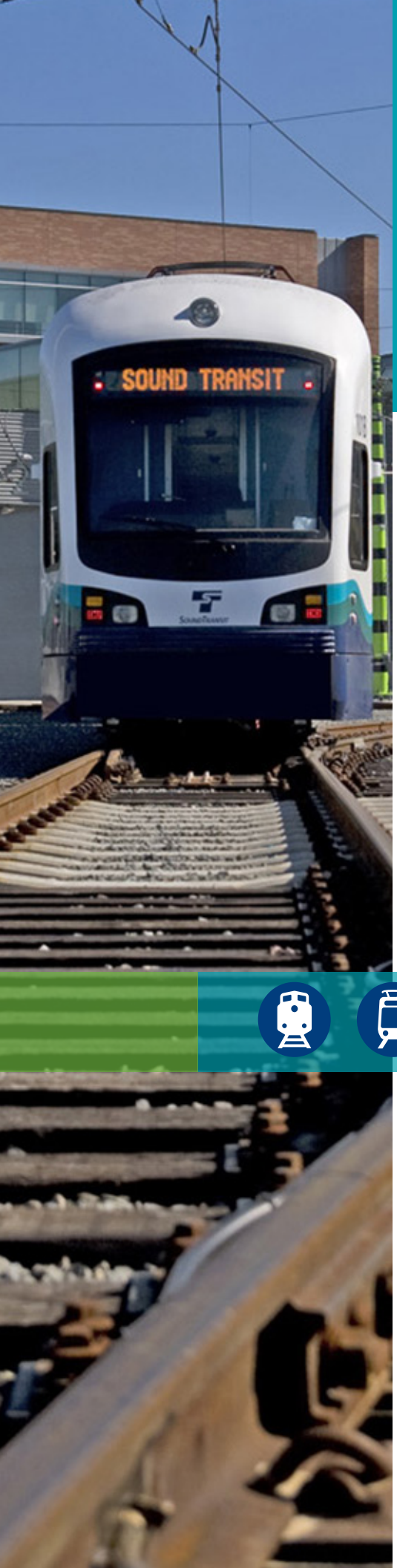


EXECUTIVE SUMMARY

INTRODUCTION

Sound Transit is updating its Regional Transit Long-Range Plan, which outlines the agency's vision for a high-capacity transit (HCT) system serving the urban areas of Snohomish, King, and Pierce Counties. The plan includes corridors for light rail, commuter rail, and regional express bus/bus rapid transit. The plan focuses on the functional elements of the system—how HCT and supporting services will continue to help meet the transportation needs created by future population and employment growth in the region. Sound Transit is in the process of completing the second phase of its investments, known as Sound Transit 2 (ST2), consistent with the current 2005 Long-Range Plan. An updated Long-Range Plan will look further ahead by addressing regional transit needs that remain after the ST2 system plan is fully implemented.

As required by the Washington State Environmental Policy Act, this Final Supplemental Environmental Impact Statement (SEIS) supports Sound Transit's current planning and decision-making efforts for an updated Long-Range Plan and future transit system plan. The Final SEIS presents a plan-level environmental review of two Long-Range Plan alternatives: the Current Plan Alternative (the No Action Alternative) and the Potential Plan Modifications Alternative (the Action Alternative). Each alternative considers broad actions throughout the region—transit modes, corridors, types of supporting facilities, programs, and policies. Upon completion of the environmental review process, the Sound Transit Board will decide whether to revise its Long-Range Plan.

History and Background of the Regional Transit Long-Range Plan

In 1996, Sound Transit developed and adopted its *Regional Transit Long-Range Vision*, which later evolved into the agency's Long-Range Plan. At the same time, Sound Transit adopted *The Ten-Year Regional Transit System Plan*, which became known as *Sound Move*. *Sound Move* was the first phase of investments for implementing the Long-Range Vision. The current Long-Range Plan was adopted in 2005 as an update to the original Long-Range Vision. The second phase of investments, the ST2 System Plan, was subsequently adopted in 2008 and is in the process of being implemented.

Sound Transit's Long-Range Plan is a fiscally unconstrained plan that includes services and facilities to connect the region's growth centers with high-capacity transit. The regional transit system currently includes light rail, commuter rail, bus rapid transit (BRT), and regional express bus services and facilities. It also includes programs and policies that support these services. Sound Transit's services are integrated with local transit service, providing a "coordinated system of services" to make it easy to move around the region.

The purpose of the Long-Range Plan Update is to define a regional HCT system that could effectively and sustainably serve the mobility needs of the central Puget Sound region through 2040 and beyond.

