

Technical Memorandum

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Subject: Draft Preliminary Study Area Limits and NEPA Purpose and Need Statements

Project Name: US 2 Trestle Capacity Improvements and Westbound Trestle Replacement PEL Study

1 Introduction

WSDOT is proceeding with the US 2 Trestle Capacity Improvements and Westbound Trestle Replacement Planning and Environmental Linkage Study (US 2 Trestle PEL Study) under the 23 United States Code (U.S.C.) 168 PEL authority, which includes defining the travel corridor or study limits and the Purpose and Need statements that would be used in a future National Environmental Policy Act (NEPA) process.

This memorandum provides a description of the preliminary study area for the US 2 Trestle PEL Study and the draft NEPA Purpose and Need statements. The purpose defines the transportation problem to be solved, and the need(s) provides information and data to support the assertion made in the purpose. Collectively, the Purpose and Need statements provide the framework for identifying and evaluating alternative transportation solutions and identifying the reasonable range of alternatives. The reasonable range of alternatives, which would be further evaluated in NEPA environmental documentation, are those that address the Purpose and Need statements and are economically and technically feasible.

To develop the US 2 Trestle PEL Study's draft Purpose and Need statements WSDOT:

- Conducted engagement with interested tribes.
- Solicited input from the PEL Study's Technical Working Group (TWG), Resource Agency Committee (RAC), and Executive Advisory Group (EAG), consisting of representatives of local agencies, resource agencies, elected officials, and tribes.
- Held listening sessions with community-based organizations, an online open house to gather public input, and hosted tabling events on both the west and east sides of the US 2 trestle.
- Obtained information from WSDOT maintenance and bridge staff on the existing conditions of the US 2 trestle.

All engagement included a statement to provide notification that it is the intent to adopt the Purpose and Need identified during the PEL Study into the project's future NEPA review. Throughout the US 2 Trestle PEL Study process, WSDOT will continue to conduct engagement with local agencies, resource agencies, tribes, and the public.

2 Background

The US 2 trestle, including the structures over the Snohomish River and Ebey Slough, connects US 2 to Interstate 5 (I-5) on the west side and the interchanges of State Route (SR) 204 and 20th Street Southeast on the east side (Figure 1). The US 2 trestle is the only direct route across the Snohomish River, Deadwater Slough, and Ebey Slough from eastern Snohomish County cities, such as Lake Stevens and Snohomish, to downtown Everett and the I-5 corridor. On a national level, US 2 begins in Everett and extends eastward to St. Ignace, Michigan. The significance of this segment of US 2 as a highway has been formalized through the following federal and state designations:

- Included in the National Highway System by the U.S. Department of Transportation.
- Classified as a federal and state Urban Principal Arterial.
- Identified as part of a Washington state scenic byway (the Cascade Loop).
- Identified as part of a National Scenic Byway (Stevens Pass Greenway).
- Designated as a Highway of Statewide Significance by the Washington State Legislature.
- Designated by WSDOT as a T-2 truck freight corridor.

With recent and locally planned population and employment growth in the area, traffic and traffic back-ups have increased on and near this segment of US 2, especially westbound in the morning and eastbound in the afternoon. Figure 2 shows projected differences in population and employment between 2018 and 2050 within the primary areas (known as travel sheds) east and west of the US 2 trestle that are expected to generate most of the trips across the facility. Additionally, the structures that comprise the US 2 trestle, including its east and west connections, are aging.

In recent years, several studies have focused on identifying needed short- and long-range improvements to this segment of US 2. Starting in 2018, WSDOT conducted a preliminary PEL Study focused on replacement and improvement options for the US 2 westbound trestle span, bounded by I-5 and SR 9. The key finding of that PEL Study indicated that a larger study area is required to adequately assess future conditions, evaluate reasonable alternatives, and develop long-term solutions. In 2022, the City of Everett launched the I-5/US 2 Interchange Planning Study to identify improvements to the interchange and connecting city streets. Also in 2022, the Washington State Legislature authorized funding for this US 2 Trestle Capacity Improvements and Westbound Trestle Replacement study with a specific request to consider options to enhance transit and multimodal mobility.

