

City of Seattle

Office of Economic Development

Industrial Lands Land Use and Employment Study



Mayor Ed Murray has tasked the Industrial Lands Advisory Panel with providing recommendations to ensure the Seattle 2035 Comprehensive Plan balances growth with the needs of Seattle's manufacturing and maritime industries. The following report is meant to inform the panel's recommendations to the Mayor.

This report focuses on three pieces integral to understanding the growth the city is experiencing, and the needs of industrial and maritime sectors.

1. Land use inventory focused on MICs in Seattle

- The largest task of the three, building a database of accurate land use at the parcel level, was the first step in this analysis. Much of the data currently available is out of date and no longer reflects what is happening on the ground.
- With the use of an online interactive map, feedback from stakeholders in the region, field work and a broad range of aerial and online research, a more accurate picture of the land use in the city's MICs has been compiled.

2. Quantitative analysis of employment within MICs

- The second main task was to describe the occupations found within the MICs. This was done through analysis of industry codes within all land in the MICs.

3. Infrastructure assessment within MICs

- Understanding how commodities move through our region is another important task of this project. As this is the first step toward coming up with recommendations, a more in-depth analysis of the infrastructure assets in the region will be important down the road.

- **Seattle's industrial areas are a vibrant mix of uses**, with many interconnections, that include heavy industry, lightweight manufacturing, transportation, office, retail and much, much more.
- Citywide, most of Seattle's industrial lands are occupied by industrial uses: 58% of all parcels, and 81% of land area devoted to industrial use.
- Big industrial use sites shape these numbers significantly, which **include railroad uses (23% of all land area)** and marine terminals.
- **A significant portion of the land in the Duwamish MIC is devoted to a single use: rail transportation - a total of 1,023 acres, making up 25% of Duwamish MIC.** Much of the rail uses are pass-through in nature. Transloading of freight to and from rail occurs in a few designated places. The passthrough rail segments make up much of the gross area of industrial lands.
- **BINMIC is 70% industrial (land area); and 28% of all land in BINMIC is devoted to marine related industrial use (the greatest amount of any land use in BINMIC).** Many warehouse uses are likely tied to those uses, as well.
- **There are subareas within the MICs where many office and retail businesses have clustered in a concentrated fashion.** These areas most notably include the corridors of 1st Ave and the busway west of 6th Ave, bordered by S Royal Brougham Way to the north, and S Spokane St to the south. Much of the area is devoted to rail tracks, switching yards, and the Amtrak Maintenance Facility.
- The offices uses include two categories, which were NOT able to quantify:
 - **Some office has a strong connection to industrial activity** in the area. Activities there include design work, administrative oversight and coordination, sales and executive management activity.
 - **Some office uses have little or nothing to do with industrial uses.** They are there because office space is cheaper than in other areas of town or they like the character and location of the space they have found.
 - Stakeholders see each of these uses and what they see allows them to arrive at different conclusions about "how industrial" is an area (where offices exist). More work could be done to understand how many businesses occupying offices need to be in an industrial area.
- Other subareas were further assessed. Some are defined by **very large uses of maritime and industrial uses**, such as the Port of Seattle terminals, the fishing boats and boat building throughout BINMIC. Others, such as the Georgetown commercial area, has a mix of commercial and industrial uses tightly comingled.
- Jobs data show about **106,000 jobs in industry sectors** traditionally thought of as industrial in nature, and also located in the MICs. An additional 34,000 jobs are in non-industrial economic sectors and in the MICs. Note that economic sectors are NOT land use. Manufacturers have offices downtown, and retailers have production facilities in the MICs, as examples. More data work can determine which jobs are in buildings and on lands that are truly industrial in nature, based on activities.



Land Use Categorization

Industrial Land Use Categorization

Each parcel was categorized broadly into industrial or non-industrial use, and then additionally described in two levels of detail. This allowed for defining parcels in a more flexible and detailed way on the one hand, as well as summarize industrial and non-industrial uses at a high-level. Additional flags were added to cover mixed use and buildings that are currently unoccupied. Retail and office flags were included for parcels whose predominant use was something else, but retail and/or offices were present. Flags for marijuana related businesses were also included. The table below provides a complete list of all levels of detail for industrial categorizations employed in this study with a definition explaining what each grouping represents.

I	II	III	Definitions
Industrial	Industrial	Industrial (Gen Purpose)	A parcel with facility in which the space is used for production, storage or distribution of goods, and which may also include some office space.
Industrial	Industrial	Industrial (Heavy)	A parcel with a facility that features certain characteristics, including large and heavy products; and/or large and heavy equipment and facilities. Production is typically more capital intensive and environmentally disruptive than light industry.
Industrial	Industrial	Industrial (Light)	An industrial facility that is less capital intensive and environmentally disruptive, and is often more consumer-oriented than business-oriented. Often produces small consumer goods.
Industrial	Industrial	Industrial Park/Flex	Properties with an industrial facility designed to accommodate alternate uses.
Industrial	Industrial	Industrial Staging	Properties without improvements that are being used for storage or other purposes, excluding parking.
Industrial	Industrial	Distribution	Establishments engaged in the efficient movement of goods, excluding transportation and marine terminals.
Industrial	Industrial	Warehouse	An industrial facility primarily used for the storage of materials, goods and merchandise.
Industrial	Industrial	Vocational Education	Properties used for education in manufacturing or trades.
Industrial	Industrial	Artists Lofts	Parcels with buildings used for craftwork or other small production and residential puposes.
Industrial	Maritime - Ind.	Industrial (Heavy Marine)	A parcel with a facility that features certain characteristics, including large and heavy products; and/or large and heavy equipment and facilities. Production is typically more capital intensive and environmentally disruptive than light industry and is water-related.
Industrial	Maritime - Ind.	Industrial Staging (Maritime)	Properties without improvements, with access to water, that are being used for storage or other purposes, excluding parking.
Industrial	Maritime - Ind.	Ship Yard	Properties where ships are built, repaired or refueled.
Industrial	Maritime - Ind.	Marine Terminal	Parcels with wharfage, dock, warehouse, or other marine terminal facilities for the movement of ocean-borne cargo.
Industrial	Transportation	Transportation Fleet Support Services	Properties that are being used for service or repair of vehicles, primarily by government agencies. Excludes commercial car repair and sales.
Industrial	Transportation	Railroad	Properties used for railroad tracks or connections between rail yards.
Industrial	Transportation	Transportation Terminal	Parcels with facilities where passengers or freight are assembled or dispersed.
Industrial	Utilities	Utilities	Properties that are being used for public utilities.

Non-Industrial Land Use Categorization

The table below provides a complete list of all levels of detail for non-industrial categorizations employed in this study with a definition explaining what each grouping represents.

I	II	III	Definitions
Not Industrial	Commercial	Office	Properties used for professional business services.
Not Industrial	Commercial	Warehouse (Commercial)	A facility primarily used for general storage by consumers.
Not Industrial	Commercial	Retail Trade	Parcels with establishments engaged in retailing merchandise, including bars and restaurants.
Not Industrial	Commercial	Auto Repair and Related Retail	Parcels with establishments engaged in service or repair of cars.
Not Industrial	Commercial	Auto Dealerships	Parcels with establishments engaged in retailing cars.
Not Industrial	Commercial	Outdoor Retail	Properties without improvements, that are being used for retail trade.
Not Industrial	Commercial	Accommodation	Properties with establishments such as hotels and hostels.
Not Industrial	Commercial	Entertainment and Arts	Properties used for entertainment such as theaters, stadiums, event and performance spaces.
Not Industrial	Commercial	Recreation	Properties used for recreation.
Not Industrial	Commercial	Animal Services	Properties used for animal service establishment, includes clinics and daycares.
Not Industrial	Other Services	Healthcare and Social Services	Properties with healthcare or social service establishments.
Not Industrial	Maritime	Marina	A dock with public boat rentals, slips, boat storage and small commercial uses.
Not Industrial	Other Services	Mail Processing	Facilities engaged in the efficient distribution of mail, including smaller post offices but excluding larger distribution centers.
Not Industrial	Other Services	Public Service Facilities	Properties with public service facilities such as fire and police.
Not Industrial	Other Services	Outdoor Vehicle Storage	Properties that are being used for the outdoor storage of vehicles (excludes auto retail and dealerships).
Not Industrial	Other Services	Religious Institutions	Parcels used by faith-based institutions.
Not Industrial	Other Services	Education	Properties used for public and private education.
Not Industrial	Open Space	Open Space	Open piece of land that is undeveloped and is accessible to the public.
Not Industrial	Parking	Parking	Properties without improvements used exclusively to park vehicles.
Not Industrial	Residential	Single Family	Properties used for residential purposes by a household.
Not Industrial	Residential	Multifamily	Properties where multiple separate housing units for residents are contained within one building or several buildings within one complex.
Not Industrial	Residential	Other Residential	Properties used for other residential purposes, for example a group home.

The assessment of land use in Seattle's manufacturing industrial centers started with data provided by the King County assessor's office at the parcel level. Frequently the land use of a parcel is out of date or does not accurately reflect all of the uses present. The intent of these detailed rules is to document how the ideas and expertise of the working group and city staff were incorporated into the land use analysis to make it more accurate. Overall, the land uses presented in the inventory reflect the current use of parcels as reported by King County Assessors office and refined through data cleaning.

Parcel boundaries can cover multiple buildings and businesses with differing uses. To reflect this, additional designations, or flags, were added to the database for parcels with mixed uses for office, retail and production. Additional flags for unoccupied buildings and marijuana producers and dispensaries were also included. Due to the limitations on where marijuana producers and dispensaries can be located, many are located within the MICS. Particularly within the SODO neighborhood, where there are over 50 producers or retailers.

- When parcels have multiple buildings with different uses, the parcel is assigned the largest use by square footage. In cases where there was an industrial use, even if it was a smaller use by size, the parcel was categorized as industrial.
- Maritime uses were broken out into four categories: marina, ship yard, marine terminal and heavy industrial marine. Marinas primarily used for recreation and public boat storage are the only maritime use categorized as non-industrial. Ship yards describe properties that do ship maintenance, repair and refueling. Marine terminals cover uses needed for ocean-borne cargo. Heavy industrial marine properties include larger scale operations like the ship building present on Harbor Island.
- Artist lofts where craft work is present are categorized as industrial.
- Working group members included feedback that some buildings are currently unoccupied. In this instance, we flagged the building as unoccupied but retained the most recent use as the land use.
- Roads are in a separate 'Right of Way' category and they are not included in any parcel acreage summaries. Parcels with only railroad track structures are classified as 'Railroad' and are included in the industrial summaries. Rail terminals, rail yards and airfields are in the transportation category under 'Transportation Terminal'.
- Breweries or distilleries that brew and have tasting rooms are marked as industrial with a retail flag.
- Wholesale uses have been categorized as 'Warehouse,' but their retail component has been flagged.
- Warehouses with distribution are categorized as distribution.
- Vacant land refers to land with no significant improvements and not in active use.
- Vacant land in active use (such as for outdoor storage or for truck staging) has been categorized as 'Industrial Staging' and as industrial.
- Urban farming parcels (this could be marijuana growing operations) are categorized as Industrial General. Similarly, aquaculture is categorized as Industrial General.
- Warehouses and mini warehouses are categorized as industrial, but public storage is categorized as non-industrial.
- Water parcels (like tidelands) are excluded from the acreage summaries. Piers and docks and other parcels along the waterfront are included in the land use categorization.



Land Use Inventory - Citywide

November 2017

Seattle Manufacturing Industrial Centers (MIC)

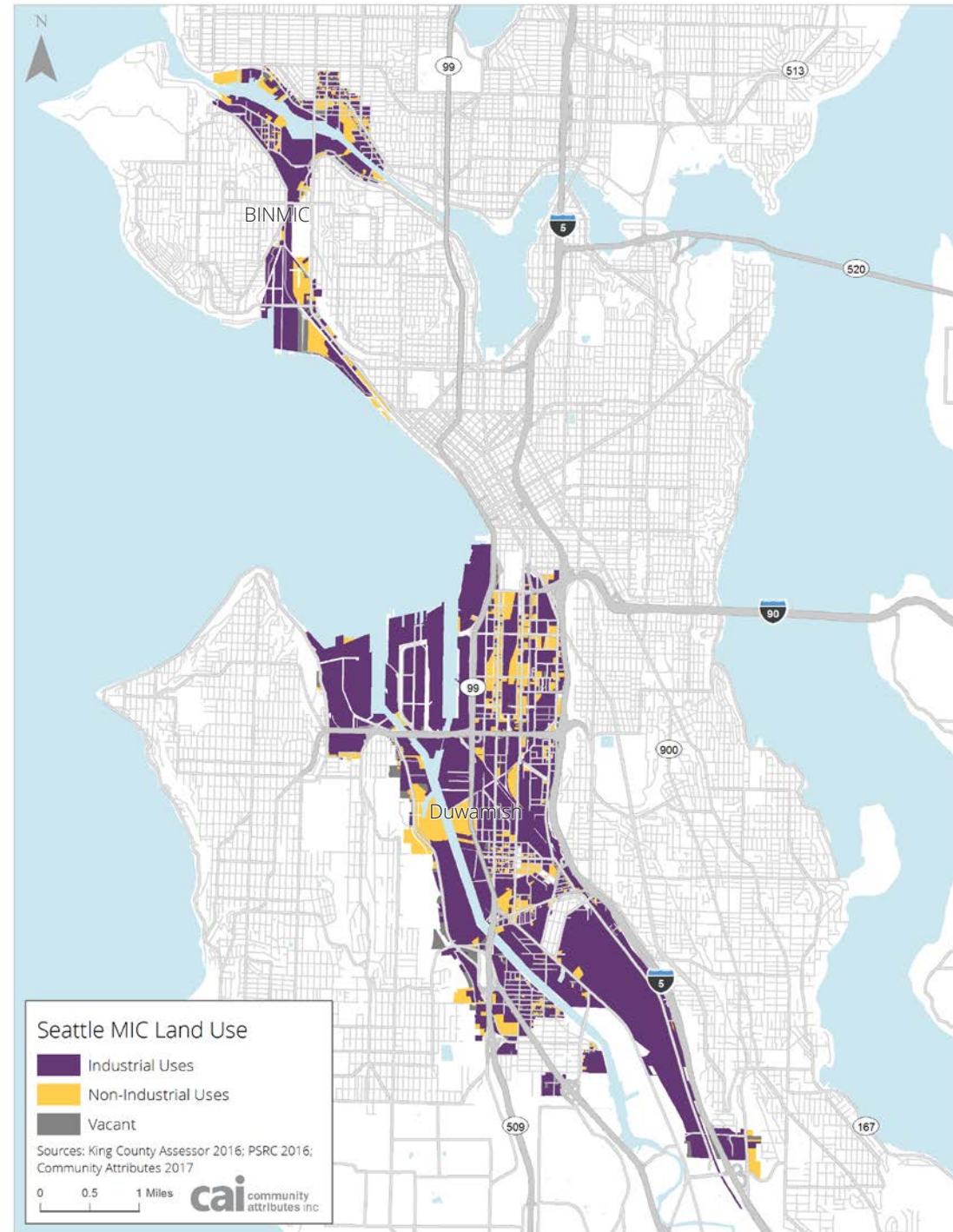
The tables below provide a summary of parcel and building counts, acreage and improvement values for each MIC broken down by high-level land use categories. All parcel counts and acreage totals exclude right of way and water parcels that are not leased for use by marinas, ship yards or marine terminals.

BINMIC	Parcels		Acreage		Buildings		Improvement Value	
Industrial	457	57%	617	70%	608	76%	\$124,751,600	17%
Non-Industrial	243	30%	208	24%	190	24%	\$607,954,300	83%
Vacant	106	13%	51	6%	0	0%	\$9,000	0%
BINMIC Total	806		876		798		\$732,714,900	
Duwamish								
Industrial	1,174	59%	3,439	83%	1,568	78%	\$1,095,958,060	50%
Non-Industrial	548	27%	550	13%	428	21%	\$1,097,939,510	50%
Vacant	274	14%	132	3%	3	0%	\$248,000	0%
Duwamish Total	1,996		4,121		1,999		\$2,194,145,570	
Seattle MICs								
Industrial	1,631	58%	4,056	81%	2,176	78%	\$1,220,709,660	42%
Non-Industrial	791	28%	758	15%	618	22%	\$1,705,893,810	58%
Vacant	380	14%	183	4%	3	0%	\$257,000	0%
MICs Total	2,802		4,996		2,797		\$2,926,860,470	

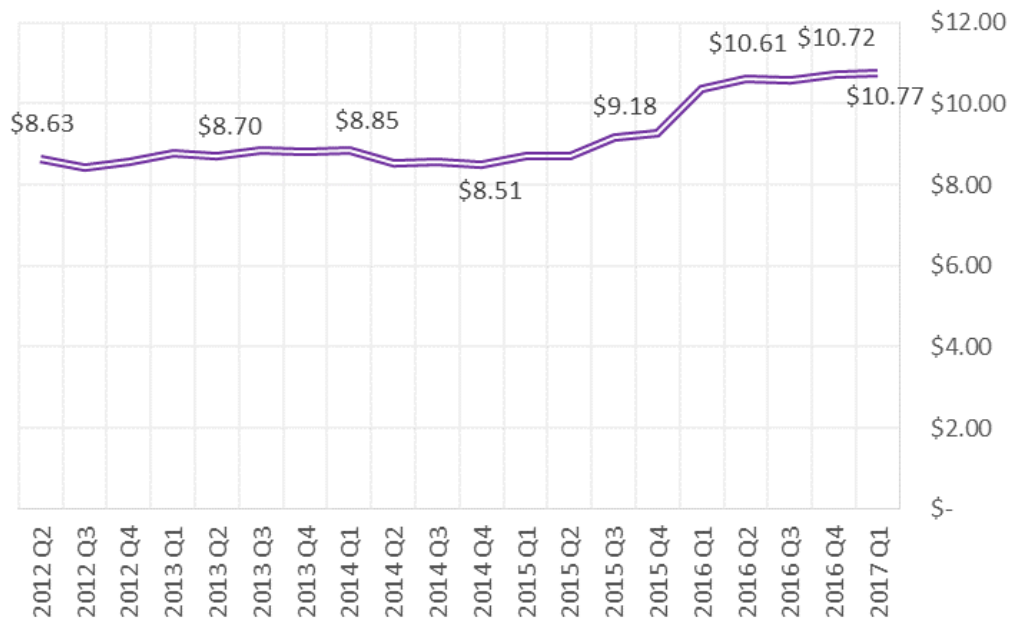
The industrial parcels in the BINMIC cover around 70% of the total land area compared to 83% in the Duwamish MIC.

Non-industrial parcels in the BINMIC have an improvement value almost five times higher than parcels with industrial uses.

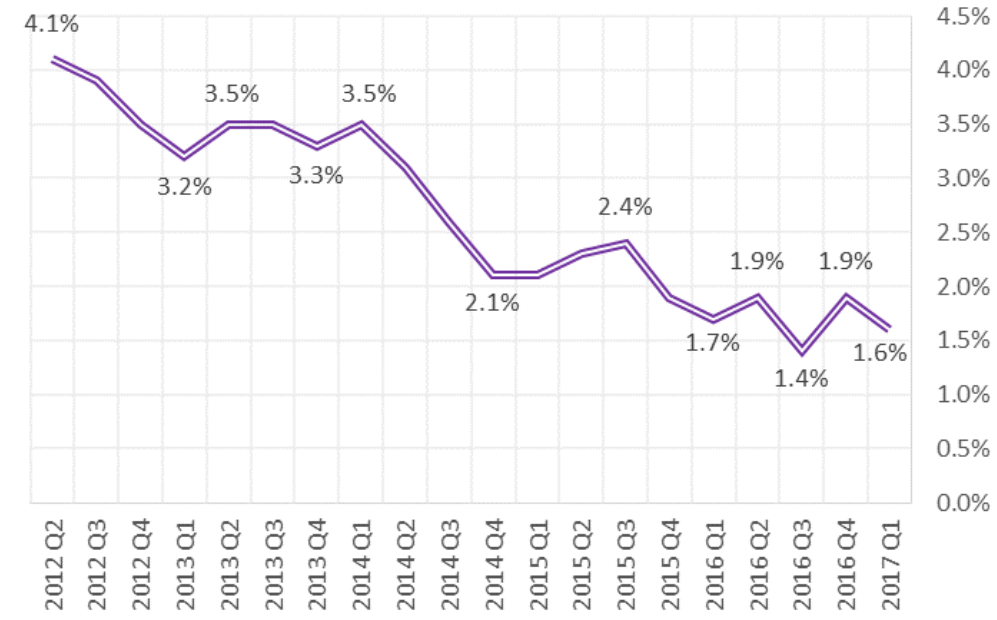
The share of vacant parcels is similar in the two MICs but the improvement value of these parcels in the Duwamish is much higher.



Industrial Rents, City of Seattle, 2012-2017



Industrial Vacancy, City of Seattle, 2012-2017



Source: CoStar, 2017

Note: "2017 Q1" covers January 1 – February 2, 2017

Within the Seattle city limits, industrial rents have not varied much between 2012 and 2014. At the beginning of 2012, rent for industrial space was \$8.63 per square footage and declined to \$8.51 in the last quarter of 2014. 2015 saw a faster increase in rentals prices per square footage, as rent levels went up by more than 15% between the first quarter of 2015 and beginning of 2016. Prices began to level out again in 2016.

The overall trend of industrial vacancy rates has been downward, with the most significant period of decline in 2014 and the lowest rate of 1.4% seen in Q3 of 2016. Between 2012 and 2017, growing demand of land zoned for industrial uses has led to a decrease in vacancy rates of more than 60%.



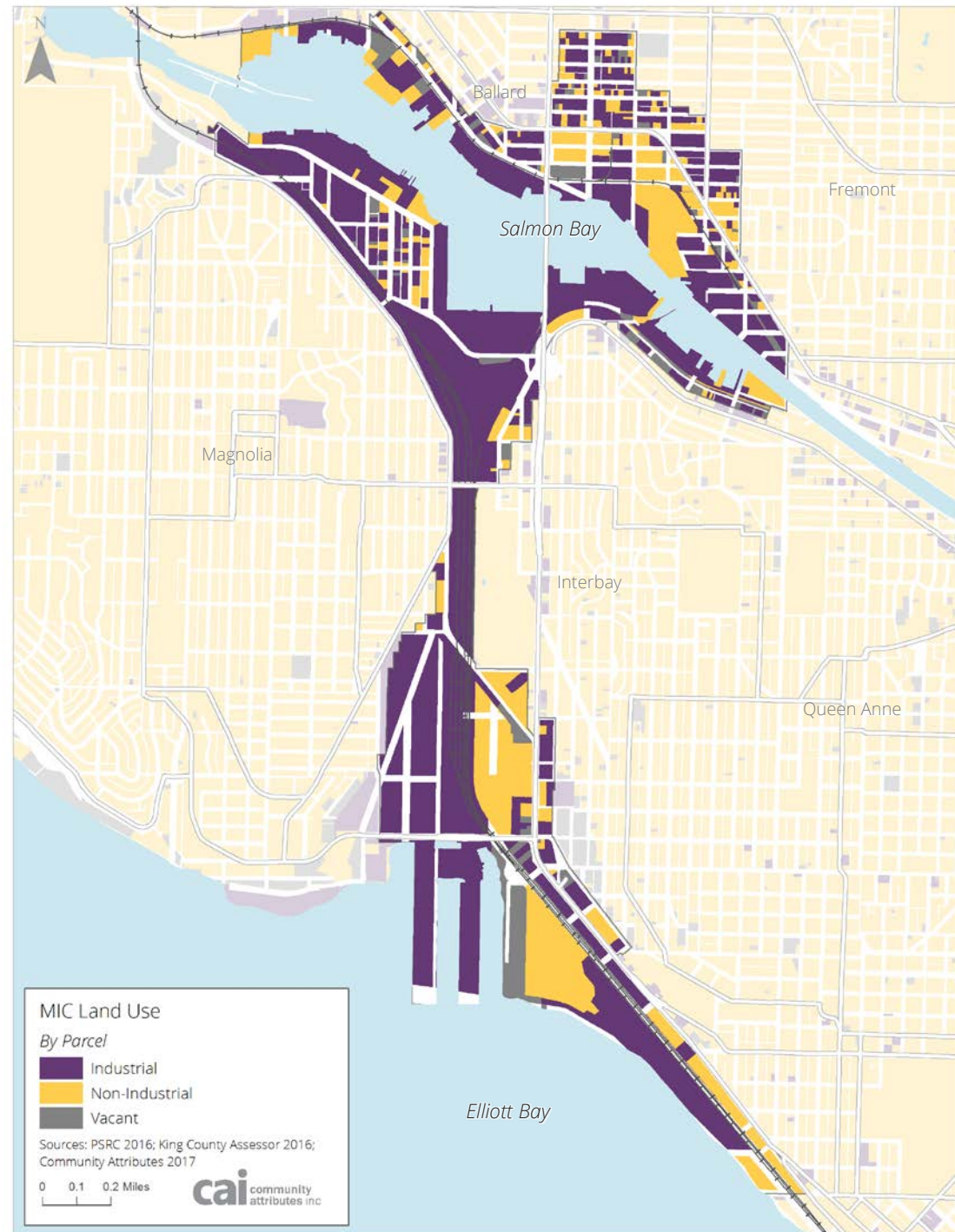
Land Use Inventory - BINMIC

BINMIC Overview

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The BINMIC ranges from Elliott Bay to Salmon Bay, and includes a working waterfront with wharfs, shipyards and rail yards. Salmon Bay is home to Fisherman's Terminal, one of the largest commercial fishing terminals in the northwest. The Salmon Bay area, stretching from the Ballard Locks to Fremont, also supports intense marine-related industrial and manufacturing uses. Interbay, located between Salmon Bay and Elliott Bay, contains a major railroad yard. At the south end of the center, Smith Cove on Elliott Bay is home to Terminal 91 (a large general cargo terminal complex) and Pier 86 (a Port of Seattle export grain terminal). The BINMIC is also the home port of the North Pacific Fishing Fleet.

