APPENDIX C – MULTIMODAL LEVEL OF SERVICE STANDARDS AND METHODOLOGY

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STATE GUIDANCE AND REQUIREMENTS FOR MULTIMODAL LEVEL OF SERVICE (MMLOS)

Methodology

To meet the requirements of the Washington State's Growth Management Act (GMA) (Figure 1), Tacoma maintains level of service (LOS) standards for pedestrian, bicycle, transit and auto networks. The cumulative effect of the targets is to evaluate and monitor the transportation systems' person trip capacity and its relationship to planned land use growth. Identified deficiencies in different modal networks inform the TMP's project list as well as project prioritization.

This appendix provides Tacoma's methodology for assessing MMLOS. This methodology is guided by the Washington State Department of Transportation (WSDOT) recommendations, incorporates peer reviews of other similar cities in Washington, and leverages available data to ensure that evaluating LOS remains manageable for city officials. As more data becomes available, Tacoma may reassess its LOS methodology.

Each mode's LOS is evaluated based on roadway characteristics and existing facility types using data that is currently available to the City of Tacoma (Table 1).

Table 1 Multimodal Level of Service Standard Metrics

Mode	Level of Service Standard Metric(s)	Acceptable Level of Service in Tacoma
Pedestrian	▪ Along roadways: Level of traffic stress ▪ As a network: Crosswalk density ▪ At intersections: Intersection ADA accessibility	▪ 1 or 2
Bicycle	▪ Level of traffic stress	▪ 1 or 2
Transit	▪ Access: Frequency of transit service and ability for riders to access the stations ▪ Speed: Transit travel between key destinations	▪ 1 or 2 on the Frequent Transit Vision Network ▪ 3 elsewhere
Auto	▪ Volume capacity ratios at PM Peak time	▪ E or above

Pedestrian and bicycle level of service standards are primarily based on traffic stress and were determined by applying WSDOT's guidance[1]. Originally developed for WSDOT's Active Transportation Plan, the guidance sets thresholds for roadway speed, number of lanes, and average daily traffic that determine the level of traffic stress a person may experience on a roadway based on existing facilities.

The faster the vehicles move on a roadway and the wider that roadway is, the more traffic stress people walking, rolling, or biking experience. Dedicated space for bicyclists and pedestrians, such as sidewalks and bike lanes, lowers stress levels, while barriers between moving traffic and active transportation users further reduce it.

The transit level of service metric considers frequency, access, and speed. While Pierce Transit controls frequency, supportive land use density within Tacoma can help justify and sustain higher frequency over time. Speed and reliability are service qualities the City can help support through improvements such as signal timing, bus queue jumps, and transit-priority treatments. Transit level of service is also connected to pedestrian level of service because safe, direct, and accessible walking routes are essential for people to access transit stops and stations.

[1] Development Division Multimodal Development and Delivery Design Bulletin #2022-01

Figure 1 WSDOT Growth Management Act language relevant to MMLOS

Mandatory elements of the Comprehensive Plan related to MMLOS per 36.70A.365:

- *(ii) Estimated multimodal level of service impacts to state-owned transportation facilities resulting from land use assumptions to assist in monitoring the performance of state facilities, to plan improvements for the facilities, and to assess the impact of land-use decisions on state-owned transportation facilities;*
- *Multimodal level of service standards for all locally owned arterials, locally and regionally operated transit routes that serve urban growth areas, state-owned or operated transit routes that serve urban areas if the department of transportation has prepared such standards, and active transportation facilities to serve as a gauge to judge performance of the system and success in helping to achieve the goals of this chapter consistent with environmental justice. These standards should be regionally coordinated;*
- *(C) For state-owned transportation facilities, multimodal level of service standards for highways, as prescribed in chapters 47.06 and 47.80 RCW, to gauge the performance of the system. The purposes of reflecting multimodal level of service standards for state highways in the local comprehensive plan are to monitor the performance of the system, to evaluate improvement strategies, and to facilitate coordination between the county's or city's six-year street, road, active transportation, or transit program and the office of financial management's ten-year investment program. The concurrency requirements of (b) of this subsection do not apply to transportation facilities and services of statewide significance except for counties consisting of islands whose only connection to the mainland are state highways or ferry routes. In these island counties, state highways and ferry route capacity must be a factor in meeting the concurrency requirements in (b) of this subsection;*
- *(D) Specific actions and requirements for bringing into compliance transportation facilities or services that are below an established multimodal level of service standard;*
- *(E) Forecasts of multimodal transportation demand and needs within cities and urban growth areas, and forecasts of multimodal transportation demand and needs outside of cities and urban growth areas, for at least ten years based on the adopted land use plan to inform the development of a transportation element that balances transportation system safety and convenience to accommodate all users of the transportation system to safely, reliably, and efficiently provide access and mobility to people and goods. Priority must be given to inclusion of transportation facilities and services providing the greatest multimodal safety benefit to each category of roadway users for the context and speed of the facility;*
- *(F) Identification of state and local system needs to equitably meet current and future demands. Identified needs on state-owned transportation facilities must be consistent with the statewide multimodal transportation plan required under chapter 47.06 RCW. Local system needs should reflect the regional transportation system and local goals, and strive to equitably implement the multimodal network*

Peer Review for Developing MMLOS

To help inform the approach and support meeting the spirit of the GMA, the following cities were reviewed to see how their comprehensive plans were incorporating MMLOS:

- City of Bellevue
- City of Burien
- City of Seattle
- WSDOT
- City of Bellingham
- Puget Sound Regional Council (PSRC)
- City of Vancouver
- City of Spokane
- City of Redmond

Many cities were still in the process of finalizing their MMLOS standards. All cities plan to calculate person trips (sometimes referred to as mobility units) available in their transportation system so they can determine how much capacity they needed to provide in the future.

PEDESTRIAN LEVEL OF SERVICE

Tacoma's Pedestrian Level of Service (LOS) standards consist of three elements:

1. **Along roadways:** Tacoma uses the level of traffic stress a person experiences walking or rolling in that segment.
2. **At a network level:** Tacoma ranks the LOS based on prevalence of marked (enhanced) crossings.
3. **At intersections:** Tacoma ranks the LOS based on accessibility of curbs.

Using the level of stress thresholds set by WSDOT, Tacoma ranks its pedestrian network from 1 to 4, with 1 indicating the least stressful environment for pedestrians and 4 indicating the most stressful (Table 2). These rankings are applied differently to intersections where the most important factor is accessibility. At intersections, Tacoma considers the curb infrastructure to determine its LOS rating. **The City will accept a Pedestrian LOS of 1 or 2.**

Combining roadway characteristics (number of lanes, posted speed limit, and average daily traffic) with the existing facility type, Figure 2 shows how Tacoma ranks its pedestrian facilities along roadways, This considers sidewalk presence and width (standard 5 feet, wide >5 feet, extra wide >5 feet with buffer). In general roadways with slower speeds require fewer facilities to be less stressful for pedestrians. For example, a neighborhood street where a small number of vehicles travel 20 MPH does not require the same level of crossing treatments or a buffer to achieve Level 1. Conversely, a very high-quality pedestrian facility, like a shared use path, will typically earn a Pedestrian LOS of 1.

The Pedestrian LOS at intersections is determined using the ADA-accessibility status of the curb ramps (Figure 3). All corners of the intersection must have ADA-compliant curb ramps to be a LOS 1. Crosswalk density LOS identifies how often people have a way to cross the street using a marked crosswalk meeting the standards outlined in the City's Right-of-Way Design Manual. A high level of service allows pedestrians to access destinations without diverting their trips. The more a pedestrian must go out of their way to comfortably cross a street to reach their destination, the lower the LOS is along that corridor. Figure 4 shows how this is driven by crossing density and potential crossing distance.