Figure 1. Location of US 2 Trestle and East and West Connections

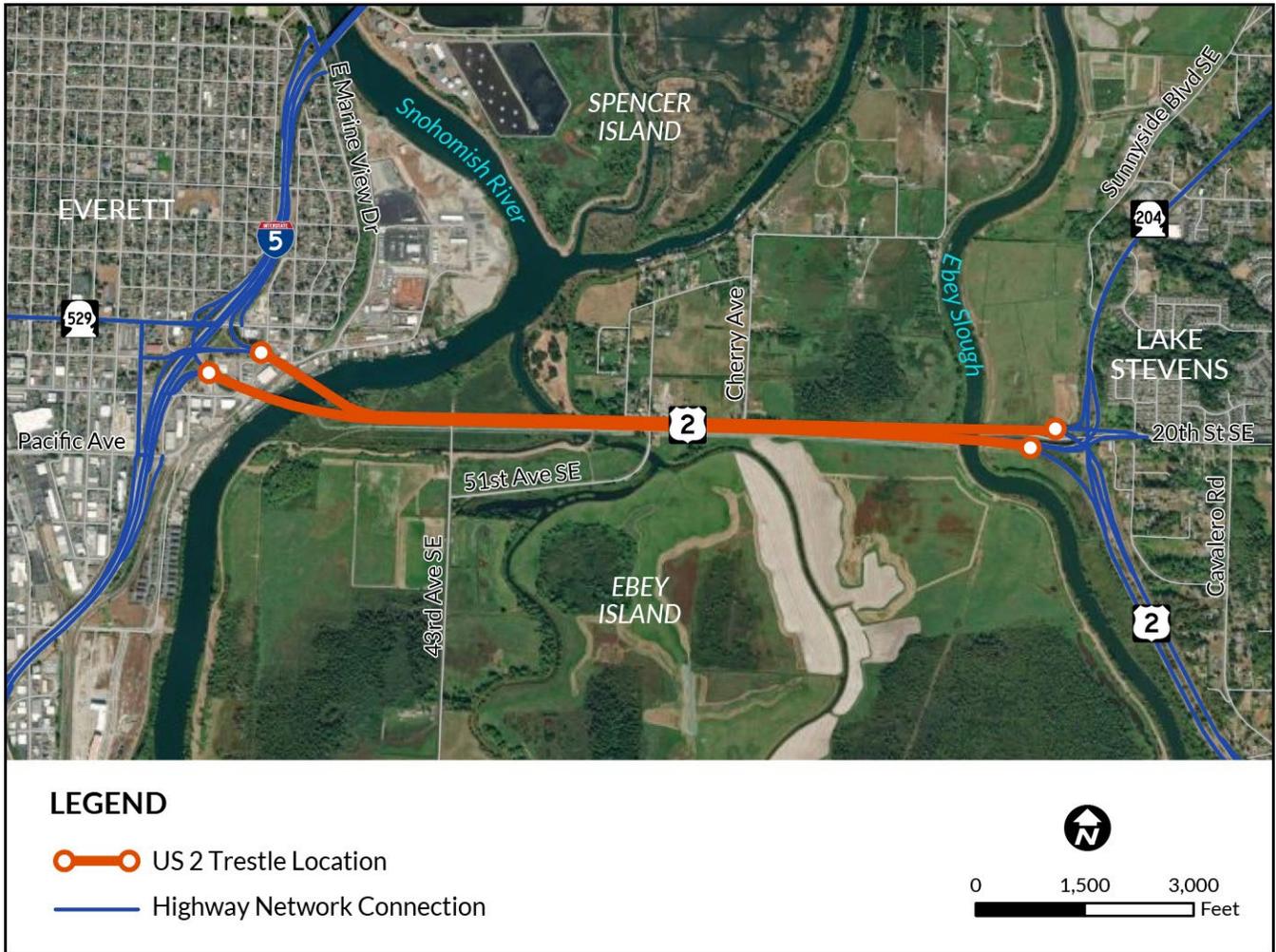
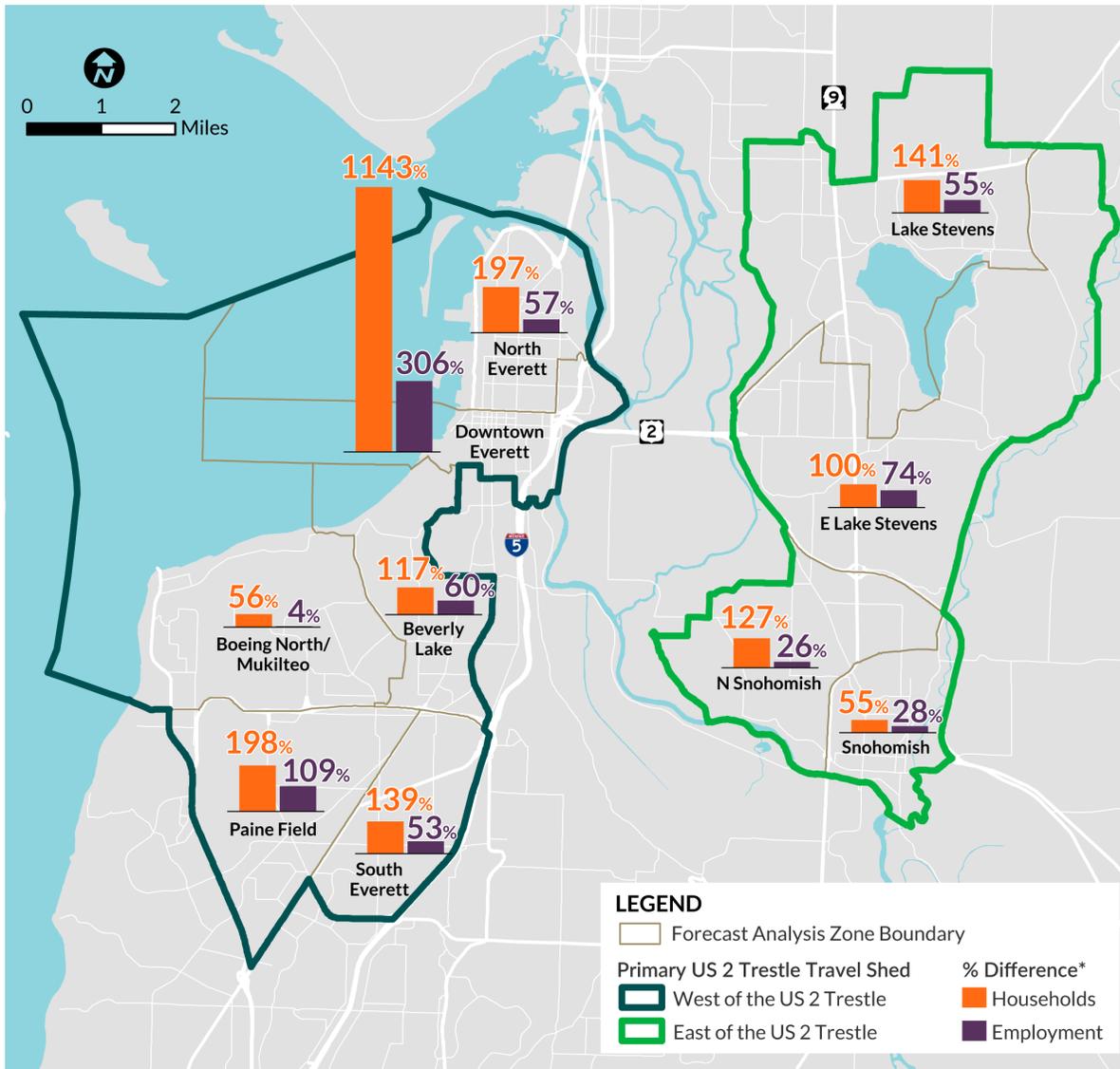


Figure 2. Percent Difference between Existing (2018) and Projected (2050) Household and Employment Levels near PEL Study Area



West Side		
	HOUSEHOLDS	EMPLOYMENT
2018	44,000	104,400
2050	150,000	194,400
% Difference*	+241%	+86%

East Side		
	HOUSEHOLDS	EMPLOYMENT
2018	23,500	14,700
2050	49,800	21,200
% Difference*	+112%	+44%