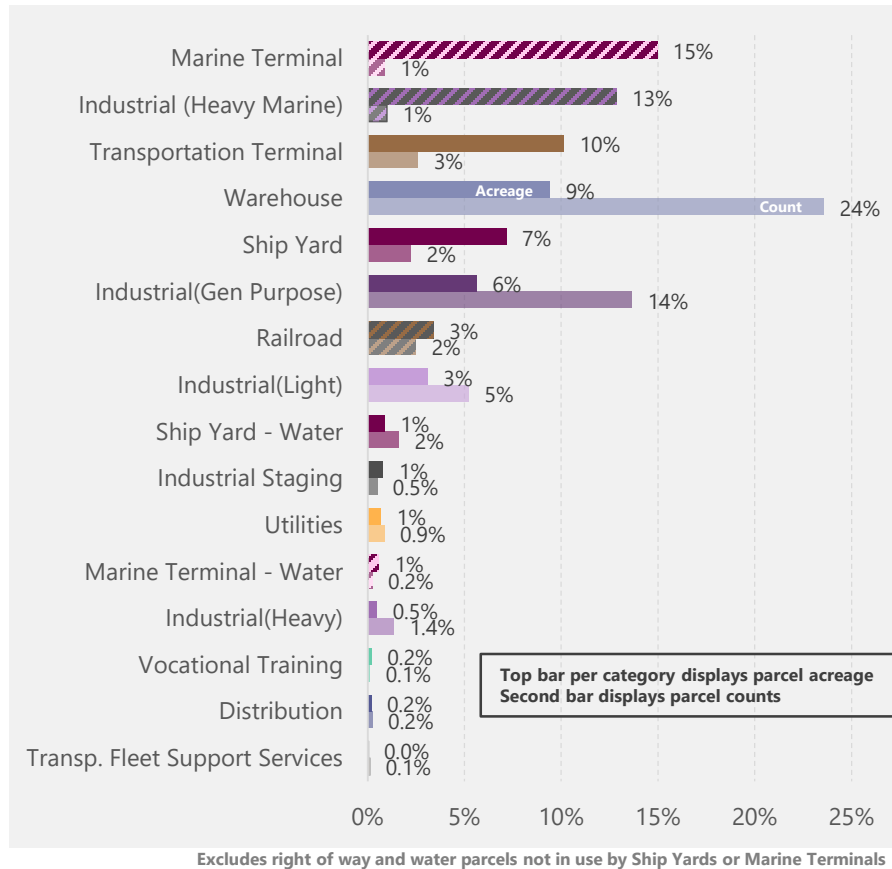
- The BINMIC is much smaller than the Duwamish MIC in size, with a gross acreage of 879 acres, including rights of way.
- Marine Terminals, Industrial Heavy Marine and Transportation Terminals are the predominant uses of land by acreage.
- 70 percent of the MIC's 876 total acres are in industrial use.
- Among industrial uses, maritime uses occupy 323 acres of land.
- 14% of land is a railway or transportation terminal.
- 5.8% of land is vacant with no improvements.
 - 1.8% of land is vacant but is in active use (vacant storage and parking).
- Average parcel size is 1.1 acres, which is significantly smaller than the average 2.1 acre size for the Duwamish MIC. Average parcel size for industrial uses is 1.3 acres.
- There are 30 parcels (53% of total acreage) greater than 5 acres in size.
- There are 378 industrial buildings containing over 6.8 million square feet of space.
- Over 31% of these buildings were constructed pre-1960.
- 7% of parcels within the BINMIC are residential, taking up less than 1% of the total acreage.



BINMIC Industrial Land Use

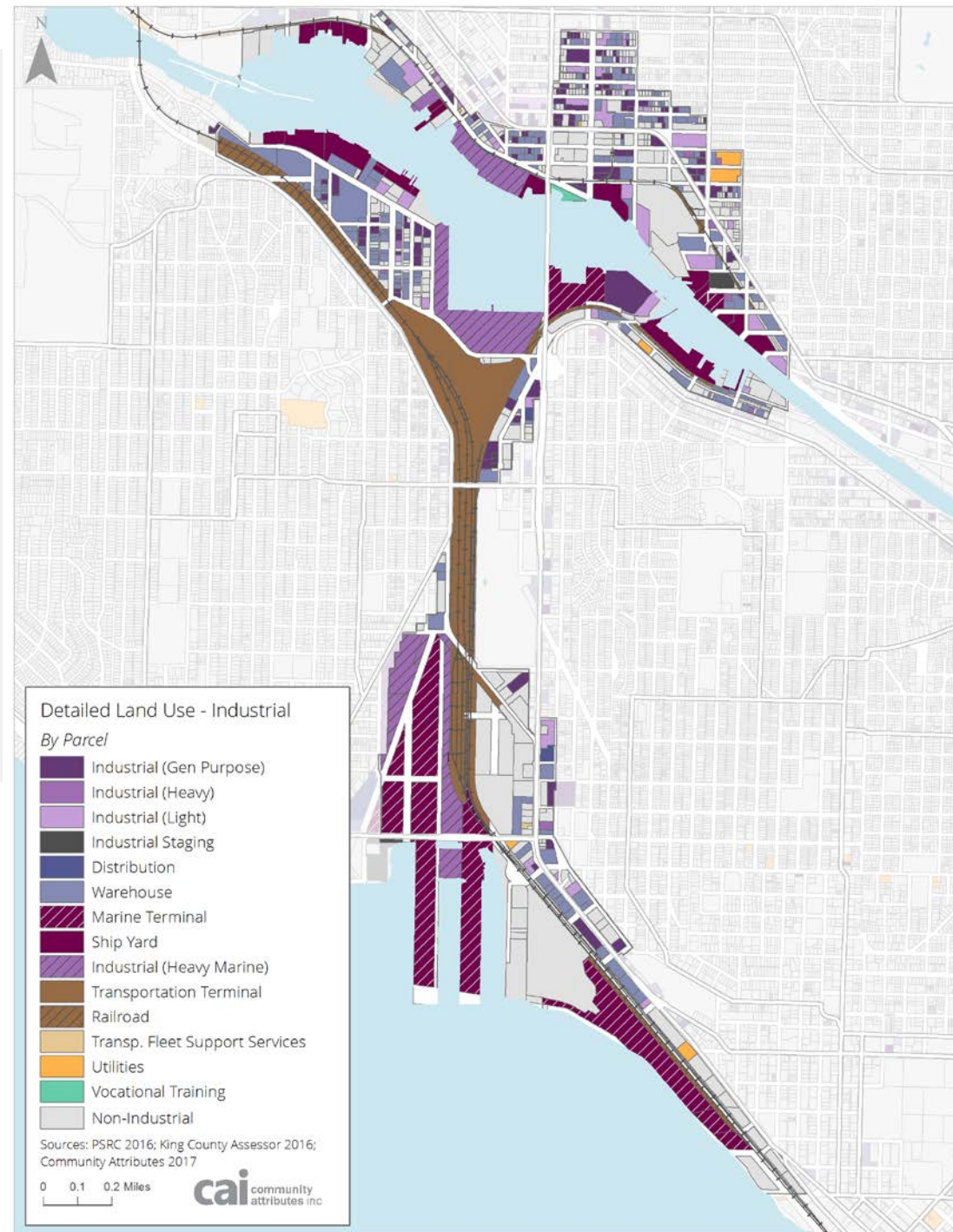
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Parcel Count and Acreage by Industrial Land Use



Each industrial land use category is displayed by the share of total number of parcels and total acreage in the MIC. Together, marine terminals, transportation terminals and industrial heavy marine uses account for 38% of total land acreage in the MIC. Although marine terminals occupy a large surface, there are only a few parcels with this land use in the BINMIC. Warehouses make up the largest percentage of parcel counts, followed by industrial general purpose.

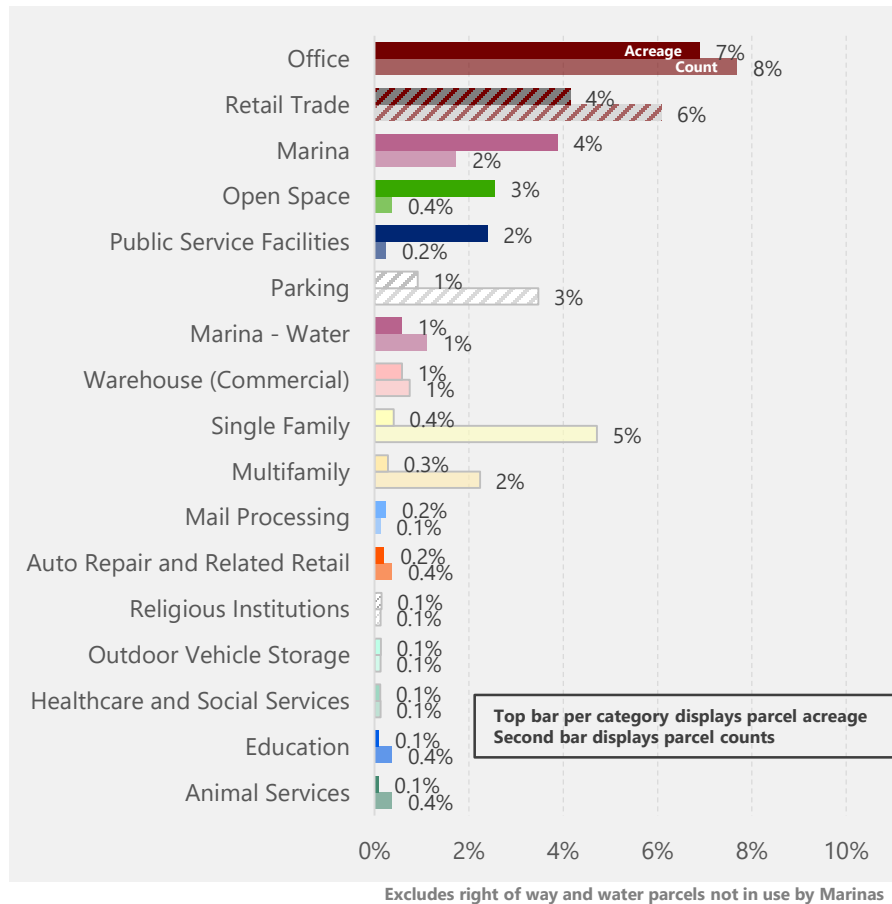
Without taking rail, marine terminals or transportation terminals into account, 51% of parcels are industrial and 42% of total acreage in the BINMIC is industrial. With those areas included, the industrial use is 57% of parcels and 70% of total acreage.



BINMIC Non-Industrial Land Use

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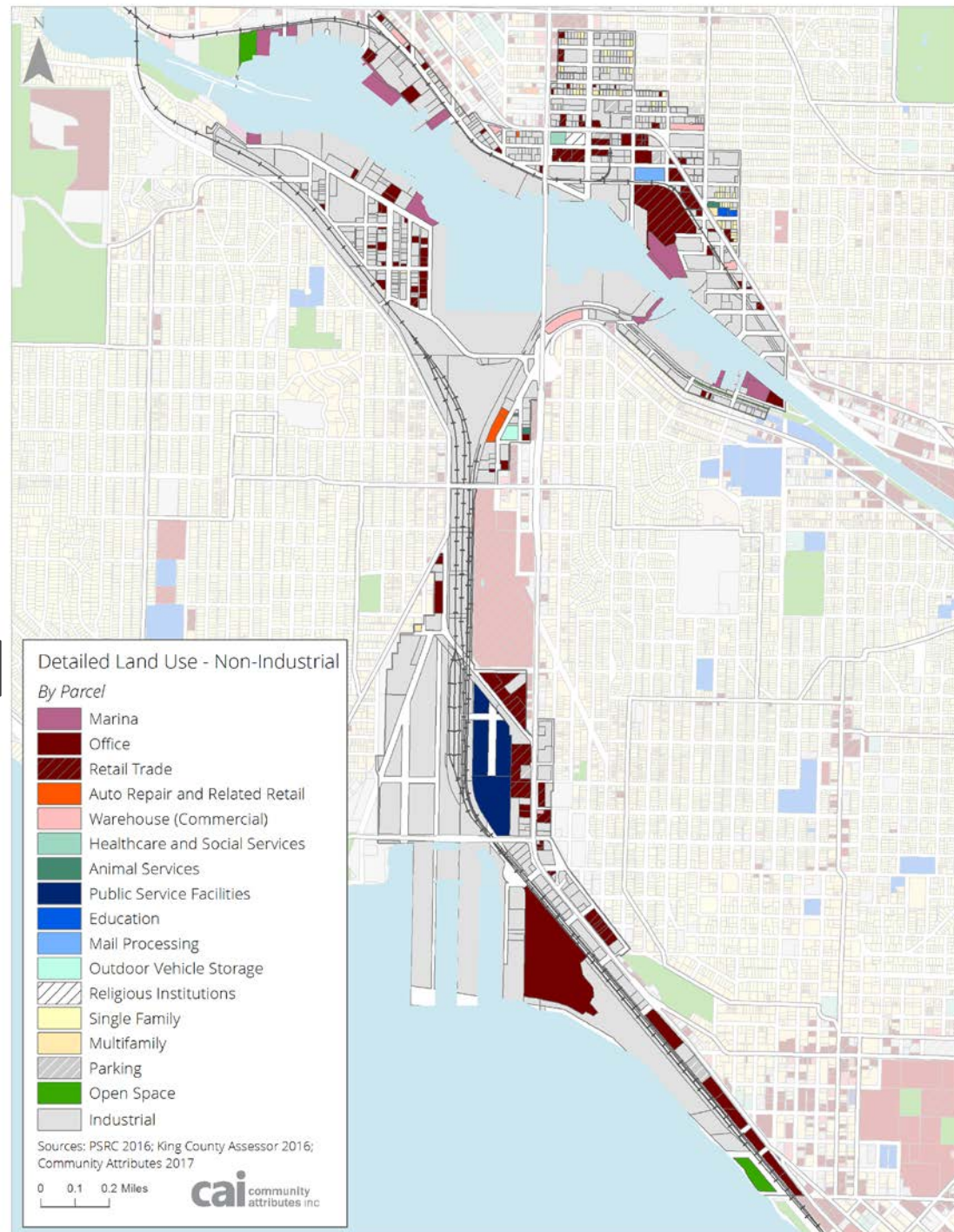
Parcel Count and Acreage by Non-Industrial Land Use



Each non-industrial land use category is displayed by the share of total number of parcels and total acreage in the MIC.

In the BINMIC, the majority of non-industrial parcels are used as office space, single family residences, marinas or for retail trade.

Parcels used for single family residences are not very numerous (0.4% of total parcel count), but they account for 5% of total acreage in the BINMIC.



BINMIC Improvement Value

This map displays the improvement value per square foot of land. This is the ratio of the assessed value of improvements to the square footage of land. Typically high improvement values denote parcels used more intensively.

Improvement Value per Square Foot of Land

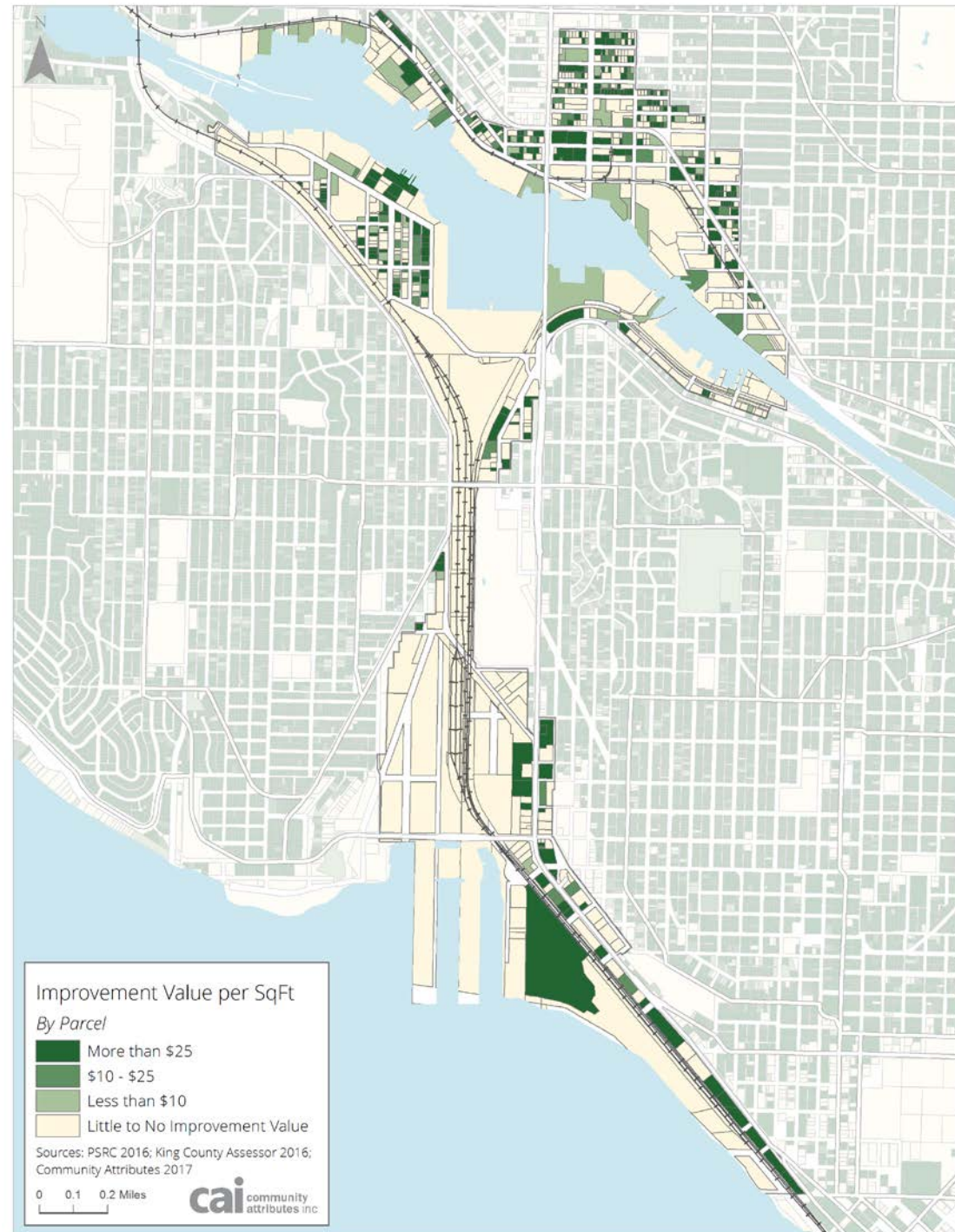
Impr. Value per SqFt	# of Parcels	Average
More than \$50	140	\$150
\$10 - \$50	153	\$28
Less than \$10	62	\$6
Little to No Impr. Value	451	\$0.04
Total & Average	806	\$46

A majority parcels in the BINMIC have little to no improvement value. This includes parcels with a total improvement value of \$1,000 or less, regardless of size.

Industrial Improvement Value per Square Foot

Impr. Value per SqFt	# of Parcels	Average
More than \$50	70	\$99
\$10 - \$50	99	\$28
Less than \$10	48	\$6
Little to No Impr. Value	240	\$0.05
Total & Average	457	\$33

Improvement value per square foot is an imperfect measure for industrial areas given the land consumptive nature of industrial uses and the relative age of buildings on these parcels. Land can be in productive industrial use even if the improvements on it are not significant. It is an industry-accepted metric, however, that can be useful to evaluate the use of non-industrial land.



BINMIC Floor Area Ratio

Floor Area Ratio (FAR)

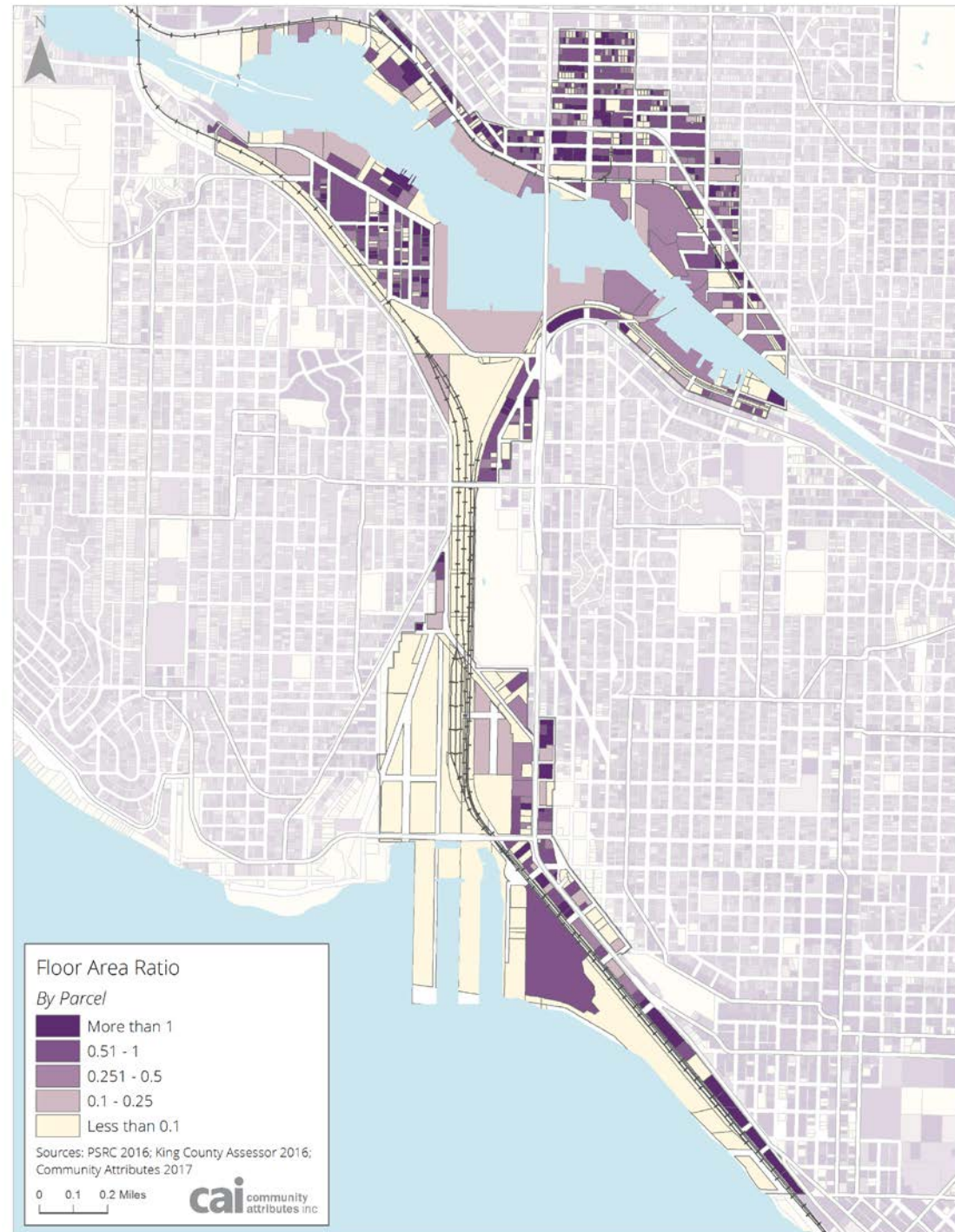
Floor area ratio is a means of relating the bulk of buildings to the acreage of land, and to other buildings in the vicinity. It is used as regulatory tool to establish an overall volume limit. It is calculated using simple formula – floor area divided by the lot area. The maximum allowable FAR for industrial zones (IG1 and IG2) in Seattle's MICs is 2.5.

