Pacific Avenue || SR 7 Corridor
HIGH CAPACITY TRANSIT
FEASIBILITY STUDY

Existing and Future Conditions Report

FINAL Deliverable TASK 5.1

June 2, 2017

Prepared for:

PIERCE TRANSIT

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Acronyms & Abbreviations

ACS	American Community Survey
ADT	Average Daily Traffic
AVL	Automatic Vehicle Location
BRT	Bus Rapid Transit
GTC	Growing Transit Communities
HCT	High Capacity Transit
LCLIP	Landscape Conservation and Local Infrastructure Program
LID	Local Improvement District
MIC	Manufacturing and Industrial Center
MPH	Miles per Hour
MPTE	Multifamily Property Tax Exemption Program
NACTO	National Association of City Transportation Officials
P&N	Purpose and Need
PLU	Pacific Lutheran University
PSM	Parkland-Spanaway-Midland
PSRC	Puget Sound Regional Council
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SFC	Strategic Freight Corridor
SLM	Shared Lane Markings
TC	Transfer Center
TCC	Tacoma Community College
TDR	Transfer of Development Rights
TMP	Transportation Master Plan
TOD	Transit-Oriented Development
UGA	Urban Growth Area
UPS	University of Puget Sound
v/c	volume to capacity
WSDOT	Washington State Department of Transportation
WSP|PB	WSP | Parsons Brinckerhoff

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1 INTRODUCTION

Pierce Transit is embarking on a Pacific Avenue S/SR 7 High Capacity Transit (HCT) Feasibility Study. The Study Corridor follows Pacific Avenue S/SR 7 between downtown Tacoma and Spanaway. The Study Corridor is currently served by Route 1, which is one of Pierce Transit's four trunk routes and the highest ridership route in the system, carrying almost 2 million passengers annually, or 20 percent of Pierce Transit's fixed route ridership. Pierce Transit's Destination 2040 Long Range Plan, Sound Transit's ST3 Plan, and Puget Sound Regional Council's (PSRC) Transportation 2040 long range plan all identify the Pacific Avenue S/SR 7 corridor for potential HCT service.

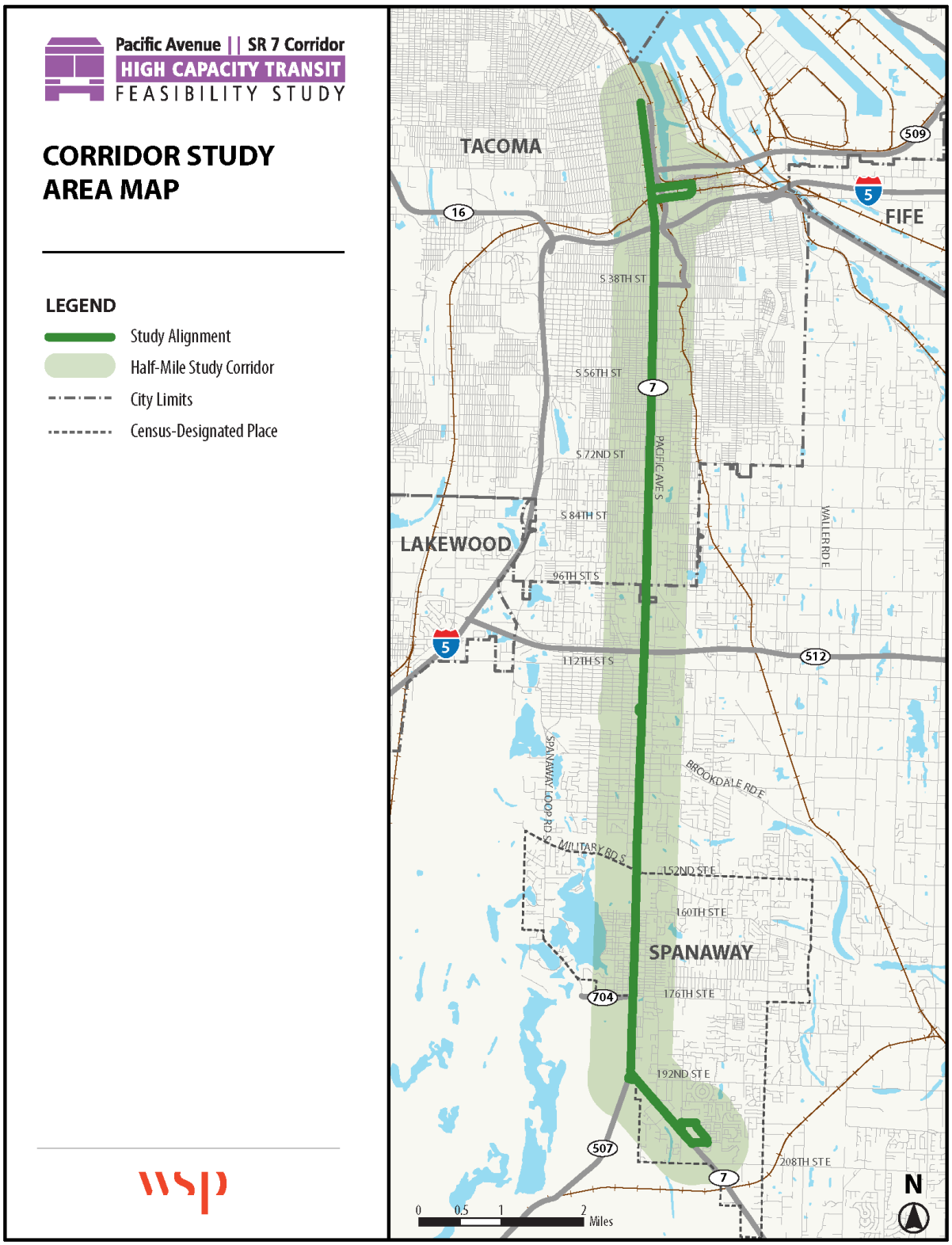
1.1 PURPOSE OF THIS REPORT

This Existing and Future Conditions Report presents a comprehensive overview of the social, physical, and jurisdictional conditions within the Study Corridor today and in the future (2040). The purpose of this report is to provide information and context for project staff and partner agencies to utilize in developing the project's purpose and need (P&N) statement, goals, and evaluation criteria. Furthermore, this report will inform the mode selection and alternatives analysis efforts.

1.2 STUDY ALIGNMENT AND STUDY CORRIDOR

The Pacific Avenue S/SR 7 HCT study alignment is a 14.4-mile segment of Pacific Avenue S/SR 7 between the Commerce Street Transfer Center in Downtown Tacoma and 204th Street E in Spanaway, entirely within Pierce County. The alignment would also serve the Tacoma Dome Station. The Study Corridor, which is the area within a half-mile of the alignment, is presented on Figure 1-1.

Figure 1-1. Pacific Avenue S/SR 7 HCT Study Corridor



2 EXISTING CONDITIONS

2.1 DEMOGRAPHICS

2.1.1 Population and Employment

POPULATION

Pierce County is home to over 820,000 people (2015) with an average of 455 persons per square mile. The Study Corridor his home to 6.7 percent of the County's population, with just over 54,900 people. However, it is much more densely populated than the county as a whole, averaging nearly 3,800 people per square mile. Table 2-1 details year 2000, 2010, and 2015 population statistics for the County, City of Tacoma, Spanaway, as well as the half-mile Study Corridor by census tract (census tracts shown in Figure 2-1). The table also details the population growth in the County and the Study Corridor between 2000 and 2015. The Study Corridor grew at a slightly slower rate than the County overall, at 14.6 percent and 17.3 percent, respectively.

Table 2-1. Population Statistics in Years 2000, 2010, and 2015

	Square Miles	2000[1]	2010[1]	2015[2]	% Change 2000 to 2015	Persons per Square Mile (2015)
Pierce County	1,806.2	700,460	795,225	821,952	17.3%	455
City of Tacoma	49.4	n.a.	198,397	203,481	n.a.	4,119
Spanaway	n.a.	n.a.	27,227	29,214	n.a.	n.a.
Study Corridor[2]	14.5	48,310	53,963	54,904	14.6%	3,786
Study Corridor Portion of County	0.8%	6.9%	6.8%	6.7%	n.a.	n.a.
Half-Mile Study Corridor Census Tracks[2*]						
53053060200	1.12	103	224	119	15.5%	106
53053060600	0.00	10	10	10	0.0%	2,065
53053061400	0.18	1,961	2,188	1,773	-9.6%	10,060
53053061500	0.07	680	719	758	11.5%	11,051
53053061601	0.29	1,398	1,824	1,925	37.7%	6,546
53053061602	0.41	639	956	846	32.4%	2,072
53053061700	0.15	609	674	672	10.3%	4,471
53053061800	0.10	557	541	527	-5.4%	5,254
53053061900	4.01	1,908	1,961	1,785	-6.4%	445
53053062000	0.30	1,575	1,543	1,657	5.2%	5,602
53053062300	0.13	623	702	705	13.2%	5,550
53053062400	0.88	5,445	5,471	5,522	1.4%	6,310
53053062500	0.15	1,020	952	1,066	4.5%	7,070
53053062600	0.05	46	53	57	23.9%	1,184
53053063100	0.13	584	594	621	6.3%	4,720
53053063200	0.87	4,563	4,619	5,243	14.9%	6,046
53053063300	0.00	10	11	12	20.0%	6,400
53053063400	1.31	6,102	6,677	6,467	6.0%	4,934
53053063501	0.10	564	555	582	3.2%	5,884
53053063502	0.10	574	678	637	11.0%	6,512
53053071403	0.82	1,297	1,388	1,423	9.7%	1,740

	Square Miles	2000[1]	2010[1]	2015[2]	% Change 2000 to 2015	Persons per Square Mile (2015)
53053071408	0.47	1,484	1,684	1,644	10.8%	3,463
53053071409	0.25	1,249	1,335	1,351	8.2%	5,435
53053071410	1.12	1,665	2,843	3,527	111.8%	3,136
53053071411	0.67	1,750	2,422	2,701	54.3%	4,039
53053071503	0.72	1,576	1,670	1,721	9.2%	2,393
53053071504	0.52	2,706	2,825	2,978	10.1%	5,703
53053071505	0.82	2,366	2,470	2,402	1.5%	2,914
53053071506	0.03	92	98	94	2.2%	3,342
53053071602	0.58	1,500	2,364	2,138	42.5%	3,670
53053071705	0.52	1,827	2,105	2,135	16.9%	4,142
53053071707	0.30	1,642	1,774	1,773	8.0%	5,819
53053072906**	0.97	170	15	17	-90.0%	18
53053940007	0.01	17	16	17	0.0%	3,400

Source: (1) PSRC, 2040 Forecast. (2) American Community Survey (ACS) 2015 5-Year Data.
n.a.: Data not available from the American Community Survey (ACS) 2015 5-Year Data.
**Data totals were estimated for census tracts that partially fall within the half-mile Study Corridor by multiplying the total for the tract by the proportion of the tract within the half-mile Study Corridor.*
***In 2000, Pierce County had 158 census tracts. Over the 15 year period, the census tracts were divided as population grew. There were 172 census tracts in the 2010 census and the ACS 5-year data. This census tract (53053072906) was much larger in 2000 and covered what is now census tracts 53072905, 53072906, and 53072907. This explains what appears to be a significant loss of population over time, when there was actually an increase of population.*

EMPLOYMENT

In 2010, Pierce County had over 318,000 jobs with an average of 176 jobs per square mile. The Study Corridor accounts for 9.89 percent of the County's jobs, with nearly 31,500 jobs within a half-mile of the proposed alignment. The Study Corridor had approximately 2,172 jobs per square mile which is far higher than the County average. Table 2-2 details the 2010 and projected 2025 employment statistics for the County, City of Tacoma, Spanaway, as well as the half-mile Study Corridor by census tract (based on data from PSRC). Jobs within the Study Corridor are expected to grow at a higher rate than within the County and the City of Tacoma, with an expected 38 percent growth within the study corridor, compared to 20 percent and 22 percent within the County and Tacoma respectively. By 2025, the Study Corridor is expected to account for 11.4 percent of the County's jobs.

Table 2-2 Employment Statistics in Years 2010 and 2025

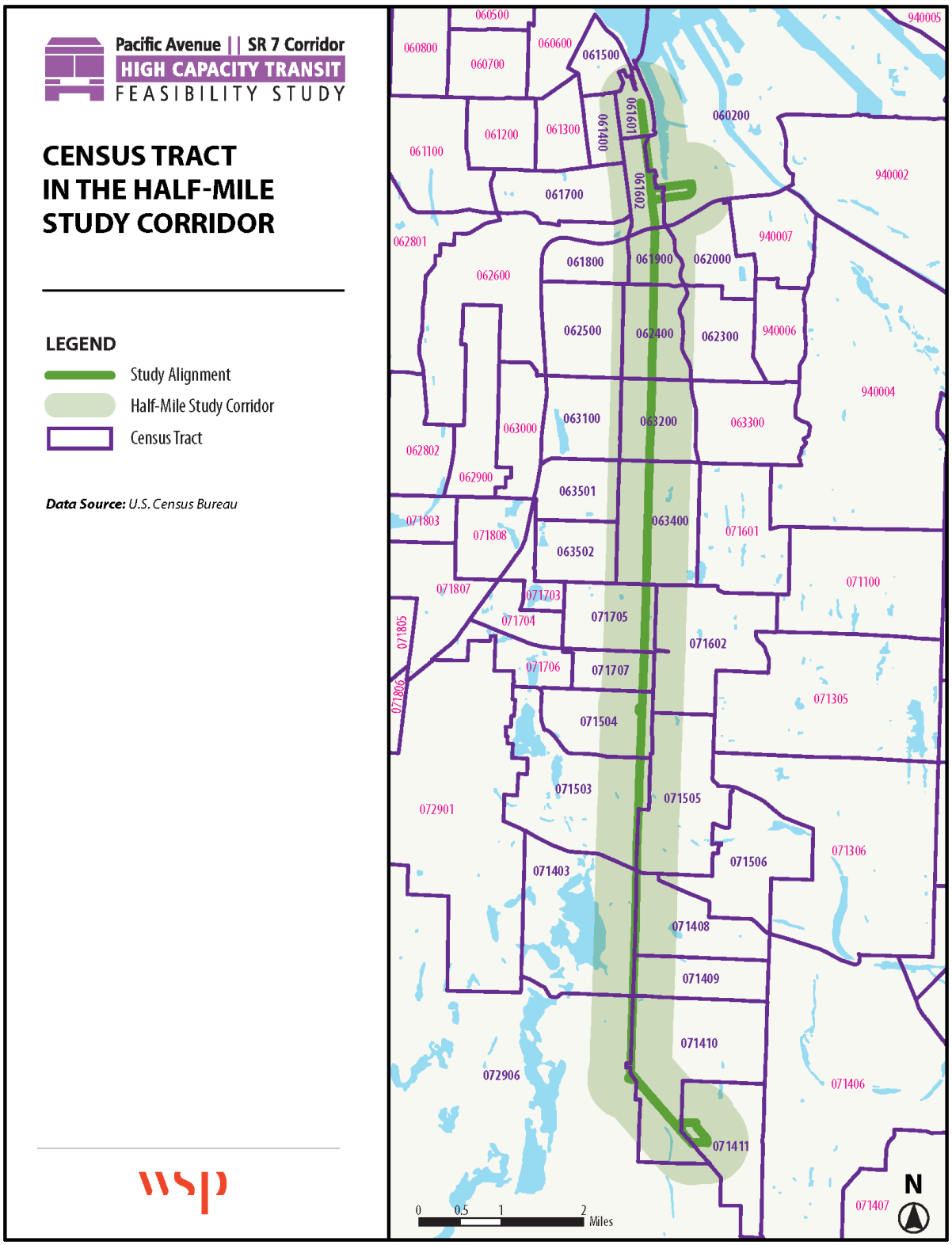
	Square Miles	2010	2025	% Change 2010 to 2025	Jobs per Square Mile (2010)
Pierce County	1,806.20	318,372	382,299	20.08%	176
City of Tacoma	49.4	104,093	127,063	22.07%	2,107
Spanaway	8.76	4,248	4,797	12.92%	485
Study Corridor[2]	14.5	31,494	43,561	38.32%	2,172
Study Corridor Portion of County	0.80%	9.89%	11.39%	15.19%	n.a.
Half-Mile Study Corridor Census Tracks*					
53053060200	1.12	1,156	1,434	24.02%	1,034
53053060600	0.00	2	2	25.37%	358
53053061400	0.18	3,924	3,386	-13.71%	22,255
53053061500	0.07	1,267	1,310	3.46%	18,465
53053061601	0.29	10,100	15,869	57.12%	34,353

	Square Miles	2010	2025	% Change 2010 to 2025	Jobs per Square Mile (2010)
53053061602	0.41	3,524	7,761	120.23%	8,633
53053061700	0.15	382	622	63.11%	2,540
53053061800	0.10	110	128	17.15%	1,092
53053061900	0.40	1,343	1,737	29.34%	3,345
53053062000	0.30	182	267	46.69%	616
53053062300	0.13	42	52	23.89%	331
53053062400	0.88	825	1,059	28.36%	943
53053062500	0.15	133	142	6.26%	884
53053062600	0.05	280	370	32.29%	5,816
53053063100	0.13	141	151	7.02%	1,071
53053063200	0.87	518	712	37.25%	598
53053063300	0.00	1	2	20.75%	773
53053063400	1.31	1,398	1,479	5.79%	1,067
53053063501	0.10	156	164	5.12%	1,581
53053063502	0.10	61	83	36.03%	627
53053071403	0.82	234	365	55.64%	286
53053071408	0.47	452	419	-7.26%	951
53053071409	0.25	141	122	-13.33%	567
53053071410	1.12	552	547	-0.99%	491
53053071411	0.67	391	532	36.09%	584
53053071503	0.72	754	763	1.17%	1,048
53053071504	0.52	1,200	1,202	0.17%	2,298
53053071505	0.82	304	406	33.59%	369
53053071506	0.03	4	4	-9.95%	146
53053071602	0.58	573	1,091	90.35%	984
53053071705	0.52	569	655	15.11%	1,104
53053071707	0.30	565	551	-2.53%	1,855
53053072906	0.97	197	161	-18.14%	204
53053940007	0.01	14	15	5.86%	2,757

Source: (1) PSRC, 2010 existing and 2025 forecast.

**Data totals were estimated for census tracts that partially fall within the half-mile Study Corridor by multiplying the total for the tract by the proportion of the tract within the half-mile Study Corridor.*

Figure 2-1. Census Tracts Within or Touched by the Study Corridor



2.1.2 Household Characteristics

Household characteristics for the County and the Study Corridor are presented in Table 2-3. There are nearly 303,600 households within Pierce County (2015) with an average size of 3.2 people, a third of which are non-family households. The Study Corridor is home to almost 20,500 households (6.7 percent of Pierce County's households), of which over 40 percent are non-family households. At 2.6 persons, the average household size within the Study Corridor is smaller than the County average. The Study Corridor has about twice the percentage of no-vehicle households compared to the County, which implies a higher level of transit dependent riders in the Study Corridor.

AFFORDABLE HOUSING

There are over 1,850 affordable housing units in the Study Corridor.[1] Figure 2-2 details the location of structures that have one or more affordable housing units, whether it is a single-family attached home, an apartment, a condominium, or a townhome. Some locations have upwards of 170-200 affordable units, others have as few as 4-20. On average, the dots represent about 48 affordable housing units. As shown in the figure, the large majority of affordable housing units are located at the north end of the Study Corridor in and around downtown Tacoma.

Table 2-3. Household Characteristics (2015)

	Number of Households	Number of Non-Family Households	Average Household Size	Average Age	No Vehicle Households	% of No Vehicle Households
Pierce County	303,586	101,190	3.2	37	17,543	5.8%
Study Corridor	20,478	8,552	2.6	34	2,255	11.0%
Half-Mile Study Corridor Census Tracks*						
53053060200	52	36	1.6	36	1	2.5%
53053060600	5	3	2.0	39	0	7.0%
53053061400	622	405	1.9	33	232	37.2%
53053061500	470	360	1.5	33	79	16.8%
53053061601	1,308	1,034	1.4	44	433	33.1%
53053061602	439	301	1.7	29	46	10.5%
53053061700	263	125	2.5	33	25	9.5%
53053061800	172	73	3.0	33	24	14.1%
53053061900	781	424	2.2	42	106	13.6%
53053062000	591	261	2.7	34	90	15.2%
53053062300	223	57	3.2	32	18	7.9%
53053062400	2,077	785	2.7	36	260	12.5%
53053062500	337	119	3.1	35	10	2.9%
53053062600	25	15	2.2	33	4	14.9%
53053063100	214	66	2.8	35	13	5.9%
53053063200	1,815	636	2.9	36	70	3.9%
53053063300	4	1	3.4	32	0	5.6%
53053063400	2,332	882	2.7	37	279	12.0%
53053063501	211	78	2.8	41	26	12.4%
53053063502	217	71	2.9	34	7	3.4%
53053071403	547	163	2.6	39	8	1.4%
53053071408	575	159	2.9	34	37	6.4%

[1] National Housing Preservation Database. Washington Database. March 31, 2016. http://www.preservationdatabase.org/. Accessed March 14, 2017.