* from 2018 to 2050

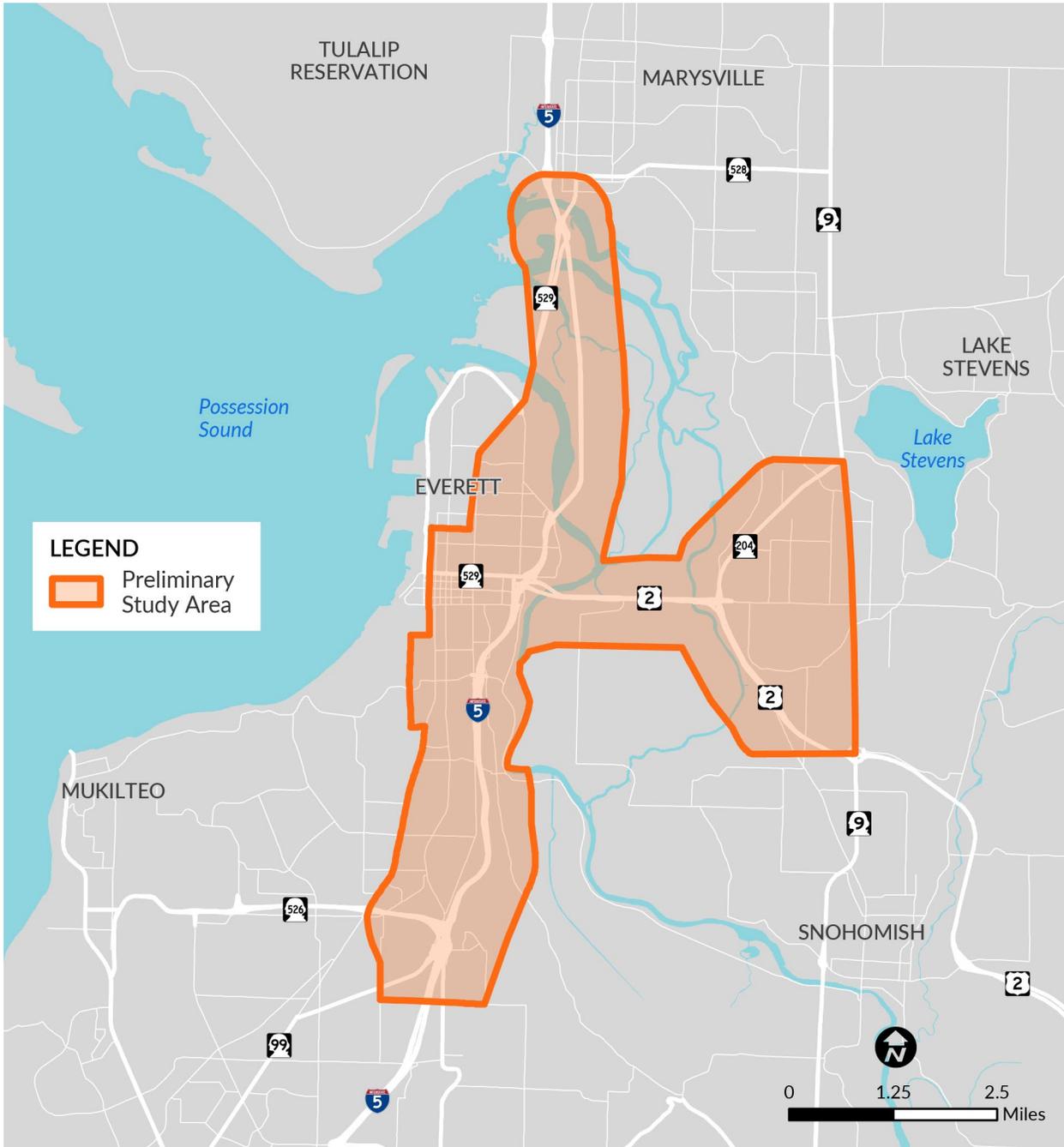
3 Preliminary PEL Study Area Limits

To assess capacity issues on the US 2 trestle a prior study, which focused on 2040 traffic operations on the westbound trestle, indicated that adding lanes to the US 2 westbound trestle alone would not alleviate the

forecasted bottlenecks (WSDOT 2021). The prior study showed that adding lanes to the trestle would reduce the length of the bottleneck on the trestle but would not address the receiving capacity of I-5.

The Study team defined the preliminary study area limits to better understand how travelers for all modes move through the network; these limits also consider the capacity on I-5 and surface streets and intersections in downtown Everett. On the west side of the US 2 trestle, the preliminary study area limits include the segment of I-5 from just south of the connection with SR 99 and SR 526 to just north of the connection of I-5 and SR 529 and downtown Everett. On the east side of the US 2 trestle the preliminary study area limits include the segments of SR 204 and US 2 east to SR 9 and the local streets and segment of SR 9 between SR 204 and US 2. The preliminary study area, shown in Figure 3, is where traffic changes are expected to be most prominent as a result of changes to the US 2 trestle and the area where a more detailed traffic analysis will be conducted to adequately assess future conditions, evaluate reasonable alternatives, and develop a long-term multimodal solution for the US 2 trestle.

Figure 3. US 2 Trestle PEL Preliminary Study Area



Once the evaluation and screening of alternatives is complete, the preliminary study area limits for the US 2 Trestle PEL Study will be refined to reflect the determination of logical termini, as will be required for the subsequent NEPA analysis.

4 Draft Purpose and Need

4.1 Purpose

The purpose of this PEL Study is to develop long-term transportation solutions connecting to and across the US 2 trestle to improve multimodal mobility, safety and resiliency while equitably serving communities.

4.2 Needs

Multimodal mobility: The US 2 trestle faces challenges accommodating all transportation modes, which limits travel options.

Mobility is defined as the ability to move freely, easily, and in a reliable manner.

Vehicular – All motorized vehicles using the US 2 trestle face recurring traffic bottlenecks during the weekday morning and afternoon peak travel periods.

- In the westbound direction, three major roadways (US 2, 20th Street Southeast, and SR 204) converge to feed traffic onto the two-lane westbound trestle. Similarly, in the eastbound direction, ramps from northbound and southbound I-5 combine with ramps from downtown Everett and funnel onto the eastbound trestle, which has two lanes throughout the day and shoulder driving (for a third lane of capacity) during the PM peak travel period.
- Existing peak period traffic volume demand for the US 2 trestle exceeds the corridor's capacity, resulting in multiple hours of delay for people accessing the trestle from I-5, SR 204, and US 2. During the morning (AM) peak period, traffic bottlenecks occur at the SR 204/20th Street Southeast on-ramp to US 2, the US 2/SR 204 ramp, the west end of the trestle, the US 2/I-5 ramp connection and on southbound I-5 at the SR 526 interchange (Figure 4). During the afternoon (PM) peak period, traffic bottlenecks occur on SR 204 at Sunnyside Boulevard, at the east end of the trestle, and at the US 2/I-5 ramp connection; traffic bottlenecks also extend on I-5 in both the northbound and southbound directions from the SR 526 interchange (Figure 5). Traffic back-ups at these locations are projected to get longer in 2050 during both peak periods.
- Traffic bottlenecks affect average peak period travel times for people using the US 2 trestle. Travel times range from 12 to 22 minutes for westbound traffic in the morning and from 18 to 20 minutes for eastbound traffic in the afternoon. This amounts to 3 to 13 minutes of delay per vehicle in the morning and 9 to 11 minutes of delay per vehicle in the afternoon.
- US 2 in the preliminary study area is classified as an urban principal arterial and is part of the national highway network with a posted speed limit of 55 miles per hour (mph). However, due to traffic bottlenecks, vehicle speeds on key road segments both approaching and on the US 2 trestle remain under 30 mph for all travel modes in the peak travel periods and peak directions.
- Local jurisdictions have projected a future increase in employment and households, which will result in increased traffic demand. Projections indicate over 30% growth in peak period traffic demand for the US 2 trestle by 2050. By 2050 future traffic growth is projected to increase average morning peak period

westbound travel times to between 18 and 48 minutes (9 to 39 minutes of delay per vehicle) and average afternoon peak period eastbound travel times to between 36 and 42 minutes (27 and 33 minutes of delay per vehicle).

- Within the preliminary study area, census tracts west and northwest of the US 2 trestle are identified by the U.S. Department of Transportation's (USDOT's) Equitable Transportation Community Explorer as transportation disadvantaged communities (experiencing transportation cost burdens and transportation safety burdens¹) (USDOT n.d.-a). These census tracts, in Everett and South Everett, are identified as some of the highest areas of transportation disadvantage in Washington State (65th to 78th percentile), including transportation cost burden (77th to 95th percentile) and transportation safety burden (74th to 82nd percentile).