Land use context informs the appropriate level of crosswalk density. Regional growth centers, mixed-use centers, and streets defined in code as Pedestrian Streets should aim for a LOS of 1. Other arterial streets may target a goal of LOS 2, allowing for greater spacing between marked crossings.

Figure 2 Pedestrian Level of Service along roadway based on Roadway Characteristics and Existing Pedestrian Facility

Roadway Characteristics			Pedestrian Facility – Along Roadways					
Lanes	Speed Limit (MPH)	ADT	No Ped facility with shoulder	5 ft Sidewalk, no buffer	> 5 ft Sidewalk, no buffer	Sidewalk with landscaped buffer	Sidewalk with robust buffer	Separated Pedestrian Pathway
1 thru lane per direction (or 1 lane one-way street)	<=25	0-750	2	1	1	1	1	1
	20	750-1,500	2	1	1	1	1	1
	25	750-1,500	2	1	1	1	1	1
	<=25	1,500-3,000	2	1	1	1	1	1
	20	>3,000	2	2	2	2	2	1
	25	>3,000	3	2	2	2	2	1
	30	Any	3	2	2	2	2	1
	35	Any	4	4	2	2	2	1
	40	Any	4	4	3	3	2	1
	45	Any	4	4	4	3	2	1
	>=50	Any	4	4	4	4	2	1
2 thru lanes per direction	<=25	Any	3	2	2	2	2	1
	30	<7,000	3	2	2	2	2	1
	30	>7,000	4	3	2	2	2	1
	35	Any	4	4	2	2	2	1
	40	Any	4	4	3	3	2	1
	45	Any	4	4	4	3	2	1
	50 or more	Any	4	4	4	4	2	1
3+ thru lanes per direction	<=25	Any	4	2	2	2	2	1
	30	Any	4	3	2	2	2	1
	35	Any	4	4	3	2	2	1
	40	Any	4	4	3	3	2	1
	45	Any	4	4	4	3	2	1
	50 or more	Any	4	4	4	4	2	1

Figure 3 Pedestrian Level of Service at Intersections

Roadway Characteristics			Pedestrian Facility – At Crossing		
Lanes	Speed Limit (MPH)	ADT	No Ramps	Non-ADA ramp	ADA Ramp
1+ thru lane per direction (or 1 lane one-way street)	<=25	0-750	4	3	1
	<=25	<1,500	4	3	1
	<=25	1,500-3,000	4	3	1
	<=25	>3,000	4	3	1
	30	Any	4	3	1
	35	Any	4	3	1
	40	Any	4	3	1
	45	Any	4	3	1
	>=50	Any	4	3	1

Table 2 Pedestrian Level of Service

Pedestrian Level of Service	Roadway Definition	Intersection Definition	Crosswalk Density Definition
Level 1 – **Best**	A level that most people would find comfortable, accessible, and safe (youth, most individuals with disabilities, older individuals)	Fully ADA accessible curb ramp	Appropriately designed marked crosswalks present every 300 feet or less.
Level 2	Little traffic stress, but requires more attention, especially for children	NA	Appropriately designed marked crosswalks present every 600 feet or less (based on pedestrian demand, land use, and safety considerations)

Level 3	Moderate traffic stress	Curb ramp present, but not fully ADA compliant	Appropriately designed marked crosswalks > 600 feet.
Level 4 – **Worst**	High traffic stress, not comfortable or accessible for most people	No curb ramp	No marked crosswalks present.

Figure 4 Pedestrian Level of Service based on Crosswalk Density

Roadway Characteristics			Crosswalk Density			
Lanes	Speed Limit (MPH)	ADT	Marked crosswalk every 300 feet or less	Marked crosswalk every 600 feet or less	Marked crosswalks More than 600 feet apart	No marked crosswalks Present
1 thru lane per direction (or 1 lane one-way street)	20-25	0-750	1	1	2	2
	20-25	<1,500	1	2	2	2
	20-25	1,500-3,000	1	2	3	3
	20-25	>3,000	1	2	3	4
	30	Any	1	2	3	4
	35	Any	1	2	3	4
	40	Any	1	2	3	4
	45	Any	1	2	3	4
	>=50	Any	1	2	3	4
2+ thru lanes per direction	25	Any	1	2	3	4
	30	<7,000	1	2	3	4
	30	>7,000	1	2	3	4
	35	Any	1	2	3	4
	40	Any	1	2	3	4
	45	Any	1	2	3	4
	50 or more	Any	1	2	3	4

2.1 Existing and Future Pedestrian Level of Service

The existing Pedestrian LOS analysis identifies where conditions currently fall short and helps inform investment priorities to support a safer, more connected pedestrian network.

Future Pedestrian LOS considered projected changes in ADT for 2050 and did not produce major differences from existing conditions. Less than 1% of roadway segments saw a change in Pedestrian LOS along roadways (dropping from LOS 1 to 2-4) and only 0.5% of roadway segments saw a change in Crosswalk density (dropping from LOS 1 and 2 to LOS 3 and 4). Since Pedestrian LOS at intersections is based on roadway infrastructure and does not change under different levels of ADT.

Figure 5 Existing Pedestrian LOS Along Roadways (2022)

