

## 3 TRANSPORTATION ENVIRONMENT AND CONSEQUENCES

The transportation system analysis considered eight transportation elements: regional transportation, transit operations, arterial and local streets, freight access and mobility, nonmotorized facilities, safety, public parking, and navigation. Long-term (operations) and short-term (construction) impacts to these elements were analyzed for the 2042 No-Build and TDLE build alternatives. Appendix J1, Transportation Technical Report, includes additional detailed information on elements of the affected environment related to transportation and potential impacts of the No-Build and TDLE build alternatives.

### 3.1 Affected Environment

The study area (Figure 3-1) for this transportation analysis includes the SR 99 and I-5 corridors from S 320th Street in Federal Way to approximately Interstate 705 (I-705) in the City of Tacoma. Pacific Highway, which extends through the Federal Way, South Federal Way, and Fife segments of the TDLE corridor, is designated as SR 99 to 54th Avenue E in Fife. SR 99 and Pacific Highway are both used in this analysis and refer to the same roadway. West of 54th Avenue E, Pacific Highway continues as a local surface street to the eastern approach of the Fishing Wars Memorial Bridge. Major arterials in the study area include S 348th Street and Enchanted Parkway S in Federal Way, 54th Avenue E and Port of Tacoma Road in Fife, and Portland Avenue E and Puyallup Avenue in Tacoma.

The sections that follow describe the traffic-related operations and performance on all regional and local roadway facilities, transit (road-based and rail), freight, bicycles and pedestrians, safety, parking, and navigable waterways. Section 4.2, Land Use, describes the jurisdictions and types of land uses in the surrounding areas, and Section 4.3, Economics, describes businesses and other activities relying on the transportation system.

#### 3.1.1 Transportation Conditions and Trends

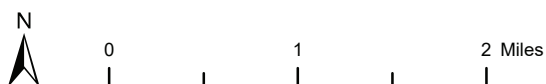
Regional transportation modeling from the PSRC travel demand model and the Sound Transit incremental ridership model reflect conditions for the 2016 base year. The Sound Transit incremental ridership model was calibrated using observed 2016 regional transit ridership data, and estimates of regional travel measures from the travel demand model are shown in the same base year for consistency. The 2016 base year was used to forecast future transit ridership in 2042 for the build and no-build alternatives.

Prior to COVID-19 and between 2016 and 2019, Sound Transit ridership increased (Sound Transit 2017, 2019), while King County Metro ridership remained steady (King County Metro 2022) and Pierce Transit ridership experienced a modest decline (Pierce Transit 2019). During the COVID-19 pandemic, transit ridership experienced a sudden and dramatic decline across all modes and agencies. Since 2020, transit ridership on Sound Transit, King County Metro, and Pierce Transit services continues to recover, but remains lower than pre-pandemic 2019 ridership for all three agencies as of 2024 (APTA 2019, 2024). Since the incremental ridership model was calibrated based on observed transit data in 2016 and trends in regional transit ridership remains lower than 2019 ridership, the 2016 base year still provides the most meaningful base year from which to forecast future transit ridership in 2042.



Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).

**FIGURE 3-1**  
Study Area



Analysis of existing conditions and traffic on arterials and local streets uses 2019 observed traffic counts on roadway segments and at intersections along the TDLE corridor. Traffic on regional and local roadways experienced a decline during the height of the COVID-19 pandemic in 2020. The decline in overall traffic volumes on regional roadways, such as I-5 and Pacific Highway, was pronounced but have returned, as of 2023, to levels similar to the pre-pandemic 2019 average annual daily traffic (ADT) figures. In the TDLE study area, WSDOT annual counts for northbound and southbound traffic on Pacific Highway and I-5 are shown in Table 3-1. This WSDOT count information is similar to traffic volumes on major regional roadways used for analysis in the Draft EIS based on the observed traffic data and regional estimates. Since the ADT counts in 2023 are similar to 2019, the traffic analysis generally reflects current conditions as of 2023 and is therefore appropriate to use for the TDLE technical analysis.

**Table 3-1 2019 and 2023 Estimated Traffic Volumes**

Regional Roadway	Segment	Location	2019 Average Daily Traffic (ADT)	2023 Average Daily Traffic (ADT)
I-5	Federal Way Segment	North of SR 18	188,000	185,000
I-5	South Federal Way Segment	South of SR 18 Off-Ramps	142,000	140,000
I-5	Fife Segment	East of 54th Avenue E /SR 99 On-Ramp	195,000	193,000
I-5	Tacoma Segment	East of SR 705/SR 7 Off-Ramp	230,000	228,000
Pacific Highway	Federal Way Segment	North of 16th Avenue S	33,000	34,000
Pacific Highway	South Federal Way Segment	South of SR 18	26,000	27,000
Pacific Highway	Fife Segment	East of 54th Avenue E	24,000	25,000

Source: WSDOT 2024.

### 3.1.2 Regional Transportation

#### 3.1.2.1 Existing Regional Roadways

The TDLE roadway network includes regional roadways, including highways and arterials that connect the study area to the region's major population and employment areas.

#### Regional Travel Measures

The regional travel measures of vehicle miles traveled (VMT), vehicle hours traveled (VHT), and vehicle hours of delay (VHD) by mode are used to summarize regional travel patterns across the Puget Sound region and are primarily useful for comparison purposes between existing and future conditions (summarized in Section 3.3) with and without the proposed TDLE. Table 3-2 summarizes existing conditions in 2016 for VMT, VHT, and VHD as estimated by the regional travel demand model. The Sound Transit incremental ridership model was calibrated from 2016 regional transit ridership data, and estimates of regional travel demand are shown in the same 2016 base year for consistency in regional and screenline estimates.

**Table 3-2 Existing 2016 Regional Travel Measures – Daily VMT, VHT, and VHD by Mode**

Mode of Travel	Vehicle Miles Traveled	Vehicle Hours Traveled	Vehicle Hours Delay
Passenger Vehicles	79,500,000	2,800,000	735,700
Heavy Trucks	9,000,000	260,000	82,300
Transit	205,000	15,000	2,600
Total	89,000,000	3,100,000	820,600

Source: PSRC Travel Demand Model – Base Forecast Scenario 2016, data rounded by Fehr & Peers April 2020.

### 3.1.2.2 Screenline Traffic Volume Performance

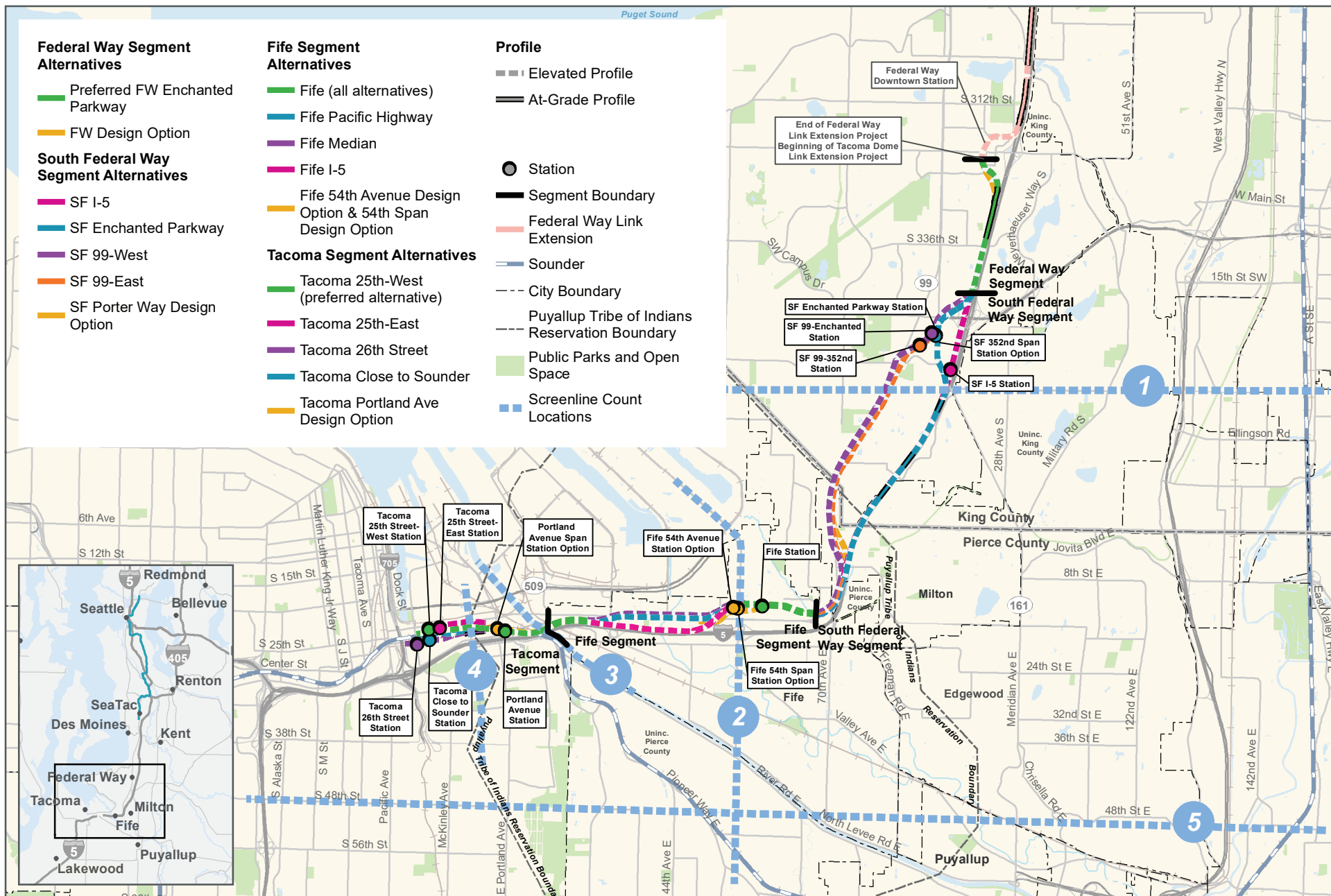
Screenlines are imaginary lines drawn across major roadways within the study area. Data at these screenlines provide a snapshot of traffic conditions (such as volumes, roadway volume-to-capacity ratios [v/c], and vehicle mode share) along the corridor. V/c ratio is a measurement of traffic volumes on a roadway or at an intersection compared to the estimated capacity of that roadway or intersection. A v/c ratio of 1.0 indicates that a roadway or intersection is operating at capacity. Five regional screenlines were evaluated to assess regional north-south and east-west travel along the project corridor. The screenlines were evaluated using the PSRC regional travel demand models for passenger vehicle travel and the Sound Transit model for transit travel in the 2016 base year. Figure 3-2 shows the screenline locations contained in the three segments.

- Screenline #1: East-west crossing, located approximately along S 360th Street.
- Screenline #2: North-south crossing, located near 54th Avenue E.
- Screenline #3: North-south crossing, along the Puyallup River.
- Screenline #4: North-south crossing, located approximately near East L Street.
- Screenline #5: East-west crossing, located approximately along S 48th Street.

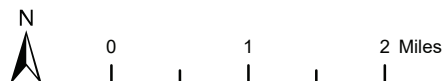
Three of the five screenlines (Screenlines #1, #2, and #3) have directional volumes at or close to capacity during the PM peak hour<sup>1</sup> (may vary by location, but generally between 3 and 6 p.m.), which indicates substantial congestion in the southbound direction (peak direction in the PM peak hour). The other two screenlines (Screenlines #4 and #5) do not exhibit the same level of congestion, with v/c ratios below 0.8 across the entire screenline. Congestion does exist in the area, especially along I-5 due to heavy merging and diverging traffic and impacts from the SR 16 and I-705 interchanges in Tacoma. All v/c ratios in the southbound/westbound direction are higher than the corresponding northbound/eastbound v/c ratios at each individual screenline (off-peak direction during the PM peak hour).

During the PM peak hour, more than 63 percent of the northbound traffic and about 60 percent of the southbound traffic are single-occupancy vehicles across all screenlines. High-occupancy vehicles account for about 33 percent of northbound traffic and nearly 36 percent of southbound traffic. Approximately 6 percent of southbound traffic and less than 2 percent of northbound traffic is attributed to transit.

<sup>1</sup> The data used in the regional traffic analysis were provided from the PSRC regional travel demand model. This model only evaluates the PM peak period because this is the period of the day when traffic volumes are highest and congestion is greatest. Therefore, the analysis included in the Draft EIS is reported for the PM peak period with analysis for the PM peak hour, or the hour with the greatest traffic volumes within the peak period, which is typically 3 hours.



Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).



**FIGURE 3-2**  
Screenline Count Locations

*Tacoma Dome Link Extension*



### 3.1.3 Transit Operations

King County Metro (Metro), Pierce Transit, and Sound Transit provide transit service in the study area, with regional and local bus fixed-route, Sounder commuter rail, and T Line light rail service to transit centers, park-and-rides, and bus stops. Table 3-3 shows the current (2016) daily boardings and transit trips served by regional transit for the entire Sound Transit three-county transit district. The regional transit system serves riders with over 600,000 daily boardings.

**Table 3-3 2016 Weekday Transit Ridership**

	2016 <sup>2</sup>
Total Regional Daily Transit Trips <sup>1</sup>	467,000
Total Regional Daily Transit Boardings <sup>3</sup>	605,000
Total Regional Link Boardings <sup>3</sup>	70,000

Source: Ridership & Traffic Forecast Technical Memorandum, Fehr & Peers April 2020.

Notes:

- (1) Transit trips count each passenger only once between the origin and destination of their trip. Transit trips include all trips on bus, Sounder, Central, and T Line services, and the Seattle Streetcar.
- (2) The Sound Transit Ridership model was calibrated for 2016 as the base or existing year and boardings in that year are included for reference.
- (3) Boardings count each time a passenger boards a transit vehicle; passengers who transfer between transit lines in a single trip count as multiple transit boardings. Transit boardings include all boardings on bus, Sounder, Central, and T Line services, and the Seattle Streetcar. Regional Link Boardings include boardings on Central and T Line services only.

Regional transit ridership from 2016 was used to calibrate the Sound Transit incremental ridership model to project potential transit ridership to 2042. The following sections discuss 2016 ridership in the context of recent traffic (2019–2024), transit service, and conditions at transit facilities.

#### 3.1.3.1 Transit Centers and Park-and-Rides

The Federal Way Downtown Station, currently being constructed by FWLE on the Federal Way Transit Center site, is immediately north of TDLE.

Two existing park-and-ride facilities in the study area, the Federal Way/S 320th Street Park and Ride and South Federal Way Park and Ride, are located more than 0.5 mile from the proposed station locations for TDLE. The transit center at Tacoma Dome Station includes two park-and-ride structures providing a total of 2,337 park-and-ride spaces.

#### 3.1.3.2 Transit Service

##### Regional and Local Bus Service

As of 2023, 16 bus routes serve destinations in the TDLE study area, including local and regional service provided by Sound Transit, Metro, and Pierce Transit. Appendix J1, Transportation Technical Report, provides a list of transit routes that serve the study area. Greyhound and FlixBus provide intercity service from the transit center at Tacoma Dome Station.

##### Rail Service

Sound Transit operates Sounder commuter rail between Lakewood/Tacoma and Seattle, with a stop at the Tacoma Dome Station in the Tacoma study area. Trains operate northbound and southbound, with a total of 13 trips per day at Tacoma Dome Station in each direction on weekdays, and eight of these weekday trips in each direction serve stations south of Tacoma Dome. Service is

predominantly northbound in the morning and southbound in the evening. Limited northbound and southbound service is provided outside the peak periods. A second Sounder commuter rail line operates between Everett and Seattle. Sound Transit also operates T Line between Tacoma Dome Station and Saint Joseph Medical Center in the Hilltop neighborhood. Stations along the route serve the University of Washington Tacoma campus, Tacoma Convention Center, and MultiCare Tacoma General Hospital.

Amtrak provides long-distance intercity (Coast Starlight) and state-supported (Amtrak Cascades) rail service, with a stop in Tacoma. The Tacoma Amtrak station was relocated in 2021 to a newly constructed station within Freighthouse Square, north of Tacoma Dome on E 25th Street, when train service began on the Point Defiance Bypass segment via Dupont. There is one daily roundtrip of the Coast Starlight route and four daily roundtrips of the Amtrak Cascades route.

#### 3.1.3.3 Transit Levels of Service

Transit Level of Service (L.O.S.) performance measures for service frequency, hours of service, passenger load, and reliability were analyzed for the PM peak period. Appendix J1, Transportation Technical Report, describes transit L.O.S. definitions and the existing and future transit L.O.S. values for each of the L.O.S. measures identified below. For transit L.O.S. performance, L.O.S. A indicates frequent peak-period service, more hours served during the day, high on-time performance, and minimal passenger crowding in a transit vehicle. Conversely, L.O.S. F indicates infrequent or irregular service, minimal service hours, poor reliability, and passenger crowding in the vehicle.

##### Service Frequency

Transit service between downtown Seattle and Tacoma operates with PM peak period service headways of 5 to 8 minutes (L.O.S. A or B). However, most of the study area between south Federal Way and Tacoma does not have direct bus service connecting the communities along the corridor to major regional destinations, such as Seattle-Tacoma International Airport or downtown Seattle. Most routes operate with PM peak period service headways of 21 minutes or longer (L.O.S. D or worse).

##### Headway

A headway is the amount of time between vehicles passing the same point while traveling in the same direction on a transit route.

##### Direct Bus Service

Direct bus service is a bus trip from one location to another that does not require a transfer.

##### Hours of Service

From the transit center at Tacoma Dome Station, the Tacoma Segment study area is well connected to Seattle-Tacoma International Airport and downtown Seattle for much of the day (L.O.S. A). South Federal Way has limited hours of service to downtown Seattle (L.O.S. E/F). The Fife Segment has direct transit connections to the existing Tacoma Dome Station (L.O.S. C).

##### Passenger Load

The passenger load L.O.S. reflects the average of all passenger loads on buses or Sounder service that cross a given screenline. At each screenline, some of the peak hour bus service may experience higher passenger loads than others; however, the average weekday PM peak hour passenger load L.O.S. for bus and Sounder service ranges from 0.02 to 0.63 (L.O.S. B or better). L.O.S. B means passengers have the option to choose where they sit, while L.O.S. A means that no passenger needs to sit next to another and empty seats are available to store carry-on items. The screenlines capture Sounder riders starting south of the Auburn Sounder station. Many

southbound Sounder passengers disembark at Tukwila, Kent, and Auburn, and the passenger loads are L.O.S. B or better when the Sounder train reaches screenline #1.

#### **On-Time Reliability**

Reliability of service was analyzed between major transit hubs within or to and from the TDLE corridor. Sound Transit Express bus routes provide service between Tacoma and Seattle-Tacoma International Airport, the University of Washington, and downtown Seattle, and all use I-5 for most of the route.

Sound Transit Express buses operate with poor on-time performance due to traffic congestion and wide variations in roadway travel times, with an average on-time performance of 79 percent (L.O.S. E). Sounder service, which is not influenced by traffic congestion, has an average on-time performance of 95 percent (L.O.S. A).

#### **3.1.4 Arterial and Local Streets**

##### **3.1.4.1 Roadway Network**

In addition to the regional roadways that would connect the study area to other regional population and employment centers, there are numerous local arterials and roadways that would connect drivers within the South Federal Way, Fife, and Tacoma segments to the proposed TDLE station locations.

##### **3.1.4.2 Intersection Operations**

Intersection operations analysis was conducted for the existing conditions for each segment. With input from the local jurisdictions and the Port of Tacoma, Sound Transit selected 86 intersections for analysis in the AM and PM peak hours. These include intersections that would be directly affected by TDLE, including intersections with changes to channelization, roadway width, or signal control, as well as intersections that would be indirectly affected, such as by a change in vehicular or pedestrian activity due to proximity to light rail stations. Existing traffic operations were measured at each intersection from traffic counts in fall 2019 and supplemented with count data and Synchro analysis from local jurisdictions.

The 86 study intersections are shown in traffic operations figures, which are summarized in Figures 3-3 through 3-10. In addition to identifying the study area intersections, these figures show anticipated L.O.S. and, where applicable, v/c ratios in the year 2042 for the No-Build and Build alternatives. Analysis of traffic operations at these intersections references agency intersection L.O.S. and/or v/c ratio standards, shown in Table 3-4, and applies these standards to both the AM and PM peak periods. The City of Federal Way and City of Tacoma use v/c ratios, a measure of existing traffic (volume) relative to the amount of traffic the roadway was designed to accommodate (capacity), in their traffic operations standards. The City of Fife uses L.O.S. standards.



**Table 3-4 Intersection Operations Standards for Affected Agencies**

Agency	Intersection Operations Standard
Washington State Department of Transportation	L.O.S. D for highways of statewide significance (HSS) L.O.S. E/mitigated for regionally significant state highways (non-HSS)
City of Federal Way	v/c ratio standard of 1.0 for unsignalized intersections v/c ratio standard of 1.2 for signalized intersections
City of Fife	L.O.S. D for all intersections
City of Tacoma	L.O.S. E or better and v/c ratio of 0.99 or below for arterials L.O.S. D or better and v/c ratio of 0.89 or below for all other roadways

### Federal Way Segment

Currently, all study intersections in the Federal Way Segment meet the City of Federal Way and WSDOT standards for intersection operations based in Synchro analysis of 2019 counts from the City of Federal Way.

### South Federal Way Segment

During the AM and PM peak hours, all sampled study intersections in the South Federal Way Segment meet the agency intersection standards based in Synchro analysis of 2019 counts from the City of Federal Way.

### Fife Segment

The roadway network and traffic volumes in the Fife Segment are anticipated to change from 2019 conditions after the construction of the SR 167 Completion Project, as well as improvements to the I-5/54th Avenue E and Port of Tacoma Road interchanges. Increases and decreases in traffic volumes as a result of those project improvements will vary by intersection. Because the improvements will alter future conditions within the Fife Segment, the analysis of existing L.O.S. was performed for select locations to provide context about current intersection operations.

During the AM peak hour, all sampled study intersections in the Fife Segment meet the agency intersection standards except for 54th Avenue E at I-5 Southbound Ramps (Fife Intersection #14), which operates at L.O.S. E. At this intersection, L.O.S. in the AM and PM peak hours is shown in Table 3-5.

