Occupancy Vehicle Lanes



Transportation Figure A-3 Bus Routes



**Transportation Figure A-4
Rail & Ferry Routes**



**Transportation Figure A-5
Park & Ride Facilities**

Lot	Name	Address	Spaces	Amenities/Routes/Notes
N/A	Montlake Station	Montlake Blvd E & SR 520	0	54 Bike Lockers Metro: 25, 43, 48
703	Green Lake Park & Ride	6601 8th Ave NE	411 *	22 Bike Lockers Metro: 48, 64, 66, 67, 76, 242, 316 Sound Transit: 542 *Lot is usually filled 90 percent or above by 9:00 a.m. on weekdays
505	Lamb of God Lutheran Church	12509 27th Ave NE	21	Metro: 41
706	North Seattle Interim Park & Ride	402 NE 103rd St.	156	Metro: 16, 40, 41, 66, 67, 68, 75, 242, 303, 345, 346, 347, 348, 995 Sound Transit: 555, 556
758	Northgate Mall Park & Ride Garage	NE 103rd St & 1st Ave NE	280 *	Spaces located on floors 1 and 2 Metro: 16, 40, 41, 66, 67, 68, 75, 242, 303, 345, 346, 347, 348, 995 Sound Transit: 555, 556 *Lot is usually filled 90 percent or above by 9:00 a.m. on weekdays
753	Northgate Transit Center	10200 1st Ave NE	296 *	12 Bike Lockers 12 On-Demand Bike eLockers Ticket Vending Machines Metro: 16, 40, 41, 66, 67, 68, 75, 242, 303, 345, 346, 347, 348, 995 Sound Transit: 555, 556 Boarding Locations Map *Lot is usually filled 90 percent or above by 9:00 a.m. on weekdays
753.1 and 753.2	Northgate Transit Center East Park & Ride	3rd Ave NE & NE 103rd St	448 *	Spaces include 50 for carpool Metro: 16, 40, 41, 66, 67, 68, 75, 242, 303, 345, 346, 347, 348, 995 Sound Transit: 555, 556

Lot	Name	Address	Spaces	Amenities/Routes/Notes
				*Lot is usually filled 90 percent or above by 9:00 a.m. on weekdays
710	South Jackson Park Park & Ride	5th Ave NE & NE 133rd St	46	Metro: 242
760	Thornton Place Garage	3rd Ave NE & NE 100th St	350 *	Garage Floors P1 & P2 Hours: Monday-Friday 6 a.m. - 8 p.m. Metro: 16, 40, 41, 66, 67, 68, 75, 242, 303, 345, 346, 347, 348, 995 Sound Transit: 555, 556 *Lot is usually filled 90 percent or above by 9:00 a.m. on weekdays
749	Airport & Spokane Park & Ride	Airport Way S & S Spokane St	25	Metro: 101, 102, 106, 131, 150, 177, 178, 190 Sound Transit: 590, 592, 593, 594, 595
550	Beverly Park First Baptist Church	11659 1st Avenue S	12	Metro: 128, 131
N/A	Columbia City Station	4818 Martin Luther King Jr Way S	0	37 Bike Lockers No Metro or Sound Transit Parking Available Paid Parking Nearby Ticket Vending Machines Sound Transit: Central Link Light Rail Closest Bus Route: Metro: 8
591	Community Bible Fellowship	11227 Renton Avenue S	29	Metro: 106
562	Holy Family Church	9641 20th Avenue SW	23	Metro: 22, 113, 125 Sound Transit: 560
738	Olson Place & Myers Way Park & Ride	9000 Olson Pl SW	100	Metro: 60, 113
N/A	SODO Station	500 S Lander St	0	16 Bike Lockers Sound Transit: Central Link Light Rail

Lot	Name	Address	Spaces	Amenities/Routes/Notes
553	Sonrise Evangelical Free Church	610 SW Roxbury St	10	Metro: 60, 113
744	Southwest Spokane St Park & Ride	3599 26th Avenue SW	55	Metro: 21, 37 Express

Source: King County Metro. "Park and Ride Information." Last modified 2014. <http://metro.kingcounty.gov/tops/parknride/>.

Bicycles and Pedestrians

Bicycles are classified as "vehicles" in the Seattle Traffic Code and have the right to use all streets in the city except where explicitly prohibited. Bicycling is steadily growing in popularity as an everyday commuting method and as recreational activity. Transportation Figure A-6 illustrates the location of seven categories of bike facilities. There are more than 300 miles of bicycle facilities as of 2013, including 78 miles of bicycle and climbing lanes, 92 miles of shared lane pavement markings, 6 miles of neighborhood greenways, 47 miles of multi-use trails, 128 miles of signed routes, and more than 2 miles of other on- and off-street bicycle facilities. A recently updated Bicycle Master Plan and an Implementation Plan spell out the approach to expanding the network further to increase its connectivity, completeness and safety.

Bicycle racks are provided in neighborhood commercial areas and downtown, and some work places provide secure, weather protected bike parking, showers, and lockers. As of 2010, the City had installed over 2,550 bike racks across the city. Seattle's Land Use Code also requires that many new developments include bike parking where parking is built for cars.

As of 2010, Seattle had more than 2,200 miles of sidewalks, nearly 5,000 crosswalks, almost 27,000 curb ramps, 500 stairways, and 39 lane miles of 12-foot wide trails (see pedestrian facilities mapped in Transportation Figure A-7). Over the past decade, the City has made progress in addressing gaps in sidewalk coverage by pursuing construction of sidewalks or asphalt walkways in numerous locations where they were lacking, within the constraints of budgeted funding. However, there remain several areas around the city, such as residential neighborhoods north of N 85th Street, that lack sidewalks because they were originally developed when sidewalks were not required. The pace of new sidewalk construction in 2009 was approximately 25 block-equivalents.

Parking

On-street parking occurs in the public right-of-way and is therefore regulated by the City through the creation of no-parking and special-use parking zones, time-of-day restrictions, parking duration limits, pay stations/meters, and residential parking zones. Over the past decade, the City has modernized its pay stations/meters and continues to do so with innovations such as pay-by-phone. It also has pursued

more active management of on-street parking rates in order to accomplish goals for availability of on-street parking for motorists wishing to park. This improves residents', visitors' and shoppers' ability to reliably find parking when and where they need it.

Residential parking zones (RPZ's) are designed to protect Seattle's residential neighborhoods from parking impacts and congestion from major employment and/or retail centers. In an RPZ, on-street parking is generally restricted to one or two hours, except for residents and guests who display special RPZ decals. Existing RPZ's include the following communities: Montlake, Squire Park, West Seattle-Fauntleroy, Capitol Hill, Wallingford, University District, First Hill, Eastlake, Magnolia, North Queen Anne, North Capitol Hill, Uptown (Seattle Center), Central District (Garfield High School), Belmont/Harvard, Mount Baker (Franklin High School), North Beacon Hill, Licton Springs (North Seattle Community College), Cowen Park/Roosevelt, Ravenna Bryant. The RPZ program is slated for review in 2015, with the objective to review program goals and seek refinements that will respond to current needs and priorities with respect to neighborhoods' on-street parking.

Off-street parking facilities are usually privately-owned and operated. The City regulates the location and size of garages and lots through the Land Use Code. Facilities with paid parking pay a licensing fee.

Carpools receive preferential parking treatment through City programs, allocation of on-street parking spaces, and Land Use Code requirements for carpool parking in new developments.

Rail

Passenger Rail: Amtrak operates trains over 900 miles of Burlington Northern tracks in the state and provides service to 16 cities. The Empire Builder provides daily service from Seattle to Spokane and on to Chicago; the Amtrak Cascades runs four times a day to/from Portland, and twice daily to/from Vancouver, B.C. The Coast Starlight runs daily connecting Seattle to Portland, Oakland and on to Los Angeles. Sound Transit operates two Sound train routes on the same tracks to between Seattle/Tacoma-Lakewood and Seattle/Everett.

Freight: Burlington Northern Santa Fe (BNSF) owns and operates a mainline dual-track from Portland to Seattle. Union Pacific owns and operates a single mainline track with two-way train operations between Tacoma and Seattle. BNSF owns and operates tracks that extend north from downtown Seattle to Snohomish County and then east to Spokane.

There are four **intermodal terminals** servicing the Duwamish Industrial area: BNSF Railway operates the Seattle International Gateway yard north of S. Hanford Street. Union Pacific Railroad operates the Seattle Argo Yard just south of Spokane St off of Diagonal/Denver Avenues. Port of Seattle terminals include intermodal facilities at Terminals 5 and 18. BNSF's Interbay rail yard is north of downtown Seattle.

Rail-line capacity depends on train length, operating speeds, the number of switch crossover points, and whether the line has one- or two-way traffic. Current train speed limits in the City are 10, 20, or 40 mph depending on the segment.

Other Intermodal Facilities

The Port of Seattle owns, operates or supports marine, rail, and air intermodal facilities. Port of Seattle facilities include nine commercial marine terminals, four ocean container terminals with 31 container cranes, and a deep-draft grain terminal. Steamship operators have direct service to Asia, Europe, Latin American and domestic markets (Alaska and Hawaii.) Services are offered by 17 ocean carriers; about 30 tug and barge operators; and BNSF Railway and Union Pacific railroads, operating intermodal yards. Transportation Figure A-8 shows Port of Seattle facilities located in Seattle.

Air Transportation

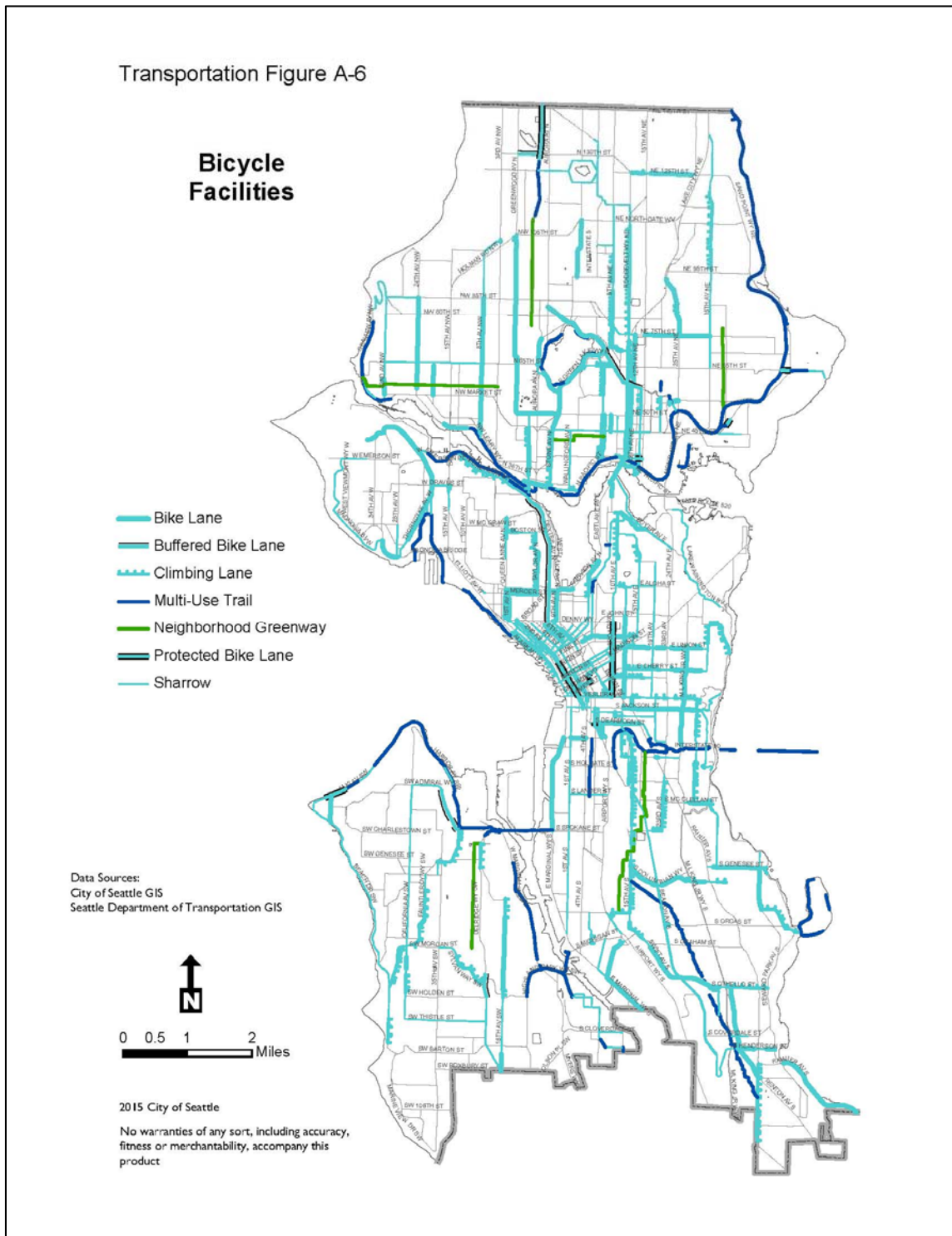
There are five commercial aircraft landing facilities in the greater Seattle metropolitan area: Seattle-Tacoma International Airport (Sea-Tac), operated by the Port of Seattle and located in the City of SeaTac; King County International Airport; the Kenmore Air Harbor and Seattle Seaplanes facilities based in Seattle's Lake Union; and the Lake Washington seaplane base near Kenmore. Transportation Figure A-9 shows air facilities in the City of Seattle.