Transportation disadvantaged communities spend more, and longer, to get where they need to go (USDOT n.d.-b).

- The US 2 trestle is an important transportation connection used by vehicles originating from locations (called forecast analysis zones or FAZs) that include these transportation disadvantaged communities. For example, in 2018, about 60% of vehicles traveling on the eastbound US 2 trestle during the AM peak period came from FAZs that include transportation disadvantaged communities in Everett and South Everett (USDOT n.d.-a). By 2050, over 80% of eastbound trips on the US 2 trestle during the AM peak period are projected to come from these FAZs (Figure 6).
- From a spring 2024 online public survey for the PEL Study the most commonly selected types of trips on the US 2 trestle was for shopping, errands, and medical appointments (82% of responses); followed by travel for recreational activities (74%); visiting friends and family (69%); and commuting to and from work (64%)². This variety of trip purposes highlights the importance of the facility for fulfilling essential tasks and basic needs at all times of day.

¹ The USDOT's Transportation Cost Burden indicator assigns higher scores to communities that spend a greater percentage of household income on transportation, "including transit costs; vehicle maintenance and insurance costs; gasoline and fuel, which leaves less money for housing, medical care and food, potentially leading to households living in substandard housing with higher rates of chronic illness and obesity." The USDOT's Transportation Safety indicator assigns higher scores to communities that experience higher levels of fatalities per 100,000 persons related to motor vehicle crashes (USDOT n.d.-c).

² The survey question allowed respondents to select as many responses as applicable and asked what types of trips they take on the US 2 trestle. The question did not specify time of day for the trips.

Figure 4. Existing and 2050 AM Peak Period Bottlenecks Experienced by US 2 Trestle Users

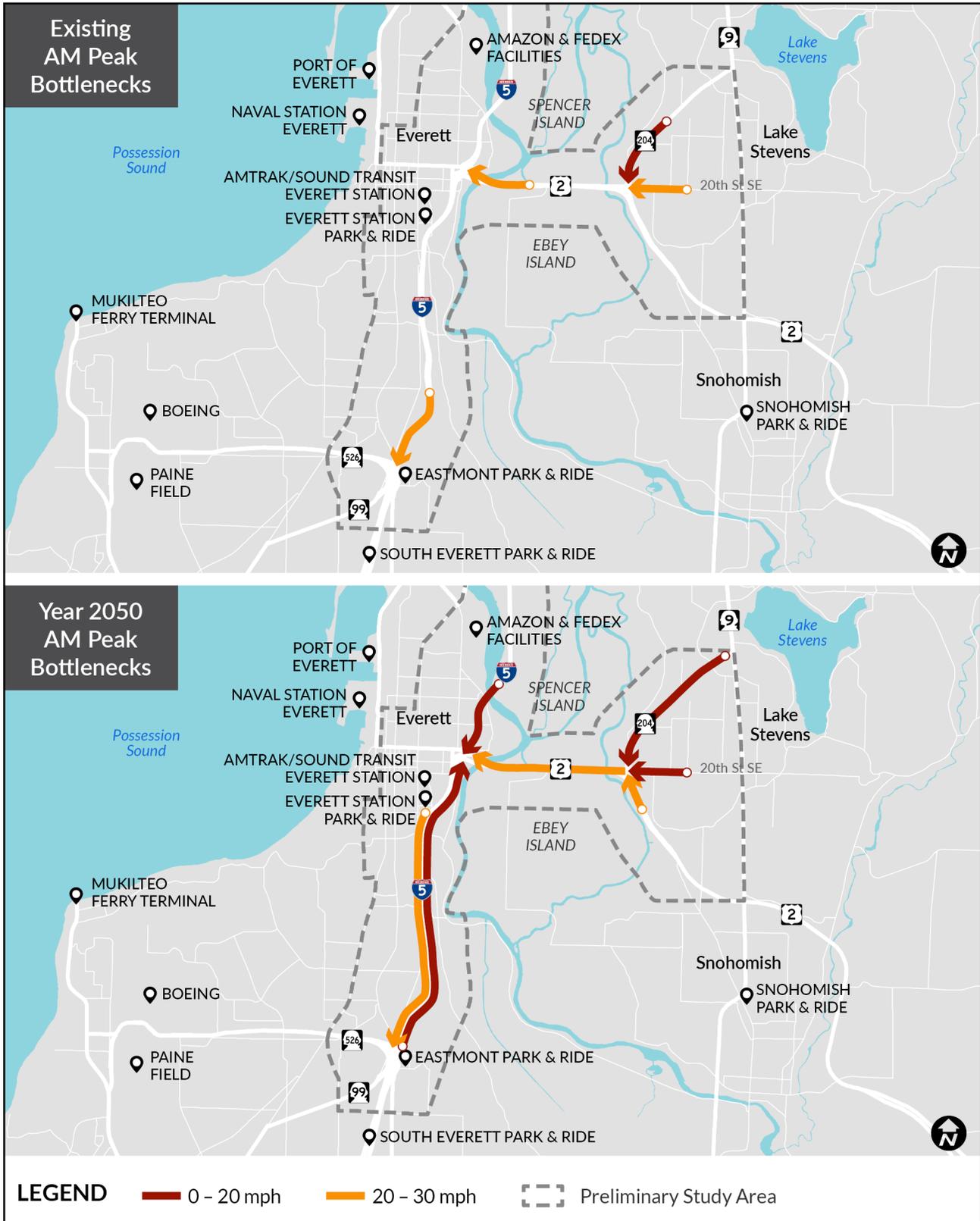


Figure 5. Existing and 2050 PM Peak Period Bottlenecks Experienced by US 2 Trestle Users