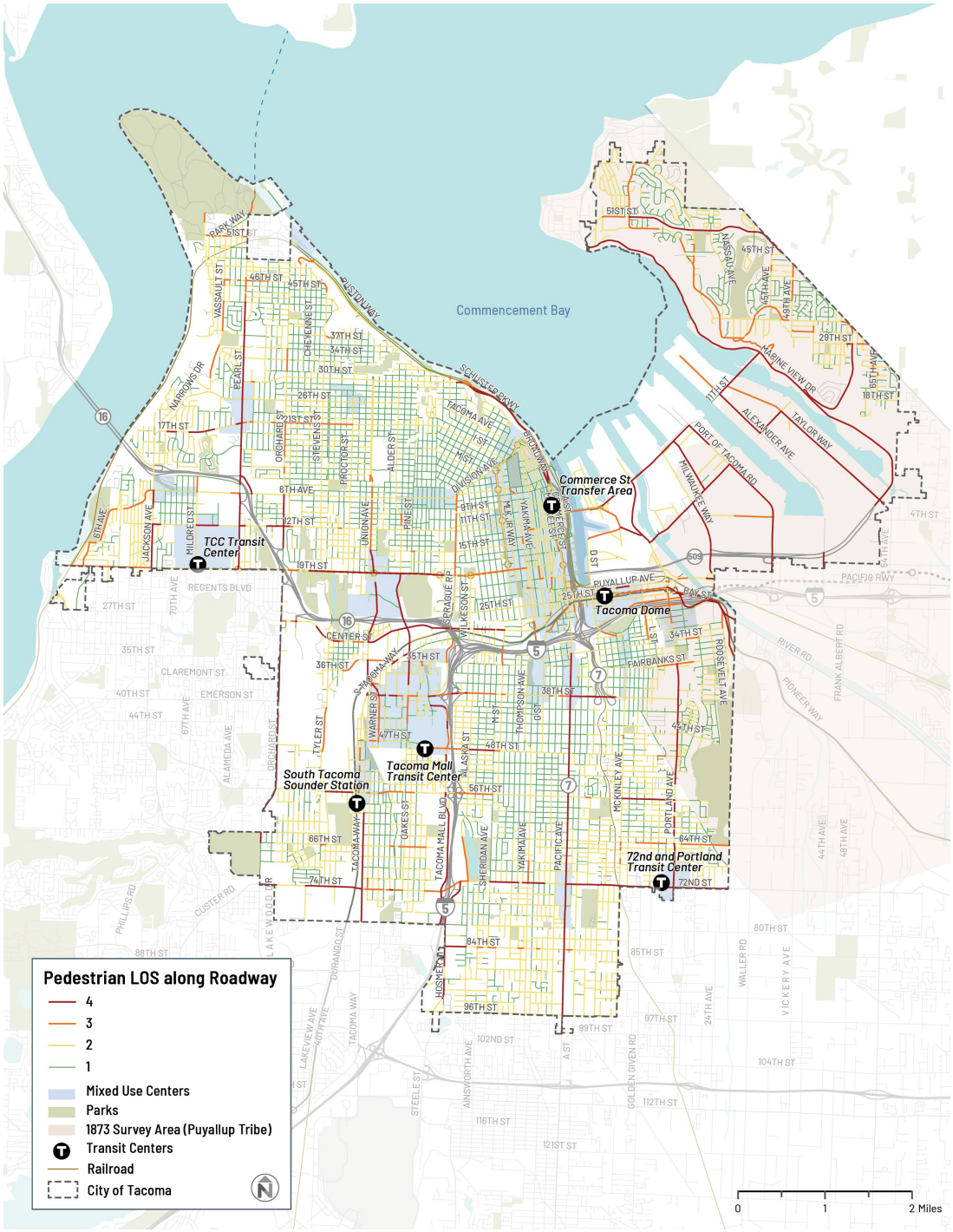


Figure 6 Existing Pedestrian Intersection Level of Service (2025)

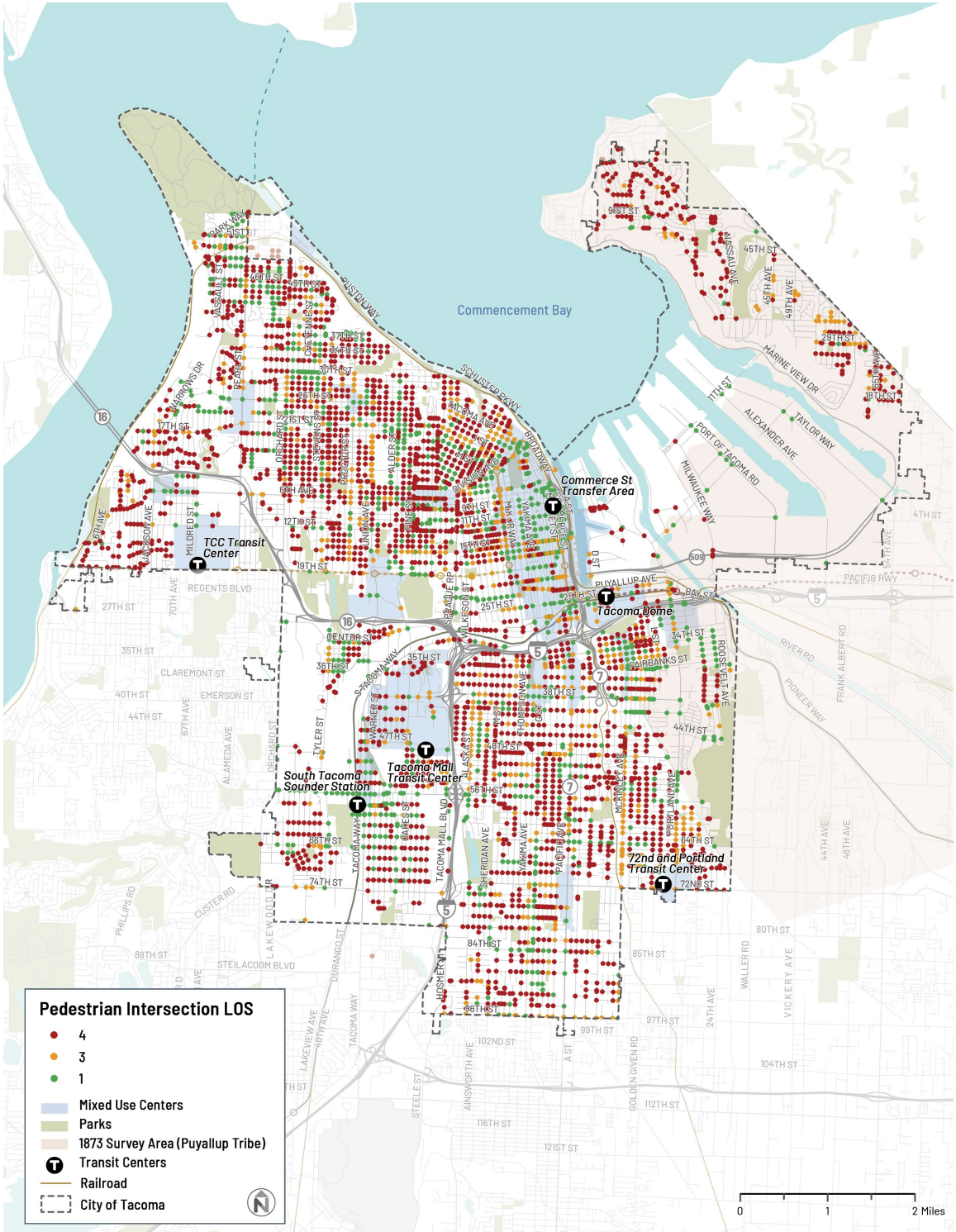
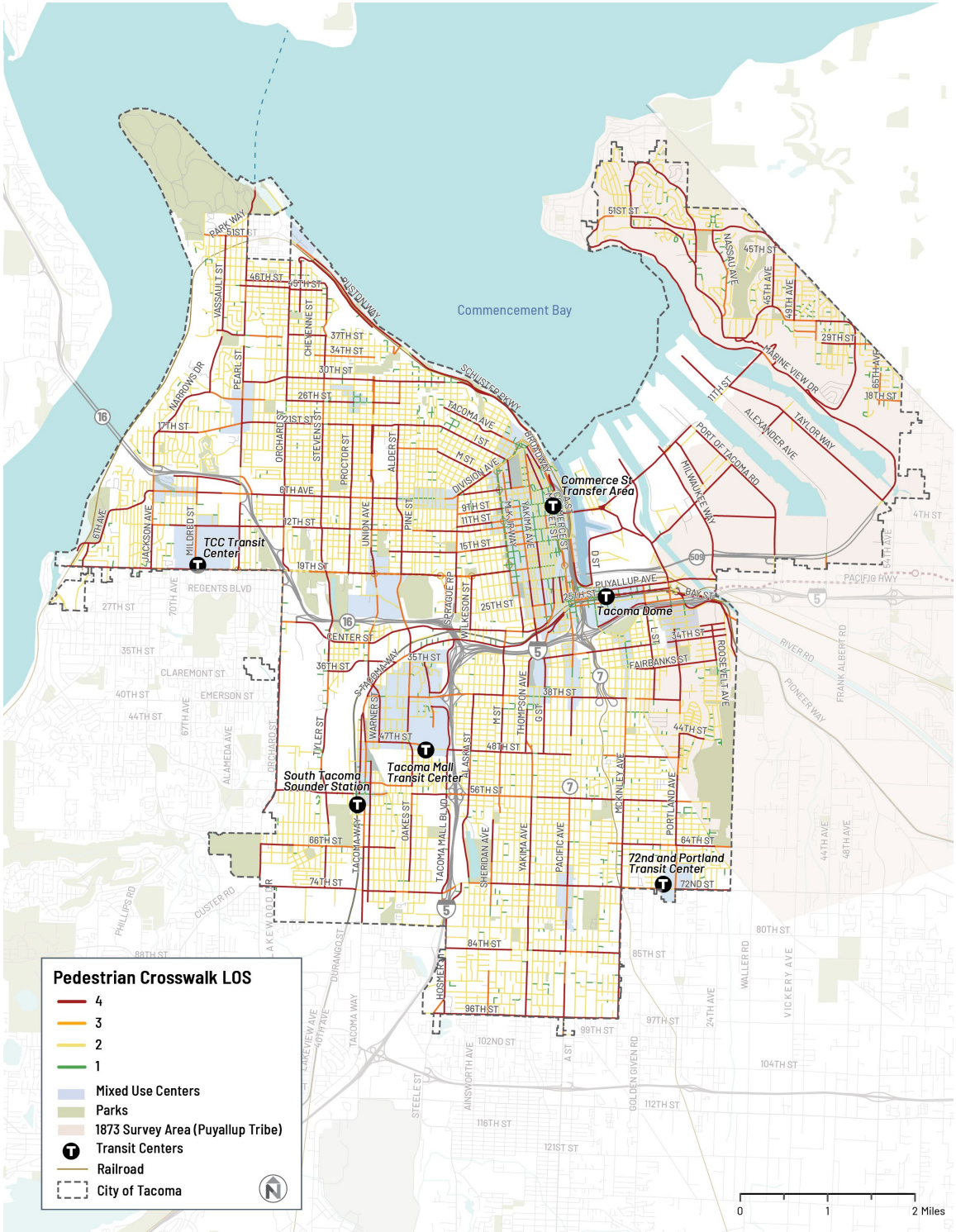