Water Transportation

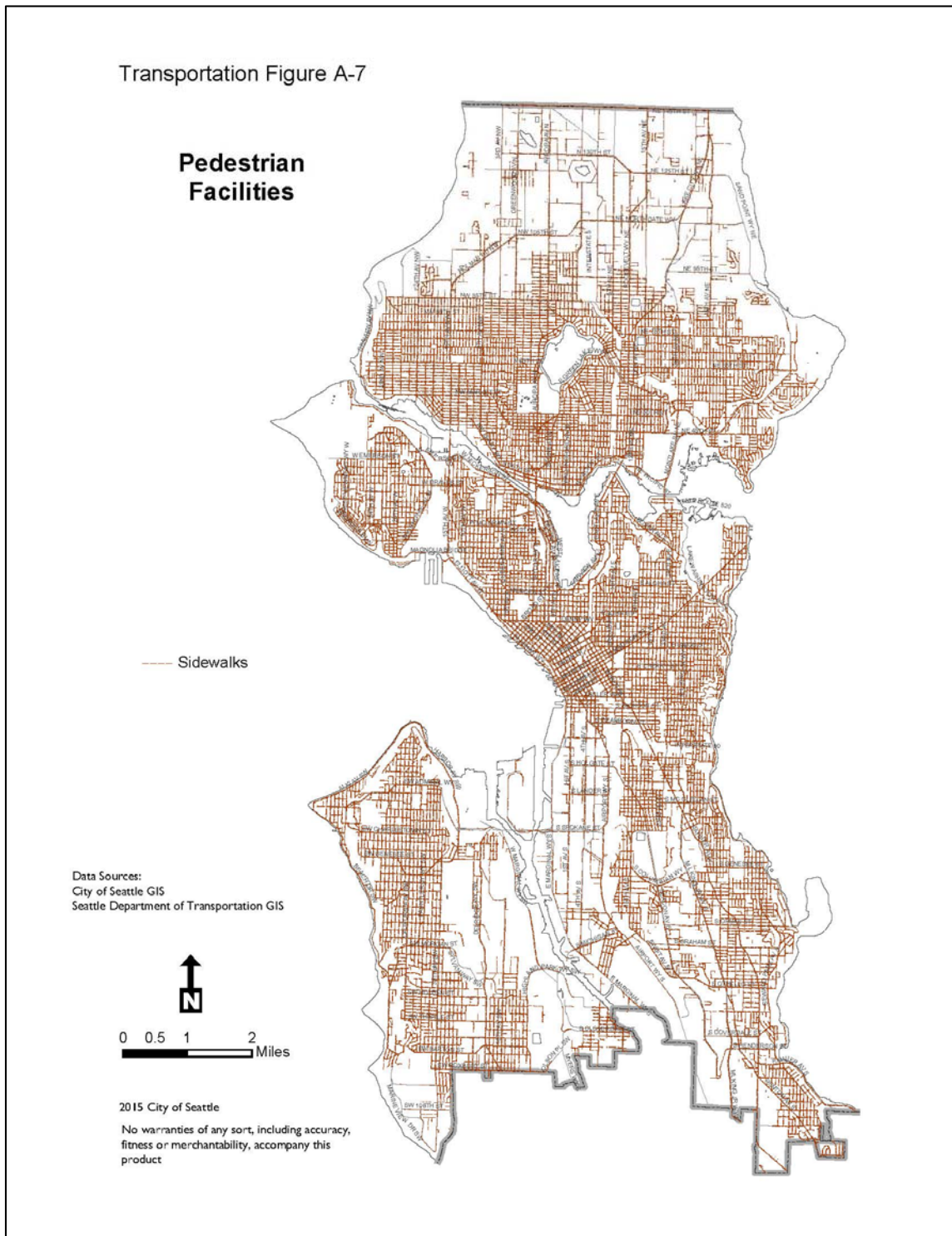
The Washington State Ferry (WSF) system operates two terminals in Seattle - Colman Dock in downtown Seattle, and the Fauntleroy terminal in West Seattle. Passenger-and-vehicle service is provided on two ferry routes from Colman Dock - to Bainbridge Island and to Bremerton. Passenger-and-vehicle ferries link Fauntleroy with Vashon Island and Southworth. King County operates a Water Taxi service in Elliott Bay connecting to West Seattle.

In 2015, the cruise ship terminals at Bell Street Cruise Terminal at Pier 66 and Smith Cove Cruise Terminal at Terminal 91 will serve seven major cruise lines including Carnival, Celebrity Cruises, Holland America Line, Norwegian Cruise Line, Princess Cruises, Oceania Cruises and Royal Caribbean. Each ship call brings in \$2.4 million to the local economy. Overall, the Seattle cruise industry generates 3,404 jobs and \$407.8 million in annual business revenue.

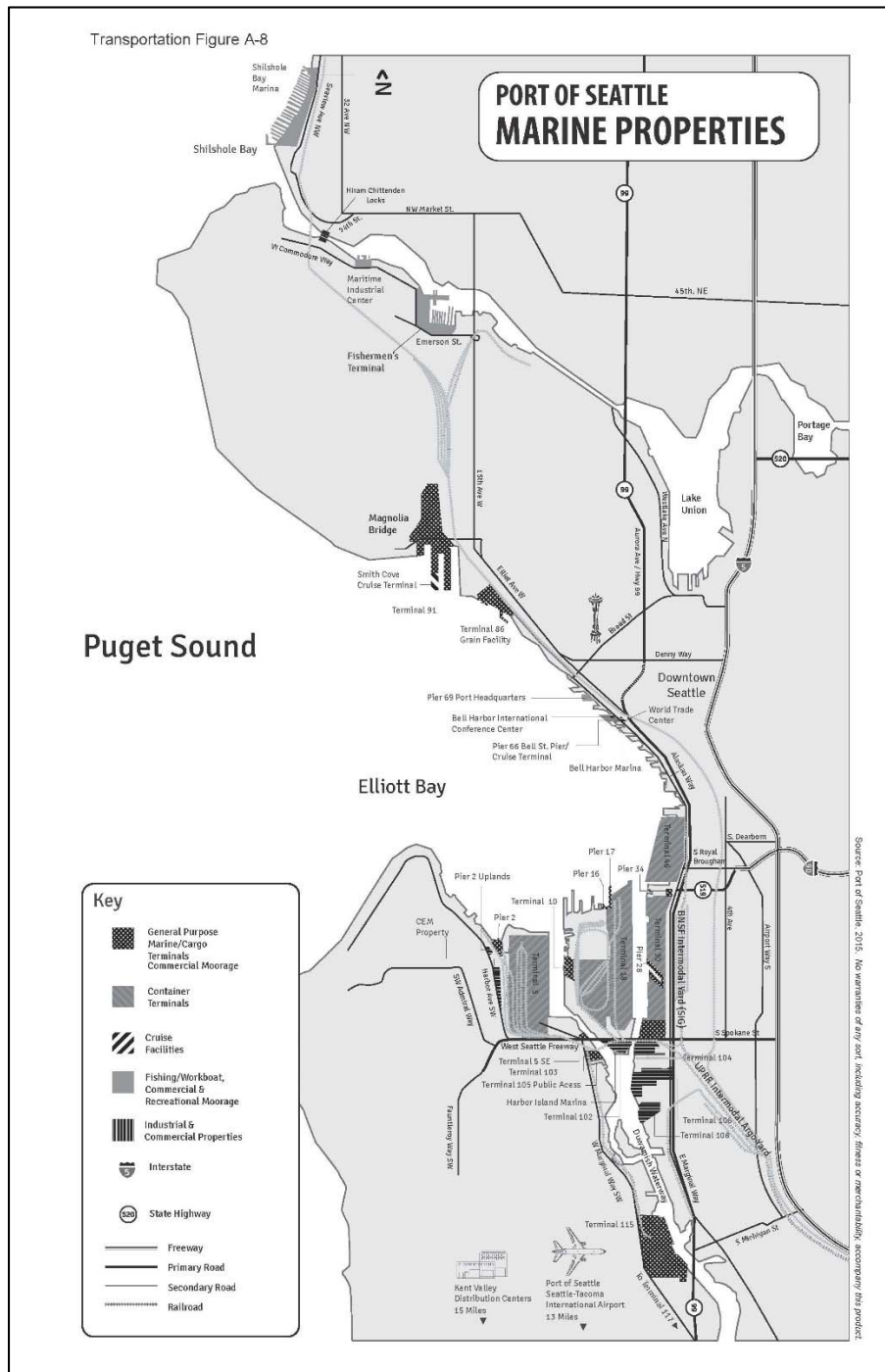
Transportation Figure A-6 Bicycle Facilities



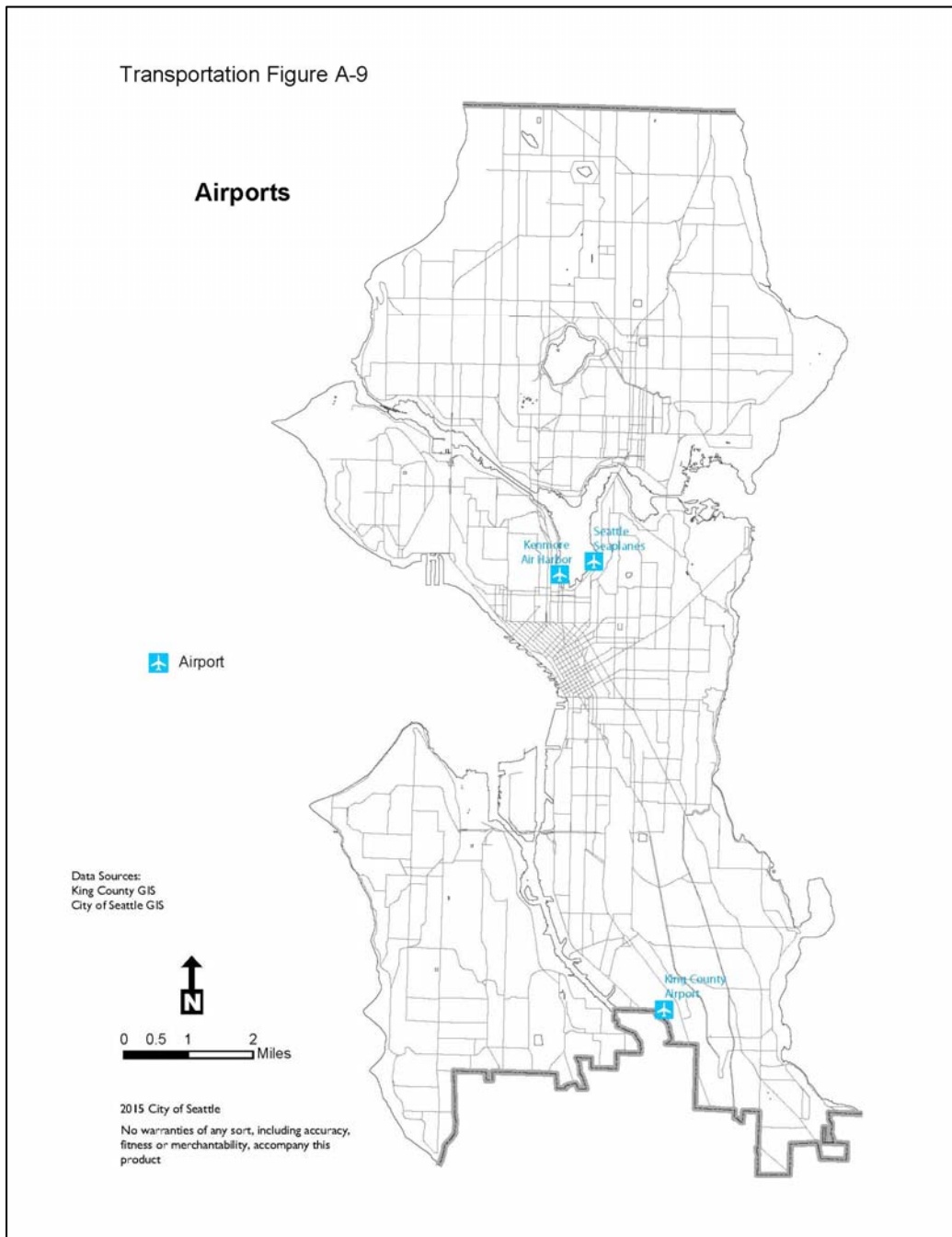
Transportation Figure A-7 Pedestrian Facilities



**Transportation Figure A-8
Port of Seattle Facilities**



Transportation Figure A-9 Airports



C Local Level of Service Standards for Arterials and Transit Routes²¹

Traffic Forecasts

The v/c ratios in Transportation Figure A-11 are based on a model that reflects the PSRC Regional Transportation model. However, the model also modifies PSRC's model to better represent street conditions such as arterial speeds, future transit routing and service levels, the distribution of trips and choice of transportation modes.