As a bulk control, the floor area ratio is less useful in industrial areas than in other type of use districts given the wide variety of uses that are considered industrial. Many industrial operations, such as grain elevators and railyards do not have floor areas as such.

FAR	# of Parcels	Average
More than 0.75	248	1.4
0.51 - 0.75	114	0.64
0.26 - 0.5	116	0.38
0.1 - 0.25	58	0.18
Less than 0.1	270	0.01
Total & Average	806	0.52

Parcel Size	# of Parcels	Acres
More than 1 Acre	146	703
20,001 SqFt - 1 Acre	100	69
10,001 - 20,000	156	53
5,000 - 10,000	234	37
Less than 5,000 SqFt	170	14
Total	806	876

Bldg Size (SqFt)	# of Parcels	SqFt
More than 20,000	119	9.2 M
10,001 - 20,000	104	1.4 M
5,001 - 10,000	139	1.0 M
1,000 - 5,000	181	530 K
Less than 1,000	263	14 K
Total	806	12.2 M



Land Use Inventory BINMIC

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Industrial Land Use	Parcels		Lot Acres		Buildings	Building SqFt	Total Improvement Value	Avg Improvement Value per Land SqFt
	#	%	#	%				
Marine Terminal	7	1%	130.9	15%	23	413,829	\$1,775,200	\$0.31
Industrial (Heavy Marine)	8	1.0%	112.5	13%	26	396,572	\$1,000	\$0.00
Transportation Terminal	21	3%	88.7	10%	16	172,842	\$6,000	\$0.00
Warehouse	190	24%	82.4	9%	244	2,611,021	\$69,344,200	\$19.33
Ship Yard	19	2%	66.9	8%	58	919,884	\$12,816,400	\$4.40
Industrial(Gen Purpose)	109	14%	45.1	5%	150	1,269,081	\$24,960,700	\$12.71
Railroad	20	2%	29.7	3%	-	-	\$0	\$0.00
Industrial(Light)	42	5%	27.1	3%	62	777,464	\$14,202,800	\$12.02
Ship Yard - Water	13	2%	7.6	0.9%	-	-	\$3,000	\$0.01
Industrial Staging	4	0.5%	7.0	0.8%	-	-	\$0	\$0.00
Utilities	7	0.9%	6.0	0.7%	6	107,488	\$1,000	\$0.00
Marine Terminal - Water	2	0.2%	5.0	0.6%	-	-	\$0	\$0.00
Industrial(Heavy)	11	1.4%	4.2	0.5%	16	80,756	\$1,640,300	\$8.96
Vocational Training	1	0.1%	1.8	0.2%	3	7,224	\$0	\$0.00
Distribution	2	0.2%	1.6	0.2%	3	22,968	\$1,000	\$0.01
Transp. Fleet Support Services	1	0.1%	0.3	0.0%	1	4,000	\$0	\$0.00
BINMIC Total	806		875.6		798	12,158,966	\$732,714,900	\$19.21

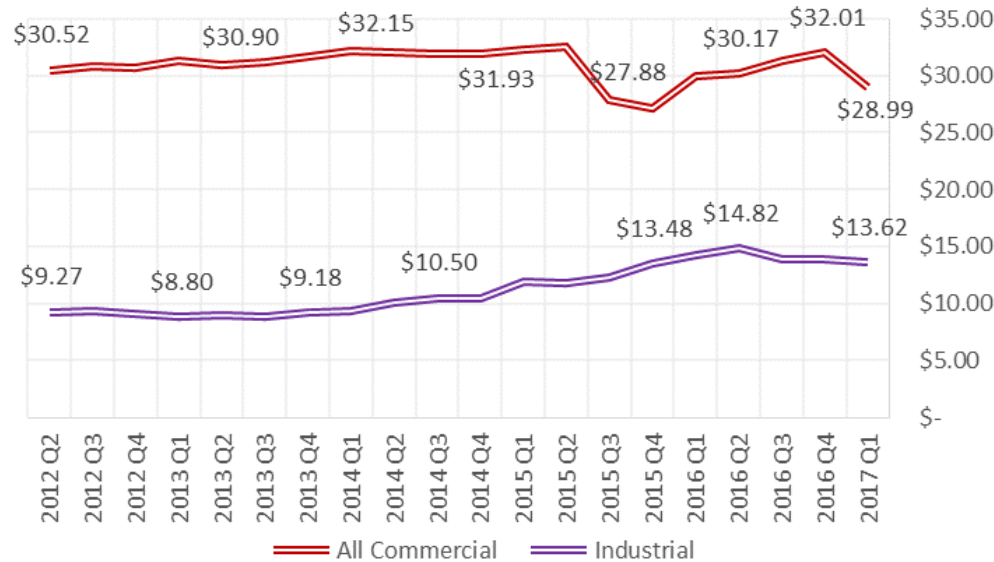
Land Use Inventory BINMIC

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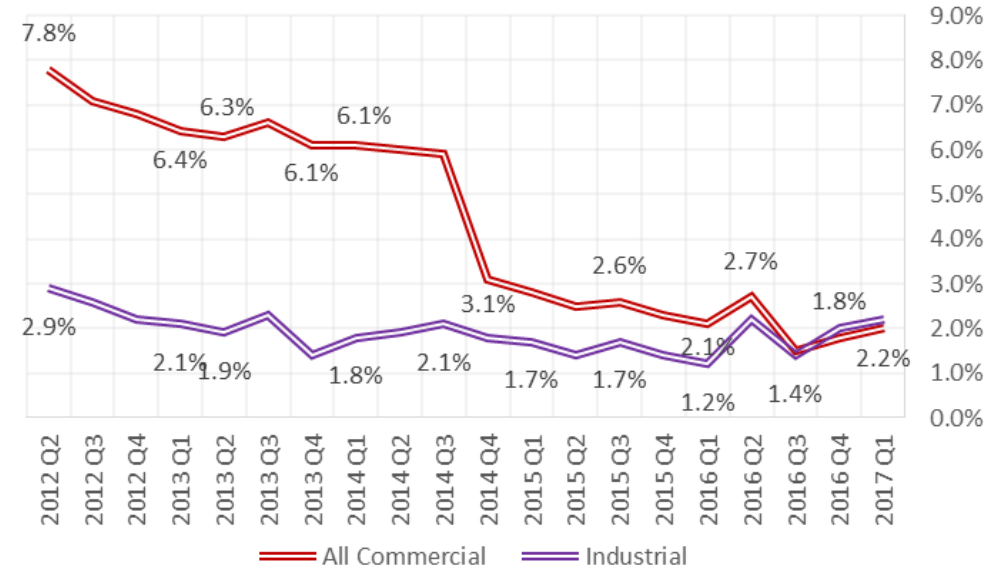
Non-Industrial Land Use	Parcels		Lot Acres		Buildings	Building SqFt	Total Improvement Value	Avg Improvement Value per Land SqFt
	#	%	#	%				
Office	62	8%	60.4	7%	72	3,467,091	\$502,813,900	\$191.04
Retail Trade	49	6%	36.3	4%	44	819,865	\$45,599,400	\$28.86
Marina	14	2%	34.0	4%	28	172,863	\$1,810,500	\$1.22
Open Space	3	0.4%	22.4	3%	1	10,000	\$0	\$0.00
Public Service Facilities	2	0.2%	21.0	2%	2	82,706	\$0	\$0.00
Parking	29	4%	8.9	1%	-	-	\$1,000	\$0.00
Marina - Water	9	1%	5.1	0.6%	-	-	\$4,000	\$0.02
Warehouse (Commercial)	6	1%	5.1	0.6%	7	381,599	\$23,741,800	\$107.51
Single Family	38	5%	3.5	0.4%	7	51,082	\$3,863,600	\$25.22
Multifamily	18	2%	2.5	0.3%	17	120,459	\$7,680,800	\$71.61
Mail Processing	1	0.1%	2.1	0.2%	1	21,463	\$0	\$0.00
Auto Repair and Related Retail	3	0.4%	1.8	0.2%	3	77,708	\$5,845,000	\$73.45
Religious Institutions	1	0.1%	1.3	0.1%	1	40,445	\$4,461,800	\$79.10
Outdoor Vehicle Storage	1	0.1%	1.2	0.1%	-	-	\$0	\$0.00
Healthcare and Social Services	1	0.1%	1.0	0.1%	1	92,092	\$10,865,400	\$244.28
Education	3	0.4%	0.8	0.1%	2	23,574	\$1,246,700	\$34.17
Animal Services	3	0.4%	0.7	0.1%	4	14,890	\$20,400	\$0.64
BINMIC Total	806		875.6		798	12,158,966	\$732,714,900	\$19.21

November 2017

Rents, BINMIC, 2012-2017



Vacancy, BINMIC, 2012-2017



Source: CoStar, 2017

Note: "2017 Q1" covers January 1 – February 2, 2017

These exhibits compare average vacancy rates and rental rates for BINMIC industrial and commercial properties over the last five years, using data from CoStar.

As shown, the value of rent for commercial space has dropped below \$30 per square footage in the second part of 2015, following a period of low fluctuations. Commercial rent values recovered in 2016 reaching a peak of \$32 towards the end of the year, only to decrease again in the first quarter of 2017.

The value of rent for industrial space has seen a more stable increase, with a slight dip from \$14.82 in Q2 of 2016 to \$13.62 in Q1 of 2017.

Commercial vacancy rates have decreased significantly between 2012 and 2017, reaching the lowest rate in Q3 of 2016 of 1.4% from 7.8% at the beginning of 2012.

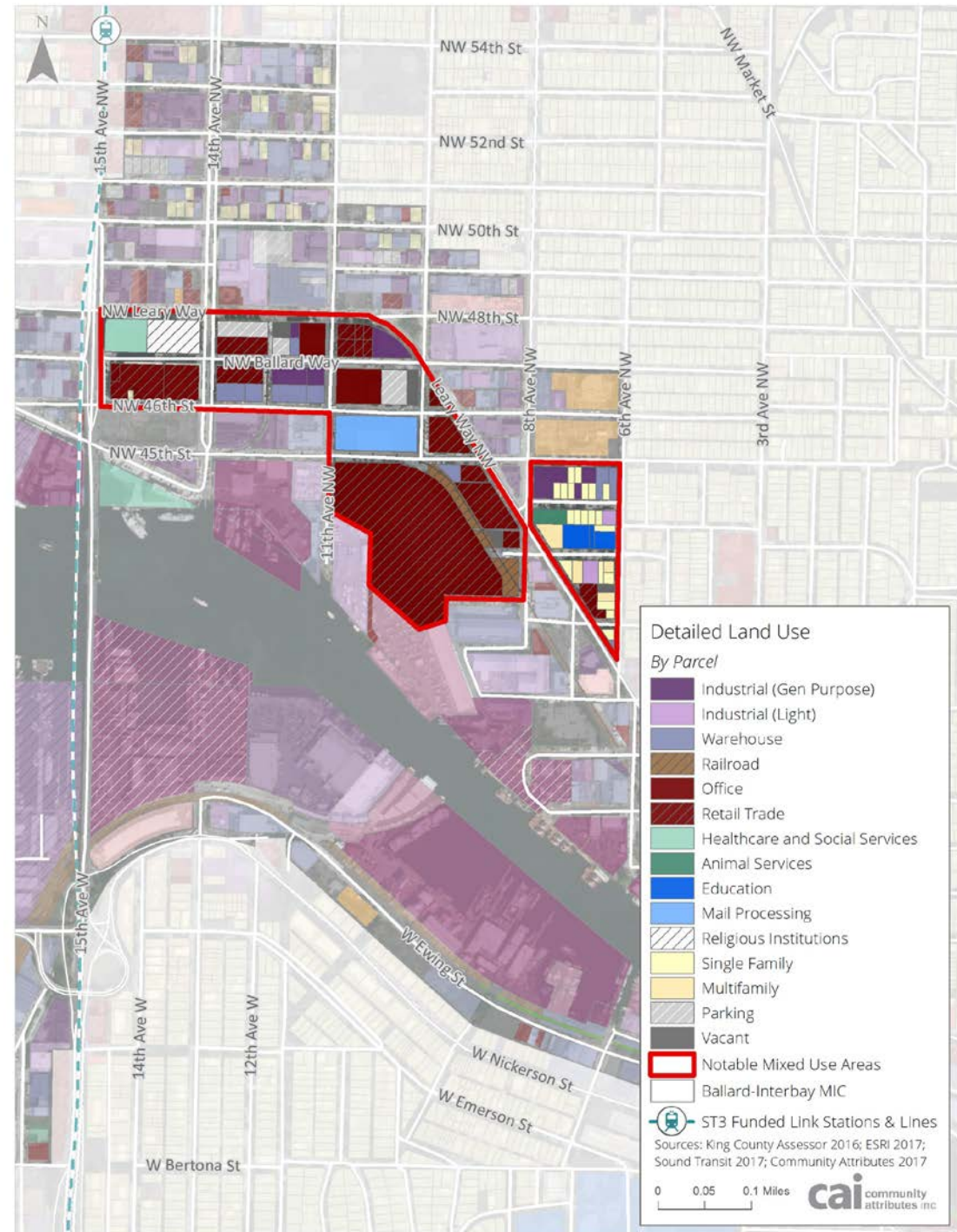
Industrial vacancy rates have not changed as much but remained very low during the same period. In the first quarter of 2017 vacancy rates for industrial space were approximately 2.2%.

BINMIC Notable Mixed Use Areas

There are a few areas within BINMIC that have higher concentrations of non-industrial uses. North of the water, residential and commercial uses are more prevalent (see map). Within the residential area selected, 21% of the land area is residential with 57% mixed industrial uses.

The combined areas are composed of 33% industrial uses and 58% non-industrial. Commercial use (office and retail) accounts for 39% of the total square footage. Residential use is close to 10% of the selected areas, compared to less than 1% in the entire MIC.

Detailed Land Use	Parcels	Site SqFt	% SqFt of All Uses
Industrial(Gen Purpose)	33	322,214	13%
Warehouse	39	317,454	12%
Industrial(Light)	14	144,490	6%
Railroad	2	54,989	2%
Industrial Uses	88	839,147	33%
Retail Trade	22	916,993	36%
Single Family	37	149,117	6%
Other Services	3	117,419	5%
Multifamily	16	93,764	4%
Mail Processing	1	93,000	4%
Office	5	90,572	4%
Education	3	36,480	1%
Non-Industrial Uses	87	1,497,345	58%
Vacant	23	118,607	5%
Parking	11	110,575	4%
Other Uses	34	229,182	9%





Land Use Inventory – Duwamish MIC

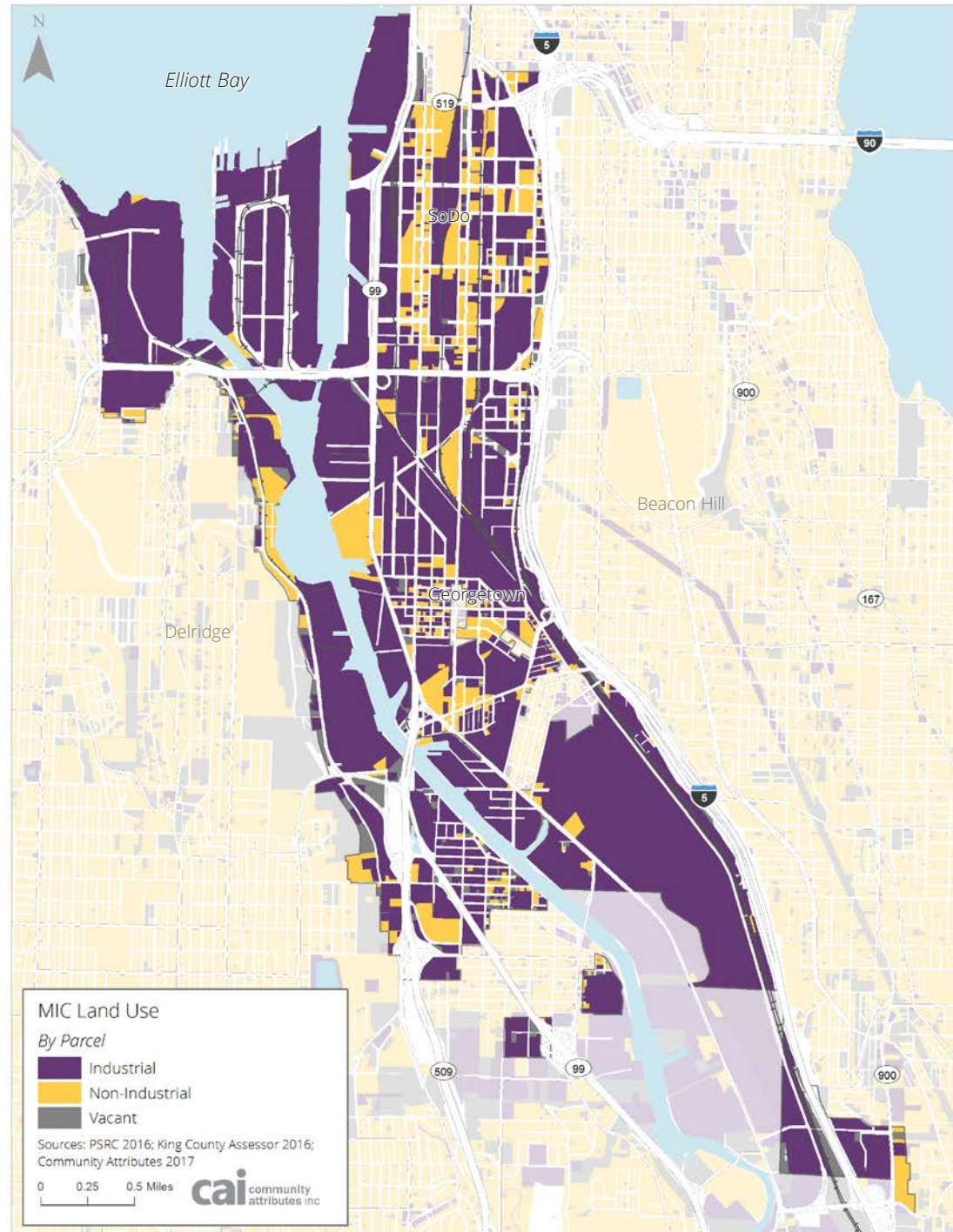
November 2017

Duwamish Overview

The Duwamish MIC adjoins the south margin of Elliott Bay, includes Harbor Island, and extends about 5 miles southward, along the Duwamish River. At its southern end, the center includes about 2/3 of King County International Airport/Boeing Field, adjoining the North Tukwila MIC. The Duwamish MIC excludes the residential section of Georgetown.

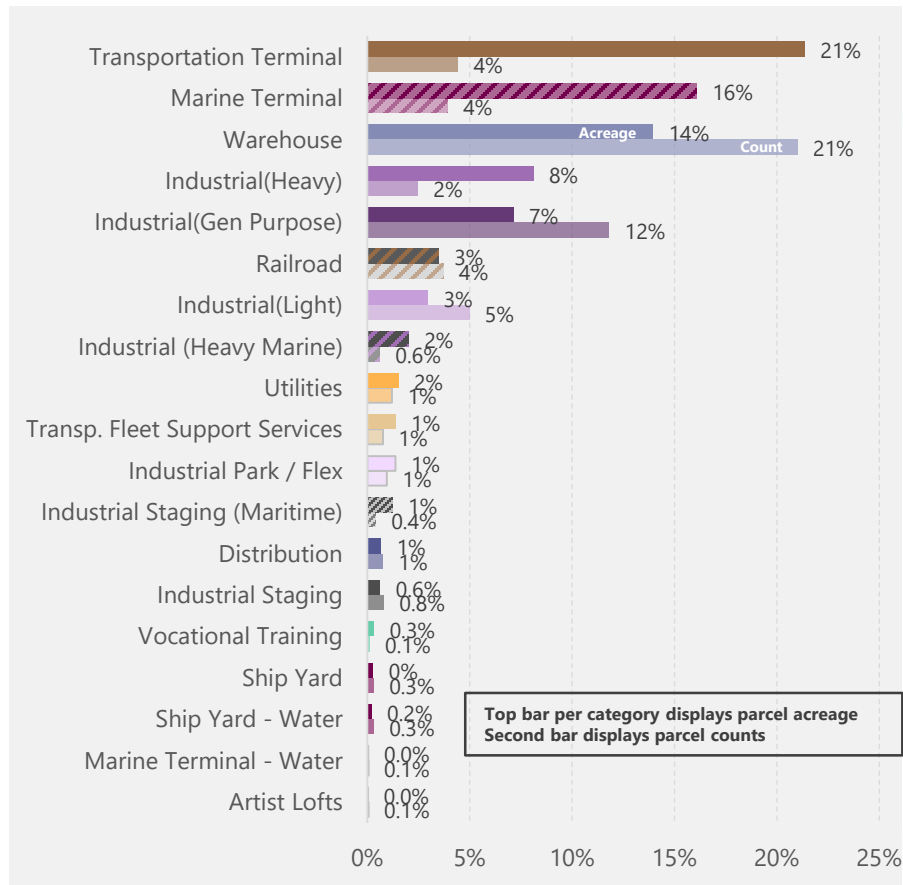
The Duwamish center includes the Port of Seattle's marine shipping area, with deep water berths, wharfs, piers, shipyards, drydocks, container cranes, on-dock rail, container yards, cargo distribution and warehousing, oil and petroleum storage facilities, and major railroad yards. Pier 48 (the northern end of the MIC) is the southern terminus of the Alaska Marine Highway System, offering passenger and freight service between Seattle and southeast Alaska. Safeco Field is located at the north end of the center.

- The Duwamish MIC is much larger than the BINMIC in size, with a gross acreage of 4,178 acres, including rights of way.
- Transportation Terminals, Marine Terminals, and Warehouses are the predominant use of land.
- About 83 percent of the center's 4,120 total acres are in industrial use.
- Among industrial uses, maritime uses occupy 846 acres of land.
- 25% of land in the Duwamish is a railway or transportation terminal.
- 3.2% of land is vacant (with no improvements).
 - 5.1% of vacant land is in active use.
- Average parcel size is 2.1 acres, which is significantly larger than the average 1.1 acre size for the BINMIC.
- There are 143 parcels greater than 5 acres in size.
- 6% of parcels within the Duwamish are residential, taking up less than 1% of the total acreage.



Duwamish Industrial Land Use

Parcel Count and Acreage by Industrial Land Use



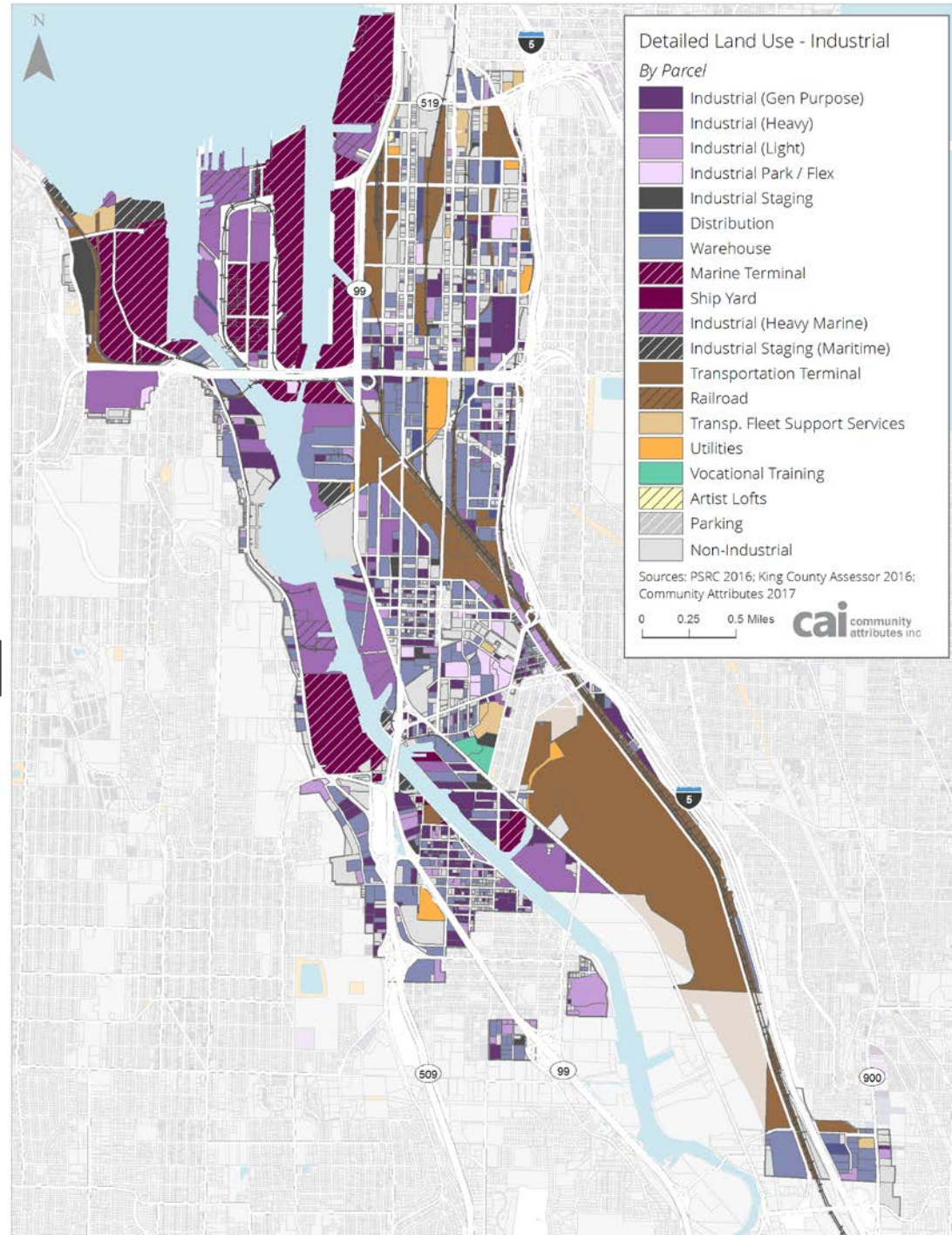
Excludes right of way and water parcels not in use by Ship Yards or Marine Terminals

Each industrial land use category is displayed by the share of total number of parcels and total acreage in the MIC.