Figure 7 Existing Pedestrian Crosswalk Density LOS (2022)



BICYCLE LEVEL OF SERVICE

Tacoma's Bicycle Level of Service (LOS) uses level of traffic stress as part of its ranking process. A LOS of 1 indicates a low level of traffic stress where most riders of all ages will feel comfortable. A LOS of 4 indicates high traffic stress situations where most riders will not be comfortable. **The city will accept a Bicycle LOS of 1 or 2.**

Table 3 Bicycle Level of Service

Bicycle Level of Service	Definition
Level 1 – **Best**	A level that most riders of all ages and abilities feel safe using
Level 2	Comfortable for most adults but requires more attention, especially for children
Level 3	Moderate traffic stress
Level 4 – **Worst**	High traffic stress, not comfortable for most riders

Bicycle LOS uses the same roadway characteristics as Pedestrian LOS, including posted speed limit, number of travel lanes, and average daily traffic. In general, greater separation between bicycle facilities and moving traffic reduces conflicts and supports more comfortable, low-stress biking conditions. Figure 6 on the following page illustrates Bicycle LOS based on roadway characteristics and facility type.

A fully separated facility, like a shared use path, typically achieves a bicycle LOS of 1. On slower, lower-traffic streets, less separation may still provide a comfortable biking experience.

Figure 8 Bicycle Level of Service based on Roadway Characteristics and Existing Bicycle Facility Type

Roadway Characteristics			Bicycle Facility					
Lanes	Speed Limit (MPH)	ADT	No Treatment (with or without shoulder)	Neighborhood Greenway	5 - 7 ft Bike Lane	Buffered Bike Lane (with paint)	Separated Bike Lane (Physical Barrier)	Shared Use Path
1 thru lane per direction (or 1 lane one-way street)	20	0-1,500	1	1	1	1	1	1
	20	>1,500	2	2	1	1	1	1
	25	0-750	1	1	1	1	1	1
	25	750-1,500	2	1	2	1	1	1
	25	1,500-3,000	2	1	2	1	1	1
	20-25	>3,000	3	2	2	2	2	1
	30	<3,000	3	2	2	2	1	1
	30	>3,000	3	3	2	2	2	1
	35	Any	4	4	4	3	2	1
	40	Any	4	4	4	4	2	1
	45	Any	4	4	4	4	2	1
	>=50	Any	4	4	4	4	2	1
2 thru lanes per direction	20	<7,000	3	3	2	2	2	1
	20	>7,000	3	3	3	2	2	1
	25	<7,000	3	3	2	2	2	1
	25	>7,000	3	3	3	2	2	1
	30	<7,000	3	3	3	2	2	1
	30	>7,000	4	4	3	3	2	1
	35	Any	4	4	4	3	2	1
	40	Any	4	4	4	4	2	1
	45	Any	4	4	4	4	2	1
	50 or more	Any	4	4	4	4	2	1
3+ thru lanes per direction	20 - 25	Any	4	4	3	3	2	1
	30	Any	4	4	4	3	2	1
	35	Any	4	4	4	4	2	1
	40	Any	4	4	4	4	2	1
	45	Any	4	4	4	4	2	1
	50 or more	Any	4	4	4	4	2	1

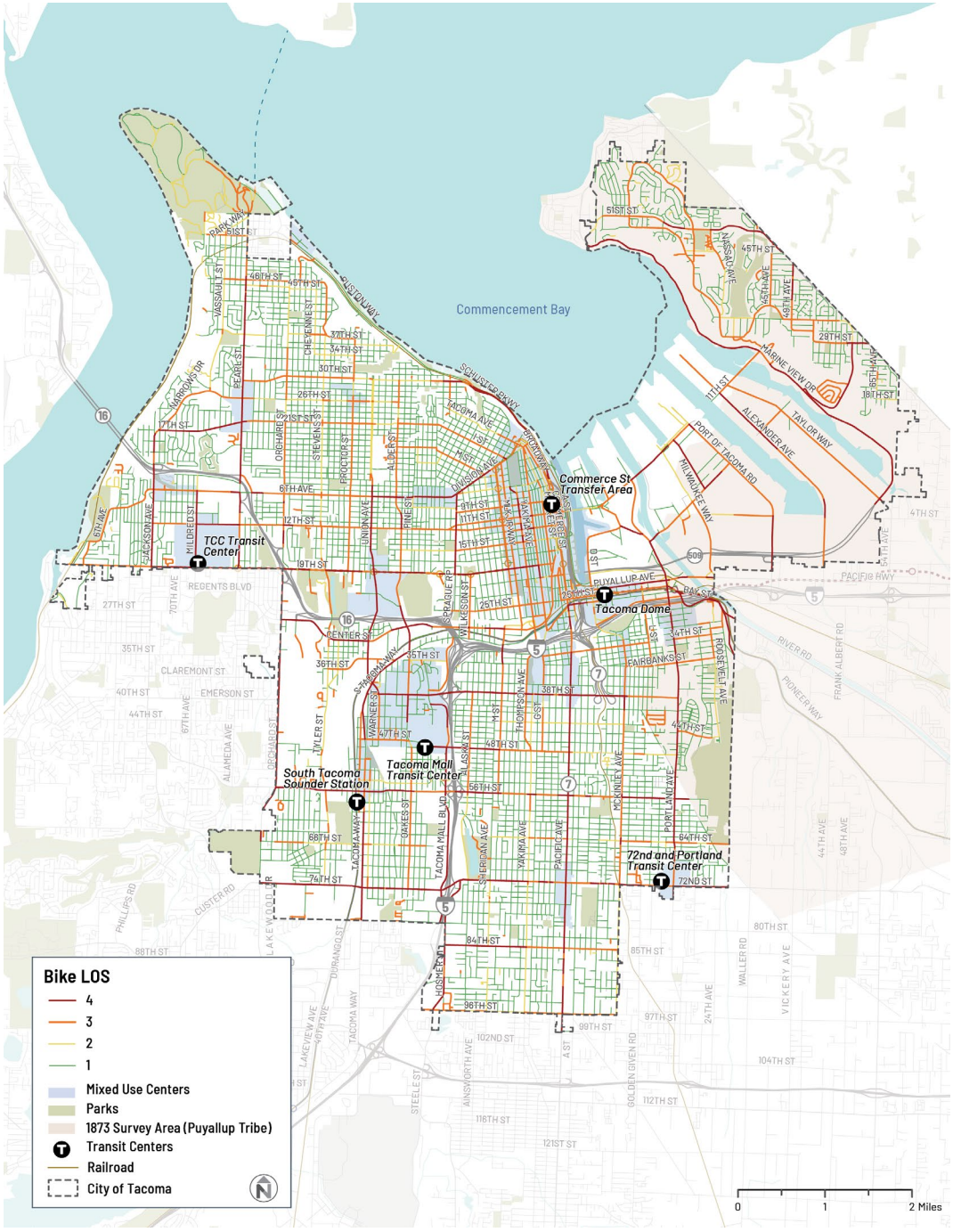
3.1 Existing and Future Bicycle Level of Service