The model's current and 2035 region-wide and city-limit traffic volume estimates are shown in the following table. These inform the Comprehensive Plan's assumed future v/c ratios. The methodology used is that traffic volumes are modeled for arterial streets for the year 2035 and compared to current conditions as of 2014/2015. The modeled volumes are then totaled for all arterials crossing a particular screenline. These totals are then compared to the sum of the arterials' rated capacities. The arterial capacity ratings were systematically reviewed and updated in 2015 to provide a consistent and accurate basis for comparison. This yields a ratio of volume-to-capacity (v/c) for each direction of traffic for each screenline.

Total vehicle-miles-of-travel (VMT) for the region (per day):	
Existing:	81.1 million
2035 forecasts:	105.3 million (+30%)
Traffic volume at north city limit (vehicles per day):	
Existing	360,800
2035 forecasts:	464,900 (+29%)
Traffic volume at south city limit (vehicles per day):	
Existing	503,600
2035 forecasts:	637,500 (+27%)

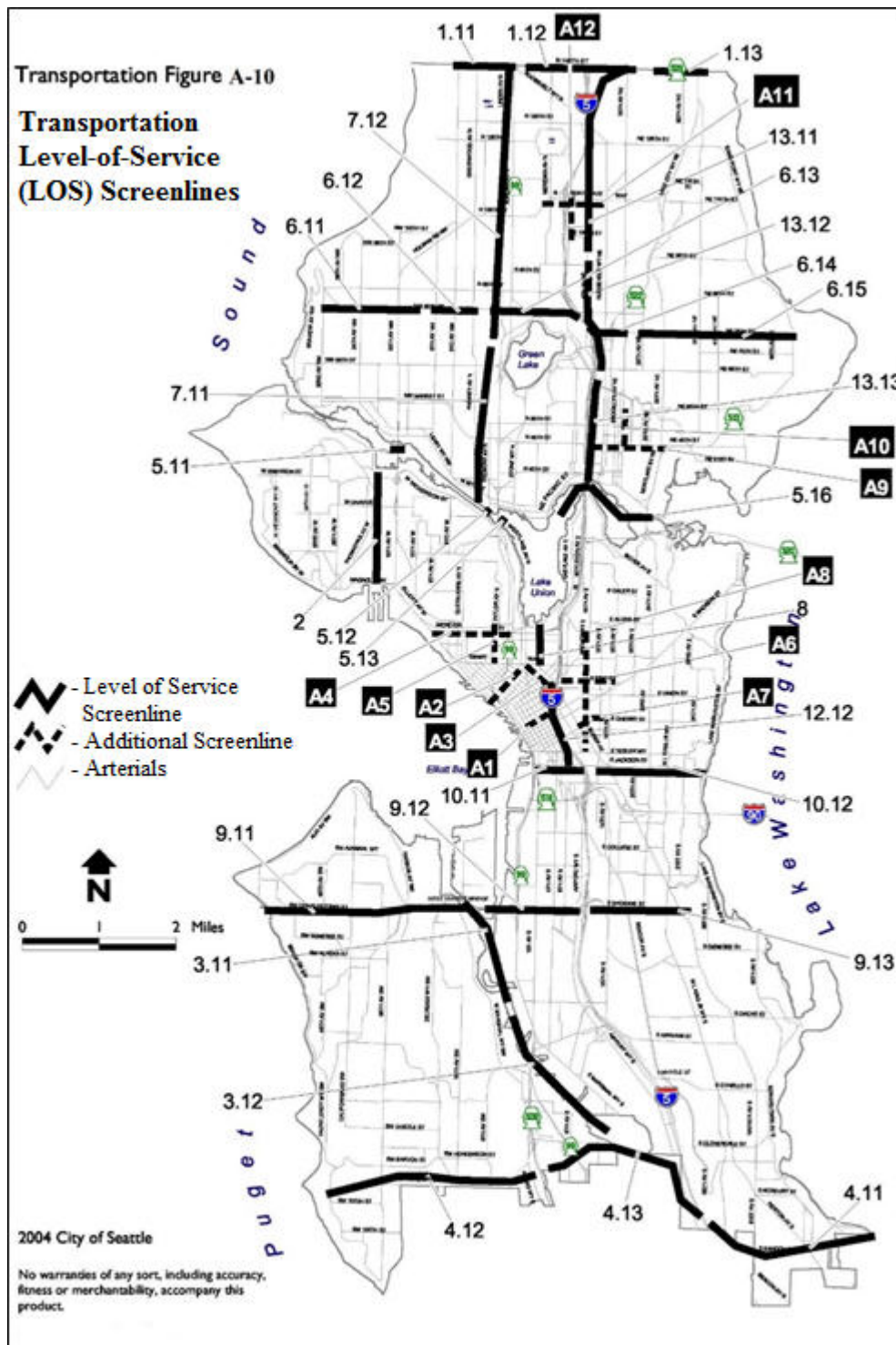
²¹ (RCW 36.70A.070. (6)(A)(iii)(B)), (RCW 36.70A.070.(6)(A)(iii)(C))

Traffic volume at east city limit (SR 520 and I-90) (vehicles per day):	
Existing	213,000
2035 forecasts:	269,500 (+27%)

Transportation Figure A-10 is a map illustrating the location of 42 screenlines. Thirty of these screenlines are part of the City’s evaluative system for level of service (LOS) performance and correspond to the screenlines in Transportation Figure A-11. Twelve other screenlines (labeled as A1 - A12 on Transportation Figure A-10) focus geographically on Seattle’s urban centers.

A screenline methodology is favored because it addresses the broader geographic impacts of development and travel patterns. The methodology recognizes that no single intersection or arterial operates in isolation. Motorists have choices, and they select particular routes based on a wide variety of factors such as avoiding blocking conditions, and minimizing travel times. Accordingly, this analytic methodology focuses on a “traffic-shed” where the screenlines measure groups of arterials among which drivers logically can choose to travel.

Transportation Figure A-10
Transportation Level-of-Service (LOS) Screenlines



Transportation Figure A-11 lists for each screenline the current conditions and modeled traffic results for the evening peak hour in year 2035, in comparison to the LOS standard for each screenline. The standards are expressed as vehicle-to-capacity (v/c) ratios of 1.0 or 1.20, which indicates a level of use equivalent to 100 percent or 120 percent of rated roadway capacity, measured during peak commute times.

With the anticipated implementation of the Comprehensive Plan, the future transportation and circulation conditions in the 2035 evening peak hour at all of the screenlines will not exceed the City's adopted LOS standards for peak hour congestion.

This Plan includes policies to improve transit service and related transit capital facilities, as well as to improve non-motorized transportation facilities, to provide ways for people to avoid the traffic congestion inherent in dense urban centers and urban village areas.

These results are evaluated in more detail below.

- The forecasted screenline v/c ratios for the year 2035 evening peak hour range from 0.38 to 1.19.
- Future peak hour traffic conditions will continue to reflect patterns similar to today, with the heaviest congestion at bridge locations including the Ballard Bridge (v/c = 1.19 northbound), the West Seattle Freeway and Spokane St. bridges (collectively a v/c = 1.15 westbound), the University and Montlake Bridges (collectively a v/c = 0.96 northbound and 1.06 southbound), and the Aurora Bridge (v/c = 0.94 northbound and 0.82 southbound).
- Congestion is also projected to increase in other locations as well. This is due to growth or, in some cases, related to future planned road improvements addressing automobiles and bicycles. With respect to the latter factor, this analysis makes conservative assumptions about potential loss of automobile travel lanes. As part of future projects such as bicycle-serving "cycle tracks," a determination would be made contemporaneous with that project whether and how automobile travel lanes would be diminished. This caveat applies to all references below to future bicycle projects.
- Volumes on Aurora Ave N, Lake City Way N, Greenwood Ave N, and 3rd Ave NW near the north city limits will continue to be heavy during evening commutes, and will contribute to conditions that approach or slightly exceed the rated capacity level by 2035. (Screenlines 1.11, 1.13).
- Volumes on MLK Jr. Way S., Rainier Ave S., and Renton Ave S. near the south city limits will continue to grow, and will contribute to greater use of capacity in the southbound peak direction, approaching the rated capacity level by 2035. (Screenline 4.11).
- Southbound volumes toward southeast Seattle measured at S. Jackson St. and at S. Spokane St will contribute to conditions that reach a v/c ratio of approximately 0.90, or using about 90 percent of rated capacity by 2035. This partly reflects the potential for changes in capacity related to future possible bicycle improvements (Screenlines 9.13 and 10.12). See above caveat about future bicycle improvements.

Transportation Figure A-11
Level of Service:
Screenline Volume-to-Capacity (V/C) Ratios

LOS Screen line #	Location	Span of Streets	LOS Standard	2013 PM Peak		2035 PM Peak	
				Dir.	V/C Ratios	Dir.	V/C Ratios
1.11	North City Limit	3rd Ave NW to Aurora Ave N	1.20	NB	0.70	NB	1.03
				SB	0.57	SB	0.80
1.12	North City Limit	Meridian Ave N to 15 th Ave NE	1.20	NB	0.41	NB	0.76
				SB	0.32	SB	0.61
1.13	North City Limit	30th Ave NE to Lake City Way NE	1.20	NB	0.73	NB	0.96
				SB	0.63	SB	0.83
2	Magnolia	Magnolia Bridge to W. Emerson Place	1.00	EB	0.53	EB	0.56
				WB	0.55	WB	0.56
3.11	Duwamish River	West Seattle Freeway and S. Spokane St	1.20	EB	0.61	EB	0.69
				WB	0.87	WB	1.15
3.12	Duwamish River	1st Ave S and 16th Ave S	1.20	EB	0.35	EB	0.38
				WB	0.52	WB	0.55
4.11	South City Limit	M L King Jr Way to Rainier Ave S	1.00	NB	0.47	NB	0.57
				SB	0.63	SB	0.98
4.12	South City Limit	Marine View Drive SW to Myers Way S	1.00	NB	0.37	NB	0.56
				SB	0.42	SB	0.72
4.13	South City Limit	SR 99 to Airport Way S	1.00	NB	0.41	NB	0.58
				SB	0.45	SB	0.73
5.11	Ship Canal	Ballard Bridge	1.20	NB	0.99	NB	1.19
				SB	0.52	SB	0.72
5.12	Ship Canal	Fremont Bridge	1.20	NB	0.71	NB	0.79
				SB	0.54	SB	0.71
5.13	Ship Canal	Aurora Ave N Bridge	1.20	NB	0.81	NB	0.94
				SB	0.62	SB	0.82
5.16	Ship Canal	University and Montlake Bridges	1.20	NB	0.80	NB	0.96
				SB	0.87	SB	1.06
6.11	South of NW 80th St	Seaview Ave NW to 15th Ave NW	1.00	NB	0.45	NB	0.52
				SB	0.43	SB	0.49
6.12	South of NW 80th St	8th Ave NW to Greenwood Ave N	1.00	NB	0.66	NB	0.87
				SB	0.49	SB	0.77
6.13	South of NE 80th St	Linden Ave N to 1st Ave NE	1.00	NB	0.44	NB	0.55
				SB	0.27	SB	0.41
6.14		5th Ave NE to 15th Ave NE	1.00	NB	0.65	NB	0.76

