SR 167 Master Plan
Planning and Environmental Linkages Study

Attachment C. Scenario Development and Evaluation Report

Final Study

JUNE 2023




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Washington State Department of Transportation

WSDOT

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
BRT	bus rapid transit
EAC	Equity Advisory Committee
ETL	express toll lane
GIS	geographic information systems
HOT	high-occupancy toll
HOV	high-occupancy vehicle
I-	Interstate
MIC	manufacturing industrial center
mph	miles per hour
PAC	Policy Advisory Committee
PEL	Planning and Environmental Linkages
PM	afternoon/evening
project	SR 167 Master Plan Planning and Environmental Linkages Study
PSRC	Puget Sound Regional Council
RGC	Regional Growth Center
SR	State Route
TAC	Technical Advisory Committee
TSMO	Transportation Systems Management and Operations
VMT	vehicle miles traveled
WSDOT	Washington State Department of Transportation

Chapter 1. Overview of Evaluation Process

This attachment details the process for evaluating projects and strategies, and how this was used to identify the Final Study Recommendations, as represented in Figure 1-1. The project team relied on the project Purpose and Need and information from *Attachment B. Existing and Future Baseline Conditions Report* to develop evaluation criteria for each step in the following screening levels:

- Initial List of Projects and Strategies
- Level 1 Screening – Purpose and Need
- Level 2a Screening – Draft Scenario Analysis
- Level 2b Screening – Refined Scenario Analysis

The project team used a data-driven and partner-refined evaluation process that was framed by the project Purpose and Need. It was developed in collaboration with the Washington State Department of Transportation's (WSDOT) partners, and it include goals for equity, safety, environment, multimodal, mobility and economic vitality, and practical solutions and State of Good Repair (refer to *Chapter 1, Vision, Purpose (Goals) and Need* section of the SR 167 Master Plan Planning and Environmental Linkages [PEL] Study).

The evaluation process incorporated feedback from the public, partners, agencies, and committee members. The team documented feedback received and decisions made during each screening level. The following terms were used to document the decisions made during the evaluation.

- **Eliminated:** Project or strategy that was removed from further consideration for not meeting the project Purpose and Need.
- **Carried Forward:** Project or strategy that was recommended for further consideration in subsequent screening levels.
- **Eliminated as a Standalone:** Project that was eliminated from further evaluation as an individual project and that was packaged as part of a larger project for further consideration.

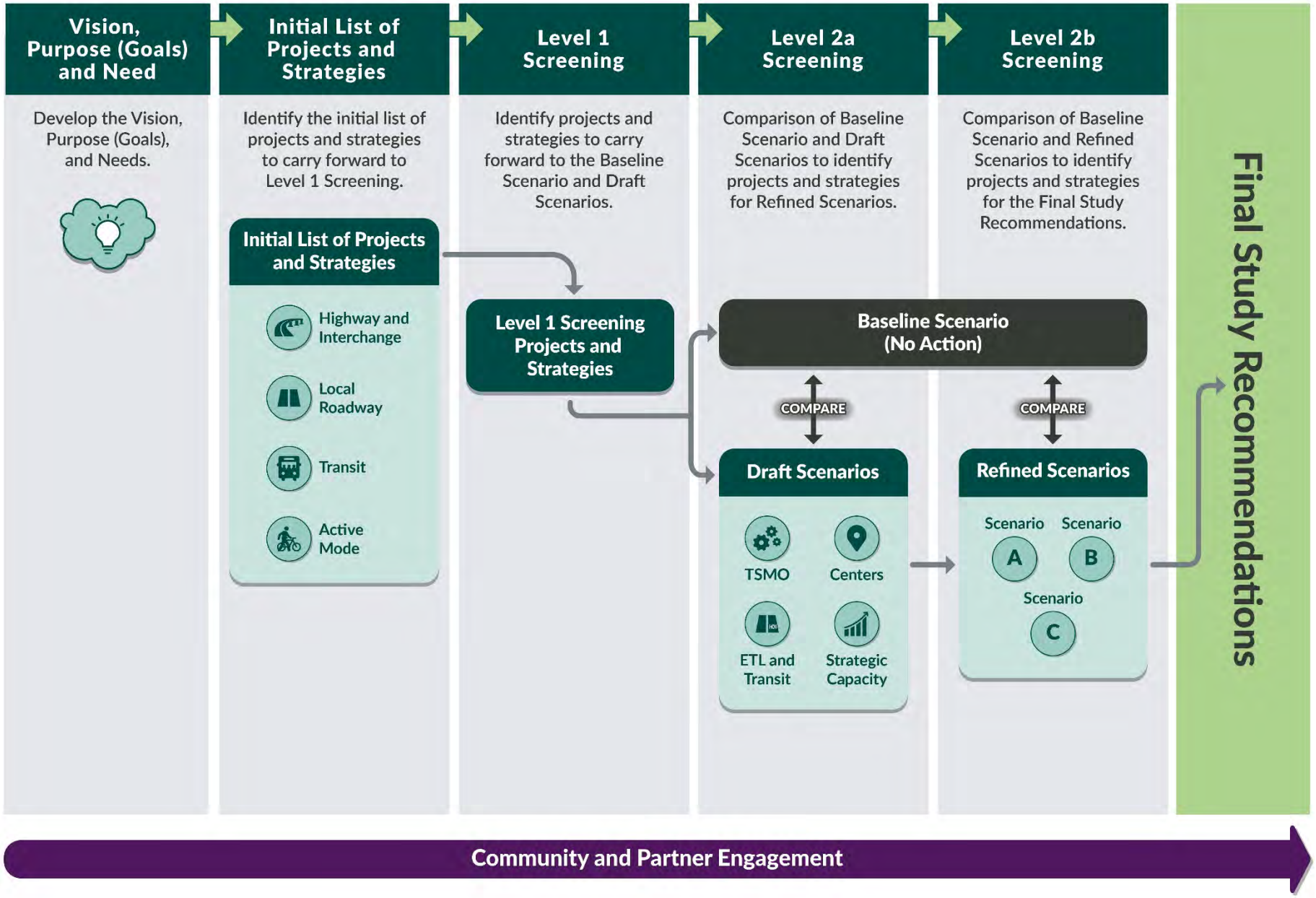

Figure 1-1. Evaluation Process

Travel Forecasting

For most of the metrics analyzed in this study, future conditions were forecast for the year 2050 to understand the long-term changes in growth patterns and travel demand in the study area. However, detailed future traffic operations on State Route (SR) 167 are forecast using year 2030 conditions. The year 2030 analysis is consistent with all similar traffic operations analyses for the I-405/SR 167 Corridor Program as the nearer-term look at traffic operations better identifies bottlenecks and refinements that can be made to potential projects like off-ramps or merging areas. Using 2050 forecasts for the detailed traffic operations analysis would obscure these details and make it more difficult to identify practical solutions to reduce traffic congestion.

HOV Modeling

The analysis models used for the SR 167 Master Plan PEL Study require an assumption related to how many people in a carpool would be allowed to use the express toll lanes (ETL) for free. Consistent with all other analysis performed for the I-405/SR 167 Corridor Program, the modeling team assumed that free access would be limited to high-occupancy vehicle (HOV) 3+ during the weekday peak travel periods.

The Puget Sound Regional Council (PSRC) travel demand model was used for all forecasts. It included a base year of 2019 and future years of 2030 and 2050. The PSRC model included both future land use forecasts and planned and likely transportation improvements, including new transit service and routes and new or wider roadways.

Chapter 2. Initial List of Projects and Strategies

The evaluation process began with the development of an initial list of projects and strategies that was as broad as possible to capture any type of transportation investment that could improve mobility within the study area. The list was developed by reviewing local, state, and regional plans and programs, such as:

- Capital improvement plans/programs
- Transportation improvement plans/programs
- Transportation master plans
- Corridor and subarea plans
- Comprehensive plan transportation elements
- Transit agency plans
- PSRC Regional Transportation Plan
- WSDOT local project support
- WSDOT Statewide Transportation Improvement Program
- WSDOT megaprograms
- WSDOT studies

Based on this review, the SR 167 project team identified approximately 800 potential projects within the SR 167 Master Plan PEL study area. After removing duplicate projects, approximately 750 projects were considered *the initial list of projects and strategies* and carried forward for further evaluation. Each project and strategy within the study area was qualitatively evaluated by reviewing whether it had the potential for improving mobility along the SR 167 corridor. This qualitative evaluation also took into consideration whether projects and strategies addressed portions of the study area that lacked transportation investments. When gaps were identified, additional project concepts, strategies, and investments were added to the list to ensure the entire study area included potential investments to improve mobility on SR 167. Examples of projects and strategies added by the project team include, but are not limited to, bus rapid transit (BRT) on SR 167, on-demand transit service to equity priority areas, active mode improvements at existing overpasses and interchanges, and interchange improvements to aid freight movements. Some projects and strategies were removed from the list because they were unlikely to improve mobility on SR 167 since they were not proximate to the corridor or they would not influence travel patterns on SR 167. Projects with a reasonable expectation of funding were carried forward in the evaluation process as part of the Baseline Scenario, which established the set of baseline conditions each scenario was evaluated against.

The project team's evaluation of the initial projects and strategies list resulted in 168 projects carried forward to Level 1 screening. Refer to *Appendix A* for a full list of projects and strategies that were considered in the initial project list and how they were advanced to Level 1 screening.

Chapter 3. Level 1 Screening – Purpose and Need

Level 1 screening was used to evaluate and screen out potential projects and strategies that do not meet the project Purpose and Need. Projects and strategies that met the project Purpose and Need were carried forward in the evaluation process.

Level 1 Screening

Level 1 screening began by evaluating 168 projects from the initial list of projects and strategies. In response to the feedback from partners and local jurisdictions, additional projects were added. Ultimately, 185 projects and strategies were evaluated as part of the Level 1 screening. The projects and strategies are described by type in the following sections. Refer to *Appendix A* for a full list of the projects and strategies evaluated in the Level 1 screening.

Highway and Interchange Projects and Strategies

This section describes projects and strategies that focus on the SR 167 facility.

General Purpose Lanes

Projects to add general purpose lanes on SR 167 were considered because general purpose lanes add capacity that can address congestion and can aid in freight access reliability. One project was considered that would add between one and two general purpose lanes on SR 167 in both directions.

Express Toll Lanes

ETLs were considered because they may address congestion, provide a reliable pathway for transit, and move some vehicles from general purpose lanes, which can benefit freight access and reliability. ETLs also tend to move more people with fewer vehicle miles traveled (VMT), which is a substantial environmental benefit. For Level 1 screening, one ETL project was considered that would add one additional ETL in each direction between I-405 and SR 410/SR 512.

Low-income Toll Program

A low-income toll program is a strategy to provide more equitable access to ETLs by reducing the relative cost burden of tolls for qualifying low-income travelers. Working with the WSDOT Toll Division, the project team evaluated one low-income toll program strategy during Level 1 screening.

Freight and Truck Lanes

Freight and truck lanes have the potential to improve freight access and improve freight travel time reliability. These lanes may also reduce congestion and improve safety by removing trucks from general purpose lanes. One project to add freight and truck lanes to SR 167 between SR 18 and the SR 167 extension (SR 161) was included in Level 1 screening.

Auxiliary Lanes

Auxiliary lanes may reduce traffic congestion and improve safety by providing a short lane between adjacent interchanges. This can reduce traffic congestion, aid in freight access travel time reliability, and improve safety by separating slower traffic from faster traffic. Eight projects to add auxiliary lanes to SR 167 and other state highways were included in Level 1 screening.

Direct Access Ramps

Direct access ramps provide a connection between the ETLs and the local street system. These ramps eliminate the need for ETL traffic to weave across all lanes to exit the highway. These ramps improve safety and reduce congestion caused by weaving. All direct access ramps considered for Level 1 screening provide a connection to transit hubs. These ramps improve transit speed and reliability, and they also improve access for equity priority communities because the study area's transit hubs are key destinations for vulnerable populations and overburdened communities Five direct access ramp projects were included in the Level 1 screening.

Interchanges

Interchange projects considered in the Level 1 screening include: interchanges between SR 167 and other state highways and interchanges between SR 167 and local streets. Interchange projects can remove traffic congestion bottlenecks, address active mode barriers caused by a lack of facilities across SR 167, improve freight access, address safety concerns, and improve transit access. Interchange projects can range in scale from minor refinements, such as the number of lanes or length of turn pockets, to major reconstruction, such as constructing a new bridge. Twenty interchange projects were included in the Level 1 screening.

Transportation Systems Management and Operations Strategies

Transportation Systems Management and Operations (TSMO) strategies along SR 167 include ramp meters that make traffic flow more smoothly, technologies to provide travelers with better information about roadway conditions, and actions that can help WSDOT and other partners quickly respond to and clear incidents. Overall, TSMO strategies are a cost-effective way to reduce congestion, improve safety, and improve access and travel time reliability for transit and freight. Three projects/strategies related to TSMO on SR 167 were evaluated in the Level 1 screening.

Statewide/Regional Highway Policies and Operations Practices

The Washington State Transportation Commission sets policies related to toll rates and the types of vehicles permitted in toll lanes. The Level 1 screening included four proposed changes to policies and practices related to operation of the SR 167 ETLs. The proposed changes range from a recommended statewide low-income toll program to all-lane congestion pricing on SR 167. While this study evaluated these changes to policy and operations, WSDOT does not have the authority to make the changes or to define the specific details of the proposed changes. Such changes would be made through a public process led by the Washington State Transportation Commission.

Local Roadway Projects and Strategies

This section describes the projects and strategies that focus on local roads within the study area.

West Valley Highway Improvements

West Valley Highway is a major parallel route to SR 167 between Tukwila and Sumner. The segment of the highway north of SR 516 in Kent is more built out than the segment south of SR 516. The southern segment has large stretches that do not have curbs, gutters, sidewalks, bicycle facilities, or turn lanes. Several communities have proposed improving West Valley Highway to a more urban standard that would include facilities for all transportation modes, transit amenities where there are transit routes that use the highway and turn lanes to improve access and safety. Therefore, West Valley Highway improvements could benefit all transportation modes. Five West Valley Highway improvement projects were considered in the Level 1 screening.

East Valley Highway Improvements

East Valley Highway also parallels SR 167. The segment south of Lakeland Hills Way generally lacks amenities like curbs, gutters, sidewalks, bicycle facilities, and turn lanes. Improving East Valley Highway has the potential to benefit all transportation modes by adding active mode facilities, reducing bottlenecks, and improving freight access. However, more vehicle capacity may have some negative equity impacts for neighborhoods adjacent to East Valley Highway if it leads to higher traffic volumes and more pollution. Four East Valley Highway improvement projects were considered in the Level 1 screening.

Transportation Systems Management and Operations Strategies

TSMO strategies for local roadways cover a range of potential improvements, such as more effective traffic signal timing, traveler information, transit signal priority, and active mode traffic signals/systems. Communities within the study area proposed several dozen improvements. The project team combined them into an overall strategy to improve person throughput (i.e., increase the number of people moved) on arterials that parallel and access SR 167, enhance access and safety through traffic signal improvements, add signal enhancements for bicycles and pedestrians at key locations, and support frequent transit routes. TSMO strategies were evaluated on about 50 miles of arterial streets that are parallel to SR 167 including Meridian Avenue, West Valley Highway, East Valley Highway/Auburn Way/Central Avenue, and 104th Avenue/108th Avenue/Benson Drive.

Other Local Roadway Projects

Other local roadway projects include a mix of roadway widening projects that can address congestion, access, or safety; intersection projects to reduce bottlenecks and or improve active mode access; and Complete Streets projects to improve conditions for all transportation modes. Sometimes local roadway projects may have negative equity or environmental impacts by increasing traffic, noise, or pollution or by impacting the built or natural environment. More than 100 local roadway projects were included in the Level 1 screening.

Transit Projects and Strategies

Transit projects and strategies identified within the study area are described in this section. As a general rule, transit projects and strategies support the project Purpose and Need. In some cases, transit is the principal means of travel (by those who do not have access to a car or who choose not to drive) to access employment, school, essential needs and services, and social/recreational destinations.

Bus Rapid Transit

BRT is a type of bus service that predominately operates in exclusive transit lanes or managed lanes. Community Transit's Swift BRT service is a local example of BRT. One BRT project was included in the Level 1 screening.

On-Demand Transit Service

On-demand transit does not operate on a fixed route; it is requested by the rider via an app or phone call. Paratransit is a type of on-demand transit that is specifically limited to eligible people with a disability that would prevent them from using traditional transit. Other types of on-demand transit can be used by any member of the public. One on-demand shuttle strategy (focusing on equity priority areas and transit hubs) was advanced to the Level 1 screening.

Sounder/Light Rail

Sound Transit already has several planned and funded projects to expand and enhance Sounder commuter rail and Link light rail service in the study area. Those planned and funded projects are included in the Baseline Scenario. Additional opportunities to expand midday Sounder service were included in the Level 1 screening.

High-capacity Transit and RapidRide Service and Routes

Both Pierce Transit and King County Metro have long-range plans to expand high-capacity transit/RapidRide service in the study area. The planned projects include both transit service and capital improvements to support the enhanced bus service (new bus stations, transit signal priority, pavement upgrades, etc.). Eight projects were included in the Level 1 screening.

Other New or Enhanced Transit Service or Routes

Pierce Transit and King County Metro's long-range plans also include additional fixed-route bus service that would: expand the overall transit coverage in the study area (particularly along east-west routes), expand the overall time of day in which transit operates (which can benefit retail and shift workers), increase frequency of service, and include more weekend service. Thirty-five new or enhanced transit routes were included in the Level 1 screening.

Active Mode Projects and Strategies

Projects and strategies that focus on walking, bicycling, or rolling within the study area are described in this section.

Interurban Trail

The Interurban Trail is the primary north-south bicycle facility within the SR 167 study area. It follows the historic Interurban rail line; therefore, it is relatively level and provides a direct route between major destinations. The Interurban Trail also directly accesses many of the largest employment areas within the study area, providing a key benefit to vulnerable populations and overburdened communities and others who may choose to walk, bike, or roll to work. Three projects to complete gaps in the Interurban Trail or to enhance user comfort of the trail were included in the Level 1 screening.

Other Trails

The study area contains several other notable trails, including the Green River, White River, Sumner Link, and Riverwalk trails. Improving access to these trails and closing key gaps would benefit vulnerable populations and overburdened communities, improve multimodal transportation, and help reduce environmental impacts. Fifteen projects to expand or enhance trails (other than the Interurban Trail) were included in the Level 1 screening.