The City of Tacoma will accept a Bicycle LOS of 1 or 2.

The existing Bicycle LOS analysis evaluates how supportive Tacoma's street network is for people biking. Figure 9 highlights segments where these factors result in higher levels of traffic stress, helping to identify locations where improvements could reduce barriers to safe, comfortable bicycling and support a more connected low-stress network. While most of Tacoma's residential streets provide a low-stress biking environment, arterial crossings often present significant barriers and are a common reason people may choose not to bike.

Future Bicycle LOS considers projected changes in ADT and does not change significantly from existing conditions. Less than 2% of the roadway network drops to LOS 4 from the 2 and 3 categories.

Figure 9 Existing Bicycle Level of Service (2022)



TRANSIT LEVEL OF SERVICE

To measure Transit Level of Service (LOS), the City of Tacoma considers two measures: transit access and travel speed between major destinations.

Transit Access LOS is determined based on how people get to a transit station and how frequently service operates at that station. A Transit LOS of 1 is considered the highest LOS and must be accessible and have frequent service (15 minutes or less). Pedestrian LOS on the roadway is used to determine if a station is accessible. The ranking then considers existing transit service frequency (headways) to determine that stop's Transit LOS. Only stops that are fully ADA accessible and have frequent service can score a LOS 1. While the City of Tacoma does not directly control or fund transit service frequency, it can support more frequent service through land use decisions, such as encouraging higher-density development near frequent transit corridors, which can help make more robust service levels viable over time.

Transit Travel Speed LOS uses the average speed of buses traveling between major destinations to determine the quality of transit between these destinations.

The city will accept a Transit Access and Speed LOS of 1 or 2 along their Frequent Transit Vision network and a LOS of 3 elsewhere.

Table 4 Transit Level of Service

Transit Level of Service	Transit Access Definition	Transit Travel Speed Definition
Level 1 – **Best**	Frequent service and easy, accessible pedestrian access to stations or stops	Travel to this destination is at or above 12 MPH (above systemwide average transit travel speeds.)
Level 2	Stops that have either frequent service (20 minutes or better) but may not have good pedestrian access	Travel to this destination is 10 - 12 MPH
Level 3	Stops with infrequent service (30 minutes or more) or stops with frequent service but poor access	Travel to this destination is less than 10 MPH
Level 4 – **Worst**	Stops with very low service and poor pedestrian access to stations. Any stop that is inaccessible automatically gets a LOS of 4.	You cannot travel to this destination via transit

Figure 10 shows the City of Tacoma's system for assigning LOS to transit stops, and Table 5 shows the thresholds for Transit Speed LOS. In the future the City may consider dedicated transit facilities (bus lanes, transit signal priority) in their assessment of Transit LOS.

Figure 10 Transit Level of Service based on Service Frequency, Pedestrian Access, and Bus Stop Characteristics

Transit Service	Pedestrian Access	Bus Stop Accessibility	
Frequency of Transit Service (Peak)	Lowest Pedestrian LOS within 1/4 mile of station	Accessible stop	Inaccessible stop
<15 minute headways	1	1	4
	2	1	4
	3	2	4
	4	2	4
15 - 20-minute headways	1	1	4
	2	2	4
	3	2	4
	4	2	4
30-minute headways	1	3	4
	2	3	4
	3	3	4
	4	3	4
30 minute - 1 hour headways	1	3	4
	2	3	4
	3	3	4
	4	3	4
> 1 hour headways	1	4	4
	2	4	4
	3	4	4
	4	4	4

Table 5 Transit Speed Level of Service Based on Average Speed Between Destinations

Average Transit Speed Between Destination	LOS
At or Above 12 MPH	1
10 – 12 MPH	2
Less than 10 MPH	3
No Transit Service Between Destinations	4

4.1 Existing Transit and Future Level of Service

The City of Tacoma will accept a Transit LOS of 1 or 2 on the frequent transit network and a LOS of 3 elsewhere.

The existing transit LOS maps highlight where transit service is currently strong or limited based on access, frequency, and travel speed. They show how well Tacoma's transit network connects people to major destinations and where gaps in service or barriers to access may discourage transit use. These findings help inform improvements that support a more reliable and accessible system. (Figure 11 and Figure 12).

Future transit travel speed LOS considers the 2050 model projections of travel speeds on Tacoma's roadways. Only one destination pair experienced slower transit travel speeds (Downtown Commerce Street to TCC Transit Center, Figure 13)

Figure 11 Existing Transit Access LOS (2025)