LOS Screen line #	Location	Span of Streets	LOS Standard	2013 PM Peak		2035 PM Peak	
				Dir.	V/C Ratios	Dir.	V/C Ratios
	South of NE 80th St			SB	0.53	SB	0.67
6.15	South of NE 80th St	20th Ave NE to Sand Point Way NE	1.00	NB	0.49	NB	0.64
				SB	0.47	SB	0.58
7.11	West of Aurora Ave N	Fremont Pl N to N 65th St	1.00	EB	0.48	EB	0.55
				WB	0.58	WB	0.66
7.12	West of Aurora Ave N	N 80th St to N 145th St	1.00	EB	0.50	EB	0.56
				WB	0.57	WB	0.66
8	South of Lake Union	Valley Street to Denny Way	1.20	EB	0.78	EB	0.92
				WB	0.78	WB	0.83
9.11	South of Spokane St	Beach Dr SW to W Marginal Way SW	1.00	NB	0.51	NB	0.59
				SB	0.58	SB	0.71
9.12	South of Spokane St	E Marginal Way S to Airport Way S	1.00	NB	0.47	NB	0.60
				SB	0.52	SB	0.71
9.13	South of Spokane St	15th Ave S to Rainier Ave S	1.00	NB	0.45	NB	0.67
				SB	0.58	SB	0.89
10.11	South of S Jackson St	Alaskan Way S to 4th Ave S	1.00	NB	0.56	NB	0.64
				SB	0.65	SB	0.84
10.12	South of S Jackson St	12th Ave S to Lakeside Ave S	1.00	NB	0.48	NB	0.74
				SB	0.58	SB	0.91
12.12	East of CBD	S Jackson St to Howell St	1.20	EB	0.35	EB	0.39
				WB	0.45	WB	0.52
13.11	East of I-5	NE Northgate Way to NE 145th St	1.00	EB	0.71	EB	0.84
				WB	0.59	WB	0.78
13.12	East of I-5	NE 65th St to NE 80th St	1.00	EB	0.44	EB	0.50
				WB	0.41	WB	0.53
13.13	East of I-5	NE Pacific St to NE Ravenna Blvd	1.00	EB	0.55	EB	0.62
				WB	0.54	WB	0.67
A1	North of Seneca St	1 st Ave to 6 th Ave	NA	NB	0.55	NB	0.67
				SB	0.40	SB	0.59
A2	North of Blanchard	Elliott Ave to Westlake Ave	NA	NB	0.43	NB	0.55
				SB	0.36	SB	0.52
A3	East of 9 th Ave	Lenora St to Pike St	NA	EB	0.36	EB	0.44
				WB	0.32	WB	0.43
A4	South of Mercer St	Elliott Ave W to Aurora Ave N	NA	NB	0.78	NB	0.93
				SB	0.51	SB	0.78

LOS Screen line #	Location	Span of Streets	LOS Standard	2013 PM Peak		2035 PM Peak	
				Dir.	V/C Ratios	Dir.	V/C Ratios
A5	East of 5 th Ave N	Denny Way to Valley St	NA	EB	0.39	EB	0.55
				WB	0.40	WB	0.48
A6	North of Pine St	Melrose Ave E to 15 th Ave E	NA	NB	0.45	NB	0.53
				SB	0.50	SB	0.63
A7	North of James St – E Cherry St	Boren Ave to 14 th Ave	NA	NB	0.62	NB	0.72
				SB	0.57	SB	0.78
A8	West of Broadway	Yesler Way to E Roy St	NA	EB	0.50	EB	0.57
				WB	0.60	WB	0.71
A9	South of NE 45 th St	7 th Ave NE to Montlake Blvd NE	NA	NB	0.70	NB	0.79
				SB	0.70	SB	0.75
A10	East of 15 th Ave NE	NE 45 th St to NE 52 nd St	NA	EB	0.52	EB	0.54
				WB	0.46	WB	0.53
A11	South of Northgate Way (N/NE 110 th St)	N Northgate Way to Roosevelt Way NE	NA	NB	0.50	NB	0.66
				SB	0.49	SB	0.61
A12	East of 1 st Ave NE	NE 100 th St to NE Northgate Way	NA	EB	0.48	EB	0.61
				WB	0.62	WB	0.88

Results for areas around Seattle's six urban centers are summarized as follows:

Downtown: Screenlines 10.11, 12.12, A1, A2, and A3 pass through or along the edge of the Downtown Urban Center, some encompassing north-south avenues, and some encompassing east-west streets. Higher v/c ratios reflect higher future volumes on most avenues and streets, and increased congestion. However, for all five of these screenlines, the future v/c ratios will remain below 1.0 in 2035 with Comprehensive Plan implementation and thus meet LOS standards.

Uptown: For the Uptown Urban Center, screenline A4 is an east-west screenline south of Mercer St extending as far west as Elliott Ave W and east to include Aurora Ave N, while screenline A5 is drawn north-south between 5th Ave N. and Taylor Ave N. The predicted increase in congestion, reaching above a v/c ratio of 0.90 for northbound traffic, relates to major traffic volumes on Elliott Ave W, Aurora Ave N. It also relates to a possible reduction in capacity on 5th Ave N if bicycle improvements reduce lanes for motorized vehicle travel. Measures of east-west travel congestion will worsen but remain well below a 1.0 v/c ratio; improvements enabling a two-way Mercer Street add capacity in the westbound direction.

South Lake Union: For the South Lake Union Urban Center, Screenline 8 is drawn north-south at Fairview Ave N. Volumes will continue to increase, and road improvements will continue to occur for a number of years into this planning period. The v/c ratios for both directions along this screenline will decline by 2035, with higher evening congestion levels in the eastbound direction reflected by a v/c ratio of 0.93. However, the ratio will remain below the 1.20 LOS standard for this screenline.

First Hill/Capitol Hill: Screenlines A6, A7, and A8 are drawn through the First Hill/ Capitol Hill Urban Center. Screenline 12.12 is on the west edge of the First Hill/Capitol Hill Urban Center adjacent to Downtown. For all four of these screenlines, the year 2035 v/c ratios under the Comprehensive Plan will remain well below the 1.20 LOS standard that applies to Screenline 12.12. Although the findings for Screenline A7 and A8 illustrate a somewhat elevated congestion level in all directions in the area between Boren Ave and 14th Ave by 2035, near James Street, and for travel east-west across Broadway, these areas are currently often congested at peak hours.

University District: For the University District Urban Center, screenlines 5.16 and 13.13 cover the south and west boundaries of the Urban Center, while screenline A9 passes east-west through the Center and screenline A10 is drawn north-south through the Center. Higher v/c ratios suggest higher volumes and a degree of increased congestion by 2035. However, the year 2035 v/c ratios will be below 1.0 for all four of these screenlines in the peak commuting directions. At the University and Montlake Bridges, evening peak hour volumes will continue to be high, and the southbound volumes on the University Bridge are projected to exceed the northbound volumes. This may reflect the diverse range of destinations of University employees and students. Given the pass-through nature of many evening commuters, the projected volumes for Roosevelt Way NE and Montlake Blvd. NE would continue to be high and grow slightly by 2035.

Northgate: For the Northgate Urban Center, screenline A11 is drawn east-west just south of Northgate Way, while screenline A12 passes north-south just east of 1st Ave NE. Screenline 13.11 also measures east-west traffic crossing 5th Ave NE. The year 2035 v/c ratios for these three screenlines will worsen but remain below 1.0. The measures of east-west traffic both indicate increasing congestion that will reach v/c ratio levels of approximately 0.8 to 0.9, meaning much of the available capacity will be used by 2035. The analysis also shows relatively high volumes west of I-5, for westbound Northgate Way and for both directions of Meridian Ave N.

State Highway Level of Service Standards

There are two different types of State highways with segments in Seattle with two different Level of Service standards. The larger facilities are “Highways of Statewide Significance” (HSS), These are I-5, I-90, SR 99, SR 509, SR 519, SR 520, and SR 522. Highways of Statewide Significance include, at a minimum, interstate highways and other principal arterials needed to connect major communities in the state.

For all the HSS, the State defines a level of service standard of “D.” RCW 36.70A.070(6)(a)(iii)(C) provides that local jurisdictions’ Comprehensive Plans should indicate LOS for state-owned facilities, but specifies that local concurrency requirements do not apply to the HSS routes. Including LOS standards for HSS is a communication and coordination tool in local plans, so that the State of Washington has a current understanding of performance on their facilities. Accordingly, the State legislation that designates HSS also directs the State Transportation Commission to give higher priority for correcting identified deficiencies on highways of statewide significance.

Non-HSS facilities (also called “Highways of Regional Significance”) in Seattle are SR 513, SR 523, and SR 99 (only those portions south of S Holden St). These highways are monitored by the Puget Sound Regional Council for regional planning purposes. For these highways the Level of Service standard is “E/mitigated.”

State-Funded Highway Improvements and Local Improvements to State Highways

The City of Seattle will continue to coordinate with the Washington State Department of Transportation (WSDOT) for consistency in plans and projects. Transportation Figure A-12 shows the known anticipated major projects for the metropolitan area that will address State highways and facilities including ferries, and an indication of project status as applicable today and/or into the future until 2035.

These are the primary projects in the city and broader metropolitan area that will affect the functioning of portions of the State highway system within the City’s boundaries. Planned local system improvements are diverse; these are addressed as presented in the City’s functional plans, including but not limited to the Transit Master Plan, Pedestrian Master Plan, Bicycle Master Plan, and the successor document to the Transportation Strategic Plan.

**Transportation Figure A-12
State Highway Project List**

Project	2015	2035
SR 99 tunnel (with tolls)		x
SR 520 HOV lanes to Montlake	x	x
Second Montlake Bascule Bridge		
SR 520 Tolling	x	x
I-90 HOV lanes	x	x
I-405 Widening (SR 167 to SR 527)		x
Passenger-only Ferries (Kingston, Southworth, Juanita)		
Montlake Blvd NE HOV Lane and ITS Improvements		x

D Estimated Traffic Impacts to State-Owned Transportation Facilities

Transportation Figure A-13 includes, for State highways, the latest existing conditions information and future modeled conditions for 2035. This data is organized by “average annual daily traffic” (AADT), “average weekday daily traffic” (AWDT), and a calculation of the modeled increase in AWDT for each highway segment expressed as a percentage.

AWDT is emphasized here as an analytical tool because it is the most representative of the peak commuting periods when volumes and congestion are highest. Existing conditions are based on available information from WSDOT, with factoring to estimate AADT in certain locations. By contrast, the modeled future conditions forecasts AWDT. These raw model volume results for 2035 were further analyzed by using the “difference method.”²²

Forecasts are for particular components of State facilities including HOV lanes, express lanes and collector-distributor lane volumes. Note the explanation on page 29 of the different LOS for state highways designated as “HSS” and those designated as Highways of Regional Significance.

**Transportation Figure A-13
State Highway Traffic Volumes – 2013 – 2035**

State Highway	Location (Roads here are cross-streets that show approx. endpoints of State Hwy. segments)	Direction	2013 Avg. Annual Daily (AADT) Volume	2013 Avg. Weekday Daily (AWDT) Volume	2035 Avg. Annual Daily (AADT) Volume	2035 Avg. Weekday Daily (AWDT) Volume	% Change In AWDT From 2013 To 2035
I-5	Boeing Access Rd. - Swift Ave. S	NB	95,900	100,300	115,000	120,200	20%
		SB	104,500	109,200	120,700	126,300	16%
I-5	Corson - Columbia Way S/West Seattle Bridge	NB	103,800	108,600	119,400	124,800	15%
		SB	121,500	127,100	135,300	141,500	11%
I-5	I-90 – James St.	NB	133,200	139,300	162,600	170,100	22%
		SB	146,900	153,600	164,900	172,400	12%
I-5	Lakeview Blvd. E - SR 520	NB	123,700	139,800	142,200	160,700	15%
		SB	114,200	129,000	132,100	149,300	16%
I-5		NB	133,400	135,900	156,100	158,900	17%

²² The findings are consistent with findings of the “Draft Environmental Impact Statement for the Seattle Comprehensive Plan Update” (May 2015) and were made using a consistent methodological approach.

	SR 520 - NE 50 th St.	SB	121,900	124,100	138,000	140,500	13%
I-5	NE 65 th St. - SR 522	NB	117,700	119,900	137,900	140,400	17%
		SB	119,000	121,200	135,500	138,000	14%
I-5	NE 130 th St. - NE 145 th St.	NB	98,000	99,800	114,300	116,300	17%
		SB	98,700	100,400	116,200	118,300	18%
I-90	Rainier Ave. S - Lake Washington (mainline)	EB	65,000	70,300	82,600	89,200	27%
		WB	68,100	72,500	89,700	95,600	32%
SR 99	14 th Ave. S - S Cloverdale St.*	NB	16,300	19,200	21,100	24,800	29%
		SB	13,700	16,200	15,700	18,500	14%
SR 99	W Marginal Way S- S Michigan St. (1 st Ave. S Br.)	NB	44,000	48,500	56,700	62,500	29%
		SB	42,000	46,300	54,100	59,700	29%
SR 99	E Marginal Way - West Seattle Bridge	NB	21,300	23,500	30,100	33,200	41%
		SB	17,700	19,500	25,500	28,100	44%
SR 99	1 st Ave. S Ramps - Seneca/Spring	NB	33,900	37,400	31,100	34,300	-8%
		SB	36,100	39,800	29,300	32,300	-19%
SR 99	Raye St - Bridge Way N	NB	32,900	36,000	42,600	46,500	29%
		SB	36,100	39,500	46,800	51,200	30%
SR 99	Winona Ave. N – N 80 th St.	NB	14,700	16,100	18,900	20,600	28%
		SB	17,300	18,900	23,100	25,300	34%
SR 99	Roosevelt Way N - N 145 th St.	NB	14,400	15,700	20,700	22,600	44%
		SB	14,600	16,000	21,700	23,800	49%
SR 509	S 112 th St. - S Cloverdale St.	NB	26,500	28,800	36,700	39,900	39%
		SB	26,600	28,900	35,200	38,300	33%
SR 513	SR 520 Ramps - NE Pacific St. (Montlake Bridge)	NB	16,600	18,100	20,700	22,600	25%
		SB	19,400	21,300	23,000	25,100	18%
SR 513	Montlake Blvd. NE - Union Bay Pl. NE	EB	18,600	20,300	18,600	20,300	0%
		WB	19,400	21,300	19,400	21,300	0%
SR 522	Roosevelt Way NE - 12 th Ave. NE	EB	12,300	13,500	14,300	15,700	16%
		WB	15,700	17,200	18,100	19,700	15%
SR 522	NE 137 th St. - NE 145 th St.	NB	15,100	16,500	18,100	19,800	20%
		SB	16,900	18,500	22,800	24,900	35%
SR 523	5 th Ave. NE - 15 th Ave. NE	EB	13,900	15,200	14,300	15,600	3%
		WB	13,100	14,300	14,800	16,200	13%
SR 520	Between I-5 and Montlake Blvd.	EB	30,000	33,900	34,700	39,200	16%
		WB	42,600	48,100	48,900	55,200	15%
SR 520	Between Montlake Blvd.- Lake Wash.	EB	30,100	33,900	35,600	40,200	19%
		WB	32,100	36,300	39,300	44,500	23%