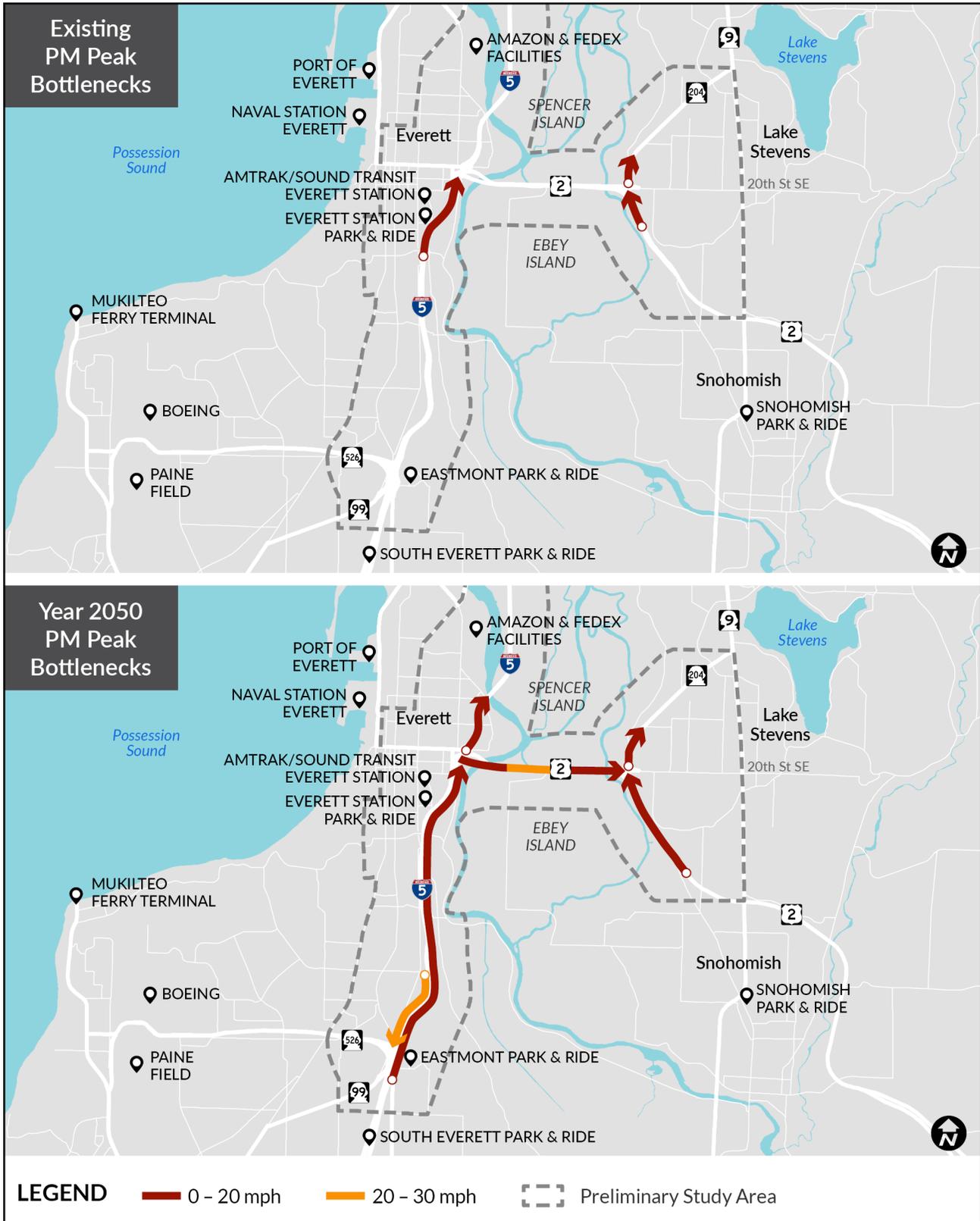
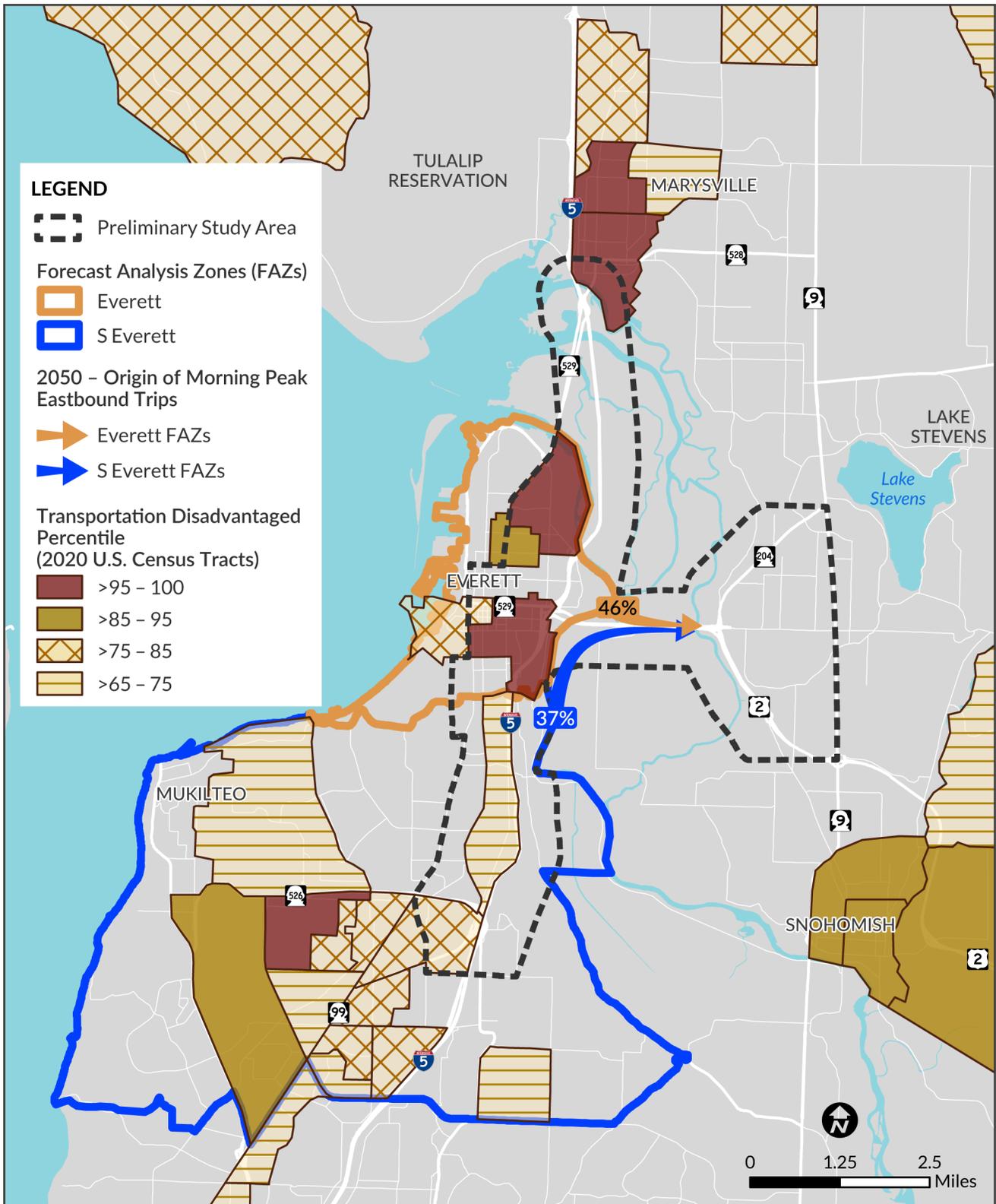


Figure 6. Future (2050) Projected Morning Peak Period Trips on the Eastbound US 2 Trestle from Locations that Include Transportation Disadvantaged Communities



Freight – Recurring bottlenecks affect the reliability of freight truck movement across US 2, which is a designated freight corridor for the movement of goods.

- Freight truck vehicles experience the same bottlenecks and travel time variability as general-purpose traffic.
- US 2 is designated as a T-2 truck freight corridor (carrying an average of 2,800 trucks per day and over 9 million tons of freight per year) by the Washington State Freight and Goods Transportation System and a Connector freight route, providing direct access between eastern Washington and western Washington.
- Major freight facilities and industrial centers use this corridor, including the Port of Everett, Everett Boeing plant, Naval Station Everett, and the Paine Field Boeing Everett Manufacturing/Industrial Center.
- Westbound freight vehicles account for approximately 17% of morning traffic and 7% of afternoon traffic over the US 2 trestle. Eastbound freight vehicles account for 14% of morning traffic and 9% of afternoon traffic.