During the PM peak hour, five of the sampled study intersections in the Fife Segment operate below the agency standards of L.O.S. D conditions (Fife Intersections #3, #13, #15, #21, and #24). The intersection at 70th Avenue E and SR 99 (Fife Intersection #25) was modeled as a signalized intersection as of 2019 and performed below agency standards; however, this intersection has since been converted to the Wapato Way E/SR 99 roundabout, which was not modeled in existing conditions. L.O.S. at these intersections in the AM and PM peak hours is shown in Table 3-5.

### Tacoma Segment

During the AM peak hour, most of the study intersections in the Tacoma Segment operate at or better than the agency intersection standards except for three unsignalized two-way stop-controlled intersections (Tacoma Intersections #9, #11, and #33). L.O.S. at these intersections in the AM and PM peak hours is shown in Table 3-5.

Most intersections during the PM peak hour operate at or better than the agency intersection standards except for two intersections, both two-way stop-controlled intersections on E Portland Avenue (Tacoma Intersections #32 and #33). L.O.S. at these intersections in the AM and PM peak hours is shown in Table 3-5.

**Table 3-5 Intersections Performing Below Agency Standards (2019)**

Intersection	Applicable Standard	AM Peak L.O.S. or V/C	PM Peak L.O.S. or V/C
Port of Tacoma Road/Pacific Highway (Fife Intersection #3)	WSDOT HSS (L.O.S. D)	C	<b>F</b>
54th Avenue E/SR 99 (Fife Intersection #13)	WSDOT HSS (L.O.S. D)	D	<b>F</b>
54th Avenue E at I-5 Southbound Ramps (Fife Intersection 1#14)	WSDOT HSS (L.O.S. D)	<b>E</b>	B
54th Avenue E/I-5 Northbound Ramps (Fife Intersection #15)	WSDOT HSS (L.O.S. D)	B	<b>F</b>
59th Avenue Ct E at SR 99 (Fife Intersection #21)	WSDOT HSS (L.O.S. D)	A	<b>F</b>
62nd Avenue E/SR 99 (Fife Intersection #24)	WSDOT HSS (L.O.S. D)	B	<b>F</b>
70th Avenue E at SR 99 (Wapato Way E at SR 99, Fife Intersection #25)	City of Fife (L.O.S. D)	Not in Model	<b>F</b>
I-705 Off-Ramp/E 26th Street (Tacoma Intersection #9)	WSDOT HSS (L.O.S. D)	<b>F</b>	D
East C Street/Tacoma Dome Parking Lot Driveway (Tacoma Intersection #11)	Tacoma – Arterial (L.O.S. D) 0.89 v/c Ratio	<b>F</b>	D
E Portland Avenue/E 25th Street/E Bay Street (Tacoma Intersection #32)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	D	<b>F</b>
E Portland Avenue/E 26th Street (Tacoma Intersection #33)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	<b>E</b>	<b>F</b>

#### 3.1.5 Freight Mobility and Access

Freeways, arterials, and local streets are important for moving freight and goods in the study area. Truck mobility within the Puget Sound region, including the South Sound area, is largely supported by a system of designated freight routes. WSDOT has designated the state freight corridors by modes based on annual freight tonnage moved by truck, rail, and waterway freight corridors. This classification system is called the Freight and Goods Transportation System. The truck freight classifications range from T-1, with more than 10 million tons annually, to T-5, with more than 20,000 tons in 60 days. The City of Tacoma also has a Freight Priority Network that includes a Heavy Haul Network to support commerce associated with the Port of Tacoma shown in Table 3-6.

**Table 3-6 Tacoma Freight Priority Network**

Network Classification	Streets Near TDLE Stations
Heavy Haul Network	Primarily within the Port of Tacoma on: <ul style="list-style-type: none"> <li>Taylor Way north of SR 509</li> <li>Lincoln Avenue between Alexander Avenue and Taylor Way and between Port of Tacoma Road and Portland Avenue E</li> <li>Port of Tacoma Road north of SR 509</li> <li>E 11th Street between Port of Tacoma Road and Milwaukee Way and between Alexander Avenue and Taylor Way</li> <li>Thorne Road</li> <li>Marshal Avenue</li> <li>Milwaukee Way from Lincoln Avenue Loop to Puyallup Avenue</li> <li>Portland Avenue E from E 11th Street to Lincoln Avenue</li> <li>St Paul Avenue from E Normal Street to Portland Avenue E</li> <li>East D/E 15th Street from E 19th Street to St Paul Avenue</li> <li>E 19th Street from E 18th Street to East D Street</li> </ul>
Primary Streets	Throughout the City of Tacoma on arterial roadways including: <ul style="list-style-type: none"> <li>I-5, I-705, SR 509, SR 7/Pacific Avenue, S 167/ River Road, SR 16, Fishing Wars Memorial Bridge</li> <li>East D Street and East F Street north of E 11th Street and from E 19th Street to E 26th Street</li> <li>A Street north of I-705</li> <li>Pacific Avenue from S 38th Street S 21st Street</li> <li>S 26th Street and South Tacoma Way west of East D Street</li> <li>11th Street from East D Street to driveways west of Portland Avenue E, from Portland Avenue E to Milwaukee Way, from Blair Waterway from Alexander Avenue E, and from Taylor Way to SR 509</li> </ul>

Tacoma Rail operates freight rail service from the Port of Tacoma to their Mountain Division, which connects Tacoma to Chehalis and Morton, Washington. A portion of the rail line between the Port of Tacoma and the Tacoma Rail Mountain Division, near and at the Tacoma Dome Station, is owned by Sound Transit. Tacoma Rail has operating rights along the portion of Sound Transit-owned rail line. Tacoma Rail typically operates between two and three freight trains during the week in the evenings, and occasionally operates a train during the day.

### 3.1.6 Nonmotorized Access

The study area for nonmotorized facilities is a 1-mile radius around each station for pedestrian facilities and a 3-mile radius around each station for bicycle facilities. The 1-mile radius around TDLE station alternatives represents the maximum distance typical riders would walk to the station, and the 3-mile radius represents the maximum distance typical riders would bike to the station. This section describes existing nonmotorized facilities within the study area, including sidewalks, on-street bicycle facilities, and shared-use paths within the study area as of 2020. Curb ramps and sidewalks in the proposed study area do not consistently meet ADA standards, and I-5 is a consistent barrier to nonmotorized access. Section 4.5 of Appendix J1, Transportation

Technical Report, includes additional detail and figures depicting the location of existing (2020) nonmotorized facilities in the study area.

#### 3.1.6.1 South Federal Way Station Area

Sidewalks are currently provided on many arterial streets within a 1-mile radius of the proposed station locations in South Federal Way. There are some existing gaps in the network, including on S 359th Street and 16th Avenue S near Todd Beamer High School. Sidewalk gaps exist where there is a lack of a dedicated pedestrian facility on the side of a public street. Marked crosswalks are provided at most major intersections. Much of the residential population near the station areas is to the east of I-5 or more than 1 mile west of the station locations. The primary crossing location of I-5 for the residential population east of the Interstate is along Enchanted Parkway S just north of Milton Road/20th Avenue S. Between Enchanted Parkway S and S 360th Street, there are existing gaps in the sidewalk network on 20th Avenue S.

There are some on-street bicycle facilities within a 3-mile radius of the proposed station locations, including Enchanted Parkway (SR 161), S 352nd Street, and S 356th Street. The BPA Trail, which extends along the Bonneville Power Administration (BPA) transmission line right-of-way and connects Celebration Park and Madrona Park in Federal Way, is the only shared-use path near the proposed stations and is located northwest of the proposed stations.

#### 3.1.6.2 Fife Station Area

Sidewalks are currently provided on many arterial streets within a 1-mile radius of proposed station locations in Fife. Existing gaps in the sidewalk network include 59th Avenue E, 15th Street E, and 54th Avenue E at the overcrossing of I-5. Marked crosswalks are provided at most major intersections. The Wapato Way E crossing of I-5 includes a shared-use path, while the crossings at 54th Avenue E and Porter Way both provide minimal pedestrian facilities. The majority of the residential population near the station area is located south of I-5.

There are some on-street bicycle facilities provided within a 3-mile radius of the proposed station locations, including 54th Avenue E south of I-5 and Pacific Highway E. The Interurban Trail can be accessed from the shared-use path along Wapato Way E and connects Fife to Milton and unincorporated King County. Near the intersection of SR 99/Wapato Way E there is a planned connection to the future spuyaləpabš Trail, a new regional trail that will pass through the Puyallup Tribe of Indians Reservation and connect the cities of Puyallup, Fife, and Tacoma.

#### 3.1.6.3 Tacoma Station Areas

Sidewalks are currently provided along E Portland Avenue, Puyallup Avenue, and local streets to the south of I-5 near the proposed Portland Avenue Station locations. Many other streets directly adjacent to the Portland Avenue Station locations do not provide sidewalks, including E 25th Street, E 26th Street, E 27th Street, E 28th Street, and E Bay Street. In the area near the Tacoma Dome Station locations, sidewalks are provided along most streets, except for E 25th Street, E 26th Street, and the north side of Puyallup Avenue. Marked crosswalks are provided at some major intersections along E Portland Avenue and legal unmarked crosswalks exist at many others, including several intersections on Puyallup Avenue at East D Street, East F Street, and East G Street. However, curb ramps and pedestrian signals are provided at these locations. Most of the residential population is to the south of I-5. Currently, there are two undercrossings at E Portland Avenue and E Bay Street and overcrossings at East L Street and E McKinley Way. The undercrossings provide sidewalks but are also adjacent to high-volume roadways with a high percentage of large trucks. Sidewalks are provided along both East L Street and E McKinley Way.

Bicycle facilities are provided within a 3-mile radius of the proposed Portland Avenue and Tacoma Station locations at crossings over I-5 on S Yakima Avenue and Tacoma Avenue S/Delin Street along East L Street, East D Street, South G Street, S Yakima Avenue, S Alaska Street, S 15th Street, S 6th Avenue and N Tacoma Avenue/S Stadium Way. Bicycle boulevards, shared roadways with traffic calming and signed bicycle priority are also provided in the western part of the Tacoma Segment on S 37th Street, South G Street, East I Street, Fawcett Avenue and N Yakima Avenue.

Near the Portland Avenue and Tacoma Dome station locations, there are several trails that do not directly connect to the proposed stations, including the Prairie Line Trail, the Scott Pierson Trail, the Water Flume Line Trail, the Pipeline Trail, and the Thea Foss Waterway Public Esplanade. These trail connections are all beyond 0.25 mile from the proposed stations near the Tacoma Dome Station. The Prairie Line Trail is to the northwest, the Scott Pierson Trail is to the west and connects to Gig Harbor, the Pipeline Trail is located to the south, and the Thea Foss Waterway Public Esplanade is located to the north between S 15th Street and E Dock Street. There are paved and unpaved paths within Swan Creek Park, located to the southeast of the Portland Avenue Station.

#### **3.1.7 Safety**

Crash data records were obtained from WSDOT for the period of January 2016 to December 2018 for all four segments. This period was selected because it is consistent with 2019 observed traffic data and represents the most recent available data for the pre-COVID pandemic condition. This does not include crash data from 2020 and 2021, when traffic volumes on arterial roadways were lower, according to WSDOT data. Historical crash data were reviewed to identify whether any of the study area intersections have existing safety concerns that could be impacted by the proposed project. The crash data were evaluated at study intersections, along the I-5 mainline, and at I-5 ramps by severity, type, and frequency.

##### **3.1.7.1 Intersection Crashes**

Many crashes at the study intersections resulted in property damage only (approximately 60 percent in Federal Way, 70 percent in both South Federal Way and Fife, and 60 percent in Tacoma). Almost all remaining crashes resulted in a minor or possible injury.

While no fatal crashes occurred in the Federal Way Segment, one fatality occurred in the South Federal Way Segment, two fatality crashes occurred in Fife and two fatality crashes occurred in Tacoma.

There were no serious injury crashes in the Federal Way Segment, but each of the other segments had crashes resulting in serious injuries including four in South Federal Way, three in Fife, and ten in Tacoma. Of the noted fatality and serious injury crashes, all occurred at study area intersections.

The types of crashes along the TDLE corridor are summarized by segment in Table 3-7.



**Table 3-7 2016-2018 Crashes by Type at Study Intersections**

Segment	Crash Types									
	Rear-End	Angle	App. Turn	Side Swipe	Fixed Object	Ped	Cycle	Other	Head-On	Total
Federal Way	39 (38%)	24 (23%)	22 (21%)	12 (12%)	2 (2%)	3 (3%)	1 (1%)	0 (0%)	0 (0%)	103
South Federal Way	225 (47%)	83 (17%)	85 (18%)	69 (14%)	12 (2%)	7 (1%)	2 (<1%)	0 (0%)	1 (<1%)	484
Fife	179 (30%)	172 (30%)	129 (22%)	74 (13%)	10 (2%)	8 (1%)	3 (<1%)	9 (2%)	3 (<1%)	587
Tacoma Way	69 (17%)	167 (40%)	93 (22%)	39 (9%)	16 (4%)	19 (5%)	8 (2%)	2 (<1%)	2 (<1%)	415

Source: WSDOT 2019.

### 3.1.7.2 I-5 Ramp Crashes

On I-5 ramps through the study segments, there was a total of 344 crashes between 2016 and 2018. The majority of crashes in the study segments were property damage only, accounting for almost 75 percent of all crashes. There was one fatality crash in the study segments over the 3-year period, and it occurred on the Bay Street (SR 167) ramp to I-5 Southbound. There were five serious injury crashes along I-5 ramps in the study segments, with three occurring in the northbound direction and two occurring in the southbound direction. Of the six fatality and serious injury crashes, all but one occurred in dark conditions, and two noted alcohol as a contributing factor.

On the on/off-ramps to/from SR 18, I-5, I-705, SR 7, and SR 161 in the study area, the most common type of crash was fixed-object crashes, accounting for about 45 percent of all crashes on the ramps. Rear-end crashes made up the second-highest percentage of crash types, at almost 35 percent. It should be noted that while freeway ramps would normally experience greater volumes of rear-end crashes, most of these crashes were intersection-related and were included in the on/off-ramp intersection crash totals. No pedestrian or bicycle crashes were noted on the on/off-ramps.

### 3.1.7.3 Southbound I-5 Clear Zone Impact Analysis

A minimum clear zone is defined by geometric considerations, including whether a recoverable slope is present and whether the area is free of fixed objects so that an errant vehicle can recover. The clear zone is a function of posted speed limits, side slope, and traffic volumes. A roadside clear zone inventory for the I-5 mainline was completed for the western edge (southbound) of I-5 in two areas where the alternatives are adjacent to I-5: between S 324th Street and 70th Avenue E and from Frank Albert Road E to the Puyallup River. The inventory assessed:

- Whether the clear zone width is currently met.
- Whether the clear zone is affected by the existing barriers required for safety (e.g., guardrail, barrier, or walls).

Within the study area, 13,900 feet of existing clear zone (approximately 43 percent of the total length) is present along the I-5 southbound mainline roadside. The remaining 57 percent (18,360 feet) is currently shielded by guardrail, walls, or barrier.

### 3.1.8 Parking

Existing weekday public on-street and off-street parking supply and utilization information was collected in February 2020 for all roads within a 0.25-mile radius of each TDLE station area. Parking supply data was collected by type of parking (time-limited parking, free parking, loading zone, private) and location. Parking utilization counts were collected once during the weekday peak midmorning or midafternoon hours.

There are three park-and-ride locations within the TDLE project area, three in Federal Way and one in Tacoma. The park-and-ride located at the Federal Way Downtown Station is north of the TDLE study area at the terminus of the FWLE, had an estimated occupancy of 69 percent in 2019. The Federal Way/S 320th Street Park and Ride within the Federal Way Segment had an estimated utilization of 30 percent in 2019. The South Federal Way Park and Ride, located on S 348th Street west of Pacific Highway, is in the South Federal Way Segment and had an approximate parking utilization of 18 percent in 2019. At the Tacoma Dome Station, there are two existing parking garages with over 2,300 parking spaces that were 99 percent utilized in February 2020. This park-and-ride location can be accessed via vehicle from Puyallup Avenue and E 25th Street and is less than 0.25 mile from the proposed TDLE station platforms. Estimated occupancy for all park-and-rides was included in this analysis to represent the same pre-pandemic timeframe.

Station areas in south Federal Way and Fife have no public on-street or off-street parking within 0.25 mile of the proposed station locations. Commercial and retail businesses that include extensive on-site parking surround each of the proposed station locations in South Federal Way and Fife. These parking spaces were not included in the field survey because they are private parking. The proposed SF I-5 Station and Fife Station are within 0.5 mile of residential neighborhoods with on-street parking.

Most of the industrial businesses near the Portland Avenue Station in Tacoma provide on-site parking for customers. Public on-street parking spaces near the Portland Avenue Station are mostly in the residential neighborhood south of I-5, with some on-street public parking located on E 26th Street. Approximately 37 percent of the public on-street parking spaces within 0.25 mile of the Portland Avenue Station are occupied during the midday period.

The area near the Tacoma Dome Station has the most on-street public parking available of all the segments. For the 0.25-mile radius surrounding the proposed station locations, roughly 72 percent of on-street parking was occupied during the midday period. In addition to the park-and-ride lots at Tacoma Dome Station, there are six publicly available off-street parking lots, with a total of 1,011 parking spaces where vehicles may park for multiple hours at a time.

The utilization percentage of the off-street public parking lots was approximately 45 percent. In total, the area near the Tacoma Dome Station maintains an 81 percent parking utilization when considering all public on-street, off-street, and Tacoma Dome Station parking spaces within a 0.25 mile of the proposed station locations.

### 3.1.9 Navigation

The Puyallup River and Thea Foss Waterway are the main navigable waterways in the study area. Thea Foss Waterway is located near the Tacoma Dome Station and has all types of users, including recreational and commercial. The Puyallup River is located near the Portland Avenue Station area and is navigable to watercraft, including both recreational and commercial users, from the confluence with Commencement Bay to 3 miles upstream. The proposed light rail bridge crossing would occur at approximately mile 2.3, upstream of an existing railroad bridge that limits the size of watercraft that can navigate the Puyallup River. The U.S. Coast Guard has identified

this reach of the Puyallup River as “navigable in law, but not actually navigated other than by logs, log rafts, rowboats, canoes, and small motorboats” (U.S. Coast Guard 2018). The U.S. Coast Guard issued an advanced approval determination for the project on October 1, 2018. All other water bodies in the study area are not navigable.

The crossing of the Puyallup River is within the ancestral and reservation lands of the Puyallup Tribe of Indians and where the Puyallup Tribe has treaty-protected fishing rights to navigate and fish in and along the Puyallup River. The Puyallup River is a water of the U.S. and any work within the Puyallup River or that may otherwise affect fish in the study area would be conducted in accordance with the terms of the USACE Section 404/Section 10 permit, Hydraulic Project Approval (HPA), and other applicable permits and reviews, such as Tribal permits and ESA Section 7 consultation. Project activities would also be subject to Section 408 for actions that affect the Puyallup River levees that are under the jurisdiction of the USACE.

## 3.2 Regional Transportation

This section describes traffic forecasts, VMT, VHT, screenline performance, and transit trips for the No-Build Alternative and build alternatives in the year 2042. Short-term construction impacts are also discussed.

### 3.2.1 Environmental Impacts to Regional Transportation

#### 3.2.1.1 Long-Term Impacts

##### No-Build Alternative

The No-Build Alternative includes projects, funding packages, and proposals in the central Puget Sound region that are planned to occur with or without TDLE, as described in Chapter 2 (Section 2.2). The No-Build Alternative would not have access or circulation impacts on I-5 or Pacific Highway/SR 99 because the number of and configuration of freeway lanes, interchange access points, and freeway shoulders would be maintained. No reduction in the overall regional VMT would occur with the No-Build Alternative.

##### All Build Alternatives

None of the TDLE build alternatives would have access or circulation impacts on I-5 because the number of and configuration of freeway lanes, interchange access points, and freeway shoulders would be maintained.

##### Potential Benefits

All of the TDLE build alternatives would reduce overall regional VMT by approximately 228,000 miles per day and VHT by approximately 15,000 hours per day compared to the No-Build Alternative. Screenline vehicle volumes and v/c ratios would be reduced with any of the build alternatives. Forecast VMT and VHT based on the PSRC travel demand model are discussed in greater detail in Appendix J1. While vehicle trips are expected to decrease, person trips (trips made by one person in any travel mode) would increase from additional transit ridership with any of the build alternatives through the TDLE corridor. In the entire region, transit trips are expected to increase by 13,000, and daily Link transit trips are expected to increase by 26,000 compared to the No-Build Alternative as discussed in Section 3.3.

#### 3.2.1.2 Construction Impacts

Construction on the TDLE corridor adjacent to I-5 would have few impacts to highway operations on the I-5 mainline or shoulders. Project-related modifications to the BPA high-tension power lines adjacent to S 324th Street may require nighttime closures or rolling slowdowns on I-5.

The SF 99-West and SF 99-East alternatives extend along Pacific Highway for approximately 2 miles and would require temporary roadway or individual lane closures during construction. The SF 99-East Alternative includes a section of alignment in the median of Pacific Highway that may require more extensive nighttime and weekend closures and daytime lane reductions. The SF 99-East Alternative would cross over Pacific Highway northbound into the roadway median south of S 373rd Street and cross over the northbound travel lanes again south of Birch Street. The SF 99-West Alternative would cross Pacific Highway north of S 356th Street and north of Birch Street. All South Federal Way Segment build alternatives would cross Pacific Highway near the intersection of 70th Avenue E, requiring temporary roadway closures.

Construction of the alignment connecting to the Fife Segment would cross portions of the WSDOT SR 167 Completion Project (Stages 1a and 1b) connecting I-5 and SR 509, requiring temporary roadway closures. The Fife Pacific Highway Alternative and Fife Median Alternative continue along Pacific Highway E for approximately 1 mile and would require partial daytime closures and full night and weekend closures in this area.

In Tacoma, west of the Puyallup River, the on-ramp to southbound I-5 from E Bay Street may experience varying degrees of impact, from temporary overnight closures to full closure and temporary realignment to avoid conflict with construction of TDLE guideway columns.

