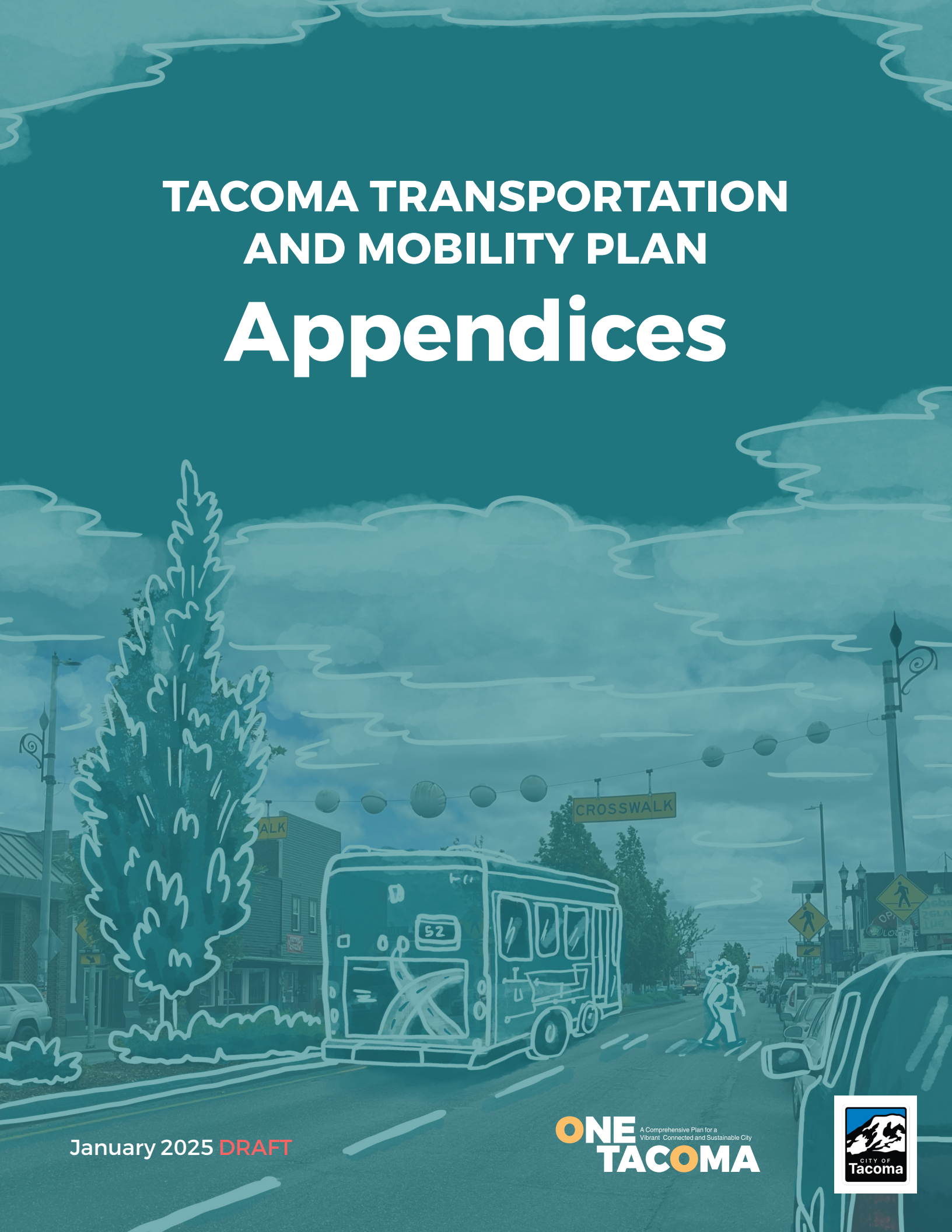
TACOMA TRANSPORTATION AND MOBILITY PLAN

Appendices



January 2025 DRAFT

ONE TACOMA
A Comprehensive Plan for a Vibrant Connected and Sustainable City

CITY OF Tacoma

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INTRODUCTION

Fehr & Peers used Pierce County's recently developed activity-based model, PierceCast, for the Tacoma TMP analysis. Complete details on the model development and validation are provided in *Travel Demand and DTA Models Design for Pierce County* (RSG, May 20, 2022). PierceCast is a focused version of PSRC's regional activity-based model, SoundCast, that has been calibrated and validated to travel behavior throughout Pierce County. The existing year scenario reflects 2018 conditions and the future year scenario estimates 2044 conditions.

For the TMP, Fehr & Peers changed the existing year to 2022 conditions, reviewed the roadway network within the City of Tacoma for accuracy, updated the land use based on information provided by the City, and adjusted model parameters to better match 2022 traffic volumes. Results were provided to the project team from the 2022 and 2044 scenarios.