High Occupancy Vehicles (HOV) and Transit – Due to a lack of dedicated facilities, existing HOV and transit using the US 2 trestle face the same bottlenecks as general-purpose traffic.

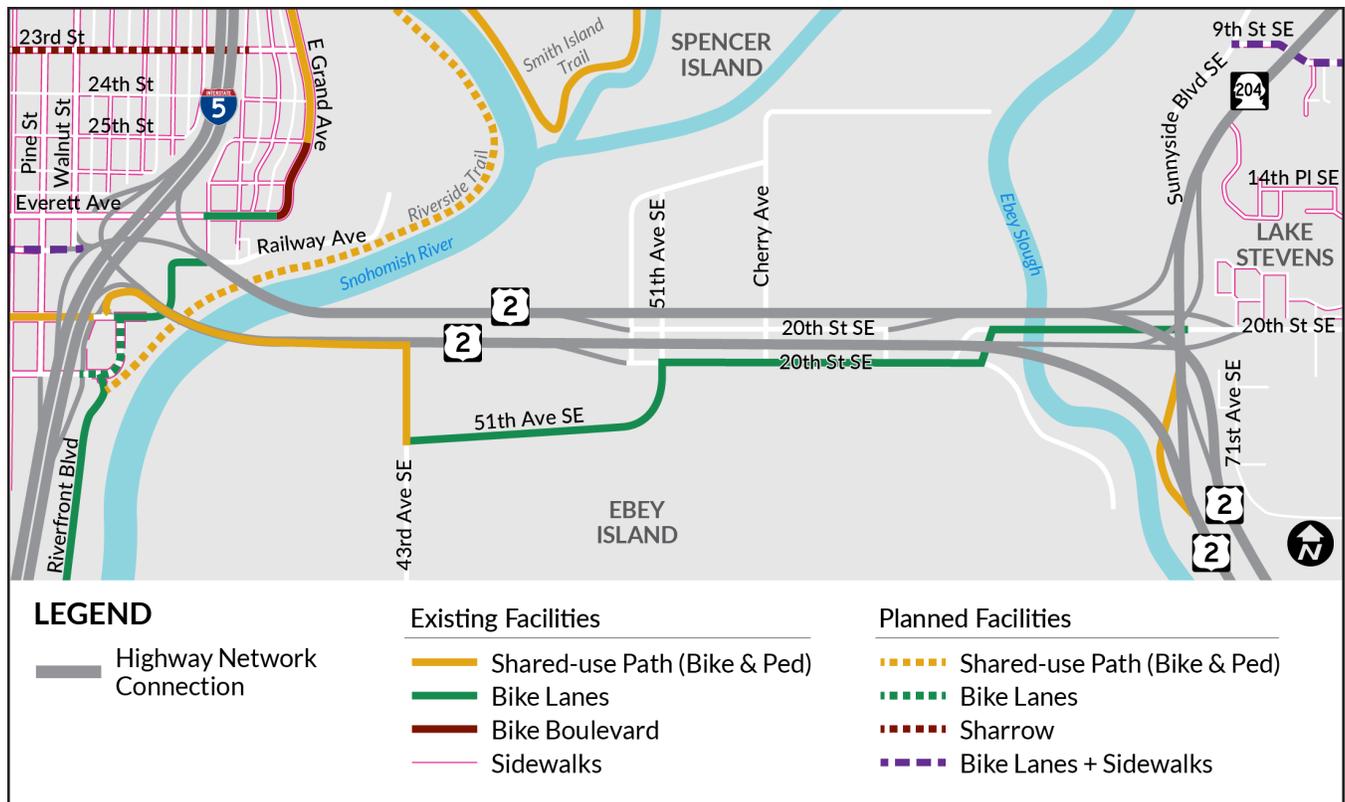
- Today, HOV trips make up approximately 3% of the westbound traffic across the trestle in the morning where there are no HOV facilities. This is in contrast to the I-5 corridor within the preliminary study area limits, which has between 13% and 28% HOV traffic and a dedicated HOV lane.
- Community Transit currently operates four bus routes that provide 9 to 10 buses per hour in the peak direction (westbound in the morning and eastbound in the afternoon) across the US 2 trestle during the peak period. Existing bus ridership for both directions of US 2 trestle travel ranges from about 200 people during the morning peak period to about 260 people during the evening peak period.
- Transit routes using the 20th Street Southeast corridor to access the US 2 trestle have a slight benefit of bypassing morning bottlenecks using the Business Access Transit (BAT) lane that extends from 91st Avenue Southeast to just west of Cavalero Road. In the year 2050, transit travel time savings from the 20th Street Southeast BAT lane are estimated to be approximately 15 minutes.
- In 2021, the Washington State Legislature directed WSDOT to work toward establishing local vehicle miles traveled (VMT) reduction targets for 10 counties, including Snohomish County. Achieving the reduction targets will require a combination of strategies to: eliminate some trips; reduce the length of some trips; and improve transportation choices using transit, walking, biking, rolling, or telework (WSDOT 2023).
- Within the preliminary study area, two intersecting census tracts have more than 15% of households with no car available and six census tracts have 5 to 15% of households with no car available (U.S. Census Bureau 2017-2021).

Active Transportation – There are no bicycle and pedestrian facilities on the westbound trestle, existing bicycle and pedestrian facilities on the eastbound trestle do not serve all ages and abilities, and there are missing connections to existing active transportation facilities at either end of the trestle.

- The existing shared-use path only extends for approximately 0.75 miles along the eastbound US 2 trestle, before turning south and terminating at 43rd Avenue Southeast on Ebey Island. From there, bike route signs direct two-way bicycle traffic to the wide shoulder along eastbound 20th Street Southeast, which also has a short shared-use path section under the US 2 trestle just west of the Ebey Slough (Figure 7).

- Bicycle use is prohibited on the eastbound US 2 trestle between the eastern end of the adjacent shared-use path and the SR 204/US 2 interchange.
- Revised Code of Washington (RCW) 47.04.035 directs state transportation projects (starting after July 1, 2022 and with a cost of \$500,000 or more) to “incorporate the principles of complete streets with facilities that provide street access with all users in mind, including pedestrians, bicyclists and public transportation users.”
- Experienced bicyclists use the existing facilities across Ebey Island to connect to regional facilities, including the Interurban Trail in downtown Everett and the Centennial Trail east of Lake Stevens.
- During 15 listening sessions with community-based organizations (CBOs) between January and April 2024, WSDOT heard repeated concerns about a lack of safe and accessible active transportation facilities on and near the US 2 trestle and a need for additional facilities and options. CBO representatives noted that routes that access existing active transportation facilities across Ebey Island (between US 2/SR 204 and I-5) are challenging. They said access in the westbound direction has a high level of traffic stress and safety concerns crossing high traffic on SR 204. Access in the eastbound direction is poorly signed and too hilly for non-electric bikes.