#### 3.2.1.3 Avoidance and Minimization Measures for Construction Impacts

During TDLE construction, Sound Transit would work with WSDOT, the Port of Tacoma, and the local jurisdictions to develop a detailed construction plan. This plan would coordinate construction activities, such as incident management, construction staging, traffic control, and closure details, where the light rail construction might affect either regional or local roadways. Sound Transit would also coordinate with WSDOT and local jurisdictions to disseminate construction closure information to the public as needed.

#### 3.2.2 Potential Mitigation Measures

No long-term transportation impacts were identified for regional transportation facilities with the No-Build or build alternatives for TDLE; therefore, no mitigation on regional transportation facilities is anticipated. Construction mitigation measures, including traffic control, closure details, safety and construction barriers, and signage, will be included in a detailed construction plan to be coordinated with WSDOT.

### 3.3 Transit Operations

This section describes potential changes to transit service and facilities, ridership and travel times, and transit L.O.S. for the No-Build Alternative and build alternatives. It also discusses total transit and light rail ridership, transit travel times, transfers, and station mode of access for build alternatives. Transit L.O.S. and operations with the build alternatives are summarized, including service frequency, hours of service, passenger load, and reliability. This section also qualitatively discusses temporary construction impacts to transit facilities and service.

### 3.3.1 Environmental Impacts to Transit Operations

#### No-Build Alternative

The No-Build Alternative includes projects, funding packages, and proposals in the central Puget Sound region that are planned to occur with or without TDLE, as described in Chapter 2 (Section 2.2). The No-Build Alternative includes a variety of changes to both transit operations and facility improvements that are funded for construction by 2042. FWLE will develop new light rail stations at Kent/Des Moines, S 272nd Street, and the Federal Way transit center, which will be called the Federal Way Downtown Station. The No-Build Alternative also includes construction of new light rail OMFs, as well as other facilities, transit bus routes, and service modifications proposed within each of the local transit agency's long-range plans.

#### All Build Alternatives

For TDLE build alternatives, there would be the same systemwide transit improvements as the No-Build Alternative, plus the extension of light rail to the Tacoma Dome Station. As described in Chapter 2, Alternatives Considered, the project would include four new light rail stations, two with new or expanded park-and-ride capacity, and improved transit connectivity through the construction of multimodal transit hubs. TDLE would operate 20 hours per day Monday through Saturday and 18 hours on Sunday. Headways are planned to be every 6 minutes during the AM and PM peaks, every 10 minutes midday and in the evenings, and every 12 to 15 minutes in the early morning and late evening. Transit agencies have identified preliminary, conceptual bus transit service assumptions that could be implemented to integrate buses and light rail services in the study area. Appendix J1, Transportation Technical Report, includes figures that display these conceptual networks. All the TDLE station locations near the Tacoma Dome would include increased bus transit service that would require bus transit facilities to accommodate the service. These are described in Table 5-7 in Appendix J1.

#### 3.3.1.1 Long-Term Impacts

The analysis in this section describes potential long-term impacts to transit operations and benefits for all TDLE alternatives.

#### Potential Benefits

With 11,000 to 16,000 new transit trips along the project, all TDLE build alternatives would shift up to 30,000 people per day from driving and vehicular travel to using light rail, reducing VMT in the region by up to 228,200 miles. TDLE build alternatives would provide reliable high-capacity transit to the South Federal Way, Fife, Portland Avenue, and Tacoma Dome station areas. Each station would accommodate bus transit connections for local transit, allowing for restructured service that better serves people and employment centers and for light rail that serves more regional and long-distance transit trips throughout the transit network. As part of the TDLE project, each of the four stations would also include nonmotorized improvements along the corridor and connections to Link light rail. Additionally, other agencies would provide bus service at stations.

#### Ridership

The ridership forecasts presented in this section do not directly forecast transit ridership during large events, such as those at the Tacoma Dome, special Sounder service to sporting events, or the Washington State Fair. While it is expected that additional ridership would be experienced on the light rail system during days with events at these facilities, it is not included in the forecasts. These events are intermittent and occur during various times of the day, with the highest surge



often occurring outside of peak travel times. These events would occur without light rail expansion, and TDLE would provide additional high-capacity transit service to support this demand and facilitate access by efficiently moving attendees and staff to and from events.

Table 3-8 shows the 2042 daily transit ridership for the No-Build and build alternatives in the TDLE corridor as well as the expected daily ridership and change in the number of new transit riders with the build alternatives. Region-wide daily transit trips and boardings reflect trips on buses, Sounder commuter rail, light rail, and streetcars throughout the Sound Transit service area, including transit services operated by county and local bus agencies.

**Table 3-8 2042 TDLE Weekday Daily Transit Trips and TDLE Riders**

Measure	No-Build Alternative	Build Alternatives
Total Daily Transit Trips Region Wide <sup>1</sup>	753,000	766,000
Total Daily Transit Boardings Region Wide <sup>2</sup>	1,152,000	1,169,000
Total Daily Link Boardings Region Wide <sup>2</sup>	500,000	526,000
Total TDLE Riders <sup>3</sup>	N/A	24,000-36,000
2042 New Transit Trips	N/A	11,000-16,000

Source: Ridership & Traffic Forecasts Technical Memorandum, Fehr & Peers April 2020.

Notes:

- (1) Transit trips count each passenger only once between the origin and destination of their trip. Transit trips include all trips on bus, Sounder, all Link services programmed through completion of the Sound Transit 3 Plan, and the Seattle Streetcar.
- (2) Boardings count each time a passenger boards a transit vehicle; passengers who transfer between transit lines in a single trip count as multiple transit boardings. Transit boardings include all boardings on bus, Sounder, all Link services programmed through completion of the Sound Transit 3 Plan, and the Seattle Streetcar. Regional Link Boardings include boardings on Central and T Line services only.
- (3) Total daily trips (ridership) account for riders on TDLE, regardless of where they would board the train.

The TDLE build alternatives would generate 24,000 to 36,000 daily riders whose trips include using some or all of the TDLE system, 11,000 to 16,000 of whom would be new transit riders. With the TDLE build alternatives, the number of daily transit boardings in the Sound Transit service area is expected to increase by up to 1.5 percent.

Average 2042 weekday and PM peak period station boardings for the build alternatives are shown in Table 3-9. These are boardings only at each TDLE station, while the total trips shown in Table 3-9 include all trips to or from any TDLE station.

**Table 3-9 TDLE Boardings by Station (2042)**

Station	PM Peak (3:00 – 6:30 PM)			Average Weekday		
	NB	SB	Total	NB	SB	Total
South Federal Way	50	120	170	1,400	400	1,800
Fife	360	340	700	1,700	900	2,600
Portland Avenue	120	N/A	120	1,200	>0	1,200
Tacoma Dome	1,090	N/A	1,090	10,800	N/A	10,800
<b>Total</b>	<b>1,620</b>	<b>460</b>	<b>2,080</b>	<b>15,100</b>	<b>1,300</b>	<b>16,400</b>

Source: Ridership & Traffic Forecasts Technical Memo, Fehr & Peers April 2020.

### Station Mode of Access

Light rail stations are typically accessed by automobile (including park-and-ride trips, as well as passenger pickup/drop-off), transit, walking, or bicycling. Table 3-10 summarizes the projected mode of access for riders who exit the train at TDLE stations during the 3.5-hour PM peak period. The stations in South Federal Way and Fife are forecast to have park-and-ride as the primary mode of access. With no planned parking and limited bus service, pickup is forecast to be the highest mode of access at the Portland Avenue Station. Transit transfers represent the highest mode of access at the Tacoma Dome Station, including transfers to/from T Line, bus, and Sounder.

Planned park-and-ride spaces at the stations in South Federal Way and Fife may be deferred for up to 3 years from the anticipated start of light rail service in 2035. If no parking spaces were provided at the stations in South Federal Way and Fife, total daily boardings at these stations would decrease; they would have up to 300 fewer average weekday boardings each. The Tacoma Dome Station would have an increase of 100 weekday boardings, and it is anticipated that daily boardings would also increase by up to 100 at the Federal Way Downtown Station. Most of the changes in boardings would be experienced during the AM peak period.

**Table 3-10 PM Peak Period Mode of Access at TDLE Stations (2042) – Passengers Exiting the Train**

Station	Park-and-Ride <sup>1</sup>	Pickup	Walk/Bike	Transit Transfer	Total Passengers Exiting the Train
South Federal Way	520 (48%)	270 (25%)	140 (13%)	160 (14%)	1,090
Fife	500 (51%)	100 (10%)	20 (2%)	360 (37%)	980
Portland Avenue	0	440 (65%)	220 (32%)	20 (3%)	680
Tacoma Dome <sup>2</sup>	1,350 (22%)	980 (15%)	780 (13%)	3,000 (49%)	6,110
<b>Total</b>	<b>2,370 (27%)</b>	<b>1,790 (20%)</b>	<b>1,160 (13%)</b>	<b>3,540 (40%)</b>	<b>8,860</b>

Source: Ridership & Traffic Forecasts Technical Memo, Fehr & Peers April 2020.

Notes:

- (1) Consistent with the Sound Transit 3 Plan, the mode of access shares assumes two 500-stall parking facilities: one in South Federal Way and located in Fife.
- (2) Forecasts for transit often show that demand for parking typically exceeds supply. It is assumed that the spaces at Tacoma Dome Station would be fully utilized, much as they are today. Sounder, T Line, and bus riders would continue to use parking facilities at Tacoma Dome Station. TDLE is expected to induce additional demand for parking; however, it is anticipated that additional parking demand would be partially offset due to:
  - Some Sounder, T Line, and bus riders who currently park at Tacoma Dome Station or would do so under the No-Build Alternative, would use TDLE instead. This would reflect a net change of zero in parking demand.
  - Transfers to and from other transit modes (Sounder, T Line, and bus riders) are expected to represent a high percentage of mode of access to TDLE during the PM peak period. These riders would not create additional parking demand.
  - For the purposes of evaluating mode of access as well as traffic, it was assumed that 55 percent of the existing 2,450 stalls at the Tacoma Dome Station parking facility would be used by TDLE riders. Nearby off-street parking lots also have additional capacity. See Section 3.8 for further discussion of parking.

Table 3-11 summarizes the projected mode of access for riders who board at TDLE stations during the 3.5-hour PM peak period. Access for boardings via park-and-ride would be less than for passengers exiting the train. Most riders would access the station in South Federal Way via walking or biking. Access to the station in Fife is forecast to be similar for pedestrians, cyclists, and transit. The highest mode of access at the Portland Avenue and Tacoma Dome stations would be the same for boardings as passengers exiting the train.

**Table 3-11 PM Peak Period Mode of Access at TDLE Stations (2042) – Boardings**

Station	Park-and-Ride <sup>1</sup>	Drop-Off	Walk/Bike	Transit Transfer	Total Boardings
South Federal Way	30 (18%)	40 (23%)	80 (47%)	20 (12%)	170
Fife	110 (16%)	70 (10%)	260 (37%)	260 (37%)	700
Portland Avenue	0 (0%)	80 (67%)	40 (33%)	0 (0%)	120
Tacoma Dome <sup>2</sup>	160 (15%)	160 (15%)	260 (24%)	510 (47%)	1,090
<b>Total</b>	<b>320 (15%)</b>	<b>350 (17%)</b>	<b>620 (30%)</b>	<b>790 (38%)</b>	<b>2,080</b>

Source: Ridership & Traffic Forecasts Technical Memo, Fehr & Peers April 2020.

Notes:

- (1) Consistent with the Sound Transit 3 Plan, the mode of access shares shown above assume 500-stall parking facilities in South Federal Way and Fife.
- (2) Forecasts for transit often show that demand for parking typically exceeds supply. It is assumed that the spaces at Tacoma Dome Station would be fully utilized, much as they are today. Sounder, T Line, and bus riders would continue to use parking facilities at Tacoma Dome Station. TDLE is expected to induce additional demand for parking, however, it is anticipated that additional parking demand would be partially offset due to:
  - Some Sounder, T Line, and bus riders who currently park at Tacoma Dome Station or would do so under the No-Build Alternative, would use TDLE instead. This would reflect a net change of zero in parking demand.
  - Transfers to and from other transit modes (Sounder, T Line, and bus riders) are expected to represent a high percentage of mode of access to TDLE during the PM peak period. These riders would not create additional parking demand.
  - For the purposes of evaluating mode of access as well as traffic, it was assumed that 55 percent of the existing 2,450 stalls at the Tacoma Dome Station parking facility would be used by TDLE riders. Nearby off-street parking lots also have additional capacity. See Section 3.8 for further discussion of parking.

Mode of access at stations in South Federal Way and Fife would be different if parking were not provided when service starts in 2035. Under this scenario, pickup/drop-off, walk/bike, and transit transfers would increase (total AM peak boardings would decrease as described earlier).

### Transit L.O.S. Measures

Transit L.O.S. was analyzed for service frequency, hours of service, passenger loads, and reliability to describe transit performance in the No-Build and build alternatives for the year 2042.

### Service Frequency

The 2042 No-Build service frequency would be similar to existing conditions because service levels would not notably change between the study area and regional destinations. In connection with FWLE, regional service from the study area would be refocused to connect to the regional light rail system at the Federal Way Downtown Station.

With the build alternatives, TDLE PM peak headways would be every 6 minutes, improving service frequency to L.O.S. A for connections between Tacoma, Fife, South Federal Way, and many of the Puget Sound regional destinations. TDLE would still require a transfer to regional destinations north and east of downtown Seattle (Bellevue/Redmond, University of Washington, North Seattle/Lynnwood); however, the frequency of the rail service and the ease of transfer between light rail lines would offset the transfer time.

#### Hours of Service

The 2042 No-Build transit hours of service are assumed to remain the same as existing transit operations. With the No-Build Alternative, the hours of service between most study areas and regional destinations remain poor. The exception is service between Tacoma and downtown Seattle, which would be L.O.S. A or B.

With the build alternatives, TDLE would operate 20 hours per day Monday through Saturday and 18 hours on Sunday, resulting in L.O.S. A for hours of service.

#### Passenger Load

Under the No-Build Alternative, direct bus service connecting to some regional destinations would no longer be provided because riders would transfer at the Federal Way Downtown Station and travel to and from areas north of Federal Way by light rail. In the PM peak period with the No-Build Alternative, planned changes to the bus network in the area is expected to improve transit passenger load for buses to L.O.S. A in both directions of travel. Increased bus service is planned in the study area, providing additional capacity for riders. Expanded Sounder service is also expected to draw some riders from buses, also contributing to lower passenger loads. Increased demand would contribute to a decline in the average passenger load L.O.S. on Sounder at several screenlines in both directions from L.O.S. A to B or C. Although capacity would increase with the provision of longer train sets (an increase from seven-car trains to 10-car trains), ridership is also forecast to increase across several screenlines. While average passenger loads are forecast to remain below the Sounder seating capacity, some trips would experience fuller trains where passengers have less seating choice.

With the build alternatives, the passenger load L.O.S. for light rail would be L.O.S. A across the four screenlines served by light rail. Light rail trains would provide additional capacity to accommodate forecast transit demand. Passenger load L.O.S. for buses would improve to L.O.S. A for all segments in both directions as riders switch from buses to light rail. Average loads would improve across all screenlines as passengers use light rail for regional travel and bus service to access light rail stations. Sounder passenger load L.O.S. would remain at L.O.S. A or B across all screenlines.

#### Reliability and On-Time Performance

The future reliability of bus service with the No-Build Alternative is expected to degrade compared with 2019 transit service. Current Sound Transit Express bus service already operates at L.O.S. D or E for service frequency between regional destinations. By 2042, speeds on key roadways, such as I-5, I-5 HOV lanes, and major arterial streets, are expected to decrease during the PM peak period. Poor bus reliability causes passengers to be less confident about arriving at the scheduled time. As a result, passengers might need to take an earlier trip to ensure getting to their destinations on time or they may shift to another mode of travel.

The TDLE build alternatives would provide more reliable transit service because service would operate in an exclusive right-of-way with no at-grade crossings in the study area. Light rail reliability in the TDLE corridor could be affected by unexpected delays at station areas or by system delays outside of the TDLE corridor, where light rail would be operating at grade with traffic. TDLE service would operate at L.O.S. A for transit frequency and transit hours of service.

#### Transit Transfers

Several hubs in the Sound Transit region, including the Tacoma Dome Station, are considered “multi-centered” route hubs where bus routes converge so transfers can be made to multiple destinations at one location. The transit transfer rate is calculated by dividing the total number of regional transit boardings by the total number of regional transit trips. The transfer rate shows how many transit trips include more than one transit boarding, such as a trip that begins on a bus and transfers to light rail. Many regional trips on light rail would require a transfer in downtown Seattle; however, the frequency of light rail service and the ease of transfer between lines will minimize this inconvenience.

At Tacoma Dome Station, approximately 45 percent of TDLE riders are expected to transfer to another transit service due to the high L.O.S. provided at this transit hub. Of those transit transfers forecast at Tacoma Dome Station during the PM peak period, the following shares of transit service types are expected: 47 percent T Line, 43 percent bus, and 10 percent Sounder.

#### Minimum Operable Segments and Interim Terminus

TDLE could be constructed and operated in phases, depending on available funding or other factors. The station in South Federal Way or the station in Fife could serve as a minimum operable segment (M.O.S.) or an interim terminus. Since the end-of-line M.O.S. stations are the same as the interim terminuses, the term interim terminus is used to refer to both. Under these scenarios, transit service assumptions differ from the full build alternatives.

With an interim terminus at the station in South Federal Way, several of the Pierce Transit routes and the Sound Transit Regional Express Route 596, which would serve the station in Fife in the build alternatives, would be routed to the transit center at Tacoma Dome Station instead. Sound Transit Regional Express Routes 574 and 590 would be extended and truncated, respectively, to serve the South Federal Way station area. With an interim terminus at the station in Fife, Pierce Transit bus service would be the same as the build alternatives and two Sound Transit routes would be truncated at the station area in Fife.

The assumed changes to bus service with either interim terminus could require changes to the station design to accommodate the greater bus volumes compared with the build alternatives. With an interim terminus at the station in South Federal Way, both the proposed station in South Federal Way and the existing Tacoma Dome Station would need to accommodate additional bus volumes since the station in Fife would not yet be constructed. With an interim terminus at the station in Fife, that station would need to accommodate additional Sound Transit buses. The number of bus bays and layover zones included in the station designs may be sufficient to accommodate increased service levels as part of interim terminus conditions; however, depending on transit service level changes, the station designs may need to include additional bays and/or layover spaces as appropriate.

#### *Ridership*

Table 3-12 summarizes forecast ridership associated with an interim terminus at either the station in South Federal Way or Fife. The interim terminus at the station in South Federal Way would result in a comparable number of transit trips and TDLE riders as the No-Build Alternative. It would have fewer transit trips and TDLE riders compared to the build alternatives. The expected daily boardings with an interim terminus at the station in South Federal Way is approximately 2,700, and approximately 4,700 with an interim terminus at the station in Fife.



**Table 3-12 2042 South Federal Way and Fife Interim Terminus Weekday Ridership and TDLE Riders**

Measure	No-Build Alternative	Build Alternatives	South Federal Way Interim Terminus	Fife Interim Terminus
Total Regional Daily Transit Trips <sup>1</sup>	753,000	766,000	751,000	757,000
Total TDLE Trips	N/A	24,000-36,000	5,000	8,700

Source: Ridership & Traffic Forecast Technical Memorandum, Fehr & Peers April 2020.

Notes:

- (1) Transit trips count each passenger only once between the origin and destination of their trip. Transit trips include all trips on bus, Sounder, all Link services programmed through completion of the Sound Transit 3 Plan, and the Seattle Streetcar.
- (2) Boardings count each time a passenger boards a transit vehicle; passengers who transfer between transit lines in a single trip count as multiple transit boardings. Transit boardings include all boardings on bus, Sounder, all Link services programmed through completion of the Sound Transit 3 Plan, and the Seattle Streetcar. Regional Link Boardings include boardings on Central and T Line services only.

### Mode of Access

With an interim terminus at the station in South Federal Way, most riders would access the station by transit during the PM peak hour. More bus routes would feed the station, which would reduce the number of riders being picked up by someone else. The number of park-and-ride users would remain constant because the size of the parking facility would not change, resulting in high use for passengers exiting the train but low use for passengers boarding the train in the PM Peak because parking spaces are expected to be mostly full, with vehicles parked during the AM peak period. Therefore, more riders boarding the train would access the station via walking or biking compared to riders exiting the train in the PM peak period.

Similar to the South Federal Way interim terminus, the number of park-and-ride users at the interim terminus station in Fife would remain constant, with more riders exiting the train in the PM peak period using the park-and-ride compared to riders boarding the train in the PM peak period. Transit transfer activity would increase, commensurate with assumed increases in bus feeder service to the station in Fife as an interim terminus and more riders boarding the train in the PM peak period would access the station by walking or biking in the PM peak period.

### Transit Transfers

The transit transfer rate with an interim terminus at either the station in South Federal Way or Fife would be the same as the No-Build Alternative. Transfers between feeder bus service and light rail would be required for both termini, as would light rail to light rail transfers to travel to regional destinations.

### 3.3.1.2 Construction Impacts

All build alternatives would involve lane closures, bus stop relocations, partial or full temporary closures of park-and-ride facilities, and sidewalk impacts that could affect transit operations within the study area during construction. Other impacts could include lane closures during guideway and column construction, transit delays to bus and rail service, and increased travel times.

During the guideway construction on the west shore of the Puyallup River and when the guideway crosses Sounder/Amtrak tracks in Tacoma, the Sounder/Amtrak tracks located below I-5 may experience temporary closures resulting in train schedule impacts during adjacent guideway foundation construction.

The existing T Line system would be impacted during construction. The current system includes a single in-street track on E 25th Street, terminating in the OMF at E 25th Street and East G Street. If either the Preferred Tacoma 25th Street-West Alternative or Tacoma 25th Street-East Alternative is selected to be built, the required column and guideway construction, along with utility relocations, may require temporary relocation or closure of the T Line terminus station on the north side of E 25th Street across from Freighthouse Square. Temporary relocation of the track connection to the OMF or a modified vehicle service schedule that minimizes construction stoppage duration and allows intermittent ingress/egress to the OMF may also be required. These temporary relocations, closures, or near East D Street schedule adjustments would take place for approximately 1 to 3 years. During that time T Line riders would board and disembark at South 25th Street Station near A Street, approximately 0.25 miles west of the existing Tacoma Dome Station.