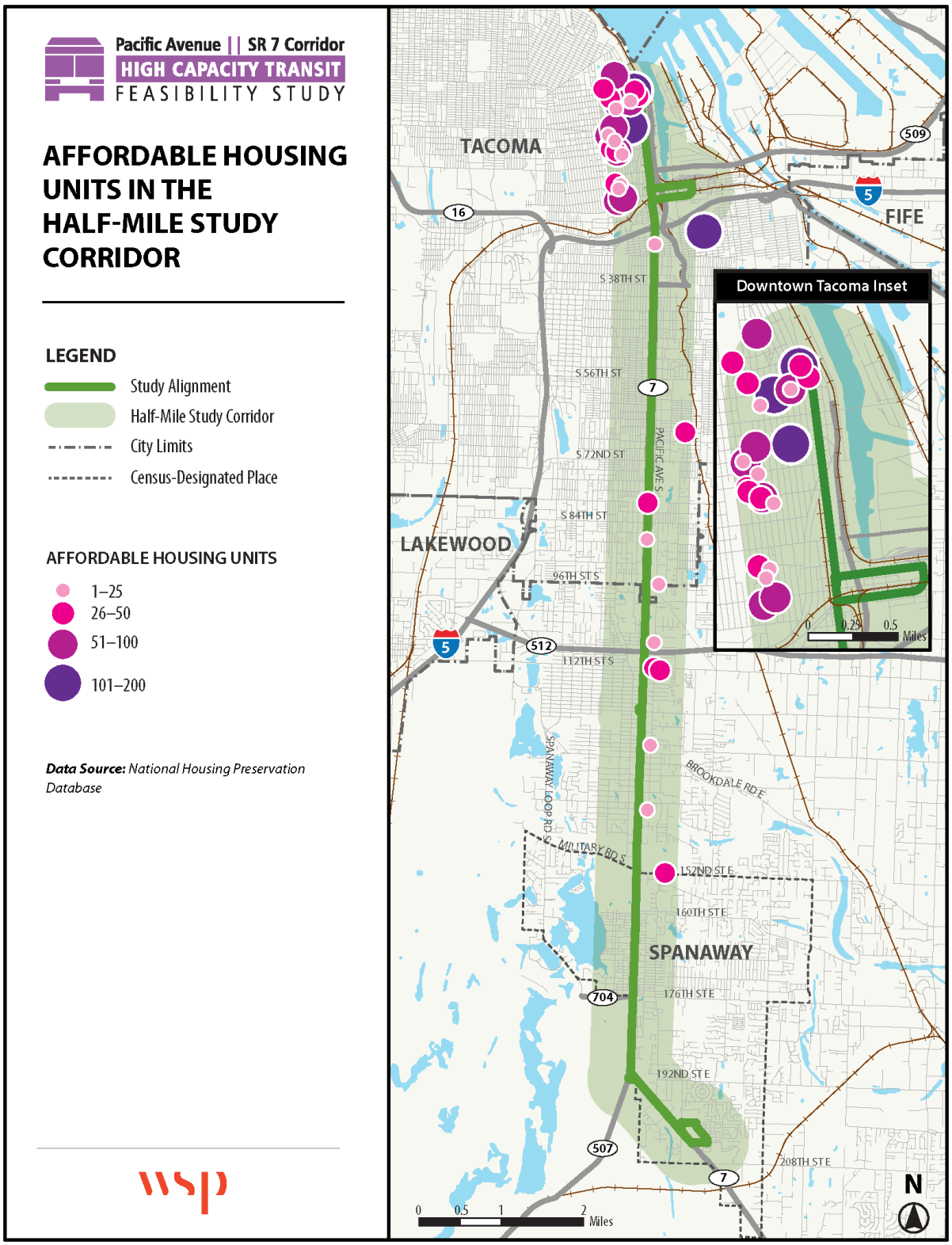
	Number of Households	Number of Non-Family Households	Average Household Size	Average Age	No Vehicle Households	% of No Vehicle Households
53053071409	452	139	3.0	32	16	3.6%
53053071410	1,214	362	2.9	31	13	1.1%
53053071411	814	143	3.3	29	8	1.0%
53053071503	708	272	2.4	44	120	16.9%
53053071504	747	350	3.0	22	82	11.0%
53053071505	936	313	2.6	38	91	9.7%
53053071506	34	10	2.8	41	1	2.5%
53053071602	879	332	2.4	32	54	6.2%
53053071705	761	283	2.8	35	37	4.8%
53053071707	649	291	2.7	34	65	10.0%
53053072906	0	0	3.6	23	0	0.0%
53053940007	5	1	3.5	31	0	4.9%

Source: American Community Survey (ACS) 2015 5-Year Data.

n.a.: data not available from the American Community Survey (ACS) 2015 5-Year Data.

**Data totals were estimated for census tracts that partially fall within the half-mile Study Corridor by multiplying the total for the tract by the proportion of the tract within the half-mile Study Corridor.*

Figure 2-2. Affordable Housing Units in the Half-Mile Study Corridor



2.1.3 Economic Characteristics

Average households within the Study Corridor are more economically depressed than the average household in the County as a whole. The 2015 median household income in the Study Corridor is over $12,000 less than the median household income in Pierce County. Furthermore, nearly 6 percent of the residents within the Study Corridor were unemployed, compared to 4.5 percent countywide, and over 20 percent of residents within the Study Corridor were below the federal poverty level (2015). Table 2-4 presents economic characteristic data for Pierce County and the Study Corridor.

Table 2-4. Economic Characteristics (2015)

	Median Household Income	Unemployed	% Unemployed	Individual Below Poverty Level w/in 12 Months	% Below Poverty Level
Pierce County	$62,469	37,196	4.5%	102,233	12.4%
City of Tacoma	$52,042	n.a.	n.a.	n.a.	n.a.
Spanaway	$59,303	n.a.	n.a.	n.a.	n.a.
Study Corridor	$49,911	3,276	6.0%	11,118	20.3%
Half Mile Study Corridor Census Tracks*					
53053060200	$78,382	8	6.9%	35	29.6%
53053060600	$68,487	1	7.4%	1	12.9%
53053061400	$18,023	94	5.3%	544	30.7%
53053061500	$37,981	58	7.6%	174	23.0%
53053061601	$19,364	212	11.0%	831	43.2%
53053061602	$53,977	101	11.9%	205	24.2%
53053061700	$51,121	38	5.6%	169	25.1%
53053061800	$41,058	17	3.2%	168	31.8%
53053061900	$32,734	89	5.0%	611	34.2%
53053062000	$42,949	102	6.2%	385	23.3%
53053062300	$46,792	30	4.3%	176	24.9%
53053062400	$50,595	397	7.2%	1,206	21.8%
53053062500	$52,900	51	4.8%	158	14.8%
53053062600	$35,202	3	4.9%	11	18.8%
53053063100	$52,889	24	3.8%	112	18.1%
53053063200	$50,331	327	6.2%	991	18.9%
53053063300	$54,150	1	4.3%	2	18.8%
53053063400	$42,787	427	6.6%	1,412	21.8%
53053063501	$49,313	37	6.3%	94	16.2%
53053063502	$46,445	44	6.9%	97	15.3%
53053071403	$59,356	43	3.1%	100	7.0%
53053071408	$52,698	106	6.5%	246	15.0%
53053071409	$49,172	74	5.5%	283	20.9%
53053071410	$57,344	81	2.3%	505	14.3%
53053071411	$66,558	87	3.2%	330	12.2%
53053071503	$45,189	110	6.4%	143	8.3%
53053071504	$40,534	226	7.6%	779	26.2%
53053071505	$60,382	100	4.2%	202	8.4%
53053071506	$69,951	2	2.3%	8	8.9%
53053071602	$44,769	108	5.0%	300	14.0%
53053071705	$42,060	152	7.1%	497	23.3%
53053071707	$42,083	125	7.0%	338	19.1%

	Median Household Income	Unemployed	% Unemployed	Individual Below Poverty Level w/in 12 Months	% Below Poverty Level
53053072906	$101,875	0	0.0%	0	0.0%
53053940007	$39,515	1	8.0%	4	24.9%

Source: American Community Survey (ACS) 2015 5-Year Data.
n.a.: Data not available from the American Community Survey (ACS) 2015 5-Year Data.
**Data totals were estimated for census tracts that partially fall within the half-mile Study Corridor by multiplying the total for the tract by the proportion of the tract within the half-mile Study Corridor.*

2.1.4 Market Conditions in the Study Corridor

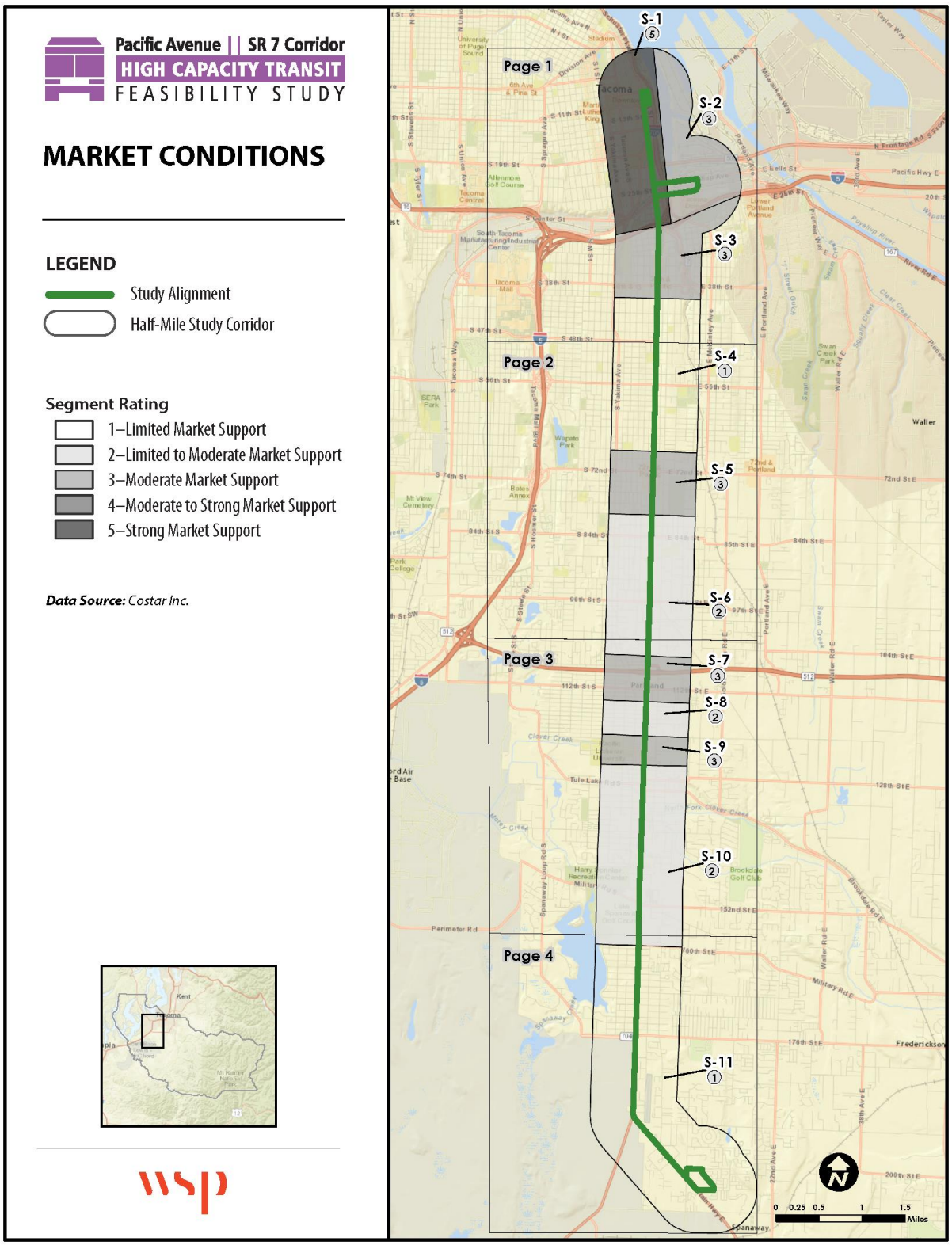
As shown on Figure 2-3, the Study Corridor is separated into 11 market segments. These segments are listed as follows from North to South:

1. Downtown Tacoma
2. Waterfront
3. Tacoma Dome
4. I-5 to 40th Street
5. 40th Street to 68th Street
6. 68th Street to 80th Street
7. 80th Street to 106th Street
8. SR 512
9. 114th Street to 121st Street
10. Pacific Lutheran University
11. 126th Street to 159th Street
12. 159th Street to the end of the Study Corridor (Mountain Highway E at 204th Street E)

Each segment is rated for its Transit-Oriented Development (TOD) potential. Ratings are based on a combination of the following factors: existing, recently constructed, under construction, and proposed multi-family and office buildings; amount of underutilized land; and, the influence of activity generators that positively increase the demand for real estate.[2] The data are used, in combination with observations from commercial real estate specialists active in the Study Corridor, to make a qualitative rating of each segment.

[2] Costar Inc.

Figure 2-3. Study Corridor Market Segments



MARKET CONDITIONS FINDINGS

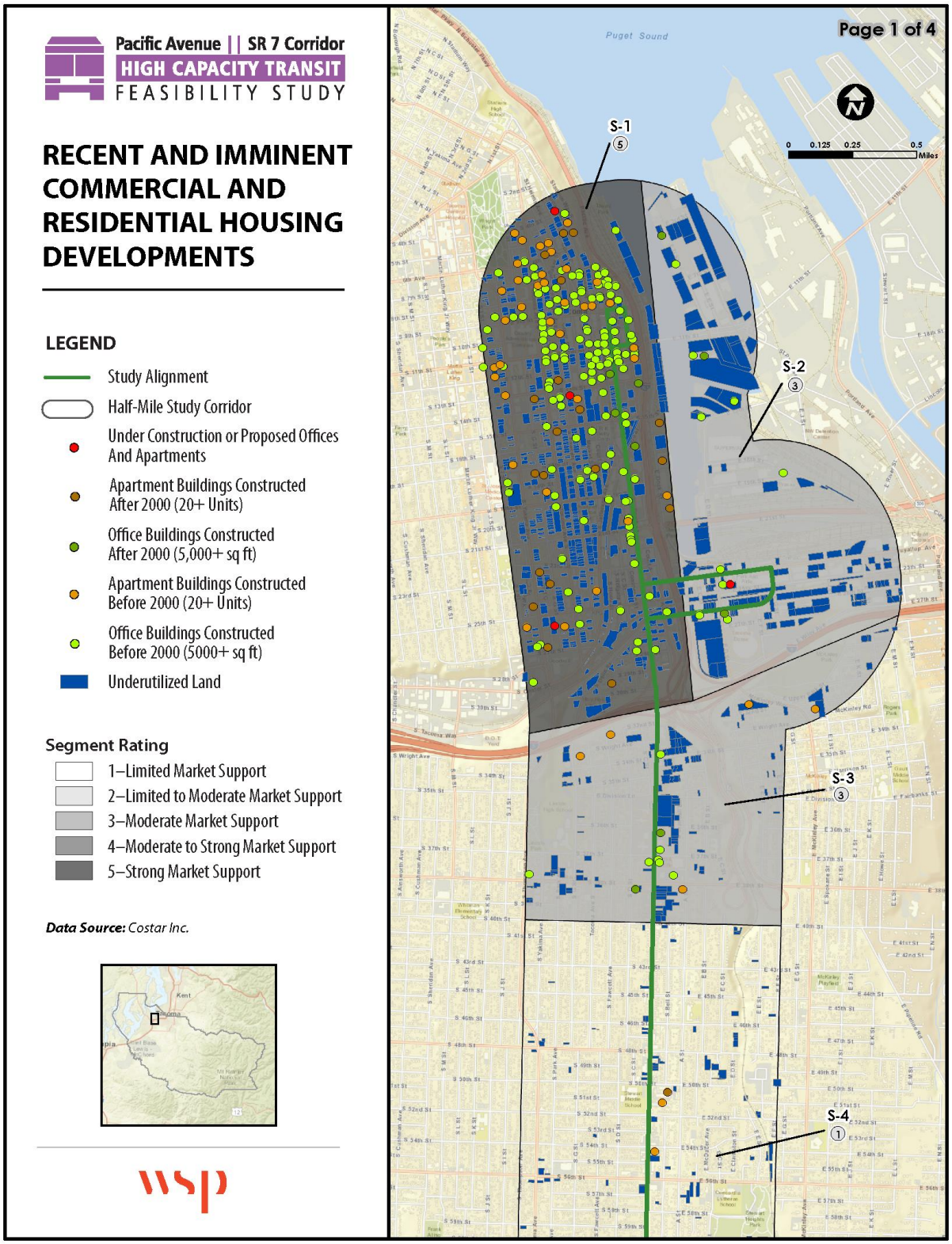
Market conditions in the Study Corridor are strongest in the Downtown Tacoma segment (no. 1). The Downtown Tacoma segment contains the largest concentration of existing, recently constructed, under construction, and planned development within the Study Corridor. Other segments where development is concentrated or new development is planned include: the Tacoma Dome (no. 3) just to the east of Downtown Tacoma, the segment south of I-5 to S 40th Street (no. 4), the segment bounded by S 68th Street and S 80th Streets (no. 6), the SR 512 segment (no. 8), and the segment proximate to Pacific Lutheran University (no. 10). Each of these six segments also offer sufficient underutilized land to accommodate new development.

Two segments are particularly challenging for development due to the lack of underutilized and vacant land. The first is the S 40th Street to S 68th Street segment (no. 5), which is dominated by established single family neighborhoods and offers little underutilized land. The second segment is located between S 159th Street and the south end of the Study Corridor (no. 12). Development of apartment and office buildings in this segment has been limited, Joint Base Lewis-McChord encompasses a large portion of this segment to the west and eliminates development potential, and the remainder of the segment is dominated by lower density development patterns.

The remaining three segments do not present specific development challenges, but also do not offer much TOD potential. These include the S 80th Street to S 106th Street segment (no. 7), the S 114th Street to S 121st Street segment (no. 9), and the S 126th Street to S 159th Street segment (no. 11).

The following figures detail recent and imminent commercial and residential housing developments and underutilized land within the Study Corridor.

Figure 2-4. Recent and Imminent Commercial and Residential Housing Developments and Underutilized Land in the Corridor (four-part figure)



Pacific Avenue || SR 7 Corridor
HIGH CAPACITY TRANSIT
FEASIBILITY STUDY

RECENT AND IMMINENT COMMERCIAL AND RESIDENTIAL HOUSING DEVELOPMENTS

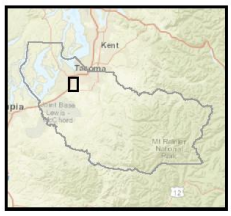
LEGEND

- Study Alignment
- Half-Mile Study Corridor
- Under Construction or Proposed Offices And Apartments
- Apartment Buildings Constructed After 2000 (20+ Units)
- Office Buildings Constructed After 2000 (5,000+ sq ft)
- Apartment Buildings Constructed Before 2000 (20+ Units)
- Office Buildings Constructed Before 2000 (5000+ sq ft)
- Underutilized Land

Segment Rating

- 1–Limited Market Support
- 2–Limited to Moderate Market Support
- 3–Moderate Market Support
- 4–Moderate to Strong Market Support
- 5–Strong Market Support