Parcels used as transportation terminals, marine terminals and warehouses tend to be larger than parcels used for other industrial uses in the Duwamish MIC. Together, these parcels account for 51% of total land acreage in the MIC.

Without taking rail, marine terminals or transportation terminals into account, 47% of parcels are industrial and 42% of total acreage in the Duwamish is industrial. With those areas included, the industrial use covers 59% of parcels and 83% of total acreage.

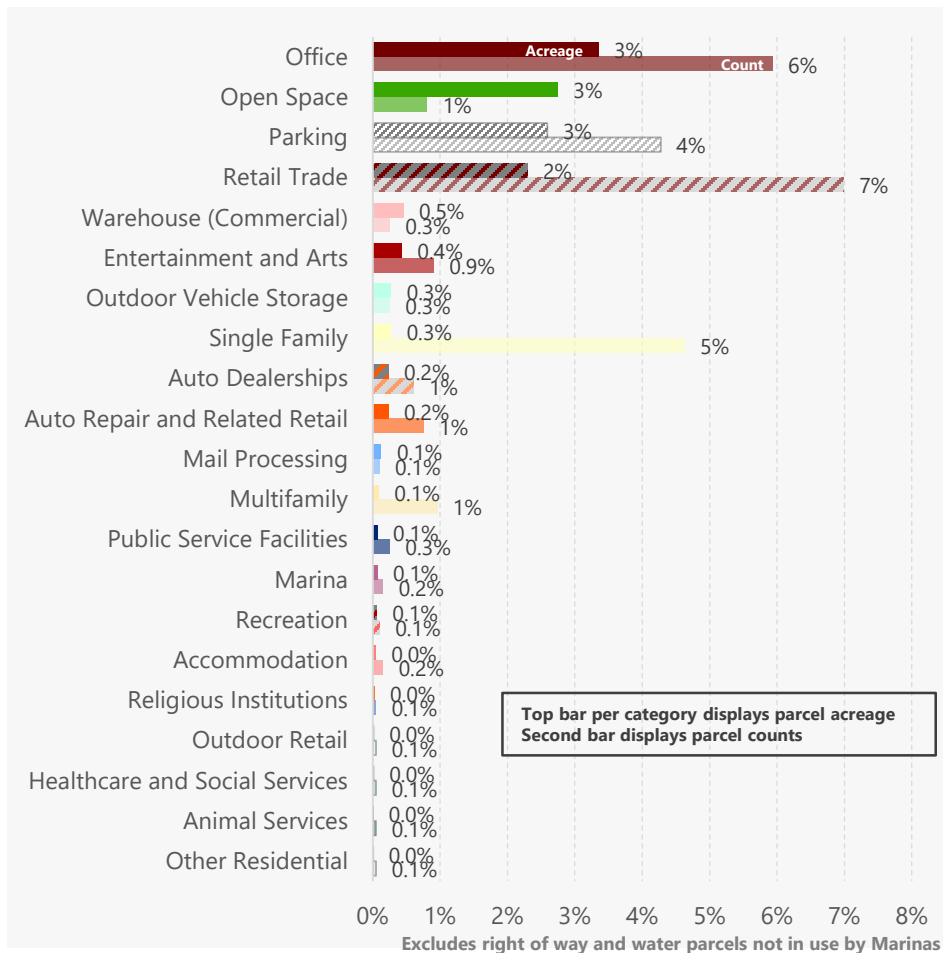
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Duwamish Non-Industrial Land Use

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Parcel Count and Acreage by Non-Industrial Land Use

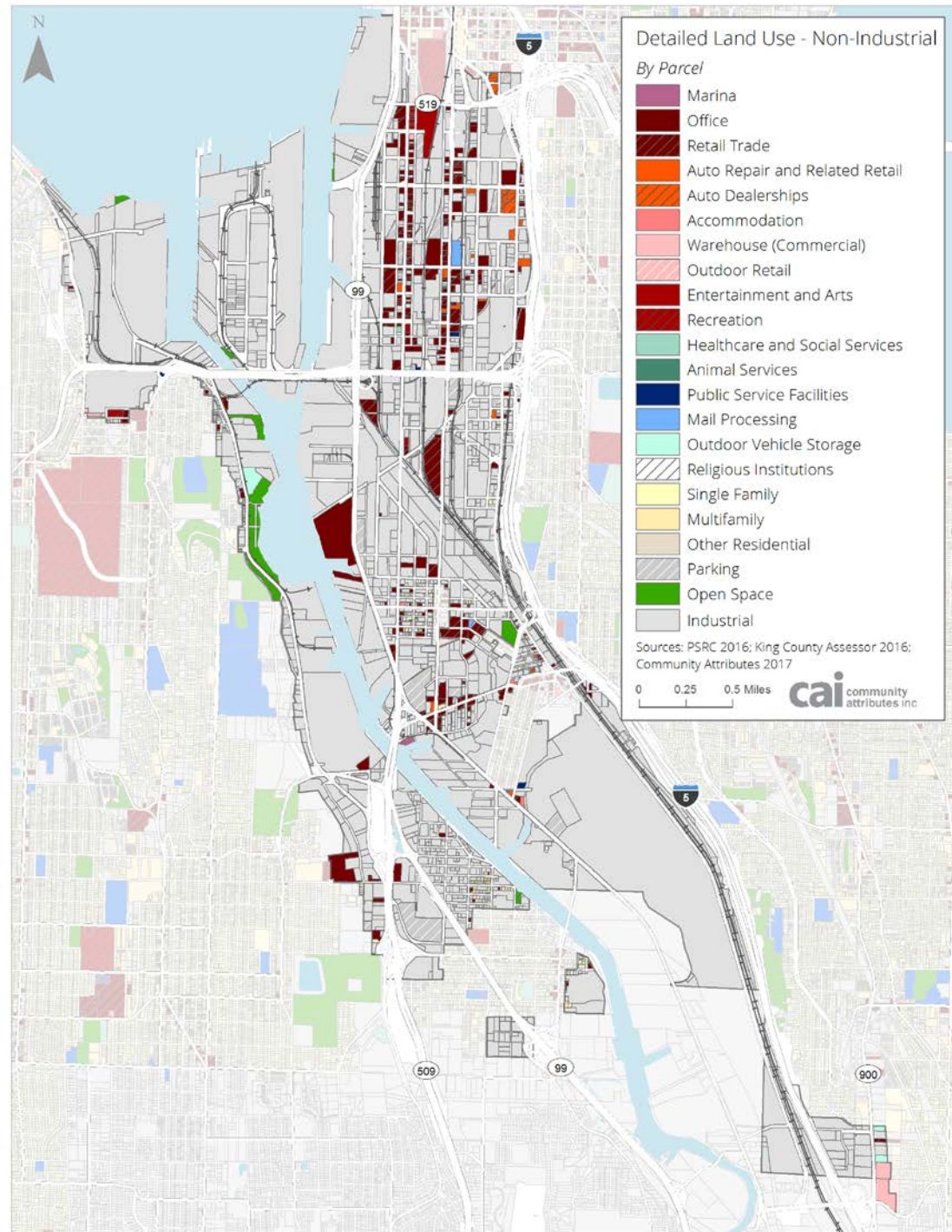


Each non-industrial land use category is displayed by the share of total number of parcels and total acreage in the MIC.

In the Duwamish MIC, the majority of non-industrial parcels are used for retail trade, office space or for single family residences.

Parcels used for single family residences are not very large (0.3% of total acreage), but they account for 5% of total parcels in the Duwamish MIC.

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Duwamish Improvement Value

This map displays the improvement value per square foot of land. This is the ratio of the assessed value of improvements to the square footage of land. Typically high improvement values denote parcels used more intensively.

Improvement Value per Square Foot

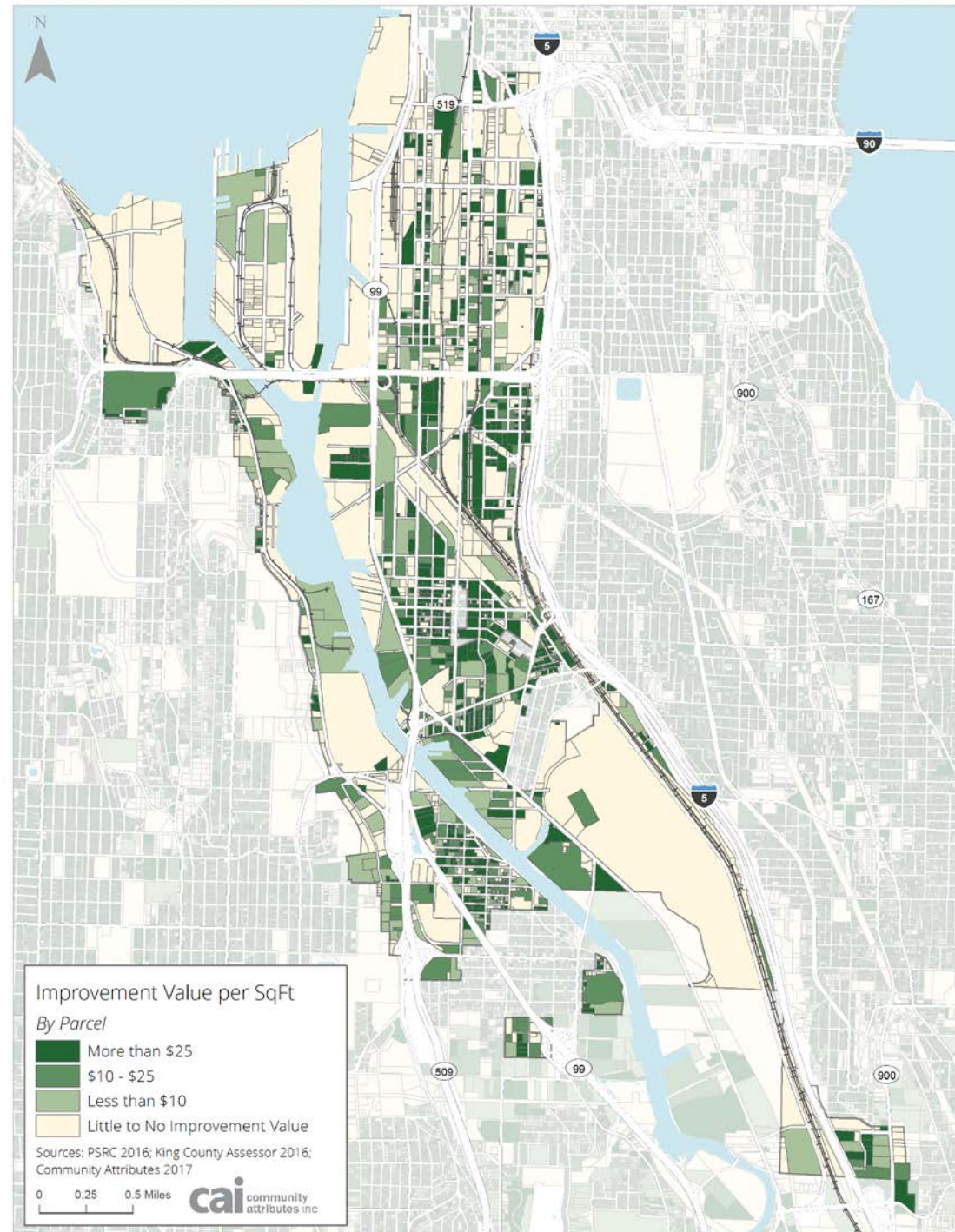
Impr. Value per SqFt	# of Parcels	Average
More than \$50	283	\$121
\$10 - \$50	577	\$28
Less than \$10	191	\$5
Little to No Impr. Value	938	\$0.01
Total & Average	1,989	\$39

Little to no improvement value includes parcels with a total improvement value of \$1,000 or less, regardless of size.

Industrial Improvement Value per Square Foot

Impr. Value per SqFt	# of Parcels	Average
More than \$50	154	\$87
\$10 - \$50	404	\$28
Less than \$10	145	\$5
Little to No Impr. Value	471	\$0.01
Total & Average	1,174	\$30

Improvement value per square foot is an imperfect measure for industrial areas given the land consumptive nature of industrial uses and the relative age of buildings on these parcels. Land can be in productive industrial use even if the improvements on it are not significant. It is an industry-accepted metric, however, that can be useful to evaluate the use of non-industrial land.



Duwamish Floor Area Ratio

Floor Area Ratio (FAR)

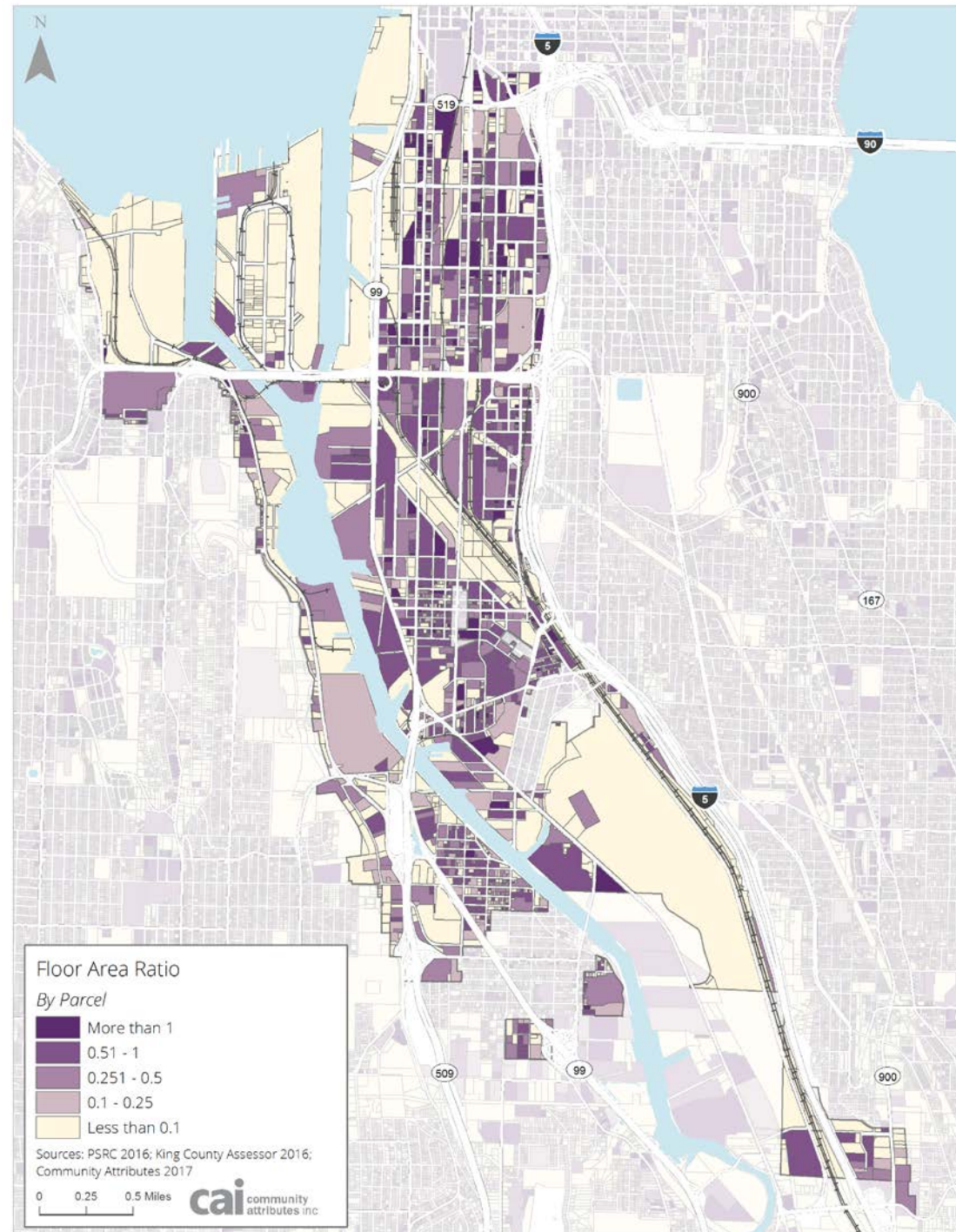
Floor area ratio is a means of relating the bulk of buildings to the acreage of land, and to other buildings in the vicinity. It is used as regulatory tool to establish an overall volume limit. It is calculated using simple formula – floor area divided by the lot area. The maximum allowable FAR for industrial zones (IG1 and IG2) in Seattle's MICs is 2.5.

As a bulk control, the floor area ratio is less useful in industrial areas than in other type of use districts given the wide variety of uses that are considered industrial. Many industrial operations, such as grain elevators, and railyards do not have floor areas as such.

FAR	# of Parcels	Average
More than 0.75	366	1.3
0.51 - 0.75	349	0.62
0.26 - 0.5	280	0.37
0.1 - 0.25	182	0.18
Less than 0.1	812	0.00
Total & Average	1,989	0.50

Parcel Size	# of Parcels	Acres
More than 1 Acre	600	3,613
20,001 SqFt - 1 Acre	439	309
10,001 - 20,000	350	121
5,000 - 10,000	357	60
Less than 5,000 SqFt	243	16
Total	1,989	4,119

Bldg Size (sqft)	# of Parcels	SqFt
More than 20,000	475	42.5 M
10,001 - 20,000	272	3.9 M
5,001 - 10,000	197	1.4 M
1,000 - 5,000	236	672 K
Less than 1,000	809	44 K
Total	1,989	48.5 M



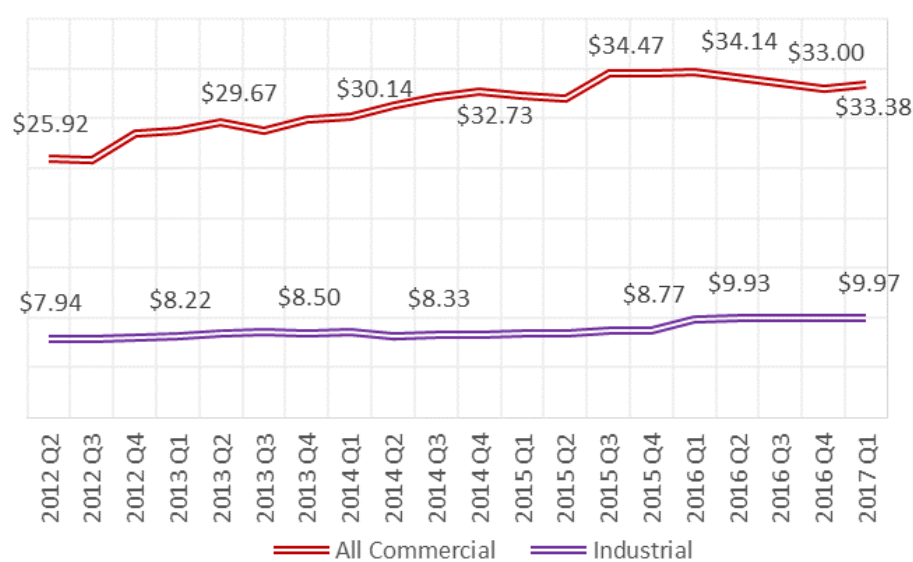
Land Use Inventory Duwamish MIC

Industrial Land Use	Parcels		Lot Acres		Buildings	Building SqFt	Total Improvement Value	Avg Improvement Value per Land SqFt
	#	%	#	%				
Transportation Terminal	87	4%	880.2	21%	134	3,235,161	\$16,431,000	\$0.43
Marine Terminal	78	4%	662.8	16%	49	1,601,408	\$9,522,700	\$0.33
Warehouse	419	21%	575.4	14%	537	14,013,752	\$532,296,660	\$21.24
Industrial(Heavy)	49	2%	334.0	8%	172	4,604,287	\$155,396,000	\$10.68
Industrial(Gen Purpose)	235	12%	292.7	7%	377	4,909,619	\$189,502,200	\$14.86
Railroad	80	4%	144.6	4%	1	360	\$4,200	\$0.00
Industrial(Light)	97	5%	121.1	3%	135	2,332,225	\$108,031,700	\$20.47
Industrial (Heavy Marine)	13	0.7%	96.8	2%	41	660,801	\$9,107,000	\$2.16
Utilities	23	1%	50.0	1%	30	418,378	\$711,300	\$0.33
Transp. Fleet Support Services	15	0.8%	56.7	1%	26	386,637	\$726,000	\$0.29
Industrial Park / Flex	19	1.0%	56.2	1%	37	1,298,053	\$41,108,600	\$16.78
Industrial Staging (Maritime)	8	0.4%	50.6	1%	-	-	\$1,000	\$0.00
Distribution	15	0.8%	27.3	0.7%	20	547,678	\$8,124,100	\$6.82
Industrial Staging	18	0.9%	51.6	1.3%	-	-	\$83,200	\$0.04
Vocational Training	2	0.1%	13.3	0.3%	5	427,184	\$12,241,300	\$21.06
Ship Yard	6	0.3%	11.6	0.3%	3	65,909	\$7,374,200	\$14.60
Ship Yard - Water	6	0.3%	8.2	0.2%	-	-	\$228,000	\$0.64
Marine Terminal - Water	1	0.1%	2.1	0.0%	-	-	\$1,400,000	\$15.68
Artist Lofts	1	0.1%	1.1	0.0%	1	130,624	\$3,668,900	\$74.50
Duwamish Total	1,996		4120.9		1,999	48,528,852	\$2,194,145,570	\$12.22

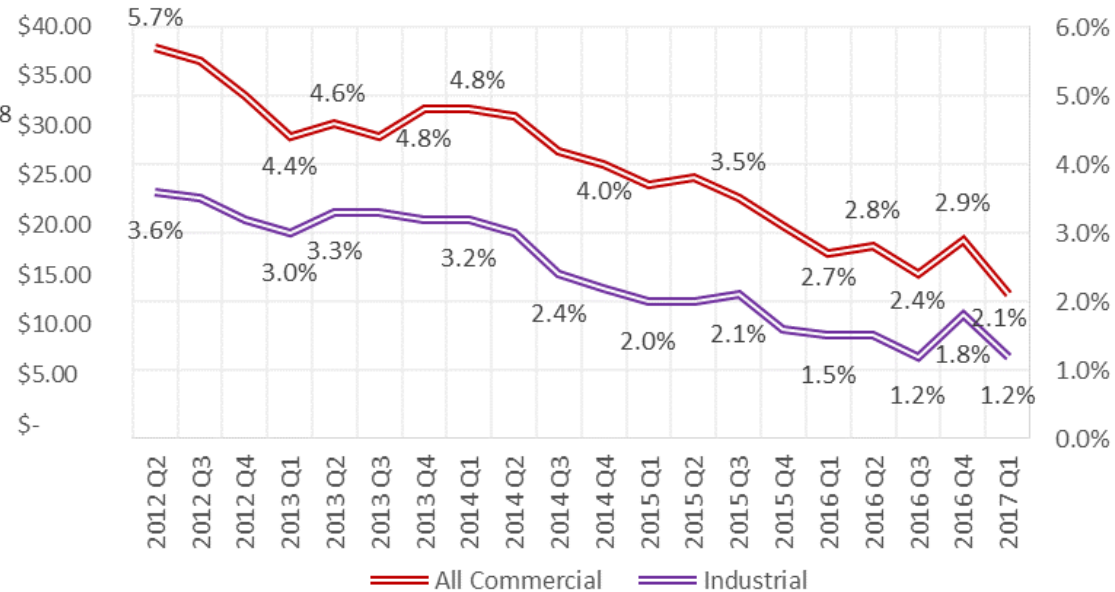
Land Use Inventory Duwamish MIC

Non-Industrial Land Use	Parcels		Lot Acres		Buildings	Building SqFt	Total Improvement Value	Avg Improvement Value per Land SqFt
	#	%	#	%				
Office	120	6%	138.2	3%	148	6,261,806	\$341,457,910	\$56.73
Open Space	17	1%	113.2	3%	-	-	\$0	\$0.00
Parking	83	4%	104.4	3%	4	809,730	\$15,682,400	\$3.45
Retail Trade	141	7%	95.3	2%	156	2,598,759	\$93,745,000	\$22.58
Warehouse (Commercial)	5	0.3%	18.6	0.5%	29	489,568	\$26,651,800	\$32.81
Entertainment and Arts	18	1%	17.7	0.4%	16	1,884,078	\$484,634,200	\$626.98
Outdoor Vehicle Storage	5	0.3%	11.2	0.3%	2	41,389	\$3,124,300	\$6.41
Single Family	93	5%	11.3	0.3%	8	112,244	\$9,692,800	\$19.76
Auto Dealerships	12	1%	9.6	0.2%	7	685,358	\$89,726,000	\$214.95
Auto Repair and Related Retail	15	1%	9.5	0.2%	21	192,364	\$4,599,900	\$11.12
Mail Processing	2	0.1%	5.2	0.1%	4	424,608	\$424,800	\$1.87
Multifamily	19	1%	3.7	0.1%	11	171,858	\$7,519,900	\$46.27
Public Service Facilities	5	0.3%	2.9	0.1%	5	46,295	\$1,770,800	\$14.05
Marina	3	0.2%	2.7	0.1%	1	2,520	\$195,200	\$1.63
Recreation	2	0.1%	2.5	0.1%	2	79,855	\$12,473,700	\$115.44
Accommodation	3	0%	1.7	0.0%	9	40,539	\$3,847,500	\$51.45
Religious Institutions	1	0.1%	1.0	0.0%	1	2,820	\$0	\$0.00
Outdoor Retail	1	0.1%	0.6	0.0%	-	-	\$0	\$0.00
Healthcare and Social Services	1	0.1%	0.5	0.0%	1	19,620	\$1,344,400	\$58.23
Animal Services	1	0.1%	0.2	0.0%	1	10,044	\$441,900	\$49.10
Other Residential	1	0.1%	0.1	0.0%	2	11,385	\$607,000	\$102.27
Duwamish Total	1,996		4120.9		1,999	48,528,852	\$2,194,145,570	\$12.22

Rents, Duwamish MIC, 2012-2017



Vacancy, Duwamish MIC, 2012-2017



Source: CoStar, 2017

Note: "2017 Q1" covers January 1 – February 2, 2017

These exhibits compare average vacancy rates and rental rates for Duwamish MIC industrial and commercial properties over the last five years, using data from CoStar.