If the Tacoma Close to Sounder Alternative is selected to be built, it is probable that the Amtrak and Sounder stations, located in Freighthouse Square, would need to be demolished and reconstructed. This would require that the stations be temporarily relocated during construction to the west end of Freighthouse Square. During this time, Amtrak and Sounder riders would board and disembark approximately 350 feet west of the current station locations.

#### **3.3.1.3 Avoidance and Minimization Measures for Construction Impacts**

During construction, transit service modifications would be coordinated with King County Metro, Pierce Transit, Sound Transit, and private transportation services such as Greyhound and FlixBus, to minimize construction impacts and disruptions to bus facilities and service. This includes developing modified service plans to accommodate stop closures during construction. During construction within street rights-of-way, buses would either continue service on the street or be rerouted to nearby roadways, where appropriate, to maintain transit service. Bus stops would be maintained in their existing locations where possible but may need to be temporarily relocated in construction areas. Access between the surrounding land uses and bus stops would be maintained to the extent feasible. Other measures could include posting informative signage before construction at existing transit stops that would be affected by construction activities.

To minimize impacts to T Line riders during construction, information of any changes to T Line operations would be provided, including alternate bus service.

#### **3.3.2 Potential Mitigation Measures**

Mitigation for transit service and operations with TDLE would not be required because the light rail extension would improve the regional transit system. The expanded light rail network with TDLE would have a beneficial impact on transit service, including reduced transit travel times and improved transit reliability to regional destinations.

### **3.4 Arterial and Local Streets**

This section describes the effects of the No-Build and build alternatives on arterial and local streets in the study area, including 2042 traffic volume forecasts; expected traffic generated at stations; intersection operations; and changes in access, circulation, and traffic control.

### 3.4.1 Environmental Impacts to Arterial and Local Streets

#### 3.4.1.1 Long-Term Impacts

##### Traffic Forecasts

Future year 2042 peak period traffic volume forecasts were developed for TDLE based on the PSRC 2014 population and employment forecasts for the region updated for 2019. The regional forecasts predict an average annual growth rate of 0.5 percent in the AM and PM peak hours for South Federal Way and Tacoma. The annual growth rate of 0.5 percent per year is typical in areas with a regionally congested transportation network that anticipates infill development and redevelopment. Instead of using the growth rate from the PSRC model in Fife, the team applied growth forecasts of 0.3 percent per year from WSDOT and the City of Fife. The WSDOT forecasts included major infrastructure projects, such as the SR 167 Completion Project and I-5/54th Avenue Interchange as well as other smaller interchange and roadway improvements. The year 2042 forecast adjustment from the City of Fife assumed a high growth scenario for future development as part of the Fife City Center.

##### No-Build Alternative

The No-Build Alternative includes projects, funding packages, and proposals in the central Puget Sound region that are planned to occur with or without TDLE, as described in Chapter 2 (Section 2.2). These reasonably foreseeable projects and transit service changes were incorporated into the transportation analysis for the 2042 No-Build and build alternatives and include both regionally noteworthy projects (e.g., Central Link Extensions and SR 167 Completion Projects) and specific local transportation improvement projects. All regional and local transportation projects were included in the Regional Transportation section of Appendix J1, Transportation Technical Report (summarized in Table 5-1).

##### Build Alternatives

For the build alternatives, the forecast vehicular trip generation was calculated at each station based on information from Sound Transit's Incremental Ridership Model and station characteristics. New park-and-ride lots would be provided at the stations in South Federal Way and Fife, with 500 park-and-ride spaces proposed at each station. The Tacoma Dome Station already has 2,337 park-and-ride spaces, and no new spaces are planned. The Portland Avenue Station would not include park-and-ride spaces.

For stations that include a park-and-ride, the following conservative assumptions were made:

- Park-and-ride lots at stations would be completely filled within the 3.5-hour peak period.
- Approximately 35.5 percent of the 3.5-hour peak period trips would occur during the peak hour.
- Highest peak hour trip generation at the station would coincide with the surrounding roadway network peak hour.

All stations would generate vehicular traffic but stations with park-and-rides would generate more traffic within the station area. The total trip generation is composed of three different vehicle trip types: park-and-ride vehicle trips, passenger pickup/drop-off trips, and bus service. Trip distribution patterns for the proposed station trips were developed using the regional travel demand models based on current and future forecast travel patterns. Bus route trips were estimated based on preliminary bus service assumptions provided by Metro, Pierce Transit, and Sound Transit. The

park-and-ride and pickup/drop-off trips are new vehicle trips that were assigned to each TDLE station. Vehicle trips summarized in the pickup/drop-off category would generate two vehicle trips at each station during each peak hour: one trip entering and one trip exiting. The change in vehicle trips that would occur from TDLE were then added to No-Build Alternative traffic volume forecasts to develop an estimate of future traffic volumes with the build alternatives.

#### *Minimum Operation Segments and Interim Terminus*

If TDLE is constructed in phases or M.O.S.s, the station in South Federal Way or Fife would be the interim terminus of the project. Regardless of which station were the terminus, the total peak hour auto volumes and trip distribution would be similar to the stations in South Federal Way and Fife in the full build alternatives because the number of parking spaces and pickup and drop-off trip generation would be similar. The peak hour auto volumes at the Tacoma Dome Station would be the same as the No-Build Alternative with either interim terminus since no additional transit service or parking would be provided at the existing station location with either interim terminus. Therefore, no additional forecast volumes need to be developed for the interim terminus in South Federal Way or Fife.

#### **Traffic Circulation, Property Access, and Traffic Control**

There would be some changes to traffic circulation, property access, and traffic control near stations; additional access points to the stations would be provided for pickup/drop-off, transit, and parking for stations with parking facilities.

#### *Impacts Common to All Build Alternatives in the Federal Way Segment*

There would be some changes to property access and local circulation for the Preferred FW Enchanted Parkway Alternative and FW Design Option for emergency access to the guideway, with new connections that would not be open to general-purpose traffic. There would otherwise be limited impacts to traffic circulation, property access, and traffic control.

#### *Impacts That Differentiate the Build Alternatives in the South Federal Way Segment*

The SF 99-West and SF 99-East alternatives would change traffic circulation on Pacific Highway between S 356th Street in Federal Way and 70th Avenue E in Milton. The SF 99-West Alternative would require driveway reconstruction and changes to property access from the roadway along the west side of Pacific Highway. The SF 99-East Alternative would require driveway reconstruction and changes to access on the east side of Pacific Highway from S 356th Street and S 373rd Street. Between S 373rd Street and 70th Avenue E, the SF 99-East Alternative would be in the median of the roadway and would require changes to property access on both sides of Pacific Highway. There would also be left-turn restrictions to local businesses and residences and at intersections through this section of the alignment.

There would be few changes to property access and local circulation outside of station areas for the SF I-5 and SF Enchanted Parkway alternatives. In some locations, emergency access to the guideway would be provided by extending existing cul-de-sac or dead ends of streets to the guideway. However, these streets would not be open to general-purpose traffic.

#### *Impacts That Differentiate the Build Alternatives in the Fife Segment*

The Fife Median Alternative would change traffic circulation on Pacific Highway E between 51st Avenue E and Port of Tacoma Road. It would include a median along Pacific Highway E where the guideway support columns would be located. Columns would be approximately every 130 feet

but could be spaced closer together or farther apart, as needed. This would result in midblock left-turn restrictions on Pacific Highway E from the two-way left-turn lane between 44th Avenue E and Port of Tacoma Road. U-turn opportunities would be provided at intersections. Several intersections along this segment of Pacific Highway E would also be widened to accommodate columns at:

- Willow Road E.
- 46th Avenue E.
- Alexander Avenue E.
- Fife Municipal Court Access Road.
- 34th Avenue E, which will be constructed as part of the I-5/Port of Tacoma Road Interchange improvements.

The same lane configurations that exist under the No-Build Alternative would be provided at each of the widened intersections, so there would be no changes to traffic circulation or operations at these intersections.

The Fife 54th Avenue and Fife 54th Span design options include access from 52nd Avenue E, which would be extended to connect with 12th Street E at a new intersection (Fife Intersection #11). This intersection would operate below standard in the PM Peak hour, as shown in Table 3-13.

#### *Impacts That Differentiate the Build Alternatives in the Tacoma Segment*

For all Tacoma Segment build alternatives, active bus stops would be provided near each of the stations. There are six options for bus stop configurations in Tacoma Dome that could be included with any of the build alternatives. All bus transit options would have minimal to no impacts on traffic circulation, except for the 25th Street Two-Way Transit-Only Option. This would result in E 25th Street between East D Street and East G Street becoming a two-way transit-only street. No adverse impacts to traffic circulation would occur because 25th Street E is a low-volume street and would be closed to general-purpose traffic for only one block, although localized impacts to the Amtrak and Sounder stations and Freighthouse Square could occur. Vehicles would use East D Street, East G Street, Puyallup Avenue, and 26th Street E to circulate around the traffic restriction on 25th Street E.

#### **Traffic Operations**

The No-Build conditions assume substantial infrastructure changes planned as part of the WSDOT SR 167 Completion Project, I-5/Port of Tacoma Road, and I-5/54th Avenue interchanges. In addition, the No-Build conditions assume new development near the proposed station area in Fife that the city is planning as part of its Fife City Center plan.

Of the 86 study intersections analyzed for TDLE, 23 intersections would not meet the applicable jurisdictional L.O.S. standard in the No-Build Alternative in either the AM or PM peak hour, as shown in Figures 3-3 through 3-10. These intersections are listed in Table 3-13 together with intersections performing below standard for the build alternatives.

Most of the intersections analyzed for the build alternatives would operate similar to the No-Build Alternative. Some exceptions would occur in the build alternatives near the proposed stations in Fife, Portland Avenue, and the area near the Tacoma Dome Station.



**Table 3-13 Intersections Operating Below Applicable Agency Standards in the No-Build and Build Alternatives**

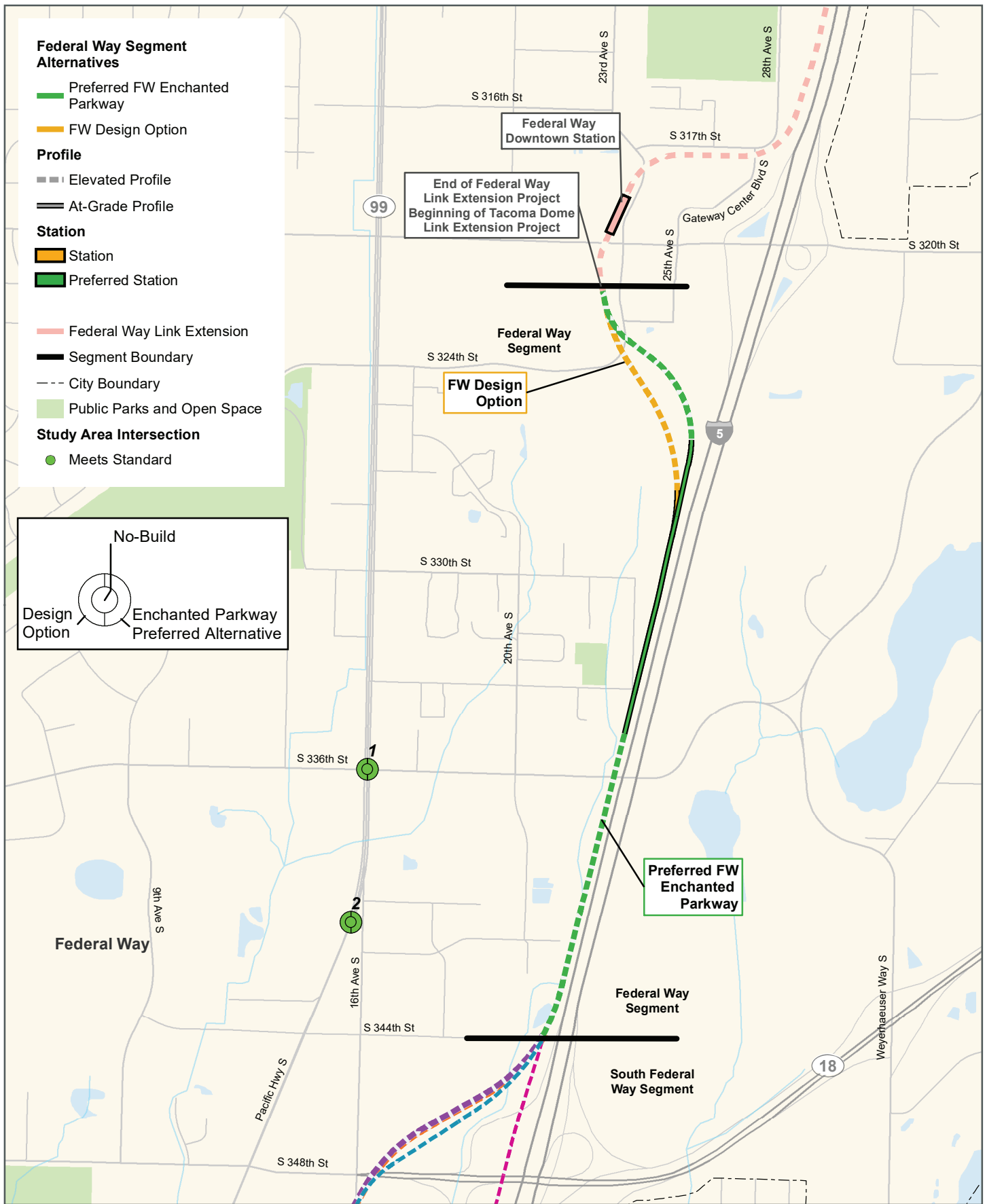
Intersection	Applicable Standard	AM Peak No-Build L.O.S. or V/C	AM Peak Build L.O.S. or V/C	% Increase in AM Delay	PM Peak No-Build L.O.S. or V/C	PM Peak Build L.O.S. or V/C	% Increase in PM Delay
SR 99/Porter Way (South Federal Way Intersection #15)	WSDOT HSS (L.O.S. D)	E	F	10%	D	E	16%
Port of Tacoma Road/Pacific Highway (Fife Intersection #3)	WSDOT HSS (L.O.S. D)	B	B	6%	F	F	0%
34th Avenue E/Pacific Highway (Fife Intersection #4)	WSDOT HSS (L.O.S. D)	A	A	0%	F	F	3%
Alexander Avenue E/SR 509 WB (Fife Intersection #5)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	F	F	0%	F	F	0%
Alexander Avenue E/12th Street E (Fife Intersection #7)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	F	F	0%	F	F	0%
52nd Avenue E and 12th Street E (Fife Intersection #11)	City of Fife (L.O.S. D)	N/A <sup>1</sup>	A	N/A <sup>1</sup>	N/A <sup>1</sup>	E	N/A <sup>1</sup>
54th Avenue E/12th Street E (Fife Intersection #12)	City of Fife (L.O.S. D)	B	B	7% – 27%	<b>E</b>	<b>F</b>	<b>95% – 158%</b>
54th Avenue E/SR 99 (Fife Intersection #13)	WSDOT HSS (L.O.S. D)	D	D	6% – 15%	<b>F</b>	<b>F</b>	<b>4% – 37%<sup>2</sup></b>
54th Avenue E at I-5 Southbound Ramps (Fife Intersection #14)	WSDOT HSS (L.O.S. D)	<b>C</b>	<b>E</b>	<b>137%</b>	C	C	0%
54th Avenue E/I-5 Northbound Ramps (Fife Intersection #15)	WSDOT HSS (L.O.S. D)	E	E	8%	F	F	1%
54th Avenue E/20th Street E (Fife Intersection #16)	City of Fife (L.O.S. D)	F	F	2%	D	D	4%
59th Avenue Ct E at SR 99 (Fife Intersection #21)	WSDOT HSS (L.O.S. D)	C	C	0% – 8%	C	<b>D – E</b>	<b>33% – 100%<sup>2</sup></b>
59th Avenue Court E at 12th Street E (Fife Intersection #22)	WSDOT HSS (L.O.S. D)	A	A – D	0% – 450%	<b>B</b>	<b>C – F<sup>2</sup></b>	<b>64% – 482%<sup>3</sup></b>
62nd Avenue E/12th Street E (Intersection #23)	City of Fife (L.O.S. D)	D	D	0%	<b>F</b>	<b>F</b>	<b>37% – 85%</b>
62nd Avenue E/SR 99 (Fife Intersection #24)	WSDOT HSS (L.O.S. D)	E	E – F <sup>4</sup>	0% – 248%	E	F	300% – 414%
70th Avenue E/20th Street E (Fife Intersection #26)	City of Fife (L.O.S. D)	F	F	7%	<b>D</b>	<b>E</b>	<b>13%</b>
I-705 Off-Ramp/E 26th Street (Tacoma Intersection #9)	WSDOT HSS (L.O.S. D)	F	F	6%	<b>F</b>	<b>F</b>	<b>117% – 239%</b>
East C Street/Tacoma Dome Parking Lot Driveway (Tacoma Intersection #11) <sup>4</sup>	Tacoma – Arterial (L.O.S. D) 0.89 v/c Ratio	<b>F</b>	<b>E – F</b>	<b>0% – 15%<sup>5</sup></b>	D	D	4% – 26%

**Table 3-13 Intersections Operating Below Applicable Agency Standards in the No-Build and Build Alternatives (continued)**

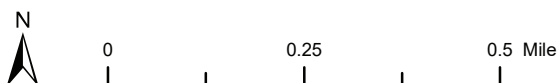
Intersection	Applicable Standard	AM Peak No-Build L.O.S. or V/C	AM Peak Build L.O.S. or V/C	% Increase in AM Delay	PM Peak No-Build L.O.S. or V/C	PM Peak Build L.O.S. or V/C	% Increase in PM Delay
East C Street/E 26th Street (Tacoma Intersection #12)	Tacoma – Arterial (L.O.S. D) 0.89 v/c Ratio	<i>E</i>	<i>F</i>	85% – >200%	<i>E</i>	<i>F</i>	38% – >400%
East L Street/Puyallup Avenue (Tacoma Intersection #24)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	<i>D</i>	<i>F</i>	83% – 143%	<i>E</i>	<i>F</i>	62% – 177%
E Portland Avenue/SR 509 WB On-Ramp (Tacoma Intersection # 29)	WSDOT HSS (L.O.S. D)	A	A	0%	<i>D</i>	<i>F</i>	86% – 204%
E Portland Avenue/SR 509 Eastbound Off-Ramp (Tacoma Intersection #30)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	<i>D</i>	<i>F</i>	83% – 140%	<i>F</i>	<i>F</i>	56% – 127%
E Portland Avenue/E 25th Street/E Bay Street (Tacoma Intersection #32)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	D	D – E	7% – 52%	F	F	0%
E Portland Avenue/E 26th Street (Tacoma Intersection #33)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	<i>F</i>	<i>F</i>	0% – 34% <sup>6</sup>	<i>F</i>	<i>F</i>	0% – 27% <sup>6</sup>
E Portland Avenue/E 27th Street (Tacoma Intersection #34)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	B	B	0% – 6%	<i>E</i>	<i>F</i>	24% – 55%
E Bay Street at SR 167 Access Ramps (Tacoma Intersection #37)	Tacoma – Arterial (L.O.S. E) 0.99 v/c Ratio	A	A – B	13% – 50%	F	F	0%
E Bay Street at E 27th Street/I-5 Southbound Off-Ramp (Tacoma Intersection #38)	WSDOT HSS (L.O.S. D)	B	B	0%	E	E	0%
East R Street/E 28th Street/I-5 Northbound On-Ramp (Tacoma Intersection #39)	WSDOT HSS (L.O.S. D)	C	C	4% – 9%	<i>F</i>	<i>F</i>	3% – 10% <sup>7</sup>
E Bay Street/River Road E (SR 167)/Pioneer Way E (Tacoma Intersection #43)	WSDOT HSS (L.O.S. D)	C	C – D	30% – 59%	<i>F</i>	<i>F</i>	81% – 133%

Notes:

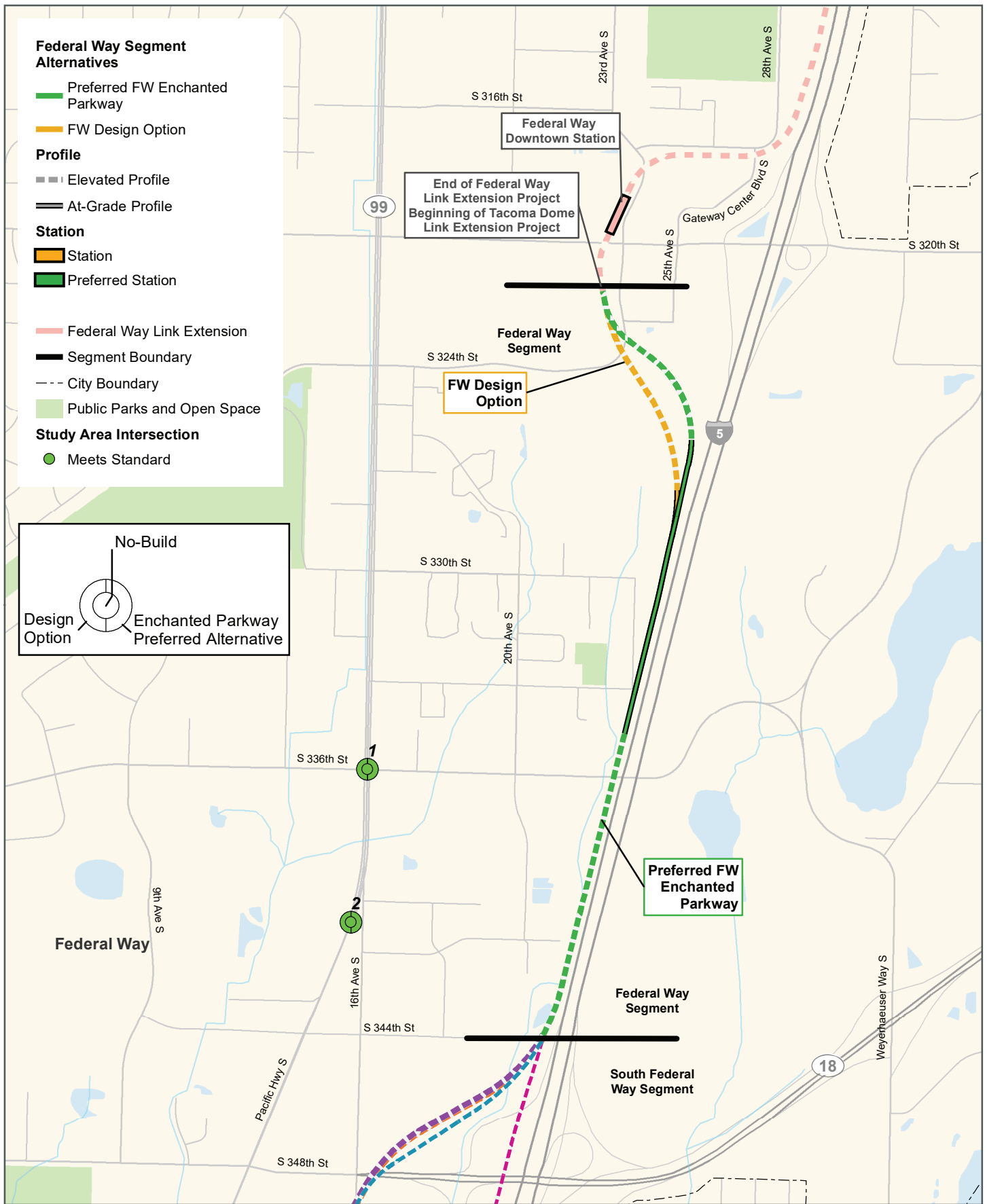
- (1) Intersection would be constructed as part of Fife 54th Avenue or 54th Span design options.
- (2) Only below standards for Fife 54th Avenue and Fife 54th Span design options.
- (3) Only below Threshold for Fife Preferred Station.
- (4) Only above the 10 percent threshold for the Fife 54th Avenue and 54th Span Alternatives.
- (5) Additional delay affects a limited number of vehicles at a driveway and may be the result of SimTraffic variability.
- (6) Only above the 10 percent threshold in the Tacoma 25th Street-East, Tacoma Close to Sounder and Tacoma 26th Street Alternatives.
- (7) Not above 10 percent threshold for Tacoma Close to Sounder Alternative.