SR 519	1st Ave. S - 4th Ave. S	EB	14,800	16,100	18,100	19,800	23%
		WB	12,200	13,400	12,200	13,400	0%

Footnote for Transportation Figure A-13:

**SR 99 14th Ave/Cloverdale Street: SR 99 south of Holden Street is a Highway of Regional Significance, with a level of service of "E/Mitigated.*

Findings in Transportation Figure A-13 also show impacts on various segments of state highways and are described more specifically as follows:

- I-5 Downtown and north of Downtown** – Future weekday daily volumes (AWDT) will increase by between 13-18 percent by 2035 in both directions in the four studied segments of I-5 north of Downtown. Daily volumes in the central segment of I-5 through Downtown will increase by 12-22 percent and be the most-used portions of I-5 in Seattle. Future volumes in segments farther from Downtown will also grow but volumes will be comparatively lesser than in the segments nearest Downtown. This is an expected pattern, given the number of motorists that use I-5 and enter or exit from places including the University District, Wallingford, Green Lake, Roosevelt, and other neighborhoods in northwest and northeast Seattle. The added volumes through the day could exacerbate congestion, most notably during peak commuting periods, which could diminish overall freeway efficiency and performance.
- I-5 south of Downtown** – Future volumes (AWDT) will increase by 15-20 percent northbound and 11-16 percent southbound by 2035 in two studied segments south of Downtown. Approaching Downtown from the south, the segment between I-90 and James Street would experience an approximately 22 percent increase in AWDT, likely due to volume contributions from I-90 and other local sources. The AWDT volumes on I-5 south of Downtown, ranging from approximately 120,000 to 140,000 vehicle trips, would be about 25 percent lower than for the segment of I-5 just north of Downtown.
- I-90** – I-90 will experience AWDT increases of approximately 27 to 32 percent by 2035, with westbound volumes increasing to about 96,000 per day, slightly exceeding eastbound volumes.
- SR 520** – For this highway that has experienced volume decreases due to the initiation of tolling, and construction east of Lake Washington, the projected future conditions are for increases in AWDT volumes of about 15 to 23 percent by 2035. This will be equivalent to an increase of about 5,000 to 6,000 vehicles in the eastbound direction, reaching about 40,000 vehicles per day east of Montlake, and about 44,500 vehicles per day in the westbound direction east of Montlake. Closer to I-5, the projected AWDT will reach approximately 55,000 vehicles in the westbound direction by 2035. Tolling is likely to continue to limit the rate of growth in usage over time on SR 520.
- SR 99 Downtown and north of Downtown** – This highway is anticipated to operate in a tunnel through Downtown by 2035, which may mean a change in volume trends compared to current operations. For three studied segments of SR 99 north of Downtown, future AWDT would increase by about 28 to 34 percent between the lower Queen Anne and Green Lake vicinities, and would increase by up to 45 to 50 percent in the segment near the north city limits at N 145th

St. The projected volumes in this vicinity would be highest in the portion nearest Lake Union and the Ship Canal, reaching about 46,000 – 50,000 vehicles per day AWDT in each direction, while in the other segments farther north, the volumes would range from about 20,000 – 25,000 vehicles per day in each direction.

- **SR 99 south of Downtown** – South of Downtown, SR 99 provides access to the SODO and Greater Duwamish industrial areas, as well as southwest Seattle and points south including Burien and Tukwila. South of South Park, SR 99 reconnects to I-5 in Tukwila. The 1st Avenue S Bridge crosses the Duwamish Waterway and accommodates traffic to/from Georgetown and the King County International Airport vicinity as well. The variety of its connections and configurations leads to different trends for projected AWDT. This includes: anticipated AWDT increases of approximately 29 percent in each direction at the 1st Avenue S Bridge (approximately 60,000 to 63,000 vehicles in each direction); increased volumes in the SODO area north of Georgetown of 40 to 44 percent (28,000 to 33,000 vehicles in each direction); and similar gains in the southern segment near South Park of 25 to 40 percent (22,000 to 30,000 vehicles in each direction).
- **SR 522 (Lake City Way)** – Future volumes (AWDT) would increase by about 15 percent in each direction in Roosevelt near I-5 (15,000 to 20,000 vehicles in each direction), and by 20 to 35 percent in each direction in Lake City near the north city limits at NE 145th Street (20,000 to 25,000 vehicles in each direction). These trends likely reflect anticipated increases in commuting traffic as well as projected traffic growth over time contributed to by nearby neighborhoods such as Lake City and Northgate.
- **SR 513 (Montlake Blvd. to Sand Point Way)** – Future volumes (AWDT) would increase by about 17 to 25 percent in this segment that includes the Montlake Bridge just north of SR 520. This would represent AWDT volumes of approximately 25,000 vehicles per day southbound and 22,600 vehicles per day northbound. This would exacerbate congestion during peak hours in this route that is used heavily for daily commuting. However, other analysis indicates that the future 2035 conditions would still meet the LOS standards for the applicable screenline that covers both the University Bridge and the Montlake Bridge.
- **SR 519 (Edgar Martinez Way)** – Future volumes (AWDT) would increase by about 23 percent in the eastbound direction for this segment that provides access to/from the Port of Seattle and SODO industrial area near the major sports stadiums. No increase in the westbound direction was projected in the modeling.
- **SR 523 (NE 145th St. east of I-5)** – This route provides east-west access from Lake City and Lake Forest Park to I-5 and is on the north city limits boundary. Future volumes (AWDT) would increase modestly by 3 to 13 percent, reaching volumes of approximately 16,000 vehicles in each direction by 2035.

Impacts on Adjacent Jurisdictions

Four jurisdictions are adjacent to the City of Seattle: the City of Shoreline, and the City of Lake Forest Park along Seattle's north boundary, and the City of Tukwila and King County along Seattle's south

boundary. Several major arterials that connect to streets in these jurisdictions near the Seattle borders were selected for analysis. For each arterial, the existing PM peak hour traffic volume and forecasted year 2035 traffic volume were compared to the rated capacity of the arterial, yielding a volume-to-capacity (v/c) ratio. The results of this analysis are shown in Transportation Figure A-14.

Transportation Figure A-14
Arterials Reaching Adjacent Jurisdictions:
PM Peak Hour Capacities, Volumes and V/C Ratios

A. Major arterials within Seattle just south of the Seattle/Shoreline-Lake Forest Park Border (145th St.)

Arterial	Existing (2014) – PM Peak Hour						2035 – PM Peak Hour					
	Outbound			Inbound			Outbound			Inbound		
	Capacity	Volume	V/C ratio	Capacity	Volume	V/C ratio	Capacity	Volume	V/C ratio	Capacity	Volume	V/C ratio
Greenwood Ave. N	1,940	1,223	0.63	1,940	838	0.45	1,940	1,740	0.90	1,940	1,221	0.63
Aurora Ave. N	2,100	1,681	0.80	2,000	1,223	0.61	2,100	2,427	1.16	2,000	1,879	0.94
Meridian Ave N	770	312	0.41	770	162	0.21	770	581	0.75	770	369	0.48
5th Ave. NE	770	366	0.48	770	205	0.27	770	550	0.71	770	340	0.44
15th Ave NE	2,040	891	0.44	2,040	640	0.31	1,010	891	0.88	1,010	727	0.72
30th Ave NE	770	433	0.56	770	365	0.47	770	592	0.77	770	550	0.71
Lake City Way	2,150	1,697	0.79	2,040	1,388	0.68	2,150	2,215	1.03	2,040	1,790	0.88

B. Major arterials within Seattle just north of the Seattle/King County Border

Arterial	Existing (2014) – PM Peak Hour						2035 – PM Peak Hour					
	Outbound			Inbound			Outbound			Inbound		
	Capacity	Volume	V/C ratio	Capacity	Volume	V/C ratio	Capacity	Volume	V/C ratio	Capacity	Volume	V/C ratio
26 th Ave SW	770	401	0.52	770	336	0.44	770	522	0.68	770	374	0.49
16 th Ave SW	770	292	0.38	770	216	0.28	770	524	0.68	770	250	0.32
Olson Pl. SW	2,040	1,442	0.71	2,040	1,070	0.52	1,010	1,442	1.43	1,010	1,070	1.06
Myers Way S	1,540	264	0.17	1,540	190	0.12	1,540	670	0.43	1,540	230	0.15
8 th Ave S	770	93	0.12	770	99	0.13	770	222	0.29	770	99	0.13
14 th Ave S	1,540	498	0.32	1,540	394	0.26	1,540	848	0.55	1,540	584	0.38
Renton Ave S	770	570	0.74	770	393	0.51	770	951	1.23	770	501	0.65
Rainier Ave S	1,460	967	0.66	1,460	663	0.45	1,460	1,421	0.97	1,460	991	0.68
E Marginal Way S	2,040	699	0.34	2,040	703	0.34	2,040	994	0.49	2,040	779	0.38
Airport Way S	2,000	756	0.38	2,000	356	0.18	1,000	1,123	1.12	1,000	822	0.82
M L King Jr. Way S	2,040	1,297	0.64	2,040	1,076	0.53	2,040	1,885	0.92	2,040	1,078	0.53
51 st Ave S	770	351	0.46	770	219	0.28	770	698	0.91	770	310	0.40

For all but five instances for the arterials shown in Transportation Figure A-14, the PM peak hour v/c ratio is below 1.0, indicating that there currently is remaining traffic capacity and that the capacity will continue into the forecasted future. The exceptions are:

- Aurora Avenue N (SR 99), as the primary north-south highway arterial to/from Shoreline, is projected to experience considerable growth in evening peak hour volumes by 2035 (nearly 750 added vehicles), which will raise the projected northbound v/c ratio from 0.80 to 1.16.
- Lake City Way (SR 522), as the primary north-south highway arterial in north Seattle to/from Lake Forest Park, is projected to experience considerable growth in evening peak hour volumes by 2035 (nearly 520 added vehicles), which will raise the projected northbound v/c ratio from 0.79 to 1.03.
- Olson Place SW, a route to/from White Center and Burien, may experience a projected v/c ratio of 1.43 in the peak westbound direction by 2035, but this is tempered by a recognition that the conservative analysis of road capacity predicts a reduced capacity with a possible future bicycle improvement, and the future volumes for 2035 are not otherwise projected to increase over existing 2014 volumes. A similar effect on the eastbound direction of travel on Olson Place SW leads to a projected congestion level measured as a 1.06 v/c ratio. Future bicycle facility design would determine whether vehicle lanes would actually be reduced; given the street's width such reductions ultimately might not be needed.

- Renton Ave S, a route to/from Skyway and the City of Renton, is projected to experience growth of approximately 380 vehicles in the southbound direction by 2035, which will raise the corresponding v/c ratio to 1.23.
- Airport Way (a route to/from Tukwila), like Olson Place SW, may be affected in its capacity by a future possible bicycle improvement, and given projected increases in peak hour traffic southbound (360 added vehicles) could experience congestion measured as a v/c ratio of 1.12.

In other locations, including Rainier Ave. S and MLK Jr. Way S., both leading toward the City of Renton, projected v/c ratios of 0.97 and 0.92 respectively indicate future increases in traffic and probable congestion.

These modeled traffic volume and v/c findings for 2035 reflect growth not only under Seattle's Comprehensive Plan, but also the probable growth in the adjacent jurisdictions and throughout the central Puget Sound region that contributes to total traffic growth. Much of the traffic on these arterials is and will continue to be through-traffic, although the destinations of some motorists will be to and from Seattle as well as the neighboring jurisdictions.

In addition to the City of Seattle's analysis of transportation impacts on adjacent jurisdictions, as described in this section, Seattle continues to work with the adjacent jurisdictions to coordinate traffic operations and to minimize cross-boundary impacts.

E Intergovernmental Coordination Efforts²³

This section describes the City's intergovernmental coordination efforts during the development of the Comprehensive Plan, and potential impacts of the plan on the transportation systems of adjacent jurisdictions.