As shown, the value of rent for commercial space has risen steadily over the period from 2012 to 2017, with a slight dip in the past year. Commercial rent values reached a peak of around \$34.50 in the third quarter of 2015, which represents an increase of 33% from the beginning of 2012.

The value of rent for industrial space has seen a slower increase from \$7.94 in Q2 of 2012 to \$9.93 at the beginning of 2016 and has been mostly flat through 2016.

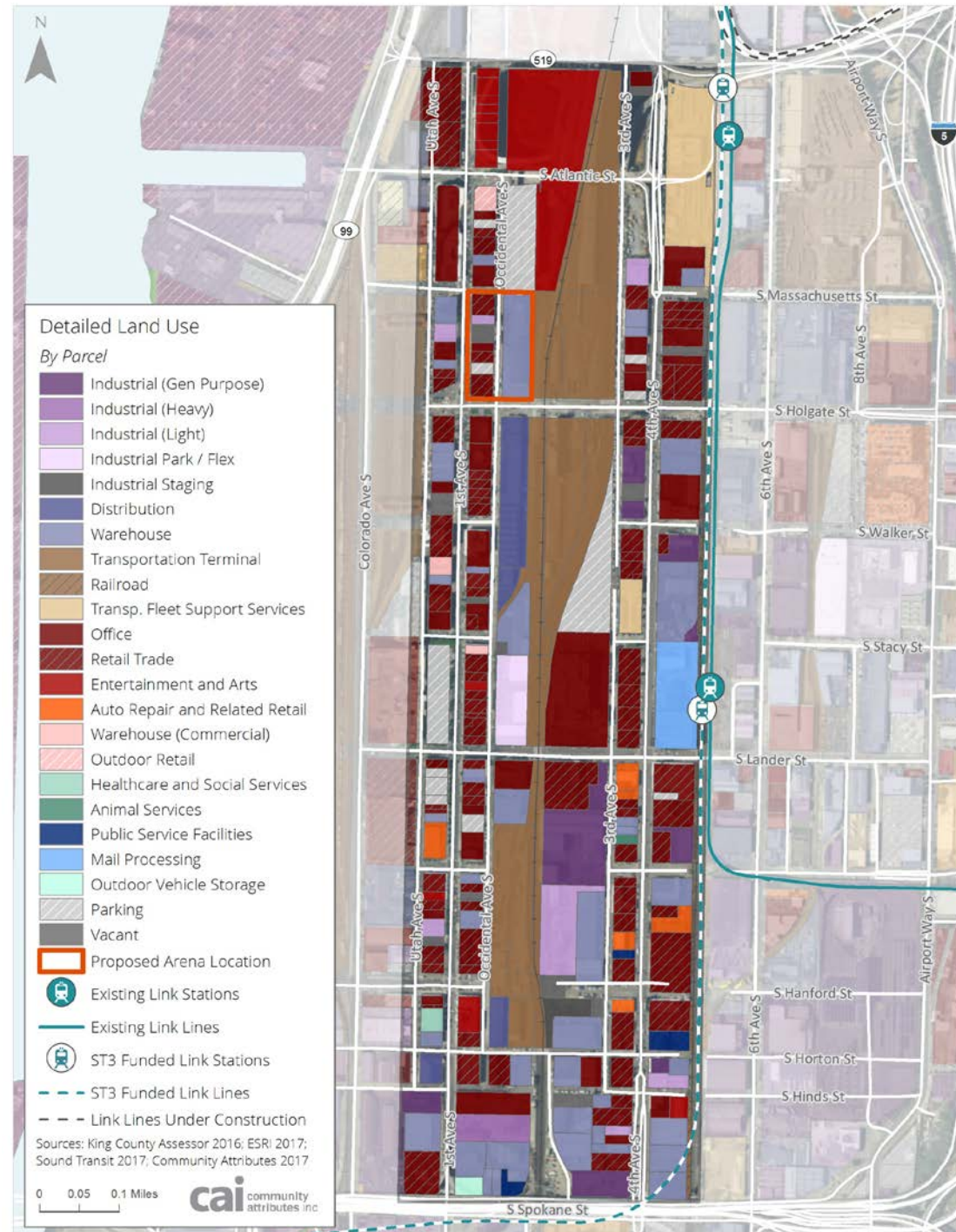
Commercial vacancy rates have decreased significantly between 2012 and 2017, reaching the lowest rate in Q1 of 2017 of 2.1% from 5.7% at the beginning of 2012.

Industrial vacancy rates have also seen a downward trend during the same period. In the first quarter of 2017 vacancy rates for industrial space were approximately 1.2%, down from 3.6% in the second quarter of 2012.

SoDo Neighborhood Notable Mixed Use Area

This area within SoDo stands out with more space converted in commercial uses than elsewhere in the City (see area shown in map). In this particular area of SoDo, the predominant use is the railroad switching yards. Rail terminal uses alone utilize 20% of the space in this area. Of the parcels that remain, excluding parcels that are either vacant or surface parking only, 69% (142 parcels) are for commercial and retail use (57% of land area), and 31% (65 parcels, 43% of land) are industrial in nature.

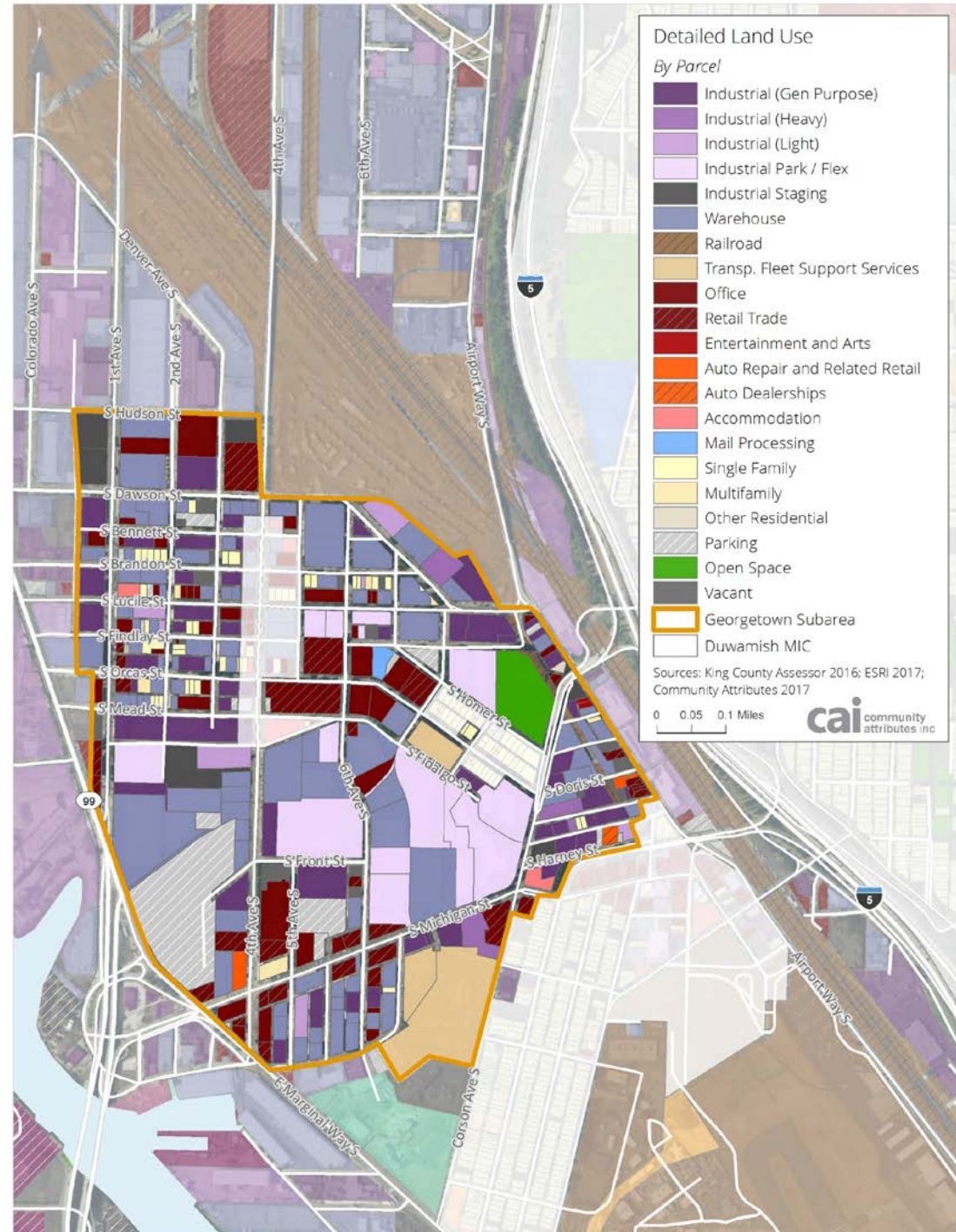
Detailed Land Use	Parcels	Land SqFt	% SqFt of All Uses
Retail Trade	83	1,850,166	18%
Office	30	1,067,710	11%
Entertainment and Arts	13	715,281	7%
Public Service Facilities	4	261,436	3%
Auto Repair and Related Retail	6	136,612	1%
Warehouse (Commercial)	2	26,760	0.3%
Outdoor Vehicle Storage & Retail	2	46,535	0.5%
Healthcare & Animal Services	2	32,088	0.3%
Non-Industrial Uses	142	4,136,588	41%
Transportation Terminal	12	2,018,425	20%
Railroad	4	38,050	0.4%
Rail Uses	16	2,056,475	20%
Warehouse	40	1,454,767	14%
Industrial(Gen Purpose)	9	497,656	5%
Transp. Fleet Support Services	2	421,840	4%
Industrial(Light) & Industrial Parks	8	385,979	4%
Distribution	4	284,680	3%
Industrial(Heavy)	1	88,920	0.9%
Industrial Staging	1	49,070	0.5%
Industrial Uses	65	3,182,912	32%
Parking	13	528,640	5%
Vacant	15	173,073	2%
Other Uses	28	701,713	7%



Georgetown Neighborhood Notable Mixed Use Area

This area in Georgetown is predominantly industrial when comparing total square footage, but the number of non-industrial parcels is slightly higher (see area shown in map). Two sections within the highlighted area are considered outside of the MIC. The summary table below includes those areas, which are a majority residential. The amount of land used by warehouses is slightly higher than all non-industrial uses combined. The diversity of land uses in the area also stands out, both in industrial and non-industrial parcels.

Detailed Land Use	Parcels	Site SqFt	% SqFt of All Uses
Warehouse	100	2,987,898	28%
Industrial Park / Flex	13	1,536,593	14%
Industrial(Gen Purpose)	54	1,447,179	13%
Transportation Fleet Support Services	3	654,288	6%
Industrial Staging	6	326,765	3%
Industrial(Light)	6	211,943	2%
Industrial(Heavy)	4	152,390	1%
Railroad	1	1,011	1%
Industrial Uses	187	7,318,067	67%
Retail Trade	39	809,562	7%
Office	40	776,952	7%
Residential	99	452,357	4%
Open Space	1	223,500	2%
Accommodation	6	102,143	1%
Auto Repair and Related Retail	2	41,832	0%
Mail Processing	1	28,168	0%
Auto Dealerships	1	16,800	0%
Other Services	1	11,982	0%
Entertainment and Arts	2	7,568	0%
Non-Industrial Uses	192	2,470,864	23%
Parking	17	852,380	8%
Vacant	28	203,094	2%
Other Uses	45	1,055,474	10%

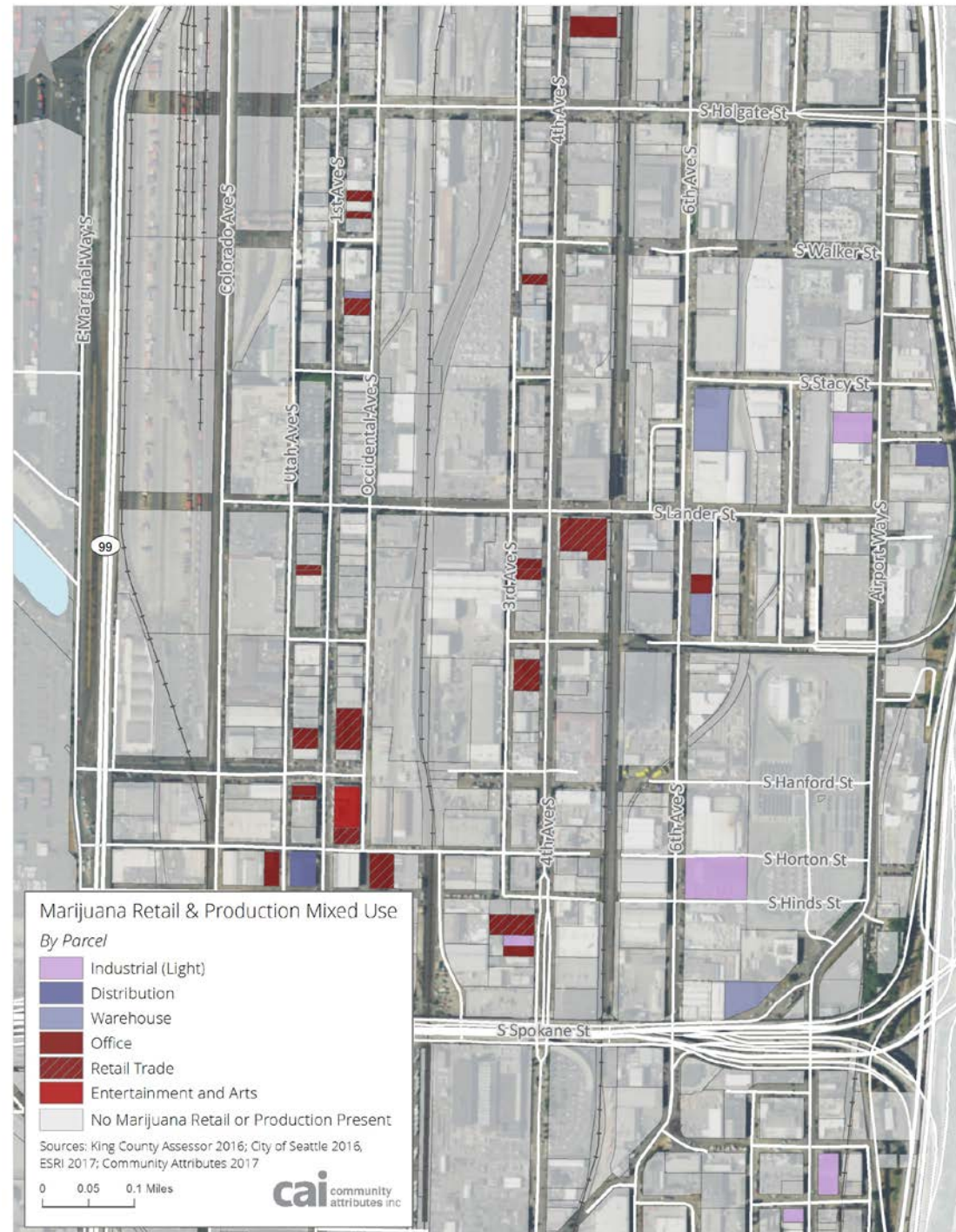


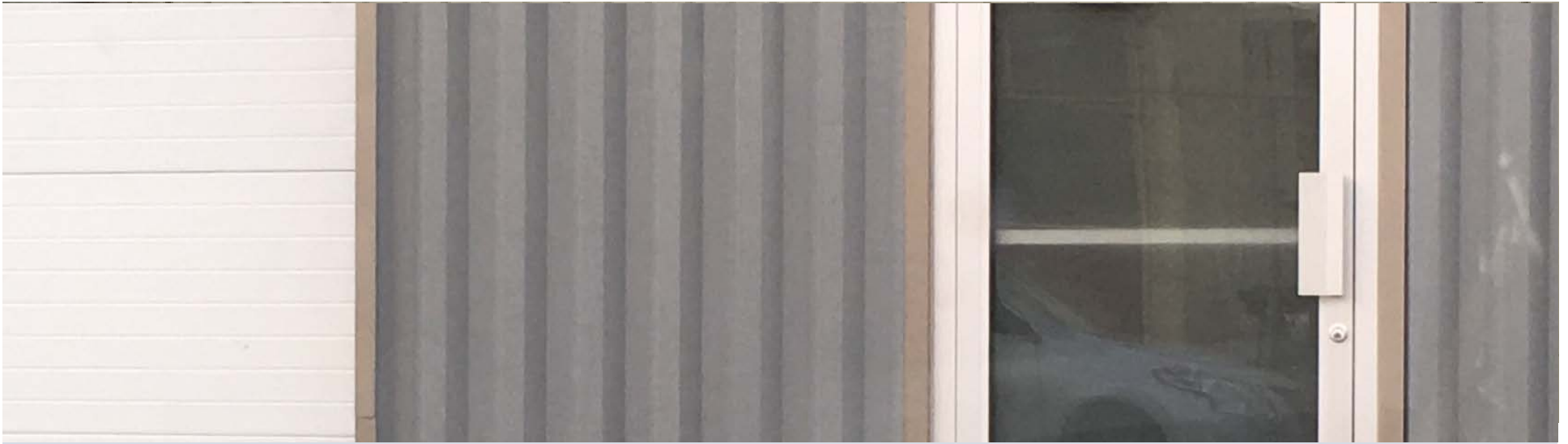
Marijuana Processors and Retailers

Due to laws that dictate where marijuana related businesses can be located, many end up in industrial areas. Within Seattle's MICs, the largest concentration of marijuana processors and retailers is found in the SoDo neighborhood. Very few are within the BINMIC boundary compared to those present in the Duwamish.

Marijuana related businesses within the Seattle MICs share parcels with both industrial and non-industrial uses as detailed below.

Detailed Land Use	Acres	% of Acreage
Industrial(Light)	6.2	29%
Retail Trade	6.3	29%
Warehouse	3.4	16%
Office	2.5	11%
Distribution	1.2	5%
Entertainment and Arts	0.8	4%
Industrial(Gen Purpose)	0.8	4%
Industrial Flex	0.6	3%
General Land Use		
Industrial	12.3	56%
Non-Industrial	9.7	44%
Total Marijuana Related Activity	21.9	





Employment Analysis

November 2017

Understanding jobs based on industrial lands is important for policy makers to assess the economic benefits that come from lands zoned for industrial use.

Other metrics are equally if not more important in measuring the economic value of industrial lands; these include:

- The characteristics of these jobs, such as whether high skill positions are not easy to replace or found elsewhere in the labor market.
- Business revenues.
- Infrastructure and production assets on industrial lands.
- Tax revenues generated through activities on industrial lands, including direct business revenues (e.g. B&O, sales tax) and retail sales tax revenues supported through worker income expenditures across the region.

This snapshot of employment provides an indicator of demand, but does not fully characterize demand for industrial lands. Real estate market data demonstrating prices and land available for sale or rent provides the best indicator of demand for land.

Factors that are changing the way jobs reflect demand for land include the following, some of which are off-setting and even within each category are off-setting considerations.

- **Land as a production input.** The demand, both in type and character, is evolving over time, even for industrial activities. One trend observed in Germany and elsewhere is the emergence of “Manufacturing 4.0,” involving types of production that are cleaner and rely on additive manufacturing. Cleaner processes may have less of the

negative externalities commonly associated with industrial activities, e.g. noise.

- **Robotics and automation**, yielding higher productivity but also lower employment demand per unit of output on industrial land.
- **Density of jobs** on industrial parcels, and the types of jobs.

Industrial codes are not land use codes

- Industrial codes refer to the type of economic activity, but the extent to which industrial land is a requirement will vary within any given industry.
- Industrial NAICS can have a commercial land use. For example, even within manufacturing there are space needs for administrative work and other non-industrial activities.
- Similarly, retail NAICS can have an industrial use.

Next steps

- We will apply revised land use data labels (industrial versus non-industrial) to PSRC geocoded jobs by parcel. This will allow us to tabulate jobs across each MIC based on actual land use, and not by NAICS.
- After completion of the land use parcel review, CAI will submit this list of parcels to the PSRC for aggregations.
- Jobs by land use classification will provide an informative and alternative approach to assessing the economic value of industrial lands, given that there exist parcels coded as industrial but are primarily used for non-industrial activities.

List of industry sectors and NAICS codes included in industrial activities definition

To be consistent with PSRC's 2015 Industrial Lands Analysis report, this study uses similar definitions for industrial activities. The following changes have been made to the original definitions:

- Because of data suppression issues, what was previously a separate category called Utilities was included under the Administrative, support and waste management grouping. Similarly, Health Care and Social Assistance was grouped with the Other Services category.
- A new classification was added to cover commercial fishing.
- 511210 Software publishers was excluded from the Information category.