ROADWAY NETWORKS

Fehr & Peers reviewed the transportation networks (freeway, arterial, and transit) for consistency with 2022 conditions and 2050 planned projects. The following roadways were updated to reflect current conditions or recently completed projects:

- Reduce Yakima Bridge to one lane in each direction
- Closed 11th St Bridge between Portland Ave and Milwaukee Way

The following improvement projects were coded into the 2050 future year model, per direction from the City of Tacoma:

- Narrow Cedar St from S 19th St to Center St from five lanes to three lanes
- Reconfigure Puyallup Ave from C St to Portland Ave E from five lanes to three lanes, with an additional eastbound bus-only lane.
- Reduce S 11th St and S 12th St from Sprague to Cedar St to one westbound travel lane
- Construct new S Burlington Way (formerly North Access Road) from S 35th St to S 48th St with one traffic lane in each direction

No changes to the transit networks were made to the 2050 scenario.

LAND USE

The City of Tacoma provided updated land use estimates for both the 2022 existing year and 2050 future year using a custom zone system. The parcel land use in PierceCast was updated following these zones boundaries using a tool developed by Fehr & Peers. The zone system includes 383 zones within the City. Table 1 below summarizes the number of households and jobs by subarea. The map on the following page shows the zone boundaries and subareas highlighted.

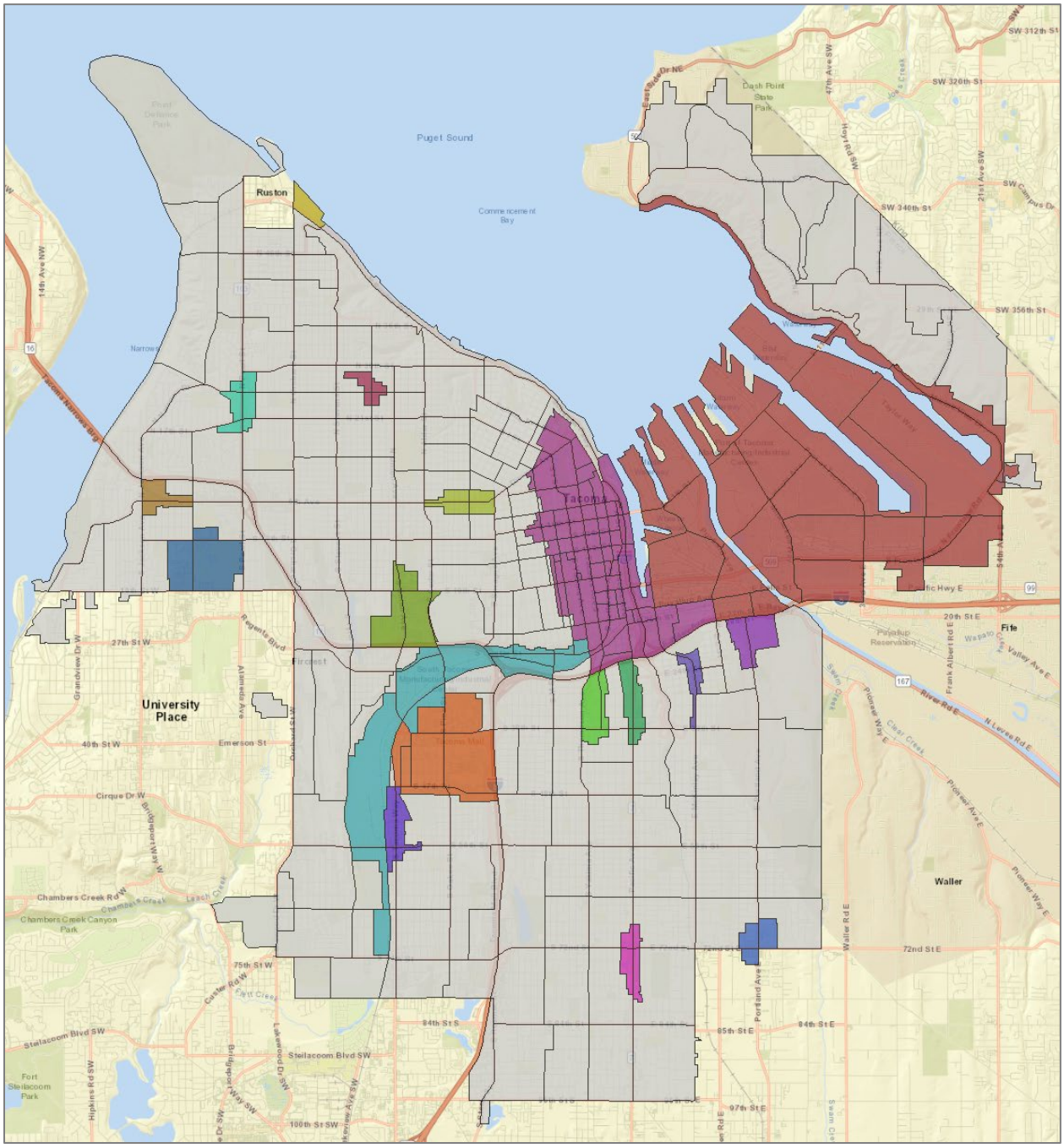
Table 1 City of Tacoma Land Use Summary by Subarea