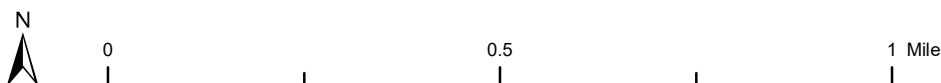
Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).



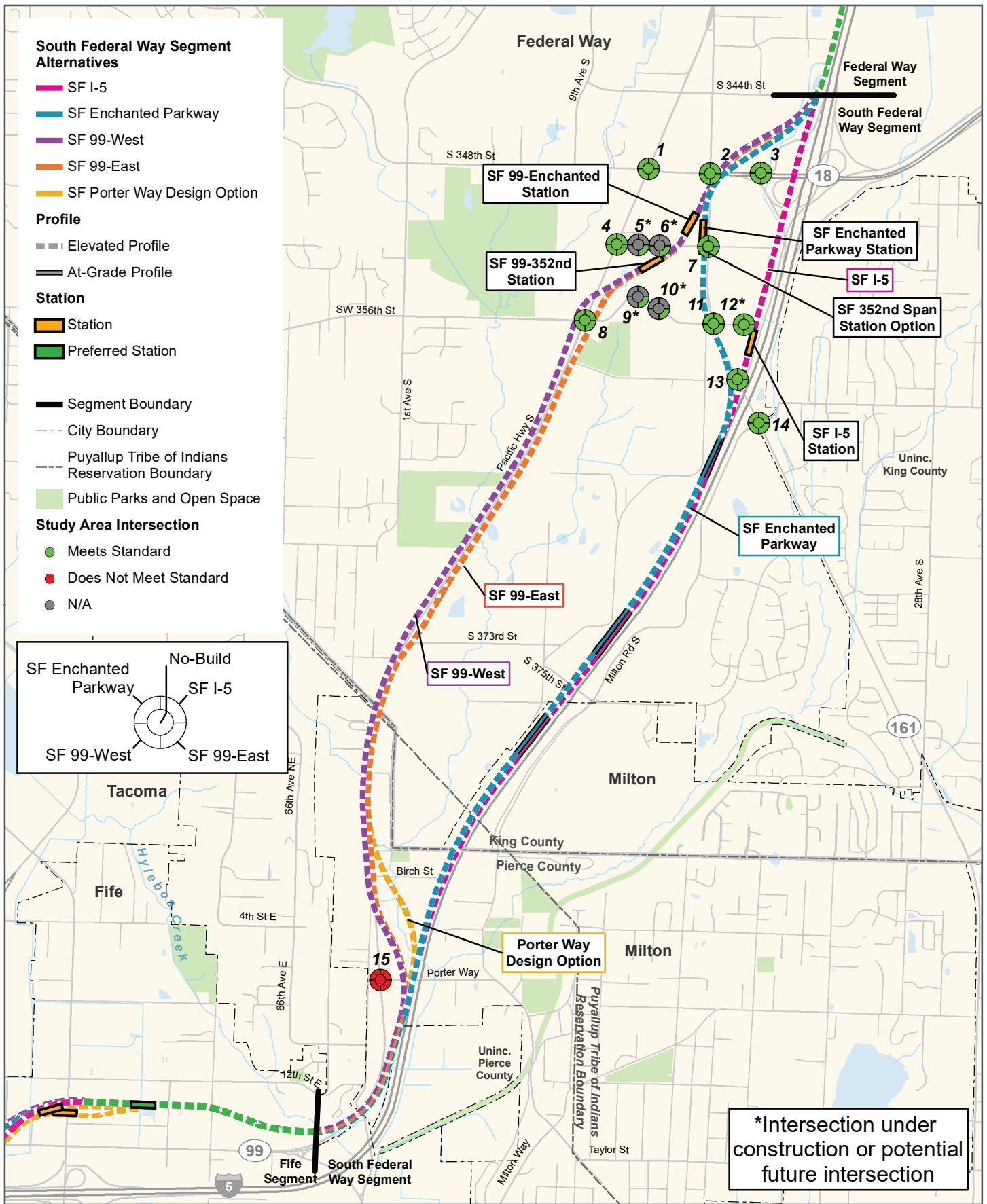
**FIGURE 3-3**  
2042 No-Build and Build Alternative  
Traffic Operations - AM Peak Hour  
Federal Way Segment  
Tacoma Dome Link Extension



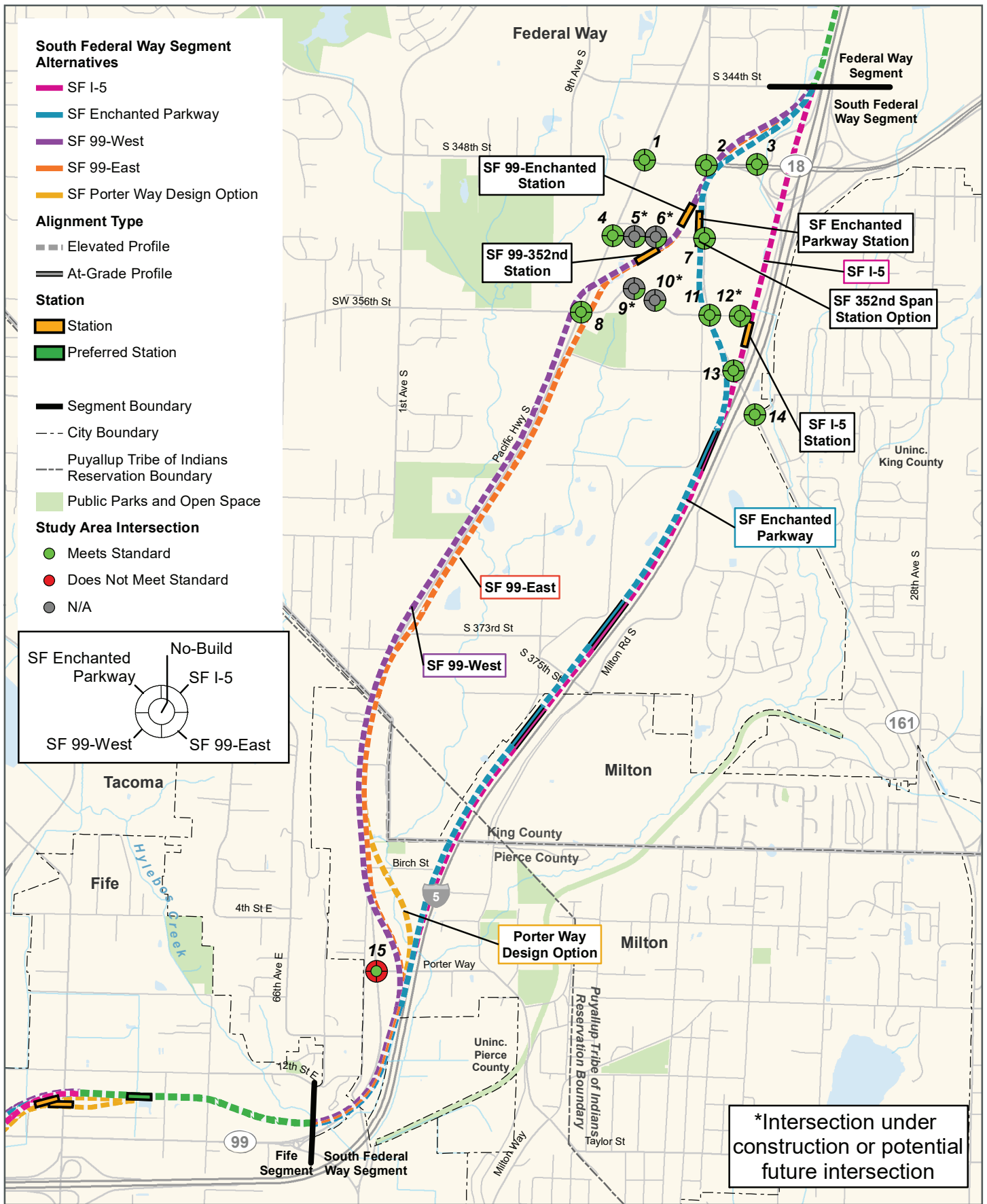
Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).



**FIGURE 3-4**  
2042 No-Build and Build Alternative  
Traffic Operations - PM Peak Hour  
Federal Way Segment  
Tacoma Dome Link Extension



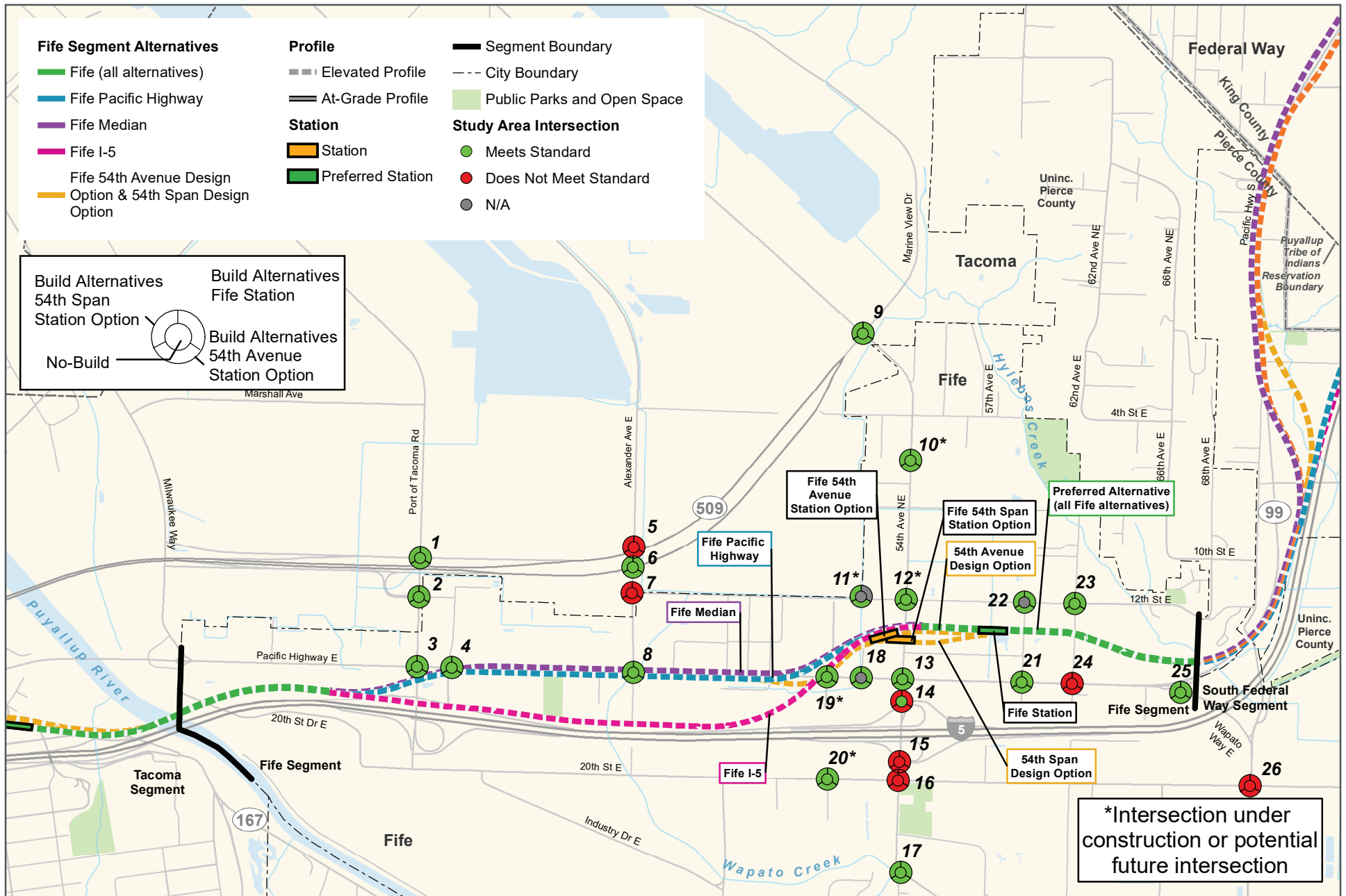
**FIGURE 3-5**  
2042 No-Build and Build Alternative  
Traffic Operations - AM Peak Hour  
South Federal Way Segment  
Tacoma Dome Link Extension



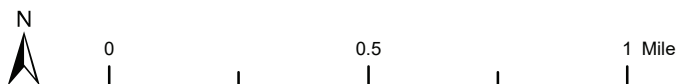
Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).

**FIGURE 3-6**  
2042 No-Build and Build Alternative  
Traffic Operations - PM Peak Hour  
South Federal Way Segment  
Tacoma Dome Link Extension





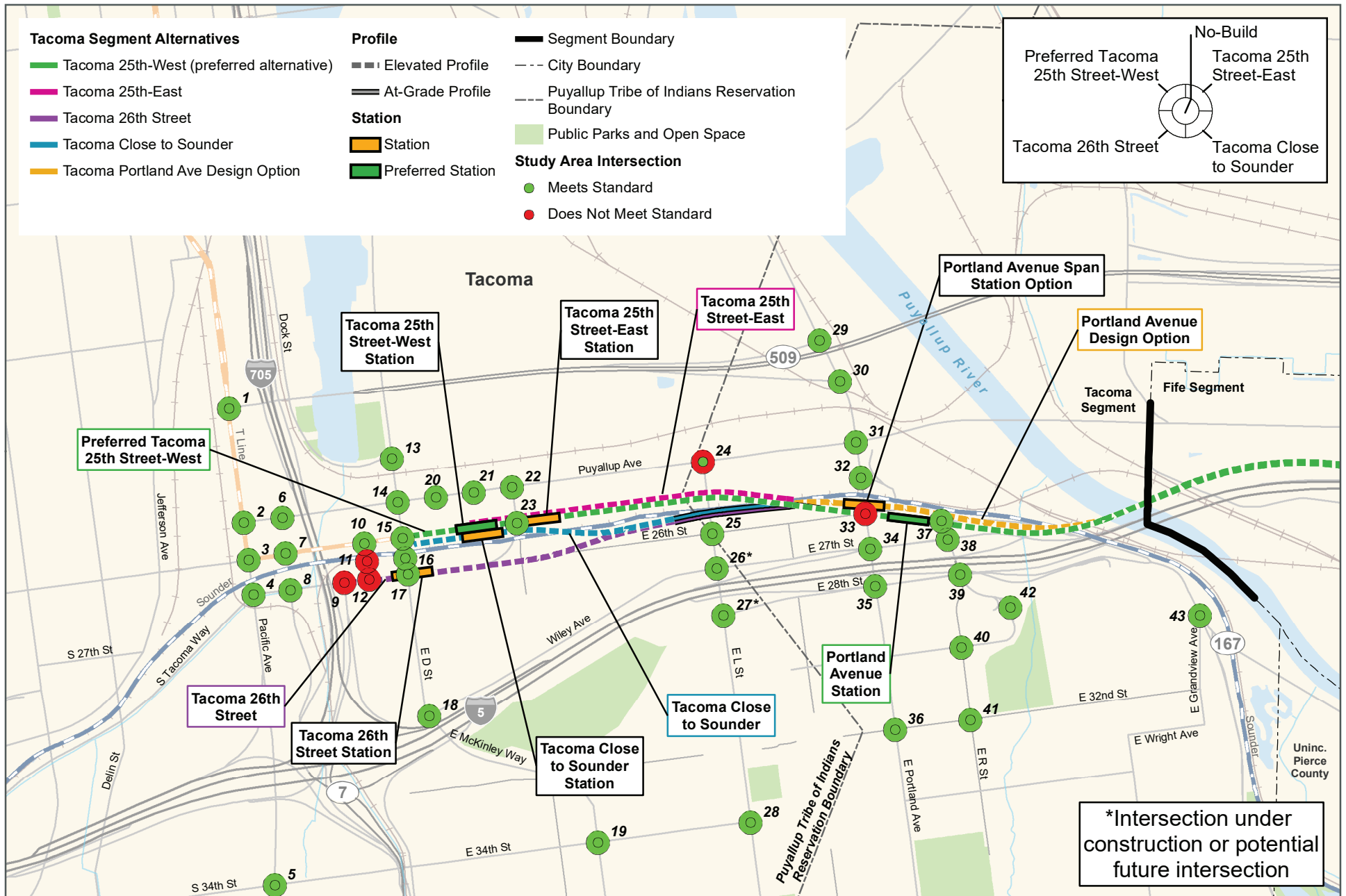
Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).



**FIGURE 3-7**  
2042 No-Build and Build Alternative  
Traffic Operations - AM Peak Hour  
Fife Segment  
Tacoma Dome Link Extension

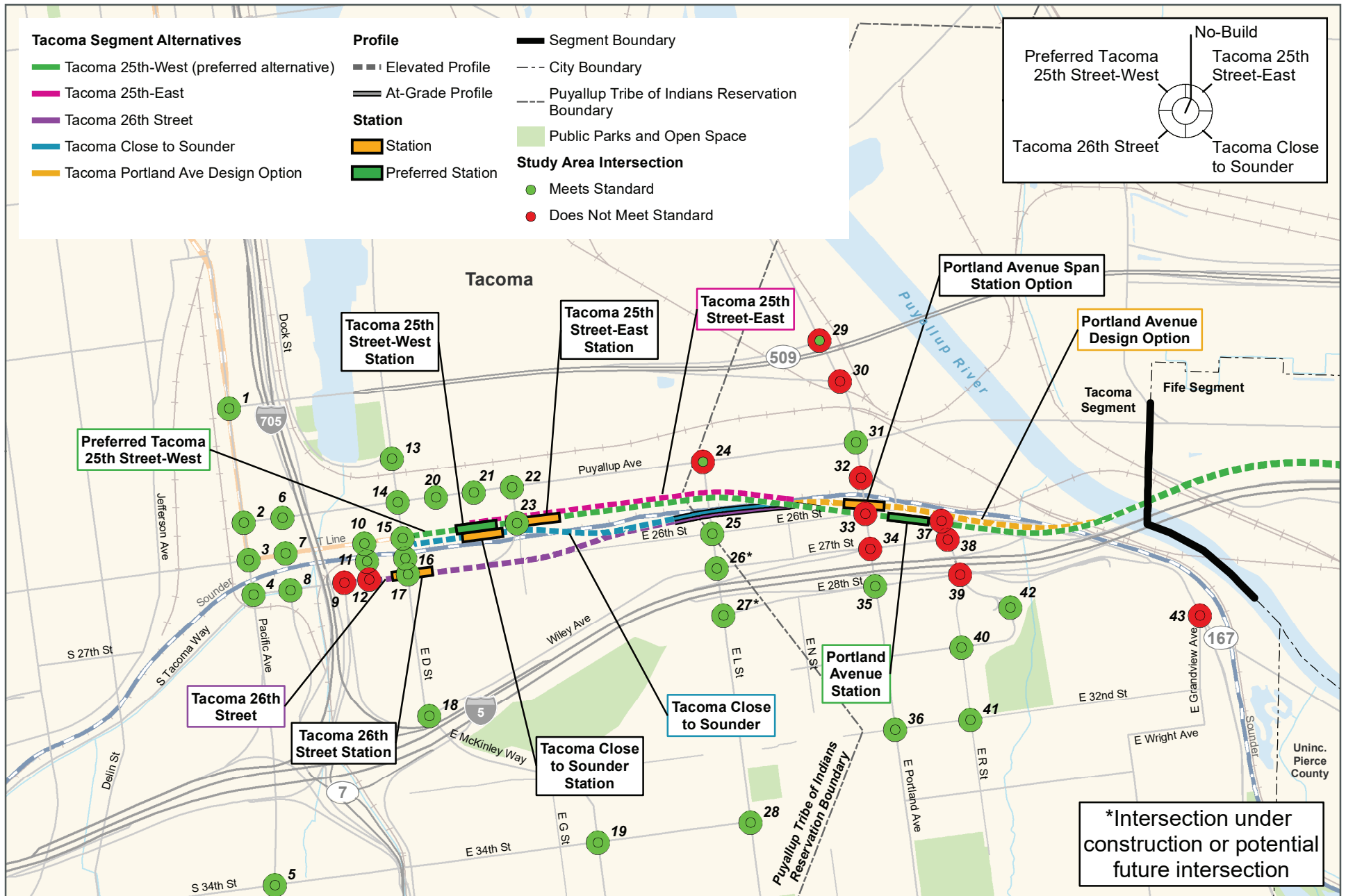


**FIGURE 3-8**  
2042 No-Build and Build Alternative  
Traffic Operations - PM Peak Hour  
Fife Segment  
*Tacoma Dome Link Extension*



Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).