Sidewalk and Crossing Improvements

The study area contains several roadways that do not have any sidewalks, making travel by foot or in a wheelchair or other mobility device (e.g., strollers or walkers) particularly challenging and potentially unsafe. Correcting these gaps could strongly enhance equity and multimodal transportation. Sixty-four projects that included some form of sidewalk or crossing enhancement project were evaluated in the Level 1 screening.

Bike Improvements

For trips of intermediate distance (1 to 5 miles), bicycles present a viable means of travel for many. However, barriers to comfortable and safe bicycling are present in the study area, particularly on busy, high-speed roadways with no bicycle accommodations. In addition to trails, many cities have planned for expanded bicycle lanes, greenways, or cycle tracks to better accommodate bicycle travel. Any project that makes bicycling easier and more comfortable advances equity, improves multimodal travel options, and can help reduce environmental impacts. Fifty-five bicycle projects (which often are part of Complete Streets projects that improve conditions for all modes) were included in the Level 1 screening.

Level 1 Screening Criteria and Metrics

The purpose of the Level 1 screening was to evaluate how well the projects and strategies meet the project Purpose and Need. The Level 1 evaluation criteria were developed using the project Purpose and Need goals of equity, safety, environment, multimodal, and mobility and economic vitality. The project Purpose and Need category related to practical solutions and State of Good Repair was not used in the Level 1 screening because that category is more useful for identifying how and whether to phase the projects and strategies selected for inclusion in the scenario analysis (Level 2b screening).

Each project and strategy on the Level 1 screening list was first assigned a rating between 1 (poor) through 4 (best) to indicate how the project or strategy would meet each element (goal) of the project Purpose and Need. While the specifics for rating varied for each goal, the rating system was generally organized as follows:

- 4 (best rating): Project or strategy would significantly advance the project goal.
- 3 (moderate rating): Project or strategy would modestly advance the project goal.
- 2 (neutral rating): Project or strategy would neither advance nor hinder the project goal.
- 1 (poor rating): Project or strategy would hinder progress on the project goal.

The project Purpose and Need rating was not used to eliminate projects. Instead, the rating was used to understand how individual projects and types of projects helped advance each of the goals, ensure the comprehensive list of projects were representative of all the goal categories (i.e., the project list represented an opportunity for improvement in all goal areas) and support development of the Draft Scenarios (for Level 2a screening).

The Level 1 screening was performed by answering "yes" or "no" to the following four questions related to the project Purpose and Need.

- Does the project or strategy add transit capacity or improve transit operations on an existing or planned transit route in the study area?
- Does the project or strategy include pedestrian improvements within 1 mile of SR 167 or within a Regional Growth Center (RGC) or Countywide Center, extend or improve a regional trail within the study area, or include bicycle projects that connect community-identified destinations, RGCs, or Countywide Centers?
- Does the project or strategy address traffic bottlenecks or add roadway capacity on SR 167, roads that are parallel to SR 167, or roads that access SR 167 and could influence the traffic operations on SR 167?
- Does the project or strategy have the potential to reduce traffic congestion or increase the use of other modes of travel, such as transit, walking, or bicycling?

The qualitative assessment questions are slanted towards identifying projects and strategies that can specifically influence travel and mobility outcomes on or across SR 167. For example, pedestrian improvements are focused within 1 mile of the corridor, and local arterials are focused on roads parallel to or crossing SR 167. This focus was necessary as the study area is large, and the list of projects and strategies includes many options that benefit equity, safety, and mobility in general, but they have no benefit to SR 167.

Projects and strategies that received a "yes" answer to any of the four questions were carried forward to the Level 2a screening. If a project or strategy received all "no" answers, it was proposed for elimination from further evaluation. The Level 1 screening results were shared with partners and local jurisdictions, giving them the opportunity to clarify project descriptions, add new projects, or advocate for screened out projects to be retained. During this feedback process, the project team received proposals for 22 new projects and strategies that were not included in the initial list and a request to include nine projects that were originally screened out for Level 2 analysis.

Level 1 Screening Results

Level 1 screening identified 135 projects and strategies to carry forward and recommend for inclusion in Draft Scenarios for Level 2a screening. Fifty projects and strategies were eliminated from further consideration.

Projects and strategies eliminated from further evaluation included local roadway projects that were not likely to improve mobility on SR 167, active mode projects that were unlikely to increase connectivity between community destinations or were farther than 1 mile from SR 167, and transit routes (or improvements) that were largely outside the study area. The proposed general purpose lanes project on SR 167 was eliminated because of the overall potential environmental impacts and inconsistency with WSDOT's Practical Solutions Framework. *Appendix A* includes detailed matrices with the results from the Level 1 screening.

Chapter 4. Level 2 Screening – Scenario Analysis

Level 2 screening consisted on two steps of scenario analyses with the purpose of comparing how well groupings of projects and strategies performed in meeting the project Purpose and Need. The projects and strategies that were retained from the Level 1 Screening were grouped into Draft Scenarios for Level 2a Screening, and the projects and strategies that were retained from Level 2a Screening were grouped into Refined Scenarios for Level 2b Screening. The result of the Level 2 Screening was the identification of projects for the Draft Final Study Recommendations.

Baseline Scenario (No Action)

The Baseline Scenario represents the No Action Alternative. It includes the existing transportation system and funded projects that would likely be implemented and built by 2050 regardless of the other improvements identified in this study. Although the Baseline Scenario does not meet the project Purpose and Need, it was carried forward through the scenario evaluation process as a baseline for comparison to this study's scenarios.

Projects and strategies were identified for the Baseline Scenario during the Level 1 Screening evaluation by reviewing available funding data and by discussing projects and strategies with implementing agencies. *Appendix A, Attachment C* provides a detailed list of projects and strategies included in the Baseline Scenario. Figure 4-1 presents the major projects included in the Baseline Scenario, which include:

No Action Alternative

Like the National Environmental Policy Act (NEPA) process, PEL studies should evaluate a No Action Alternative to provide a baseline against which potential improvements are measured, even if it does not meet the project Purpose and Need (Colorado DOT 2022).

The 2050 Baseline Condition is the No Action Alternative for this study. This scenario represents what is expected to happen within the study area if growth proceeds as forecast and only currently funded transportation projects are implemented.

- **ETL and High-occupancy Toll (HOT) Lanes:** Construction of ETLs in both directions of I-405 from SR 167 in Renton to Northeast 6th Street in Bellevue; extension of the southbound HOT lane on SR 167 from Ellingson Road to SR 410; and conversion of existing HOV and HOT lanes on SR 167 to ETLs by upgrading toll equipment to be consistent with tolling equipment on I-405
- **Highway Completion:** Completion of SR 509 near SeaTac Airport; completion of the SR 167 extension from Port of Tacoma (SR 509) to North Meridian Avenue (SR 161) with a half interchange at Valley Road and restriping of northbound lanes near SR 512
- **Auxiliary Lanes:** Construction of a southbound auxiliary lane on SR 167 from SR 516 to South 277th Street
- **Transit and Active Modes:** Construction of Tacoma to Puyallup Trail; addition of BRT service on I-405; addition of the RapidRide I Line between the cities of Auburn and Renton; extension of light rail to the cities of Federal Way and Tacoma; and implementation of Sounder station access and parking improvements.
- **Other Improvements:** Canyon Road Regional Connection project to directly link the Frederickson manufacturing industrial center (MIC) to I-5; widening of Stewart Road over the White River to improve freight access and complete the multipurpose path between the Interurban Trail, Sumner Link Trail, and Lake Tapps Parkway Trail; local roadway projects to address traffic and freight access; and local active mode projects to improve sidewalks and crossings

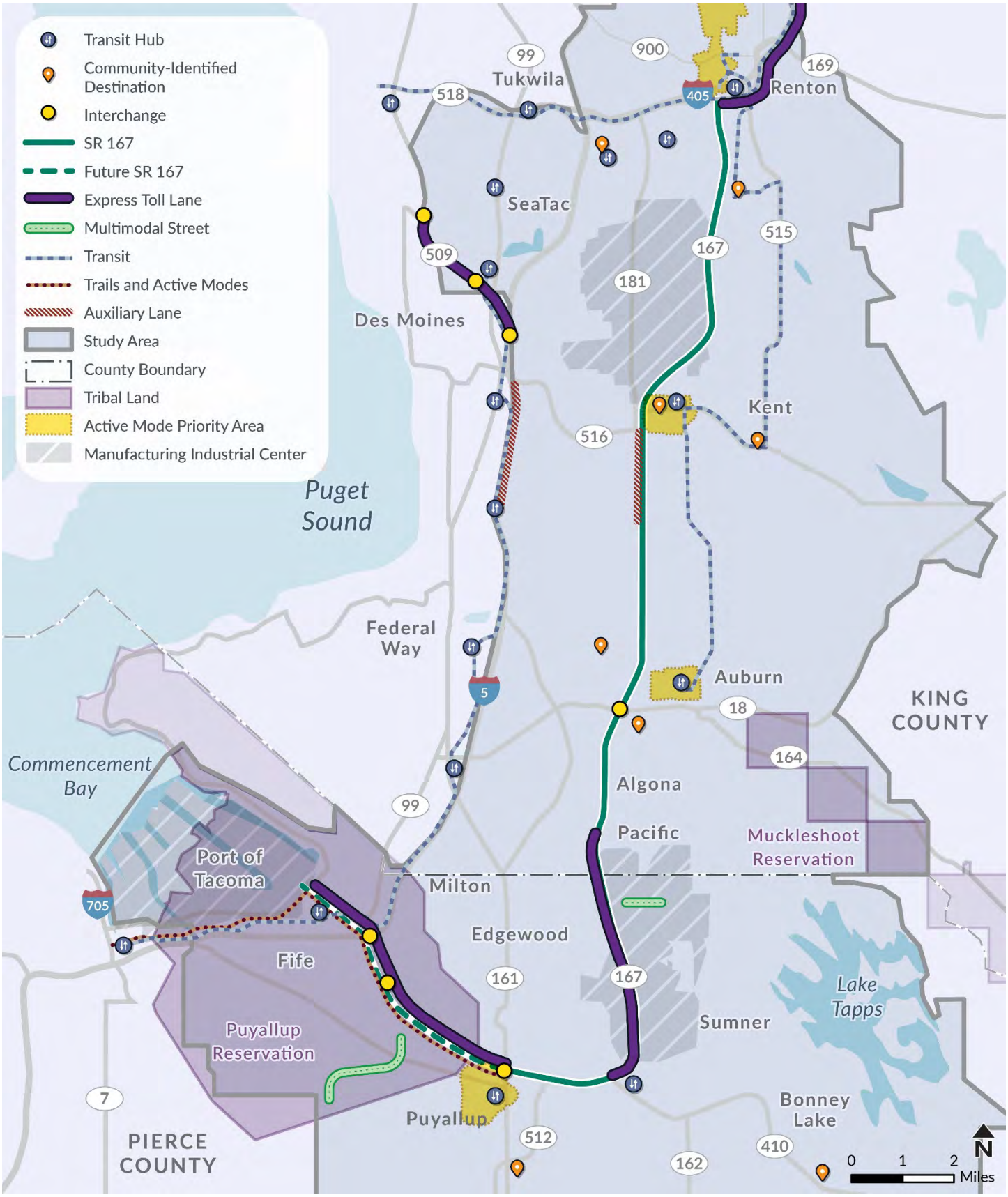

Figure 4-1. Baseline Scenario (No Action)

Level 2a Draft Scenario Projects and Strategies

Level 2a screening started with organizing each of the 134 projects and strategies advanced from Level 1 screening into one (or more) of four Draft Scenarios. As noted in the previous chapter, 74 projects were grouped into the Baseline Scenario. Organizing the projects and strategies into the Draft Scenarios was a necessary step because: it was considered impractical to evaluate 134 individual projects and strategies and several of the projects and strategies work best as part of a coordinated package of improvements. Each Draft Scenario represents a unique theme or approach to SR 167meeting the project Purpose and Need and related criteria; however, all Draft Scenarios included projects and strategies that are:

- Across all modes
- Implemented by multiple agencies
- Able to advance the project Purpose and Need

The following sections describe the overarching themes and key projects and strategies for the Draft Scenarios analyzed in the Level 2a Screening. The themes and project groupings for each Draft Scenario were influenced through feedback from the Technical Advisory Committee (TAC), Equity Advisory Committee (EAC), and Policy Advisory Committee (PAC) and from an online open house. *Appendix A* provides a detailed list of projects and strategies reviewed in the Level 2a Screening. The four Draft Scenarios are as follows:

- TSMO Scenario
- Centers Scenario
- ETLs and Transit Scenario
- Strategic Capacity Scenario

Each Draft Scenario, or combination of projects and strategies, has a distinct theme. The Draft Scenarios were an intermediate step in the evaluation process. They were used to identify the strongest-performing projects and strategies in each Draft Scenario that were then carried forward to the Level 2b screening of Refined Scenarios. Less effective projects and strategies were eliminated from further consideration. Figure 4-2, Figure 4-3, Figure 4-4, and Figure 4-5 illustrate the project locations on maps.