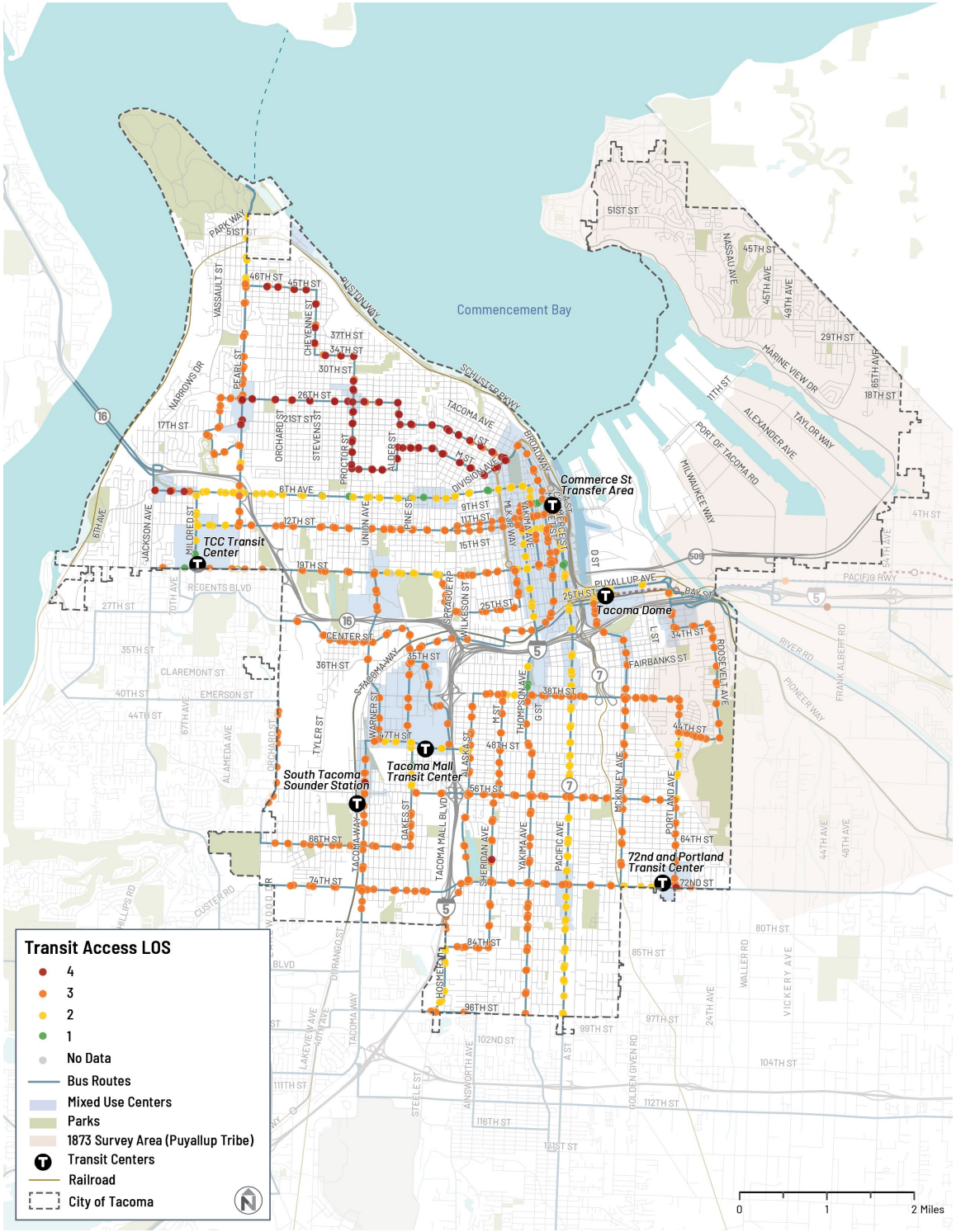


Figure 12 Existing Transit Speed LOS (2022)

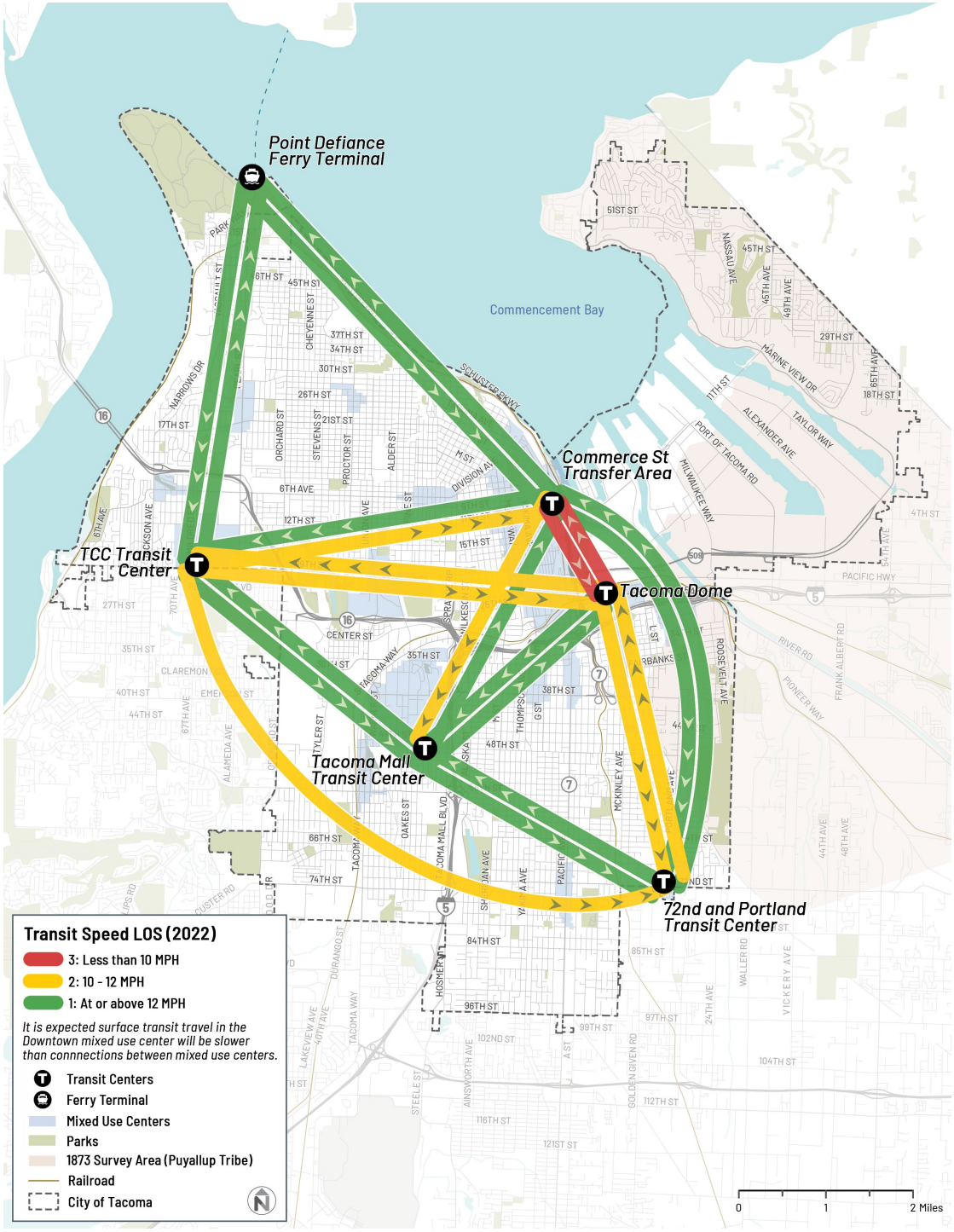
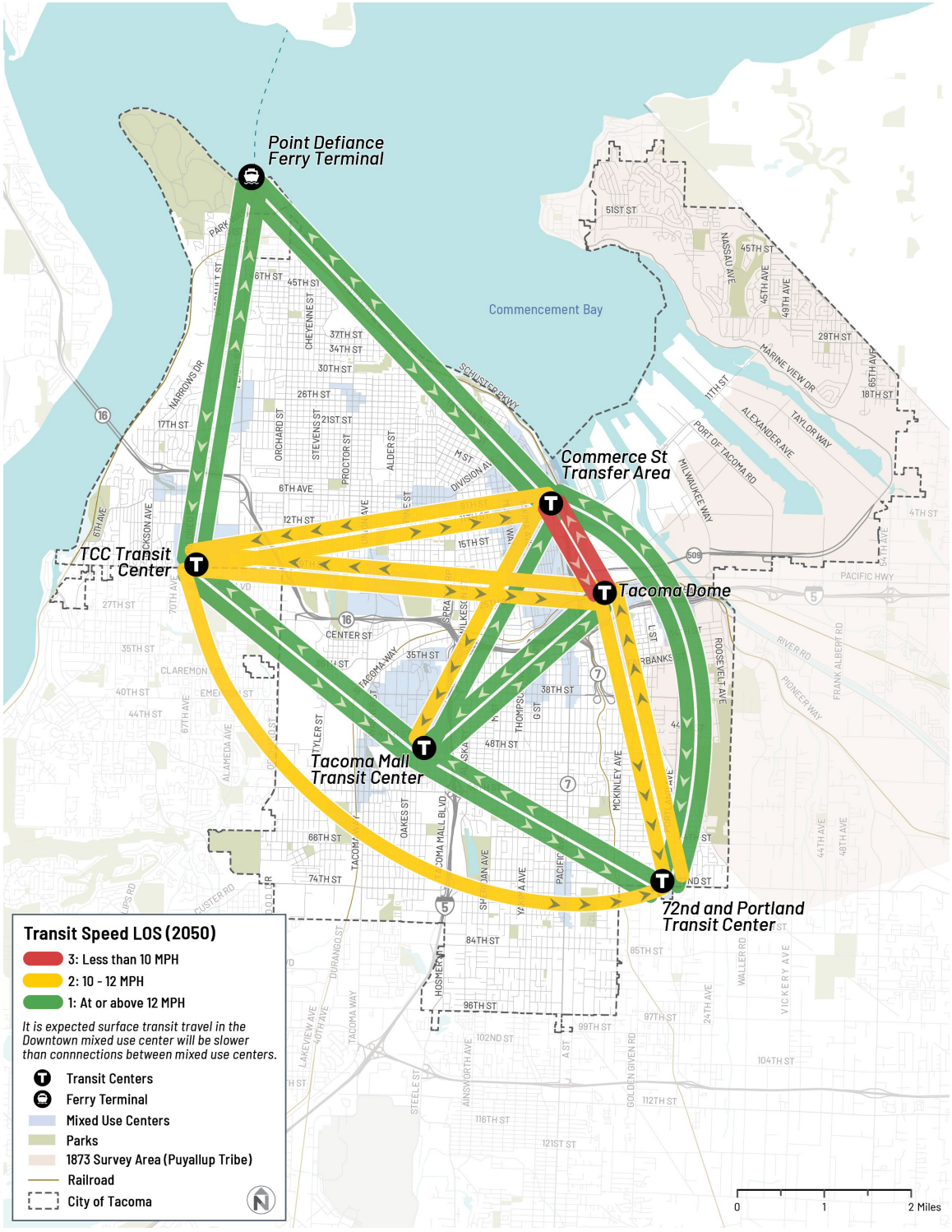