**FIGURE 3-9**  
2042 No-Build and Build Alternative Traffic Operations - AM Peak Hour  
Tacoma Segment  
Tacoma Dome Link Extension



Data Sources: King and Pierce County, Cities of Federal Way, Fife, Milton, Tacoma (2019).

**FIGURE 3-10**  
2042 No-Build and Build Alternative Traffic Operations - PM Peak Hour  
Tacoma Segment  
Tacoma Dome Link Extension



#### *Impacts Common to the Build Alternatives in the Federal Way Segment*

For all build alternatives in the Federal Way Segment, the project-related changes in v/c values would be small; intersection operations would continue to meet the City of Federal Way and WSDOT standards for intersection operations during both the AM and PM peak hours.

#### *Impacts Common to the Build Alternatives in the South Federal Way Segment*

For all build alternatives in the South Federal Way Segment, the project-related changes in v/c values would be small. Most intersection operations would continue to meet the City of Federal Way and WSDOT standards for intersection operations during both the AM and PM peak hours (see Figures 3-5 and 3-6). One intersection would operate below standard during the AM and PM peak hours associated primarily with Fife Segment build alternatives (South Federal Way #15), as shown in Table 3-13.

The Porter Way Design Option and SF 352nd Span Station Option would not change intersection operations results. The surface parking lot options would have similar traffic operations as the parking garage options.

#### *Impacts Common to the Build Alternatives in the Fife Segment*

Traffic operations in the Fife study area were evaluated with the additional traffic generated by the build alternatives. During the AM Peak Hour (see Figure 3-7), six intersections would operate below standards in the No-Build Alternative (Intersections #5, #7, #15, #16, #24, and #26), and one additional intersection (Intersection #14) would operate below standard under the build alternative. The seven intersections that would operate below standard for all Fife build alternatives are listed in Table 3-13, with those above thresholds for mitigation in bold and italics.

During the PM Peak Hour (see Figure 3-8), nine intersections would operate below standards in the No-Build Alternative (Intersections #3, #4, #5, #7, #12, #13, #15, #23, and #24) and three additional intersections (Intersections #21, #22, and #26) would operate below standard under the build alternative. The 12 intersections that would operate below standard for all Fife build alternatives are listed in Table 3-13 with those above thresholds for mitigation in bold and italics.

The surface parking lot option would have similar traffic operations as the parking garage option.

The Fife 54th Avenue and Fife 54th Span design options would add a new intersection at 52nd Avenue and 12th Street E (Intersection #11) that would operate below standard in the PM peak hour.

#### *Impacts Common to the Build Alternatives in the Tacoma Segment*

Traffic operations in the Tacoma Segment were evaluated with the additional traffic generated by the Portland Avenue Station in combination with a station at the Tacoma Dome Station area. The Portland Avenue Span Option is a design option that was evaluated only with the Tacoma Segment's Preferred Alternative (Tacoma 25th Street-West).

During the AM Peak Hour (see Figure 3-9), four intersections would operate below standards in the No-Build Alternative (Intersections #9, #11, #12, and #33), and one additional intersection (Intersection #24) would operate below standard under all build alternatives. The five intersections that would operate below standard under any proposed alternative in the Tacoma Segment with Portland Avenue Station locations are listed in Table 3-13, with those above thresholds for mitigation in bold and italics. During the PM peak hour (see Figure 3-10), 10 intersections would

operate below standards in the No-Build Alternative (Intersections #9, #12, #30, #32, #33, #34, #37, #38, #39, and #43), and two additional intersections (Intersections #24 and #29) would operate below standard under all build alternatives. The 12 intersections that would operate below standard under any proposed alternative in the Tacoma Segment with Portland Avenue Station locations scenario are listed in Table 3-13 with those above thresholds for mitigation in bold and italics.

#### **Construction Impacts**

With each of the TDLE build alternatives, construction would require local road closures, lane closures, traffic detours, and property access modifications and closures to maintain traffic flow. There could be extended lane closures where guideway construction runs parallel or within the median of Pacific Highway. Streets that would be beneath the guideway would require temporary full and/or partial closures to construct the guideway and other associated features. If driveway closures are required, temporary access routes to these properties would be maintained to the extent practical. If access to a business could not be maintained during construction, the specific construction activity would be reviewed to determine if it could occur during non-business hours.

The peak number of truck trips is expected to occur during earthwork operations and during concrete delivery for both guideway and station construction. For the elevated guideway construction, peak truck trips are estimated at 10 to 15 trucks per hour for concrete delivery, or between 80 and 240 trips per day, assuming 8 to 16 hours per day of active construction, some of which may occur at night. This would occur for approximately 2 years for each area of construction. A similar level of truck activity is expected for earthwork activities, but this would be focused on trucks hauling material during excavation and would not overlap with concrete delivery trucks.

Construction truck traffic would use truck routes and, where required, local roadways to access the construction areas. Delivery of large items, such as precast girders, would occur via truck routes. There would be limited direct access via the I-5 mainline, although trucks may use I-5 for trips to and from other locations in the region. For these trips, access would be from existing interchange ramps, WSDOT facilities, or even I-5, pending coordination with and approval from WSDOT and Federal Highway Administration (FHWA). During construction there may be some short-term closures (night/weekend) to on- and off-ramps to accommodate installing girders over ramps. As the design and construction plans are advanced, there could be the need for direct access between I-5 and construction areas. If direct access is required, Sound Transit would coordinate with WSDOT and FHWA and would notify the local jurisdiction.

Construction staging areas would be located within the project's construction limits shown in Appendix F, Conceptual Design Drawings. The staging areas will be refined in the Final EIS.

#### **3.4.1.2 Avoidance and Minimization Measures for Construction Impacts**

All avoidance and minimization measures associated with constructing TDLE would comply with local regulations governing construction traffic control and construction truck routing. Sound Transit would finalize detailed construction plans in close coordination with local jurisdictions and WSDOT during the final design and permitting phases of the project.

#### **3.4.2 Potential Mitigation Measures**

Mitigation would be required at intersections where the operational standard for a build alternative would be worse than with the No-Build Alternative and would not meet the agency operational standards.



Where an intersection would not meet the agency operational standard under the No-Build Alternative, Sound Transit would provide mitigation if the build alternatives would degrade operations by more than 10 percent.

Potential improvements for up to 15 intersections that would require mitigation are summarized below. Sound Transit would provide these improvements or other improvements agreed to with the agency of jurisdiction. As the project design advances, Sound Transit would continue to work with affected jurisdictions/agencies to evaluate mitigation strategies for safe, efficient operations. Final mitigation will be determined and agreed upon by Sound Transit and the affected jurisdiction(s). Sound Transit's contribution to improve intersections would be determined during the project permitting process. This may include contributing a proportionate share of costs to improve intersections affected by the build alternative, based on the project's proportionate ratio of trips at the intersection, or another equitable method.

#### **Federal Way Segment**

No study intersections in the Federal Way Segment would require mitigation because all are forecast to meet agency standards.

#### **South Federal Way Segment**

One intersection in the South Federal Way Segment would require mitigation because it does not meet agency standards and the build alternatives would increase delay by more than 10 percent.

- **SR 99/Porter Way (South Federal Way Intersection #15)** – Eastbound and westbound traffic on Porter Way have shared left-through movements and permissive left-turn phasing (meaning that left turns must yield to oncoming traffic). Widening Porter Way to provide exclusive left-turn lanes would improve AM and PM peak-hour traffic operations and accommodate projected background and station growth.

#### **Fife Segment**

In the Fife Segment, nine intersections (Intersections #11, #12, #13, #14, #21, #22, #23, #24, and #26) would require mitigation or some contribution of proportionate share because they would not meet agency standards and the build alternatives would increase delay by more than 10 percent.

- **52nd Avenue E/12th Street E (Fife Intersection #11)** – Improvements to mitigate PM peak hour operations with the 54th Avenue and 54th Span design options at this intersection would include adding a southbound right-turn pocket at the downstream intersection of 54th Avenue E/SR 99 (Fife Intersection #13) along with signal optimization.
- **54th Avenue E/12th Street E (Fife Intersection #12)** – Improvements to mitigate PM peak hour operations at this intersection would include optimizing the signal phasing as well as adding a southbound right-turn pocket at the downstream intersection of 54th Avenue E/SR 99 (Fife Intersection #13). The added southbound right-turn pocket would improve southbound traffic operations along 54th Avenue E, which would reduce delay for eastbound vehicles destined for southbound 54th Avenue E.
- **54th Avenue E/SR 99 (Fife Intersection #13)** – Improvements to mitigate PM peak hour traffic operations at this intersection include optimizing the signal phasing as well as adding southbound and westbound right-turn pockets to improve traffic operations.

- **54th Avenue E/I-5 Southbound Ramps (Fife Intersection #14)** – This intersection would be modified by the future I-5/54th Street Ramp project to split the interchange ramps and add new ramps at 51st Avenue E. Sound Transit would work with the City of Fife to determine the proportionate share contribution for AM peak hour traffic operations based on the limited additional trips added to this intersection from the station in Fife.
- **59th Avenue Ct E/SR 99 (Fife Intersection #21)** – This signalized intersection would operate below standard only with the 54th Avenue Design Options in the PM peak hour. Proposed mitigation at other nearby intersections, including a westbound right-turn pocket at 54th Avenue E/SR 99 (Fife Intersection #13), would improve PM peak traffic operations at this intersection.
- **12th Street E/59th Ave Ct E (Intersection #22)** – This signalized intersection would operate below standards only with the preferred Fife Station in the PM Peak. Proposed mitigation at other nearby intersections would mitigate PM Peak operations at this intersection including a southbound right turn pocket at 54th Avenue/SR 99 (Fife Intersection #13) and signal; timing optimization at 54th Avenue E and 12th Street E (Fife Intersection #12). Sound Transit would work with the City of Fife to determine appropriate intersection configuration and traffic control at these nearby intersections.
- **12th Street E/62nd Avenue E (Fife Intersection #23)** – In 2042, the volumes on the side street would likely be high enough to warrant a traffic signal if/when the planned Fife City Center development occurs. Installing a traffic signal would improve overall intersection operations, and Sound Transit would work with the City of Fife to determine what proportionate share Sound Transit would contribute to these improvements.
- **SR 99/62nd Avenue E (Fife Intersection #24)** – In 2042, the volumes on the side street would likely be high enough to warrant a traffic signal if/when the planned Fife City Center development occurs. Installing a traffic signal would improve intersection operations in the AM and PM peak hours. Sound Transit would work with the City of Fife to determine what proportionate share Sound Transit would contribute to these improvements.
- **70th Avenue E/20th Street E (Fife Intersection #26)** – Travel patterns through this intersection are expected to change in the future with the extension of SR 167. If congestion persists, traffic may shift to other routes. Sound Transit would work with the local agency to determine intersection improvements and what proportionate share Sound Transit would contribute to these improvements.

#### Tacoma Segment

In the Tacoma Segment, eight intersections (Intersections #9, #12, #24, #29, #30, #33, #34, and #43) would require mitigation or contribution of proportionate share because they would not meet agency standards and build alternatives would increase delay by more than 10 percent. One intersection (Intersection #11) would require mitigation only with the Tacoma 26th Street Alternative.

- **I-705 Northbound Ramp/E 26th Street (Tacoma Intersection #9)** – Installing a traffic signal at this intersection would improve intersection operations in the AM and PM peak hours, especially for the northbound stop-controlled movement.
- **East C Street/E 26th Street (Tacoma Intersection #12)** – Installing protected left turns for the eastbound movement would improve intersection operations in the AM and PM peak hours. Delays for the low northbound volume (less than 20 vehicles) are due to queuing from the East D Street intersection.

- **East L Street/Puyallup Avenue (Tacoma Intersection #24)** – Installing a traffic signal would assist both northbound and southbound traffic (currently stop-controlled). Sound Transit would work with the City of Tacoma to determine what proportionate share Sound Transit would contribute to these improvements.
- **E Portland Avenue Intersections at SR 509 Ramps (Tacoma Intersections #29 and #30)** – Improvements to mitigate PM peak traffic operations would include signalization of the intersections at the SR 509 access ramps on E Portland Avenue. Sound Transit would work with the local agency to determine intersection improvements for mitigation or contribution of proportionate share to accommodate the future TDLE station.
- **E Portland Avenue Intersections at E 26th Street (Tacoma Intersection #33) and E 27th Street (Tacoma Intersection #34)** – Sound Transit would work with the City of Tacoma to determine appropriate intersection configuration and traffic control to accommodate the future TDLE station and growth along E Portland Avenue from Puyallup Tribe of Indians development projects and other private development projects. Improvements to mitigate AM peak traffic operations at E 26th Street and PM peak traffic operations at both intersections would include signalization of current two-way stop-controlled intersections at E 25th Street and E 26th Street to improve operations and provide protected left-turn access to the Portland Avenue Station.
- **E Bay Street/River Road E (SR 167)/Pioneer Way E (Tacoma Intersection #43)** – At the time of analysis, this intersection was under construction and Sound Transit will continue to assess traffic operations and potential mitigation or contribution of proportionate share to accommodate the future TDLE station.

## 3.5 Freight Mobility and Access

This section describes the effects of the No-Build and build alternatives on freight mobility and access within the study area.

### 3.5.1 Environmental Impacts to Freight Mobility and Access

#### 3.5.1.1 Long-Term Impacts

##### No-Build Alternative

The No-Build Alternative includes projects, funding packages, and proposals in the central Puget Sound region that are planned to occur with or without TDLE, as described in Chapter 2 (Section 2.2). Freight mobility and access are expected to improve under the No-Build Alternative compared with existing conditions because the SR 167 Completion Project would create a new regional highway connection to/from I-5 within the study area. In addition to the SR 167 Completion Project, both the I-5/Port of Tacoma Road Interchange and I-5/54th Avenue Interchange planned improvements would improve freight travel because interchange improvements would reduce congestion through both interchanges.

In the Tacoma Segment, the City of Tacoma has planned improvements specifically for freight access along E Portland Avenue, which include the Portland Avenue Freight Access Improvements project. Other changes in Tacoma include the multimodal planned improvements along Puyallup Avenue, which include converting one eastbound travel lane to a transit-only lane.

#### **Impacts Common to All Build Alternatives in All Segments**

The distribution of trucks on I-5, Pacific Highway, SR 167, Port of Tacoma Road, E Portland Avenue, and other major freight routes in the study area would be similar to the No-Build conditions. Because the build alternatives would be either grade-separated or travel in an exclusive light rail guideway outside the roadway travel lanes, freight mobility and access would be similar to automobile mobility and access.

#### **Impacts That Differentiate Build Alternatives in All Segments**

The SF 99-East Alternative would have an elevated guideway in the median of Pacific Highway for approximately 1 mile between S 373rd Street and 70th Avenue E. Left-turn movements at intersections and midblock to access businesses along both sides of Pacific Highway would be restricted through this section.

The Fife Median Alternative would have an elevated structure that would bisect the current channelization of Pacific Highway E from 34th Avenue E to Willow Road. The median included with the Fife Median Alternative would prohibit left turns at some midblock driveways. U-turn facilities provided at major intersections could be used by smaller trucks. However, larger trucks may be required to approach affected businesses using a route that does not require left turns. This is possible because there are full-access I-5 interchanges at each end of the affected segment. The Fife Median Alternative would have a greater effect on freight compared with the Fife Pacific Highway or Fife I-5 alternatives because of adjacent property access limitations.

None of the build alternatives in the Tacoma Segment would impact Tacoma Rail freight rail operations.

#### **3.5.1.2 Construction Impacts**

For all build alternatives, impacts on freight truck movements would be approximately the same as impacts to general traffic. Port of Tacoma truck traffic utilizes East D Street, E Portland Avenue, and Port of Tacoma Road as the three primary corridors for access to container terminals, and 54th Avenue E in the Fife Segment is also an important freight access point to the port. Closures on these roads could result in temporary delays to freight traffic, with temporary closures over a longer period for construction of the Fife 54th Span Design Option. During construction of overhead guideway across active rail lines, there could be some temporary closures of rail lines, which could result in delays to freight train traffic. It is anticipated that this impact would be infrequent, and all efforts would be made to perform critical work during BNSF shutdowns that would occur only at night and on weekends, minimizing the impact to freight rail operations.

#### **3.5.1.3 Avoidance and Minimization Measures for Construction Impacts**

To minimize potential freight impacts during construction, Sound Transit would coordinate with affected businesses throughout the construction period to notify them of lane and/or access closures and maintain business access as much as possible.

For any construction activities that could impact the regional roadway system, Sound Transit would provide construction information to the Port of Tacoma, local jurisdictions, and to WSDOT for use in the state's freight notification system and regional transportation alerts. Sound Transit would provide information in a format required by WSDOT.

#### 3.5.2 Potential Mitigation Measures

The TDLE alternatives do not require freight mitigation during operations beyond the mitigation identified at the local intersections identified in the Arterials and Local Streets section.

### 3.6 Nonmotorized Access

This section describes project changes to pedestrian and bicycle facilities and circulation. Project impacts to pedestrian and bicycle facilities during construction include closures and detours. Appendix J1, Transportation Technical Report, includes detailed information on nonmotorized facilities and pedestrian L.O.S. for intersections and street segments.

#### 3.6.1 Environmental Impacts to Nonmotorized Modes

##### 3.6.1.1 Long-Term Impacts

###### No-Build Alternative

The No-Build Alternative includes projects, funding packages, and proposals in the central Puget Sound region that are planned to occur with or without TDLE, as described in Chapter 2 (Section 2.2). Future pedestrian and bicycle facilities expected to exist in the study area under the No-Build Alternative are described in Section 5.5.3 of Appendix J1, Transportation Technical Report.

Nonmotorized volumes are expected to increase throughout the study area from land use and development changes, construction of new nonmotorized facilities, and users shifting from other travel modes. It is expected that background nonmotorized trips in the No-Build condition would grow by approximately 7-13 percent by 2042. Nonmotorized travel patterns would be expected to be similar to Affected Environment conditions.

###### Impacts Common to All Build Alternatives in All Segments

TDLE would affect how pedestrians access and circulate within each of the station areas. This would result in differences in nonmotorized flows that would not occur under the No-Build Alternative.

None of the build alternatives would create barriers to nonmotorized traffic. The guideway would be elevated where it would cross public streets and private driveways or property access to prevent impacts. Where the guideway is at grade, it would not cross any existing streets, or the guideway would pass below the existing street.

Table 3-14 summarizes the pedestrian and bicycle trips that would be associated with the TDLE build alternatives during the PM peak period. Transfers between modes, including transit, park-and-ride access, and pickup/drop-off, would also result in nonmotorized traffic within station areas.

Consistent with Sound Transit System Access Policy, TDLE includes pedestrian and bicycle improvements at stations to safely accommodate the projected increase in pedestrian and bicycle travel with TDLE (Sound Transit 2013). Sound Transit has initiated work with local jurisdictions to identify a preliminary list of pedestrian and bicycle improvements to support station access as part of a System Access Program. Ongoing work with Tribes and local jurisdictions on system access improvements are described further in Chapter 5.

**Table 3-14 Station Area Nonmotorized Trips – Year 2042 PM Peak Period**

Station Area	Walk/Bike Trips	Other Transfers
South Federal Way	220	1,040
Fife	280	1,400
Portland Avenue	260	540
Tacoma Dome	960	6,240

Source: Ridership & Traffic Forecasts Technical Memo, Fehr & Peers April 2020.

Limited right-of-way and large block sizes near station alternatives in the South Federal Way and Fife segments require some out-of-direction travel for nonmotorized users.

Short- and long-term bicycle parking would be provided at stations in a centralized location, which could include lockers and bicycle racks.

### Impacts Common to the Build Alternatives in the Federal Way Segment

The alternative and design option through the Federal Way Segment do not include a station and would not have permanent effects on pedestrian facilities, volumes, or circulation.

### Impacts That Differentiate the Build Alternatives in the South Federal Way Segment

The SF 352nd Span Option would eliminate the need for nonmotorized users from the south to cross S 352nd Street at grade since there would be station entrances on both sides of the street.

The SF 99-West Alternative would add new sidewalks to the west side of Pacific Highway where the alignment would be alongside the roadway. The SF 99-East Alternative would add sidewalks to the east side of Pacific Highway north of S 373rd Street and between S 373rd Street and south of Birch Street, where the alignment is in the center of the roadway would add sidewalks to both sides of Pacific Highway.

Near the SF I-5 Alternative, the I-5 SR 161/SR 18 Triangle Project would introduce two roundabouts directly adjacent to the SF I-5 Station. Station accessibility could be reduced for some nonmotorized users due to the proximity of the roundabouts to the station. The I-5 SR 161/SR 18 Triangle Project was suspended in 2023, with no schedule for resumption.

The SF I-5 Station would also be directly adjacent to I-5. This would reduce nonmotorized access from the east due to the limited street network accessible to pedestrian and bicycle users directly surrounding the station. The terrain between Enchanted Parkway S and the station could also be a barrier for some users because there is an elevation gain between the plaza and Enchanted Parkway S.

### Impacts That Differentiate the Build Alternatives in the Fife Segment

To accommodate roadway widening under the Fife Median Alternative, the sidewalk and crosswalks could move from their existing location along Pacific Highway E between 54th Avenue E and Port of Tacoma Road. All sidewalks and crosswalks would be reconstructed to meet the current standards. Some crossing distances could increase to accommodate roadway widening; the median would provide a midblock refuge for nonmotorized users at intersections and designated crossing locations.



#### **Impacts Common to All Build Alternatives in the Tacoma Segment**

All build alternatives in the Tacoma Segment would include the same Portland Avenue Station location. Nonmotorized users accessing the Portland Avenue Station, or the Portland Avenue Span Option would be able to cross I-5 using the undercrossings at E Portland Avenue and E Bay Street/East R Street. These undercrossings would be improved and may include sidewalk widening, lighting, and art. A nonmotorized overcrossing of I-5, referred to as the optional Portland Avenue bike and pedestrian bridge, could be provided between the station and the area south of I-5 in the vicinity of either East R Street or E Portland Avenue. This would provide nonmotorized users traveling to and from the area south of I-5 with a grade-separated connection to the Portland Avenue Station. There is currently no funding commitment by any party, including Sound Transit, to build the optional Portland Avenue bike and pedestrian bridge.