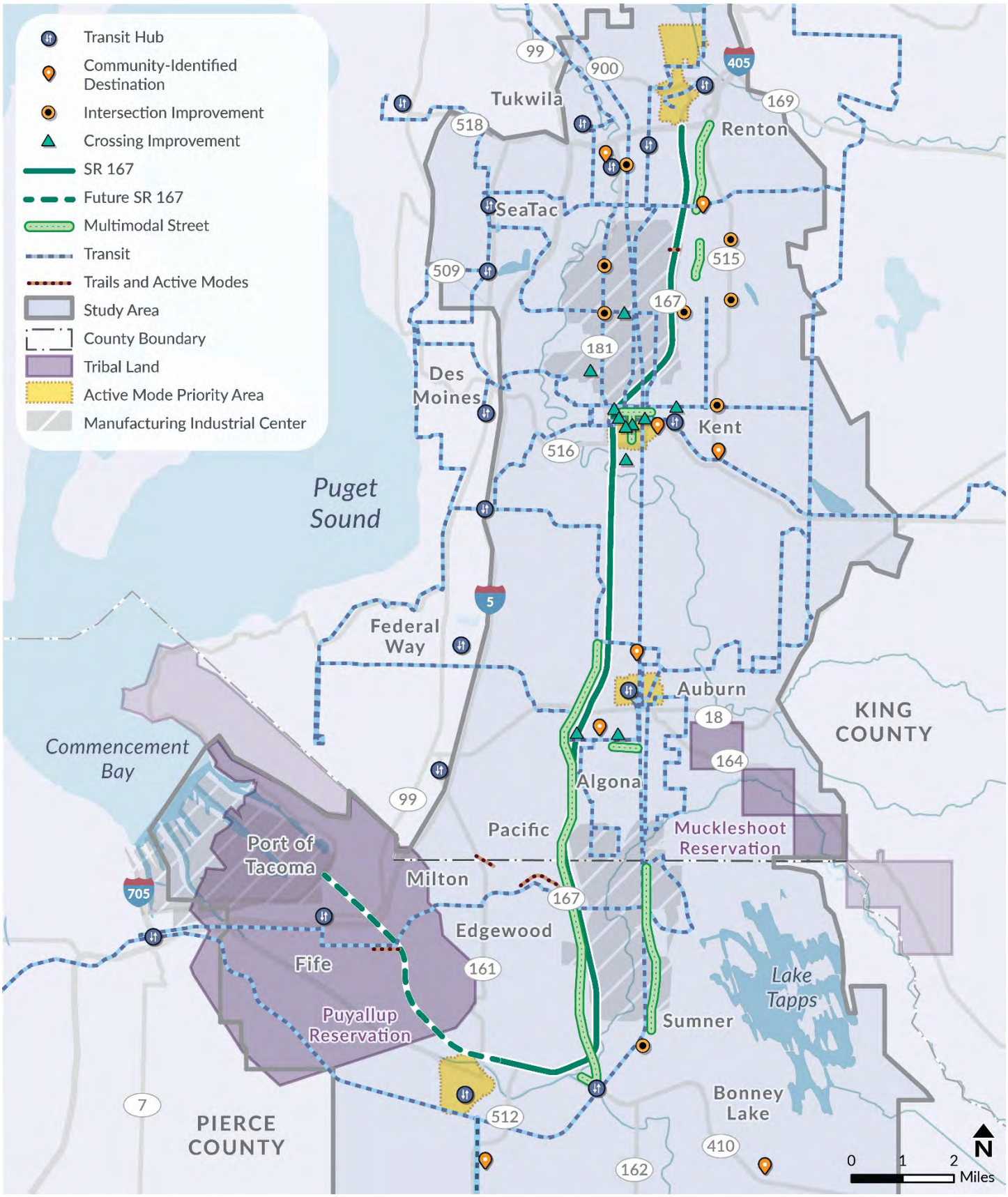

Figure 4-2. TSMO Scenario

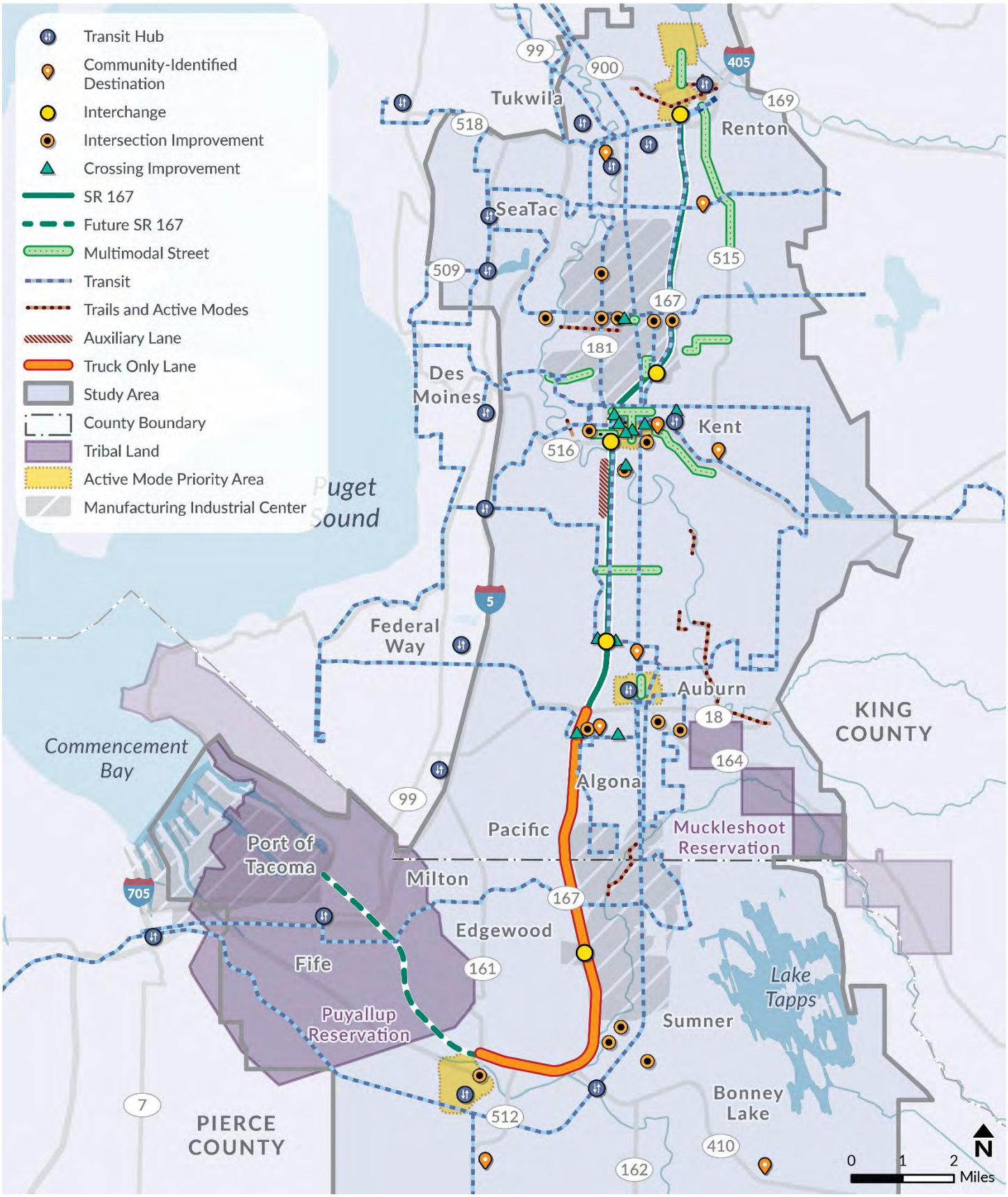

Figure 4-3. Centers Scenario

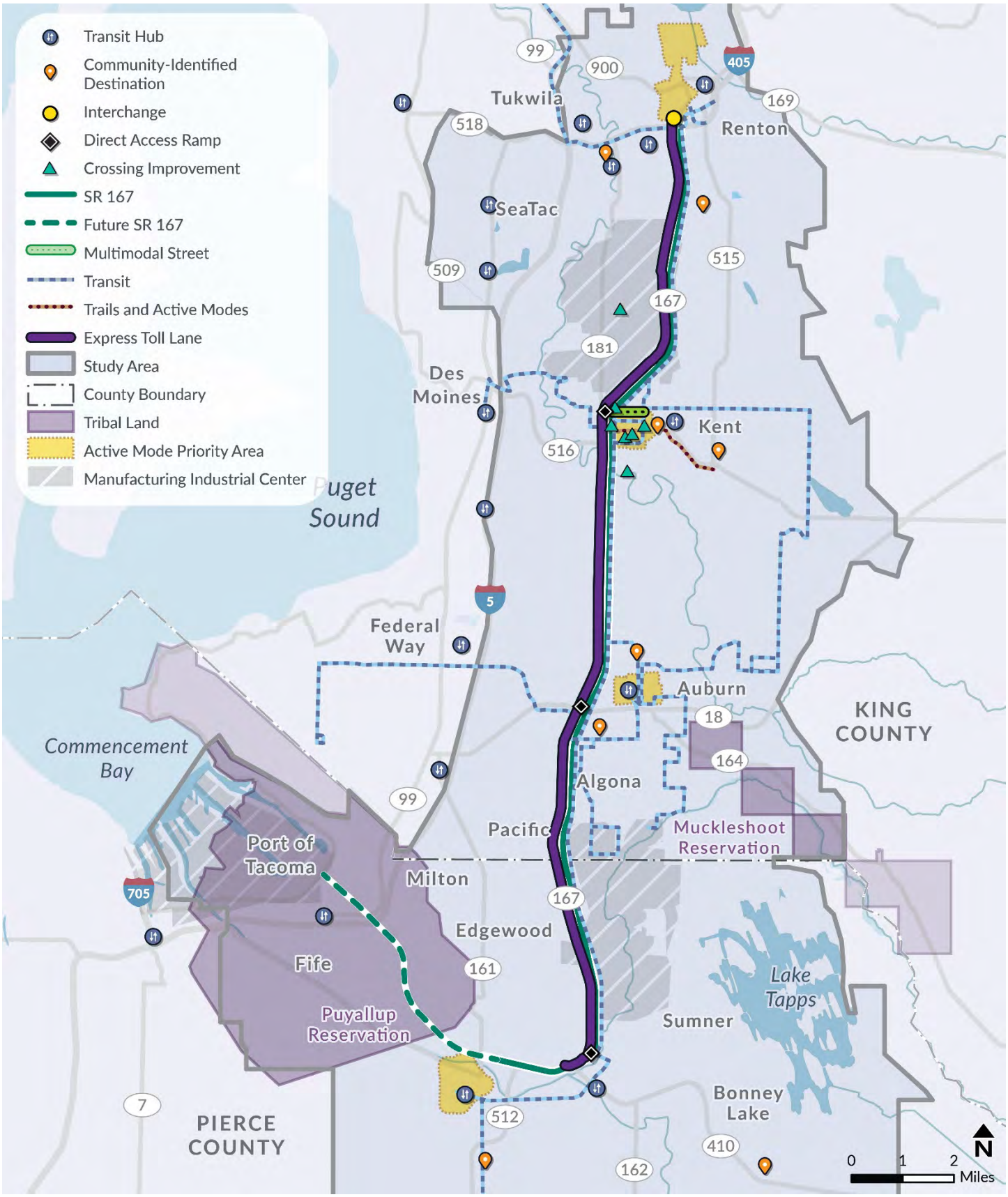

Figure 4-4. ETL and Transit Scenario

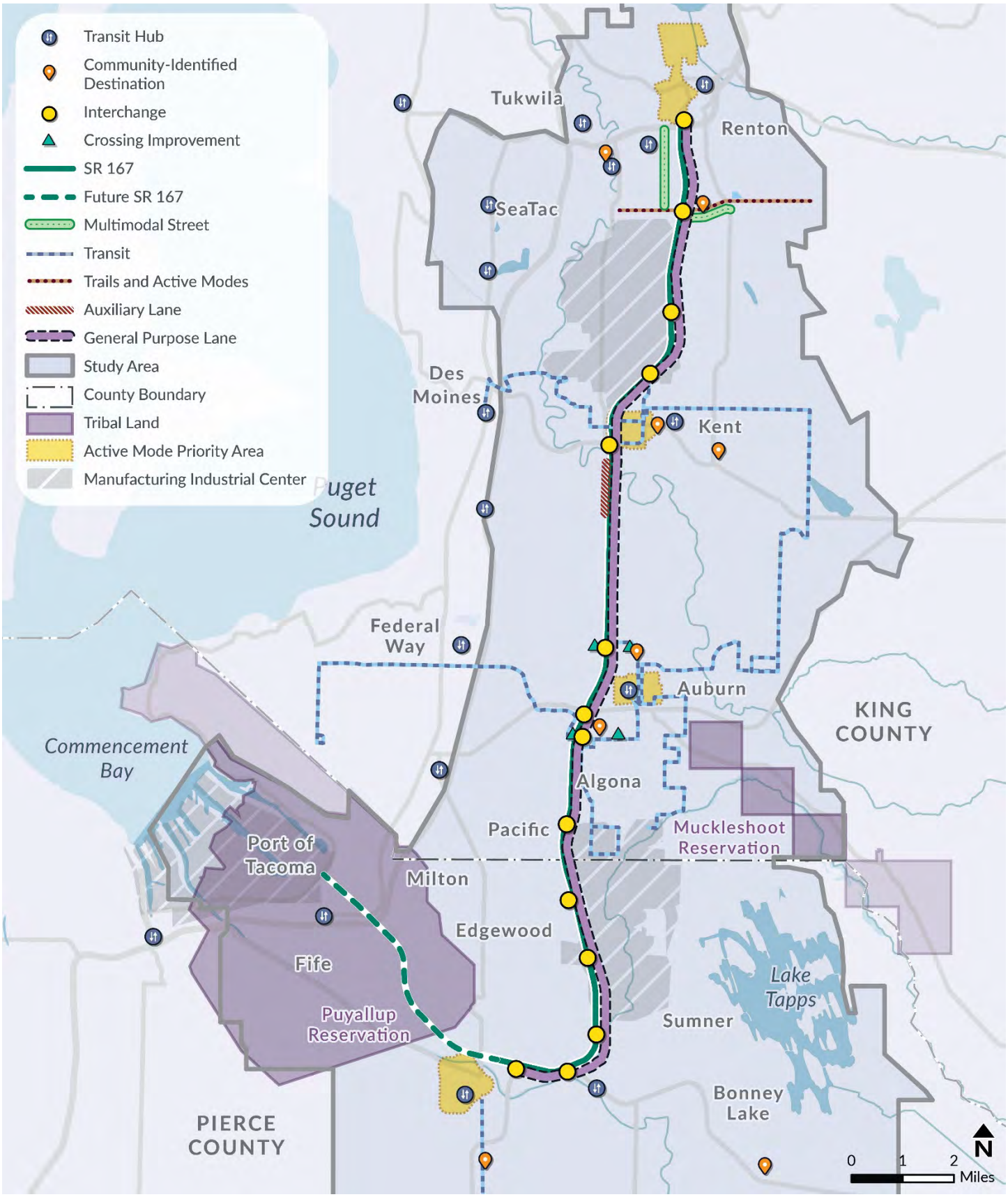

Figure 4-5. Strategic Capacity Scenario

TSMO Scenario Projects and Strategies

The TSMO Scenario focused on TSMO projects and strategies. A fundamental objective of TSMO is to implement technology and to share information to maximize the overall ability for the transportation system to move people within the existing physical infrastructure (e.g., total lanes of roadway and miles of train tracks). Key projects and strategies in the TSMO Scenario included:

- All-lane congestion pricing strategy for SR 167
- Arterial widening and Complete Streets projects on West Valley and East Valley highways
- Signal upgrades (timing updates, coordination, adaptive signal systems) on major parallel arterials
- Multimodal improvements in PSRC-designated centers and to transit hubs
- Low-income toll program strategy
- Ramp meter upgrades on SR 167

Centers Scenario Projects and Strategies

The Centers Scenario focused on enhancing multimodal access to the study area's regional centers, as designated by PSRC: RGCs, MICs, and Countywide Centers. The Centers Scenario offered more new roadway capacity than the TSMO Scenario, including a truck-only lane between the SR 167 extension project and SR 18, which would create a continuous freight corridor between I-5 and the Port of Tacoma and major industrial and warehousing areas in the study area. The Centers Scenario also included a substantial increase in transit service and a major expansion of pedestrian and bicycle facilities within and between regional centers in the study area. To amplify the benefits of these multimodal investments, the Centers Scenario also assumed a major expansion of transportation demand management programs. Key projects and strategies in the Centers Scenario include:

- Expanded transportation demand management strategies for all employers, specifically assuming that all employers are able to generate a reduction of commute trips at levels similar to those of larger employers that are required to participate in WSDOT's Commute Trip Reduction program
- Substantial expansion of transit services; speed and reliability enhancements on 13 planned but unfunded transit routes from King County Metro and Pierce Transit
- Substantial expansion of active transportation infrastructure in designated regional centers to fill gaps in sidewalks and bicycle facilities and to improve access to transit
- A new truck-only lane on SR 167 between Meridian Avenue in Puyallup and SR 18
- Medium-duty trucks allowed (less than 20,000 pounds) in ETLs
- Interchange improvements for improved truck and vehicle access and to add low-stress facilities crossing SR 167 at five arterial interchanges (South 212th Street, 84th Avenue South, Willis Street, 15th Avenue Northwest, Stewart Road, and 24th Street East)
- Low-income toll program strategy

Express Toll Lanes and Transit Scenario Projects and Strategies

The ETLs and Transit Scenario explores the benefits and impacts of expanding the SR 167 facility with dual ETLs between I-405 and SR 512. This would create an SR 167 facility with two ETLs and two general purpose lanes in each direction with an additional auxiliary lane in places. A new BRT service that would utilize the ETLs would further increase person throughput on the SR 167 corridor. To better access the ETLs, new direct access ramps are proposed at key transit hubs and RGCs. This scenario also includes improved access to the major transit hubs in the study area with both active mode and on-demand transit services to lower-density areas that may not be efficiently served with fixed-route transit. Key projects include:

- Second ETL on SR 167 between I-405 and SR 512

- Direct access ramps to transit hubs at Kent, Auburn, and Sumner
- BRT service on SR 167 between the Puyallup Sounder station and the South Renton Transit Center with a possible extension to Link light rail in Seattle
- Four east-west transit routes that connect residential areas to Sounder, BRT, and Link light rail
- On-demand transit service in areas without robust fixed-route service
- Low-income toll program strategy

Strategic Capacity Scenario Projects and Strategies

The Strategic Capacity Scenario explores the benefits and impacts of more general purpose capacity expansion on the SR 167 facility, both on the mainline and at interchanges. This scenario has less investment off the SR 167 facility compared to the other scenarios, although it maintains an emphasis on providing on-demand transit service to equity priority areas that do not otherwise have frequent transit service. The Strategic Capacity Scenario was developed based on a review of the 2008 *SR 167 Corridor Plan*, but with refinements to better align the prior planning work with the project Purpose and Need. Key projects include:

- Additional general purpose lane on SR 167 between I-405 and SR 512
- Northbound auxiliary lane on SR 167 between South 277th Street and SR 516
- Substantial system interchange improvements at SR 167/I-405, SR 167/SR 18, and SR 167/SR 410/SR 512
- Arterial interchange improvements, including Complete Streets multimodal facilities, at seven locations (43rd/South 180th Street, South 212th Street, 84th Avenue South, Willis Street, 15th Avenue Northwest, Stewart Road, and 24th Street East)
- Four east-west transit routes to connect residential areas to transit
- On-demand transit service in areas without robust fixed-route service

Level 2a Draft Scenario Criteria and Metrics

The purpose of the Level 2a Screening was to evaluate the key benefits and tradeoffs of each Draft Scenario relative to the Baseline Scenario with respect to the project Purpose and Need. The key benefits and tradeoffs were identified using the PSRC regional travel model and geographic information systems (GIS) data from the PSRC and local jurisdictions (refer to *Attachment B, Appendix A*). They specifically focused on the following evaluation metrics, summarized in Table 4-1, that respond to the project Purpose and Need. Refer to the *Level 2b Screening* section for evaluation metrics related to the practical solutions and the State of Good Repair and project Purpose and Need categories. The benefits and tradeoffs evaluation was not used to directly screen an entire Draft Scenario. Rather, the screening was used to identify specific projects and strategies within the Draft Scenarios that best met and advanced the project Purpose and Need.

Table 4-1. Level 2a Screening Evaluation Criteria and Metrics

Project Purpose and Need Category	Evaluation Metric
Equity, Multimodal, Safety	• Transit service coverage within equity priority areas • Presence or absence of sidewalks and bicycle facilities along arterials within equity priority areas • Improvements to trail crossing at arterials (qualitative)
Equity, Multimodal, Environment	• Daily transit boardings
Safety, Multimodal, Environment, Mobility, and Economic Vitality	• AM peak hour single-occupancy vehicle mode share • VMT per capita

Project Purpose and Need Category	Evaluation Metric
Safety, Mobility, and Economic Vitality	• Hours of congestion on SR 167 • Hours of congestions on parallel arterials
Environment	• Relative environmental effects (qualitative)

Level 2a Draft Scenario Screening Results

Draft Scenario Screening

Table 4-2 through Table 4-5 summarize the results of the Level 2a screening. Projects and strategies from each Draft Scenario were selected to be carried forward to the Level 2b Screening or to be eliminated from the evaluation process. *Appendix A* includes a list of all the projects and strategies that were included in each Draft Scenario and which were eliminated during the Level 2a screening.

TSMO Scenario Key Benefits and Tradeoffs

Table 4-2 summarizes the key benefits and tradeoffs of the TSMO Scenario. Overall, the TSMO Scenario resulted in the greatest reduction in traffic congestion for SR 167 because of the congestion pricing strategy. However, by increasing the cost to drive on SR 167, this scenario results in more arterial traffic congestion, even when factoring in some of the arterial TSMO and widening projects. This scenario performed strongly with respect to the project's Purpose and Need statements related to equity and the environment as it includes extensive transit and active mode investments. By providing alternatives to driving and increasing the cost to drive, the TSMO Scenario results in the lowest VMT per capita of the five scenarios evaluated (i.e., Baseline Scenario and four Draft Scenarios).

Table 4-2. TSMO Scenario Key Benefits and Tradeoffs

Goal	Key Benefits	Tradeoffs
Equity	• Greatest transit service levels and access to transit • Considerably more trail access compared to all other scenarios • Greatest increase in transit boardings (same increase as the Centers Scenario)	• Highest reliance on tolling to manage congestion
Safety	• Lowest congestion levels on SR 167 results in fewer congestion-related crashes • Most trail crossing improvements compared to all other scenarios	• Substantially more traffic on arterial streets • Wider arterials increase speeds during off-peak periods, which could degrade safety
Environment	• Lowest VMT per capita	• Potential environmental impacts related to widening arterial streets

Goal	Key Benefits	Tradeoffs
Multimodal	• Considerably higher transit frequencies • Better freight travel times • Regional trail expansion	• More freight congestion on some arterials • Higher traffic stress on some bicycle and pedestrian routes • More transit delays on some arterials
Mobility and Economic Vitality	• Greatest reduction in congestion on SR 167	• Highest levels of congestion on arterials within 1 mile of SR 167

Centers Scenario Key Benefits and Tradeoffs

Table 4-3 summarizes the key benefits and tradeoffs of the Centers Scenario. The Centers Scenario resulted in the greatest decrease in single-occupancy vehicle travel and the greatest increase in non-auto mode share; the increases were driven by the expanded transportation demand management strategy and supporting transit and active mode infrastructure investments included in this scenario. Truck travel times were also reduced (i.e., improved) as a result of the truck lane on SR 167. However, because the Centers Scenario did not result in a substantial increase in travel capacity or more specific congestion management, overall traffic congestion levels on SR 167 and arterials within 1 mile of SR 167 were similar to those of the Baseline Scenario.