Data Source: *Costar Inc.*



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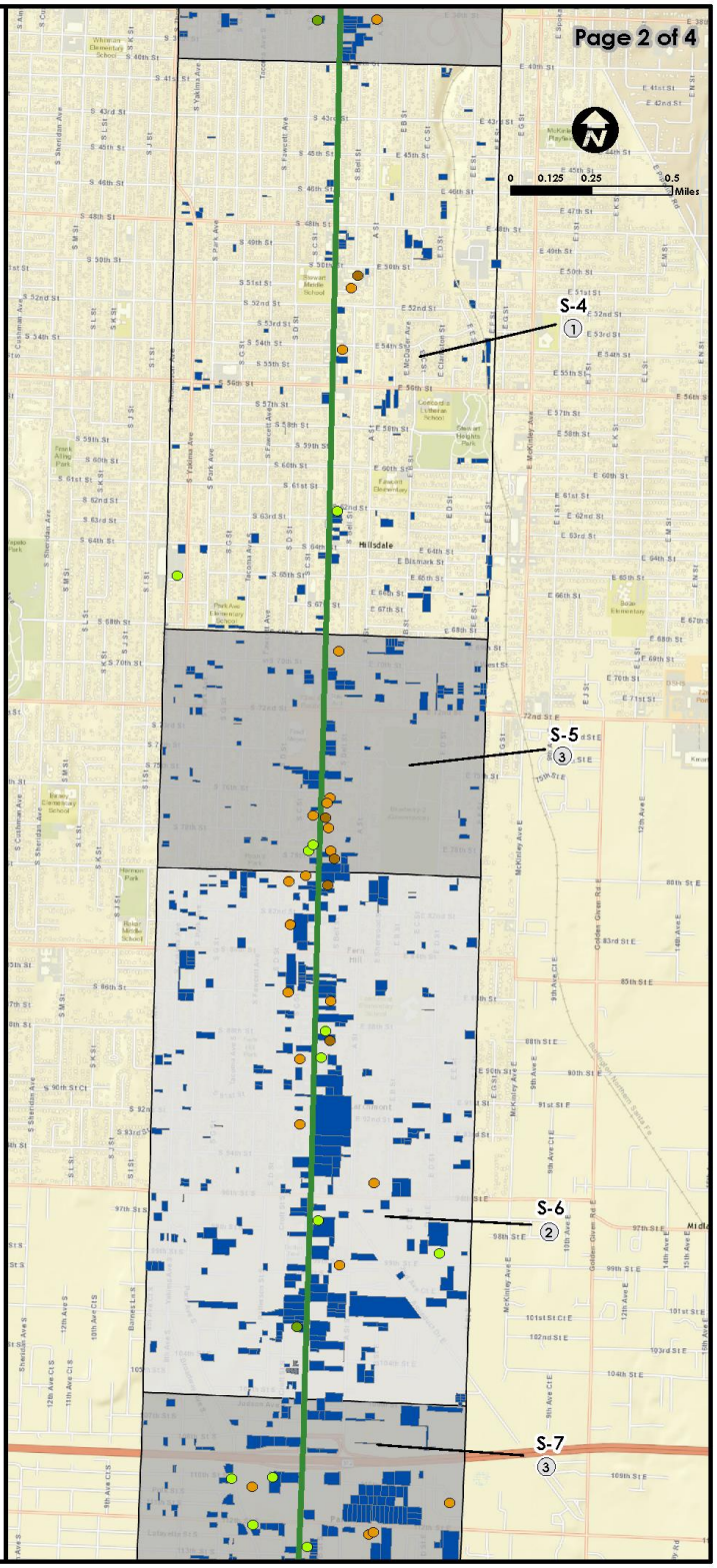
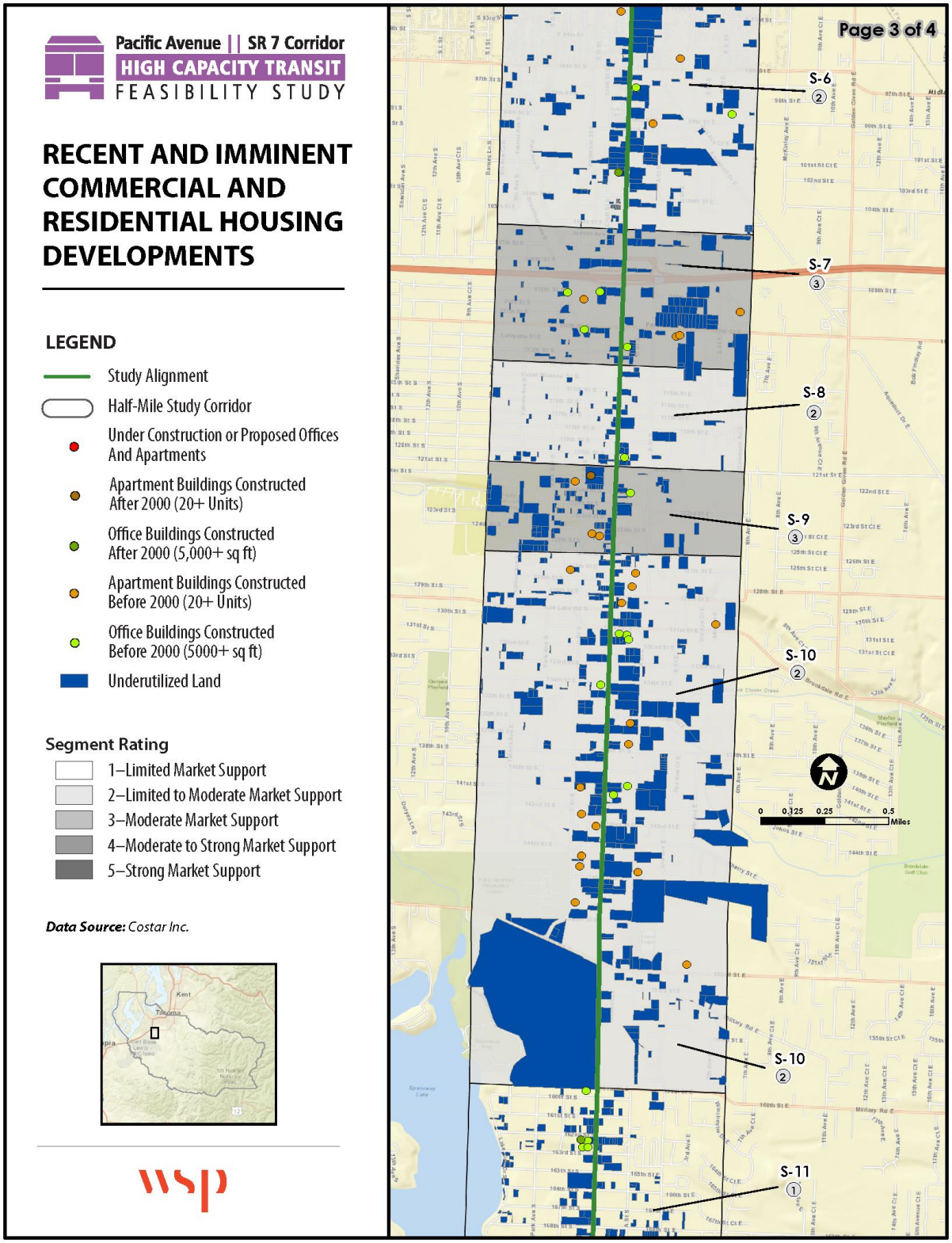
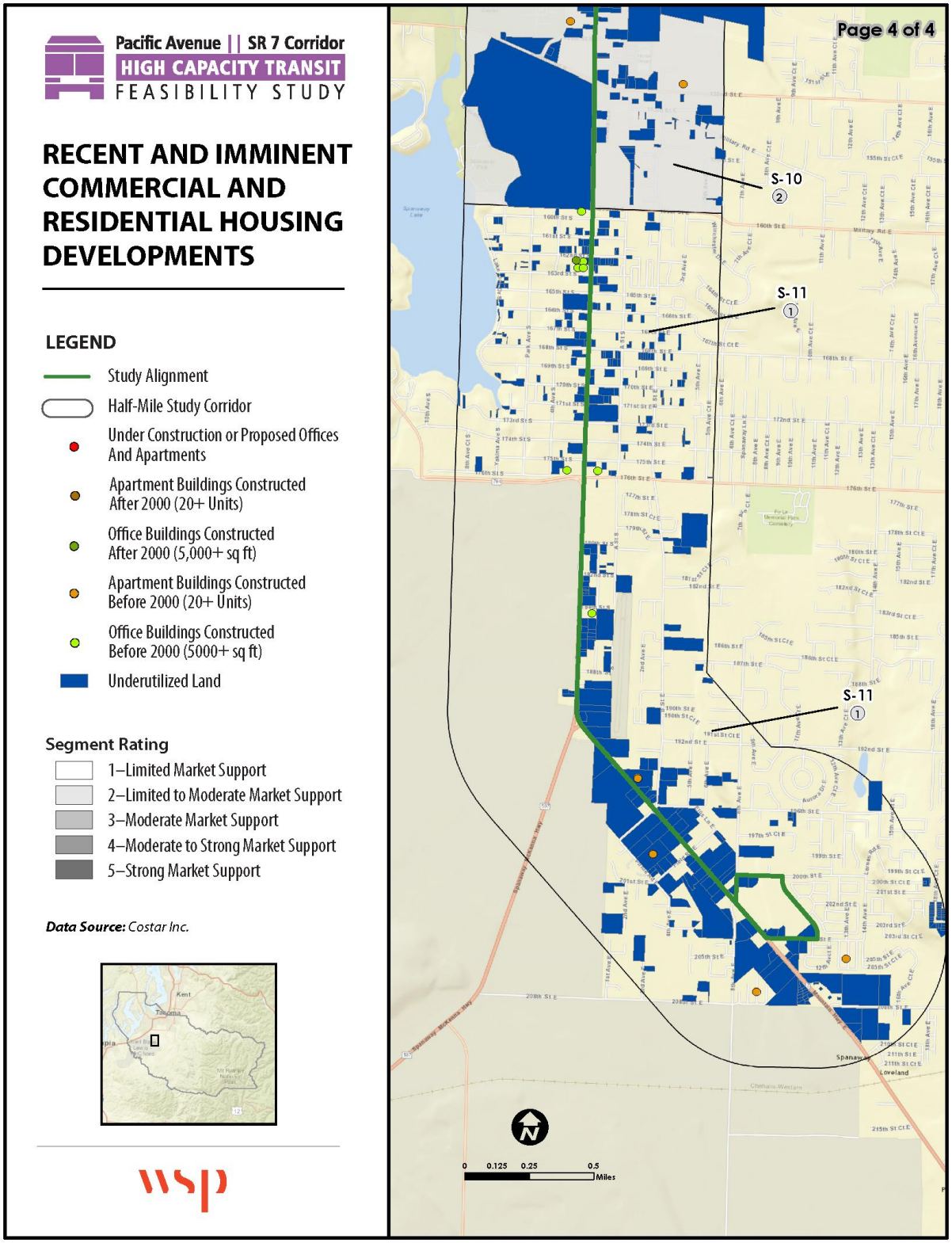


Pacific Avenue || SR 7 Corridor
HIGH CAPACITY TRANSIT
FEASIBILITY STUDY

RECENT AND IMMINENT COMMERCIAL AND RESIDENTIAL HOUSING DEVELOPMENTS




Pacific Avenue || SR 7 Corridor
HIGH CAPACITY TRANSIT
FEASIBILITY STUDY
RECENT AND IMMINENT COMMERCIAL AND RESIDENTIAL HOUSING DEVELOPMENTS
LEGEND
Study Alignment
Half-Mile Study Corridor
Under Construction or Proposed Offices And Apartments
Apartment Buildings Constructed After 2000 (20+ Units)
Office Buildings Constructed After 2000 (5,000+ sq ft)
Apartment Buildings Constructed Before 2000 (20+ Units)
Office Buildings Constructed Before 2000 (5000+ sq ft)
Underutilized Land
Segment Rating
1–Limited Market Support
2–Limited to Moderate Market Support
3–Moderate Market Support
4–Moderate to Strong Market Support
5–Strong Market Support
Data Source: Costar Inc.
Page 4 of 4
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2.2 EXISTING PLANS & POLICY

2.2.1 Puget Sound Regional Council (PSRC)

VISION 2040

The PSRC is the regional planning agency for Central Puget Sound. *VISION 2040,* which was adopted by PSRC in 2008, is the region's integrated, long-range vision for how and where the region should accommodate approximately 1.5 million additional people for a total population of 5 million, as well as 1.2 million new jobs for a total employment of nearly 3 million.[3] *VISION 2040*'s goals are to maintain a healthy region, promote the well-being of people and communities, ensure economic vitality, and preserve a healthy environment. *VISION 2040* refines the urban growth boundaries first established over 20 years ago.

The *VISION 2040* strategy seeks to focus housing and employment growth into urban centers, and employment growth into manufacturing and industrial centers. The Pacific Avenue S/SR 7 HCT Project is within Pierce County's urban growth boundaries and serves the core of the region's second most populous city, Tacoma.

At the north end of the Study Corridor there is a PSRC-designated Regional Growth Center, Downtown Tacoma, plus a PSRC-designated Manufacturing/Industrial Center, the Port of Tacoma.

TRANSIT-ORIENTED DEVELOPMENT

PSRC's TOD program is a continuation of its Growing Transit Communities (GTC) project funded through the U.S. Department of Housing and Urban Development's Sustainable Communities Regional Planning Grant Program.[4] The program focuses on capitalizing on transit investments by growing and strengthening TOD, recognizing that transit investments present once-in-a-lifetime opportunities to support and improve existing communities and meet regional goals through strategies to make great places for people to live and work. These places are compact, equitable communities along the region's growing mass transit corridors that include equitable access to housing, jobs, and services close to transit, where it will be a viable and affordable travel option for many people.

Transit communities included in the GTC work have either existing or planned light rail station locations or other major transit nodes such as Bus Rapid Transit (BRT) station locations. Within the Study Corridor, the following nodes are included in the GTC Strategy:

- Theater District
- Convention Center
- Union Station
- S 25th St Station
- Tacoma Dome

Demographics, economics, land use, housing and housing affordability, and transportation were assessed and included in an Existing Conditions Report for GTC. A TOD Market Study was also prepared

[3] PSRC. February 1, 2017. VISION 2040. https://www.psrc.org/vision-2040-documents. Accessed March 23, 2017.
[4] PSRC. March 22, 2017. Growing Transit Communities Strategy. http://www.psrc.org/growing-transit-communities. Accessed March 23, 2017.

as part of existing conditions and a set of Implementation Approaches was defined. The five nodes in this project fall into the implementation approach "Stimulate Demand." These transit communities are smaller employment centers in older city centers with good form and activity, but that currently have moderate demand for TOD. Key approaches focus on economic development strategies and investments to expand the local job base, fulfill development potential, and expand access to opportunity.

2.2.2 Pierce County

PIERCE COUNTY COMPREHENSIVE PLAN

The Pierce County Comprehensive Plan (2016) defines the County's Urban Growth Area (UGA), and the entire HCT Study Corridor is within this UGA.[5] In addition, most of the Study Corridor not already within the City of Tacoma is identified as a Potential Annexation Area for the city. The comprehensive plan includes policies and guidance for how cities, towns, and the UGA interrelate, and it provides further detail on the regional center and the Manufacturing and Industrial Center (MIC) included within the Study Corridor.

Land Use Element

General policies relevant to locating HCT within the Study Corridor include:

- Designate Centers/Central Places and Transit-Oriented Corridors within the UGA characterized by: intensity/density of uses sufficient to support HCT; pedestrian-oriented land use and amenities; mixed uses and choices in housing types; transportation projects designed to achieve community development objectives of connectivity, walkability, bikeability, and transit support.
- Set mixed-use housing designations to minimum densities of 4 to 12 units per acre and maximums of 25 units, with 30 units allowed for senior and affordable housing.
- Designate the Garfield/Pacific Lutheran University area as a Central Place/Local Center.

Housing Element

Housing stock in unincorporated Pierce County increased by nearly 22 percent between 2000 and 2010 and over 96 percent of the housing stock is in Good/Average condition. The Pierce County Comprehensive Plan projects a housing need over the 20-year planning period of nearly 27 percent more units. The plan provides directions to accommodate this growth as well as to accommodate enough affordable housing for all segments of the community.

Economic Development Element

The Economic Development Element addresses the labor force that commutes out of the county (30 percent) and suggests that development patterns that allow those workers to work closer to home would reduce traffic congestion and free up personal time.

THE PARKLAND-SPANAWAY-MIDLAND COMMUNITIES PLAN

The Parkland-Spanaway-Midland (PSM) Communities Plan was initially adopted in 2002, and was updated as part of the Pierce County Comprehensive Plan.[6] The Study Corridor runs through the center

[5] Pierce County. 2016. Pierce County Comprehensive Plan. http://www.co.pierce.wa.us/950/Comprehensive-Plan. Accessed March 23, 2017.

[6] Pierce County. Appendix I: Parkland-Spanaway-Midland Communities Plan. http://wa-piercecounty2.civicplus.com/DocumentCenter/View/38490. Accessed March 23, 2017.

of the PSM Communities Plan area until the south end of the planning area, where Pacific Avenue then marks its western border. The PSM Communities Plan calls for exploring opportunities to increase transit service in the area, including extending rail to PSM communities and ensuring commercial centers are connected to the regional rail service. The PSM Communities Plan calls for modifying the range of land uses in the area to more closely control density and housing types, with more sub-designations, allowing higher density in multi-family zones and lower-density housing in areas of open space and environmental sensitivity.

2.2.3 Tacoma

There are well over a dozen plans and studies that address different geographic areas or specific projects in the Study Corridor. This section summarizes the major ones most relevant to the project.

TACOMA COMPREHENSIVE PLAN

The City of Tacoma Comprehensive Plan was adopted in 2004 and most recently updated in 2015.[7] Following are summaries of how the comprehensive plan's major elements relate to the Study Corridor.

Urban Form Element

The Urban Form Element defines land use designations and policies relevant to the Pacific Avenue S/SR 7 HCT Study and includes:

- Direct the majority of growth and change to centers, corridors, and transit station areas.
- Promote future residential and employment growth in coordination with transit infrastructure and service investments.
- Establish designated corridors as thriving places that support and connect Tacoma's centers.
- Establish Crossroads Centers[8] as successful places that serve the needs of surrounding neighborhoods and a wider area and contain high concentrations of employment, institutions, commercial, and community services, and a wide range of housing options.
- Partner with Pierce Transit in providing development incentives and programs to improve transit-orientation and walking conditions in all centers.

Housing Element

The Housing Element defines goals and strategies to concentrate new housing in and around centers and corridors near transit and services to reduce the housing/transportation cost burden. Policies include:

- Locate higher density housing, including units that are affordable and accessible, in and around designated centers to take advantage of the access to transportation, jobs, open spaces, schools, and various services and amenities.
- Promote transit supportive densities along designated corridors that connect centers, including duplex, triplex, cottage housing, and townhouses.
- Strive to accommodate 80 percent of the City's housing targets within and around designated centers.

[7] City of Tacoma. 2015. One Tacoma: Comprehensive Plan. https://www.cityoftacoma.org/government/city_departments/planning_and_development_services/planning_services/one_tacoma__comprehensive_plan. Accessed March 23, 2017.

[8] Crossroads Centers are defined as commercial development focused on intersections of major arterials or highways.

- Improve equitable access to active transportation, jobs, open spaces, high-quality schools, and supportive services and amenities in areas with high concentrations of under-served populations and an existing supply of affordable housing.
- Locate new affordable housing in areas that are opportunity-rich in terms of access to active transportation, jobs, open spaces, high quality schools, and supportive services and amenities.

Economic Development Element

The Economic Development Element focuses on economic growth and thriving employment centers. By concentrating commercial areas in centers and along major transportation corridors, the plan intends to ensure there is appropriate zoning and sufficient development capacity to accommodate the 2040 growth allocations. Goals include proactively investing in transportation to grow Tacoma's economic base.

Transportation Master Plan Element

The Transportation Master Plan (TMP) Element recognizes 28 other plans that have influenced the TMP. Among the key mandates of the plan is to accommodate future growth focused in centers in Tacoma for 127,000 new residents and 97,000 new jobs by 2040. The plan identifies the Pacific Avenue S/SR 7 HCT Study Corridor as a location for all-day frequent transit service. In addition to downtown, the Tacoma Comprehensive Plan highlights Upper and Lower Pacific as mixed-use centers with land use patterns and transportation infrastructure developed in a coordinated way to support robust "20-minute neighborhoods," along what is defined as one of Tacoma's three HCT corridors.[9] The Pacific Avenue S/SR 7 HCT Study Corridor is specifically *not* recognized as an "auto-priority" corridor; land use patterns are intended to support TOD with: a compact mix of land uses, including mixed use, residential, and commercial development; moderate to high density housing; affordable housing for all income groups; pedestrian orientation/connectivity; convenient access to transportation choices, including transit, bicycle, and pedestrian facilities; reduced size of surface parking facilities or minimum parking requirements; and high quality design.

Downtown Element

The Downtown Element of the Tacoma Comprehensive Plan challenges itself to "Resolve the questions of how to responsibly increase density while laying the groundwork for a long-term, high quality city environment and maintaining Tacoma's unique character." Sixteen initiatives/sub-plans are recognized as integral to the larger plan emphasizing, among other goals, increasing employment and retail and supporting the University of Washington-Tacoma downtown campus. A Sustainable City is one of four Framework themes that define the City's vision for downtown, among the keys to which are: a transit rich environment, and walkable compact neighborhoods with a variety of housing and retail choices.

North Downtown Tacoma Subarea Plan

The North Downtown Tacoma Subarea is the northern half of the PSRC-designated Tacoma Downtown Regional Growth Center. It includes the commercial core and extends north to include Wright Park, the St. Helens neighborhood, and the Stadium District. Currently, the Pacific Avenue S/SR 7 HCT Study

[9] City of Tacoma. Tacoma Transportation Master Plan. https://www.cityoftacoma.org/government/city_departments/public_works/engineering/transportation_master_plan. Accessed April 4, 2017.

Corridor encompasses the southern three-quarters of this subarea. The North Downtown Subarea Plan[10] sets 2030 growth targets of 30,000 new jobs and 30,000 additional residents, with up to 26 million square feet of new commercial and residential floor space. The Subarea Plan acknowledges that underutilized buildings and properties in the plan area "present an opportunity for development that can accommodate the future growth."

Specific actions to achieve this growth include: reduced parking; expansion of transit; continuing the Multifamily Property Tax Exemption Program; establishing a 25 percent Affordable Housing requirement; prioritizing affordable housing loans and an affordable housing fund; identifying publicly-owned properties for non-profit housing development; applying mixed-use complete streets guidelines; and, implementing pedestrian improvement projects.

The Subarea Plan also suggests taking advantage of the Landscape Conservation and Local Infrastructure Program (LCLIP) created by state law in 2011, which combines Transfer of Development Rights (TDR) with tax increment financing (TIF) to fund public infrastructure.

Tacoma has also created a new Code provision (TMC 13.06.100 E) that supports Live-Work units, which support higher density development.

South Downtown Tacoma Subarea Plan

The South Downtown Subarea is the southern half of the PSRC-designated Tacoma Downtown Regional Growth Center, and includes the Tacoma Dome area and the existing Sounder and Link stations located near the Dome.[11] The 2030 growth target for this area is 20 million square feet of new development with 30,000 new residents and 40,000 new jobs.

The Subarea Plan for this area of downtown recognizes its greater challenges relative to the north half of the Regional Growth Center; South Downtown has experienced lower levels of development and re-development, although the University of Washington Tacoma campus and museums have been positive stimuli. Compared to North Downtown, South Downtown has relatively low population density, a higher rate of low income households, and high poverty and unemployment rates.

The South Downtown Subarea Plan, and its accompanying non-project Environmental Impact Statement, was funded through PSRC's Growing Transit Communities Project and promotes compact, equitable communities along HCT networks.

Proposed actions in the South Downtown Subarea Plan emphasize the area's relation to transit and call for coordinating "with transit agencies to prioritize future high-frequency transit service allocations that will help catalyze redevelopment and the creation of complete communities."

Strategies to support the development targets include: "upfront SEPA [State Environmental Policy Act]," which reduces developer risk by eliminating the requirement for individual project SEPA review; "Transit Infill Review" under Revised Code of Washington (RCW) 43.21C.420, which is a part of upfront SEPA and eliminates the risk of SEPA-based appeals.

[10] City of Tacoma, North Downtown Subarea Plan and EIS. http://www.cityoftacoma.org/cms/One.aspx?pageId=15747. Accessed April 4, 2017.
[11] City of Tacoma. South Downtown Subarea Plan and EIS. http://www.cityoftacoma.org/cms/one.aspx?objectId=15736. Accessed April 4, 2017.

The Subarea Plan also supports use of TDR and "Density Transfers" to raise minimum heights on non-historic infill sites, and city-backed grants and loans to historic property owners for seismic and other upgrades. It calls for using the same Live/Work Code elements called for in the North Downtown Plan, as well as the use of Tax Increment Financing, the collection of Development Impact Fees, and the use of No-Protest Agreements for Local Improvement District (LID) projects in South Downtown.

Strategies also include actions targeted to the area's existing residences related to education, job training, and outreach to improve people's lives and opportunities. There is a strong affordable housing element in the South Downtown Plan – calling for 25 percent affordable housing – to ensure "equitable access to all of the benefits provided by a transit-rich, walkable, mixed-use neighborhood."