CAI Category	NAICS Code	Industry Code Description	CAI Category	NAICS Code	Industry Code Description
Construction	236	Construction of Buildings	Information	511110	Newspaper publishers
	237	Heavy and Civil Engineering Construction		511120	Periodical publishers
	238	Specialty Trade Contractors		511130	Book publishers
Manufacturing	311	Food		511140	Directory and mailing list publishers
	312	Beverage and Tobacco Product		511191	Greeting card publishers
	313	Textile Mills		511199	All other publishers
	314	Textile Product Mills		51211	Motion Picture and Video Production
	315	Apparel		515	Broadcasting
	316	Leather and Allied Product		517	Telecommunications
	321	Wood Product	Real Estate and Rental and Leasing	53113	Mini Warehouse and Self-Storage
	322	Paper		53212	Truck Rental and Leasing
	323	Printing and Related Support		5324	Machinery/Equipment Rental and Leasing
	324	Petroleum and Coal Products	Professional, Scientific and Technical	54138	Testing Laboratories
	325	Chemical		54185	Display Advertising
	326	Plastics and Rubber Products	Administrative, support, waste management & utilities	221	Utilities
	327	Nonmetallic Mineral Product		561612	Security Guards and Patrol
	331	Primary Metal		56162	Security Systems
	332	Fabricated Metal Product		56171	Extermination and Pest Control
	333	Machinery		56172	Janitorial
	334	Computer and Electronics		56173	Landscaping
	335	Electrical Equipment, Appliance, and Component		56174	Carpet and Upholstery Cleaning
	336	Transportation Equipment		56179	Other Services to Buildings and Dwellings
	337	Furniture and Related Product		56191	Packaging and Labeling
	339	Miscellaneous		562	Waste Management and Remediation
Wholesale Trade	423	Merchant Wholesalers (Durable)	Accommodation and Food Services	72232	Caterers
	424	Merchant Wholesalers (Non-durable)		72233	Mobile Food Services
	425	Electronic Markets, Agents and Brokers	Other Services	62191	Ambulance Services
Retail Trade	4542	Vending Machine Operators		621991	Blood and Organ Banks
	454311	Heating Oil Dealers		62421	Community Food Services
Transportation and Warehousing	481	Air Transportation		8113	Commercial and Ind. Equip Repair
	482	Rail Transportation		811412	Appliance Repair and Maintenance
	483	Water Transportation		81233	Linen and Uniform Supply
	484	Truck Transportation		812332	Industrial Launderers
	485	Transit and Ground Passenger Transportation	Fishing	1141	Fishing
	486	Pipeline Transportation			
	487	Scenic and Sightseeing Transportation			
	488	Support Activities for Transportation			
	491	Postal Service			
	492	Couriers and Messengers			
	493	Warehousing and Storage			

Source: Industrial Lands Analysis for the Central Puget Sound Region, Appendix B (March 2015)

Employment data used in this study was provided by the Puget Sound Regional Council (PSRC). The estimates were obtained for both covered and total employment at the level of industry sectors included in the industrial activities definition for each MIC and the city. However, there were two important departures from the PSRC employment estimates, discussed below.

Fishing Jobs Estimates

The estimates for fishing jobs provided by PSRC were considered to be low, based on the significant role of self-employed workers in this fishing sector (including sole proprietors and partnerships). The fishing industry in general tends to be disproportionately comprised of self-employed workers relative to other sectors of the economy. This became further the case when in 2013 Washington state exempted most fishing crew wages from unemployment tax regardless of where the vessel operates. Under the law, employers who operate boats with 10 or fewer workers who are paid wages as a share of the value of the vessel's catch are not required to report these employees for taxation purposes.

CAI estimated that in 2015, the proportion of self-employed fishing jobs in Washington was 75% of total employment, i.e. 5,000 out of the 6,670 statewide jobs in fishing were among the self-employed or the ratio of total-to-covered jobs was 4:1. As most of the statewide fishing jobs are concentrated in the Puget Sound region, this ratio was considered relevant to the geography of this study and was applied to adjust the PSRC covered employment estimates for fishing at the MICs and city level. For example, the PSRC covered employment estimate for the city was around 550 jobs and it was assumed this does not include self-employment. Using the statewide ratio of total-to-covered jobs of 4:1, we estimated that there are just over 2,100 fishing jobs in Seattle.

The data used for the CAI estimates is derived from two sources: the Quarterly Census of Employment and Wages (QCEW) and Nonemployer Statistics (NES) published by the Census Bureau. QCEW data is reported at the county level and represents employment by employer location. NES data is used to estimate the total number of self-employed workers in the industry.

Information Sector Jobs Estimates

The PSRC estimates for the Information sector were adjusted to exclude software publishing jobs, which are included within the broader industry code for publishing and printing (NAICS 511). The following methodology was applied:

- At the MIC level we estimated the number of jobs in each MIC for NAICS 5112 using employment data from Hoovers and subtracted from the total PSRC jobs estimates for the Information sector; for BINMIC, the main employer in the software publishing industry is Big Fish Games while for Duwamish there were several smaller employers such as Ixio Corporation, Industrial Generosity, Inc. and Graymatter Software.
- At the city level we estimated the proportion of jobs that are not software publisher jobs from total jobs for the Information sector for King County in 2015 and applied that proportion to the total PSRC jobs estimated for the Information sector for the same year. The data used to calculate this proportion was from the Bureau of Labor Statistics and is reported at the county level.

In addition to total job estimates from PSRC broken down by industrial and non-industrial activities and type of employment (covered and self-employed), our analysis also includes:

- **Industrial job estimates by educational requirements and median wage levels** - for this part of the analysis we use educational requirements and wage level data by detailed occupation from the Bureau of Labor Statistics. This data provides a median wage value and information on typical education needed for entry for each 6-digit SOC occupation. Because this data is at the occupational level, we need to convert the PSRC industrial employment estimates to occupational employment estimates. We use the industry occupation matrix provided by the Employment Security Department which indicates the distribution of industry employment between occupations to generate industrial occupational employment estimates. This analysis is performed for each of the three geographies in this study.
- **Industrial Job Estimates by Occupation, major groups (2-digit SOC)** – this is a summary of occupational employment estimates for industrial jobs at the 2-digit SOC level in each MIC and citywide and is done following the conversion of industrial employment estimates to occupational employment estimates.
- **Industrial Job Estimates for Leading Occupations, detailed groups (6-digit SOC)** – this is a summary of industrial occupations with the most number of jobs in each MIC and citywide.

Industrial Job Estimates by Educational Requirements and Median Wage Levels Seattle-Tacoma-Bellevue (MSA) 2015

	Less than \$25,000	\$25,000 to \$50,000	\$50,000 to \$75,000	More than \$75,000	Data not available	Total
High school diploma or equivalent	7,142	141,622	104,668	10,782	1,924	266,139
No formal educational credential	105,229	117,113	4,440	-	43	226,824
Bachelor's degree	-	1,390	34,020	71,085	8,040	114,535
Postsecondary nondegree award	-	16,684	5,689	1,768	3,507	27,648
Associate's degree	274	853	5,498	2,933	1,227	10,786
Some college, no degree	-	7,434	1,507	-	612	9,553
Master's degree	-	139	271	215	-	625
Doctoral or professional degree	-	-	32	219	38	290
Total	112,645	285,236	156,125	87,002	15,390	656,399

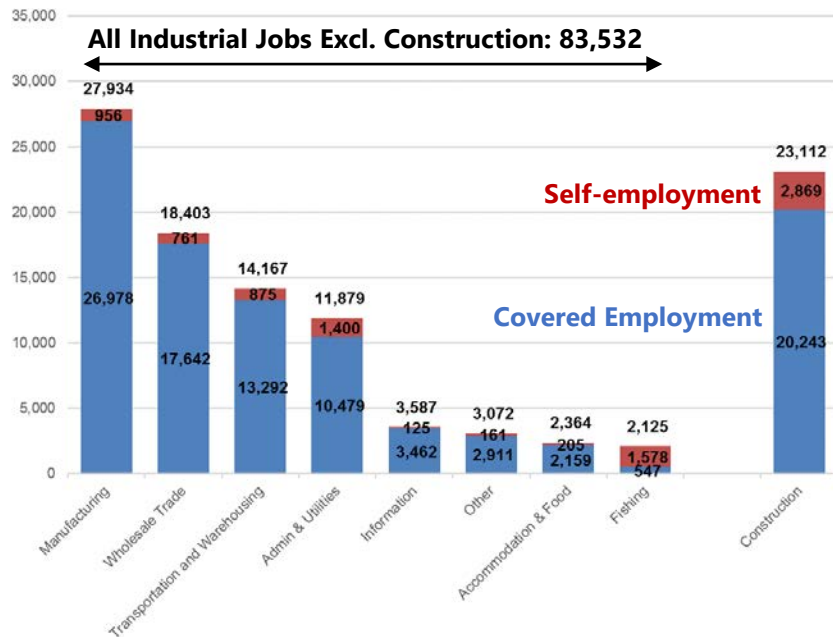
Source: Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

Non-Industrial Job Estimates by Educational Requirements and Median Wage Levels Seattle-Tacoma-Bellevue (MSA) 2015

	Less than \$25,000	\$25,000 to \$50,000	\$50,000 to \$75,000	More than \$75,000	Data not available	Total
Bachelor's degree	290	17,220	130,820	206,825	4,250	359,405
High school diploma or equivalent	15,988	215,278	61,052	11,088	216	303,621
No formal educational credential	88,361	131,947	3,010	-	827	224,146
Postsecondary nondegree award	-	48,276	11,571	6,192	33	66,072
Doctoral or professional degree	-	190	13,298	22,071	6,362	41,920
Some college, no degree	-	28,476	8,893	-	978	38,347
Associate's degree	46	9,587	12,502	9,207	13	31,354
Master's degree	-	6,061	9,749	12,145	-	27,955
Total	104,685	457,034	250,895	267,528	12,680	1,092,821

Source: Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

Industrial Job Estimates by Industrial Sector Citywide 2015



Source: Puget Sound Regional Council 2016, Community Attributes 2016

Note: Other is an aggregation of the following categories: Other Services, Real Estate and Rental and Leasing, Professional, Scientific and Technical, Fishing and Retail Trade

Total Job Estimates Citywide 2015

	Covered Employment Excl. Construction	Self-employed Excl. Construction	All Jobs Excl. Construction	Covered Employment	Self-employed	All Jobs
Industrial	77,470	6,061	83,532	97,713	8,930	106,644
Non-Industrial	454,278	42,484	496,762	454,278	42,484	496,762
TOTAL	531,748	48,545	580,293	551,991	51,414	603,405

Industrial Job Estimates by Educational Requirements and Median Wage Levels Citywide 2015

	Less than \$25,000	\$25,000 to \$50,000	\$50,000 to \$75,000	More than \$75,000	Data not available	Total
High school diploma or equivalent	854	24,278	21,562	2,408	1,274	50,376
No formal educational credential	3,972	19,668	1,000	-	2,146	26,787
Bachelor's degree	-	262	6,033	13,389	1,681	21,365
Postsecondary nondegree or Associate's degree	48	2,891	1,399	782	1,037	6,157
Some college, no degree	-	1,339	334	-	139	1,813
Master's degree or higher	-	15	54	58	20	146
Total	4,875	48,454	30,383	16,636	6,297	106,644

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

- In 2015, total industrial employment in Seattle was 106,644 jobs (including both covered and self-employed workers) which represents 18% of total Citywide employment. Approximately 50% of these jobs are located in the BINMIC and Duwamish MIC. The majority of the non-MIC industrial jobs are concentrated in four industries: construction, manufacturing, wholesale trade and administrative, support, waste management & utilities.
- Of the total number of industrial jobs in the City, 8% represent self-employed workers.
- Manufacturing jobs constituted the largest share of industrial jobs in 2015 (26%), followed by Construction (22%).
- Over 67% of industrial jobs in Seattle require a high school diploma or equivalent or no formal education credential.

Employment Analysis – Citywide

Industrial Job Estimates by Occupation, major groups (2-digit SOC)

Citywide 2015

SOC Description	2-digit SOC	Industrial Jobs	% of Total Industrial Jobs	% of Total Occupational Employment (Seattle-Tacoma-Bellevue)
Construction and Extraction Occupations	47	16,380	15.4%	10.8%
Transportation and Material Moving Occupations	53	15,005	14.1%	6.1%
Office and Administrative Support Occupations	43	13,441	12.6%	2.7%
Production Occupations	51	12,484	11.7%	6.3%
Sales and Related Occupations	41	7,757	7.3%	2.2%
Business and Financial Operations Occupations	13	6,270	5.9%	2.5%
Building and Grounds Cleaning and Maintenance Occupations	37	5,600	5.3%	6.3%
Management Occupations	11	5,533	5.2%	2.9%
Installation, Maintenance, and Repair Occupations	49	4,717	4.4%	3.7%
Architecture and Engineering Occupations	17	4,672	4.4%	4.4%
Computer and Mathematical Occupations	15	4,214	4.0%	1.7%
Protective Service Occupations	33	3,013	2.8%	4.3%
Food Preparation and Serving Related Occupations	35	2,461	2.3%	0.8%
Farming, Fishing, and Forestry Occupations	45	2,388	2.2%	49.6%
Arts, Design, Entertainment, Sports, and Media Occupations	27	1,409	1.3%	2.3%
Personal Care and Service Occupations	39	472	0.4%	0.4%
Healthcare Practitioners and Technical Occupations	29	332	0.3%	0.2%
Life, Physical, and Social Science Occupations	19	208	0.2%	0.5%
Community and Social Service Occupations	21	161	0.2%	0.3%
Legal Occupations	23	58	0.1%	0.2%
Education, Training, and Library Occupations	25	41	0.0%	0.0%
Healthcare Support Occupations	31	29	0.0%	0.0%
Total Industrial		106,644	100%	

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

- The Construction and Extraction occupation category was well represented Citywide with more than 16,000 jobs in 2015.
- In 2015, there were around 4,937 Sale Representatives, Wholesale and Manufacturing in Seattle as estimated by PSRC – the largest industrial occupation in the region. These sale representatives had a median wage of \$63,660 and required a high school diploma or equivalent.

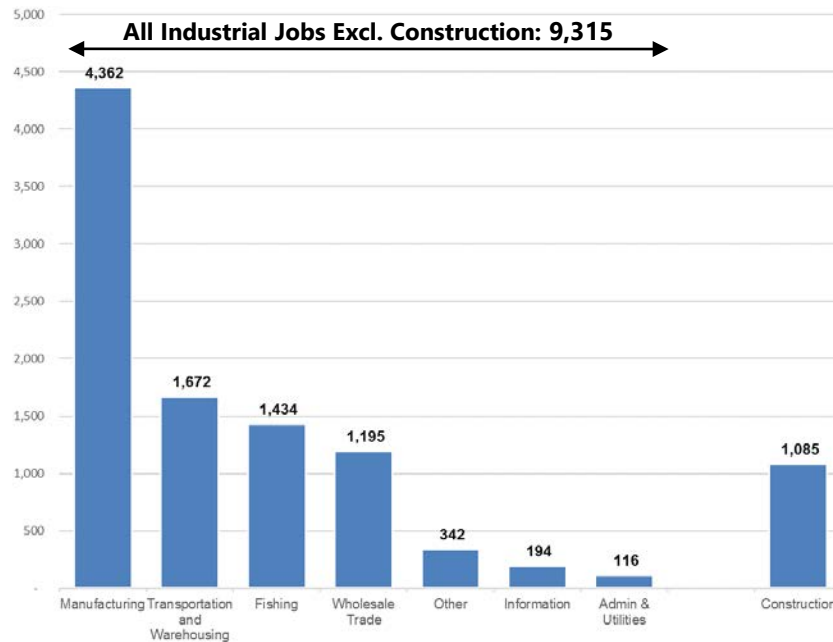
Industrial Job Estimates for Leading Occupations, detailed groups (6-digit SOC)

Citywide 2015

SOC Description	6-digit SOC	% of Total Industrial Jobs	Jobs	Median Wage	Educational Requirement
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	41-4012	4.6%	4,937	63,660	High school diploma or equivalent
Laborers and Freight, Stock, and Material Movers, Hand	53-7062	3.7%	3,987	29,570	No formal educational credential
Carpenters	47-2031	3.2%	3,422	53,290	High school diploma or equivalent
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	37-2011	2.5%	2,687	30,440	No formal educational credential
Security Guards	33-9032	2.5%	2,644	30,340	High school diploma or equivalent
Heavy and Tractor-Trailer Truck Drivers	53-3032	2.3%	2,471	44,620	Postsecondary nondegree award
Construction Laborers	47-2061	2.2%	2,326	43,220	No formal educational credential
Fishers and Related Fishing Workers	45-3011	2.0%	2,128	Data not available	No formal educational credential
Customer Service Representatives	43-4051	1.9%	2,046	36,500	High school diploma or equivalent
General and Operations Managers	11-1021	1.6%	1,719	112,540	Bachelor's degree
Remaining 549 occupations		73%	78,278		
Total		100%	106,644		

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

Industrial Job Estimates by Industrial Sector BINMIC 2015



Source: Puget Sound Regional Council 2016, Community Attributes 2016

Note: Other is an aggregation of the following categories: Other Services, Real Estate and Rental and Leasing, Accommodation and Food Services and Professional, Scientific and Technical

Total Job Estimates BINMIC 2015

	Covered Employment Excl. Construction	Self-employed Excl. Construction	All Jobs Excl. Construction	Covered Employment	Self-employed	All Jobs
Industrial	8,101	1,214	9,315	9,115	1,285	10,400
Non-Industrial	9,024	815	9,839	9,024	815	9,839
TOTAL	17,125	2,029	19,154	18,139	2,100	20,239

Industrial Job Estimates by Educational Requirements and Median Wage Levels BINMIC 2015

	Less than \$25,000	\$25,000 to \$50,000	\$50,000 to \$75,000	More than \$75,000	Data not available	Total
High school diploma or equivalent	102	2,279	1,626	153	184	4,345
No formal educational credential	235	1,286	69	-	1,435	3,025
Bachelor's degree	-	24	559	1,416	240	2,239
Postsecondary nondegree or Associate's degree	3	270	113	94	152	631
Some college, no degree	-	104	28	-	9	141
Master's degree or higher	-	2	7	6	3	18
Total	340	3,965	2,402	1,668	2,024	10,400

Source: Puget Sound Regional Council 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

- The industrially zoned BINMIC is home to a diverse assortment of businesses, working waterfront, wharfs, shipyards and rail yards. BINMIC North is the home of the North Pacific fishing fleet while the south portion of the BINMIC is dominated by the presence of Seattle's Terminal 91 which supports a variety of industrial activities such as cargo handling, cold storage warehouses, seafood processing and distribution etc.
- Total industrial employment in the BINMIC (including both covered and self-employed workers) summed to 10,400 in 2015 and was just under 10% of Citywide industrial employment and more than half (51%) of total employment in the BINMIC area.
- Of the total number of industrial jobs in the BINMIC, 12% represent self-employed workers, with over 1,000 mainly working in the fishing industry.
- The BINMIC supports intense manufacturing uses. Manufacturing jobs constituted the largest share of industrial jobs in 2015 (42%), followed by Transport and Warehousing (16%).
- Most industrial jobs in the BINMIC require a high school diploma or no formal educational credential.

Industrial Job Estimates by Occupation, major groups (2-digit SOC) BINMIC 2015

SOC Description	2-digit SOC	Industrial Jobs	% of Total Industrial Jobs	% of Total Occupational Employment (Seattle-Tacoma-Bellevue)
Production Occupations	51	1,813	17.4%	0.9%
Transportation and Material Moving Occupations	53	1,507	14.5%	0.6%
Farming, Fishing, and Forestry Occupations	45	1,457	14.0%	30.3%
Office and Administrative Support Occupations	43	1,183	11.4%	0.2%
Construction and Extraction Occupations	47	787	7.6%	0.5%
Business and Financial Operations Occupations	13	644	6.2%	0.3%
Architecture and Engineering Occupations	17	584	5.6%	0.5%
Sales and Related Occupations	41	560	5.4%	0.2%
Management Occupations	11	485	4.7%	0.3%
Computer and Mathematical Occupations	15	476	4.6%	0.2%
Installation, Maintenance, and Repair Occupations	49	422	4.1%	0.3%
Arts, Design, Entertainment, Sports, and Media Occupations	27	108	1.0%	0.2%
Building and Grounds Cleaning and Maintenance Occupations	37	100	1.0%	0.1%
Food Preparation and Serving Related Occupations	35	71	0.7%	0.0%
Protective Service Occupations	33	55	0.5%	0.1%
Personal Care and Service Occupations	39	44	0.4%	0.0%
Healthcare Practitioners and Technical Occupations	29	37	0.4%	0.0%
Community and Social Service Occupations	21	26	0.3%	0.1%
Life, Physical, and Social Science Occupations	19	25	0.2%	0.1%
Legal Occupations	23	6	0.1%	0.0%
Healthcare Support Occupations	31	4	0.0%	0.0%
Education, Training, and Library Occupations	25	4	0.0%	0.0%
Total Industrial		10,400	100%	

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

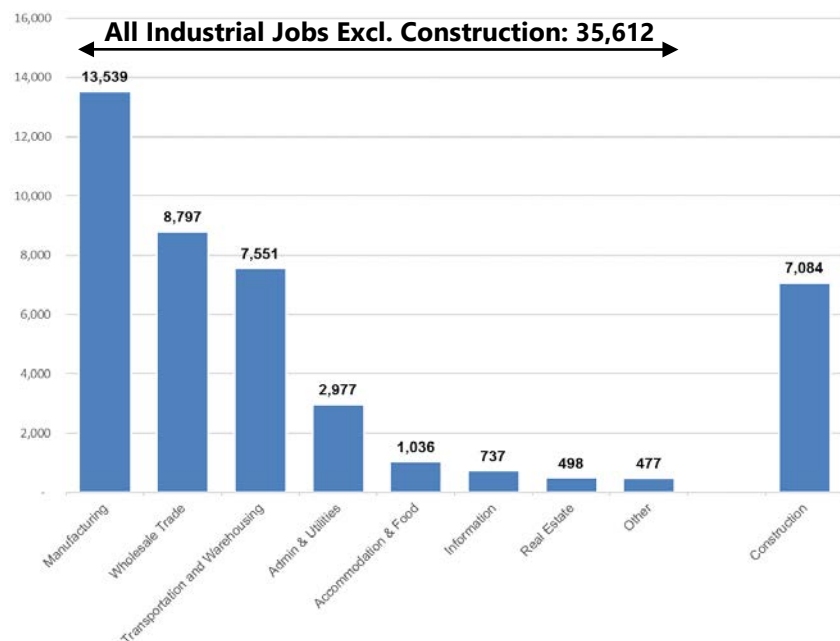
- The three largest occupational groups by number of industrial jobs were production, transportation and material moving and farming, fishing and forestry occupations.
- In 2015, it was estimated there were around 1,434 Fishers and Related Fishing Workers in BINMIC – the largest industrial occupation in the region.

Industrial Job Estimates for Leading Occupations, detailed groups (6-digit SOC) BINMIC 2015

SOC Description	6-digit SOC	% of Total Industrial Jobs	Jobs	Median Wage	Educational Requirement
Fishers and Related Fishing Workers	45-3011	13.8%	1,434	Data not available	No formal educational credential
Laborers and Freight, Stock, and Material Movers, Hand	53-7062	3.6%	379	29,570	No formal educational credential
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	41-4012	3.5%	360	63,660	High school diploma or equivalent
Heavy and Tractor-Trailer Truck Drivers	53-3032	2.2%	234	44,620	Postsecondary nondegree award
Team Assemblers	51-2092	1.7%	180	33,570	High school diploma or equivalent
Customer Service Representatives	43-4051	1.6%	163	36,500	High school diploma or equivalent
Carpenters	47-2031	1.6%	163	53,290	High school diploma or equivalent
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	51-2011	1.4%	144	Data not available	High school diploma or equivalent
General and Operations Managers	11-1021	1.4%	144	112,540	Bachelor's degree
First-Line Supervisors of Production and Operating Workers	51-1011	1.3%	134	70,380	High school diploma or equivalent
Remaining 549 occupations		68%	7,064		
Total		100%	10,400		

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

Industrial Job Estimates by Industrial Sector Duwamish MIC 2015



Source: Puget Sound Regional Council 2016, Community Attributes 2016

Note: Other is an aggregation of the following categories: Other Services and Professional, Scientific and Technical

Total Job Estimates Duwamish 2015

	Covered Employment Excl. Construction	Self-employed Excl. Construction	All Jobs Excl. Construction	Covered Employment	Self-employed	All Jobs
Industrial	34,941	671	35,612	41,844	852	42,696
Non-Industrial	23,930	1,221	25,151	23,930	1,221	25,151
TOTAL	58,871	1,892	60,763	65,774	2,073	67,847

Industrial Job Estimates by Educational Requirements and Median Wage Levels Duwamish MIC 2015

	Less than \$25,000	\$25,000 to \$50,000	\$50,000 to \$75,000	More than \$75,000	Data not available	Total
High school diploma or equivalent	398	10,259	8,612	866	597	20,731
No formal educational credential	1,676	7,423	372	-	8	9,479
Bachelor's degree	-	56	2,379	5,743	784	8,962
Postsecondary nondegree or Associate's degree	10	1,346	486	387	510	2,739
Some college, no degree	-	532	141	-	58	732
Master's degree or higher	-	3	21	21	8	53
Total	2,084	19,619	12,011	7,017	1,965	42,696

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

- The Duwamish center functions as the city's principal industrial area and is the Port of Seattle's primary marine shipping area. In 2015 this area included more than 42,000 industrial jobs (including both covered and self-employed workers) within its boundaries, which represent 40% of Citywide industrial employment and approximately 63% of total employment in the Duwamish MIC area.
- Of the total number of industrial jobs in the Duwamish MIC only 2% or 850 jobs are self-employed workers.
- The Duwamish is a major logistics hub, with industrial activities primarily concentrated along the shoreline where port of Seattle cargo operations take place and in three major rail yards, King County's airport and at various sites that serve as locations of freight logistics companies. Jobs in the Duwamish are split mainly among manufacturing, wholesale trade, transportation and warehousing and construction. Manufacturing jobs constituted the largest share of industrial jobs in 2015 (32%).
- The Duwamish MIC is a significant source of jobs for people without a college degree. Over 70% of industrial jobs in the Duwamish MIC require a high school diploma or equivalent or no formal educational credential.