Figure 13 Future Transit Speed LOS (2050)



AUTO LEVEL OF SERVICE

In line with WSDOT, Tacoma uses the Highway Capacity Manual and AASHTO Geometric Design of Highways and Streets to determine Auto LOS for their roadways. Auto LOS is typically based on PM peak-hour travel data on the roadway. This is used to calculate volume capacity (V/C) ratios which is a comparison of the number of vehicles using a roadway to its designed capacity. These "V/C" ratios are then used to "grade" (A through F) the operation of the roadway (Figure 14).

Unlike traditional grades in school a score of an "A" is not always ideal. It may indicate a roadway that has been overbuilt for the traffic needs in the area. Efficient roadways are ones that operate near, but not over capacity. Auto LOS of E or below indicates the roadway is overused from an auto perspective and increasing capacity on the overall multimodal transportation system can help stem this congestion and preserve the overall operation of the transportation system.

Figure 14 Auto Level of Service Definitions

Auto Level of Service	Definition
A	Free Flow
B	Reasonably Free Flow
C	Stable Flow
D	Approaching Unstable Flow
E	Unstable Flow
F	Forced Flow or Flow Breakdown

How Auto LOS will be applied

The City will accept an Auto LOS as low as E on their roadways. WSDOT and the Puget Sound Regional Council (PSRC) will set the acceptable LOS for Highways of Statewide Significance that fall inside city limits.

Tacoma also recognizes elements of multimodal level of service (MMLOS) to consider their transportation network as a whole, so roadways' Auto LOS that fall below LOS E (i.e., LOS F/volume-to-capacity ratio > 1.0) may be permissible if mitigated (with resulting V/C ratio not exceeding 1.1) by increasing people-throughput capacity via additional transit service or dedicating more roadway space to walking and biking. Methodology for calculating Auto LOS is well documented and not included here.

5.1 Existing and Future Auto LOS

The City of Tacoma will accept an Auto LOS at or above E.

Existing

Most miles of the city's streets achieve a LOS of A. Segments that experience unstable flow or breakdown in flow are typically highways and bridges (Figure 15). Future Auto LOS considers projected changes in 2050 ADT and leads to slight increases in LOS of B, C, and D along Tacoma's roadways shown in Figure 16.

LOS on 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 in Appendix E 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 6 and **all State Facility intersections are forecasted to operate at or better than LOS standard in 2050**. WSDOT and the Puget Sound Region Council will set the acceptable LOS for Highways of Statewide Significance that fall inside city limits.

Table 6 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.

In general, the City's network has sufficient capacity to absorb the forecast growth. The most significant travel delays on the City's network are a result of backups on the regional network, rather than local-level capacity constraints; however, only a small portion of the City's system is expected to exceed capacity and will do so only for a small part of the day. The Transportation and Mobility Plan is moving Tacoma to a plan-based rather than arterial/intersection based concurrency system. This plan-based system is a tool to manage the pace of development while providing transportation improvements for all users including bicyclists, pedestrians, drivers, and transit riders, which may also help alleviate projected shortcomings on the State system.

Figure 15 Existing Auto LOS (2022 PM Peak)