Subarea	2022 Households	2022 Employment	2050 Households	2050 Employment
34th & Pacific	208	1,229	1,441	2,957
38th & G	380	670	2,299	809
56th & STW	151	850	1,522	2,508
6th Ave & Pine St	810	1,140	3,003	1,278
72nd and Pacific	483	779	1,580	2,162
72nd and Portland	165	820	1,193	2,202
James Center	413	1,670	1,440	2,223
Lower Portland Avenue	287	710	1,521	2,782
McKinley	387	400	1,757	538
MLK	1,682	10,904	5,869	24,099
Narrows	278	290	1,101	428
North Downtown	2,924	13,648	11,085	30,165
Point Ruston	547	160	1,095	298
Proctor	296	1,120	845	1,189
South Downtown	2,292	12,838	8,004	28,369
South Tacoma MIC	0	7,360	0	14,729
Stadium	452	673	1,577	1,485
Tacoma Central	365	5,231	1,393	7,993
Tacoma Mall	2,720	10,449	5,460	17,820
Tideflats MIC	0	10,339	0	17,710
Westgate	80	1,220	1,109	2,741
Outside Subareas	81,950	30,111	98,413	40,273
Total	*96,870*	*112,611*	*151,707*	*204,758*

Source: Fehr & Peers, 2024.

Outisde the City of Tacoma, the Pierce County land use totals were extrapolated to the year 2050 using the zonal totals for 2018 and 2044. For King, Snohomish, and Kitsap counties, PSRC's 2050 LUV-it land use forecast was used.

Figure 1 City of Tacoma Land Use Zone Boundaries



Source: City of Tacoma, 2024.

CALIBRATION

The City of Tacoma provided traffic counts from October 2022 at around two dozen intersections that were used to compare with the model's volume estimates. Fehr & Peers also downloaded volume data from the same time period from WSDOT's loop database for freeways within the City. The only calibration adjustments that were made were to adjust the volume-delay function parameters to increase congestion on freeways and encourage more traffic to use local arterials, as initial model results showed higher freeway and lower arterial volumes compared to actual counts.

After incorporating these changes, the difference between the daily observed counts and the daily model estimates was around 6% low for all freeways and 14% low for all arterials. For the PM peak hour between 4-5pm, these differences improved to 1% high for freeways and the 9% low for arterials. Fehr & Peers was limited in the amount of time available for model calibration and further effort would be required to improve the overall results. For the purposes of the TMP and providing citywide growth trends, the model was considered appropriate.

RESULTS

The updated PierceCast model was used to provide the following information to the project team:

- Aggregated person trip flows by time of day and travel mode for districts within and outside of the City for 2022 and 2050.
- Daily and hourly passenger car and truck volumes for all roadways within the City and in the model.

In addition, the volumes from the model were used to forecast 2050 turning movement volumes at 10 freeway off-ramp locations for state facility intersection analysis.

STATE FACILITIES

State facilities within Tacoma were analyzed in two ways:

- Existing and future volume to capacity ratios from the model were provided to the project team.
- Ten high volume freeway ramp terminal intersections were analyzed.

Using the forecasted 2050 turning movement volumes noted above plus 2024 PM peak hour counts at the 10 selected intersections, Fehr & Peers completed a Synchro traffic operations intersection level of service (LOS) evaluation. All signals have been optimized for cycle lengths and splits prior to the calculation of future conditions due to the assumption that signals will be optimized within the given time frame.

The results of this analysis are shown in Table 2 and all intersections are forecasted to operate at or better than LOS standard in 2050.

Table 2 PM Peak Hour LOS Results at State Ramp Terminals

#	Intersection Name	Control	HCM Version	LOS Standard	Existing (2024) PM (LOS/Delay)	Future (2050) PM (LOS/Delay)
1	I-5 SB Ramp & S 38th St	Signal	2000	D	A/9	B/10
2	I-5 NB Ramp & S 72nd St	Signal	6th	D	B/11	B/15
3	Tacoma Mall Blvd & I-5 SB Ramp	Signal	6th	D	B/14	C/21
4	Portland Ave E & E 28th St	Signal	6th	D	C/29	C/31
5	S Union Ave & SR 16 WB Ramp	Signal	6th	D	C/22	D/55
6	S Mullen St & Center St	Signal	6th	D	C/30	D/53
7	Portland Ave E & E 27th St	Signal	6th	D	B/15	C/20
8	S Union Ave & SR 16 EB Ramp	Signal	6th	D	B/17	C/25
9	Bantz Blvd & 6th Ave	Signal	6th	D	B/12	B/17
10	N Jackson Ave & SR 16 EB Ramp	Signal	6th	D	D/38	C/32

Source: Fehr & Peers, 2024.