Table 4-3. Centers Scenario Key Benefits and Tradeoffs

Goal	Key Benefits	Tradeoffs
Equity	• More transit service and access to transit compared to Baseline, ETL and Transit, and Strategic Capacity scenarios • More investments in active mode infrastructure when compared to Baseline, ETL and Transit, and Strategic Capacity scenarios • Greatest increase in transit boardings (same increase as the TSMO Scenario)	• Three arterial/intersection widening projects in lower income areas could negatively impact vulnerable populations and overburdened communities who walk and bicycle and could increase traffic impacts to equity priority area neighborhoods
Safety	• Highest investment in active mode improvements in PSRC-designated RGSs	• Some higher crash areas on SR 167 do not have any projects that would improve conditions
Environment	• Greatest decrease in single-occupancy vehicle travel • Less VMT per capita than Baseline, ETL and Transit, and Strategic Capacity scenarios • SR 18 active mode improvements in RGCs results in more mode shift away from vehicles compared to all other scenarios	• Moderate environmental impacts for SR 167 and interchange widening
Multimodal	• Substantial transit expansion compared to Baseline, ETL and Transit, and Strategic Capacity scenarios	• SR 167 and arterial congestion is similar to the Baseline Scenario

Goal	Key Benefits	Tradeoffs
Mobility and Economic Vitality	• New freight capacity south of SR 18 improves freight speed and reliability compared to all other scenarios • Interchange improvements to RGCs and MICs improve access, although there are fewer improvements than are identified in the ETL and Transit and Strategic Capacity scenarios	• Some active mode projects may decrease freight capacity by some MICs near the SR 167 corridor

ETL and Transit Scenario Key Benefits and Tradeoffs

Table 4-4 provides a summary of the key benefits and tradeoffs of the ETL and Transit Scenario. This scenario resulted in the highest overall person throughput when considering SR 167 and the adjacent transit routes (e.g., Sounder, RapidRide I Line, and other transit routes that use SR 167). This higher person throughput is because ETLs move more vehicles, including transit and HOVs, faster and more reliably than other solutions. The additional ETL also has more overall capacity compared to the TSMO or Centers scenarios. By moving more people along SR 167, the ETL and Transit Scenario results in the lowest levels of arterial traffic congestion of all scenarios evaluated in Level 2a screening, and it results in an improvement in truck travel times compared to the Baseline Scenario. VMT per capita is similar to the Baseline Scenario. A review of the data indicated that per capita VMT is influenced in two different directions: improved transit speed and reliability and increased transit services reduced VMT through mode shift, but the additional roadway capacity caused by drivers shifting from the congested general purpose lanes to the ETLs resulted in new and longer vehicle trips from some drivers. Tradeoffs include the environmental impacts of adding a new ETL for the length of the SR 167 corridor.

Table 4-4. ETL and Transit Scenario Key Benefits and Tradeoffs

Goal	Key Benefits	Tradeoffs
Equity	• More transit service on SR 167 and east-west routes compared to the Baseline Scenario, but less than the TSMO or Centers scenarios • Additional ETL capacity will reduce peak toll rates compared to all other scenarios	• ETLs may not be affordable to low-income travelers
Safety	• Less stop-and-go traffic on SR 167 compared to the Baseline and Centers scenarios • Active mode investments in designated regional centers	• Increase in weaving traffic to ETLs
Environment	• Less single-occupancy-vehicle travel than the Baseline Scenario	• Potentially large and complex environmental impacts related to widening SR 167

Goal	Key Benefits	Tradeoffs
Multimodal	• More transit ridership than the Baseline Scenario • Substantially less midday freight delay • Substantial access to transit improvements • Highest person throughput on SR 167	• Lower transit ridership and active mode shares than the TSMO or Centers scenarios, but improvement compared to the Baseline Scenario
Mobility and Economic Vitality	• Lowest ETL travel time speed and best travel time reliability compared to all other scenarios • Reduced congestion in general purpose lanes compared to the Baseline and Centers scenarios • Least amount of arterial congestion compared to all other scenarios	• Less freight travel time benefits compared to the Centers Scenario

Strategic Capacity Scenario Key Benefits and Tradeoffs

Table 4-5 summarizes the key benefits and tradeoffs of the Strategic Capacity Scenario. Of all scenarios evaluated in the Level 2a screening, the Strategic Capacity Scenario has the most intense investment in general purpose lanes' capacity. As a result, this scenario has the greatest reduction in freight travel times. However, peak period congestion is still forecast, and total SR 167 congestion levels are slightly higher than those of the TSMO Scenario. The Strategic Capacity Scenario includes new ramps and improvements at several major freeway-to-freeway interchanges, which would address bottlenecks and a few key safety issues. However, because the added capacity is on general purpose lanes, this is the only Draft Scenario that has a higher VMT per capita than the Baseline Scenario. The modeling results indicated that the higher VMT per capita is caused by longer trips (the mode share of single-occupancy vehicles does not change). These longer trips may result in more traffic impacts in equity priority areas. The Strategic Capacity Scenario has less investments in active modes than the other Draft Scenarios, and it has substantial environmental impacts from freeway and interchange expansion.

Table 4-5. Strategic Capacity Scenario Key Benefits and Tradeoffs

Goal	Key Benefits	Tradeoffs
Equity	• Greatest reduction in traffic congestion levels during off-peak periods, which may benefit vulnerable populations and overburdened communities who travel outside of typical commuting periods	• Induced demand from additional general purpose lanes capacity increases traffic in equity priority areas
Safety	• Less stop-and-go traffic on SR 167 compared to the Baseline, Centers, and ETLs and Transit scenarios • Less traffic on arterial stress compared to the Baseline, TSMO, and Centers scenarios	• Wider ramp intersections can increase crossing distance for active modes

Goal	Key Benefits	Tradeoffs
Environment	• Fewer widening projects away from SR 167	• Greatest level VMT per capita compared to all other scenarios • Potentially large and complex environmental impacts related to widening SR 167
Multimodal	• Greatest amount of new capacity available to freight vehicles • Reconstructed bridges and interchanges would include Complete Streets improvements and reduces the multimodal barrier caused by SR 167 more than the Baseline, TSMO, and Centers scenarios	• Least active mode investment compared to other scenarios
Mobility and Economic Vitality	• Least number of congestion hours in general purpose lanes compared to the other scenarios • Less traffic on arterial streets compared to the Baseline, TSMO, and Centers scenarios • Best freight travel time and reliability of all the scenarios	• Even with new capacity, peak period congestion remains in SR 167's general purpose lanes and there is less ability to manage future congestion compared to the TSMO or ETL and Transit scenarios

Draft Scenario Screening Results

Table 4-6 summarizes the principal metrics from the travel demand model results for each Draft Scenario relative to the Baseline Scenario.

Table 4-6. Travel Demand Model Metrics for Draft Scenarios Relative to the Baseline Scenario

Measure	TSMO Scenario	Centers Scenario	ETL and Transit Scenario	Strategic Capacity Scenario
Daily transit boardings	+11%	+11%	+4%	+2%
AM peak period single-occupancy vehicle mode share	−1%	−4%	−1%	No Change
Per capita VMT	−1%	−0.5%	No Change	+2%
Hours of congestion on parallel arterials	+28%	No Change	−2%	No Change
Hours of congestion on SR 167	−18%	No Change	−11%	−17%

Based on the travel demand model results and the evaluation of the key benefits and tradeoffs, several projects and strategies were eliminated from further consideration, as summarized in Table 4-7.

Table 4-7. Summary of Key Projects and Strategies Eliminated During Level 2a Screening

Project or Strategy	Reason for Elimination
Additional general purpose lane on SR 167 between I-405 and SR 512	Increased VMT per capita compared to the Baseline Scenario; this result is inconsistent with environmental state goals to reduce VMT per capita
All-lane congestion pricing on SR 167	Increased arterial congestion levels substantially, which raised concerns from city staff and elected officials within the study area
Transportation demand management requirement for all employers in the study area	While WSDOT supports this idea in concept, it is not under its authority; therefore, it could be complex to implement in order to achieve the results modeled in the Centers Scenario
Reconstruction of I-405/SR 167 interchange	Inconsistent with the prioritization identified in the *I-405 Master Plan*
Regional trail projects more than 1 mile from SR 167 (e.g., Soos Creek Trail)	No effect on SR 167 mobility or access to trails that directly serve the SR 167 corridor
Various arterial widening projects	No effect on SR 167 mobility or access; concerns raised by local agencies about increasing traffic through cities that would otherwise be on SR 167

Level 2b Refined Scenario Projects and Strategies

Level 2b screening included the projects and strategies that were grouped into Refined Scenarios (Scenarios A, B, and C) and a Baseline Scenario. Although the Baseline Scenario does not meet the project Purpose and Need, it was carried forward through the analysis for comparison with the Refined Scenarios.

Projects and strategies carried forward from the Level 2a Screening were grouped into the Refined Scenarios that were developed with feedback and input from the following:

- **Subject matter experts from WSDOT and outside consultants.** The project team convened a series of workshops with experts whose backgrounds included safety, maintenance, transit, smart cities/TSMO, traffic operations, and capital project planning and implementation to review the Draft Scenario evaluation results and to suggest project concepts to include in the Refined Scenarios.
- **TAC, EAC, and PAC members** who highlighted the projects and strategies they considered to best meet the project Purpose and Need while also aligning with their local constituents' travel needs.
- **Co-creation workshop participants** provided detailed information about their transportation challenges and the types of projects and strategies that could improve their transportation outcomes in the study area.
- **Open house participants** shared thoughts related to what works well and what does not work with respect to transportation within the study area, along with ideas for projects and strategies to improve transportation.

Projects and Strategies Common to All Refined Scenarios

In reviewing the results of the Level 2a Screening and in considering the feedback and input from the aforementioned groups, the project team identified several projects and strategies that were fundamental to achieving the project Purpose and Need. These projects and strategies are presented in Figure 4-6 and summarized in the following subsections.

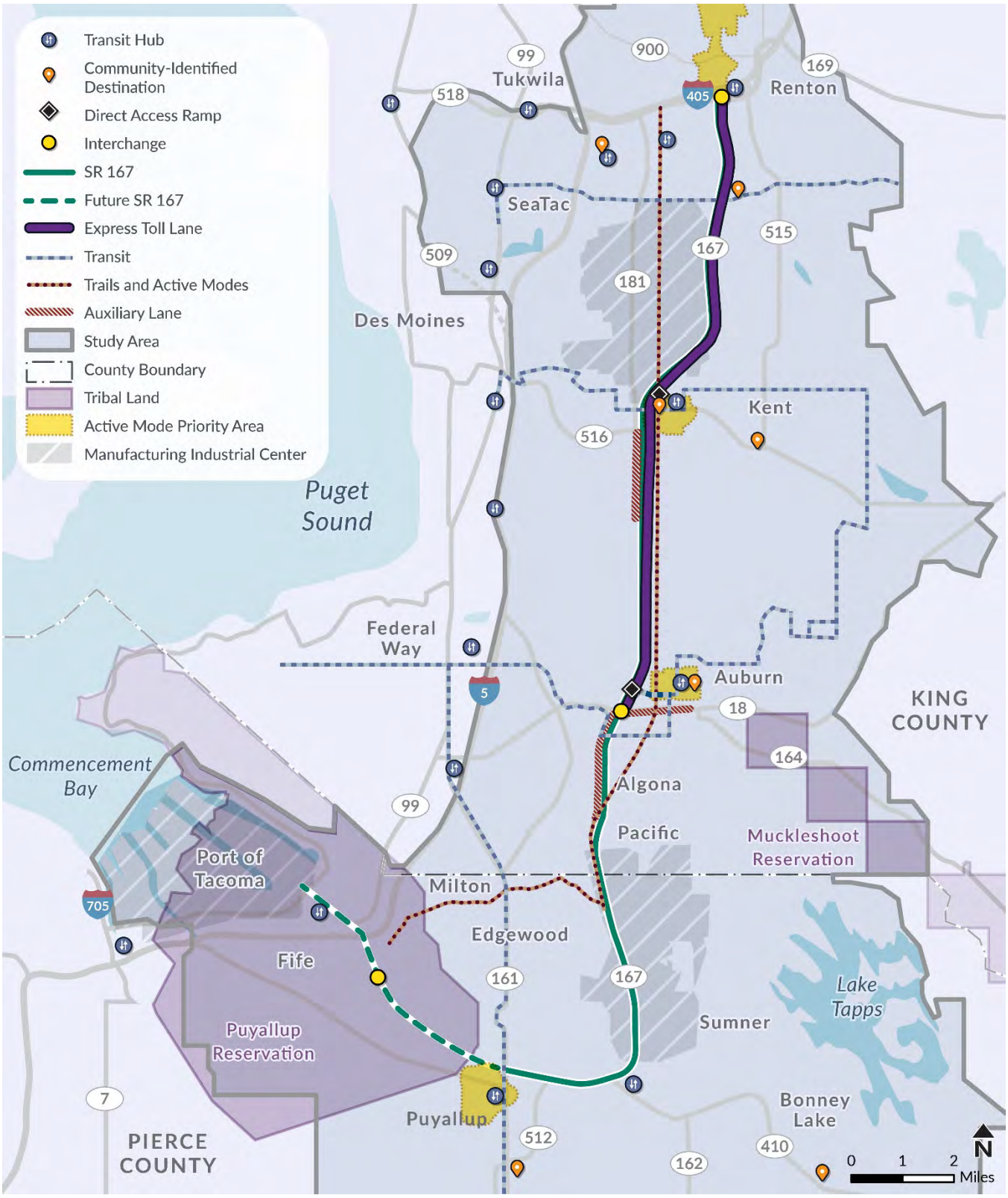

Figure 4-6. Level 2b Screening - Projects and Strategies Common to all Refined Scenarios

Highway and Interchange Projects and Strategies

Add a second ETL between I-405 and SR 18. A second ETL on SR 167 is key to managing traffic congestion in a way that does not increase VMT per capita. The ETLs would also strongly benefit transit and improve the overall SR 167 corridor person throughput.

Complete missing ramps at the SR 18/SR 167 interchange. There are no direct freeway-to-freeway ramps from northbound SR 167 to westbound SR 18 or from eastbound SR 18 to southbound SR 167. The lack of such ramps means regional freeway traffic must divert to local roads, which results in more potential conflicts between trucks and active modes. This negatively affects the comfort of pedestrians and bicyclists, and it increases local traffic congestion.

Complete the Valley Avenue interchange with the SR 167 Extension. Under the Baseline Scenario, the Valley Avenue interchange only includes ramps to/from the west. This project would complete the missing ramps and would improve freight access.

Add auxiliary lanes on SR 167 and SR 18. Adding auxiliary lanes on northbound SR 167 between South 277th Street and SR 516, in both directions of SR 167 between SR 18 and Ellingson Road, and on eastbound SR 18 between SR 167 and SR 164 would help to address current safety hazards caused by slow traffic approaching these interchanges, and it would improve access to the RGCs.

Add direct access ramps from the ETLs to Kent and Auburn. New ramps from the ETLs to the Sounder stations at Kent and Auburn would improve transit and ETL access to the RGCs in Kent and Auburn.

Implement a statewide low-income toll program. This strategy would recommend to the Washington State Transportation Commission (which sets toll rates and polices for the state) to establish a statewide low-income toll program to improve equitable access to the ETLs on SR 167.

Allow medium duty-trucks (less than 20,000 pounds) in ETLs. This strategy would recommend to the Washington State Transportation Commission to change the operations policies for ETLs to allow medium-duty trucks and trailers access to the ETLs. This strategy would improve freight access, and it would also benefit equity as many equity priority populations work in the freight and service industries that operate these types of vehicles.

Implement ramp meters for all lanes and at all interchanges. Ramp metering is a well-established strategy to manage traffic congestion without expanding the number of freeway lanes. This strategy would implement ramp meters at all interchanges along SR 167.

Local Roadway Projects and Strategies

Grade separate Grady Way/Rainier Avenue. This project would grade separate or otherwise improve transit access at the intersection of Grady Way and Rainier Avenue in Renton. This is an important project for high-capacity transit services on both I-405 and SR 167.

Transit Projects and Strategies

Implement four all-day, frequent transit routes. These planned transit routes from King County Metro and Pierce Transit would connect residential areas, equity priority areas, employment centers, and transit hubs. It would include improvements to transit access (spot sidewalk and arterial crossing treatments) and speed and

reliability enhancements along these transit routes, which is typical of King County Metro RapidRide and Pierce Transit Stream.

Active Mode Projects and Strategies

Complete gaps in the sidewalk system within the RGCs that are within 1 mile of SR 167. The existing conditions analysis for this study found that there are gaps in the sidewalk system within the RGCs. By closing these gaps, the RGCs will be able to better accommodate increases in housing, land use density, and mixed uses that are called for in the PSRC Regional Growth Strategy and comprehensive plans of the local jurisdictions in the study area. WSDOT strongly supports increased land use density within designated regional centers that have robust multimodal infrastructure.

Complete 5 to 10 miles of bicycle lanes/facilities to connect to community-identified destinations. Outreach to equity priority communities in the co-creation workshops for this study indicated that the lack of bicycle connections to key destinations was a barrier to travel. While there are many roadways that lack low-stress bicycle facilities, this study highlights the connections that communities identified as being the highest priority.

Implement low-stress pedestrian and bicycle facilities across SR 167. As part of its Complete Streets initiative, WSDOT will seek opportunities to implement low-stress pedestrian and bicycle improvements on any project with more than $500,000 of state investment. This would include any overpass, interchange, or underpass that would be modified as part of the SR 167 Master Plan effort. These low-stress active mode improvements would reduce the barrier effect that is caused by SR 167.

Scenario A Projects and Strategies

Scenario A builds off some of the results of the Level 2a screening that described how expanded transit and active mode investments benefit the mobility of equity priority areas while also reducing single-occupancy-vehicle mode share and VMT per capita. The results of the TSMO and Centers scenarios also identified the benefits of Complete Streets improvements to several arterials that are parallel to SR 167, which have also been incorporated into Scenario A. Key projects and strategies in Scenario A, beyond those common to all Refined Scenarios, are listed in the following subsections and are illustrated in Figure 4-7.