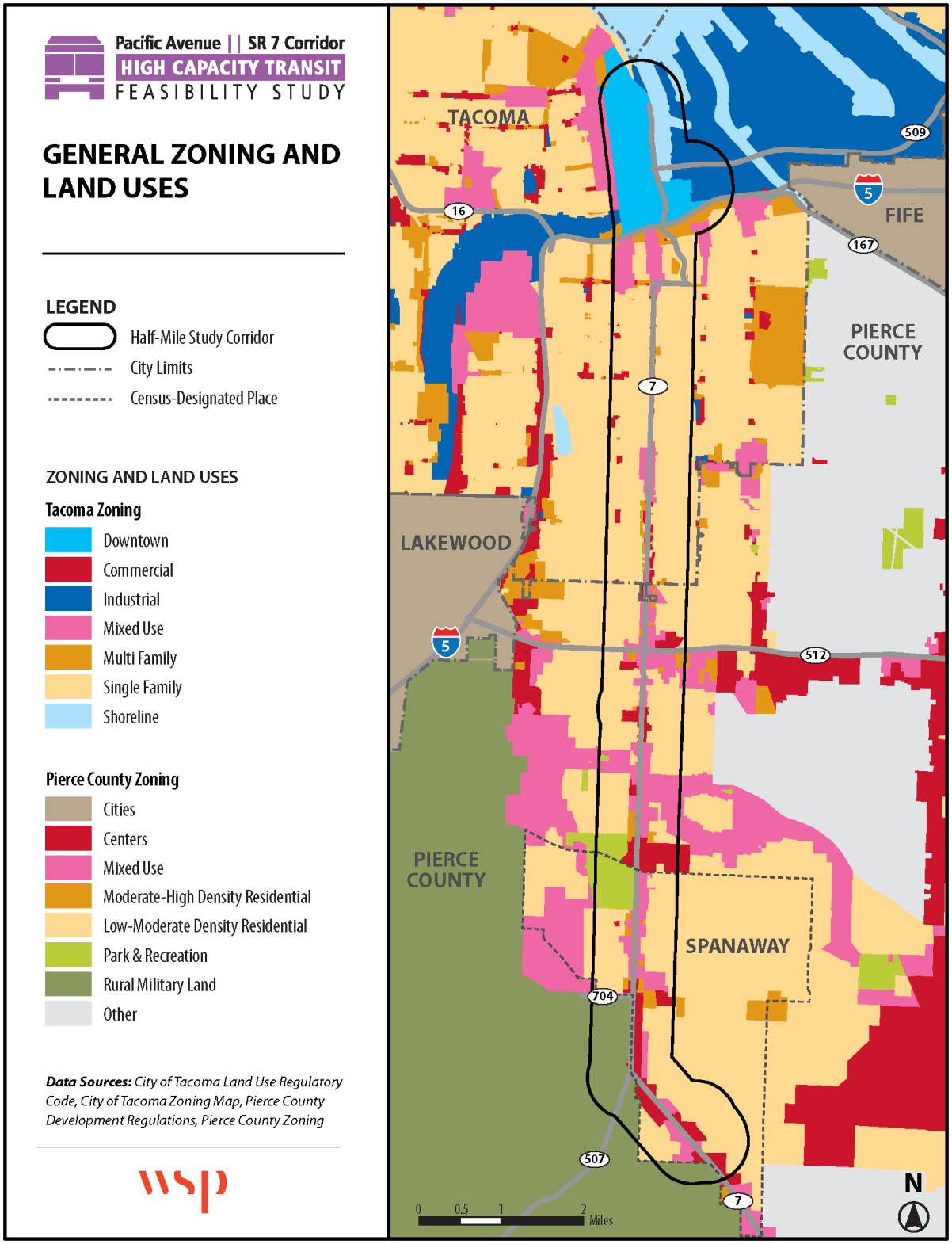
Finally, catalyst redevelopment projects are recommended to jump start the desired changes. More than 20 individual projects are identified in the Subarea Plan, some of which could be public-private partnerships, building in part on PSRC's Growing Transit Communities work.

2.3 EXISTING LAND USES & ZONING DESIGNATIONS

The following description of current zoning and existing land use in the Study Corridor is broken into two segments: Tacoma (Downtown Tacoma and South Tacoma) and Unincorporated Pierce County (Parkland-Spanaway-Midland). Figure 2-5 presents the land use types described in the following sections. Information about the current zoning and land uses within the City of Tacoma came from their municipal code and zoning map.[12,13] Similarly, information about Pierce County's current zoning and land uses came from their code and zoning map.[14,15]

[12] City of Tacoma. March 2017. Title 13 – Land Use Regulatory Code. http://www.cityoftacoma.org/cms/one.aspx?objectId=2255. Accessed March 23, 2017.
[13] City of Tacoma. October 31, 2016. Zoning. http://wspdsmap.ci.tacoma.wa.us/samples/zoning.pdf. Accessed March 23, 2017.
[14] Pierce County. September 2016. Title 18A Development Regulations – Zoning. http://www.codepublishing.com/WA/PierceCounty. Accessed March 23, 2017.
[15] Pierce County. Zoning - Full County: Full County: Zoning. http://yakima.co.pierce.wa.us/MapGallery/index.cfm?event=displayMapInformation&id=198. Accessed March 23, 2017.

Figure 2-5. General Zoning and Existing Land Uses



2.3.1 Tacoma

Tacoma's land use designations include eight residential zones. Other designations define different types of commercial areas, growth centers, designations for Parks and Open Space, Major Institutional Campus and Shoreline. Residential densities are calculated based on underlying densities for each designation, with bonuses for Planned Residential Developments (PRD), additional bonuses for PRD Affordable Housing, and even greater bonuses for PRD with Sustainability Features. This gives the following ranges by dwelling types[16]:

- Single-Family Zone: 5.8-17.5 dwelling units/acre
- Two-Family Zone: 14.5-29 dwelling units/acre
- Multi-Family Low Density: 29-58 dwelling units/acre
- Multi-Family High Density: 43.6-116 dwelling units/acre

DOWNTOWN TACOMA

Current Zoning: Downtown Tacoma is a PSRC-designated Regional Growth Center, which is reflected in its zoning. Beginning at the north end, the Study Corridor west of I-705 and north of I-5 is zoned Downtown, with sub-designations including Commercial Core, Mixed-Use, Residential, and Warehouse/Residential. The area along Thea Foss Waterway is a Combined Shoreline Zone, which allows a mix of uses. The Port of Tacoma area is to the east of the waterway, zoned for Maritime, Heavy, and Light Industrial use.

Existing Land Uses: Downtown Tacoma is heavily developed, although vacant and underutilized parcels and buildings remain. There are currently 45,000 jobs, including financial, health, and professional services.[17] Defined areas/districts in Downtown Tacoma within the Pacific Avenue S/SR 7 HCT Study Corridor include:

- **St. Helens**: Medium density mixed-use with retail, residential and commercial.
- **Commercial Core**: Center with office, government, culture, and commercial.
- **UWT/Museum District**: University of Washington Tacoma campus, Greater Tacoma Convention and Trade Center, several museums, plus some housing and commercial.
- **Old Brewery District**: The least-intensely developed area in Downtown, including a small amount of housing and commercial property and a relatively high-amount of vacant or underutilized property.
- **Dome District**: Tacoma Dome; Sounder, Amtrak, Tacoma Link, Pierce Transit and Sound Transit Bus stations; America's Car Museum; and the Freighthouse Square retail/restaurant center. Like the Old Brewery District, this area of the Regional Growth Center is less intensely developed.
- **Thea Foss Waterway**: Between the Port of Tacoma and downtown, this area is a growing mixed-use neighborhood, with parks, residential, office, and commercial property.
- **Hillside**: Lower density residential, with multi-family and commercial.

[16] Tacoma Municipal Code. http://cms.cityoftacoma.org/cityclerk/Files/MunicipalCode/Title13-LandUseRegulatoryCode.PDFAccessed April 4, 2017.
[17] City of Tacoma. One Tacoma Plan, Chapter Twelve, Downtown. http://cms.cityoftacoma.org/Planning/OneTacomaPlan/1-12Downtown.pdf. Accessed April 4, 2017.

Current zoning allows heights ranging from 90 feet in the Downtown Residential District to 400 feet in the Downtown Commercial Core. The Downtown Regional Center zoning capacity is sufficient to accommodate planned growth of 76,200 new residents and 67,900 new jobs by 2040.[18]

Proposed/Planned Zoning Changes: There are no planned rezones within this segment.

TACOMA SOUTH OF I-5

There are two Crossroads Centers along Pacific Avenue in South Tacoma: Lower Pacific and Upper Pacific.

Lower Pacific Crossroads Center

Current Zoning: Lower Pacific Crossroads Center straddles Pacific Avenue between I-5 and S 40th St with the major intersecting arterial of S 38th St. It is zoned Mixed-Use Center along Pacific Avenue and Single-Family and Multi-Family away from the arterial. Approximately four blocks are zoned as Other Institutional.

Existing Land Uses: A mix of commercial (23 percent), institutional (19 percent), multi-family (14 percent), single-family (13 percent), educational facilities (2 percent), and transportation/utilities (3 percent); vacant land currently accounts for 26 percent of the center.[19] Uses include the Tacoma-Pierce County Health Department, Puget Sound Hospital, and auto-oriented retail and services.

Planned Future Use: A new County Building accommodating more than 1,000 employees is planned for the area.

Proposed/Planned Zoning Changes: A few partial blocks within the Study Corridor are identified as possible multi-family rezones. The nine blocks directly south of the center, along Pacific Avenue, are identified as potential rezones to a mix of Multi-Family (Low Density), Multi-Family (High Density), and Neighborhood Commercial.

Upper Pacific Crossroads Center

Current Zoning: This area is centered around the intersection of Pacific Avenue at S 72nd St and is zoned Mixed-Use Center.

Existing Land Uses: There is a Fred Meyer, and other strip commercial, some small apartment buildings along the arterial, generally one or two stories, and occasionally three stories. These buildings are surrounded primarily by single-family homes and a public park that was previously a private blueberry farm, where blueberries can now be harvested for free. Within the defined center boundaries, commercial uses are 48 percent, multi-family 20 percent, single-family 23 percent, and vacant land 8 percent, with 1 percent other institutional.[20]

[18] City of Tacoma. Downtown Tacoma Regional Growth Center. http://www.cityoftacoma.org/cms/one.aspx?portalId=169&pageId=117951. Accessed April 4, 2017.
[19] City of Tacoma. Tacoma Mixed Use Centers, October 1, 2015. http://cms.cityoftacoma.org/Planning/2015%20Annual%20Amendment/Exhibit%20Section%20B%20-%20MUC.pdf. Accessed April 4, 2017.
[20] Ibid.

Planned Future Use: Retail demand is expected to continue to grow as the trade area grows, with support from additional residential density in the area. The vacant land in the center provides a strong opportunity for new multi-family development.

Proposed/Planned Zoning Changes: No changes planned in this area.

Pacific Avenue in Tacoma outside the Crossroads Centers

Current Zoning: Primarily single-family residential with limited multi-family. There are occasional sites with commercial zoning directly along Pacific Avenue, however the City's plan is to focus mixed-use development in the two Crossroads Centers, rather than evenly along the arterial/highway.

Existing Land Uses: Include residential and strip commercial.

Proposed/Planned Zoning Changes: Extensive areas along Pacific Avenue are targeted for rezoning, primarily along the arterial frontage and primarily for multi-family and neighborhood commercial.

UNINCORPORATED PIERCE COUNTY

Parkland-Spanaway-Midland

The PSM planning area is 20 square miles from the Tacoma City boundary in the north to Joint Base Lewis-McChord in the south. The zoning throughout the PSM planning area is predominantly single-family, but the zoning abutting Pacific Ave/SR 7 is primarily mixed-used and "center" designations, with the exception of some stretches of multi-family zoning.

Current Zoning: For the center as a whole, under current zoning, 18 percent of the land is zoned mixed-use or as one of three types of centers: activity, employment, and community. The remaining land is zoned almost entirely single-family (78.2 percent). There are Special Use zoning designations in areas where these exist; for example Pacific Lutheran University is zoned Major Institution Overlay.

Existing Land Uses: Existing uses and future plans identify commercial nodes at Pacific Avenue and the intersections of 131st Street and 176th Street.[21] Currently, Pacific Lutheran University occupies a large site to the west of Pacific Highway just south of the Tacoma City Limits, and the entire length of the highway is a succession of strip development. More densely developed areas include the stretch between 133rd Street S and 140th Street S, which includes larger retailers, a Pierce County Library branch, smaller strip malls, and multi-family housing. At 176th Street E, a major east-west arterial that becomes SR 704, there is strip development and multi-family housing.

Proposed/Planned Zoning Changes: Proposed changes in Land Use Designations would reduce the land zoned mixed-use from 13.5 percent to 4.7 percent, while increasing high density residential from 0.9 percent to 5.2 percent. No other designation would change by more than two percentage points.

[21] Pierce County Comprehensive Plan, Effective June 30, 2016. http://wa-piercecounty2.civicplus.com/DocumentCenter/View/38483. Accessed April 4, 2017.

2.3.2 Key Destinations & Community Centers

REGIONAL CENTERS

1. **Downtown Tacoma —** Tacoma is the region's second largest city and Downtown Tacoma is a PSRC-designated Regional Growth Center. In 2010, it had 31,502 jobs and 13,360 residents.[22] Major employers include MultiCare Health Systems, CHI Franciscan Health, and City and County governments. Downtown is home to numerous arts institutions and to the University of Washington Tacoma campus. It is currently served by bus, light rail, commuter rail, and Amtrak.
2. **Port of Tacoma —** A PSRC-designated Manufacturing and Industrial Center (MIC), the Port abuts downtown Tacoma and generates 29,000 jobs and nearly $3 billion in economic activity. International trade moving through the Port in 2015 totaled $52.1 billion, with an additional $5.4 billion in trade with Alaska. In January of 2017, the Port recorded a 17 percent year-over-year growth in container cargo.[23]

GOVERNMENT CENTERS

3. **Tacoma Municipal Building —** Houses the Mayor, City Manager, City Council offices, and major city departments with the exception of the municipal court and Tacoma Public Utilities.
4. **County City Building —** Houses Pierce County government, including the Courts, the Sheriff's Department, and the Main Jail.

COLLEGES AND UNIVERSITIES

5. **Bates Technical College —** Founded in 1940 and now operated under the Washington State Board for Community and Technical Colleges, Bates is a two-year public technical college offering Associate's degrees in applied science, certificates in several fields, and transfer credit to four-year colleges and universities. It serves 3,000 career-track students and 20,000 community members.[24]
6. **University of Washington-Tacoma —** A four-year undergraduate, graduate, and post-graduate campus of the University of Washington that opened in 1990. It offers degrees in a wide range of fields, and where it does not offer a full four-year program in a subject, students can transfer to another state college/university campus (or other four-year institution) to complete their degrees. It serves roughly 5,000 undergraduates in the heart of downtown Tacoma and employees almost 1,000 faculty and staff.[25]
7. **Pacific Lutheran University (PLU) —** Founded in 1890, PLU is a private non-profit university serving 3,300 students with undergraduate and graduate degrees in a broad array of fields. [26] The Pierce County Comprehensive Plan also identifies this area as a potential center.

STADIUMS AND ARENAS

8. **Tacoma Dome —** An indoor arena that opened in 1983, the Tacoma Dome seats approximately 17,000 people for sporting events, 23,000 for concerts, and as many as 30,000 for religious

[22] PSRC. Tacoma Downtown Regional Growth Center Profile, 2010 Summary Statistics. https://www.psrc.org/sites/default/files/rgc-profile-tacoma-downtown_0.pdf. Accessed April 5, 2017.
[23] Port of Tacoma. 2014Annual Report. http://www.portoftacoma.com/sites/default/files/2014AnnualReport-web.pdf. Accessed March 23, 2017.
[24] Bates College: About Bates. http://www.bates.ctc.edu/about-bates. Accessed April 4, 2017.
[25] University of Washington Tacoma, phone call to Payroll Office, confirmed enrolment and staffing levels. April 5, 2017.
[26] Pacific Lutheran University. http://www.plu.edu/. Accessed April 4, 2017.

events. It also hosts a variety of expos and fairs, as well as graduation commencement ceremonies for local schools.[27]

HOSPITALS AND MEDICAL CENTERS

9. **St. Joseph Medical Center —** St Joseph is a major hospital and trauma center with around-the-clock services and a number of associated clinics. Opened in 1891, the hospital employs 3,600 people and has 361 licensed beds. In 2016, it served over 54,000 emergency visits, over 111,000 in-patient days, over 238,000 outpatient visits, and nearly 4,300 births.[28]

PERFORMING AND OTHER ARTS CENTERS AND MEETING VENUES

10. **Broadway Center for the Performing Arts/Pantages Theater —** The Pantages Theater opened in downtown Tacoma in 1913 and, along with the Rialto and the Theatre on the Square, makes up the Broadway Center for the Performing Arts. The complex is home to the Tacoma City Ballet, Tacoma Opera, Symphony Tacoma, and others. In 2015, the Center hosted 233,500 total visitors, including 105,000 attending outdoor events, parades, and festivals.[29]
11. **Greater Tacoma Convention and Trade Center —** The Convention and Trade Center offers 119,000 square feet for events, with 800 nearby hotel rooms to host visitors. In addition to conferences and conventions, it hosts trade shows, social events and weddings, sports and competitions, and other meetings.[30]

TACOMA MUSEUM DISTRICT

The Tacoma Museum District comprises six museums within walking distance of each other that are covered under a single annual visitor's pass:

12.A **Children's Museum of Tacoma —** Founded in 1985 by Tacoma parents, the Children's Museum served nearly 170,000 people between June 2014 and May 2015, with an annual budget of $1.3 million, a "Pay as You Will" entrance philosophy (average donation $2.37), and thousands of volunteer hours.[31]

12.B **Tacoma Art Museum —** Founded by volunteers in 1935, the Tacoma Art Museum moved to a new purpose-built facility in 2003 that has since been expanded to provide more display space for owned and traveling exhibits.

12.C **Museum of Glass —** This 79,000 square foot space and the Chihuly Bridge of Glass associated with it opened in 2002, more than a decade after the region had begun to be known worldwide as a center of the Studio Glass movement, sparked in part by Tacoma native Dale Chihuly.

12.D **Washington State History Museum —** This museum is a transformation and expansion of Tacoma's Union Station and is one of two museums operated by the Washington State Historical Society. Permanent and changing exhibits tell the history of the state and its people. This museum permanently houses the largest model train layout in the state.

12.E **LeMay - America's Car Museum —** With 165,000 square feet indoors and a 3.5-acre "show field," the Car Museum opened in 2012 to display the largest privately-owned collection of

[27] Tacoma Dome. https://tacomadome.org/. Accessed April 4, 2017.
[28] CHI Franciscan Health. https://www.chifranciscan.org/st-joseph-medical-center.html. Accessed April 4, 2017.
[29] Broadway Center for the Performing Arts. http://www.broadwaycenter.org/. Accessed April 4, 2017.
[30] Greater Tacoma Convention and Trade Center. https://gtctc.org/. Accessed April 4, 2017.
[31] Tacoma Children's Museum. https://www.playtacoma.org/. Accessed April 4, 2017.

automobiles and memorabilia in the world. During the first summer, over 100,000 people visited the museum, which projects ongoing annual attendance upwards of 400,000.[32]

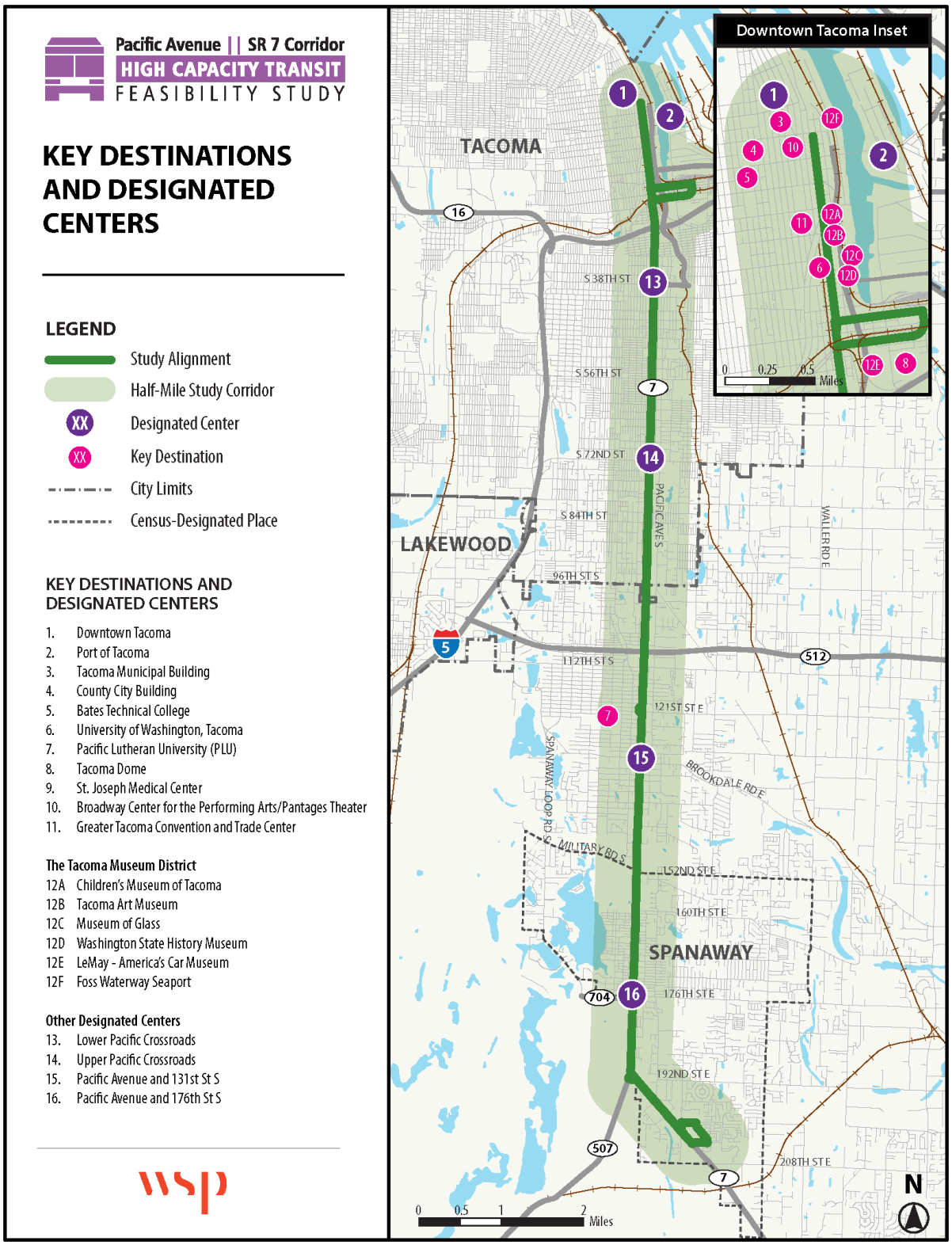
12.F **Foss Waterway Seaport —** Located at Tacoma's original deep-water dock, the Seaport is a Working Waterfront Maritime Museum. In addition to hosting museum-goers, the project has active programs for school-age children in boat-building and aquatic marine and environmental science programs. Over 20,000 visitors and students engage with the project every year.[33]

OTHER DESIGNATED CENTERS

13. **Lower Pacific Crossroads —** The Tacoma Comprehensive Plan defines a crossroads center as a concentration of commercial and/or institutional development that serves many nearby neighborhoods and generally includes a unique attraction that draws people from throughout the city. Some residential development may already be present, and there is a goal to have more residential development. Minimum Allowable Development Density: 25 dwelling units/net acre. Lower Pacific Crossroads Center is just south of downtown and south of I-5, and is intended to become a more active commercial, residential and institutional center.
14. **Upper Pacific Crossroads —** Located around the intersection of S 72nd St and Pacific Avenue, and with excellent automobile access from the surrounding area, this center is anchored by a Fred Meyer and other retail and services. Multi-family housing is clustered along a few blocks of Pacific Avenue with predominantly single-family housing elsewhere.
15. **Pacific Avenue and 131st St S —** This area is identified in the Pierce County Comprehensive Plan as a future commercial node; currently it is auto-oriented strip development.
16. **Pacific Avenue and 176th St S —** This area is identified in the Pierce County Comprehensive Plan as a future commercial node; currently it is auto-oriented strip development.