During large events at the Tacoma Dome, there could be surges of nonmotorized users prior to and after events. During these times, pedestrians could experience congestion along facilities near the Tacoma Dome Station locations due to event attendees using light rail or accessing parking in the vicinity. It is anticipated that these events would occur sporadically during the year and that traffic control would be provided by the City of Tacoma and Tacoma Dome management to manage vehicular and nonmotorized traffic.

Each of the proposed stations near the Tacoma Dome could include a pedestrian bridge to provide nonmotorized users with a grade-separated connection between the station mezzanine and other nearby transit uses. Each of the pedestrian bridges could also include a grade-separated connection over E 25th Street to the Tacoma Dome Station garage. For detailed information on the pedestrian bridges included for each station alternative, see Appendix J1, Transportation Technical Report.

#### **Minimum Operable Segments and Interim Terminus**

If TDLE is constructed in phases or M.O.S.s, the station in South Federal Way or Fife would be the interim terminus of the project. If the station in South Federal Way were the interim terminus for the project, nonmotorized trips would be the same as the full-build condition. While there would be changes to transit transfers and pickup/drop-off trips, these transfers would occur within the station footprint so there would be no changes to nonmotorized impacts near the station.

If the station in Fife were the interim terminus, there would be fewer nonmotorized trips and fewer pickup/drop-off transfers during the PM peak period than the full-build condition. Bus transit transfers would be expected to increase with more bus service feeding the station. Nonmotorized trips would decrease during the PM peak period and more riders would access the station in Fife by transferring from connecting Pierce Transit bus routes. Because nonmotorized volumes would be lower and transfers would occur within the station footprint, nonmotorized impacts near the station would be similar to or less than those present at the station in Fife under the full-build condition.

Nonmotorized trips at the station in South Federal Way would also change if the station in Fife were the interim terminus. There would be fewer nonmotorized trips to the station as well as fewer transfers between modes.

#### 3.6.1.2 Construction Impacts

##### Impacts Common to All Build Alternatives in All Segments

All alternatives would temporarily close either sidewalks and/or bicycle lanes or reduce sidewalk widths within construction areas. Existing walking and biking routes would need to be rerouted during construction while maintaining accessibility.

##### Impacts Common to All Build Alternatives in the Federal Way Segment

Nonmotorized travel could be affected by construction of the guideway through the Federal Way Segment, particularly along 23rd Avenue S near the South Federal Way Park and Ride and on S 336th Street from 20th Avenue S to the I-5 undercrossing.

##### Impacts Common to All Build Alternatives in the South Federal Way Segment

Nonmotorized travel could be affected in station areas during construction as well as from construction of the elevated guideway over arterials and local streets.

The limited number of I-5 crossings currently restricts the pedestrian and bicycle activity across I-5 in the study area; therefore, existing nonmotorized facilities across I-5 would be maintained to the extent practical. Construction of the SF Enchanted Parkway Alternative would affect nonmotorized access on Enchanted Parkway between S 348th Street and the I-5 overcrossing. This would impact nonmotorized mobility across I-5, as crossings are limited and Enchanted Parkway is an important east-west connection.

Temporary closures and restrictions associated with construction of the SF 99-West and SF 99-East alternatives would affect nonmotorized access along and across Pacific Highway due to sidewalk closures and pedestrian detours during construction. Both the SF 99-East and SF 99-West alternatives would also add sections of sidewalk where none currently exist along Pacific Highway through the South Federal Way Segment.

##### Impacts That Differentiate the Build Alternatives in the Fife Segment

There would be some impact on nonmotorized travel (pedestrians and bicyclists) during construction of the elevated guideway along Pacific Highway under the Fife Pacific Highway and Fife Median alternatives. Wherever practical, sidewalks and crosswalks would remain open in the construction areas. Protected sidewalks next to the construction area would be provided when detour routes are not practical. The Fife Pacific Highway and Fife Median alternatives would affect pedestrian and nonmotorized access along Pacific Highway during construction. Short sections of sidewalks may need to be temporarily closed during construction on or adjacent to the roadway and would require pedestrians to detour to the closest signalized crossing of Pacific Highway.

The Fife 54th Avenue and Fife 54th Span design options would have more effects on nonmotorized access along 54th Avenue E and at the intersection with 12th Street E. The Fife 54th Span Design Option would likely require a longer-term closure of 54th Avenue E or intermittent closures over a longer period to construct the station, which would require rerouting nonmotorized users to one side of the street in an area with limited crossings.

#### **Impacts Common to All Build Alternatives in the Tacoma Segment**

The sidewalk network in the area near the Tacoma Dome would be impacted. Construction would necessitate several sidewalk closures during column construction, including along E 25th Street and E 26th Street, depending on the alternative chosen. There is an existing at-grade pedestrian crossing of the Sounder/Amtrak tracks at East D Street, which would be temporarily closed during construction. This would require nonmotorized detours.

##### **3.6.1.3 Avoidance and Minimization Measures for Construction Impacts**

During construction, Sound Transit would minimize impacts from temporary sidewalk and bicycle facility closures by providing detours that address accessibility needs within construction areas, such as protected walkways, and notifying the public as appropriate.

#### **3.6.2 Potential Mitigation Measures**

TDLE would not result in any permanent adverse impacts on existing nonmotorized facilities near the stations or along the guideway. No mitigation would be required.

### **3.7 Safety**

This section describes project elements that may affect safety and safety impacts (potential increase/decrease in crashes) for freeways (including clear zones), arterials and local streets, and nonmotorized modes.

#### **3.7.1 Environmental Impacts to Safety**

##### **3.7.1.1 Long-Term Impacts**

##### **No-Build Alternative**

The No-Build Alternative includes projects, funding packages, and proposals in the central Puget Sound region that are planned to occur with or without TDLE, as described in Chapter 2 (Section 2.2). The safety of the transportation system would be expected to be similar to existing conditions, but crash frequencies may increase due to additional traffic. Traffic volumes on roadways in the study area are expected to grow at an annual rate of 0.5 percent, except in Fife, where growth factors were adjusted for the SR 167 Completion Project and I-5 interchange improvements to an annual growth rate of 0.3 percent. These major infrastructure projects would change nearby traffic distribution and volumes, increasing traffic volumes at a lower rate compared to other segments. Crash types and locations would be similar as described in Section 3.2.6 of the Affected Environment.

#### **Impacts Common to All Build Alternatives in All Segments**

The safety of the transportation system is expected to be largely consistent with existing conditions because all TDLE build alternatives would be grade-separated and operate in exclusive right-of-way, with no direct conflicts with vehicles, pedestrians, or bicyclists. Columns supporting the guideway would be present at ground level and may be alongside vehicular and nonmotorized traffic. The light rail design would adhere to both light rail and roadway standards to minimize the potential effects on traffic safety.

If TDLE were to remove or modify transportation infrastructure, these facilities would be replaced to ensure that the transportation system would operate similar to or better than the No-Build Alternative. In some locations, increased traffic volumes could result in an increase in crashes.

TDLE would shift up to 30,000 people per day from driving or other type of vehicular travel to using light rail. This would reduce VMT in the region by up to 228,200 miles, which would be likely to result in fewer crashes in the region because people would be driving fewer miles. There would be an increase in general traffic volumes, transit movements, pedestrians, and bicyclists near each of the stations, which could increase the risk of traffic conflicts and conflicts among travel modes.

Traffic signals and protected turn phasing indicated in Section 3.5.2 are anticipated to reduce the severity of crashes (fatality and serious injury) compared with two-way or all-way stop-control intersections. As a result of these measures, intersection safety would be improved with construction of TDLE.

#### **Impacts Common to All Build Alternatives in the Federal Way Segment**

The Federal Way Segment does not include any stations, but traffic on some roadways in this segment are likely to increase with vehicles accessing the station in the South Federal Way Segment. This would increase the potential for conflicts between travel modes on the southern end of the Federal Way Segment near the station in South Federal Way.

For the Preferred FW Enchanted Parkway Alternative and FW Design Option, the guideway would be elevated or at grade west of I-5 southbound and would be directly adjacent to roadside clear zones, areas that border the edge of the traveled way that are free of objects to allow for recovery when a driver's path is altered. Some portions of the I-5 mainline would maintain clear zone standards established in the WSDOT Design Manual. In areas where minimum clear zone conditions cannot be maintained, barriers or impact attenuators would be provided to "shield" vehicles from roadside hazards.

#### **Impacts Common to All Build Alternatives in the South Federal Way Segment**

Under all South Federal Way Segment build alternatives, the safety of the transportation system would be expected to be similar to existing conditions.

Transfers between bus transit and light rail would contribute to the pedestrian traffic near the station. The bus transit and paratransit facilities would be within the station footprint, so these users would likely not be crossing at intersections near the station. The station and facilities within the footprint would be designed to standards that minimize the potential for conflicts among buses, nonmotorized users, and vehicles.

#### **Impacts That Differentiate the Build Alternatives in the South Federal Way Segment**

For the SF Enchanted Parkway and SF I-5 Alternatives, the roadside clear zones along the I-5 southbound mainline between S 344th Street and 70th Avenue E are directly adjacent to portions of both the SF Enchanted Parkway and SF I-5 alternatives. Some portions of the I-5 mainline would maintain clear zone standards established in the WSDOT Design Manual. In areas where minimum clear zone conditions cannot be maintained, barriers or impact attenuators would be provided to "shield" vehicles from roadside hazards. The I-5 clear zone safety analysis is further discussed in Appendix J1, Transportation Technical Report, and in Attachment C to Appendix J1.

For the SF 99-West and SF 99-East alternatives, columns alongside Pacific Highway would be set back from the roadway to provide adequate sight distance for vehicles turning out of connecting streets or driveways. Where the SF 99-East Alternative would be in the median of Pacific Highway, a median barrier would be constructed, which could increase crashes. However, left-turn movements would be restricted midblock and at intersections on this section of median guideway and may reduce some types of crashes on the corridor.

#### **Impacts Common to All Build Alternatives in the Fife Segment**

Under all Fife Segment build alternatives, safety elements of the transportation system would be similar to existing conditions, with crash types and locations consistent with those described in the Affected Environment section. Increased vehicle and nonmotorized activity around the station area could increase the potential for conflicts among different travel modes, specifically at intersections where local streets intersect the arterial street network.

If on-street bus stops were provided along 59th Avenue E, there could be additional nonmotorized users at the crossing of 59th Avenue E near the station. This crossing would be a marked crosswalk with lighting, and other pedestrian improvements to facilitate pedestrian movements across the street.

The Fife build alternatives could also include a multiuse path to be provided beneath the guideway between 54th Avenue E and the SR 167 Completion Project. If constructed, the Fife Multiuse Path would introduce nonmotorized crossings of several streets along this portion of the build alternatives, including 62nd Avenue E and 59th Avenue E. These new crossings could increase the potential for conflicts among nonmotorized users and vehicles. These crossings would be marked crosswalks with lighting, and other pedestrian improvements to facilitate crossings.

In the Fife Segment, roadside clear zones along the I-5 southbound mainline between 46th Avenue E to 20th Street E are directly adjacent to portions of all Fife build alternatives. Some portions of the I-5 mainline would maintain clear zone standards established in the WSDOT Design Manual. In areas where minimum clear zone conditions cannot be maintained, barriers or impact attenuators would be provided to “shield” vehicles from roadside hazards. The I-5 clear zone safety analysis is further discussed in Appendix J1, Transportation Technical Report, and in Attachment C to Appendix J1.

#### **Impacts That Differentiate the Build Alternatives in the Fife Segment**

The Fife Median Alternative would include a median along Pacific Highway E where the guideway support columns would be located. This would result in localized left-turn restrictions on Pacific Highway E as well as U-turn opportunities at intersections. Restrictions on left turns could result in minor reductions in crashes in this part of Pacific Highway E because there would be fewer locations where vehicles would be turning across traffic.

All columns and guideway infrastructure associated with the median would be designed to current standards for fixed objects, vertical and horizontal clearances, and other infrastructure-related safety elements and could result in more crashes in this part of Pacific Highway E because this adds new objects to the roadway system.

#### **Impacts Common to All Build Alternatives in the Tacoma Segment**

Some intersections along E Portland Avenue — including E Portland Avenue/E 25th Street (Tacoma Intersection #32), E Portland Avenue/E 26th Street (Tacoma Intersection #33), and E Portland Avenue/E 27th Street (Tacoma Intersection #34) — would experience increases in

traffic volumes and delay, which could result in increases in crashes along this corridor. The intersection of E Bay Street at the SR 167 access ramps (Tacoma Intersection #37) would also experience more congestion relative to other roadways in the study area. This congestion increase could result in a commensurate increase in crashes.

The Portland Avenue Span Option would include on-street bus stops; however, the potential for conflicts among buses, nonmotorized users, and vehicles would be lessened through the inclusion of station entrances on both sides of E Portland Avenue. This would likely result in a reduction of pedestrians crossing E Portland Avenue at grade to make transfers between modes.

Transfers between bus transit and light rail at any of the station locations near the Tacoma Dome would contribute to the pedestrian traffic near the stations. The bus transit facilities would be outside of the station footprints, which could result in the potential for conflicts among buses, nonmotorized users, and vehicles. Depending on the station alternative, additional at-grade nonmotorized crossings of the Sounder tracks could be introduced along East D Street. The Tacoma 25th Street-West, Tacoma Close to Sounder, and Tacoma 26th Street station alternatives would include a nonmotorized user bridge to allow grade-separated crossings of the Sounder tracks with a direct connection into the station mezzanine.

#### **Impacts That Differentiate the Build Alternatives in the Tacoma Segment**

The Preferred Tacoma 25th Street-West Station and the Tacoma 25th Street-East Station could include a nonmotorized-user bridge between the station mezzanine and the existing Tacoma Dome parking garage, which is being considered as part of the System Access Program and would undergo a separate environmental review. This would allow nonmotorized users to avoid the at-grade crossing of East G Street and improve pedestrian safety.

##### **3.7.1.2 Construction Impacts**

#### **Impacts Common to All Build Alternatives in All Segments**

With each of the TDLE build alternatives, traffic diversion caused by light rail guideway construction would lead to higher traffic volumes on detour streets. The higher traffic volumes could lead to a potential increase in collision frequency; however, crash rates should remain similar to existing conditions due to the limited volume diversion and length of closures. In locations where there is no physical change to the roadway, the types of crashes would also remain similar to existing conditions. Currently, most crashes in the study area are property damage only.

#### **Impacts Common to All Build Alternatives in the Federal Way Segment**

During construction there would be temporary impacts to the clear zone along southbound I-5 between S 324th Street and S 344th Street. A temporary construction barrier would be placed along the edge of I-5 southbound while the guideway is constructed for approximately 1 to 4 years. During that time, an increase in crashes could occur. Current I-5 travel lane and shoulder widths would be maintained during construction.

#### **Impacts That Differentiate Build Alternatives in the South Federal Way Segment**

The SF Enchanted Parkway and SF I-5 Alternatives would have temporary impacts to the clear zone along most of southbound I-5 through the study area. Where the light rail alignment is parallel to the I-5 mainline from approximately S 344th Street to Porter Way in the City of Milton, a temporary construction barrier would be placed near the southbound I-5 edge of pavement where barriers are not already present. This would provide separation of construction activity from traffic on I-5. This



temporary construction barrier would be present for the duration of guideway construction, approximately 1 to 4 years. During this period, an increase in crashes could occur. Most of these additional crashes would likely be property damage only, consistent with the crash history in the area. Current I-5 travel lane and shoulder widths would be maintained during construction.

The construction area for the SF 99-East Alternative would be alongside Pacific Highway northbound and in the middle of the roadway and would have temporary impacts to the roadway. Temporary construction barriers would be placed along the east side of Pacific Highway and on the perimeter of the construction zone in the center of the roadway from S 373rd Street to 70th Avenue E for approximately 1 to 2.5 years as the guideway is constructed. During this period, speeds would be reduced near construction areas and left-turn movements would be restricted where the guideway is being constructed in the median. Changes to access and lane closures may increase the number of crashes; however, there would likely be fewer crashes over this period, with fewer left-turn movements and lower speeds on Pacific Highway.

The SF 99-West Alternative would have temporary impacts along the west side of Pacific Highway from approximately S 356th Street to 70th Avenue E. This alternative would also require intermittent lane or roadway closures, and a temporary construction barrier would be placed along the pavement edge of Pacific Highway southbound as the guideway is constructed for approximately 1 to 2.5 years. During that period, changes to access and lane closures may increase the number of crashes, but reduced speeds through construction areas could reduce the number and severity of crashes.

#### **Impacts Common to All Build Alternatives in the Fife Segment**

Access modifications (such as right-in, right-out) and left-turn restrictions at intersections along Pacific Highway would occur in the construction areas for the Fife Pacific Highway and Fife Median Alternatives. This would eliminate some vehicle conflicts at these locations. Detour routes would change traffic circulation. This could lead to driver confusion and increase the potential for crashes. Strategic sequencing or construction phasing would minimize the potential safety impacts and would be addressed in a Maintenance of Traffic Plan.

During construction, there would be temporary impacts to the clear zone along southbound I-5 between 46th Avenue E to 20th Street E. Where the light rail alignment is parallel to the I-5 mainline, a temporary construction barrier would be placed near the southbound I-5 edge of pavement where barriers are not already present. This would provide separation of construction activity from traffic on I-5. This temporary construction barrier would be present for the duration of guideway construction. During this period, an increase in crashes could occur. Most of these additional crashes would likely be property damage only, consistent with the crash history in the area. Current I-5 travel lane and shoulder widths would be maintained during construction.

#### **Impacts That Differentiate the Build Alternatives in the Fife Segment**

The Fife I-5 Alternative would have the same potential impacts as described above for the Pacific Highway and Fife Median alternatives east of 51st Avenue E. Once the Fife I-5 Alternative crosses Pacific Highway just west of 51st Avenue E, the I-5 alignment would not create vehicle conflicts or necessitate detour routes. The Fife Pacific Highway Alternative and Fife Median Alternative would continue to have access and lane reduction impacts west of 51st Avenue E.

#### **Impacts Common to All Build Alternatives in the Tacoma Segment**

During construction of the guideway over Sounder/Amtrak tracks, closures may be necessary to ensure safety. This occurs at the Puyallup River crossing and where the guideway crosses the Sounder/Amtrak tracks near East M Street. Coordination with the Federal Railroad Administration and railway operations would be necessary for construction activities over and adjacent to railway tracks.

For safety, navigation would be restricted when construction activities occur directly over the Puyallup River. Activities that restrict navigation would be coordinated and approved in advance by the Puyallup Tribe of Indians, U.S. Coast Guard, and USACE. These activities are anticipated to last for short periods during only a portion of the day or night.

The area near the Tacoma Dome has high pedestrian volumes, especially before or after events at the Tacoma Dome and during the peak travel periods near the Tacoma Dome Station. Pedestrian detours that meet accessibility needs could be required to ensure pedestrian safety near construction zones.

##### **3.7.1.3 Avoidance and Minimization Measures for Construction Impacts**

Near I-5, potential avoidance and minimization measures for construction impacts include placing a temporary construction barrier near the southbound I-5 edge of pavement where barriers are not already present to separate construction activity from I-5 mainline traffic.

#### **3.7.2 Potential Mitigation Measures**

TDLE would have no permanent impacts on transportation safety that would require mitigation. The proposed measures outlined in the section describing mitigation measures for arterial and local streets (Section 3.5.2) would not adversely affect transportation safety in the study area.

### **3.8 Parking**

This section documents the amount of public (on- and off-street) parking that would exist under the No-Build Alternative and how much would be removed by the build alternatives and assesses the potential for the station parking demand to exceed capacity. In areas where parking demand may exceed available supply at the stations, the potential for spillover to nearby on-street parking that surrounds the station areas is assessed. It also summarizes the amount of private (off-street) parking that would be removed with any of the build alternatives and summarizes impacts during construction, such as loss of on- and off-street parking and construction worker parking.

#### **3.8.1 Environmental Impacts to Parking**

##### **3.8.1.1 Long-Term Impacts**

##### **Impacts of the No-Build Alternative**

The No-Build Alternative includes projects, funding packages, and proposals in the central Puget Sound region that are planned to occur with or without TDLE, as described in Chapter 2 (Section 2.2). There is potential for some parking impacts to occur as a result of development and transportation projects included in the No-Build Alternative that are in the environmental and design process.

#### Impacts Common to All Build Alternatives in All Segments

All build alternatives would affect the availability of private, off-street parking for businesses and residents near the proposed alignments and stations. None of the build alternatives would remove public off-street parking, with the exception of both Federal Way alternatives, which would remove portions of the Federal Way/S 320th Street Park and Ride. Private parking spaces within properties that are expected to be entirely acquired by Sound Transit for an alternative are not considered in the analysis of the build alternatives because the corresponding demand for the parking spaces would also be removed. Private parking spaces that would be removed due to partial property acquisitions could reduce business activity in those locations. This could make the business nonconforming to city parking standards, and/or limit the type of business that could occupy the space based on the remaining number of parking spaces. If parking removal makes use of a property unviable, it was considered a full acquisition and was not included in the parking impacts assessment.

Public and private parking impacts from all build alternatives to partially acquired properties are shown below in Table 3-15.