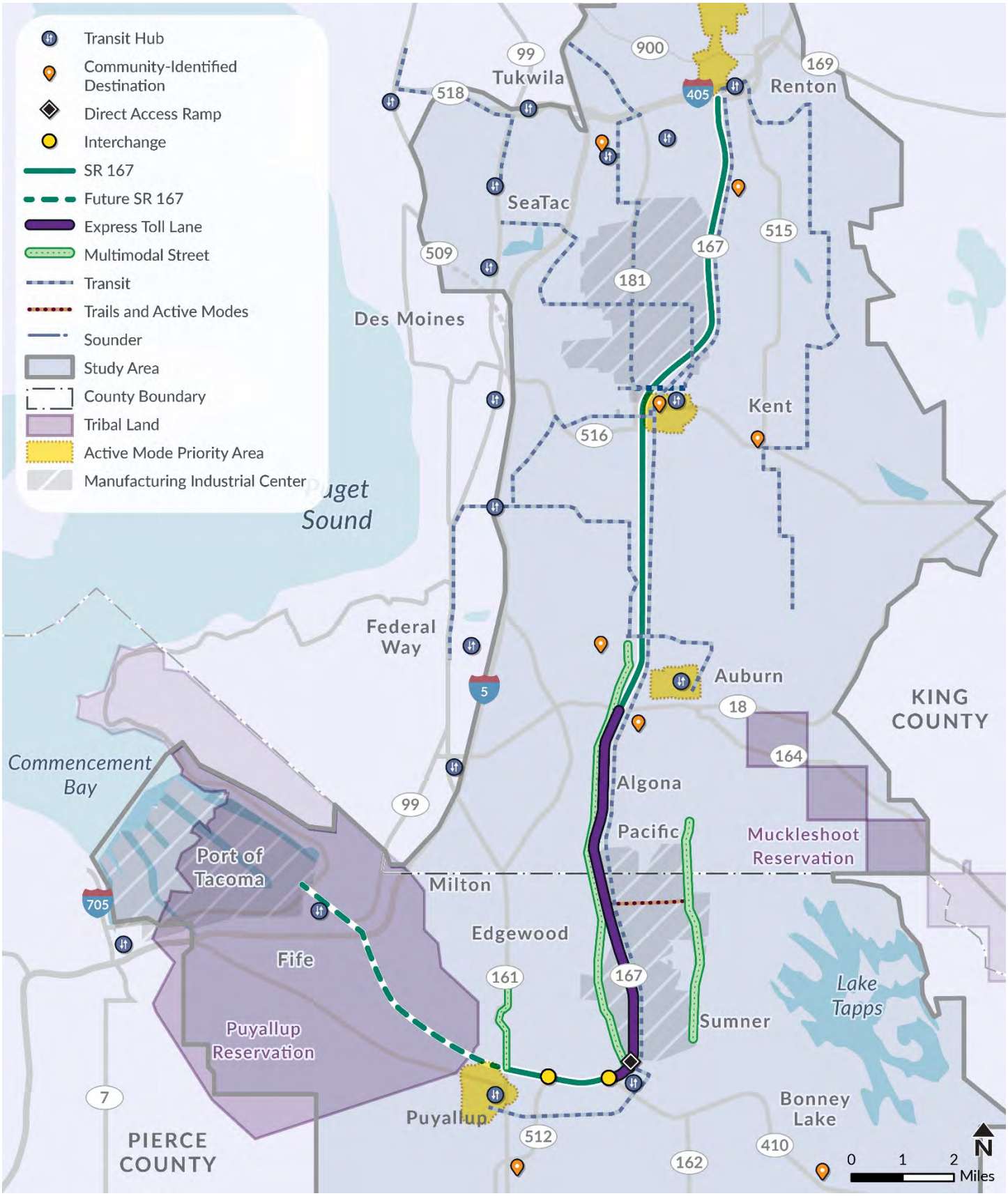

Figure 4-7. Level 2b Screening – Scenario A

Highway and Interchange Projects and Strategies

Add a second ETL between SR 18 and SR 410. By extending the second ETL that is common to all the Refined Scenarios, this project would create a dual ETL corridor between I-405 and SR 410, extending the benefits of the ETLs south to Sumner and Puyallup.

Add direct access ramps from the ETLs to Sumner. This project would provide access to and from the north between the ETLs and downtown Sumner and the Sumner Sounder station. This project would improve transit access to a major transit hub.

Reconstruct the SR 167/SR 410/SR 512 interchange. This interchange currently has short weaving segments between two major highway ramps. This project would improve the traffic flow in this interchange area, addressing traffic congestion, freight access, and safety issues.

Local Roadway Projects and Strategies

Improve 10 miles of local arterial streets. The travel demand modeling from the Level 2a Screening identified substantial traffic congestion on local arterials like East Valley Highway and West Valley Highway in the future. Rebuilding these arterials to include turn lanes would improve freight access to the adjacent industrial uses. Rebuilding these streets would also allow for improvements in pedestrian and bicycle infrastructure.

Implement TSMO strategies on 25 miles of arterial streets. This strategy includes new traffic signal coordination plans, adaptive traffic signal systems, transit signal priority systems, new traffic signal communications systems, and other infrastructure to move more people without widening the roadways.

Transit Projects and Strategies

Add BRT on SR 167. This project would implement a BRT system on SR 167 that is similar to existing BRT in the region, including Community Transit's Swift routes and Sound Transit's upcoming Stride BRT. This project would provide BRT service connections between Puyallup, Sumner, Auburn, Kent, and Renton with a possible extension to Link light rail. This service would provide similar coverage to Sounder, but with an emphasis on an all-day, bi-directional service that also directly integrates with Swift BRT in Renton. It would meet a direct need that was expressed by equity priority communities for an all-day, bi-directional frequent service that connects along the SR 167 corridor.

Expand transit along 160 miles of new or enhanced service. This would implement 15 planned, but unfunded, transit routes included in the long-range plans from King County Metro (Metro Connects) and Pierce Transit (Destination 2040). Some of this service could be implemented through on-demand services (to be determined through future studies).

Implement business access and transit lanes on Meridian Avenue. Meridian Avenue between Valley Avenue and 24th Street East experiences congestion and has little to no accommodation for pedestrians and bicyclists. This project would rebuild this section of roadway to include lanes for business access and transit and low-stress bicycle and pedestrian accommodations per WSDOT's Complete Streets policy.

Active Mode Projects and Strategies

Close sidewalk gaps on 20 miles of arterials. Based on the GIS analysis of existing conditions, approximately 20 miles of arterial streets within 1 mile of SR 167 lack sidewalks on both sides of the street. This investment would close those gaps.

Implement Complete Streets. The previously described projects on East Valley Highway, West Valley Highway, and Meridian Avenue would implement low-stress pedestrian and bicycle improvements.

Scenario B Projects and Strategies

Scenario B differs from Scenario A by concentrating more investment along the SR 167 facility (e.g., additional interchange improvements) and less to projects and strategies in the surrounding communities (e.g., fewer transit routes and sidewalk projects). Key projects in Scenario B, beyond those common to all Refined Scenarios, are listed in the following subsections and are illustrated in Figure 4-8.

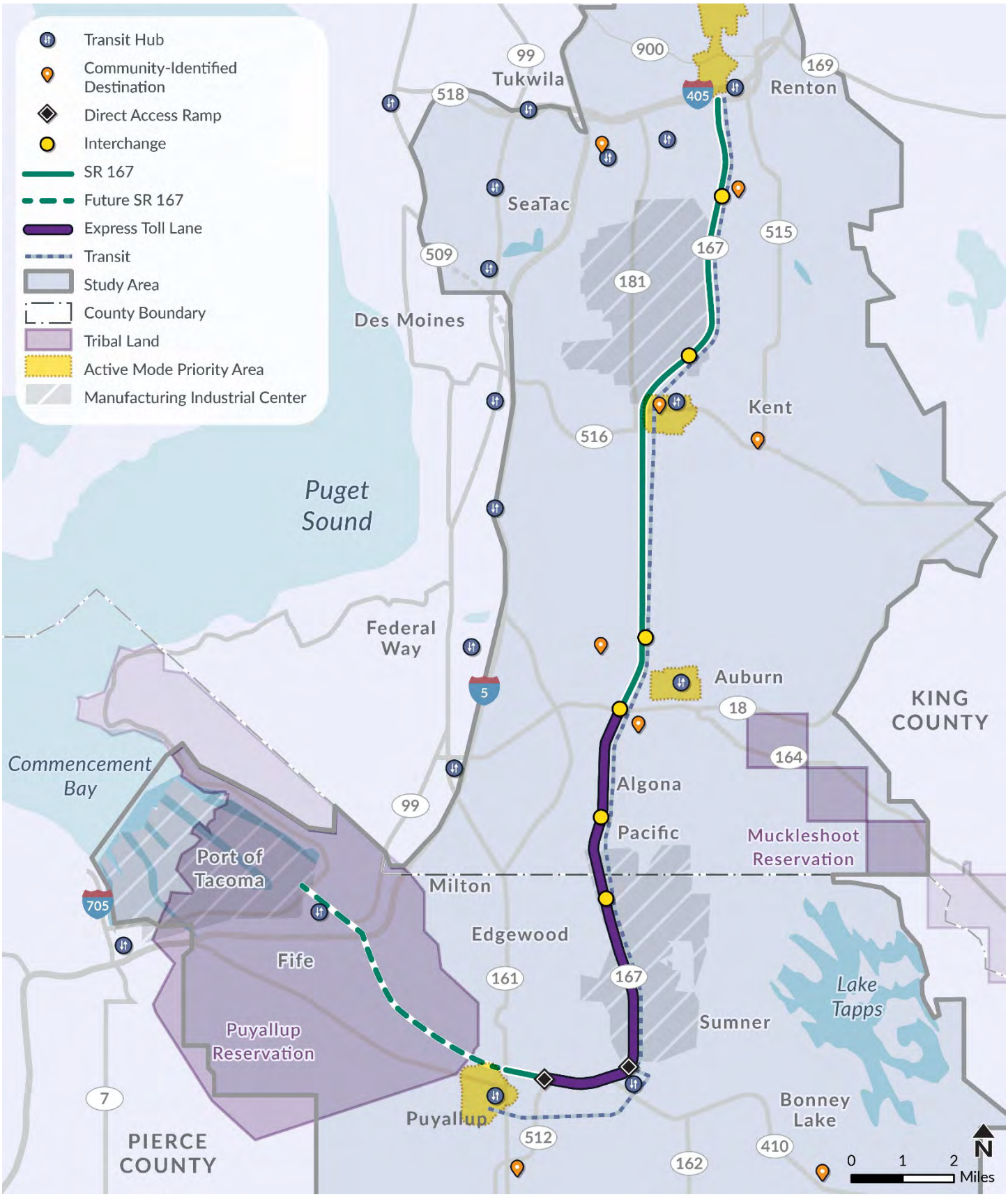

Figure 4-8. Level 2b Screening - Scenario B

Highway and Interchange Projects and Strategies

Add a second ETL between SR 18 and SR 512. By extending the second ETL common to all Refined Scenarios, this project would create a dual ETL corridor between I-405 and SR 512 (which is a slightly longer distance than the second ETL proposed under Scenario A), extending the benefits of the ETLs south to Sumner and Puyallup.

Reconstruct the SR 167/SR 18 interchange. Supplementing the project common to all Refined Scenarios to complete the missing ramps at this interchange, this project would rebuild a portion of the SR 167/SR 18 interchange to address the short weaving segments and tight loop ramps of the existing interchange. It would address safety issues with the existing configuration, and it would increase the overall capacity of the interchange, helping to reduce traffic congestion and improve freight access.

Add direct access ramps from the ETLs to Sumner. This project is identical to the one proposed under Scenario A. It would provide access to and from the north between the ETLs and downtown Sumner and the Sumner Sounder station. This project would improve transit access to a major transit hub.

Construct a direct connection between SR 167 and SR 512. This project would create a set of direct connector ramps between the SR 167 ETLs and SR 512, facilitating the major traffic movement from southbound SR 167 to westbound SR 512 and from eastbound SR 512 to northbound SR 167. The purpose of evaluating this project is to determine if it can address congestion issues at the SR 167/SR 410/SR 512 interchange at a lower cost than a complete reconstruction.

Reconstruct or improve five arterial interchanges. Improve the SR 167 interchanges at South 180th Street in Renton, 84th Avenue South in Kent, Ellingson Road and Steward Road in Pacific, and 24th Street East in Sumner. These interchanges are key to accessing the major MICs along the SR 167 corridor, and they have existing challenges related to traffic congestion, turning radii, closely spaced intersections, and poor multimodal accommodations.

Transit Projects and Strategies

Upgrade transit frequencies and leverage the SR 167 ETLs. This strategy would refine the frequency and span of service of three planned routes from Sound Transit and King County Metro (based on Sound Transit's 2023 Service Plan and Metro Connects) that are already planned to operate along SR 167. Additionally, this strategy would implement a new bus route along SR 167 between Puyallup, Sumner, Auburn, Kent, and Renton to provide all-day, bi-directional transit service along the corridor. With all four routes, a bus would be traveling along SR 167 in both directions with frequencies of 15 minutes or better throughout the day and evening.

Active Mode Projects and Strategies

Implement Complete Streets. In addition to the pedestrian and bicycle projects common to all Refined Scenarios, the SR 167 interchange improvements included in this scenario would implement low-stress pedestrian and bicycle improvements across SR 167.

Scenario C Projects and Strategies

Scenario C explores the potential benefits to freight access and mobility that could be provided by a truck-only lane on SR 167 between SR 18 and SR 161/Meridian Avenue. Otherwise, Scenario C is similar to Scenario B. Key projects and strategies, beyond those common to all Refined Scenarios, are illustrated in Figure 4-9 and listed in the following subsections.

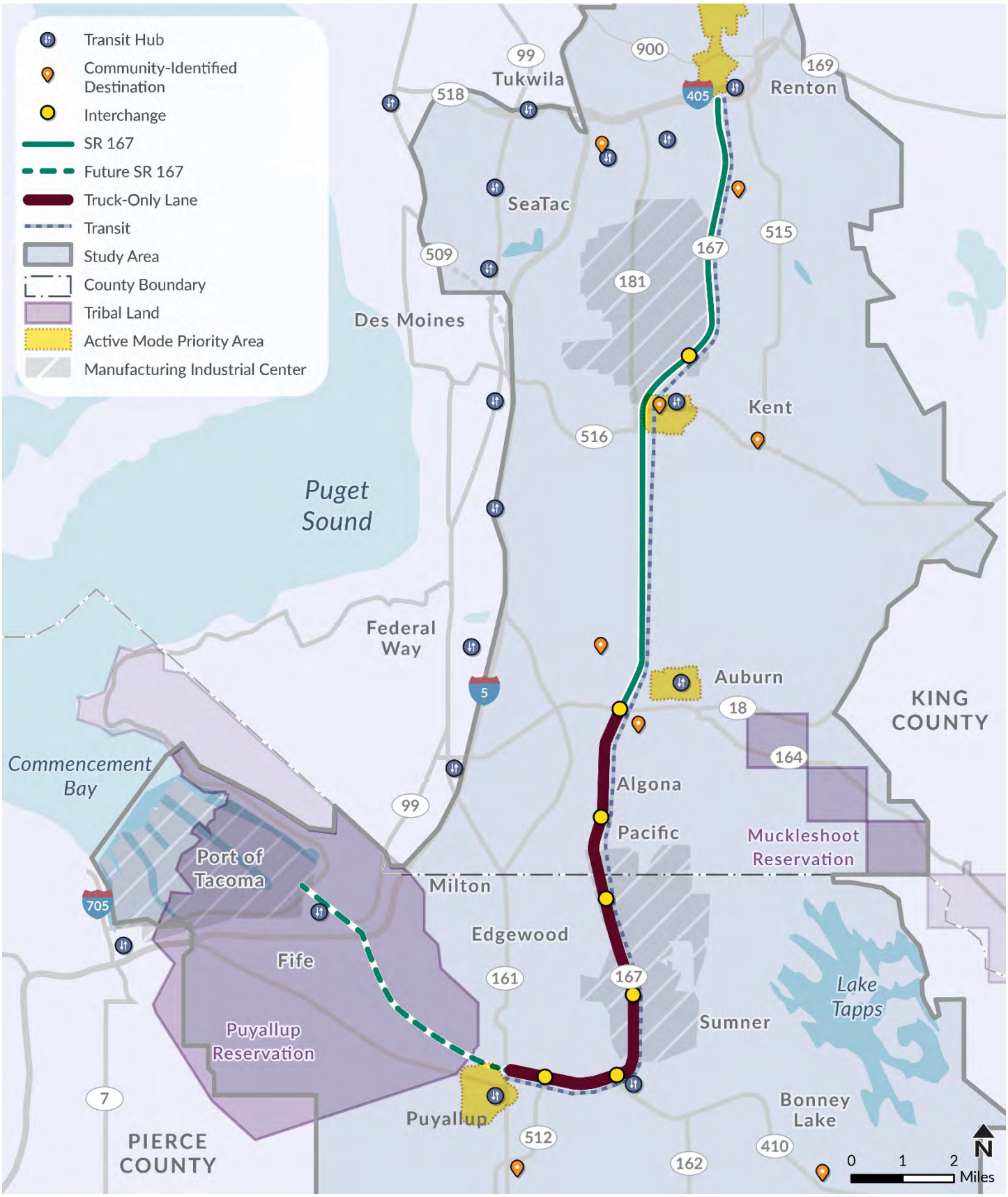

Figure 4-9. Level 2b Screening – Scenario C

Highway and Interchange Projects and Strategies

Add a truck-only lane on SR 18 and SR 410. This project would construct a new truck-only lane between SR 18 in Auburn and the SR 167 extension project at SR 161/Meridian Avenue in Puyallup. This segment of SR 167 is expected to have the fastest growth in truck traffic (relative to the rest of the corridor) with the completion of the SR 167 extension and the buildout of planned warehousing and industrial projects throughout the study area. The truck-only lane would function alongside the existing two general purpose lanes and single ETL. Near interchanges, truck traffic would merge with general purpose traffic exiting the freeway.

Reconstruct the SR 167/SR 18 westbound-to-southbound ramp. This project would enhance the functionality of the truck-only lanes by reconstructing the westbound-to-southbound ramp from SR 18 to SR 167. This project would supplement the project, common to all Refined Scenarios, which would construct the missing ramps at this interchange. The westbound-to-southbound ramp has a tight loop ramp and a short weaving section that results in bottlenecks and freight and safety concerns.

Reconstruct the SR 167/SR 410/SR 512 interchange. This project is identical to the project proposed under Scenario A. This interchange has short weaving segments between two major highway ramps. This project would improve the traffic flow in the interchange area, addressing traffic congestion, freight access, and safety issues.

Reconstruct or improve five arterial interchanges. Identical to Scenario B, these projects would improve the SR 167 interchanges at South 180th Street in Renton, 84th Avenue South in Kent, Ellingson Road and Stewart Road in Pacific, and 24th Street East in Sumner. These interchanges are key to accessing the major MICs along the SR 167 corridor, and they have existing challenges related to traffic congestion, turning radii, closely spaced intersections, and poor multimodal accommodations.