[32] LeMay America's Car Museum, https://www.americascarmuseum.org/about/. Accessed April 5, 2017.
[33] Foss Waterway Seaport, http://www.fosswaterwayseaport.org/. Accessed April 5, 2017.

Figure 2-6. Key Destinations Within or Near the Study Corridor



2.4 STREET SYSTEM & TRAFFIC ANALYSIS

2.4.1 Street System Overview

The majority of the Study Corridor alignment is on Pacific Avenue S/SR 7. SR 7 is a Washington State operated and maintained highway. The City of Tacoma and Pierce County are responsible for maintenance of the sidewalk within their respective jurisdictions.

The alignment has a spur along Puyallup Avenue and E G/E 26th Street that serves the Tacoma Dome Station. The City of Tacoma has jurisdiction of and maintains these roads except at the southern terminus where the alignment uses 8th Avenue E, 200th Street E, Hidden Village Drive E, and 204th Street, which are owned and maintained by Pierce County.

The Washington State Department of Transportation (WSDOT) assigns functional classifications to all roadways within their jurisdiction. They also require that cities and counties designate functional classification for the roadways within their jurisdiction. Table 2-5 details the functional classification designations of the roadways along the alignment as well as the jurisdictional maintenance responsibility.

Table 2-5: Study Corridor Alignment Functional Classification and Jurisdictional Maintenance Responsibility

Study Corridor Alignment	From	To	Length (miles)	Functional Classification	Maintenance Responsibility*
Pacific Avenue	S 9th Street	S 11th Street	0.15	Major Collector	City of Tacoma
Pacific Avenue	S 11th Street	S 38th Street	2.11	Principal Arterial	City of Tacoma
SR 7	S 38th Street	204th Street E	10.77	Principal Arterial	WSDOT
Puyallup Avenue	SR 7	E G Street	0.51	Principal Arterial	City of Tacoma
E G St /E 26th Street	Puyallup Ave	SR 7	0.61	Major Collector	City of Tacoma
8th Avenue E	SR 7	200th Street E	0.10	Major Collector (Urban)	Pierce County
200th Street E	8th Avenue E	Hidden Village Drive E	0.18	Local Street	Pierce County
Hidden Village Drive E	200th Street E	204th Street	0.30	Local Street	Pierce County
204th Street	Hidden Village Drive E	SR 7	0.19	Local Street	Pierce County

**Back of curb to back of curb. Source: WSDOT. Functional Classification - Map Application. http://www.wsdot.wa.gov/mapsdata/travel/hpms/functionalclass.htm. Accessed March 30, 2017.*

The state and local jurisdictions have standard cross section requirements for each functional class of roadway. Table 2-6 describes the standards for the roads along the Study Corridor alignment.

Table 2-6: Vehicle Miles Traveled and Mileage Guidelines by Functional Classifications

	Urban Other Principal Arterial	Urban Major Collector	Local
Typical Characteristics			
Lane Width	11 feet – 12 feet	10 - 11 feet	8 feet – 10 feet
Inside Shoulder Width	0 feet	0 feet	0 feet
Outside Shoulder Width	8 feet – 12 feet	1 feet – 4 feet	0 feet – 2 feet
AADT	7,000 – 27,000	1,100 – 6,300	80 – 700
Divided/Undivided	Undivided/Divided	Undivided	Undivided
Access	Partially/Uncontrolled	Uncontrolled	Uncontrolled
Qualitative Description	• Serve major activity centers, highest traffic volume corridors, and longest trip demands • Carry high proportion of total urban travel on minimum of mileage • Interconnect and provide continuity for major rural corridors to accommodate trips entering and leaving urban area and movements through the urban area • Serve demand for intra-area travel between the central business district and outlying residential areas	• Serve both land access and traffic circulation in lower density residential, and commercial/industrial areas • Penetrate residential neighborhoods, often only for a short distance • Distribute and channel trips between local streets and arterials, usually over a distance of less than three-quarters of a mile	• Provide direct access to adjacent land • Provide access to higher systems • Carry no through traffic movement

Source: WSDOT. October 2013. Guidelines for Amending Functional Classification in Washington State. https://www.wsdot.wa.gov/mapsdata/travel/hpms/pdf/GuidelinesForAmendingFC_WaState.pdf. Accessed April 2, 2017.

EXISTING ROADWAY CONDITION

Pavement condition on the corridor varies significantly, as indicated by the pavement condition information WSDOT collects for SR 7. Table 2-7 identifies locations on the corridor where pavement condition is poor or very poor. Table 2-8 identifies existing characteristics of the Study Corridor alignment, including length, travel lanes, bikes lanes, and parking.

Table 2-7: General Location of Fair to Poor to Very Poor Pavement Condition

Study Corridor Alignment	From	To	Pavement Condition	
			Northbound	Southbound
SR 7	S 38th Street	S 40th Street	Fair-Poor	Poor-Very Poor
SR 7	S 45rd Street	S 48th Street	Fair-Poor	Poor
SR 7	S 50th Street	S 53rd Street	Poor-Very Poor	Poor-Very Poor
SR 7	S 70th Street	S 74th Street	Fair-Poor	Fair-Poor
SR 7	S 78th Street	S 80th Street	Poor	Good
SR 7	S 82nd Street	S 86th Street	Poor	Very Poor
SR 7	S 112th Street	S 114th Street	Poor	Good
SR 7	121st Street S	Garfield Street S	Poor	Good
SR 7	146th Street S	149th Street S	Poor	Fair
SR 7	149th Street S	153rd Street S	Fair	Poor
SR 7	162nd Street S	165th Street S	Poor	Fair
SR 7	167th Street S	169th Street S	Good	Poor
SR 7	170th Street S	173rd Street S	Poor	Good
SR 7	175th Street S	176th Street S	Good	Poor
SR 7	189th Street S	190th Street S	Very Poor	Fair

Source: WSDOT – Pavement Condition. January 6, 2017. Current Pavement Condition for Washington State Highways. https://www.arcgis.com/home/item.html?id=f49a4724610548c693680fa745b0a44e. Accessed April 2, 2017.

Table 2-8: Study Corridor Alignment Characteristics

Study Corridor Alignment	From	To	Length (miles)	Number of Travel Lanes	Bike Lanes Present	On-Street Parking
Pacific Ave	S 9th St	S 11th St	0.15	2 NB, 2 SB, L Turn at Intersections	Y, sharrows*	Y, Parallel
Pacific Ave	S 11th St	S 17th St	0.43	2 NB, 2 SB, L Turn at some Intersections	Y, sharrows	Y, Parallel
Pacific Ave	S 17th St	S 21st St	0.29	1 NB, 1 SB, L Turn Lane, Transit in Median	N	Y, Parallel & Angle
Pacific Ave	S 21st St	S 24th St	0.22	2 NB, 2 SB, Transit in Median	N	N
Puyallup Ave	SR 7	E G St	0.51	2 EB, 2 WB, Median Turn Lane	N	Y, Parallel
E G St /E 26th St	Puyallup Ave	SR 7	0.61	1 EB, 1 WB	N	Y, parallel
Pacific Ave	S 24th St	S 25th St	0.07	2 NB, 2 SB, Transit in Median	N	Y, parallel on west side
Pacific Ave	S 25th St	S 27th St	0.14	2 NB, 2 SB, L Turn at some Intersections	N	N
Pacific Ave	S 27th St	S 32nd St	0.48	2 NB, 2 SB, L Turn at some Intersections	N	N
Pacific Ave	S 32nd St	S 38th St	0.63	2 NB, 2 SB, Median Turn Lane	N	N
Pacific Hwy/SR 7	S 38th St	S 40th St	0.15	2 NB, 2 SB, Median Turn Lane	N	N
Pacific Hwy/SR 7	S 40th St	S 46th St	0.39	2 NB, 2 SB, L Turn at some Intersections	N	N
Pacific Hwy/SR 7	S 46th St	S 55th St	0.55	2 NB, 2 SB, Median Turn Lane	N	N
Pacific Hwy/SR 7	S 55th St	S 57th St	0.13	2 NB, 2 SB, Median Turn Lane		Y, parallel on west side
Pacific Hwy/SR 7	S 57th St	S 63rd St	0.35	2 NB, 2 SB, Median Turn Lane	N	N
Pacific Hwy/SR 7	S 63rd St	S 65th St	0.18	2 NB, 2 SB, Median Turn Lane	N	Y, parallel at S 64th St intersection
Pacific Hwy/SR 7	S 65th St	S 82nd St	1.04	2 NB, 2 SB, Median Turn Lane	N	N
Pacific Hwy/SR 7	S 82nd St	S 84th St	0.12	2 NB, 2 SB, Median Turn Lane	N	Y, parallel on west side
Pacific Hwy/SR 7	S 84th St	S 112th St	1.77	2 NB, 2 SB, Median Turn Lane	N	N
Pacific Hwy/SR 7	S 112th St	204th St E	6.10	2 NB, 2 SB, Median Turn Lane, L Turn at some Intersections	Y, striped	N
8th Ave E	SR 7	200th St E	0.10	1NB, 1 SB	Y, striped	N
200th St E	8th Ave E	Hidden Village Dr E	0.18	1 EB, 1 WB	N	N
Hidden Village Dr E	200th St E	204th St	0.30	1 NB, 1 SB, Median Turn Lane,	N	N
204th St	Hidden Village Dr E	SR 7	0.19	1 EB, 1 WB	N	N

Source: Googlemaps. Accessed March 30, 2017.

** Also known as Shared Lane Markings (SLM). Road markings used to indicate a shared lane environment for bicycles and automobiles. (Definition provided by National Association of City Transportation Officials (NACTO). Urban Bikeway Design Guide. http://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/shared-lane-markings/. Accessed April 7, 2017.*

FREIGHT

The Washington State Freight and Goods Transportation System classification system is used to classify state highways, county roads, and city streets into the following five tiers of freight tonnage moved on the roadway:

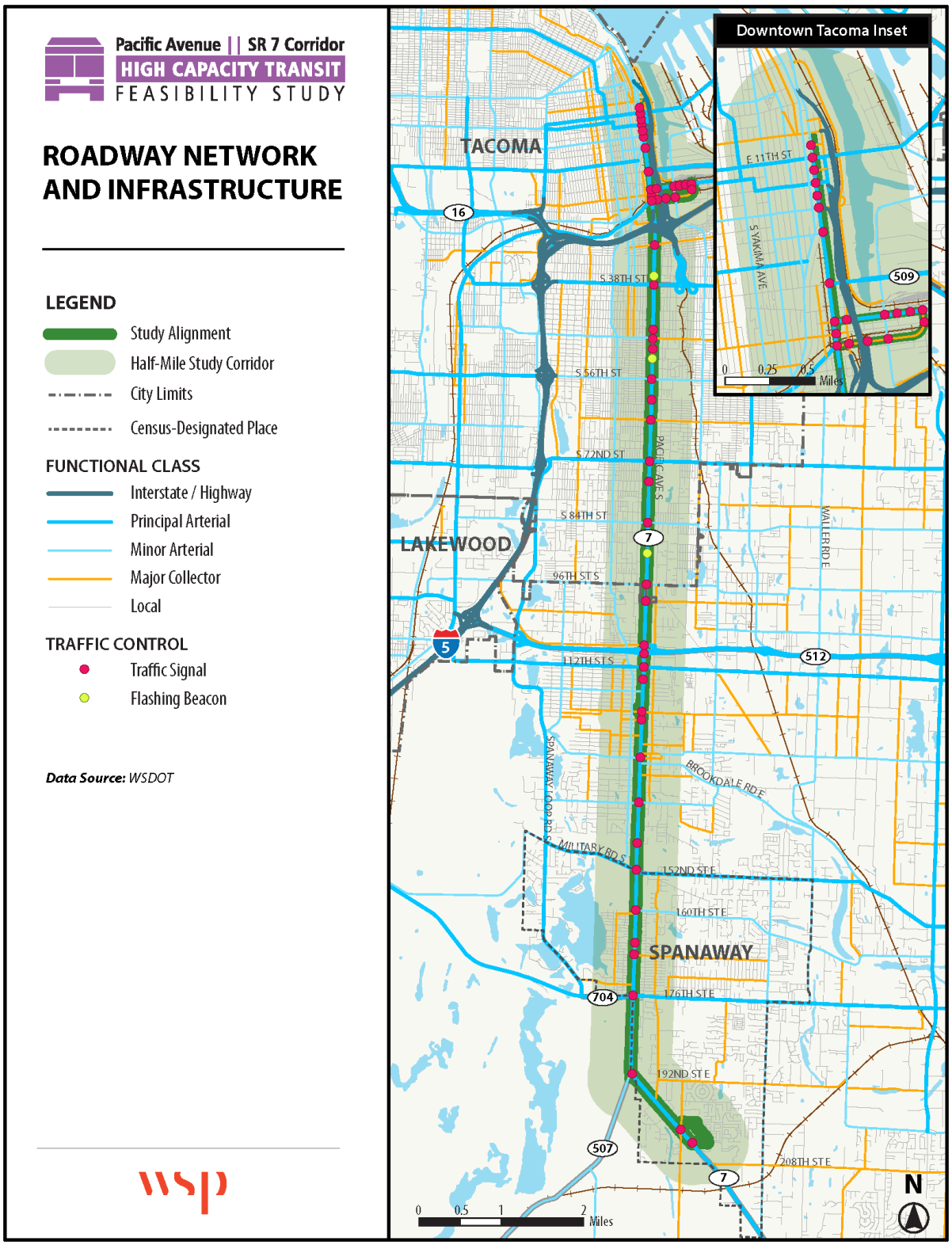
- T-1 – More than 10 million tons per year
- T-2 – 4 million to 10 million tons per year
- T-3 – 300,000 to 4 million tons per year
- T-4 – 100,000 to 300,000 tons per year
- T-5 – at least 20,000 tons in 60 days

Roadways qualifying under T-1 and T-2 are considered Strategic Freight Corridors (SFC).[34] The following segments of Pacific Avenue S/SR 7 are designated Tier 1 and Tier 2 SFC:

- T-2: S 38th Street to SR512
- T-1: SR512 to Roy Y Park-and-Ride
- T-2: Roy Y Park-and-Ride to south terminus

[34] SFCs defined by RCW 47.06A.010 as a transportation corridor of great economic importance within an integrated freight system that carried freight tonnages of at least four million gross tons annually on state highways, city streets, and county roads. Source: http://www.wsdot.wa.gov/Freight/EconCorridors.htm.

Figure 2-7. Study Corridor Roadway Network and Infrastructure



2.4.2 Bicycle and Pedestrian Conditions

The environment and conditions for people walking and bicycling has a high degree of variation over the 14-mile Study Corridor. In general, the northern portion of the Study Corridor within downtown Tacoma is far more pedestrian-friendly than the remainder of the Study Corridor. The Study Corridor transitions to a more auto-oriented arterial environment as you move south, land use patterns become more dispersed, and the pedestrian environment degrades. There are limited bicycle facilities in the Study Corridor. However, downtown Tacoma is a far friendlier environment for bicycling as there are generally lower travel speeds and a higher density of land uses. For the purposes of describing the conditions for people walking and bicycling, the Study Corridor has been divided into six segments, as shown in Table 2-9.

Table 2-9: Segments for Bicycle and Pedestrian Conditions

Segment	Roadway	Limits From	Limits To
1	Pacific Avenue	South 9th Street	Puyallup Avenue
2	Puyallup Avenue	Pacific Avenue	E 26th Street
3	E 26th Street	Puyallup Avenue	Pacific Avenue
4	Pacific Avenue/SR 7	S 26th Street	S 96th
5	Pacific Avenue/SR 7	S 96th	SR 507
6	Mountain Highway/SR 7	Pacific Avenue/SR 7	204th Street East

SEGMENT 1 – PACIFIC AVENUE BETWEEN SOUTH 9TH STREET AND PUYALLUP AVENUE

This segment is a downtown environment that is very pedestrian friendly. Sidewalks on both sides of the roadway throughout this segment are generally wide and feature planting or furnishing zones, providing a buffer between pedestrians and motor vehicle traffic. Sidewalks are in good condition and feature no obvious obstructions that might impact those with limited mobility. Sidewalks in this segment feature a mix of street trees and other furnishing elements, such as benches, post office boxes, and transit shelters.

Bus stops feature bus shelters and posted information for passengers. Bus stops are in-line with the roadway, featuring curb extensions where necessary. Pedestrian scale lighting is found throughout this segment on both sides of the street, which contributes to a comfortable environment for people walking at all times of day.

Most crossings feature a marked crosswalk, but the crossing styles vary from high-visibility continental crosswalk striping to a low-visibility textured surface. Most crossings feature ADA-compliant curb ramps with a textured warning surface. Signalized intersections generally feature pedestrian walk signals.

Many intersections in this segment feature curb-extensions which function to provide additional space for sidewalk users around intersections, shorten crossing distances for pedestrians, and reduce corner radii. However, other intersections in this segment feature wide turning radii, which increases crossing distances for pedestrians as well as turning speeds for motor vehicles.

SEGMENT 2 – PUYALLUP AVENUE BETWEEN PACIFIC AVENUE AND E 26TH STREET

This segment of the Study Corridor is more auto-oriented than Segment 1, largely due to industrial land uses. There is a complete sidewalk network on both sides of the roadway throughout this segment, aside from the westbound direction between East G Street and the exit driveway of the Tacoma Dome

Station. This segment features open access between the BNSF Railway facility and the street, and provides no distinction between the pedestrian zone and vehicle zone.

Overall, sidewalks in the segment are sufficiently wide and feature occasional planting or furnishing zones to provide separation between pedestrians and motor vehicles. Sidewalk condition varies throughout the segment from sidewalks in good repair to areas with cracking and heaving that might present challenges for pedestrians with limited mobility. Some sidewalk segments in this Study Corridor feature street trees, but there is no pedestrian-scale lighting in this segment. Most (but not all) bus stops feature bus shelters and posted information for passengers.

Most crossings lack marked and/or striped crosswalks. There are continental-striped crosswalks across S. 24th Street at A Street. Most crossings feature curb ramps. Curb ramps on the eastern portion of the segment are generally ADA-compliant, including textured warning surfaces. Signalized intersections generally feature pedestrian walk signals.

A few intersections in the Study Corridor feature curb-extensions that provide additional space for sidewalk users around intersections and shorten crossing distances for pedestrians, including at E Street, D Street, and C Street.

Segment 3 – E 26th Street between Puyallup Avenue and Pacific Avenue

This segment becomes more auto-oriented as it moves away from the Tacoma Dome Station. The segment is comprised of a mix of light-industrial, commercial, and residential land uses. The continuity, width, and quality of sidewalks vary widely in this segment. Sidewalk maintenance is an issue at many locations, with instances of overgrown vegetation, cracks, and/or obstructions within the sidewalk.

Most of this segment does not feature pedestrian-scale lighting, but there is lighting near and under the I-705 overpass, a critical location for lighting. Some sidewalk segments feature street trees, however there are no bus shelters.

Most crossings lack marked and/or striped crosswalks. A Street and Pacific Street include continental crosswalks, but many other crossings of 26th Street in this segment lack any crosswalk marking. Most crossings feature curb ramps but generally lack textured warning surfaces. Additionally, many curb ramps are oriented at the apex of the curb rather than towards the crossing area, which can be hazardous to those with limited mobility, particularly wheelchair users who are directed to the middle of the street rather than the crossing.

There are only a few signalized intersections within this segment. Those that have signals feature pedestrian signals as well. Only a few intersections in this segment feature curb-extensions that provide additional space for sidewalk users around intersections and shorten crossing distances for pedestrians, including both D Street and G Street at E 25th Street.

Segment 4 – Pacific Avenue S/SR 7 between S 26th Street and S 96th Street

As the Study Corridor moves south away from downtown Tacoma, the environment becomes far more auto-oriented and arterial. This segment, along with segments 5 and 6, comprise the bulk of the Study Corridor and are generally not friendly environments for pedestrians or bicyclists. High motor vehicle travel speeds, auto-oriented street design, lower density land uses often with large setback, and highly variable pedestrian infrastructure degrade the experience of walking and bicycling.

In contrast to segments 5 and 6, however, sidewalks in this segment are mostly continuous and land uses more dense. Sidewalks feature high variation in width and quality, and are frequently broken up by driveways that cut through the sidewalk and by intersecting roadways that do not feature crosswalks. Most of this segment does not feature pedestrian-scale lighting and most bus stops only feature a post marking the stop. Some sidewalk segments feature street trees, which enhances the pedestrian environment.

Large turning radii at many intersections encourage high automobile turning speeds, creating safety hazards for pedestrians. There is a very notable missing piece of sidewalk in the southbound direction near the I-5 interchange. A worn path here demonstrates existing use and the need for a facility.

As with other pedestrian infrastructure along this segment, intersections vary widely in the existence of and quality of marked crossings. Most marked crosswalks feature continental striping but many of these crosswalks are faded. Most marked crosswalks are at intersections, though there are quite a few mid-block crossings. Some crosswalks feature a pedestrian refuge island, while others are merely striped across the 5-lane roadway, creating a potential hazardous condition for pedestrians.

The existence and quality of curb ramps varies highly intersection-to-intersection and parcel-to-parcel. Signalized intersections generally feature pedestrian signals. Curb extensions are not common in this segment.