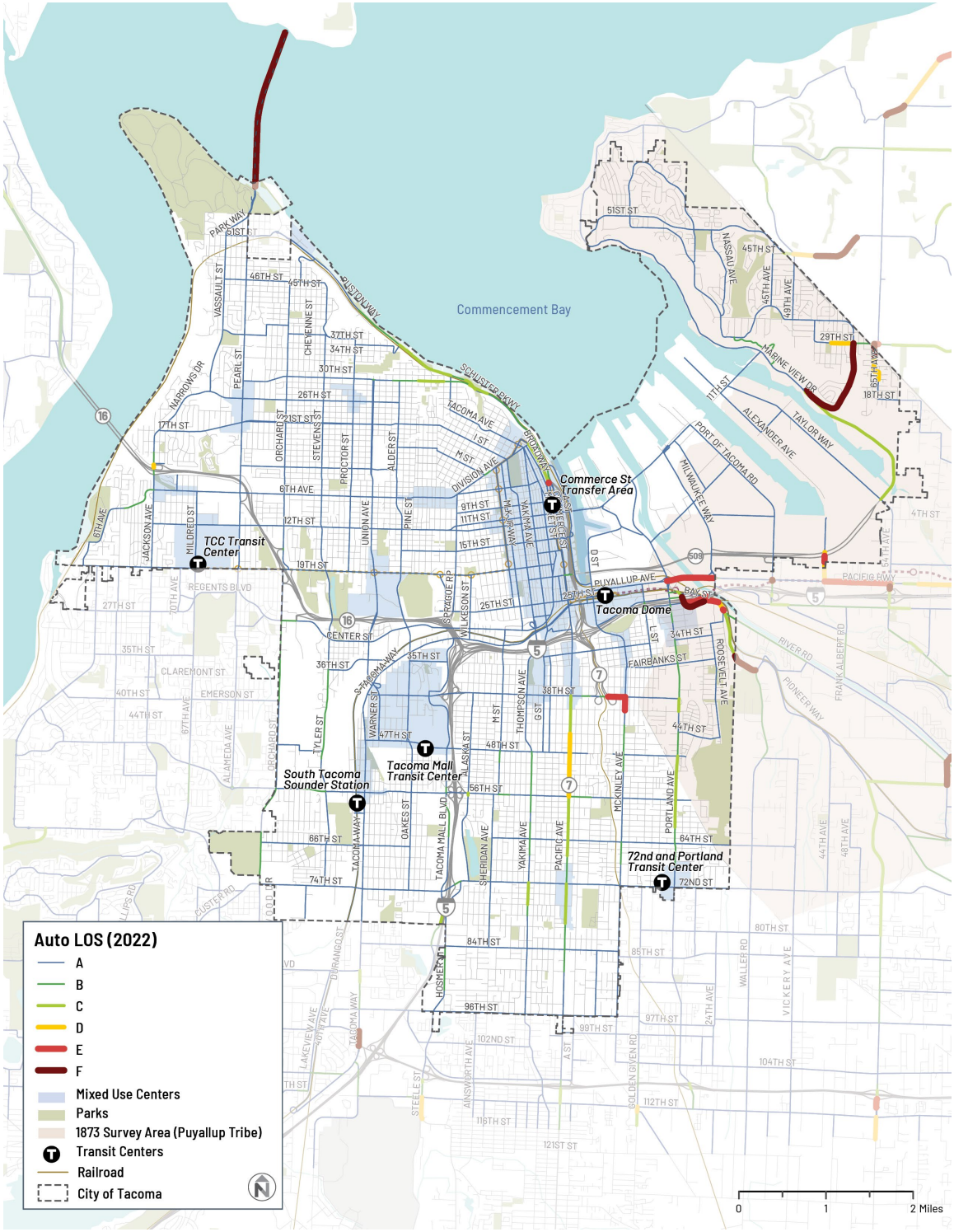
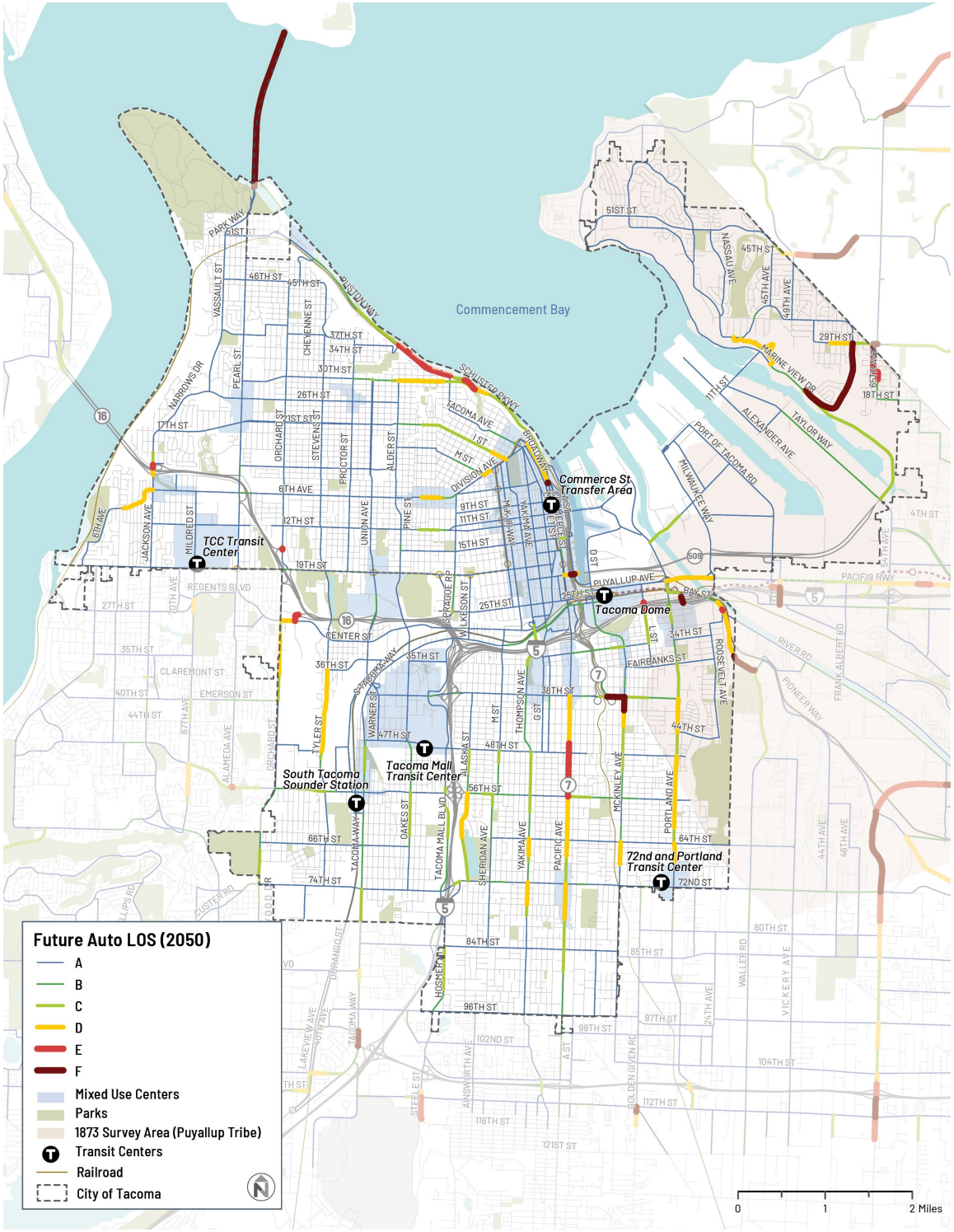


Figure 16 Future Auto LOS (2050 PM Peak)



GMA REQUIREMENTS AND OPERATIONALIZING MMLOS

The City of Tacoma uses MMLOS to help inform the development of the Project List (Appendix D) – looking at existing and projected MMLOS on a facility and future trip demand and identifying projects that enhance LOS for different modes and address deficiencies.

Modeled travel demand in Tacoma compares 2022 to a future 2050 numbers assuming households to grow by 58 percent and employment to grow by 83 percent over this timeframe. The resulting change in trip by mode is shown in Table 7.

Table 7 Existing and Future Demand for Trips by Mode

	2022	2050	Delta	Percent Change
Households	*94,800*	*149,700*	*54,900*	*58%*
Employment	*110,600*	*202,700*	*92,100*	*83%*
Auto Trips	17,773,900	23,017,500	*5,243,600*	*30%*
Transit Trips	779,100	1,495,600	*716,500*	*92%*
Walk and Bike Trips	2,603,000	4,589,200	*1,986,200*	*76%*
Total Daily Trips	21,156,000	29,102,300	*7,946,300*	*38%*

The table below summarizes the GMA requirements and how the city has responded to these requirements.

Table 8 Index of GMA Requirements

GMA Requirements	City of Tacoma Actions
Establish LOS standards for all locally owned arterials, existing transit routes, and active transportation facilities	▪ This appendix establishes level of service standards for pedestrians, bikes, transit, and autos and; ▪ Calculates existing and future MMLOS in the city
Estimate multimodal impacts to state facilities	▪ Modeling work has estimated impacts to state facilities (see Table 12).
Provide forecasts of multimodal transportation demand and needs within and outside the city for at least 10 years. The project list developed through the TMP anticipates inadequacies and includes projects for those facilities/locations.	▪ See Table 13 for existing and future trip demand by mode ▪ Projects identified in Appendix D are informed by MMLOS to help bring any deficient MMLOS facilities into alignment with the city's standard.

Create specific actions and requirements for bringing into compliance transportation facilities and services that are below the required LOS	▪ This appendix assigns minimum acceptable MMLOS standards for city facilities to establish where facilities need to be brought up to the required LOS – Use MMLOS during project development to see where multimodal projects can bring city facilities into alignment with standards and the City's Complete Streets policy – Add projects to the 6-year TIP that will improve LOS – Continue to partner with Pierce Transit and Sound Transit to identify ways to increase transit frequency and speed in Tacoma – Require development projects to mitigate multimodal system impacts when proposed in areas operating below the adopted level of service, consistent with the City's concurrency and mitigation standards – Adjust signal timing to improve flow, pedestrian crossings, or transit priority