Seattle is an active member of the Puget Sound Regional Council (PSRC), which is charged with certifying that local transportation plans are consistent with regional plans and goals. The City supports PSRC's Vision 2040, a transportation/land use plan that describes linking high density residential and employment centers throughout the region by high capacity transit and promoting a multi modal transportation system. Vision 2040's goals are carried forward by this Comprehensive Plan.

The PSRC provides population, employment, and transportation data to Seattle and other jurisdictions. Coordination is established via this centralized information resource. The PSRC is charged with allocating certain federal funds. Seattle has participated in establishing the criteria and selection process to determine how funds will be distributed among transportation projects.

²³ (RCW 36.70A.070(6)(a)(v))

The City of Seattle cooperates with the Washington State Department of Transportation (WSDOT) and the Puget Sound Regional Council regarding improvements to state transportation facilities and services and to ensure that the City's plans are consistent with the State Transportation Plan and the Transportation 2040 plan. The PSRC also monitors State highways of regional significance, such as non-HSS, for regional planning purposes.

Utilities Appendix

A City Utilities: Inventory, Capacity and Future Needs Assessment

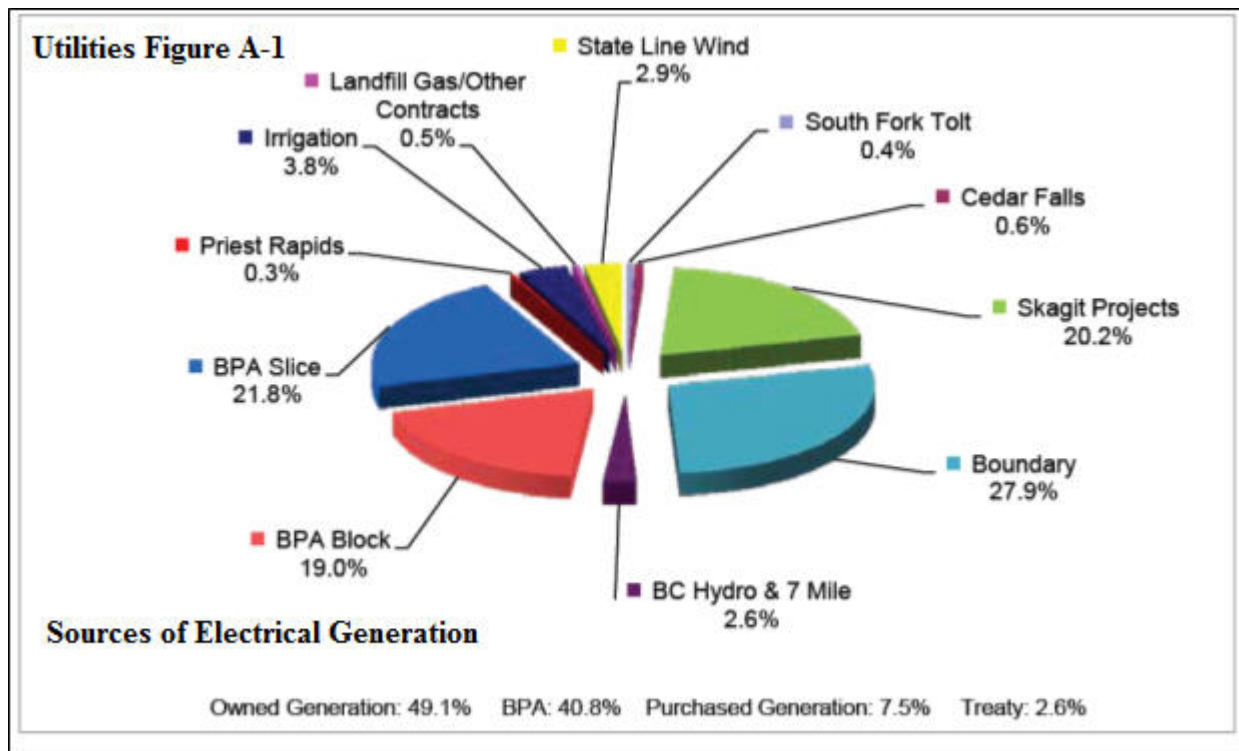
Seattle City Light: Electricity

Seattle City Light (SCL) is the City-owned electric utility serving all of Seattle and some portions of other cities and unincorporated King County north and south of the city limits.

Seattle City Light: Inventory and Capacity

SCL supplies power from a portfolio of sources that includes self-generated assets and purchased power. SCL typically purchases 50% of all power delivered to its customers. Utilities Figure A-1 below shows the sources of power.

**Utilities Figure A-1
Sources of Electrical Generation**



The current resource portfolio includes SCL-owned generation resources; long-term contract resources supplemented with power exchange agreements, near-term purchases, and sales made in the wholesale power market; and conservation. City Light-owned generation facilities include the Boundary Project, on the Pend Oreille River in northeast Washington, and the Skagit Project, which consists of three hydroelectric dams (Ross, Diablo and Gorge) on the Skagit River. The Newhalem Hydroelectric Plant on Newhalem Creek, the Cedar Falls Dam on the Cedar River, and the South Fork Tolt Dam on the South Fork Tolt River are also smaller generating facilities owned by SCL.

In addition to these power sources, SCL purchases power from a variety of other sources including:

- The Bonneville Power Administration (BPA), including firm amounts under the Block Product and a share in the output from the Federal System (Slice Product), which depends on water conditions
- British Columbia Hydro
- Lucy Peak, a hydro project located near Boise Idaho
- Priest Rapids, a hydro project within the Grant County Public Utility District
- Grand Coulee Project Hydroelectric Authority, a share in the State Line Wind Project located in Southeast Washington and Northeast Oregon
- Biomass and landfill gas through Burlington Biomass, Columbia Ridge Landfill Gas Project and King County West Point Wastewater Treatment Plant

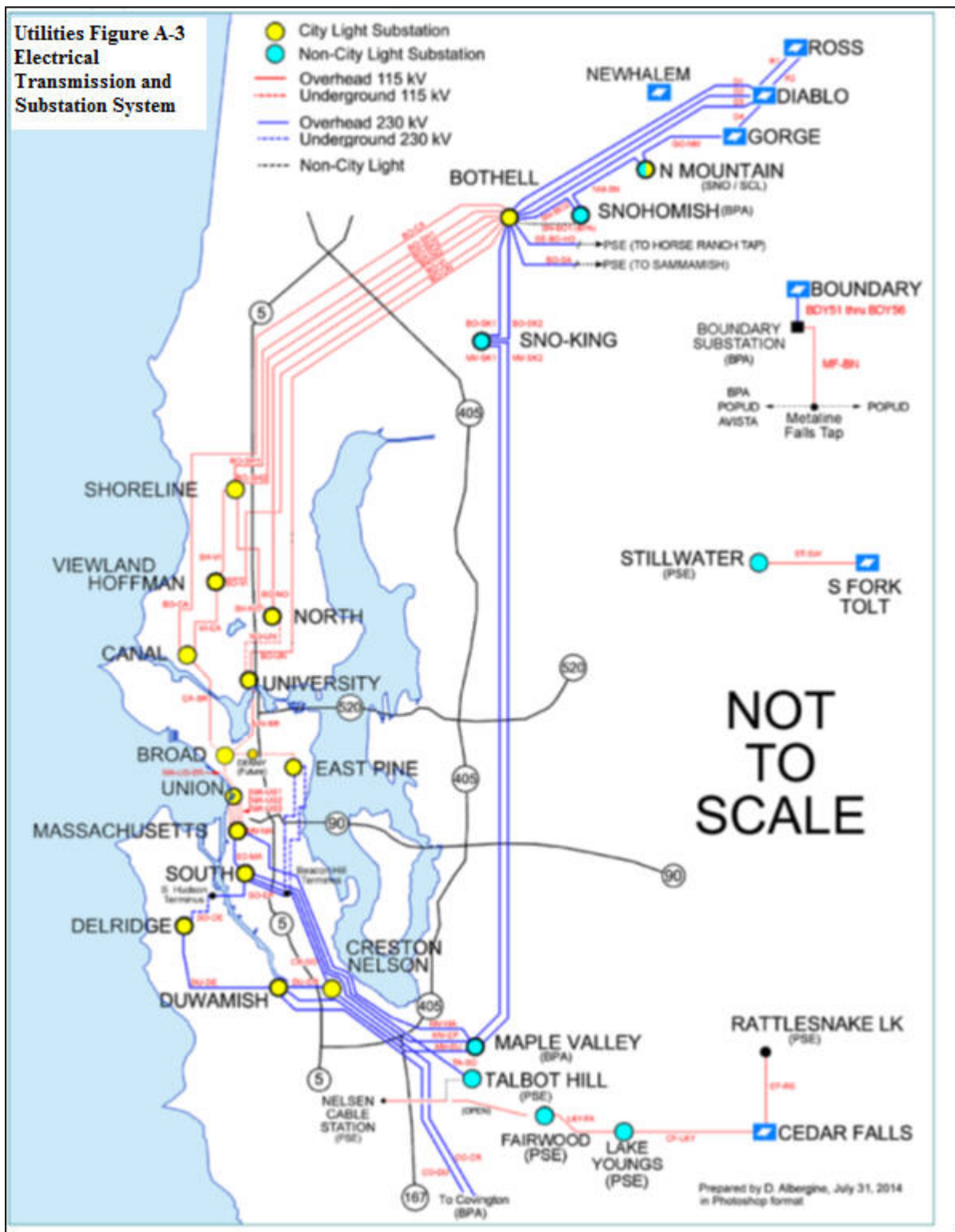
Under an exchange agreement with the Northern California Power Agency, City Light delivers energy to NCPA in the summer and in exchange NCPA delivers energy to City Light in the winter.

SCL owns and maintains approximately 657 miles of transmission lines which carry power from the Skagit and Cedar Falls generating facilities to 14 principal substations. SCL is dependent on other transmission line owners, i.e., the Bonneville Power Administration (BPA), to bring power from its Boundary Dam hydroelectric plant and from other contracted resources, to serve its load in Seattle. The transmission grid interconnection with other utilities also provides additional reliability to meet load requirements. Power is distributed from SCL's principal substations via high voltage feeder lines to numerous smaller distribution substations and pole transformers which reduce voltage to required levels for customers. SCL owns and maintains 2,428 circuit miles of distribution lines within Seattle that deliver power from the 14 principal substations to approximately 365,200 customers (See Utilities Figure A-2 and A-3).

**Utilities Figure A-2
Electrical Generation Resources**



Utilities Figure A-3
Electrical Transmission and Substation System



SCL's current generation capability (owned and contracted) is adequate to serve existing customers. Because of the nature of City Light's hydroelectric system, the utility is not presently constrained by its ability to meet peak loads (typically referred to as capacity). At times, the system may be constrained in its ability to carry load over periods of heavy load hours (6 a.m. to 10 p.m.) during the winter. On an average monthly basis, City Light currently has sufficient resources to meet expected customer load in the next few years, even under serious drought conditions.

SCL sells on the wholesale energy markets the energy it does not need to meet customer load. The utility also buys energy in the wholesale markets to enhance the value of its resource portfolio and to meet occasional short-term energy deficits.

Seattle City Light: Future Needs Assessment

New resources will be needed to meet load growth and to comply with I-937 over the next 20 years. The timing of resource acquisition depends on the rate of load growth, hydro volatility, together with the I-937 schedule for acquiring renewable resources and/or renewable energy credits.

For the transmission and distribution components of SCL's system, projected growth will be accommodated by planned transmission and distribution capacity additions. The addition of a downtown substation is being permitted to meet the load growth in the Denny Triangle and South Lake Union.

Capacity would also be expanded at the North, Duwamish, Shoreline, University and Creston substations. New substations also may be built in the next five to twenty years in Interbay, SODO, and the Highline area, depending on load growth projections and emerging real construction. Substations in the Northeast and Northwest parts of the City may also be built in the 20-year period. City Light owns properties for the Interbay, Northeast, and Northwest substations.