SEGMENT 5 – PACIFIC AVENUE S/SR 7 BETWEEN S 96TH STREET AND SR 507

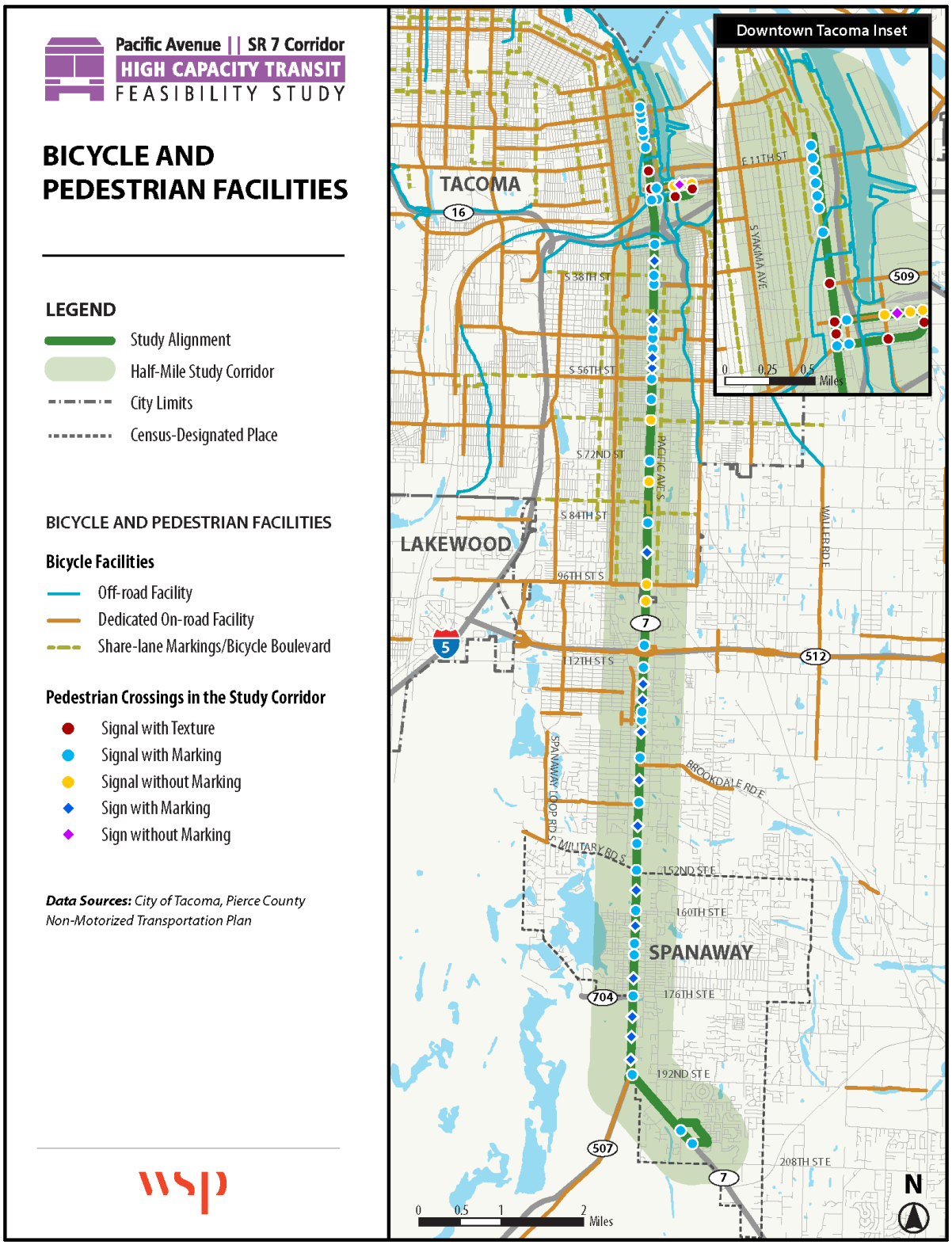
Sidewalks are less frequent in this segment than in segments 1 through 4. Sidewalks are mostly absent between 96th Street and 112th Street. This, combined with the generally open access commercial properties and frequent driveways, greatly curtails pedestrian access and mobility. Similar to segment 4, where sidewalks do exist their quality varies greatly by block and property.

Other pedestrian infrastructure, such as crosswalks, curb ramps, pedestrian signals, and bus stops, is similar to segment 5, with high variability between blocks and parcels.

SEGMENT 6 - MOUNTAIN HIGHWAY/SR 7 BETWEEN SR 507 AND S 204TH STREET E

This segment is almost entirely lacking of sidewalks. There are only two marked crosswalks in this segment—near SR 507 and at the Walmart entrance—but they do not connect to sidewalks. These intersections feature pedestrian signals. There is a bus shelter at the Walmart bus stop.

Figure 2-8. Study Corridor Bicycle and Pedestrian Infrastructure



2.4.3 Traffic

Pacific Avenue S is a major north-south thoroughfare connecting Spanaway to Downtown Tacoma. Traffic volumes vary along the 13-mile stretch of roadway. Average Daily Traffic (ADT) on the south end of the corridor between the Roy 'Y' and Military Road is approximately 38,000 vehicles. Continuing northward, volumes on Pacific Avenue S decline steadily until they reach drop below 10,000 daily vehicles in Downtown Tacoma. Table 2-10 provides ADT data at key intersections along Pacific Avenue S within the Study Corridor. The following discussion is based on a review of these daily volumes, which provides a high-level assessment of conditions in the corridor. As part of the alternatives analysis process to be conducted later in this study, peak hour operations of key intersections will also evaluated which will provide a more comprehensive picture of potential bottlenecks in the corridor that affect transit mobility.

Table 2-10. Traffic Volumes at Key Intersections along Pacific Avenue S (When? In what year were the counts taken?

Pacific Avenue	ADT
South of 11th Street	9,000
South of 21st Street	15,000
South of 26th Street	11,000
South of 38th Street	19,000
North of 72nd Street	21,000
South of 96th Street	20,000
South of 112th Street	32,000
South of Military Road	38,000
South of Roy 'Y'	27,000

Source: WSDOT Olympic Region

The major traffic flow along Pacific Avenue S is mostly directional, heading northbound in the AM peak and southbound in the PM peak. Table 2-11 below summarizes estimated volume to capacity (v/c) ratios at five screenlines along Pacific Avenue. Generally speaking, any v/c ratio less than 0.60 is reflective of free-flow traffic conditions, whereas v/c ratios greater than that reflect increasing congestion—with a v/c ratio of 1.00 being the worst. The highest levels of congestion, corresponding to the highest v/c ratios, occur north of Military Road in both the AM and PM peak periods. Traffic congestion in the off-peak direction is relatively similar throughout the corridor.

Table 2-11. Corridor Congestion (When? In what year were the ratios determined taken?

	Volume to Capacity (v/c) Ratio			
	AM		PM	
Pacific Avenue	NB	SB	NB	SB
North of S 19th Street	0.08	0.20	0.13	0.17
North of E 56th Street	0.71	0.25	0.41	0.68
North of SR 512	0.55	0.28	0.39	0.53
North of Military Road	0.95	0.31	0.57	0.85
North of 208th Street E	0.78	0.24	0.41	0.74

Source: WSDOT Olympic Region

2.4.4 Multimodal Historic Crash Analysis

A review of a five year (2012-2016) crash history was conducted for the Study Corridor, extending from 8th Avenue E at the south end of the corridor to S 9th Street at the north end of the corridor in Tacoma. A total of 2,931 recorded crashes over these five years were reviewed to develop an overview of the travel safety issues along the proposed HCT alignment. An understanding of the crash patterns in the Study Corridor, based on a review of the historical crash data by location, type, year, and severity, can provide insight for helping plan for and design the HCT corridor.

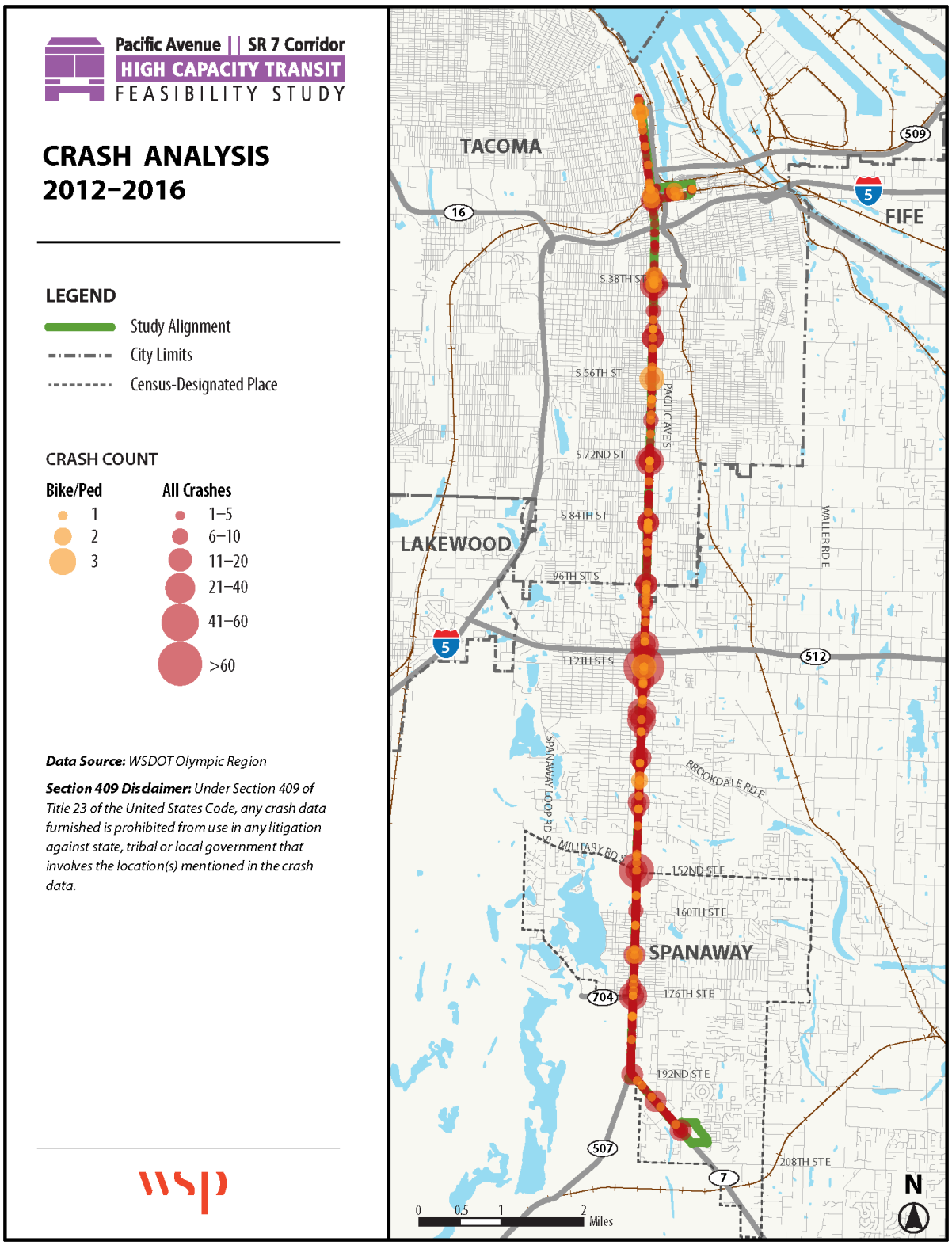
The Study Corridor experiences an average of 1.6 crashes per day, or about three crashes every two days. Crashes likely cause additional congestion in the Study Corridor. There were 13 fatal crashes in the Study Corridor, with 12 fatal crashes along Pacific Avenue and one fatal crash in the loop study area.

Figure 2-9 shows crash locations using graduated symbols corresponding with increased numbers for vehicle crashes and for crashes involving pedestrians and bicyclists. The figure illustrates a clustering of vehicle crashes around key crossroads and commercial districts such as at the Cross Base Highway, Military Road, 112th Street S, SR 512, and S 72nd Street. The incidence of crashes involving pedestrians is of key interest in this review of Study Corridor safety since most transit riders are walking to access bus stops.

Pedestrian and bicycle crashes have occurred at multiple locations along the Study Corridor alignment, for a total of 137 crashes recorded along Pacific Avenue in the five year period (89 crashes involving pedestrians and 48 crashes involving bicyclists). Another five pedestrian crashes and two bicycle crashes were reported within the loop study area. Pedestrian and bicycle crashes occur primarily near the intersections, but not always at the signalized crossings. Crashes involving pedestrians and bicyclists were logged as one of three types: vehicle traveling straight (possible jay-walking or in crosswalk), vehicle turning left (with permissive left-turn movement), or vehicle turning right (failure to yield to pedestrian). Bicycle crashes were logged based on the vehicle movement: vehicle turning right (majority of the crashes), vehicle traveling straight, vehicle turning left, or vehicle passing/overtaking or merging.

A total of five pedestrian and one bicyclist crashes were fatal during the five year analysis period, with two fatal pedestrian crashes occurring at one location near 180th Street E and near a marked crossing adjacent to bus pullouts. All five of the pedestrian fatalities involved vehicles traveling straight along the roadway, striking the pedestrian: four at mid-block locations and one at an unsignalized intersection. The bicycle fatality occurred on E 25th Street near E G Street where a turning truck struck the bicyclist. The roadway corridor is a long stretch of five-lane roadway with occasional marked crossing locations and often long spacing between signalized crossings.

Figure 2-9: Corridor Multimodal Crash Count



Rear-end crashes are the most common type of crash in the Study Corridor, accounting for approximately half of the total crashes reported. Along with sideswipe crashes, rear-end crashes are an indication of high volumes of traffic in the Study Corridor and high levels of congestion at the major arterial and cross-roads intersections, especially during peak travel periods.

Left-turn and right angle crashes may indicate the need for a higher level of traffic control at an intersection—being either signalized control or left-turn signal control.

Figure 2-10: SR 7 Crash Summary

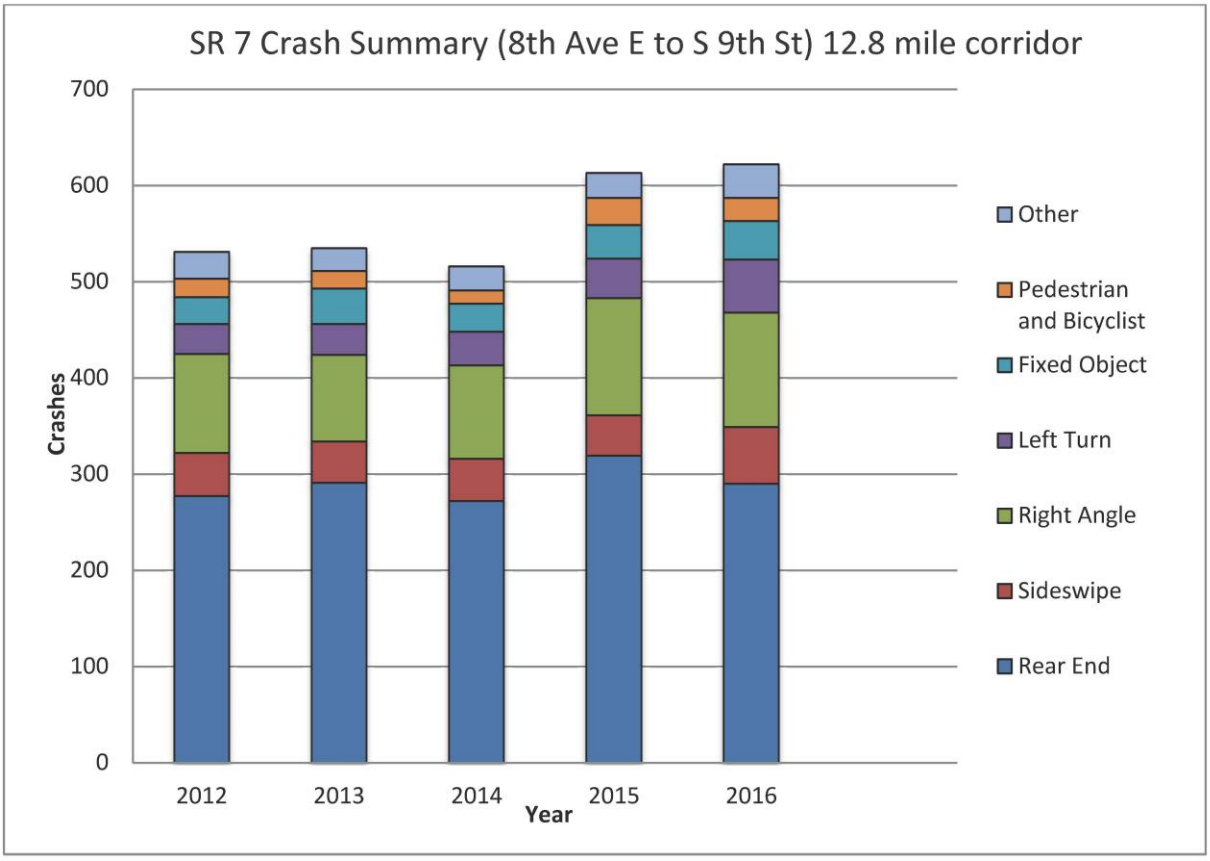


Table 2-12. Summary of 5 Years of Crash Data for the Study Corridor Intersections

SR 7 MP	Segment	Intersection Cross Street	Signal (S) or Unsignalized (U)	Crashes over 5 years (2012-2016)	Average Crashes per Year	Severity		# Pedestrian Crashes	# Bicycle Crashes
						# Fatal Crashes	# Injury Crashes (Evident and Serious)		
46.45	SR 7, Mtn Hwy	8th Ave E	S	44	8.8	0	2		
47.36	SR 7, Mtn Hwy	SR 507 Junction	S	30	6	1	6		
48.31	SR 7/Pacific Ave S	Cross Base Highway	S	78	15.6	0	6*		2
48.82	SR 7/Pacific Ave S	168th Street S	S	28	5.6	0	2*	3	
48.96	SR 7/Pacific Ave S	166th Street S	S	21	4.2	0	3		
49.37	SR 7/Pacific Ave S	159th Street S	S	22	4.4	0	1*		
49.86	SR 7/Pacific Ave S	Military Road S	S	105	21	0	5*	1	
50.03	SR 7/Pacific Ave S	149th Street S	U	34	6.8	0	1		
50.19	SR 7/Pacific Ave S	146th Street S	S	13	2.6	0	0		
50.61	SR 7/Pacific Ave S	140th Street S	U	28	5.6	0	3		2
50.67	SR 7/Pacific Ave S	138th Street S	S	38	7.6	0	1		
50.97	SR 7/Pacific Ave S	134th Street S	U	19	3.8	0	3*	3	1
51.24	SR 7/Pacific Ave S	Tule Lake Road	S	22	4.4	0	2*		
51.7	SR 7/Pacific Ave S	Garfield Street	S	43	8.6	0	0		1
51.17	SR 7/Pacific Ave S	131st Street S	U	42	8.4	0	2		2
51.57	SR 7/Pacific Ave S	124th Street S	U	24	4.8	0	2		1
51.79	SR 7/Pacific Ave S	121st Street S	S	49	9.8	0	1		
52.18	SR 7/Pacific Ave S	114th Street S	U	58	11.6	0	2*		1
52.34	SR 7/Pacific Ave S	112th Street S	S	116	23.2	1	4*	3	2
52.5	SR 7/Pacific Ave S	SR 512 On/Off Ramp	S	94	18.8	1	5	2	3
52.61	SR 7/Pacific Ave S	108th Street S and SR 512 WB ramps	S	58	11.6	0	3*		
53.35	SR 7/Pacific Ave S	S 96th Street	S	57	11.4	0	9*		1
53.76	SR 7/Pacific Ave S	Pedestrian Crossing with flasher	U	1	0.2	0	1	1	
54.03	SR 7/Pacific Ave S	Mid-block between 86th and 84th Street	U	3	0.6	0	5	3	
54.1	SR 7/Pacific Ave S	S 84th Street	S	49	9.8	0	8*	4	
54.61	SR 7/Pacific Ave S	S 76th Street	S	23	4.6	0	1		

SR 7 MP	Segment	Intersection Cross Street	Signal (S) or Unsignalized (U)	Crashes over 5 years (2012-2016)	Average Crashes per Year	Severity		# Pedestrian Crashes	# Bicycle Crashes
						# Fatal Crashes	# Injury Crashes (Evident and Serious)		
54.85	SR 7/Pacific Ave S	S 72nd Street	S	94	18.8	0	11*	3	1
55.35	SR 7/Pacific Ave S	S 64th Street	S	16	3.2	0	2		1
55.6	SR 7/Pacific Ave S	S 60th Street	S	15	3	0	1	2	1
55.86	SR 7/Pacific Ave S	S 56th Street	S	24	4.8	0	4	3	
56.22	SR 7/Pacific Ave S	S 50th Street	S	3	0.6	0	1		
56.36	SR 7/Pacific Ave S	S 48th Street	S	27	5.4	1	2*	1	
56.46	SR 7/Pacific Ave S	S 46th Street	S	15	3	0	1	3	1
57.03	SR 7/Pacific Ave S	S 38th Street	S	55	11	0	6*	3	2
	Pacific Avenue S	S Tacoma Way/S 26th Street	S	14	2.8	1	2	2	0
	Pacific Avenue S	S 24th Street/S Puyallup	S	10	2	0	2	1	1
	Pacific Avenue S	S 21st Street/ SR 705 LX	S	36	7.2	0	2	0	1
	Pacific Avenue S	S 15th Street	S	5	1	0	0	0	0
	Pacific Avenue S	S 13th Street	S	13	2.6	0	2	2	0
	Pacific Avenue S	S 11th Street	S	14	2.8	0	4	2	2
	Pacific Avenue S	S 9th Street	S	8	1.6	0	1	0	1

2.5 PUBLIC TRANSPORTATION

2.5.1 Bus Routes and Key Transfers to Other Modes

Pierce Transit, founded in 1979, covers 292 square miles of Pierce County with roughly 70 percent of the county population. Pierce Transit provides four types of service: fixed route, SHUTTLE paratransit, vanpools and seasonal trolleys. Pierce Transit is one of three public transportation providers serving the Study Corridor. The others are:

- **Sound Transit**: plans for, builds and operates express bus, light rail and commuter train services in the urban areas of King, Pierce and Snohomish counties.
- **Intercity Transit**: provides fixed route bus and paratransit service in Olympia, Lacey, Tumwater, and Yelm with three routes that serve downtown Tacoma.