Transit Projects and Strategies

Add BRT on SR 167. This project would implement a BRT system on SR 167 that is similar to the project described in Scenario A. This route would connect between Puyallup, Auburn, Kent, and Renton with a possible extension to Link light rail. This project does not include a connection to Sumner because there are no direct access ramps at Sumner under Scenario C since there is not a dual ETL system south of SR 18.

Active Mode Projects and Strategies

Implement Complete Streets. In addition to the pedestrian and bicycle projects common to all Refined Scenarios, the interchange improvements included in Scenario C would implement low-stress pedestrian and bicycle improvements across SR 167.

Level 2b Refined Scenario Criteria and Metrics

The purpose of the Level 2b Screening was to identify the projects and strategies to be included in the Final Study Recommendations. Table 4-8 provides the evaluation criteria and metrics used to compare how well each Refined Scenario addresses the project Purpose and Need.

Table 4-8. Level 2b Screening Evaluation Criteria and Metrics

Criteria	Performance Metrics
Equity Criteria: • Access to jobs • Access to households • Access to transit • Transit service availability during off-peak periods • Travel cost	**Equity Performance Metrics:** • Jobs within a 45-minute bus or train ride of equity priority areas • Equity priority households within a 45-minute bus or train ride from an MIC • Equity priority area population within a half-mile of frequent or on-demand transit • Total number of bus hours of service in midday and evening periods in the study area • Travel costs for vehicle and transit from equity priority areas (qualitative)
Safety Criteria: • Ability to reduce the potential for fatal and serious injury crashes	**Safety Performance Metrics:** • Investments in areas with a history of: – SR 167 facility crashes (qualitative) – SR 167 speed differentials (qualitative) – Active mode crashes (qualitative)
Environment Criteria: • Impacts on environmental resources	**Environment Performance Metrics:** • Assessment of impacts and benefits to natural and built environment resources based on the existing conditions identified in *Attachment B, Chapter 12* • VMT per capita
Multimodal Criteria: • Pedestrian and bicycle system completeness • Transit boardings	**Multimodal Performance Metrics:** • System completeness for bicycle and pedestrian infrastructure within 1 mile of SR 167 • Sidewalk system completeness within 1 mile of SR 167 and within RGCs • Active mode gap closures across SR 167 • Daily transit boardings • Daily transit boardings on SR 167 bus service
Mobility and Economic Vitality Criteria: • Number of people moved • Traffic congestion • Freight mobility and reliability	**Mobility and Economic Vitality Performance Metrics:** • Peak period person throughput on SR 167 • Average travel speeds for vehicles in general purpose lanes on SR 167 • Average travel speeds for vehicles in ETLs on SR 167 • Peak period congestion on SR 167 in general purpose lanes • Peak period congestion on SR 167 in ETLs • Peak period vehicle-hours of delay on SR 167 and on arterials within 1 mile of SR 167 • Freight vehicle travel time on SR 167 • Freight vehicle travel time reliability on SR 167 • Local freight access at interchanges on SR 167 (qualitative)
Practical Solutions and State of Good Repair Criteria: • Capital cost • State of Good Repair	**Practical Solutions and State of Good Repair Performance Metrics:** • Planning level capital costs of engineering, right of way, environmental mitigation, and construction • Ability to maintain the system in a State of Good Repair (qualitative)

Level 2b Refined Scenario Screening Results

The following subsections summarize the results of the Level 2b screening related to the project Purpose and Need categories of equity, safety, environment, multimodal, mobility and economic vitality, and practical solutions and State of Good Repair.

Equity

Table 4-9 summarizes the results of the Level 2b screening for the equity category. For each performance metric for the equity evaluation (listed in Table 4-8), the table details the change (increase or decrease) for each Refined Scenario compared to the Baseline Scenario. Refer to the Environment subsection for additional details related to environmental justice and equity.

Table 4-9. Refined Scenario Evaluation Results – Equity

Performance Metric	Scenario A*	Scenario B*	Scenario C*
Difference in the number of jobs within 45 minutes by bus or train from equity priority areas	+18% 12,000 jobs	+16% 11,000 jobs	+16% 11,000 jobs
Difference in the number of equity priority area households within 45 minutes by bus or train from equity priority areas	+50% 28,000 households	+46% 26,000 households	+46% 26,000 households
Equity priority area population within a half mile of frequent or on-demand transit	+110% 13,000 people	+45% 5,000 people	+45% 5,000 people
Difference in the number of bus hours of service in midday and evening periods	+49% (midday) 312,000 annual midday hours +149% (evening) 283,000 annual evening hours	+9% (midday) 58,000 annual midday hours +45% (evening) 87,000 annual evening hours	+9% (midday) 58,000 annual midday hours +45% (evening) 87,000 annual evening hours
Travel cost (qualitative)	• Lower auto costs for ETL users relative to the Baseline Scenario due to a low-income toll program and dual ETLs • Similar transit costs	• Lower auto costs for ETL users relative to the Baseline Scenario due to a low-income toll program and dual ETLs • Similar transit costs	• Lower auto costs for ETL users relative to the Baseline Scenario but higher than Scenarios A and B • Similar transit costs

Note:
* Scenario results indicate change relative to the Baseline Scenario.

As indicated by the results in Table 4-9, Scenario A generally performs better, with respect to the equity performance metrics, than Scenarios B and C; however, all Refined Scenarios perform better than the Baseline Scenario.

The project team also considered differences in access from equity priority areas to key destinations by walking and bicycling, and they observed that all three Refined Scenarios performed similarly at the relatively coarse level of analysis available for this study. All three Refined Scenarios include more investment in pedestrian and bicycle infrastructure in equity priority areas than the Baseline Scenario, but it is difficult to quantify the benefits.

Safety

Table 4-10 summarizes the results of the Level 2b screening for the safety category. For each performance metric for the safety evaluation (listed in Table 4-8), the table details the change (increase or decrease) for each Refined Scenario compared to the Baseline Scenario. The scenarios were evaluated qualitatively for all three safety performance metrics as detailed safety forecasting requires extensive engineering and travel data that were not available for the analysis. However, the project team is familiar with quantitative safety analysis and applied best engineering judgement to the three qualitative performance metrics for safety.[1]

Table 4-10. Refined Scenario Evaluation Results – Safety

Performance Metric	Scenario A*	Scenario B*	Scenario C*
Investments in areas with a history of fatal and serious injury crashes on the SR 167 facility (qualitative)	*Good performance:* The SR 410/SR 512 interchange improvements reduce weaving and smooth traffic conditions in the south end of the corridor.	*Best performance:* System interchange improvements at SR 18 and SR 410/SR 512 reduce weaving and ease traffic conditions in the south end of the corridor. Has the most extensive set of improvements in areas with a history of crashes.	*Good performance:* System interchange improvements at SR 18 and SR 410/SR 512 reduce weaving and ease traffic conditions in the south end of the corridor.
Investments in areas with a history of SR 167 speed differential (qualitative)	*Good performance:* Dual ETLs provide the most relief to speed differentials in general purpose lanes.	*Best performance:* Dual ETLs provide the most relief to speed differentials in general purpose lanes. Also improves five arterial interchanges that could queue back toward the mainline.	*Good performance:* Scenario C improves five arterial interchanges that could queue back toward the mainline. Truck-only lanes are better than in the Baseline Scenario but are less effective at addressing speed differentials compared to Scenarios A and B.
Investment in areas with a history of fatal and serious injury active mode crashes (qualitative)	*Best performance:* Scenario A has the most active mode improvements that could overlap with a history of safety issues, particularly in the RGCs.	*Good performance: C*loses sidewalk gaps in the RGCs and adds bicycle facilities on key arterial roads in the study area.	*Good performance:* Closes sidewalk gaps in the RGCs and adds bicycle facilities on key arterial roads in the study area.

Note:
* Scenario results indicate change relative to the Baseline Scenario.

[1] Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

All three Refined Scenarios are expected to perform better than the Baseline Scenario with respect to safety as each Refined Scenario invests more in projects that help reduce speed differentials or are in areas with a history of safety issues. Scenarios A and B generally perform better than Scenario C because Scenario A invests more in active mode infrastructure and Scenario B is likely to have better safety outcomes on the SR 167 facility.

Environment

Table 4-11 summarizes the results of the Level 2b screening related to the potential effects of the Refined Scenarios on environmental resources. For each environmental resource, Table 4-11 summarizes the potential effects that are common to all Refined Scenarios, and it provides an overall comparison of the potential environmental effects for each Refined Scenario. Potential effects related to the Baseline Scenario would be the same for all Refined Scenarios; therefore, the Baseline Scenario is not included in Table 4-11.

Table 4-11. Refined Scenario Evaluation Results – Environment

Environmental Resource	Effects Common to All Refined Scenarios	Comparison Evaluation of Refined Scenarios
Wetlands	All scenarios include projects that could impact at least 0.5 acres of wetlands.	Scenario A includes the most projects with potential to impact at least 0.5 acres of wetlands. The East Valley Highway and West Valley Highway projects are notable projects that could impact wetlands within Scenario A.
Water	All scenarios include a similar number of projects that could impact a stream or waterbody. All scenarios include projects that would increase impervious surfaces.	Scenarios B and C include more projects that could potentially impact at least 500 linear feet or more of a stream, including the Stewart Road interchange and the 84th Avenue South Interchange.
Fish and Wildlife Habitat	All scenarios include projects that could impact critical habitat for bull trout and steelhead.	Scenario A includes the most projects that could impact critical habitat.
Fish Passage	All scenarios include projects that could affect fish passage.	All scenarios include projects that could address fish passage barriers on or near SR 167.
Flood Hazards	All scenarios include projects that could involve work within a 500-year floodplain and Special Flood Hazard Areas.	While Scenarios B and C include the most interchange projects that could involve work within a Special Flood Hazard Area, Scenario A has the most overall projects with the potential to impact a Special Flood Hazard Area.
Air Quality	All scenarios would decrease VMT per capita compared to existing conditions.	All scenarios would lower VMT per capita than existing conditions (25 percent by 2050), but Scenario A would have the greatest decrease due to more extensive transit service and active mode investments.

Environmental Resource	Effects Common to All Refined Scenarios	Comparison Evaluation of Refined Scenarios
Hazardous Materials	None of the scenarios are likely to affect a hazardous materials cleanup site (i.e., cleanup required under the Resource Conservation and Recovery Act). Redevelopment of the Interurban Trail South is part of all scenarios and is near the West Processing Superfund site.	Scenarios B and C include more interchange projects with the potential for affecting a hazardous materials storage tank or state cleanup site, but Scenario A includes the most overall projects with the potential to affect a hazardous materials storage tank or state cleanup site because of the East Valley Highway and West Valley Highway projects. Scenario A also includes the greatest number of projects that could potentially affect more than three storage tank or state cleanup sites.
Cultural Resources and Historic Bridges	All scenarios could affect a historic resource on the Washington Heritage Barn Register (Upper Daniel Farm) if adding lanes to SR 167.	None of the scenarios would affect resources listed on the National Register of Historic Places. Scenarios A and C could affect Department of Archaeology and Historic Preservation historic resources within the SR 410/SR 512 interchange project. Additionally, Scenario A could also impact a property listed on the Washington Heritage Register within a West Valley Highway project.
Recreational Resources	All scenarios have the potential to impact recreational resources, including parks and trails.	Scenario A includes more local roadway projects with parks and open space impacts. Scenarios B and C include more interchange projects with trail impacts. Scenario A includes the most trail projects because of the White River Trail.
Noise	All scenarios include projects that would add lanes or change the roadway geometry and could have associated noise impacts at nearby sensitive receivers.	Scenario A includes more local roadway projects with the potential for noise impacts. Scenarios B and C include more interchange projects with the potential for noise impacts.
Land Use	All scenarios include projects with the potential to convert land to a transportation use.	Projects located along the SR 167 facility (Scenarios B and C) are more likely to impact commercial and industrial lands while local roadway projects (Scenario A) are more likely to impact residential and some commercial lands.

The following summarizes the key findings from the environmental analysis related to environmental justice, equity, and social resources. Refer to the Equity subsection for additional information related to the equity evaluation.

- All refined scenarios include projects that could require property acquisition in equity priority areas, and all scenarios include projects in equity priority areas that could have associated noise impacts at nearby sensitive receivers.
- All refined scenarios include direct access ramp projects at Auburn and Kent and auxiliary lane projects on SR 167 and SR 18 that could impact a park or trail within an equity priority area.
- All refined scenarios have a similar level of investment for bicycle route improvements between community-identified destinations; therefore, they would have a similar level of system completeness.
- Due to the expanded bus service on SR 167 and the new east-west routes, the growth in access to jobs via transit is higher in equity priority areas than in the rest of the study area for all refined scenarios.

Table 4-12 summarizes the potential differences in benefits and impacts related to equity, property acquisition, and social resources. Although Scenario A would provide the greatest investment in transit and active mode improvements, it includes local roadway projects that could require more residential displacements and property acquisitions than Scenarios B and C.

Table 4-12. Level 2b Summary of the Refined Scenarios Potential Environmental Justice, Equity, and Social Resources Impacts and Benefits

Scenario A	Scenario B	Scenario C
Potential Impacts: • Scenario A includes the most overall projects potentially requiring property acquisition. It also includes the most local roadway projects that could require property acquisition in an equity priority area. • The A Street Northwest project could potentially impact a subsidized housing complex. • Scenario A and Scenario C could have the greatest number of property acquisitions with residential displacements because of the SR 410/SR 512 Interchange project. This project could also impact properties with mobile homes.	**Potential Impacts:** • Scenario B includes the most interchange and direct access projects likely requiring property acquisition in an equity priority area. The 43rd Street/180th Street Interchange project could impact a retirement facility at the southwest corner of the interchange area. • Scenario B could have the most property acquisitions with business displacements due to interchange projects at SR 18 and 43rd Street/ 180th Street.	**Potential Impacts:** • Scenarios A and C could have the greatest number of residential displacements due to the SR 410/SR 512 interchange project. This project could also impact properties with mobile homes.
Potential Benefits: • Scenario A includes more investment in transit and active modes and could result in more jobs that are accessible during off-peak times and a greater level of sidewalk system completeness within equity priority areas.	**Potential Benefits:** • Refer to the bullets directly before Table 4-12 for benefits to all scenarios regarding investments in bicycle route improvements and expanded bus service.	**Potential Benefits:** • Refer to the bullets directly before Table 4-12 for benefits to all scenarios regarding investments in bicycle route improvements and expanded bus service.

Multimodal

Table 4-13 summarizes the results of the Level 2b screening for the multimodal category. For each performance metric for the safety evaluation (listed in Table 4-8), the table identifies the change (increase or decrease) for each Refined Scenario compared to the Baseline Scenario.

Table 4-13. Refined Scenario Evaluation Results – Multimodal

Performance Metric	Scenario A*	Scenario B*	Scenario C*
System completeness for bicycle and pedestrian infrastructure within 1 mile of SR 167	Sidewalks: 100% complete +20 miles Bike Lanes/Trail Crossings: 39% complete +10 miles	Sidewalks: 83% complete +5 miles Bike Lanes/Trail Crossings: 39% complete +10 miles	Sidewalks: 83% complete +5 miles Bike Lanes/Trail Crossings: 39% complete +10 miles
Sidewalk system completeness within 1 mile of SR 167 and within the RGCs	Sidewalks: 100% complete +5 miles	Sidewalks: 100% complete +5 miles	Sidewalks: 100% complete +5 miles
Closing active mode gaps across SR 167	• Overpasses and underpasses impacted by ETLs would include Complete Streets improvements	• Overpasses and underpasses impacted by ETLs would include Complete Streets improvements • Five arterial interchanges would be rebuilt	• Overpasses and underpasses impacted by ETLs would include Complete Streets improvements • Five arterial interchanges would be rebuilt
Daily transit boardings in the study area	+9% 50,000	+7% 35,000	+6% 34,000
Daily transit boardings on SR 167 bus services	4,500	5,300	5,300

Note:
* Scenario results indicate change relative to the Baseline Scenario.

In general, Scenario A performs better than Scenarios B and C in meeting the multimodal category of the project Purpose and Need. This result is expected because Scenarios B and C have similar active mode and transit network assumptions. The slightly better transit performance for Scenario B, compared to Scenario C, is attributed to its more extensive ETL infrastructure that improves bus performance on SR 167 between Puyallup and Auburn. All three Refined Scenarios perform better than the Baseline Scenario in the multimodal category.

Mobility and Economic Vitality

This section summarizes the results of the Refined Scenarios evaluation against the criteria and related performance metrics for mobility and economic vitality listed in Table 4-8. The performance metrics are related to three criteria: person throughput (i.e., number of people moved), traffic congestion, and freight mobility and reliability.

Person Throughput

Figure 4-10 illustrates the difference in person throughput during the peak travel periods at two locations along SR 167 for the Baseline Scenario and the Refined Scenarios. The two locations identified for the AM peak

period are on northbound SR 167. They are: north of 24th Street East in Sumner and north of Central Avenue in Kent. The two locations identified for the PM peak period are on southbound SR 167. They area: south of South 212th Street in Kent and south of 8th Street East in Pacific. Figure 4-10 illustrates the person throughput per hour under each scenario in three types of facilities: general purpose lanes, ETLs, and transit.