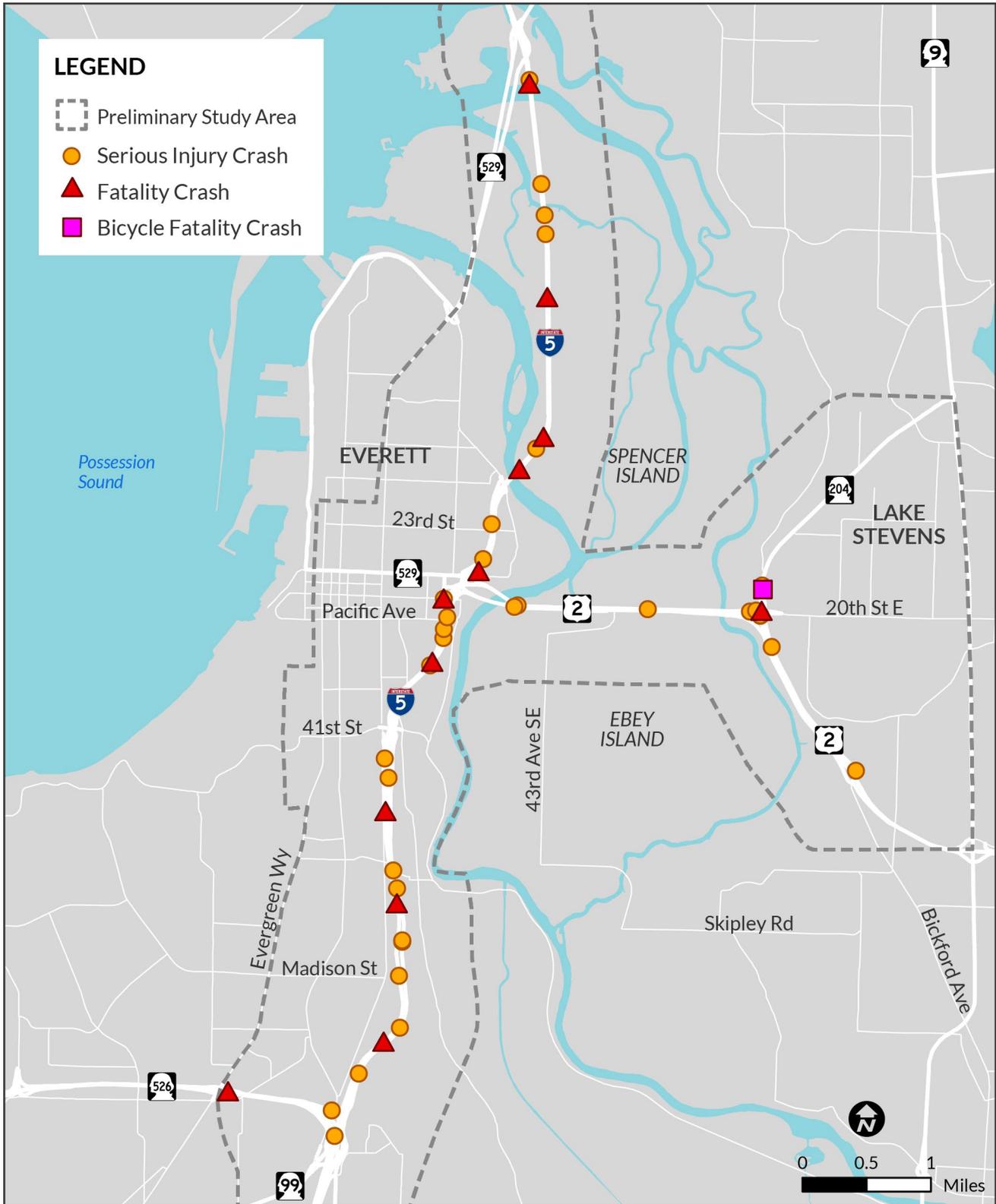
Figure 7. Existing and Planned Active Transportation Facilities



Safety: Serious injury and fatal crashes are reported on WSDOT facilities in the preliminary study area.

- As shown in Figure 8, from January 2018 to December 2022, there were 3,709 crashes, including 32 serious injuries and 12 fatalities on WSDOT facilities within the preliminary study area based on WSDOT crash data. Of those crashes, a total of 644 crashes occurred on the US 2 trestle and ramps, including nine with serious injuries and no fatal crashes.
- During the 2018 and 2022 time period, there were four pedestrian related crashes on the eastbound or westbound US 2 trestle and off-ramp to SR 204.
- Between 2018 and 2022 there were no reported bicycle related crashes in the preliminary study area. In 2017 there was one fatal bicycle crash at the SR 204 ramp to westbound US 2. This crash occurred in an area that does not have bicycle facilities but provides direct access to the bike route under the US 2 trestle.
- Numerous research studies have found there is consistent underreporting of crashes involving pedestrians and bicyclists, which indicates that there may be more bicycle- and pedestrian-related crashes in the preliminary study area than the data shows (Pedestrian and Bicycle Information Center n.d.).
- The westbound US 2 trestle, built in 1968, has an existing width of 30 feet curb to curb, with two 12-foot-wide travel lanes and 3-foot-wide shoulders. The 3-foot-wide shoulders, which are intended to accommodate stopped vehicles for emergency use, no longer meets current design criteria. For an urban principal arterial, such as US 2, WSDOT's Highway Design Manual specifies a 4-foot minimum clearance between the edge of the travel lane and the curb or barrier. This lack of shoulder space limits efficient clearance of incidents or vehicle breakdowns and makes it difficult for other vehicles to give way to emergency vehicles traveling across the westbound trestle.
- WSDOT's Target Zero is the Strategic Highway Safety Plan with an adopted goal to reduce traffic fatalities and serious injuries to zero by the year 2030. WSDOT's Target Zero complies with the principles of FHWA's Safe System approach, with the same vision of supporting a safety culture and zero traffic fatalities.

Figure 8. Serious Injury and Fatal Crashes on WSDOT Facilities in the Preliminary Study Area



Resiliency: The US 2 trestle, which is identified as a primary transportation facility and critical asset, needs improvements to enhance the resilience of the statewide transportation system and to reduce risks of disrupted travel.

Seismic resilience – The structures that comprise the US 2 trestle, including its east and west connections, do not meet current seismic design standards.

- The US 2 trestle spans an area identified by the Washington State Department of Natural Resources (DNR) as having a moderate to high liquefaction susceptibility (Figure 9) (DNR 2024).
- The structures that comprise the westbound US 2 trestle, including the east and west connections, were built to the design standards of 1968. The structures that comprise the eastbound US 2 trestle and its connections were built in the 1990s and early 2000s. Based on currently available information, none of these structures meet current seismic standards; therefore, they could be vulnerable to instability in the event of an earthquake.

Asset management – WSDOT needs to achieve and sustain a state of good repair for the US 2 trestle and reduce related lane closures that can limit or disrupt both directions of travel.