Today, Pierce Transit provides frequent bus service on Pacific Avenue S/SR 7 via bus Route 1. This route is referred by Pierce Transit as a 'trunk line' and is the highest ridership bus route in their system. Pierce Transit's Destination 2040 Long Range Plan identifies Route 1 for HCT.[35]

Route 1 travels on Pacific Avenue S/SR 7 between Tacoma Community College (TCC) and the Walmart in Spanaway at 8th Avenue and operates every 15 minutes between 5:30AM and 11:30PM on weekdays. Weekend service operates approximately every 20 minutes between 6:30AM and 9:30PM.

Table 2-13 lists the public transportation routes that provide direct transfers to Route 1. These are also shown on Figure 2-11. In addition to the bus routes that have direct transfer opportunities to Route 1, there are several other public transportation options within or near the Study Corridor, including:

- Sound Transit: Tacoma Link
  - 1.6 mile alignment serving five stations along the Study Corridor alignment:
    - Tacoma Dome Station
    - South 25th Street Station
    - Union Station
    - Convention Center Station
    - Commerce Street Station
  - There are plans to extend Tacoma Link 2.4 miles to the Hilltop Neighborhood, including six new stations and one relocated station in the Theater District.[36]
- Amtrak Tacoma Station (1001 Puyallup Avenue) provides access to:[37]
  - Amtrak Cascade operates service between Vancouver, B.C. and Eugene, Oregon with multiple train departures every day of the week
  - Coast Starlight operates service between Los Angeles and Seattle with one train departure every day of the week
  - Thruway Bus service from the Tacoma Station is provided to serve communities without rail service

[35] Pierce Transit. April 11, 2016. Destination 2040 | Pierce Transit Long Range Plan. file:///C:/Users/bones/Downloads/Destination_2040_LRP_050916_Web.pdf.
[36] Sound Transit. Tacoma Link Expansion. https://www.soundtransit.org/tacomalinkexpansion. Accessed April 4, 2017.
[37] Amtrak. Northwest Train Routes. https://www.amtrak.com/northwest-train-routes. Accessed April 3, 2017.

- Greyhound (510 Puyallup Ave) buses provide daily service north and south along the I-5 corridor between Los Angeles and Vancouver, B.C.[38] Greyhound provides service to more destinations than Amtrak trains.[39]

Table 2-13: Public Transportation Routes with Transfers to Route 1

Route No.	Description
Pierce Transit	
2	S 19th Street – Bridgeport Way: Lakewood Transfer Center (TC) to 10th & Commerce TC
3	Lakewood – Tacoma: Lakewood TC to 10th & Commerce TC
11	Point Defiance: 10th & Commerce TC (Zone F) to Point Defiance Ferry Terminal
13	N 30th Street: Proctor Street N & N 24th St to Tacoma Dome Station
15	Downtown to Defiance Trolley: Demonstration trolley service (from June 2 through September 3), operating between downtown Tacoma and Point Defiance Park via Ruston Way
16	UPS – TCC: TCC Transit Center to 10th & Commerce TC
28	S 12th Street: TCC Transit Center to 11th Street S & Pacific Avenue
41	Portland Avenue: Tacoma Mall TC to 10th & Commerce TC
42	McKinley Avenue: 72nd St TC to 10th & Commerce TC
45	Yakima: Parkland TC to 10th & Commerce TC
48	Sheridan – M Street: Lakewood TC to 10th & Commerce TC
57	Tacoma Mall: Tacoma Mall TC to 10th & Commerce TC
63	NE Tacoma Express: 10th & Commerce TC to 39th Avenue SW & Northshore Parkway
102	Gig Harbor Express: MLK Jr Way & Division Avenue to Purdy P&R
400	Puyallup – Downtown Tacoma: South Hill Mall TC to 10th & Commerce TC
500	Federal Way: 10th & Commerce TC to Federal Way Transit Center
501	Milton – Federal Way: 10th & Commerce TC to Federal Way Transit Center
Sound Transit	
590	Express Bus: Seattle to 10th & Commerce TC
594	Express Bus: Seattle to DuPont Station
Intercity Transit	
603/605/612	Express Bus: Olympia Transit Center to 10th & Commerce TC

[38] Greyhound. Tacoma Current Schedules. http://bustracker.greyhound.com/stops/780879/Tacoma_WA. Accessed April 3, 2017.

[39] Depending on Greyhound bus selected, riders can travel to the following cities: Los Angeles, Bakersfield, Fresno, Stockton, Sacramento, Marysville, Oroville, Chico, Red Bluff, Redding, Weed, Medford, Medford, Grants Pass, Roseburg, Eugene, Corvallis, Salem, Woodburn, Portland, Kelso, Centralia, Olympia, Tacoma, Seattle, Everett, Mt. Vernon, Bellingham, Coquitlam, and Vancouver, B.C.

Figure 2-11. Bus Routes and High Transfer Points/Locations

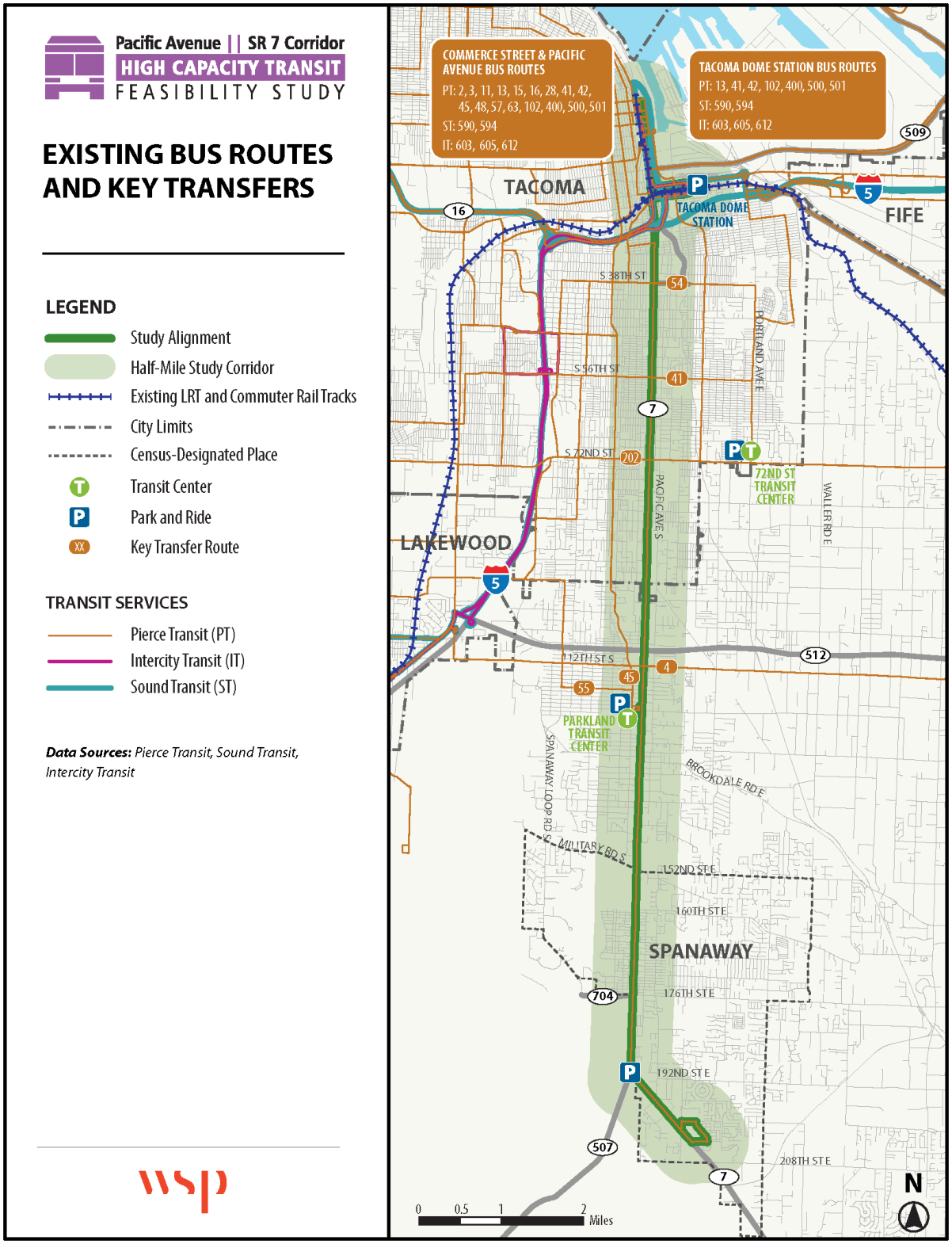
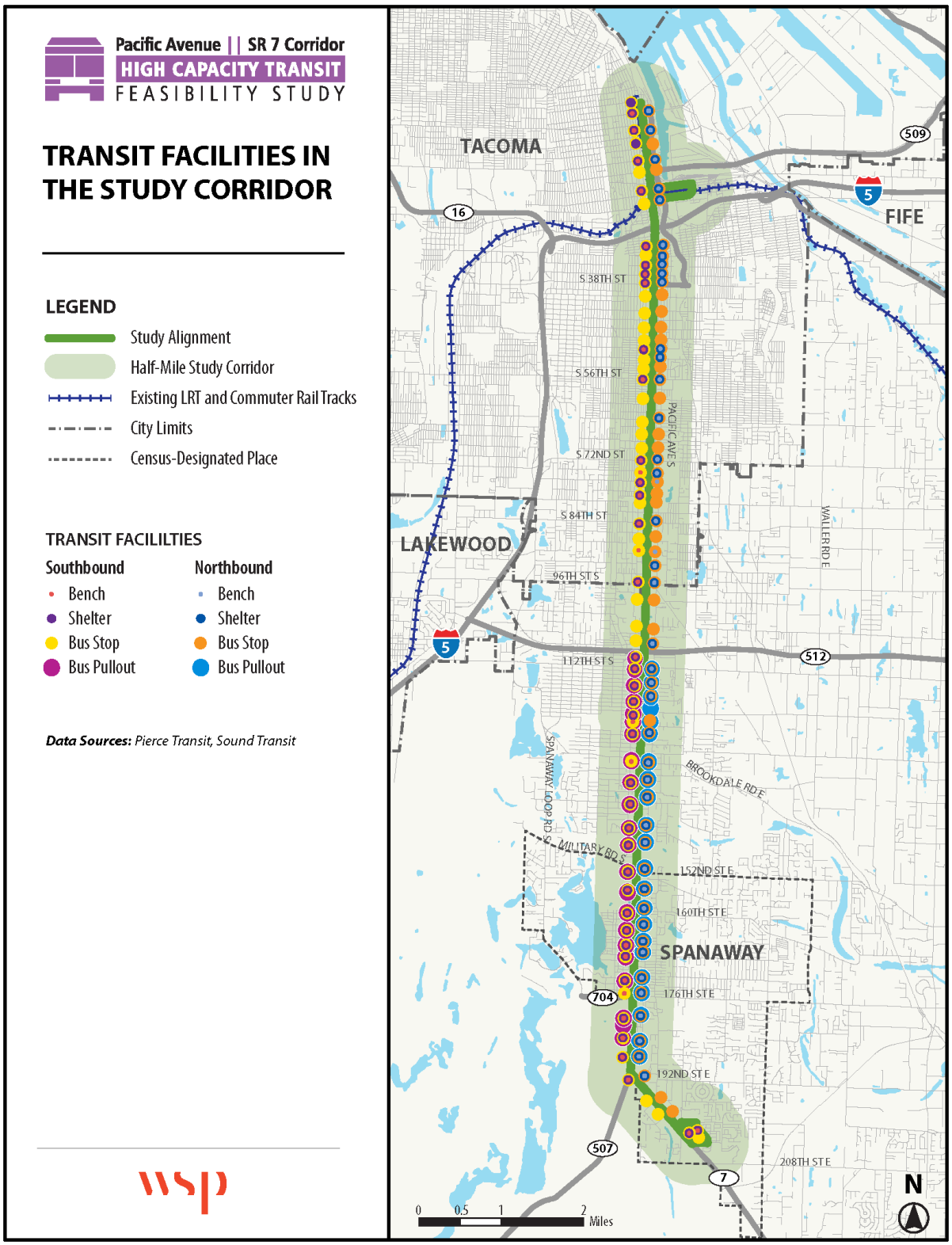


Figure 2-12. Transit Facilities in the Study Corridor



2.5.2 Transit Ridership by Stop

ROUTE 1: AVERAGE DAILY BOARDINGS

In October 2016, there were over 5,500 average daily weekday boardings on the Pierce Transit Route 1 (2,800 northbound and 2,760 southbound). Figure 2-13 shows the distribution of these boardings in the Study Corridor by travel direction using graduated symbols corresponding with increased numbers of boardings.

In the northbound direction, 6 stops averaged over 90 passengers boarding daily; these are listed in Table 2-14. Three out of the top six stops in the northbound direction are in downtown Tacoma. Similarly, three of the top five stops in the southbound direction are also in downtown Tacoma. The most popular stop on Route 1 is the Tacoma Community College (TCC) Transit Center which is not within the Study Corridor and not shown on Figure 2-13. The TCC Transit Center stop averaged over 500 daily boardings. The other highest ridership stops in the southbound direction are also listed in Table 2-14.

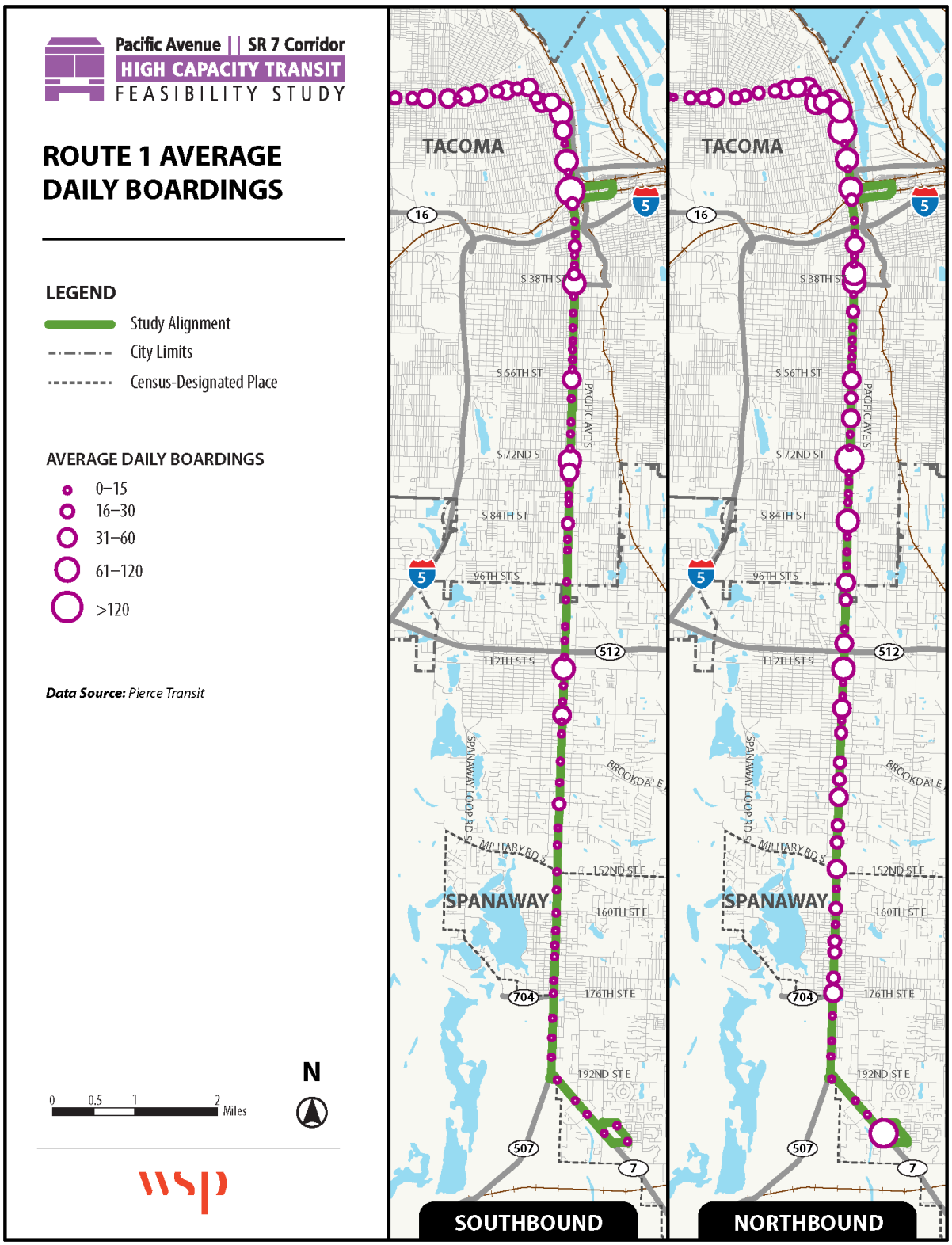
Table 2-14. Highest Average Daily Boarding Stops by Direction

Direction	Stop Location	Boardings
Northbound	Mountain Highway and 8th (WalMart)	277
	Pacific Avenue and 14th	217
	Pacific Avenue and 72nd	142
	9th and Saint Helens*	114
	Pacific Avenue and 112th	106
	Pacific Avenue and 11th	92
Southbound	Pacific Avenue and 24th	193
	Pacific Avenue and UW Campus	120
	Pacific Avenue and 11th	118
	Pacific Avenue and 112th	108
	6th and Pearl*	98
Terminus	TCC Transit Center	508

Source: Pierce Transit Automatic Passenger Count (APC) Data (October 2016).

** Route 1 stop is not within the Study Corridor*

Figure 2-13. Ridership by Stop

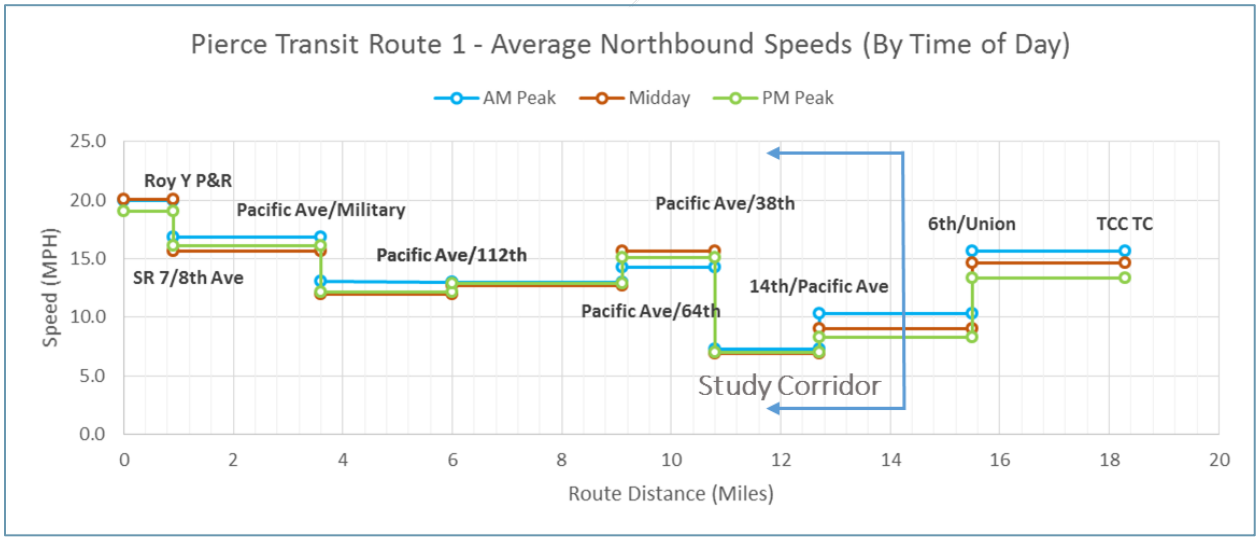


2.5.3 Transit Travel Time By Time of Day

Figure 2-14 and Figure 2-15 below show average travel speeds by time of day and direction for the Pierce Transit Route 1. Table 2-15 shows the travel times between these same points by time of day. As these figures indicate, the northbound direction experiences very little variability between the average AM Peak, Midday, and PM Peak periods. Overall, travel speeds tend to be the highest towards the start of the northbound route and experiences the highest delay between Pacific Avenue S/38th Street and Pacific Avenue S/14th Street in downtown Tacoma. Speeds pick up again beyond 14th Street, which is outside of the Study Corridor. Speeds vary along the Study Corridor between a high of 20 miles per hour (MPH) in the AM peak between SR 7/8th Avenue and Roy Y Park and Ride, to a low of just under 7 MPH during the Midday period between Pacific Avenue S/64th Street and Pacific Avenue and 14th Street in downtown Tacoma.

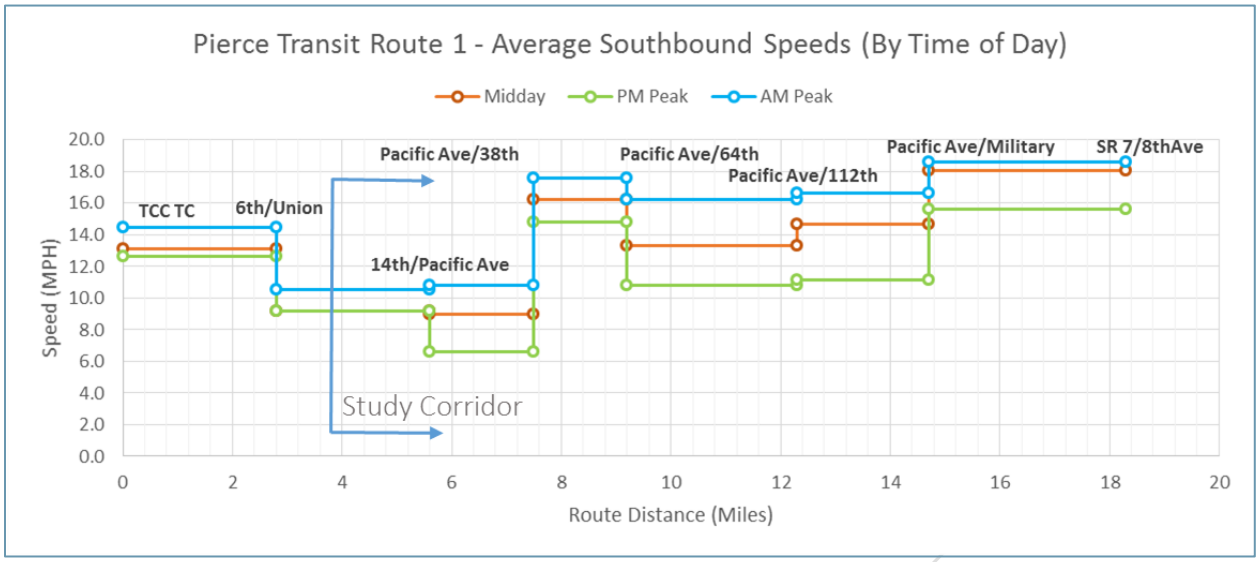
In contrast, the southbound direction of Route 1 experiences a high degree of variability between times of day with a general degradation of speeds from AM Peak to Midday to PM Peak—reflecting higher congestion levels and more volatility in roadway operations during the PM peak in the southbound direction. This impact is greatest between Pacific Avenue S/14th Street and Pacific Avenue S/38th Street where average speeds drop from over 10 MPH in the AM Peak to just over 6 MPH in the PM Peak (leading to an approximate 7 minute or 62 percent increase in travel times in this segment), and between Pacific Avenue S/64th Street and Pacific Avenue S/Military Road where speeds drop from just over 16 MPH in the AM Peak to approximately 11 MPH in the PM Peak (a 6 minute or 51 percent increase from 64th Street to 112th Street and a 4 minute or 48 percent increase from 112th Street to Military Road).