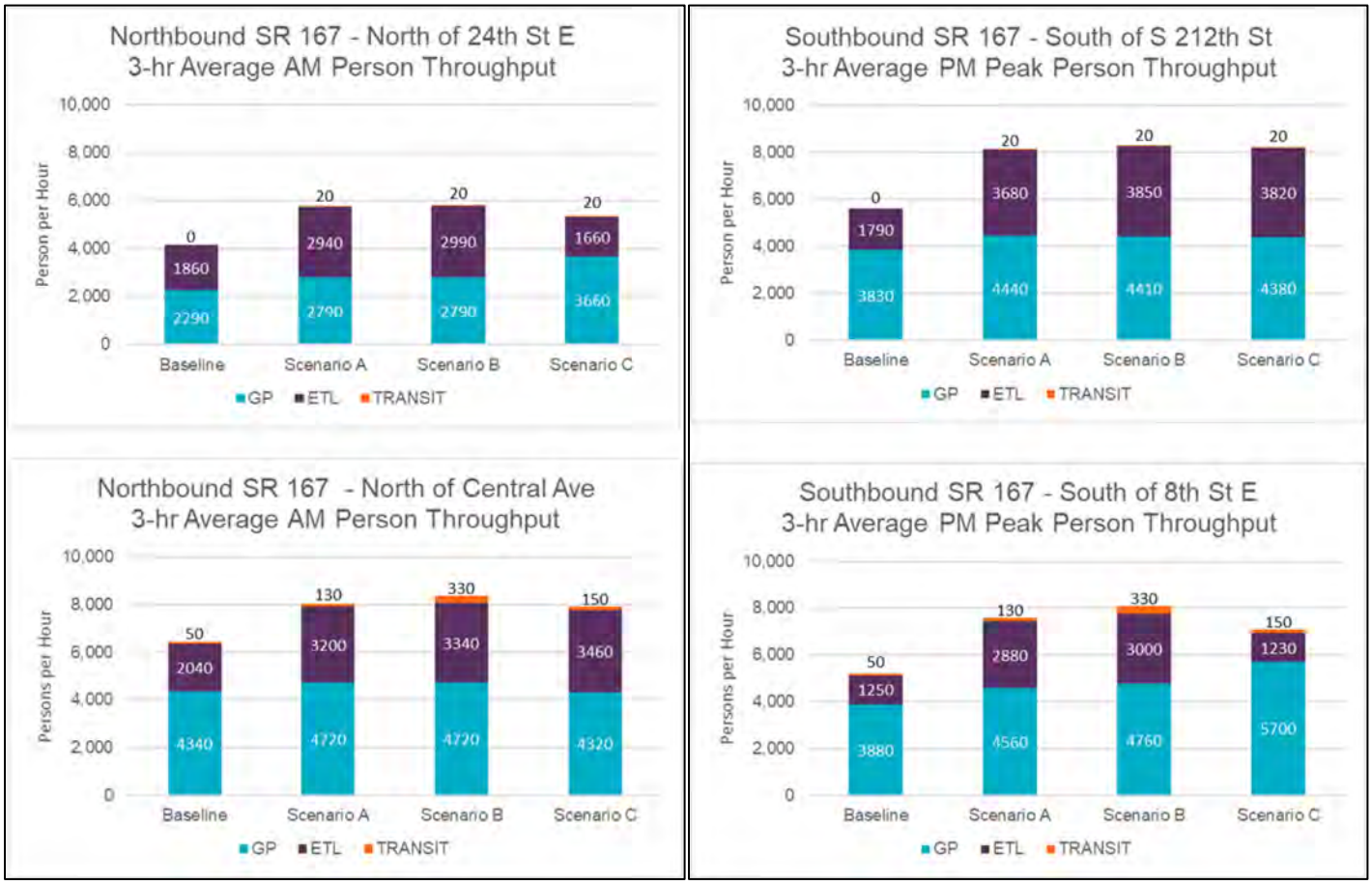

Figure 4-10. AM and PM Peak Period Person Throughput on SR 167 Near Kent and Pacific

GP = general purpose lane

As illustrated in Figure 4-10, each Refined Scenario has more person throughput, in total, than the Baseline Scenario. Overall, compared to the Baseline Scenario, Scenario C would move approximately 25 percent more people, Scenario A would move approximately 48 percent more people, and Scenario B would move approximately 55 percent more people on SR 167 in the PM peak period. Scenarios A and B, which include dual ETLs through the entire SR 167 corridor, would have higher person throughput than Scenario C, which includes that configuration for only part of the corridor.

Traffic Congestion

This section describes evaluation results for five performance metrics related to traffic congestion:

- Average travel speeds for vehicles in general purpose lanes on SR 167
- Average travel speeds for vehicles in ETLs on SR 167
- Peak period congestion on SR 167 in general purpose lanes
- Peak period congestion on SR 167 in ETLs
- Peak period vehicle hours of delay on SR 167 and arterials within 1 mile of SR 167

Figure 4-11 through Figure 4-14 summarize the differences in corridor travel speeds and traffic congestion along SR 167 in the northbound and southbound directions for the ETLs and general purpose lanes, respectively. The average travel speeds would be faster with Scenarios A, B, or C compared to the Baseline Scenario.

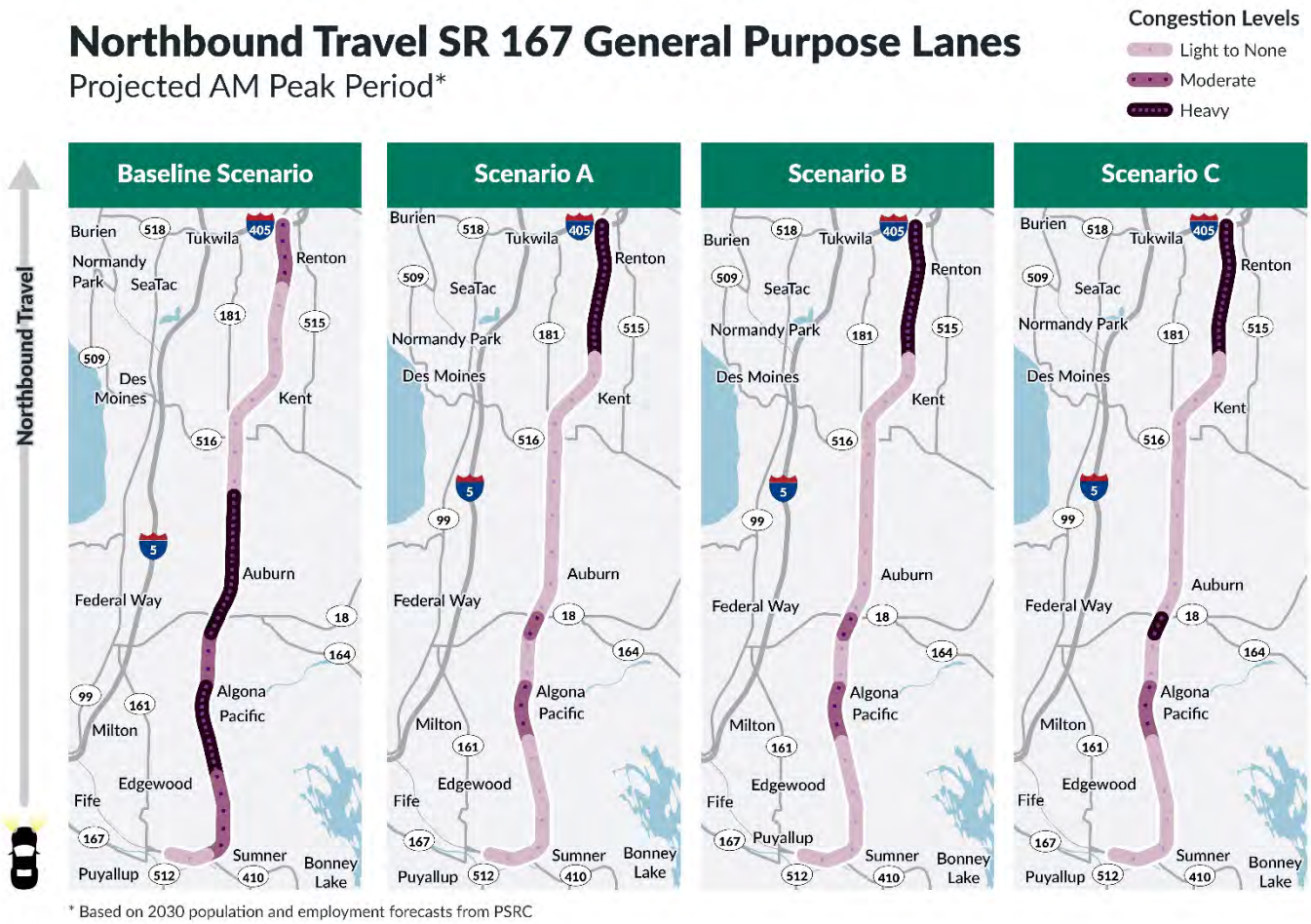

Figure 4-11. AM Peak Period Northbound SR 167 Congestion and Speed – General Purpose Lanes

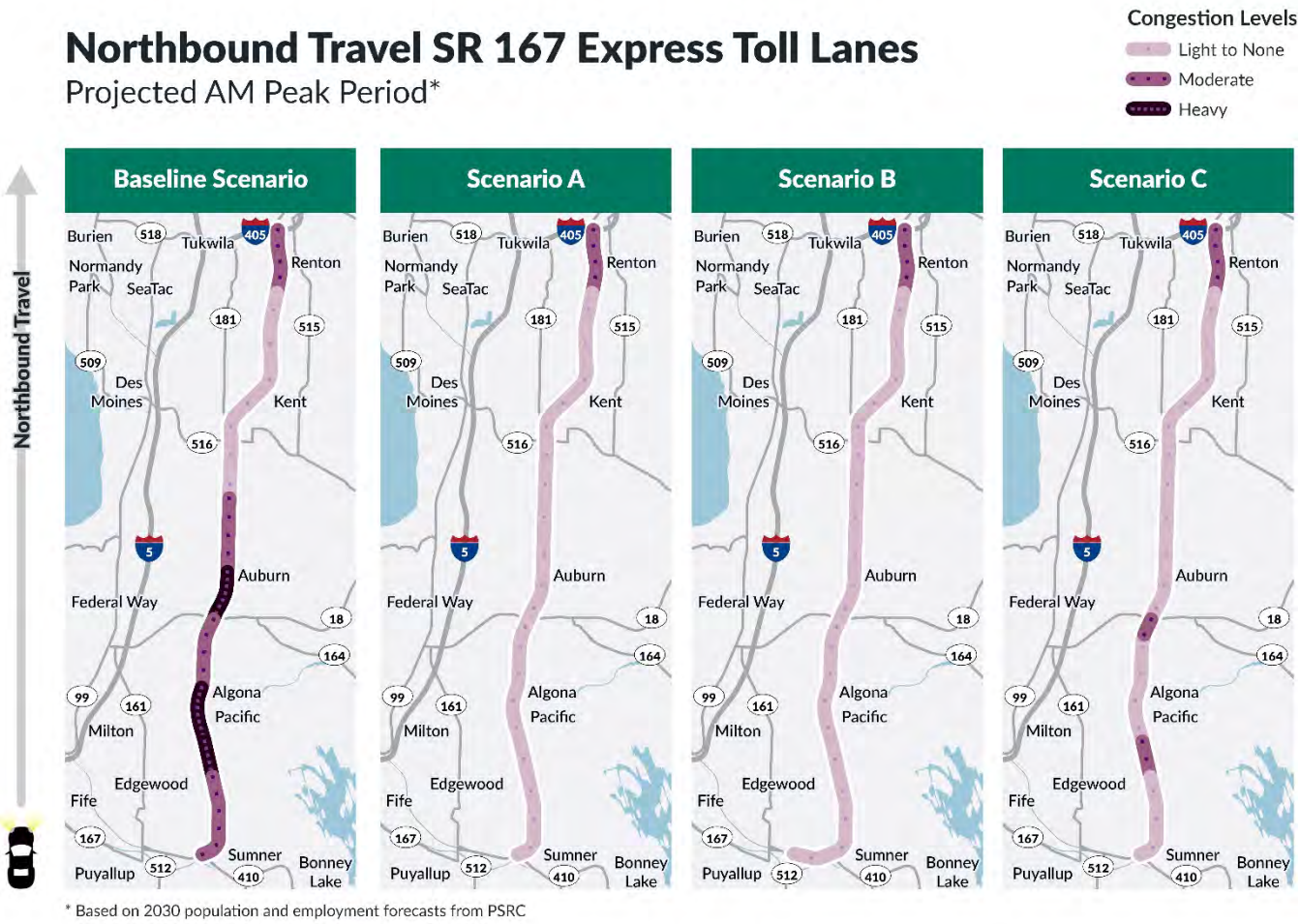

Figure 4-12. AM Peak Period Northbound SR 167 Congestion and Speed – ETLs

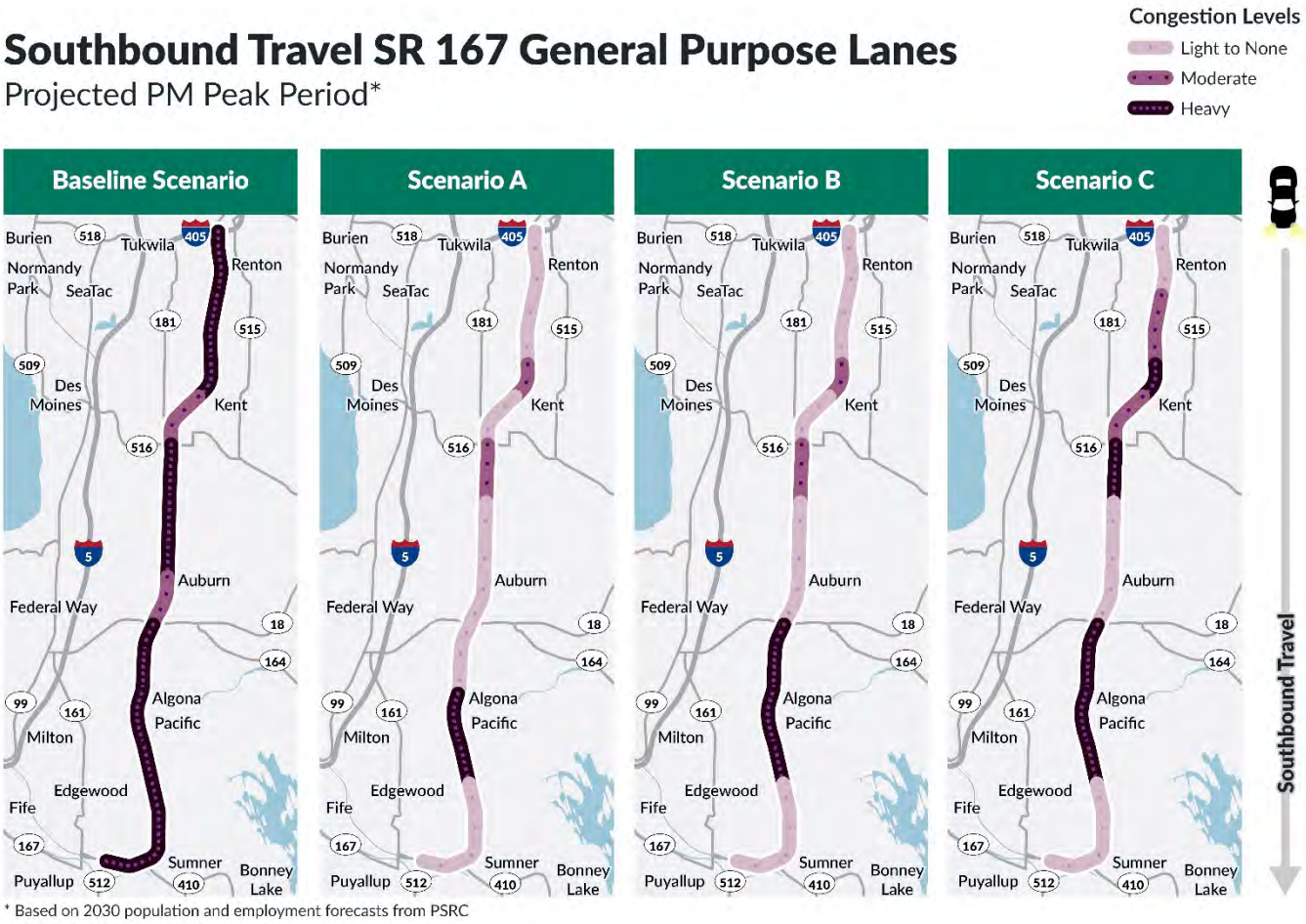

Figure 4-13. PM Peak Period Southbound SR 167 Congestion and Speed – General Purpose Lanes

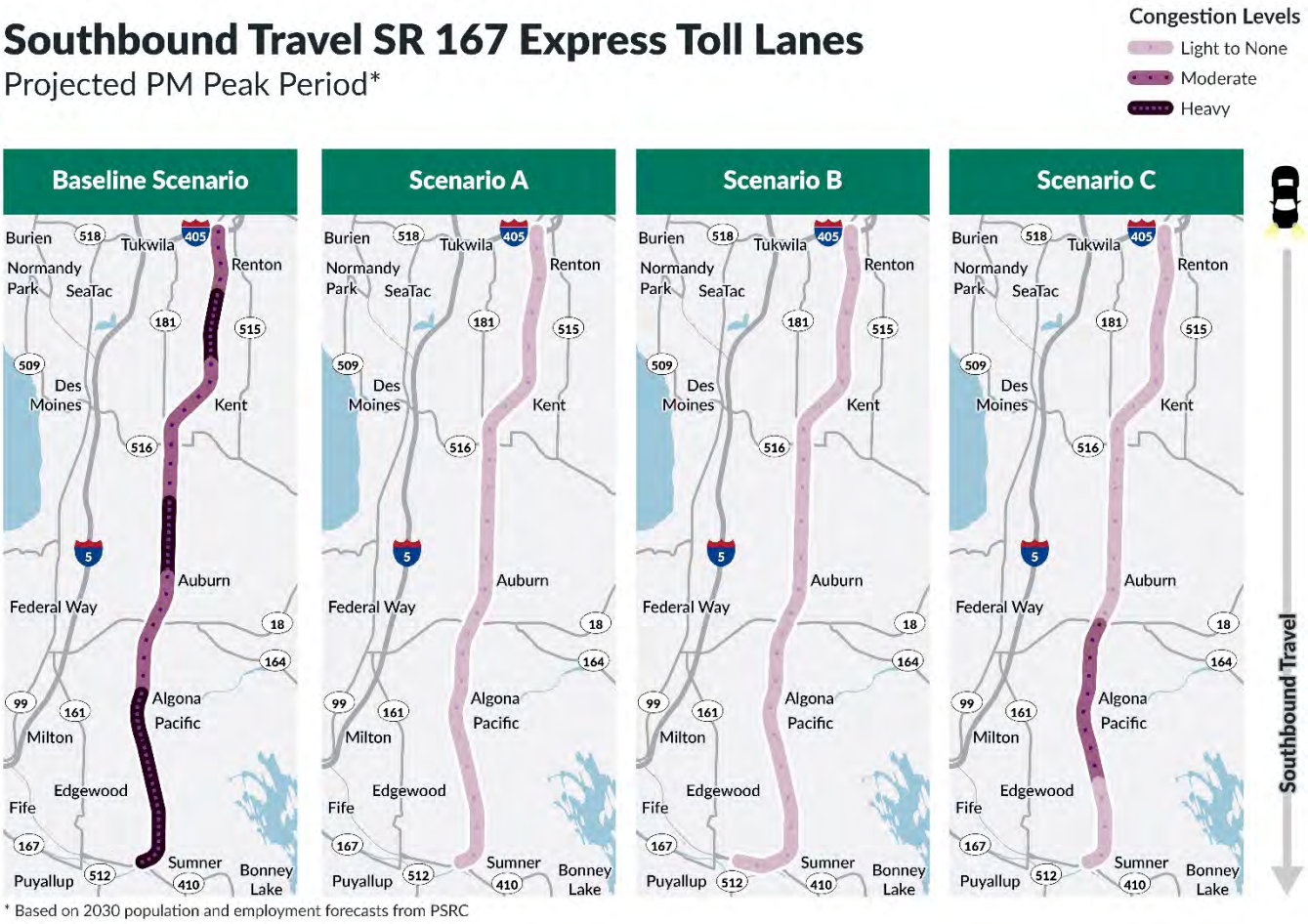

Figure 4-14. PM Peak Period Southbound SR 167 Congestion and Speed – ETLs

In the northbound direction during the AM peak period, travel speeds in the general purpose lanes in Scenarios A and C would be similar to one another, with vehicles expected to travel between 35 and 60 miles per hour (mph) on average. In Scenarios A, B, and C, there is a stretch of heavy congestion (speeds less than 35 mph) in the northbound general purpose lanes between 212th Street in Kent and I-405. This congestion (which is not in the Baseline Scenario) is caused by the higher person and vehicle throughput from the additional lanes on SR 167 and a bottleneck at the SR 167/I-405 interchange. The Baseline Scenario would operate with average travel speeds of 20 to 25 mph in the general purpose lanes with the slower speeds concentrated between Sumner and Kent.