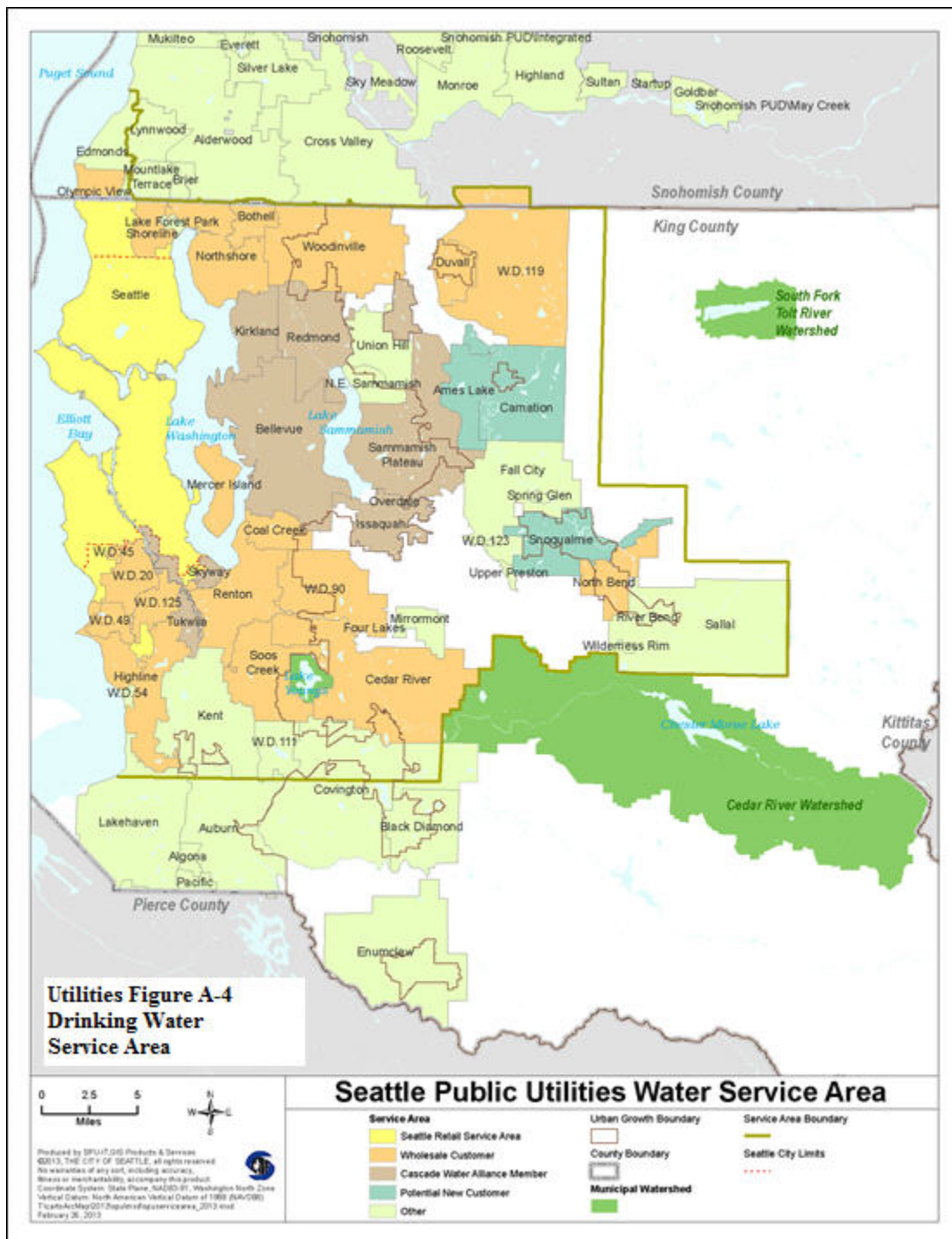
Seattle Public Utilities: Drinking Water

Seattle Public Utilities (SPU) provides drinking water to a service area population of 1.3 million within the greater Seattle metropolitan region of King County and portions of southern Snohomish County. SPU provides retail water service to customers in the City of Seattle, and portions of the cities of Shoreline, Lake Forest Park and Burien, as well as portions of unincorporated King County south of the City of Seattle. SPU also provides retail water service to Shorewood Apartments on Mercer Island and Seattle Tacoma International Airport. In addition, SPU sells wholesale water to 19 municipalities and special purpose districts, plus Cascade Water Alliance, who in turn provide the water to their own retail customers (See Utilities Figure A-4). SPU operates under an annual Operating Permit issued by the Washington State Department of Health. More information about the water system can be found in Seattle's latest Water System Plan.

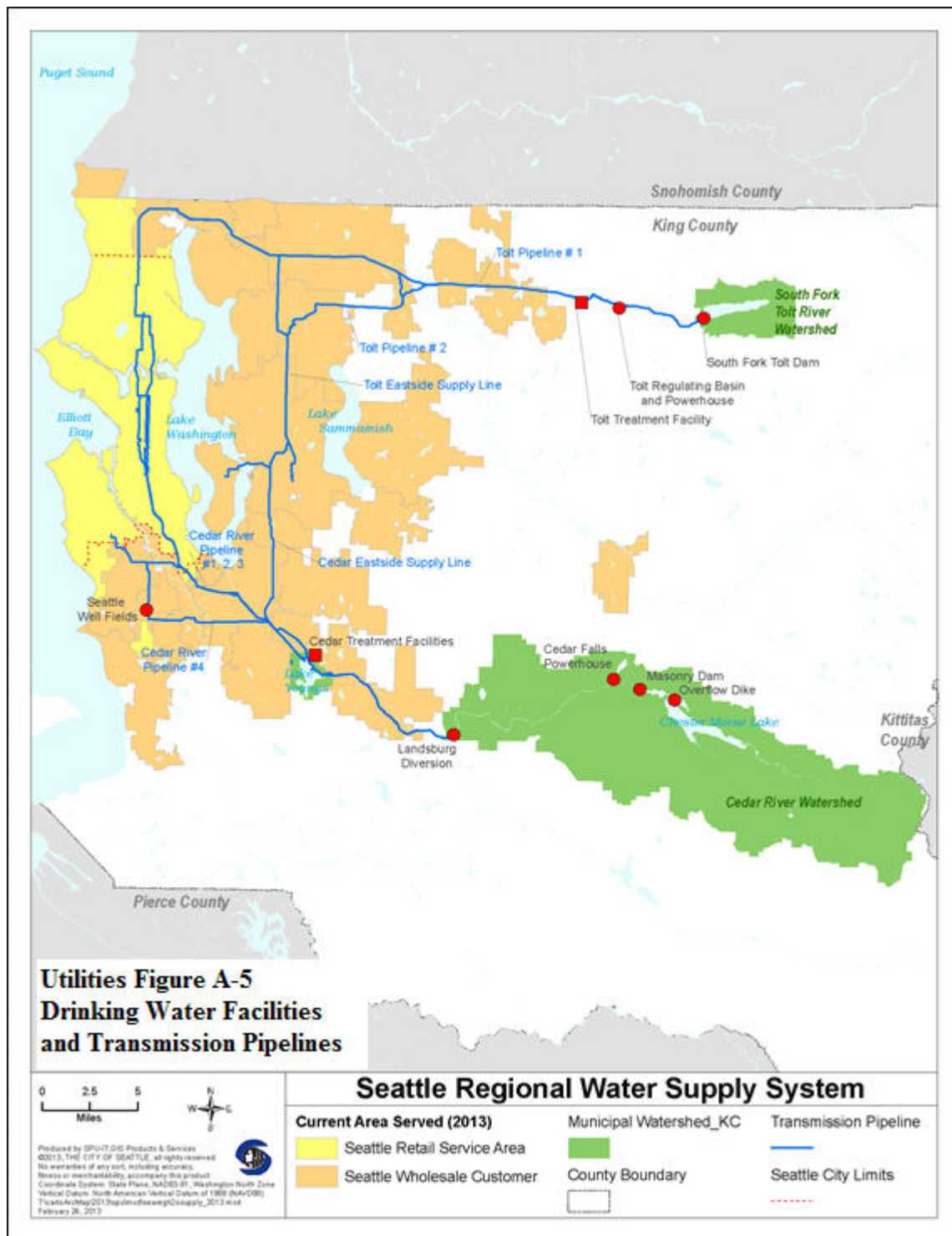
Seattle Public Utilities: Inventory and Capacity

SPU supplies drinking water from two major water supply sources, the Cedar River Watershed and the South Fork of the Tolt River Watershed, both on the western slopes of the Cascade Mountains. In addition, a small amount of water from Seattle Well Fields, which are located north of Seattle Tacoma International Airport, is available to provide drought and emergency supply. In total, these sources can supply up to 172 million gallons of water per day on an average annual basis. Water from these sources is treated to meet drinking water quality regulations. The treated water is then delivered to Seattle retail and wholesale customers through a network of approximately 1,880 miles of transmission and distribution system pipelines, 400 million gallons of treated water storage facilities (reservoirs, tanks and standpipes), and 31 pump stations. System-wide treatment and transmission capacity is 310 million gallons per day (See Utilities Figure A-4).

**Utilities Figure A-4
Drinking Water Service Area**



**Utilities Figure A-5
Drinking Water Facilities and Transmission Pipelines**



Seattle Public Utilities: Future Needs Assessment

SPU expects water supply to be adequate to serve the City's existing and forecast population for at least the next 20 years. This assessment considered an analysis of future climate change impacts on both supply and demand. That analysis indicated that, although available supply could be reduced by as much as 4 percent in 2025 and 6 percent in 2050 under the warmest climate change scenario analyzed, this reduced supply would still exceed climate-impacted demands in those time periods.

One reason for this outlook is the anticipated continued reduction in per capita water use in SPU's service area. Total water use in SPU's regional water system declined by 15% from 2000 to 2013 while the population served has grown by 30%. The regional water conservation program administered by SPU for the Saving Water Partnership – a collaborative program run by Seattle and 18 of SPU's wholesale customers – has been a contributor to this reduction in water use. For the 2013-2018 period, the Saving Water Partnership has set a goal to reduce per capita water use from current levels so that total average annual retail water use of members of the Saving Water Partnership is less than 105 million gallons per day despite forecasted population growth.

Distribution and storage facilities that serve Seattle residents and businesses have adequate capacity to serve the city. There are, however, a few areas where SPU's water system has hydrants that cannot provide fire flows to existing buildings as required under current codes for new buildings. This can be caused by a combination of factors including pipes with small diameters or areas with low water pressure due to older design standards, or pipes whose interiors have been reduced by deposits. There are also areas that were originally built to now-obsolete fire codes. Depending on the location and type of development, parts of SPU's water distribution system may need to be upgraded to meet current fire flow standards for the planned development. Additionally, there are also parts of the retail service area in which water mains need to be extended to serve a particular parcel. SPU will work with developers to have needed water infrastructure in place for the development.

In addition to the distribution system improvements needed to support new development, investments are needed to replace aging infrastructure that has reached the end of its economic life. SPU is currently applying an asset management assessment to determine which facilities would be replaced using the funds available in the six-year CIP instead of being repaired.

Seattle Public Utilities: Drainage and Sewer

Seattle Public Utilities is charged with managing drainage and sewer systems to meet public safety, water quality, and resource protection goals. SPU's drainage and sewer service area covers the City of Seattle. King County is responsible for operating the sewage treatment plants that treat all City of Seattle sewage as well as the interceptor lines that deliver sewage to these facilities.

Seattle Public Utilities: Inventory and Capacity

Although a few small areas are still served by septic systems, almost all areas of the city are served by sewer. Three types of drainage and sewer systems are used in Seattle:

- Combined drainage and sewer (a single set of pipes carries water from drainage water and sewage)
- Separate drainage sewer systems, (the pipes carrying drainage are completely separate from the pipes carrying sewage)
- Partially separated drainage and sewer (one set of pipes carries sewage and some drainage water – general from street runoff, while the other set carries only drainage water)

The SPU system collects residential, commercial, and industrial sewage and delivers it to interceptor lines operated by the regional sewage treatment agency (King County). While King County operates a regional system including various treatment plants, sewage from Seattle is primarily treated at the West Point Sewage Treatment Plant before being discharged into Puget Sound (See Utilities Figure A-5). The West Point Treatment Plant is a secondary treatment facility, with a monthly average capacity of 133 million gallons per day (MGD) and daily peak flow capacity of 440 MGD. Of the daily peak flow capacity, 300 MGD would receive secondary treatment and the remainder would receive primary treatment. The West Point Treatment Plant serves 1.3 million people including residents of Seattle, King County north of Seattle, and South Snohomish County.

The capacity of the drainage and sewer system in some areas is limited during peak storm events. During or following intense or prolonged periods of rainfall, some of the systems cannot accommodate the combined drainage and sewage flows, resulting in combined sewer overflows (CSOs) being discharged into area waters. CSOs occur in both the regional and the City systems. There are two “wet weather” treatment facilities, Alki and Carkeek, that partially treat a portion of this overflow, but in many areas the overflows discharge completely untreated water.

Seattle Public Utilities: Future Needs Assessment

Generally, the City-operated drainage and sewer facilities in Seattle have been planned and sized to serve the maximum or build out conditions under zoning at the time and will be adequate to serve the level of increased growth proposed in the Plan. The capacity of the sewer system is limited in confined areas of the city, where there have been historic hydraulic and system backup problems. In addition, there are areas of drainage deficiencies and water quality issues in the City. These problems are being addressed through developer- funded facility upgrades and by Seattle Public Utilities’ Capital improvement Program (CIP).

Seattle Public Utilities: Solid Waste

Various state and local regulations and guidelines influence Seattle's solid waste planning. Chief among the regulations is the State of Washington's 1969 legislation Revised Code of Washington (RCW) 70.95 requiring local solid waste plans. Seattle Public Utilities manages this responsibility by regularly reviewing and updating Seattle's Solid Waste Plan. The Plan has a 20-year horizon and provides strategies for future solid waste management needs.