Figure 2-14. Pierce Transit Route 1 - Average Weekday Northbound Speeds (By Time of Day)



Source: Pierce Transit AVL Data (October 2016)

Figure 2-15. Pierce Transit Route 1 - Average Weekday Southbound Speeds (By Time of Day)



Source: Pierce Transit AVL Data (October 2016)

Table 2-15. Route 1 Average Travel Times (in minutes), Northbound and Southbound Directions

Direction	From	To	AM Peak	Midday	PM Peak
Northbound	SR 7/8th Ave	Roy Y P&R	2.7	2.7	2.8
	Roy Y P&R	Pacific Ave/Military	9.6	10.4	10.1
	Pacific Ave/Military	Pacific Ave/112th Ave	11.1	12.0	11.9
	Pacific Ave/112th Ave	Pacific Ave/64th Ave	14.3	14.6	14.5
	Pacific Ave/64th Ave	Pacific Ave/38th Ave	7.2	6.5	6.8
	Pacific Ave/38th Ave	14th/Pacific Ave N	15.6	16.6	16.2
	14th/Pacific Ave N	6th/Union	16.3	18.7	20.3
	6th/Union	TCC TC	10.8	11.5	12.6
Southbound	TCC TC	6th/Union	11.6	12.8	13.3
	6th/Union	14th/Pacific Ave S	16.0	18.2	18.3
	14th/Pacific Ave S	Pacific Ave/38th Ave	10.6	12.7	17.2
	Pacific Ave/38th Ave	Pacific Ave/64th Ave	5.8	6.3	6.9
	Pacific Ave/64th Ave	Pacific Ave/112th Ave	11.4	14.0	17.2
	Pacific Ave/112th Ave	Pacific Ave/Military	8.7	9.8	12.9
	Pacific Ave/Military	SR 7/8th Ave	11.6	12.0	13.8

Source: Pierce Transit AVL Data (October 2016)

2.5.4 Transit Service Reliability (On Time Performance)

Pierce Transit's on-time performance standard is that a bus cannot be more than one minute early or more than five minutes late at a designated timepoint to be considered on-time. On-time performance on the south leg of the existing Route 1 shows significant weekday variability. While there are several ways of expressing bus route travel time variability, an initial review of October 2016 automatic vehicle location (AVL) data on this line shows average end-to-end times within five minutes of scheduled times during all period and in both the southbound and northbound directions.

Average travel times, however, may not be the best illustration of how on-time performance affects riders and the service attractiveness. A common review of schedule reliability would also include

measurement of a 90th percentile on-time performance. The basis for this measurement is that the 90th percentile performance shows what a rider could expect on 9 out 10 weekday trips, a reasonable tolerance for schedule unreliability for regular travelers.

The 90th percentile measure for this same October 2016 AVL data for both AM peak and midday periods shows actual travel times running about 6 to 10 minutes late, and AM peak time in both directions running about 15 minutes late. A rider experiencing a 15-minute late arrival at least once a week may be significantly inconvenienced.

Further, looking at the 25th percentile, the travel time is 60 minutes; this means that many trips actually travel much faster than scheduled time. Therefore, these fast trips offset the trips that are very late, creating an average travel time that is very close to the scheduled time. This only serves to highlight the extreme variability of the travel time and the difficult to manage headways and schedule travel times throughout the day within the study corridor.

Table 2-16 presents a simple summary of the data discussed.

Table 2-16. Transit Service Reliability

	Schedule time	Average Time	90th Percentile Time
AM Peak (Avg. Both Directions)	56 min	58 min	64 min
Midday (Avg. Both Directions)	58 min	59 min	68 min
PM Peak Northbound	58 min	62 min	73 min
PM Peak Southbound	67 min	68 min	82 min

Source: Pierce Transit AVL Data (October 2016)

3 FUTURE CONDITIONS

3.1 POPULATION AND EMPLOYMENT AND HOUSEHOLD PROJECTIONS

Table 3-1 shows that population in the Study Corridor is projected to grow by nearly 25 percent between 2010 and 2040. In 2015, there were roughly 3,800 people per square mile on average in the Study Corridor (as detailed Table 2-1 of this report). The 2040 projections predict over 5,500 people per square mile on average in the Study Corridor, representing a density increase of over 40 percent. On average, between 2010 and 2040 Pierce County will experience an increase in population and overall density, with nearly a 16 percent increase in population and 35 percent increase in average persons per square mile.

Table 3-2 shows employment within Pierce County and the Study Corridor is expected to increase as well. In 2010, jobs in the Study Corridor represented nearly 10 percent of the jobs in Pierce County. In 2025 and continuing further into the future, the jobs in the Study Corridor will represent upwards of 11.4 to 11.9 percent of the county jobs. In total, the Study Corridor had nearly 31,500 jobs in 2010. In 2040, jobs in the Study Corridor are forecasted to increase to just over 59,000, representing an increase of over 35 percent.

Table 3-1. Population Growth

	Square Miles	2010	2025	2030	2040	% Change 2010 to 2040	Persons per Square Mile (2040)
Pierce County	1,806.2	795,225	958,669	1,004,669	1,109,294	15.7%	614
Study Corridor	14.5	53,963	65,196	68,943	80,255	23.1%	5,535
Study Corridor Portion of County	0.8%	6.8%	6.8%	6.9%	7.2%	n.a.	n.a.
Half-Mile Study Corridor Census Tracks							
53053060200	1.12	224	315	359	464	47.3%	414
53053060600	0.00	10	13	14	15	15.4%	3,097
53053061400	0.18	2,188	4,073	4,901	7,428	82.4%	41,267
53053061500	0.07	719	1,035	1,275	2,010	94.2%	28,714
53053061601	0.29	1,824	2,250	2,806	5,341	137.4%	18,417
53053061602	0.41	956	4,223	5,804	9,557	126.3%	23,310
53053061700	0.15	674	1,046	1,200	1,710	63.5%	11,400
53053061800	0.10	541	557	575	671	20.5%	6,710
53053061900	4.01	1,961	2,116	2,205	2,491	17.7%	621
53053062000	0.30	1,543	1,632	1,693	1,844	13.0%	6,147
53053062300	0.13	702	817	848	923	13.0%	7,100
53053062400	0.88	5,471	5,920	6,226	6,580	11.1%	7,477
53053062500	0.15	952	1,011	1,082	1,329	31.5%	8,860
53053062600	0.05	53	102	104	177	73.5%	3,540
53053063100	0.13	594	646	673	733	13.5%	5,638
53053063200	0.87	4,619	5,189	5,359	5,807	11.9%	6,675
53053063300	0.00	11	12	12	13	8.3%	10
53053063400	1.31	6,677	7,905	8,320	9,047	14.4%	6,906
53053063501	0.10	555	602	656	680	13.0%	6,800
53053063502	0.10	678	749	777	831	10.9%	8,310
53053071403	0.82	1,388	1,671	1,518	1,331	-20.3%	1,623
53053071408	0.47	1,684	1,684	1,674	1,616	-4.0%	3,438
53053071409	0.25	1,335	1,531	1,462	1,175	-23.3%	4,700
53053071410	1.12	2,843	3,263	3,314	3,454	5.9%	3,084
53053071411	0.67	2,422	2,582	2,488	2,358	-8.7%	3,519
53053071503	0.72	1,670	1,661	1,622	1,572	-5.4%	2,183
53053071504	0.52	2,825	3,000	2,967	2,904	-3.2%	5,585
53053071505	0.82	2,470	2,908	2,669	2,367	-18.6%	2,887
53053071506	0.03	98	99	97	91	-8.1%	3,033
53053071602	0.58	2,364	2,782	2,474	2,185	-21.5%	3,767
53053071705	0.52	2,105	2,039	2,014	1,923	-5.7%	3,698
53053071707	0.30	1,774	1,665	1,644	1,520	-8.7%	5,067
53053072906	0.97	15	77	87	85	10.4%	88
53053940007	0.01	16	21	22	23	9.5%	2,300

Source: PSRC, 2040 Forecast.

**Data totals were estimated for census tracts that partially fall within the half-mile Study Corridor by multiplying the total for the tract by the proportion of the tract within the half-mile Study Corridor.*

Table 3-2. Employment Growth

	Square Miles	2010	2025	2030	2040	% Change 2010 to 2040	Employees per Square Mile (2040)
Pierce County	1,806.2	318,372	382,299	400,825	498,991	30.5%	276
Study Corridor	14.5	31,494	43,561	47,498	59,024	35.5%	4,071
Study Corridor Portion of County	0.8%	9.9%	11.4%	11.9%	11.8%	n.a.	n.a.
Half-Mile Study Corridor Census Tracks							
53053060200	1.12	1,156	1,434	1,558	2,165	51.0%	1,933
53053060600	0.00	2	2	2	3	50.0%	619
53053061400	0.18	3,924	3,386	3,580	4,607	36.1%	25,594
53053061500	0.07	1,267	1,310	1,400	1,661	26.8%	23,729
53053061601	0.29	10,100	15,869	17,592	20,479	29.1%	70,617
53053061602	0.41	3,524	7,761	9,135	12,201	57.2%	29,759
53053061700	0.15	382	622	709	977	57.1%	6,513
53053061800	0.10	110	128	134	171	33.6%	1,710
53053061900	4.01	1,343	1,737	1,923	2,569	47.9%	641
53053062000	0.30	182	267	296	389	45.7%	1,297
53053062300	0.13	42	52	55	66	26.9%	508
53053062400	0.88	825	1,059	1,127	1,320	24.6%	1,500
53053062500	0.15	133	142	154	205	44.4%	1,367
53053062600	0.05	280	370	421	654	76.8%	13,080
53053063100	0.13	141	51	161	599	1074.5%	4,608
53053063200	0.87	518	712	777	1,273	78.8%	1,463
53053063300	0.00	1	2	2	2	0.0%	2
53053063400	1.31	1,398	1,479	1,617	2,642	78.6%	2,017
53053063501	0.10	156	164	192	274	67.1%	2,740
53053063502	0.10	61	83	95	122	47.0%	1,220
53053071403	0.82	234	365	348	310	-15.1%	378
53053071408	0.47	452	419	456	475	13.4%	1,011
53053071409	0.25	141	122	105	108	-11.5%	432
53053071410	1.12	552	547	542	560	2.4%	500
53053071411	0.67	391	532	557	604	13.5%	901
53053071503	0.72	754	763	764	803	5.2%	1,115
53053071504	0.52	1,200	1,202	1,243	1,311	9.1%	2,521
53053071505	0.82	304	406	418	339	-16.5%	413
53053071506	0.03	4	4	4	5	25.0%	167
53053071602	0.58	573	1,091	756	701	-35.7%	1,209
53053071705	0.52	569	655	652	681	4.0%	1,310
53053071707	0.30	565	551	548	572	3.8%	1,907
53053072906	0.97	197	161	161	163	1.2%	168
53053940007	0.01	14	15	15	14	-6.7%	1,400

Source: PSRC, 2040 Forecast.

**Data totals were estimated for census tracts that partially fall within the half-mile Study Corridor by multiplying the total for the tract by the proportion of the tract within the half-mile Study Corridor.*

3.2 FUTURE TRAFFIC CHARACTERISTICS TRAFFIC VOLUME

As was the case for existing conditions, the following discussion is based on a review of average daily traffic (ADT) volumes, which provides a high-level assessment of conditions in the corridor. As part of the alternatives analysis process to be conducted later in this study, peak hour operations at key intersections will also be evaluated, which will provide a more comprehensive picture of potential bottlenecks in the corridor that affect transit mobility.

Though little growth is forecasted for traffic volumes south of the Roy 'Y,' traffic volumes for the rest of Pacific Avenue are forecasted to grow approximately one to two percent annually through 2025 as shown in Table 3-3. Growth rates then slow when forecasting out to 2045, ranging between 0.5 percent and 1.7 percent annual growth. The largest growth rates in traffic are projected for the north end of the corridor. The forecasted ADT volumes for Pacific Avenue in 2045 ranges from 25,000 to 44,000 vehicles along the corridor.

Table 3-3. 2015 and Forecasted Traffic Volumes at Key Points on the Study Corridor

Pacific Avenue	Base Year ADT	Forecasted ADT	
	2015	2025	2045
South of Roy 'Y'	27,000	28,000	29,000
South of Military Road	38,000	42,000	44,000
South of 96th Street	20,000	23,000	25,000
South of 38th Street	19,000	22,000	26,000
South of 21st Street	15,000	18,000	25,000

Source: WSP| PB

3.2.1 Traffic Congestion

General traffic congestion trends are not forecasted to change dramatically by 2025 or 2045. The major traffic flow along Pacific Avenue S is expected to remain mostly directional, heading northbound in the AM peak and southbound in the PM peak. Table 2-11 below summarizes estimated future volume to capacity (v/c) ratios at five screenlines along Pacific Avenue. Generally speaking, any v/c ratio less than 0.60 is reflective of free-flow traffic conditions, whereas v/c ratios greater than that reflect increasing congestion—with a v/c ratio of 1.00 or greater being the worst. The AM peak continues to see relatively consistent volume to capacity ratios in the off-peak direction with the peak direction seeing volumes approaching or exceeding the roadway's capacity—indicating the potential for high levels of congestion. In both 2025 and 2045, the AM peak sees higher levels of congestion than the PM peak period.

Table 3-4. 2025 and 2045 Traffic Congestion at Key Points on the Study Corridor

	2025 Volume to Capacity Ratio				2045 Volume to Capacity Ratio			
	AM		PM		AM		PM	
Pacific Avenue	NB	SB	NB	SB	NB	SB	NB	SB
North of S 19th Street	0.15	0.31	0.20	0.27	0.20	0.45	0.51	0.45
North of E 56th Street	0.89	0.29	0.52	0.80	0.89	0.36	0.56	0.82
North of SR 512	0.68	0.31	0.46	0.61	0.70	0.33	0.48	0.67
North of Military Road	1.02	0.33	0.62	0.94	1.07	0.30	0.60	0.98
North of 208th Street E	0.87	0.25	0.44	0.77	0.90	0.26	0.46	0.78

Source: DKS / WSP| PB

3.3 FUTURE TRANSIT CHARACTERISTICS

3.3.1 Estimated 2040 Ridership

The future ridership on the Pierce Transit Route 1 was estimated using the Sound Transit 3 regional ridership model. These results are categorized by segment in Table 3-5. Overall, ridership along the Route 1 alignment is expected to increase between 27 percent (low estimate) and 60 percent (high estimate) by 2040. While all segments show increases in ridership, the middle part of the corridor, between 14th and 64th, is projected to have the greatest gains. While the results of this analysis have a reasonable degree of accuracy at a higher level, the regional model used is not designed to conduct a finer grain, stop-by-stop analysis. A more rigorous exercise will be conducted as part of the alternatives analysis portion of this study.

Table 3-5. Estimated 2040 Daily Boardings for Pierce Transit Route 1 (weekday)

Route Segments	Base Year (2014)	2040 (Low)	2040 (High)
TCC Transit Center - 6th/Union	1,210	1,520	1,950
6th/Union - 14th S/Pacific Ave	1,360	1,430	1,860
14th S/Pacific Ave - Pacific Ave/38th	1,230	1,700	2,170
Pacific Ave/38th - Pacific Ave/64th	670	910	1,170
Pacific Ave/64th - Pacific Ave and 112th	510	700	890
Pacific Ave/112th - Pacific Ave/Military	540	690	760
Pacific Ave/Military – SR 7/8th Ave	360	520	590
Total Daily	5,880	7,470	9,390

Note: Data summarized from ST3 Plan Models. The boardings shown above for 2040 corresponds to 2040 ST3 Baseline results

3.3.2 Transit Travel Time and Reliability

Based on a preliminary, high-level assessment of daily traffic volumes and corridor volume-to-capacity (v/c) ratios, there is expected to be some degradation of travel times, both for general purpose traffic and for transit, along the study corridor by 2045—particularly in the AM northbound direction. Congestion is expected to increase in both directions along the entirety of the corridor which will likely lead to slower travel speeds and less transit reliability. Based on this relatively high-level preliminary analysis, while the roadway capacity (i.e., number of lanes) may not to need to be substantially increased in the future, it is likely that a number of key bottleneck locations in the corridor will need to be addressed to facilitate current and future transit speed and reliability. Field observations have shown that a number of intersections within the corridor experience peak period congestion, and these are likely to get worse in the future. A more detailed intersection analysis will be done as part of the alternatives analysis process to identify these locations and develop potential improvements to facilitate improved transit speed and reliability through them.

3.4 PLANNED INFRASTRUCTURE PROJECTS

Ongoing and planned infrastructure projects are being implemented on the corridor now or scheduled to be constructed in the foreseeable future. These improvements include roadway widening and transit improvements by WSDOT, Pierce Transit, and Pierce County.

- **WSDOT** kicked-off construction of the new Amtrak Cascades Station in July of 2016 at Tacoma's Freighthouse Square. The new station will open in 2017.[40]
- **Pierce Transit** identifies this HTC study in their Transit Development Plan.[41] They also identify:
  - Repair and refurbishing the Tacoma Dome Station (mid-life improvements)
  - Route 1 Bus Zone Enhancements: This project will complete bus zone enhancements along the Route 1 corridor to accommodate the future use of higher capacity articulated or double-decker buses. Cost: $161,000.
- **Pierce County**'s Transportation Improvement Program identifies one project that will impact the Study Corridor alignment:
  - 112th Street S/112th Street E: This project will widen 112th Street along a 0.30 mile segment between 'C' Street S and 'A' Street S to provide turn lanes(s), install pedestrian facilities, and install illumination. A cost estimate for this project has not yet been developed.[42]
- The City of Tacoma has identified projects on perpendicular streets to the Study Corridor alignment within their amended Transportation Improvement Program.[43] None of the identified project directly impact the study corridor.
- Sound Transit 3 includes extending light rail from Federal Way to the Tacoma Dome.[44]
- WSDOT's Connecting Washington Program includes funding to complete the Puget Sound Gateway Program, which will connect SR 167 as a limited access facility from Puyallup west across I-5 and into the Port of Tacoma. This facility will change regional and subarea travel patterns in the north Pierce County area, including in the Pacific Avenue S/SR 7 corridor.[45]

3.5 Study Corridor Market Potential

In total, six Study Corridor segments stand out from a market perspective as listed below. A more detailed market conditions analysis will be conducted for specific station locations as part of the alternatives analysis.

- **Downtown Tacoma segment**: The real estate markets, over the long-term, have been strong in Downtown Tacoma. Support for new development in the future is reasonable to expect, subject to the cyclical nature of real estate markets.
- **Waterfront segment**: The Waterfront segment is unique. The area is industrial in nature and is separated from transit service by significant barriers; the Foss Waterway, BNSF Rail Yard, and changes in topography.
- **Tacoma Dome:** The market segment contains a significant multi-modal transit hub. There are many competing uses in the area; the BNSF Rail Yard, SR 509, SR 705, I-5, Commuter and Light

[40] WSDOT. New Amtrak Cascades Station at Freighthouse Square. http://www.wsdot.wa.gov/Projects/Rail/PNWRC_PtDefiance/TacomaAmtrak.htm. Accessed April 3, 2017.
[41] Pierce Transit. Transit Development Plan: 2016-2021. https://www.piercetransit.org/documents/. Accessed April 3, 2017.
[42] Pierce County. 2017. Public Works. Transportation Programs. 2017-2022 Six-Year Transportation Improvement Program. http://www.co.pierce.wa.us/ArchiveCenter/ViewFile/Item/5292. Accessed March 30, 2017.
[43] City of Tacoma. July 12, 2016, as amended. Six-Year Comprehensive Transportation Improvement Program. http://cms.cityoftacoma.org/PublicWorks/Engineering/6YRTIP_FINAL071216.pdf. Accessed March 30, 2017.
[44] Sound Transit 3. Projects Full List. http://soundtransit3.org/map#full-list. Accessed April 6, 2017.
[45] WSDOT. March 2017. Puget Sound Gateway Program. https://www.wsdot.wa.gov/Projects/Gateway/. Accessed April 6, 2017.

Rail alignments, the Tacoma Dome, and the LeMay Car Museum. Although redevelopment in the area has been slow to evolve, it is reasonable to expect that as Downtown Tacoma continues to grow, future development activity will spill over into the area.

- **PLU segment**: The area around 123rd Street (PLU) is a micro-market centered around the university. PLU generates demand for campus facilities, related businesses, and housing. While demand is somewhat limited and contained to the area immediately surrounding PLU, it is reasonable to expect the market will support additional development over the long term.
- **I-5 to 40th Street segment**: This segment offers proximity to downtown, access to I-5, and underutilized land. These factors suggest the area has development potential, especially as prices rise downtown and push development elsewhere. A portion of this segment also benefits from Tacoma's Multifamily Property Tax Exemption Program (MPTE) designation.
- **68th Street to 80th Street segment**: A portion of this segment is designated as an MPTE area, so this segment will likely attract attention from multi-family developers in the future.
- **SR 512 segment**: A small cluster of newer multifamily buildings are within proximity to the intersection of Pacific Avenue and SR 512. Occupants find the proximity to SR 512 attractive and developers are drawn to the low-cost land.