**Table 3-15 Parking Impacts by Build Alternative**

Segment	Alternative	Removed Public (On- or Off-Street Spaces)	Removed Private Parking Spaces	Total Parking Removed
Federal Way	FW Enchanted Parkway Alternative	79	248	327
	FW Enchanted Parkway Alternative with Design Option	42	259	301
South Federal Way	SF Enchanted Parkway Alternative, including SF Enchanted Parkway Station	0	96	96
	SF I-5 Alternative, including SF I-5 Station	0	3	3
	SF 99-West Alternative, including SF 99-Enchanted Station	0	64	64
	SF 99-East Alternative, including SF 99-352nd Station	0	22	22
	SF 99-West Alternative, including SF 99-Enchanted Station with Porter Way Design Option	0	64	64
	SF 99-East Alternative, including SF 99-352nd Station with Porter Way Design Option	0	26	26
Fife	Fife Pacific Highway Alternative, including Fife Station	0	200	200
	Fife Pacific Highway Alternative with 54th Avenue Design Option	0	198	198
	Fife Pacific Highway Alternative with 54th Span Design Option	0	190	190
	Fife Median Alternative, including Fife Station	0	254	254
	Fife Median Alternative, including Fife 54th Avenue Station Option	0	252	252
	Fife Median Alternative, including Fife 54th Span Station Option	0	244	244
	Fife I-5 Alternative, including Fife Station	0	193	193
	Fife I-5 Alternative, including Fife 54th Avenue Station Option	0	191	191
	Fife I-5 Alternative, including Fife 54th Span Station Option	0	184	184

**Table 3-15 Parking Impacts by Build Alternative (continued)**

Segment	Alternative	Removed Public (On- or Off-Street Spaces)	Removed Private Parking Spaces	Total Parking Removed
Tacoma	Preferred Tacoma 25th Street-West Alternative, including Portland Avenue Station and 25th Street-West Station	166	3	169
	Tacoma 25th Street-East Alternative, including Portland Avenue Station and 25th Street-East Station	187	3	190
	Tacoma Close to Sounder Alternative, including Portland Avenue Station and Close to Sounder Station	40	0	40
	Tacoma 26th Street Alternative, including Portland Avenue Station and 26th Street Station	86	5	91

Source: TDLE Team estimated parking impacts based on the 10 percent design drawings.

### Impacts Common to All Build Alternatives in the Federal Way Segment

The Preferred FW Enchanted Parkway Alternative would remove approximately 79 spaces at the Federal Way/S 320th Street Park and Ride and the FW Enchanted Parkway Alternative with the FW Design Option would remove 42 spaces. Current utilization of this 877-space park-and-ride is 11 percent, or 95 spaces. While future parking utilization of this park-and-ride lot could increase, the number of parking spaces remaining is more than the February 2020 current forecast usage. Any changes to the Federal Way/S 320th Street Park and Ride facility would be coordinated with WSDOT. The Preferred FW Enchanted Parkway Alternative and FW Design Option would have similar impacts to private parking, permanently removing approximately 248 to 259 spaces through the Federal Way Segment.

### Impacts Common to All Build Alternatives in the South Federal Way Segment

There is very limited public parking in the South Federal Segment and no public spaces would be affected by any of the South Federal Way build alternatives.

### Impacts That Differentiate the Build Alternatives in the South Federal Way Segment

The SF I-5 Alternative would have the fewest impacts to private parking, with the guideway primarily alongside I-5 southbound. The SF Enchanted Parkway Alternative would permanently remove the most parking spaces, with a total of 96 spaces removed, mostly along the west side of Enchanted Parkway.

The SF 99-East Alternative would permanently remove approximately 22 private parking spaces, most of which would be in the northern section of the segment near Enchanted Parkway. The SF 99-West Alternative would have more permanent impacts to private parking areas along the west side of Pacific Highway and would permanently remove approximately 64 private parking spaces.

### Impacts Common to All Build Alternatives in the Fife Segment

Most of the parking loss associated with the Fife build alternatives would be from partial business acquisitions and would be similar among all build alternatives, ranging from 184 to 252 parking spaces. All of the design options would have similar impacts.

#### **Impacts That Differentiate Build Alternatives in the Fife Segment**

The Fife Pacific Highway Alternative would permanently remove an estimated 190 to 200 private parking spaces. The Fife I-5 Alternative is the only build alternative that would impact residential parking areas and would have a similar number of permanent parking impacts, removing an estimated 184 to 193 private parking spaces. The Fife Median Alternative would have the most potential parking impacts and would remove an estimated 244 to 254 private parking spaces.

#### **Impacts That Differentiate the Build Alternatives in the Tacoma Segment**

While all the build alternatives in Tacoma would displace some public on-street parking, the Preferred Tacoma 25th Street-West Alternative and the Tacoma 25th Street-East Alternative would remove approximately two to four times the number of parking spaces compared with the other build alternatives. The Preferred Tacoma 25th Street-West Alternative would remove an estimated 169 parking spaces, including 166 public on-street spaces. The Tacoma 25th Street-East Alternative would remove an estimated 190 parking spaces, including 187 public on-street spaces. Most of the displaced parking for the Preferred Tacoma 25th Street-West Alternative and the Tacoma 25th Street-East Alternative is anticipated to affect areas adjacent to primarily industrial and warehouse land uses on the north side of E 25th Street.

#### **Station Area Parking**

The two proposed light rail station facilities in South Federal Way and Fife would both include the construction of new park-and-ride facilities to accommodate the increase in demand. Each park-and-ride facility is proposed to have roughly 500 parking spaces. All of the stations would include short-term parking spaces for pickup/drop-off (including accessible spaces) and paratransit. Accessible spaces would be provided at each of the parking facilities at South Federal Way and Fife. Planned park-and-ride spaces at the stations in South Federal Way and Fife may be deferred for up to 3 years from the anticipated start of light rail service in 2035.

If none or fewer than 500 park-and-ride spaces were provided at South Federal Way and Fife until 2038, there would be some shift in mode of access to both stations to pickup/drop-off, walk/bike, and transit. In the 3 years between the start of TDLE service in 2035 and 2038 when parking would be complete, the stations in South Federal Way and Fife would be open with some or no parking available on the station site. During that period, there would be lower ridership at both stations, and there would be more demand for pickup/drop-off spaces. These changes to ridership and mode of access at South Federal Way and Fife would have a limited effect on ridership and access to the station by 2042, the build year for the TDLE project and model year for ridership forecasting.

No additional parking would be provided at either of the stations in the Tacoma Segment for the build condition. The Portland Avenue Station and Portland Avenue Span Station Option would serve only pickup/drop-off, nonmotorized, and transit transfers and would not have a dedicated park-and-ride facility. The existing Tacoma Dome Station already has more than 2,300 parking stalls and was close to 100 percent utilized in February 2020.

In each of the station areas, there is the potential for parking spillover onto private property or unrestricted on-street parking. There is no unrestricted on-street parking in either of the station areas in South Federal Way or Fife. In Federal Way and Fife, transit riders may choose to park in retail lots such as at Federal Way Crossings or the Emerald Queen Hotel and Casino, although these lots are intended only for retail and recreational patrons. Each of the stations in South Federal Way and Fife would include a 500-space parking facility, and spillover parking is expected to be minimal unless parking is deferred to 2038. If parking is deferred to 2038, there is a greater

chance of spillover parking effects at South Federal Way and Fife, with the potential for some riders to park in private lots nearby to access the station.

In Tacoma, the possibility of Sound Transit riders using unrestricted on-street parking exists in the residential area west of E Portland Avenue and at parking lots associated with the Emerald Queen Casino. Neither of the Portland Avenue Station alternatives provides park-and-ride facilities, only pickup/drop-off locations, so drivers may resort to parking on the street. Currently, on-street parking south of I-5 has no time restrictions and is less than 40 percent utilized, but parking controls could be considered to restrict TDLE users from parking in these areas. The newly constructed parking lots for the Emerald Queen Casino could also be used for TDLE patrons because the lot would be less than 0.25 mile from the proposed Portland Avenue Station location. It is anticipated that the Emerald Queen Casino and other private businesses would have parking controls in place to deter unauthorized use.

The possibility of TDLE patrons using unrestricted on-street parking could also exist in Tacoma near the potential stations near the Tacoma Dome. The existing Tacoma Dome Station parking garage is currently near capacity, with almost 100 percent of the stalls used daily for commuters and other station users. Off-street public parking near the Tacoma Dome is currently 45 percent occupied, so TDLE users could use these public off-street lots as needed. In addition, over 70 percent of the on-street public parking near the Tacoma Dome was utilized, but much of that is time-limited and would minimize TDLE patron use of public on-street in the station area.

#### **Minimum Operable Segments and Interim Terminus**

If TDLE is constructed in phases or M.O.S.s, the station in South Federal Way or Fife would be the interim terminus of the project. With an interim terminus at the station in South Federal Way or Fife, 500 parking spaces would be included at the station, but construction of these parking areas may be deferred until 2038. Since the parking facilities and number of parking stalls included with the stations would be the same as in the full-length TDLE alternatives, the potential impacts on parking in the station areas would be the same for either interim terminus.

#### **3.8.1.2 Construction Impacts**

##### **Impacts Common to All Build Alternatives in All Segments**

Construction worker parking would be provided within the construction area where possible and could also occur on local streets and arterials where parking is unrestricted. Construction worker parking near designated construction staging areas could affect the nearby parking supply during peak construction periods. Contractors would be responsible for providing parking for construction workers, where necessary, as part of the project requirements. Construction worker parking would be accommodated at the staging areas or designated areas provided by the contractor along the alignment.

There is limited to no on-street parking allowed along the entire length of Pacific Highway in the TDLE corridor. Available on-street parking exists in neighborhoods east and west of Pacific Highway in Federal Way and north and south of Pacific Highway in Fife and would not be affected by construction activity. All build alternatives would affect the parking spaces at and access to the Federal Way/S 320th Street Park and Ride.



#### **Impacts Common to All Build Alternatives in the Federal Way Segment**

There is minimal on-street parking along the length of both build alternatives in the Federal Way Segment. There are multiple surface parking lots along Enchanted Parkway, which would be impacted during construction. While some parking spaces would be impacted temporarily by construction of the guideway, most parking would remain intact or be replaced when construction is complete. The SF Enchanted Parkway Station would impact approximately 20 to 30 private business parking spaces in The Commons at Federal Way during construction, but most spaces would be replaced once construction of the guideway is complete.

#### **Impacts That Differentiate Build Alternatives in the South Federal Way Segment**

There is limited on-street parking in the South Federal Way Segment, but there are multiple surface parking lots along Enchanted Parkway and Pacific Highway that would be impacted temporarily by construction for each of the build alternatives. The SF I-5 Alternative is anticipated to have limited temporary parking impacts to three privately-owned parking spaces. Construction of the SF Enchanted Parkway Alternative would temporarily impact approximately 325 privately owned parking stalls. The SF 99-West and SF 99-East alternatives would have similar temporary impacts to private parking stalls, approximately 450 spaces with the SF 99-West Alternative and 415 spaces with the SF 99-East Alternative.

Apart from the SF I-5 Alternative, all other South Federal Way build alternatives would have temporary but longer-term impacts to parking spaces for construction staging in the Walmart parking lot northwest of the interchange between I-5 and SR 18 that are included in the total temporary parking impacts discussed above. The SF Enchanted Parkway Alternative would temporarily affect approximately 250 parking spaces in this lot for use in construction staging. Both the SF 99-East Alternative and SF 99-West Alternative would affect more parking spaces temporarily, with approximately 405 spaces that would not be accessible during construction. Some parking spaces in this lot would be removed permanently as part of the partial acquisitions discussed in Section 3.9.1.1.

#### **Impacts Common to All Build Alternatives in the Fife Segment**

There is limited on-street parking in the Fife segment, and no on-street parking is anticipated to be impacted by construction of the guideway, station, and associated features through this segment. All build alternatives in the Fife Segment would have temporary construction impacts to parking at private businesses along the corridor.

#### **Impacts That Differentiate Build Alternatives in the Fife Segment**

The Fife Median Alternative would have the fewest temporary parking impacts, with an estimated 290 spaces affected during construction. The Fife I-5 Alternative would have the greatest number of potential temporary parking impacts with approximately 375 to 410 parking stalls affected during construction. The Fife Pacific Highway Alternative would have a moderate number of temporary impacts compared to other Fife build alternatives, with an estimated 350 spaces affected by during construction.

The Fife I-5 Alternative would not impact any parking along Pacific Highway but would temporarily impact private storage parking for car dealerships along I-5 as well as rows of parking adjacent to the I-5 right-of-way for other businesses and residences. The Fife I-5 Alternative would temporarily impact approximately 405 parking stalls along the entire Fife Segment. The Fife Pacific Highway and Fife Median alternatives would have temporary impacts to parking spaces at businesses and some car dealership storage during construction on the south side of Pacific Highway.

Approximately 350 private parking spaces would be temporarily impacted for construction of the Fife Pacific Highway Alternative, and approximately 290 spaces would be temporarily impacted for construction of the Fife Median Alternative.

#### **Impacts Common to All Build Alternatives in the Tacoma Segment**

The Preferred Tacoma 25th Street-West, Tacoma 25th Street-East, and Tacoma Close to Sounder alternatives would impact regular operations of the Tacoma Dome Station garage due to column construction, possible pedestrian bridge connections, and operational improvements to integrate with the new TDLE station. It is possible some entrances could be closed, and some parking spaces removed during construction. All build alternatives in the Tacoma Segment would temporarily affect a similar number of public on-street parking spaces, with potential impacts to approximately 25 to 45 spaces during construction.

##### **3.8.1.3 Avoidance and Minimization Measures for Construction Impacts**

In South Federal Way and Tacoma, avoidance and minimization measures, including a public education campaign and/or signage, could be used to let transit users know when construction impacts would affect operations near or at the South Federal Way Park and Ride and at the Tacoma Dome Station Parking Garage.

#### **3.8.2 Potential Mitigation Measures**

Sound Transit would evaluate impacts from TDLE patrons using available public on-street and off-street parking near the stations near the Tacoma Dome and the Portland Avenue Station. Sound Transit would inventory public on-street and off-street parking within 0.25 mile around each station for up to 1 year before the start of light rail revenue service. These inventories would document the public on-street and off-street parking supply and utilization prior to the opening of TDLE for revenue service. Inventories would exclude spaces that would be permanently removed and any space still in use for construction staging. Within a year after opening, Sound Transit would again inventory supply and utilization to determine parking impacts within 0.25 mile of the stations. If impacts are determined after light rail operations begin, Sound Transit and the local jurisdiction would work with the affected stakeholders to identify and implement appropriate mitigation measures.

If parking is deferred from 2035 to 2038, spillover parking effects at the stations in Fife and South Federal Way would be more likely in the period that TDLE is in service because not all 500 spaces would be available at each of the stations. The Fife and South Federal Way segments have very limited public on-street parking. Spillover parking impacts are anticipated to primarily affect privately owned off-street lots. Sound Transit and the local jurisdiction would work with the affected stakeholders to identify and implement appropriate mitigation measures if necessary.

Parking control measures could consist of parking meters, restricted parking signage, passenger and truck load zones, time-limited parking, and residential parking zone permitting systems. Additional parking mitigation strategies could include promotion of other transit and transportation services (e.g., encourage the use of buses, vanpool or carpool services, walking, or bicycle riding). For parking controls agreed to with the local jurisdiction and community, Sound Transit would be responsible for the cost of installing the signage or other parking controls and any expansion of the parking controls for 1 year after opening the light rail system. The local jurisdiction would be responsible for monitoring the parking controls and providing all enforcement and maintenance of the parking controls, including ongoing residential parking zone-related costs. Off-street private lot owners would be responsible for monitoring and preventing potential TDLE patron parking within their own lots.

For acquired off-street parking resulting from partial property acquisitions Sound Transit would provide private business owners with fair market value of the acquired spaces.

## 3.9 Navigation

This section describes how TDLE could affect navigable waterways during project operation and construction.

### 3.9.1 Environmental Impacts to Navigation

#### 3.9.1.1 Long-Term Impacts

##### No-Build Alternative

The navigable waterways and usage would be expected to be similar to existing conditions on the Puyallup River and Thea Foss Waterway as described in Section 3.2.8 of the Affected Environment.

##### Impacts Common to All Build Alternatives in All Segments

The operation of the TDLE project would not affect navigation on the Puyallup River or Thea Foss Waterway.

The Puyallup River crossing could include columns within the ordinary high-water mark depending on the bridge type. Any in-water bridge columns would be outside of the navigation channel and would maintain navigability by recreational and small craft. However, an in-water column may change vessel movement outside of the navigation channel. The bridge height would be the same height or higher than the existing I-5 bridge and higher than the downstream Milwaukee Railroad Puyallup River Bridge; therefore, it would not reduce the existing vertical clearance. The Thea Foss Waterway north of the station alternatives near the Tacoma Dome would not be impacted.

#### 3.9.1.2 Construction Impacts

Construction of the bridge over the Puyallup River could affect navigability and restrict boating in a portion of the river for short periods of time for both the long-span or pier-supported bridge option. For safety, navigation channels would be restricted around active construction areas, but would remain open.

Any in-water work in the Puyallup River would be subject to work window restrictions to protect Endangered Species Act-listed fish, as well as timing restrictions for Tribal fishing and ceremonial activities. The exact windows and associated activity restrictions would be determined during the permitting process with the Puyallup Tribe of Indians, USFWS, NMFS, U.S. Coast Guard, and USACE. The pier-supported bridge would require the placement of construction equipment and construction areas within the Puyallup River to allow construction of the support piers. This would result in navigation restrictions on the Puyallup River while barges are present, equipment is set, and piers are constructed. There could also be periods of time when navigation would be restricted to allow for the placement of cofferdams or temporary shoring systems. These conditions could occur for up to 3 years, and there would be adequate space maintained to allow watercraft to navigate around construction areas. The construction of the piers would occur in-line with the piers for I-5, so the area where navigability would be restricted would be similar to existing conditions.

The long-span bridge could also have periods of time when navigation close to the shore would be restricted to allow for the placement of cofferdams or temporary shoring systems for construction of supporting piers that are located on or near the Puyallup River levees. The placement of columns would be further defined as the conceptual design develops.

All required permits and approvals would be acquired prior to construction of either bridge option over the Puyallup River.

#### **3.9.1.3 Avoidance and Minimization Measures for Construction Impacts**

During construction, Sound Transit would minimize impacts on the navigability of the Puyallup River by minimizing work within the waterway. If barges are required during in-water construction for the pier-supported bridge option or other bridge structure types, Sound Transit would coordinate with the Puyallup Tribe of Indians, the U.S. Coast Guard, and others to minimize impacts and allow passage of boat traffic.

Sound Transit would also consult with and work with the Puyallup Tribe of Indians on necessary agreements for any in-water work. Such agreements could include measures to avoid and minimize impacts to Treaty Fishing Activities, such as construction timing restrictions, in-water and over-water work notifications, coordination on construction debris removal, reimbursement for lost fishing time, and would also identify mitigation for unavoidable impacts.

#### **3.9.2 Potential Mitigation Measures**

During TDLE operation, no mitigation of impacts on navigable waterways would be required for the long-span bridge because it would maintain navigability for waterway users. For the pier-supported bridge, the construction footprint would be minimized, and the new piers would be aligned with the existing I-5 piers as much as possible. Restrictions on navigation during construction of the pier-supported bridge would be scheduled outside of peak navigation periods to the extent possible, and consistent with mitigation described in Section 4.9, Ecosystems Resources.

### **3.10 Indirect Impacts**

This section describes the indirect transportation impacts, those that occur later in time or farther removed in distance, during project operation and construction.

#### **3.10.1 Regional Travel**

TDLE would provide reliable light rail service between Tacoma and many of the region's urban centers. Light rail service could help to facilitate potential increases in residential and employment uses around project stations. This could lead to corresponding changes in regional travel patterns as both trips to and from these areas potentially increase for all travel modes, thus affecting transit, traffic volumes, parking demand, and nonmotorized users. It would also provide additional transit connections to long distance transportation services, including Amtrak Cascades.

#### **3.10.2 Transit Service and Operations**

In addition to the planned changes to local and commuter bus service assumed for TDLE, Metro, Pierce Transit, and Sound Transit could make additional changes in response to the project. These could include redeploying and/or reinvesting in bus service that is replaced by the TDLE light rail service. TDLE may also provide improved access to the Amtrak Station near the Tacoma Dome, improving ridership on the Amtrak Cascades route. Some bus riders could be affected if there are

additional changes to the bus system beyond the previously identified bus integration plans to support new connections with the light rail system.

Light rail could facilitate TOD surrounding the TDLE stations, which was assumed in the Sound Transit and PSRC travel demand models. However, the mode of access to and from stations may shift to a greater percentage of nonmotorized access or transit transfers and lower percentage of automobile access as the population and employment densities increase within station area walksheds and bikesheds. Any development beyond the PSRC's adopted population and employment land use forecasts for 2042 could require further regional and local planning and policy decisions. This could result in overall ridership increases in the TDLE corridor.

#### **3.10.3 Arterial and Local Street Operations**

Increased automobile and bus transit trips both to and from the station areas could result from potential increases in land use and development density around the light rail stations in the corridor. This increase in traffic could cause additional impacts on the arterials and local street operations near stations. Conversely, increased development along the light rail corridor could also result in shifts from automobile trips to other travel modes such as transit, bicycle, and pedestrian trips.

The potential direct impacts identified in the previous sections of Chapter 3 are consistent with the cities of Federal Way, Milton, Fife, and Tacoma and regional comprehensive planning, which promotes higher-density, mixed-use development around transit services. Larger developments in and around TDLE station areas would be subject to a separate environmental review process to determine project-level impacts.

#### **3.10.4 Freight Mobility and Access**

Increases in traffic accessing station areas could cause additional impacts on the arterials and local street operations farther from stations along roadways that provide station access for local traffic, which could affect freight mobility and access. Any impacts on freight would be similar to those for automobiles.

#### **3.10.5 Nonmotorized Access**

Higher-density residential and commercial development around station areas could increase light rail ridership and nonmotorized trips, including additional pedestrian and bicycle trips. These nonmotorized trips could travel along older streets that lack ADA accessibility but could encourage improvements to these facilities by local jurisdictions as increased usage becomes evident.

#### **3.10.6 Safety**

The potential for increases in residential and employment uses around the light rail stations could lead to an increase in motorized and nonmotorized activity and further conflicts among all travel modes (automobile, transit, and nonmotorized).

#### **3.10.7 Parking**

The potential for increased land use and development density around station areas in the TDLE corridor could increase the demand for parking in these areas. Local transit improvements by others on routes connecting to TDLE stations could increase the potential for some TDLE users to park along feeder bus routes. There could be reduced demand at park-and-rides on parallel corridors from riders shifting to the light rail service.

#### **3.10.8 Navigation**

No indirect impacts on navigable waterways are expected.

#### **3.10.9 Mitigation for Indirect Impacts**

No mitigation for indirect impacts is needed.