The general purpose lanes in the southbound direction during the PM peak period would operate with average travel speeds of 20 to 50 mph for the Refined Scenarios. Scenario A would operate with the fastest average speeds (30 to 50 mph) compared to Scenario B (25 to 35 mph) and Scenario C (20 to 35 mph). Most of the congestion for the Refined Scenarios is in the southern end of the corridor between SR 18 and Stewart Road. Each Refined Scenario would operate better than the Baseline Scenario, which is expected to have average travel speeds in the range of 5 to 20 mph in the general purpose lanes with heavy congestion for nearly the entire stretch between I-405 and SR 512.

In the ETLs, average northbound travel speeds during the AM peak period would be faster with Scenarios A, B, and C compared to the Baseline Scenario. The ETLs in Scenarios A, B, and C would operate with average travel

speeds of 55 mph or greater; although there are some areas of slower traffic with Scenario C between Stewart Road and SR 18 since there is only a single northbound ETL in that section. For the Baseline Scenario, the ETL would have average travel speeds of 45 to 50 mph with the slowest travel between SR 410 in Sumner and 212th Street in Kent.

During the PM peak period, average travel speeds in the southbound ETLs would be faster in Scenarios A, B, or C than with the Baseline Scenario. Average travel speeds with Scenarios A and B (55 mph or greater) would be faster and more reliable than Scenario C (50 to 55 mph) since Scenarios A and B include two continuous ETLs between I-405 and SR 410, while Scenario C includes two ETLs for a shorter distance between I-405 and SR 18 and only a single ETL between SR 18 and SR 410. As a result, there is more congestion in the Scenario C ETL between SR 18 in Auburn and Stewart Road in Sumner.

Figure 4-15 and Figure 4-16 summarize the differences in vehicle hours of delay, a measure of traffic congestion, along SR 167 in the northbound and southbound directions, respectively. Within these figures, off-system highways refer to any bridge or road that is not on the National Highway System that approaches SR 167.

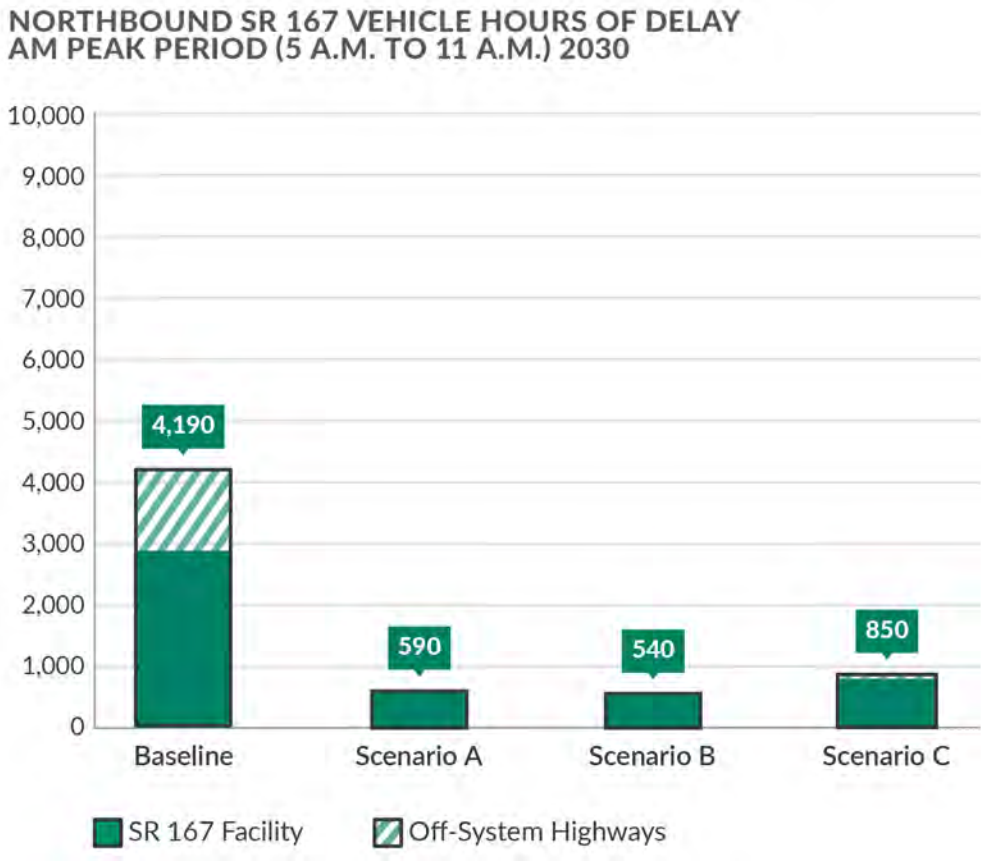

Figure 4-15. AM Northbound SR 167 Vehicle-Hours of Delay

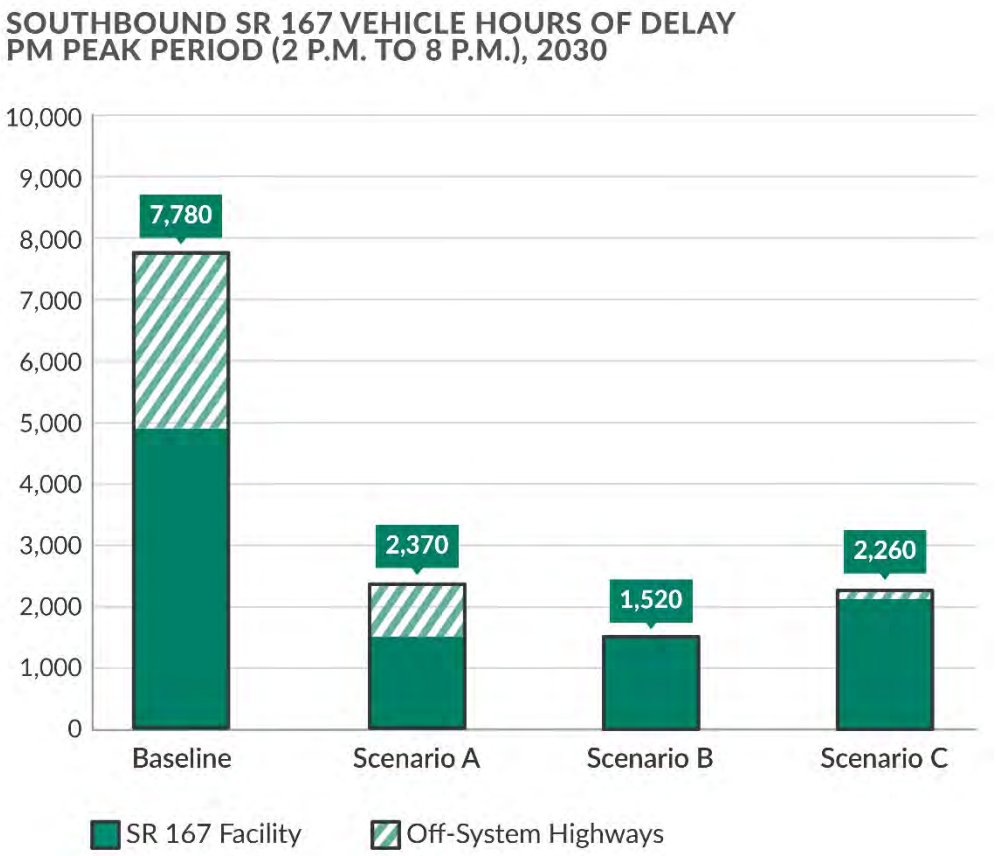

Figure 4-16. PM Southbound SR 167 Vehicle-Hours of Delay

As illustrated in Figure 4-15 and Figure 4-16, Scenarios A, B, and C would reduce traffic congestion, compared to the Baseline Scenario, in both the AM and PM peak periods. Scenario B, with its higher person throughput, will provide the greatest reductions in vehicle hours of delay on SR 167 and on state highway segments that approach SR 167. The Baseline Scenario, Scenario A, and Scenario C are each expected to experience measurable vehicle hours of delay on state highway segments that approach SR 167. Scenario B is expected to eliminate all the congestion that currently backs up off SR 167 onto adjacent state routes (e.g., I-405, SR 18, SR 410, and SR 512).

On northbound SR 167 in the AM peak period, Scenarios A and B are estimated to have 590 to 540 vehicle hours of delay, respectively, on SR 167. Compared to the Baseline Scenario, which would experience approximately 4,190 vehicle hours of delay on SR 167 and on connecting state highways, Scenarios A and B would have approximately 85 percent fewer vehicle hours of delay. Scenario C is estimated to have 850 vehicle hours of delay on SR 167 northbound during the AM peak period. This delay would occur on SR 167 northbound and on SR 18 approaching SR 167. Scenario C would have approximately 80 percent fewer vehicle hours of delay than the Baseline Scenario in the AM peak period.

In the PM peak period, southbound SR 167 would experience fewer vehicle hours of delay with Scenarios A, B, or C than with the Baseline Scenario. The Baseline Scenario is estimated to have 7,780 vehicle hours of delay on SR 167 and on connecting off-system state highways. Scenario B is expected to have fewer vehicle hours of delay compared to Scenario A and Scenario C. With Scenario B, approximately 1,520 vehicle hours of delay are anticipated on southbound SR 167, which is approximately 80 percent less than the Baseline Scenario. Scenarios A and C would each have about 70 percent fewer vehicle hours of delay than the Baseline Scenario.

Scenario A would have an estimated 2,370 vehicle hours of delay on SR 167 southbound and on SR 18 approaching SR 167. Scenario C would have approximately 2,260 vehicle hours of delay, primarily on southbound SR 167.

The Level 2b Screening also evaluated vehicle hours of delay on arterial streets within 1 mile of SR 167. Table 4-14 summarizes the results of that evaluation.

Table 4-14. Refined Scenario Evaluation Results – Arterial Vehicle Hours of Delay

Metric	Scenario A*	Scenario B*	Scenario C*
Weekday vehicle hours of delay on arterials within 1 mile of SR 167	−11% −4,090 vehicle hours of delay	−10% −3,490 vehicle hours of delay	−8% −2,780 vehicle hours of delay

Note:
* Scenario results indicate change relative to the Baseline Scenario.

The results in Table 4-14 detail that all three Refined Scenarios would have fewer weekday vehicle hours of delay on arterials within 1 mile of SR 167 compared to the Baseline Scenario. Scenarios A and B perform similarly, largely because the dual ETL system between I-405 and SR 410/SR 512 is the major reason for the reduced arterial delay. Scenario A performs slightly better than Scenario B because of the arterial Complete Streets projects along East Valley Highway, West Valley Highway, and Meridian Avenue/SR 161. Scenario C has a lower reduction of arterial vehicle hours of delay compared to Scenarios A and B because the truck-only lane is less effective at moving people and vehicles compared to the ETL.

Freight Mobility and Reliability

The performance metrics for freight mobility relate to freight vehicle travel time and travel time reliability on SR 167 and local freight access at interchanges on SR 167.

Overall truck speeds and travel time reliability are key to freight mobility. The same general factors that affect general purpose speeds for the three Refined Scenarios also affect truck speeds. Average travel speeds for heavy trucks would be faster with Scenarios A, B, and C compared to the Baseline Scenario. In the northbound direction during the AM peak period, heavy truck speeds would be between 35 and 60 mph in Scenarios A, B, and C compared to 20 to 25 mph for heavy trucks in the Baseline Scenario. Southbound during the PM peak period, heavy trucks would travel at 25 to 50 mph in Scenarios A, B, and C, while truck speeds in the Baseline Scenario would range from 5 to 20 mph. Heavy truck speeds in Scenario C, south of SR 18, would be slightly faster than average truck speeds in Scenarios A and B in the same segment of SR 167 due to the proposed truck-only lane in Scenario C.

The Refined Scenarios would improve travel time reliability for freight vehicles compared to the Baseline Scenario. The proposed ETLs in Scenarios A, B, and C are expected to address areas of congestion that would likely occur with the Baseline Scenario in both the general purpose lanes and the ETLs. With less congestion in the general purpose lanes, freight vehicles would be able to travel the SR 167 corridor with lower and more reliable travel times when compared to the Baseline Scenario.

Scenario C includes a truck-only lane in both directions of SR 167 between SR 18 and SR 410. This lane would allow for more reliable freight travel times because heavy trucks would interact less with other vehicles,

compared to Scenarios A and B and the Baseline Scenario. However, the difference in truck travel time reliability for the truck-only lane would be limited by the interactions of vehicles entering and exiting SR 167.

The recommendation to allow medium-duty trucks in the ETLs in Scenarios A, B, and C would improve travel time reliability for medium-duty trucks, and it would also increase capacity and improve efficiency for freight vehicles in the general purpose lanes by allowing additional vehicles to use the ETLs rather than general purpose or truck-only lanes.

All three of the Refined Scenarios would improve freight access within the study area by fundamentally improving travel along SR 167. However, for local access, there is a difference between the Refined Scenarios. Scenario A would improve freight access along East Valley Highway and West Valley Highway by constructing a Complete Street along these arterials that would include turn lanes at key locations and separated pedestrian and bicycle facilities to remove some of the conflicts between the modes. Scenarios B and C include reconstruction at several key interchanges that provide access to large manufacturing and industrial areas. These interchanges include 84th Street South in Kent, Ellingson Road and Stewart Road in Pacific, and 24th Street East in Sumner.

Practical Solutions and State of Good Repair

This section summarizes the qualitative analysis of how Scenarios A, B, and C advance practical solutions and State of Good Repair. WSDOT launched its practical solutions planning and design framework in 2020 as a way to implement mobility improvements that are more cost effective and that better integrate into their surroundings. All three Refined Scenarios have been developed in accordance with the Practical Solutions Framework and are of a scale that is consistent with other large WSDOT capital programs (the projected costs for the three Refined Scenarios range from $4.5-$6 billion). This approach is in contrast to the 2008 SR 167 Corridor Plan that was focused on larger-scale general capacity lane expansion and interchange projects that proved to be very difficult to finance. The prior plan also lacked any substantiative multimodal investments or input from vulnerable populations and overburdened communities.

Considering that the Refined Scenarios are similar in scale to other programs WSDOT has implemented in the past, it is also reasonable to assume the projects and strategies outlined in the scenarios can also be maintained in a State of Good Repair. Some of the projects identified in the Refined Scenarios could be implemented in time with infrastructure that will be reaching the end of its service life over the coming years, such as bridges built during SR 167's initial construction period, pavement, and communications, tolling, and TSMO infrastructure.

Eliminated Projects and Strategies

Based on the travel demand model and evaluation results, several projects and strategies were eliminated from further consideration and were not carried forward into the draft Final Study Recommendations, as summarized in Table 4-15.

Table 4-15. Summary of Key Projects and Strategies Eliminated During Level 2b Screening

Project or Strategy	Reason for Elimination
Truck-only Lane on SR 167	Provided only a marginal freight travel time reliability benefit, and it did not reduce traffic congestion or improve transit performance as much as a the dual ETLs.
Full Reconstruction of the SR 167/SR 18 and SR 167/SR 512/SR 410 Interchanges	High costs, high environmental impacts, property impacts, and smaller-scale, practical solutions that achieved similar improvements in congestion relief and freight access.
20 Miles of Sidewalk Gap Closure Outside of Regional Centers	Limited alignment with the regional land use strategy, high costs, limited ability to change travel patterns, and potential property and environmental impacts.
New General Purpose Capacity on Arterial Streets	Concerns raised by jurisdictions related to attracting additional traffic to city streets.
TSMO on Arterial Streets	Need to focus more resources on interchange improvements to/from SR 167; however, WSDOT supports TSMO strategies overall as a low cost way to improve mobility for all modes.
Complete Streets Improvements on Portions of East Valley Highway	Eliminated south of Terrace View Drive because of concerns raised by the City of Sumner about the ability to maintain additional facilities over time given the unstable hillside adjacent to the road.
New Active Mode Crossings of SR 167	WSDOT's Complete Streets policy will add low-stress facilities on the majority of all existing SR 167 crossings as ETL and interchange projects that require reconstruction. Areas where there are long stretches between existing crossings do not connect to any community-identified destinations and often have environmental barriers (wetlands, rivers, etc.).

Chapter 5. Next Steps

Using the results from the Level 2b Screening analysis, the next step in the process is for the project team to work with the TAC, EAC, and PAC, along with key partners, to develop draft Final Study Recommendations for inclusion in the SR 167 Master Plan PEL Study. WSDOT will share the Draft Final Study Recommendations during the spring 2023 online open house to gather input from the public.

Following feedback and review of the Draft Final Study Recommendations, the Final Study Recommendations will be developed. These Final Study Recommendations will align with the conclusion of the PEL study prepared for the SR 167 Master Plan.

As none of the projects and strategies that will be included in the Final Study Recommendations have dedicated funding, another future step will be to develop an implementation plan. This step will involve further engineering, analysis, and refined cost estimates that can help inform the legislature about next steps to fund, design and to build the projects that will be included in the SR 167 Master Plan.