Industrial Job Estimates by Occupation, major groups (2-digit SOC) Duwamish MIC 2015

SOC Description	2-digit SOC	Industrial Jobs	% of Total Industrial Jobs	% of Total Occupational Employment (Seattle-Tacoma-Bellevue)
Transportation and Material Moving Occupations	53	7,263	17.0%	2.9%
Production Occupations	51	5,873	13.8%	3.0%
Office and Administrative Support Occupations	43	5,854	13.7%	1.2%
Construction and Extraction Occupations	47	5,063	11.9%	3.3%
Sales and Related Occupations	41	3,452	8.1%	1.0%
Business and Financial Operations Occupations	13	2,636	6.2%	1.1%
Management Occupations	11	2,250	5.3%	1.2%
Architecture and Engineering Occupations	17	2,019	4.7%	1.9%
Installation, Maintenance, and Repair Occupations	49	1,989	4.7%	1.6%
Computer and Mathematical Occupations	15	1,852	4.3%	0.8%
Building and Grounds Cleaning and Maintenance Occupations	37	1,507	3.5%	1.7%
Food Preparation and Serving Related Occupations	35	1,095	2.6%	0.4%
Protective Service Occupations	33	802	1.9%	1.1%
Arts, Design, Entertainment, Sports, and Media Occupations	27	468	1.1%	0.8%
Personal Care and Service Occupations	39	171	0.4%	0.2%
Healthcare Practitioners and Technical Occupations	29	123	0.3%	0.1%
Farming, Fishing, and Forestry Occupations	45	109	0.3%	2.3%
Life, Physical, and Social Science Occupations	19	86	0.2%	0.2%
Community and Social Service Occupations	21	34	0.1%	0.1%
Legal Occupations	23	22	0.1%	0.1%
Education, Training, and Library Occupations	25	16	0.0%	0.0%
Healthcare Support Occupations	31	11	0.0%	0.0%
Total Industrial		42,696	100%	

- The Transportation and Material Moving occupation category was well represented in the Duwamish MIC with more than 7,000 jobs in 2015.
- In 2015, there were around 2,324 Sales Representatives (Wholesale and Manufacturing, Except Technical and Scientific Products) in the Duwamish MIC as estimated by PSRC – the largest industrial occupation in the region. These sales representatives had a median wage of \$63,660.

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.

Industrial Job Estimates for Leading Occupations, detailed groups (6-digit SOC) Duwamish MIC 2015

SOC Description	6-digit SOC	% of Total Industrial Jobs	Jobs	Median Wage	Educational Requirement
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	41-4012	5.4%	2,324	63,660	High school diploma or equivalent
Laborers and Freight, Stock, and Material Movers, Hand	53-7062	4.6%	1,948	29,570	No formal educational credential
Heavy and Tractor-Trailer Truck Drivers	53-3032	2.7%	1,172	44,620	Postsecondary nondegree award
Carpenters	47-2031	2.5%	1,055	53,290	High school diploma or equivalent
Customer Service Representatives	43-4051	2.1%	890	36,500	High school diploma or equivalent
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	37-2011	1.8%	764	30,440	No formal educational credential
General and Operations Managers	11-1021	1.7%	716	112,540	Bachelor's degree
Construction Laborers	47-2061	1.7%	708	43,220	No formal educational credential
Security Guards	33-9032	1.6%	692	30,340	High school diploma or equivalent
Light Truck or Delivery Services Drivers	53-3033	1.5%	640	34,820	High school diploma or equivalent
Remaining 549 occupations		74%	31,785		
Total		100%	42,696		

Source: Puget Sound Regional Council, 2016; Washington State Employment Security Department, 2016; U.S. Bureau of Labor Statistics, 2016; Community Attributes, 2016.



Infrastructure

November 2017

Freight Infrastructure

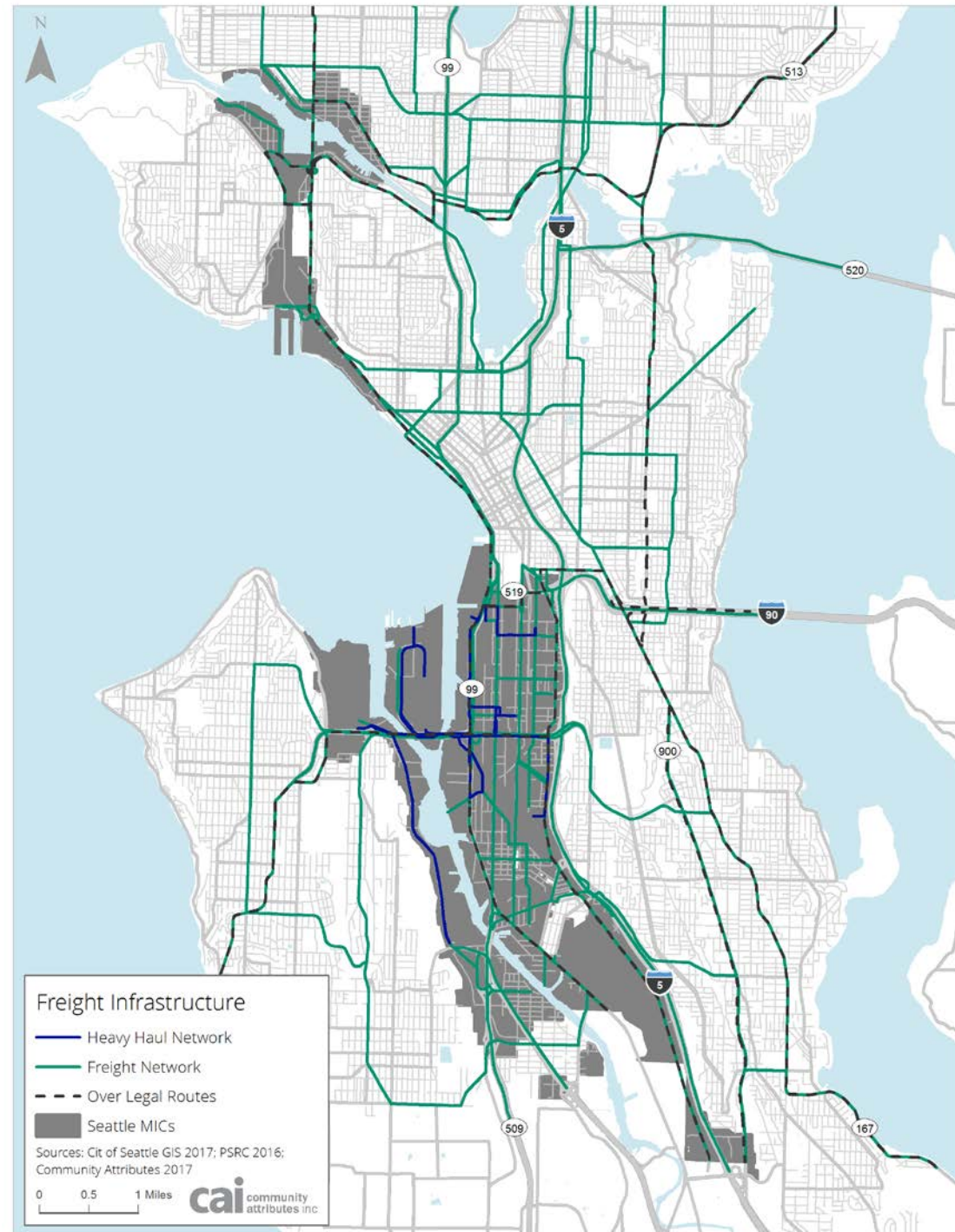
A system of marine terminals, railroads and rail spurs, roadways and airports serve the MICs and accommodate marine, truck and rail freight that is critical to the success and continuing job growth of industrial activities in those regions. There are many different types of freight generators in these areas that require raw materials that must arrive by truck or rail, and they produce goods that must be delivered by truck or rail.

In the BINMIC, land use is dominated by transportation and marine uses. Commercial fishing is an example of marine use that is a major generator of truck traffic. Fishing results in perishable goods that require processing or cold storage and are moved to processing plants or cold storage plants in both MICs. While fresh fish can be sold from the processing plants, frozen fish and fish products are sold wholesale from the cold storage facilities.

Transportation and warehousing related land uses are most predominant in the Duwamish MIC and generate significant truck and freight travel. The large intermodal rail terminals accommodate substantial truck volumes moving containers between the port and rail, the multiple marine terminals, and Boeing Field. The King County International Airport or Boeing Field has 17 acres devoted to air cargo and warehousing. Other key truck-trip generating land uses in the Duwamish MIC are manufacturing, wholesale and construction materials.

To preserve and improve freight transportation mobility and access, the City adopted a Major Truck Street (MTS) network as part of Seattle's 2005 Transportation Strategic Plan (TSP). The network was made up of arterial streets that accommodate significant freight movement through the City, and connect to and from major freight traffic generators. Analysis conducted for the City of Seattle Freight Master Plan (FMP) in 2016 identified differences between where and how goods move through the city and the 2005 MTS network.

The MTS network was replaced with the extended freight network (illustrated in green in the map) to meet the city's changing freight mobility needs. Supplementing the freight network, and distributed throughout the city, are the Over Legal Routes - specific routes that provide for oversized and overweight trucks. Lastly, the Heavy Haul Network denotes those streets that allow heavier cargo containers to be transported between the Port of Seattle, industrial businesses, and rail yards with appropriate permits.



The following are key interstate and major roadway links crossing the two MICs:

- Interstate 5 runs along the eastern edge of the Duwamish MIC with several points of direct access.
- Interstate 90 runs east from the northeast corner of the Duwamish MIC.
- State Route 99 runs north/south along the Duwamish waterway and connects the MIC with downtown Seattle and North Seattle to the north and with the SeaTac International Airport to the south.
- 15th Avenue W and 15th Avenue NW is the main route in BINMIC connecting the area to Holman Road and State Route 99 in the north and Denny Way to Interstate 5 in the south.

Freight Rail Lines

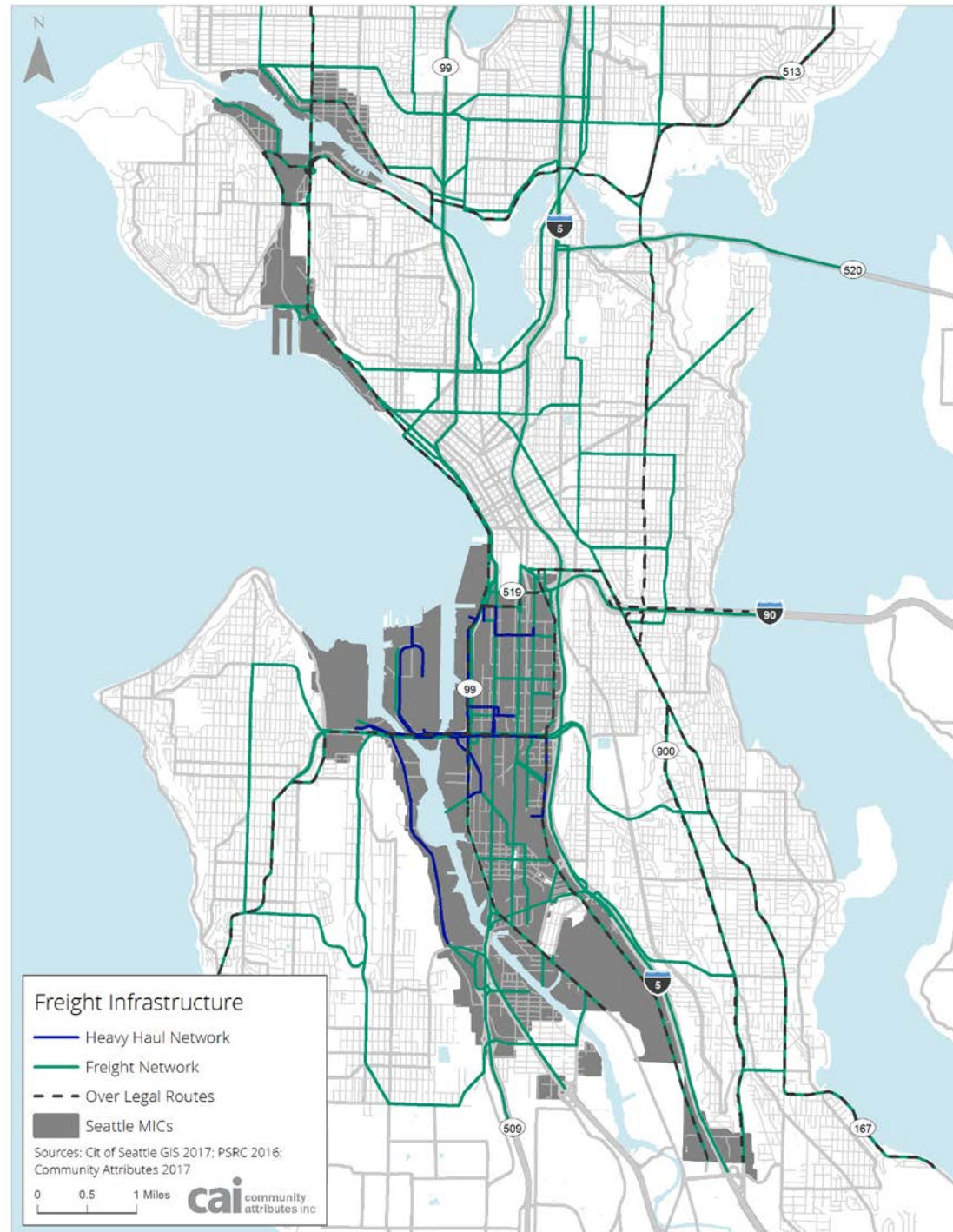
Within the BINMIC, there are two primary freight facilities:

- The BNSF mainline – runs between Elliott Avenue W and the Elliott Bay Bike Trail before entering Terminal 91 between the Queen Anne and Magnolia neighborhoods. The rail line crosses a movable bridge west of the Ballard Locks and runs north between Seaview Avenue and the Loyal Heights neighborhood.
- The Ballard Terminal Railroad - operates on a single-track that is a spur of the BNSF mainline. This rail line serves some of the maritime industry and businesses located along Shilshole Avenue NW.

Within the Greater Duwamish MIC there are four primary freight rail facilities, supplemented by ondock rail facilities at the Port terminals:

- The BNSF mainline railroad tracks - runs between 1st Avenue S and 4th Avenue S from the Great Northern Tunnel near the 4th Avenue S / S Washington Street intersection down south parallel to Airport Way and I-5. Several small spur tracks along the mainline serve adjacent businesses.
- The BNSF Seattle International Gateway (SIG Yard) – is divided into two facilities, the North SIG Yard, which is accessed by trucks from S Massachusetts Street at Colorado Avenue, and Main SIG/Stacy, which is accessed by trucks from S Hanford Street east of E Marginal Way.
- The Amtrak Seattle King Street Coach Yard maintenance facility - extends south from Edgar Martinez Drive S to south of S Walker Street, east to 3rd Avenue S, and across the rail spur line that serves the King Street Coach Yard.
- The Union Pacific Argo Yard (intermodal).

November 2017



Sound Transit Link Light Rail

Only the north east area of the Duwamish MIC is currently connected to the Light Rail system through two stations: SODO, located in the SODO neighborhood of Seattle and Stadium station, located at the intersection of SODO Busway and Royal Brougham Way.

Sound-Transit 3, which represents the new phase of high-capacity transit improvements for central Puget Sound, will connect the Duwamish MIC to West Seattle and to BINMIC and North Seattle. Three new stations located on the eastern border of the Ballard-Interbay MIC will provide a link to the rest of the network.

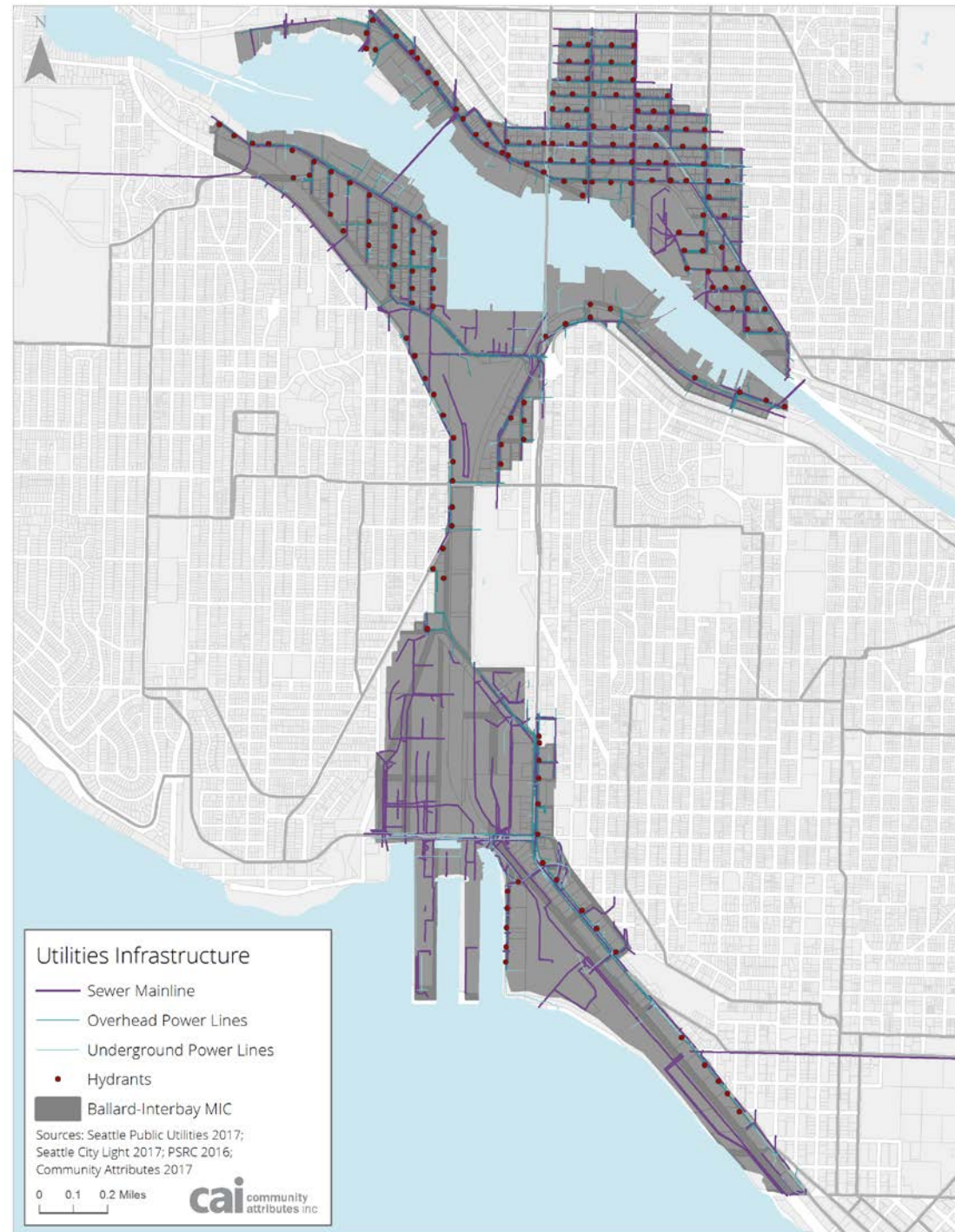
Transportation and land use are strongly connected and ST3 is likely to have an impact on shaping land use by providing the infrastructure required to improve accessibility and mobility. Increased access to land raises its potential for development, and more development generates additional travel.



Public Utilities - BINMIC

Within the industrial subareas, information was collected regarding the location of existing utilities infrastructure such as power lines, sewer mainline and hydrants within the Ballard-Interbay MIC.

Due to the sensitive nature of the locations of Seattle's main water lines, they have not been mapped.

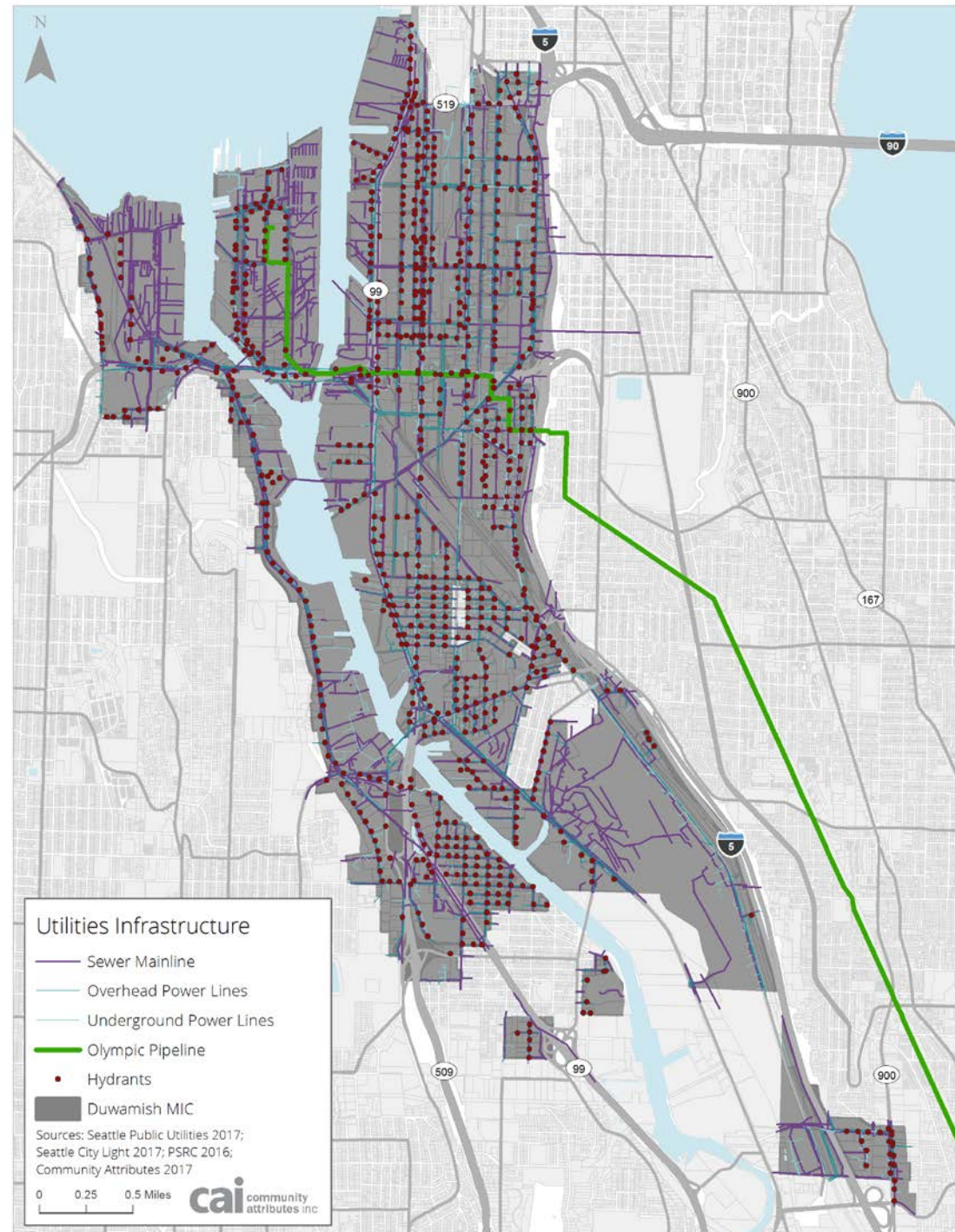


Public Utilities - Duwamish

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Within the industrial subareas, information was collected regarding the location of existing utilities infrastructure such as power lines, sewer mainline and hydrants within the Duwamish MIC.