- WSDOT has identified the need to replace the westbound US 2 trestle, which is classified as functionally obsolete. Necessary repair work on the westbound US 2 trestle has resulted in planned shutdowns and lane closures, which requires using alternate routes that add time and distance to trips (Figure 9).

A functionally obsolete bridge does not meet current design standards, either because the volume of traffic carried by the bridge exceeds the level anticipated when the bridge was constructed and/or the relevant design standards have been revised.

- WSDOT has also identified the eastbound US 2 bridge over Ebey Slough for replacement.
- As structures that comprise the US 2 trestle, and its east and west connections, near the end of their planned lifecycle, substantial and ongoing maintenance would be required to maintain the aging roadway in a state of good repair. Bridge deterioration or damage from exceeding the original design life could result in weight restrictions on heavier freight and transit vehicles to reduce the risk of further damage and ensure the safety of the traveling public (WSDOT 2024).
- Potential structural damage under the eastbound and westbound US 2 trestle deck could occur from vehicular collisions from vehicles on 20th Street Southeast, the active transportation route, which is directly underneath portions of the US 2 trestle structure. Inspections or repairs after a collision could lead to lane closures on both the westbound and eastbound US 2 trestle and 20th Street Southeast.
- Potential structural damage to the eastbound US 2 trestle and 20th Street Southeast bridge, the active transportation route, could occur from extensive logjams in the Ebey Slough due to closely spaced piers. Clearing the logjams at Ebey Slough requires lane closures on the eastbound US 2 trestle.
- The US 2 trestle stormwater system is undersized and failing. On both the westbound and eastbound US 2 trestle, the smaller drainage inlets result in clogged stormwater drains and standing water that results in closures of travel lanes.

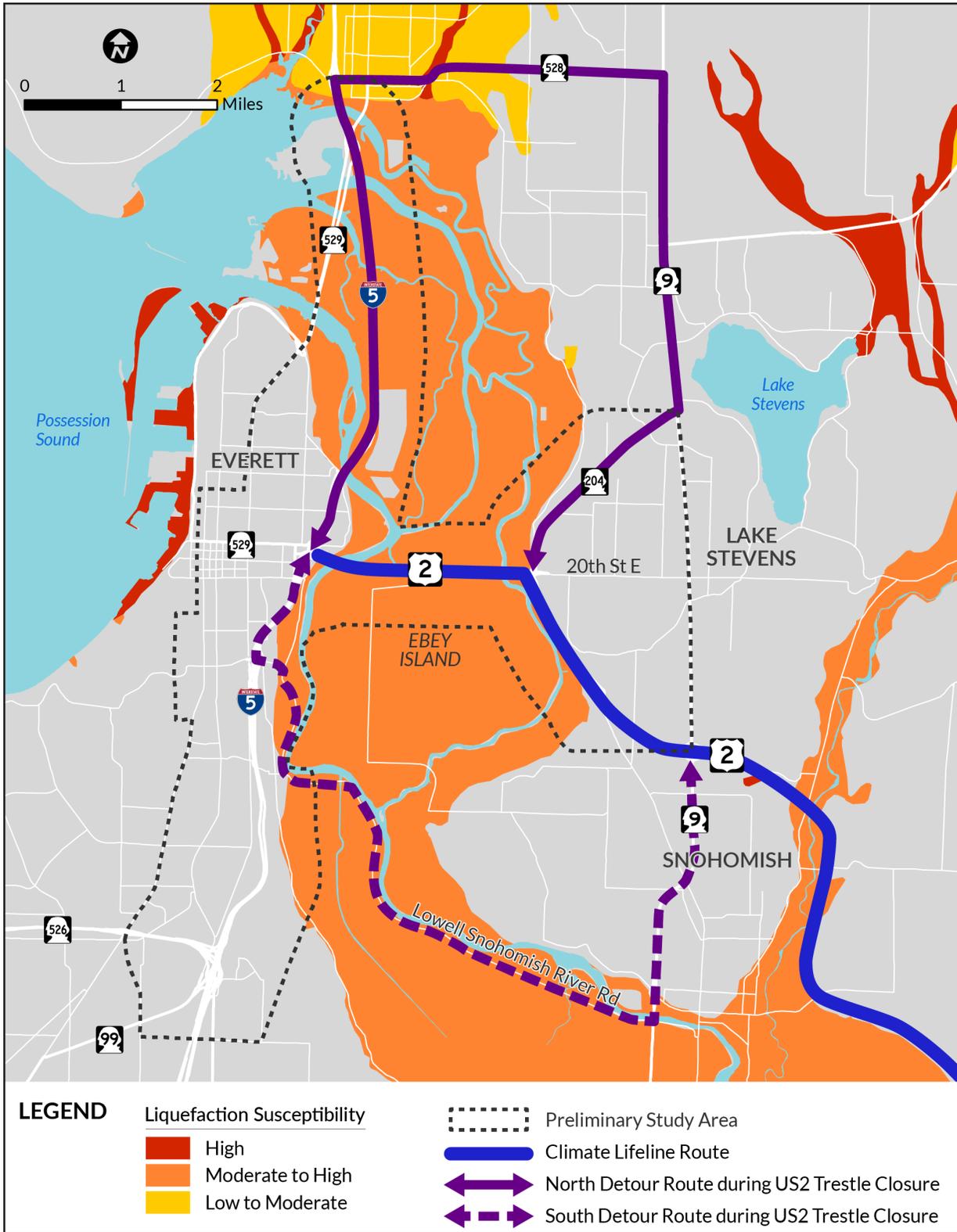
Climate and natural hazard resilience – The US 2 trestle, which is identified as a highly critical asset for travelers and freight, needs to maintain its function during extreme weather events.

- WSDOT's Climate Impact Vulnerability Assessment identifies US 2, including the segment within the preliminary study area, as a highly critical asset.
- During a heavy rain event, both directions of the US 2 trestle experience plugged and inefficient drainage, which leads to standing water, lane closures, and continued maintenance. The frequency of heavy rain events may increase as a result of climate change.

Operational resilience –The US 2 trestle requires improvements to support and enhance safety for WSDOT staff and properties and to improve response and recovery from incidents.

- The lack of pullouts, or other storage space, and limited shoulders on the US 2 trestle bridge decks presents a safety concern for WSDOT staff responding to natural and manmade incidents and results in lane closures that disrupt travel. Examples include:
 - The limited shoulder width on the westbound US 2 trestle results in the need to close a travel lane to access and clean drain inlets and maintain the drainage system.
 - To clear the logjams in Ebey Slough, WSDOT crews must use the shoulder on the eastbound US 2 trestle, which also serves as a travel lane during peak hours.
 - Because of environmental and safety considerations, snow and ice cannot be dumped over the side of the bridge to the area below; it must be stored on the bridge decks. The lack of shoulders, or other storage space, on the bridge decks can result in the need for lane closures, creating potential impacts to traffic flow and safety on the US 2 trestle for WSDOT staff.

Figure 9. US 2 Trestle Liquefaction Susceptibility and Alternate or Detour Routes



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