Seattle Public Utilities: Inventory and Capacity

A network of public and private service providers and facilities collect, transfer, process, and landfill Seattle's discards. All Seattle's Municipal Solid Waste that is not recycled or composted is, by law, under city control.

SPU contracts with private firms to collect residential garbage, recyclables, and yard and food waste (organics). The same contractors collect commercial garbage. Open-market providers collect commercial recycling and organics. Businesses may choose to "self-haul" their solid waste materials.

Transfer and recycling processing facilities consolidate collected solid waste materials and route them to their next destination. Garbage and organics collected by the city's contractors goes to the transfer stations owned and operated by the city. Recycling picked up by the city's contractors goes to the city's contracted recycling processing facility. Recycling picked up from businesses may go to a recycling processor or one of the many local businesses specializing in recycled materials. Other collected materials go to the city's transfer stations, or private transfer stations or processors. Occasionally, residential garbage is taken to private transfer facilities such as when a city station temporarily needs to close.

At the transfer stations, garbage is loaded into rail containers and trucked to Seattle's contracted rail yard. Assembled trains of containers are hauled to the city's contracted landfill. Processed recyclables go to various materials markets. Organics go to the city's contracted organics contractor to be processed into compost.

SPU also runs two moderate risk waste (MRW) collection facilities. Seattle provides this service as a partner in the Local Hazardous Waste Management Program (LHWMP) in King County.

Except for the two city-owned transfer stations, the equipment and facilities necessary to operate Seattle's solid waste system are provided by contracted services.

Seattle Public Utilities: Collection

Two collection companies collect all residential solid waste materials and commercial garbage. Current contracts started in March 2009 and run until at least 2017. The companies provide all aspects of

collection, including trucks, truck yards, and labor. Service areas and routes are planned to ensure efficient use of collection vehicles and to collect consistent amounts of material each day so that the daily capacity of each transfer station is not exceeded. Transfer and processing facilities need an even, predictable inflow to avoid having to stockpile incoming materials.

Seattle Public Utilities: Transfer Stations

The city owns and operates two transfer stations: North Transfer Station in the Wallingford neighborhood, and South Transfer Station in the South Park neighborhood. Two private transfer stations supplement city facilities.

The city's transfer facilities now serve a variety of vehicles and customers and receive a range of discarded materials that include garbage, recyclables, and compostables. In addition to transferring materials delivered by collectors, the stations play an important role in accepting materials unsuitable for curbside collection. Residents with large, bulky items or excess quantities can bring these materials to the stations for recycling or disposal. The stations also serve businesses that choose to self-haul their waste and recyclable materials.

In 2007, the Seattle City Council decided to proceed with improvements to the two city-owned stations, which were originally built in the 1960's. SPU completed construction of the new South Transfer Station in 2013. The new North Transfer Station will be complete in 2016. Demolition of the old South Recycling and Disposal Station and redevelopment of that site is scheduled to be complete in 2018.

The two private transfer facilities are located in the industrial area south of downtown Seattle.

Seattle Public Utilities: Recycling and Composting

SPU contracts with Rabanco Recycling Center for traditional recycling (newspaper, glass bottles, tin cans, etc.). It is located in the Duwamish Manufacturing/Industrial Center.

Most commercial recycling is provided by private arrangements. Vendors collect both mixed and source-separated materials, and take them to a variety of processors in the Seattle area. Which processor they use depends on the material and any agreements haulers and processors may have.

For organics composting, SPU implemented new contracts in 2014 with two vendors: Lenz Enterprises, Inc., and PacifiClean Environmental of Washington, LLC. Lenz Enterprises is mainly responsible for taking organics from SPU's Seattle's North Transfer Station to its processing facility in Stanwood, Washington. PacifiClean will take mainly organics from SPU's South Transfer station to their processing facility that will be located in central Washington. Both companies have guaranteed access to backup facilities.

Seattle Public Utilities: Disposal

The City of Seattle contracts with Waste Management of Washington for rail haul and disposal of all non-recyclable waste at Columbia Ridge Landfill in Gilliam County, Oregon. After it has been compacted into shipping containers at transfer facilities, garbage is hauled to the Argo rail yard and loaded onto the train. The Argo Yard is owned and operated by the Union Pacific Railroad, and is located in the Duwamish Manufacturing/Industrial Center. Trains leave Seattle six times a week, stacked two-high. Waste Management of Washington owns the containers. The Columbia Ridge Landfill and Recycling Center is owned and operated by Oregon Waste Systems, a division of Waste Management.

Seattle Public Utilities: Future Needs Assessment

As the City of Seattle contracts with private service providers for recycling processing, organics composting, and landfill long-haul and disposal, any programmatic changes would be made through those contracts. Since Public Health-Seattle & King County regulates all solid waste handling facilities in their jurisdiction, their approval is required for any a new public or private facilities for the transfer, recycling, composting and landfilling of solid waste materials.

Although the overall amount of waste generated in the city will increase with projected residential and employment growth over the 20 year plan horizon, the percentage of waste that will be directed to disposal is expected to decrease. Seattle's overall municipal solid waste generation (MSW) has generally followed the ups and downs of economic trends, even as population has steadily increased. Total generation saw a prolonged downward trend after 2007 through the Great Recession and through 2012. SPU expects overall waste generation to increase gradually over the next two decades, not rising to pre-recession levels of about 850,000 tons of material per year until about 2027 or after.

Seattle's diversion goal is to recycle or compost 70% of the city's MSW by 2022. In 2012 Seattle recycled or composted 56% of its MSW. Seattle recently set an additional goal, to recycle 70% of the city's construction and demolition (C&D) waste by 2020. The majority of C&D waste is managed in the private sector, from generation through processing and disposal.

Shifts in consumer patterns change over time. Likewise, new materials and combinations of materials continue to enter the consumption cycle. SPU will conduct waste composition analyses frequently enough to be able to respond to these changes. For example, SPU will continue to work with processors to designate additional recyclable materials, and modify collection programs as needed.

Future Needs Assessment

Collection

Seattle will continue with its strategy to competitively contract for collection services. The contractors will adjust to changing service needs, such as more recycling, over time.

Transfer

The capacity provided by the rebuild of Seattle's two transfer facilities, in conjunction with private transfer capacity, is projected to satisfy Seattle's solid waste transfer needs for at least as long as the 50-year expected life of the rebuilt facilities. Seattle's new facilities are purposely designed for flexibility in response to a changing mix of solid waste materials over time.

Recycling and Composting

Recycling capacity at private facilities is considered adequate for at least two decades, and Seattle will continue to contract for these services. Seattle's current contract is guaranteed through 2019. In 2014, Recology Cleanscapes opened a new high capacity mixed-material recycling facility in the Duwamish Manufacturing/Industrial Center. Furthermore, the Washington State Department of Ecology currently lists more than 280 recycling facilities in King, Pierce, and Snohomish counties. In addition to the new Recology Cleanscapes facility, at least 3 of these are large facilities that process mixed recycling and are within 20 miles of Seattle. SPU expects that many other private recyclers that handle limited ranges of materials will continue their presence in the local market.

Current composting capacity is adequate for the 20 year planning horizon. However, statewide there is concern about future capacity as more cities and counties divert more organics. Seattle's two organics contracts are guaranteed, and may be extended through 2024. As regional demand for composting increases, composting service providers are researching and developing new technologies, for example anaerobic digestion.

Disposal

Columbia Ridge landfill, Seattle's current contracted landfill, projects that it will be able to receive material beyond the current contract's guaranteed 2028 end date. Seattle plans to continue with contracting for this service. Although Seattle's disposal alternatives are restricted through the life of the contract, the City will continue monitoring emerging alternate technologies. Rail-haul capacity has not been an issue. The contract provides for alternate transportation if rail lines become unavailable.

City Communications Facilities

The City Department of Information Technology, in collaboration with City Light and other departments, jurisdictions and institutions, installs, owns and/or operates an extensive radio and broadband information and communications technology (ICT) infrastructure, including radio for emergency services and field work, and fiber optic for transmission of voice, video and data for delivery of city services. The City leases some services from private providers, but has steadily increased the network of public infrastructure to city buildings. The City has a fiber sharing agreement with other public agencies that enables joint installation and maintenance of an extensive network of conduit and which minimizes cost,

digging and installation of broadband infrastructure. The City also leases excess fiber capacity to private providers.

B Investor-Owned Utilities

Natural Gas

Puget Sound Energy (PSE) provides natural gas service to more than 780,000 customers in six Western Washington counties: Snohomish, King, Kittitas, Pierce, Thurston, and Lewis. As of 2014, it is estimated that PSE serves over 140,000 customers with the City of Seattle.

Natural gas comes from gas wells in the Rocky Mountains and in Canada and is transported through interstate pipelines by Williams Northwest Pipeline to Puget Sound Energy's gate stations.

Supply mains then transport the gas from the gate stations to district regulators where the pressure is reduced to less than 60psig. Distribution mains are fed from the district regulators and individual residential service lines are fed by the distribution mains.

PSE does not have any major projects planned in Seattle, but new projects may be developed in the future at any time due to:

- New or replacement of existing facilities to increase capacity requirements due to new building construction and conversion from other fuels
- Main replacement to facilitate improved maintenance of facilities
- Replacement or relocation of facilities due to municipal and state projects

Cable

The FCC provides limited regulatory authority to local jurisdictions to enable franchise agreements with providers of cable television. As of 2014, the City of Seattle had cable franchise agreements with two companies: Comcast and Wave Broadband. Comcast is the city's largest provider, serving approximately 2/3 of the city. These companies also provide telephone and broadband Internet services. As of 2014, Wave also owns CondoInternet, which offers gigabit Internet service in a limited, but growing area of Seattle.

The franchise agreements provide for consumer protection and public benefits, such as delivery of cable television and public Internet access to City community centers, public housing, and non-profits providing Internet access and skills training to technology disadvantaged residents. The companies are allowed to compete, though overlapping service areas have been minimal as of 2014. The franchise agreements have generally been for 10 year periods with some adjustment when companies are sold. See seattle.gov/cable/franchises.htm for more detail.

Landline Telephone

CenturyLink, which purchased QWEST Communications, is the largest telephone company, providing local landline telephone and related retail and wholesale communications services throughout the entire city. They maintain a number of poles, transmission lines and network architecture. Additionally, there are a number of small companies that provide limited telephone service, often by paying for the use of other company's infrastructure.

Wireless and Cellular

Seattle is served by numerous companies providing wireless and cellular services. These communications utility companies tend to own wireless and cellular transmission facilities as well as fiber backbone to relay the data received in the transmission facilities. Common wireless technologies include point-to-point microwave as well as Wi-Fi internet services. Microwave antennas require location for line of sight transmission. Cellular and Wi-Fi transmitters have limited transmission radius and are also dependent on the strength of the antenna in user's mobile devices. As the number of users and the demand for higher data transfer (e.g. for watching or sending video) grows, the infrastructure will also require expansion. Greater distribution of fiber optics through the city enables higher bandwidth connections to these antennas. The industry is continuing to evolve, so the city is likely to see continued demand for placement of antennas, though technology developments may also result in some reduction of the number required.

Radio and Broadcast Television

Seattle is also served by a number of radio and television broadcast facilities who maintain antennas and transmission equipment in the city which, like cellular equipment, may be located and operated on company sites, or placed on other public or private buildings through leasing arrangements. Some of these companies also operate other communications hosting or networking services. The FCC issued a limited number of low-power FM construction licenses to non-profit entities, starting in 2014, that require siting of small antennas and will enable local information distribution.

District Energy

Enwave Seattle is a district energy utility franchised by the City. Enwave produce heat at a centralized plant and distributes steam to commercial, residential, and institutional customers for space and hot water heating, along with other uses, by underground lines. Its service area encompasses roughly a square-mile area of the Central Business District, extending from Blanchard Street to King Street and from the waterfront to 14th Avenue, crossing over First Hill.

Enwave Seattle is a privately-owned utility that provides heat to approximately 200 buildings in Seattle's Central Business District and First Hill neighborhoods. Enwave Seattle's mission is to deliver a reliable,

cost-effective and efficient source of heat that benefits its customers, the environment and the Seattle community.

Two steam-generating plants supply the piping network. The primary plant is located on Western Avenue at University Street. The secondary plant is located on Western Avenue near Yesler Way—the site of the original plant built in 1893. Total steam generation capacity is 670,000 pounds per hour, with boilers designed to burn renewable biomass, natural gas or diesel oil if natural gas is not available. The network of insulated steel pipe encompasses a total length of over 18 miles beneath city streets and currently serves approximately 200 buildings.

The City is also working to establish district energy utility systems in South Lake Union, Denny Triangle, and First Hill. Systems for these neighborhoods are in varying planning stages, but each, if established, would likely be a closed-loop water-based utility system providing heating, hot water, and potentially cooling services to building owners. Energy sources for the utility system would largely be comprised of waste heat already in the neighborhood, including waste heat from data centers, sewer lines, and condensate from the nearby Enwave system.