Due to the sensitive nature of the locations of Seattle's main water lines, they have not been mapped.



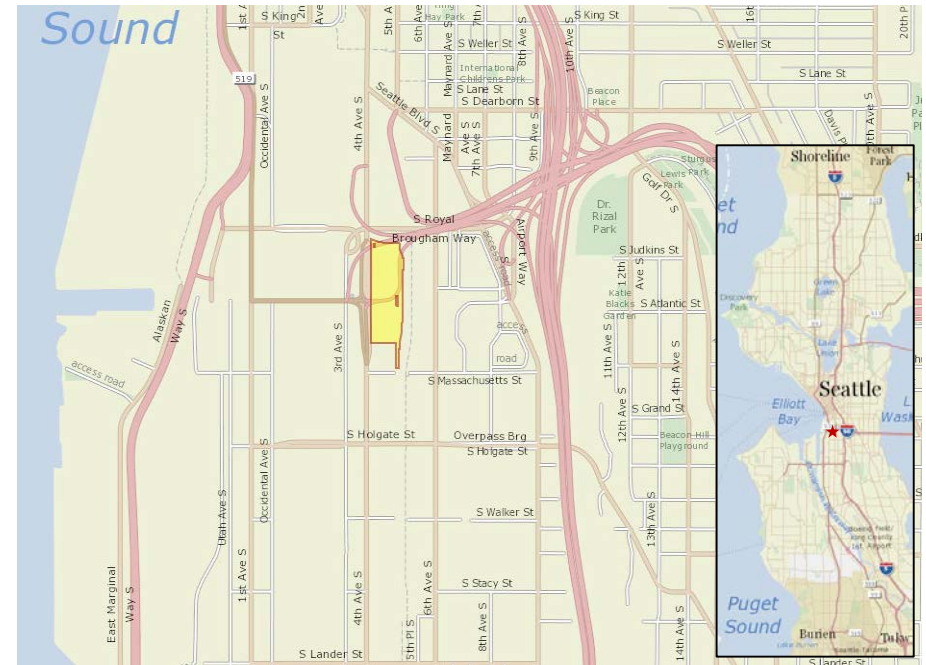


Appendices

Metro Maint & Operations (7666204685)

- Land use defined by Assessor as **Terminal (Auto/Bus/Other)**.
- The King County Metro Ryerson Base is located on this parcel and consists of an office building used both as an office and as a garage for services repairs and a parking lot for buses.
- The owner of this parcel is the Washington State Government.
- Although the parcel is publicly owned, the categorization is based on present land use and not on ownership.
- Land use for this property was reviewed and categorized as **Transportation Fleet Support Services – Transportation** because this parcel serves as a bus base and the office is auxiliary to the bus base. An Office tag in our parcels categorization database denotes the secondary use as an office.

Location of Metro Maint & Operations



Source: King County Department of Assessments, 2016

List of Buildings at Metro Maint & Operations

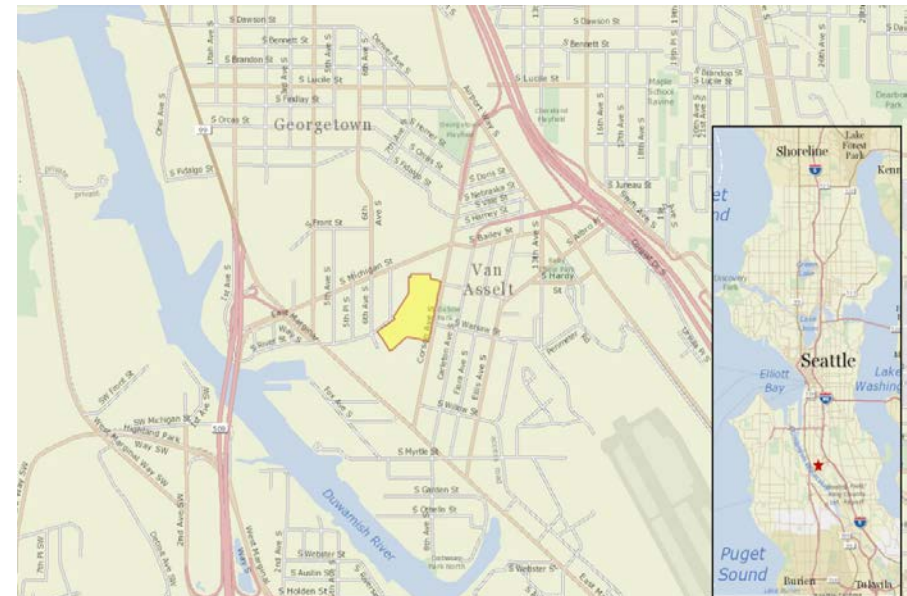
Commercial Building Description	Predominant Use	Building Gross Sq Ft	Share of Total
OFFICE BUILDING	OFFICE BUILDING (344)	51,025	100%
TOTAL		51,025	

Source: King County Department of Assessments, 2016

Department of Transportation (2924049062)

- Land use defined by Assessor as **Utility, Public**.
- Multiple buildings are located on this parcel and have different uses e.g. garage, service repair, industrial light manufacturing and office building.
- Google aerial view shows that the WA State Department of Transportation District 1 Traffic Operations are located on this parcel.
- For parcels with multiple buildings with different land uses, the predominant land use was determined by the building with the largest square footage.
- Approximately 74% of all built square footage on the Department of Transportation parcel is used as garage for service repairs.
- Land use for this property was reviewed and tagged as **Transportation Fleet Support Services - Transportation** because the property is mainly being used for service or repair of vehicles by a government agency.

Location of DOT District 1 Traffic Operations



Source: King County Department of Assessments, 2016

List of Buildings at DOT District 1 Traffic Operations

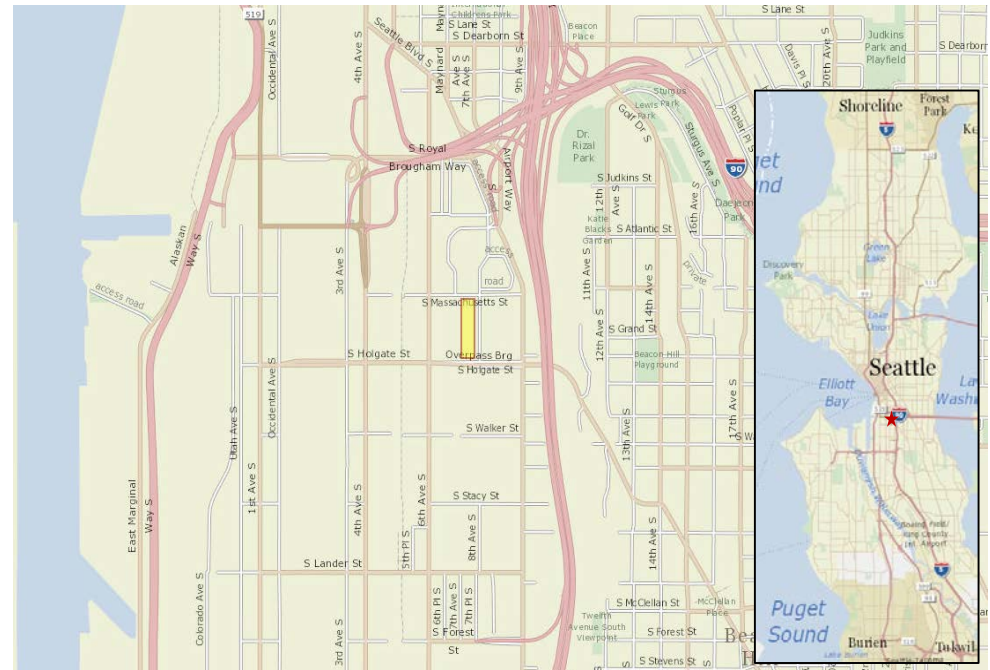
Commercial Building Description	Predominant Use	Building Gross Sq Ft	Share of Total
REPAIR GAR	GARAGE, SERVICE REPAIR (528)	22,316	22%
CITY TRANSPORTATION BLDG	INDUSTRIAL LIGHT MANUFACTURING (494)	18,000	18%
OFFICE	OFFICE BUILDING (344)	8,508	9%
BLDGS 4 THRU 14	GARAGE, SERVICE REPAIR (528)	51,210	51%
TOTAL		100,034	

Source: King County Department of Assessments, 2016

Pacific Alaska Forwarding (7666203450)

- Land use defined by Assessor as **Terminal(Auto/Bus/Other)**.
- Several buildings are located on this parcel with different past predominant uses such as industrial light manufacturing, warehouse distribution and equipment shed.
- All buildings on this parcel are currently unoccupied. The previous tenant was Pacific Alaska Forwarding which provided freight transportation services.
- The largest building on this parcel in terms of square footage was used as a warehouse for distribution.
- For parcels with unoccupied buildings, the categorization is based on the last predominant land use.
- Land use for this property was reviewed and tagged as **Distribution – Industrial** due to the latest predominant use, along with an unoccupied flag.

Location of Pacific Alaska Forwarding



Source: King County Department of Assessments, 2016

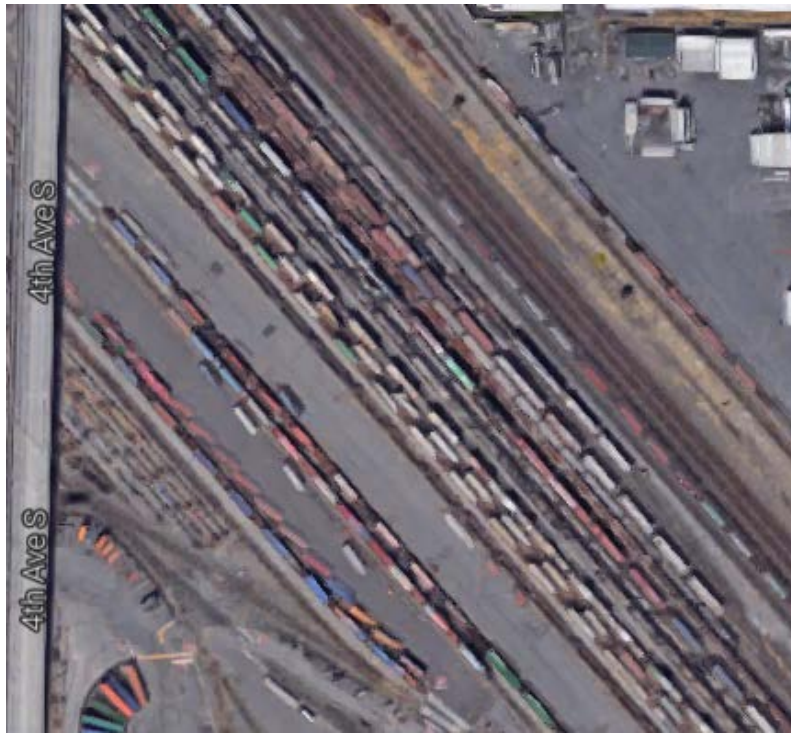
List of Buildings at Pacific Alaska Forwarding

Commercial Building Description	Predominant Use	Building Gross Sq Ft	Share of Total
WAREHOUSE	INDUSTRIAL LIGT MANUFACTURING (494)	3,200	10%
TRUCK TERMINAL	WAREHOUSE, DISTRIBUTION (407)	25,880	83%
EQUIPMENT SHED	EQUIPMENT SHED (472)	2,016	6%
TOTAL		31,096	

Source: King County Department of Assessments, 2016

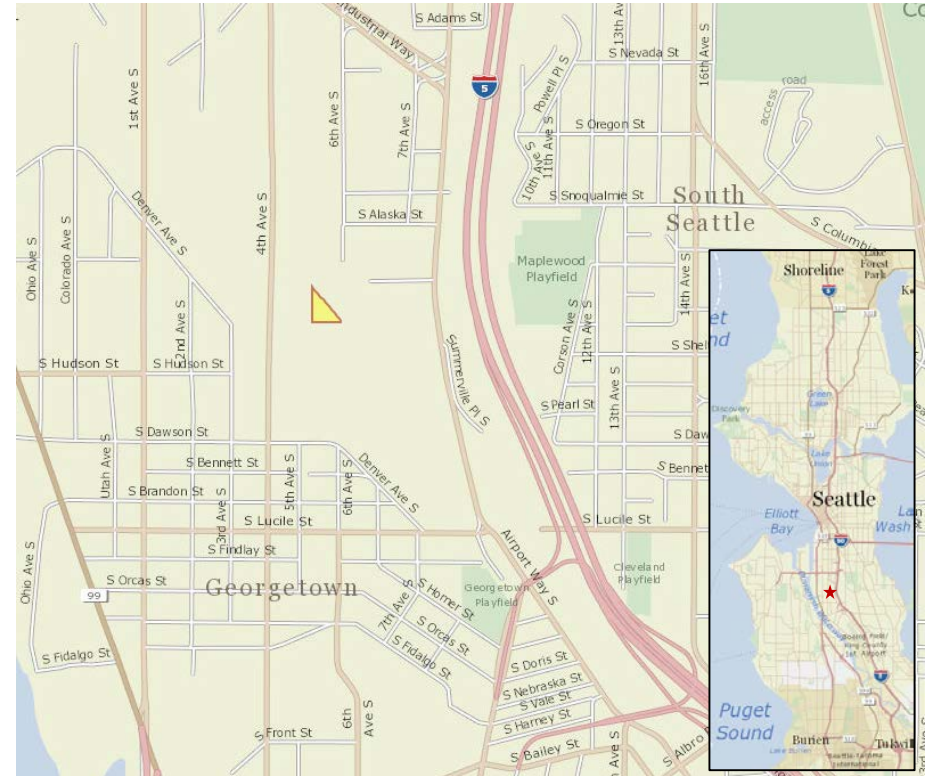
Union Pacific Rail Yard (6604000100)

Aerial view of Union Pacific Rail Yard



Source: Google Earth, 2016

Location of Union Pacific Rail Yard

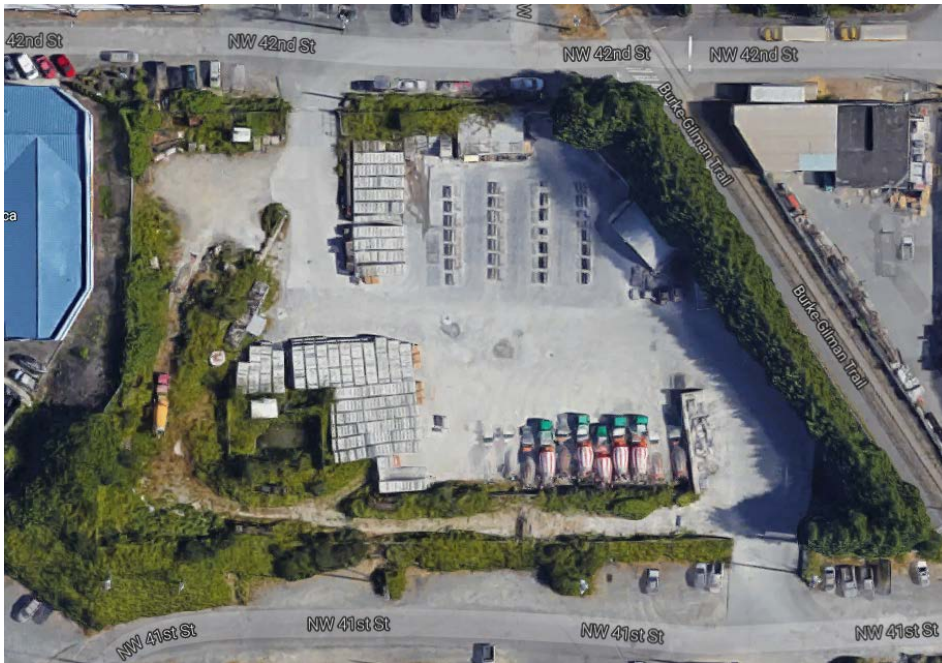


Source: King County Department of Assessments, 2016

- Land use defined by Assessor as **Vacant (Industrial)**.
- Vacant parcels with no buildings that are actively used for industrial purposes have been categorized accordingly based on their predominant present use.
- Land use for this property was reviewed and classified as **Transportation Terminal** because it represents a rail yard with railroad tracks used for keeping rolling stock stored of the mainline.

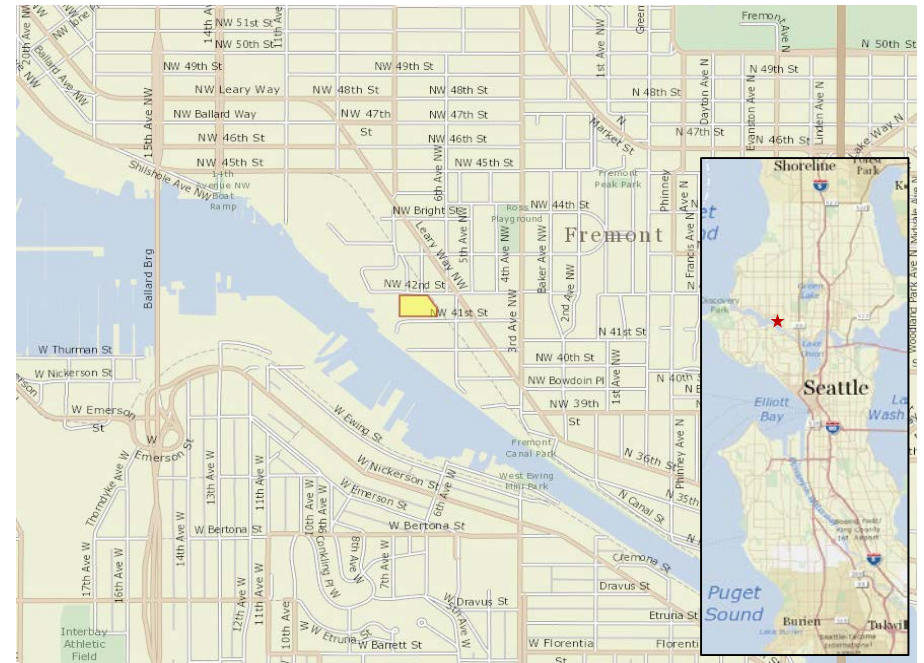
Northwest Marble & Terrazzo (7446000020)

Aerial view of Northwest Marble & Terrazzo



Source: Google Earth, 2016

Location of Northwest Marble & Terrazzo



Source: King County Department of Assessments, 2016

- Land use defined by Assessor as **Vacant (Industrial)**.
- Vacant parcels with no buildings or improvements have been categorized as 'Industrial staging' if they are actively used for storage or other industrial purposes.
- Land use for this property was reviewed and classified as **Industrial staging – Industrial** because it is currently used for storing concrete mixing transport trucks and cement blocks. Since concrete is being sold at this location, the retail component has been flagged.

Appendix B – BINMIC Permit Data

We received data on the building permits issued for all zones within the MIC where the proposed use was different from the current use. These include permits issued for changes to the occupancy of an existing building, for the development of new buildings as well as for remodeling and renovations (uses can be changed when you renovate or remodel buildings). Given the broad range of activities for which permits can be issued, those highlighted here have a subtype designation of "new".

Address	Application Date	Issue Date	Permit Description	Application Use	Current Land Use	Suggested Land Use
5423 SHILSHOLE AVE NW	1/11/2016		Construct office, retail and restaurant building with accessory parking garage and occupy per plans.	General Retail; Office	Vacant	Retail Trade
933 NW 49TH ST	7/11/2013	11/21/2013	Establish use as manufacturing, construct commercial building with surface parking, and occupy, per plan.	Warehouse	Warehouse	Warehouse
907 NW BALLARD WAY	6/22/2016		Establish use as retail and construct a commercial building, occupy per plan.	General Retail	Office	Retail Trade
951 NW BALLARD WAY	6/16/2016		Construct new retail building and surface parking and occupy, per plan.	Multipurpose Ret	Office	Retail Trade
4445 26TH AVE W	4/4/2012	10/23/2012	Establish use and construct warehouse building and occupy per plan.	Warehouse	Warehouse	Warehouse
3445 16TH AVE W	1/20/2010	1/30/2013	Grading and construction of foundation and prefabricated steel building, per plan.	Storage	Warehouse	Warehouse
1700 W ARMORY WAY	2/19/2015		Construct new retail building with surface parking and occupy per plans.	General Retail	Office	Retail Trade
1550 W ARMORY WAY	1/16/2015	10/14/2015	Establish retail use and construct a commercial building for "Total Wine" with surface parking, occupy per plans.	General Retail	Retail Trade	Retail Trade
2360 W COMMODORE WAY	5/21/2013	10/10/2013	Construct minor marine repair and marine sales & service building and occupy, per plans.	Warehouse; Vessel Rep Mnr	Warehouse	Ship Yard
2356 W COMMODORE WAY	8/7/2015	3/7/2016	Construct marine repair/ storage and office building and occupy, per plans.	Sale Small Boat	Vacant	Ship Yard

Appendix B – Duwamish Permit Data

We received data on the building permits issued for all zones within the MIC where the proposed use was different from the current use. These include permits issued for changes to the occupancy of an existing building, for the development of new buildings as well as for remodeling and renovations (uses can be changed when you renovate or remodel buildings). Given the broad range of activities for which permits can be issued, those highlighted here have a subtype designation of “new”.

Address	Application Date	Issue Date	Permit Description	Application Use	Current Land Use	Suggested Land Use
609 S BRANDON ST	4/4/2012	1/25/2013	Establish use and construct new commercial building with surface parking, per plan.	Office	Industrial(Light)	Office
5400 AIRPORT WAY S	7/29/2014	5/13/2015	Construction of storage and office building with caretaker unit and occupy, per plan	Warehouse	Industrial(Light)	Warehouse
306 S RIVER ST	4/6/2011	4/6/2011	Establish use as warehouse, construct and occupy per plan.	Warehouse	Warehouse	Warehouse
252 S CHICAGO ST	12/7/2013	7/28/2014	Establish use as general manufacturing, construct industrial building, and occupy, per plan.	General Mfg	Vacant	Industrial(Gen Purpose)
503 S ROYAL BROUGHAM WAY	8/16/2012	8/14/2013	Establish use as passenger terminal for Greyhound. Install factory-built terminal and canopy structures and occupy per plans.	Transp Facility	Transportation Terminal	Transportation Terminal
1501 1ST AVE S	1/8/2010	5/25/2010	Establish use and construct new 6-story office building with street-level retail/restaurant and below grade parking and occupy per plan. Restaurant occupancy under separate permit, shell & core only this permit (North bldg only this permit.)	Restaurant; Office; General Retail	Outdoor Retail	Office
1201 ALASKAN WAY S	10/5/2011	3/22/2012	Construct mitigation facility at Port of Seattle Terminal #46 for the SR 99 deep bore tunnel staging. Specifically, construction of a new crane maintenance building, and occupy per plan.	Transp Facility	Marine Terminal	Marine Terminal
910 SW SPOKANE ST	5/20/2011	10/19/2011	Phased project: Construction of an atrium office building and occupy (through shell and core only), per plan.	Office	Ship Yard	Office
2400 HARBOR AVE SW	8/5/2013	9/21/2013	Change of use from cargo terminal (Port of Seattle) to outdoor (vehicle) storage (private) and construct accessory office (1) 28'x64' modular structure and entry ramp, occupy per plan.	Outdoor Storage	Transportation Terminal	Outdoor Vehicle Storage

Industrial real estate market rents and vacancy rates were obtained from CoStar in February 2017, and cover the past five years. The same information was gathered for three areas – the entire City of Seattle, BINMIC, and Duwamish MIC. This information relates to properties classified as being “industrial” or “flex” in type by CoStar, and may not exactly match those considered industrial in use by this analysis. CoStar groups properties “based on the presence of improvements, structural characteristics of these improvements, and on the tenant use or intended use of these improvements.”

The following CoStar definitions were included in the analysis:

- **Industrial** buildings are “adapted for a combination of uses such as assemblage, processing, and/or manufacturing products from raw materials or fabricated parts. Additional uses include warehousing, distribution, and maintenance facilities.”
- **Flex** buildings are “designed to be versatile, which may be used in combination with office, research and development, quasi-retail sales, and including but not limited to industrial, warehouse, and distribution uses. At least half of the rentable area of the building must be used as office space.”

The same process was used to gather data for all commercial properties. For these searches, the only property types that were omitted were residential and vacant land. Specifically, the included property types were office, retail, hospitality, health care, specialty, and sports & entertainment.