The envisioned network of transit services described in the Long-Range Plan is at a corridor-wide level; specific routes or alignments are not defined. The Long-Range Plan has been implemented in phases through voter-approved funding programs, first through *Sound Move* and then ST2, which were both fiscally constrained. That is, they were limited by the funds projected to be available.

Environmental Review Process

This Final SEIS is part of a phased environmental review process. It supplements and builds on the *Regional Transit System Plan Final EIS* of 1993 (JRPC 1993) and the *Final Supplemental Environmental Impact Statement on the Regional Transit Long-Range Plan* of 2005 (Sound Transit 2005), which were prepared to support Sound Transit's previous long-range planning efforts. This SEIS process precedes any future project-level environmental review for individual projects that may be implemented under future funding programs once ST2 is completed.

This Final SEIS evaluates the potential transportation and environmental effects of implementing the Current Plan Alternative and the Potential Plan Modifications Alternative using a 2040 planning horizon. Corridors in the Potential Plan Modifications Alternative could be selected in whole, or in part, by the Board when updating the plan.

Along with other information developed through the update process (e.g., high-capacity transit corridor studies—see page S-13), this SEIS will support the decisions of the Sound Transit Board to:

- Ensure that the Long-Range Plan continues to meet Sound Transit's goals
- Make revisions to update the Long-Range Plan
- Adopt an HCT system plan identifying the next phase of capital investments and improvements

A Draft SEIS on the Long-Range Plan Update was issued for public review on June 13, 2014 with a 45-day comment period. During the comment period, Sound Transit held six public hearings at locations throughout the Sound Transit District to solicit comments (see Appendix B of the Final SEIS for more information on agency coordination and public outreach during the SEIS process). Sound Transit received comments from over 560 commenters, including public agencies, jurisdictions, tribes, organizations, and individuals. A petition with 776 signatures was also received. An overview of comments received on the Draft SEIS is provided in Chapter 5 of the Final SEIS. Copies of all comments received at the public hearings (via comment forms and transcribed verbal testimony) and through emails and letters are included in Appendix L of the Final SEIS along with responses to substantive comments.

Based on the comments received, the SEIS was revised to include: modifications to the revised goals and objectives for consideration; updates on technical information including information on local plans; adjustment of corridors in Tacoma and Pierce County studied as part of the Potential Plan Modifications

Alternative; and, the addition of new corridors that were studied to the same level of detail as other corridors in the Potential Plan Modifications Alternative. New light rail corridors studied in the Final SEIS include, but are not limited to, a new crossing of Lake Washington from Sandpoint to Redmond, downtown Tacoma to Tacoma Community College, Tacoma Mall to University Place, and Issaquah to the Issaquah Highlands. See Chapter 2 of the Final SEIS for a complete list of corridors.

Purpose and Need

Purpose

The purpose of the Long-Range Plan Update is to define a regional HCT system that could effectively and sustainably serve the mobility needs of the central Puget Sound region through 2040 and beyond, providing an alternative to travel by automobile and the congested freeway network. The Long-Range Plan Update will consider the projected regional population, employment, and transportation growth. This will be done in coordination with, and with the support of, the growth management strategies established in regional land use, transportation, and economic development plans.

Need

An update to Sound Transit's Long-Range Plan is needed to achieve the following:

- **Make it consistent with updated local and regional plans**
  Sound Transit's Long-Range Plan is a part of the larger regional transportation picture and feeds into *Transportation 2040*, the Puget Sound Region's Transportation Plan. Since the 2005 Long-Range Plan was adopted, *Transportation 2040*, *VISION 2040,* and other local plans have been updated by the Puget Sound Regional Council, the region's federally recognized metropolitan planning organization. County and city comprehensive plans throughout the region reinforce the need for HCT investments to support new and continued population and employment growth, as well as to provide for vibrant urban communities that offer alternatives to travel via the automobile. Sound Transit's Long-Range Plan Update will help support these plans.

- **Incorporate current population and employment forecasts**
  From a base of more than 2.8 million today, the region's population is expected to grow by over 30 percent to more than 3.7 million in 2040. During

the same period, employment is expected to grow even faster, from approximately 1.5 million jobs to over 2.5 million, an increase of 62 percent. The projected increases in population and jobs in the Plan area will result in more congestion. The Long-Range Plan update will address appropriate HCT service to support the anticipated growth.

- **Identify potential modifications to the plan that could serve as a basis for the next phase of HCT improvements to continue to address long-term mobility needs**
  Since the Long-Range Plan was last updated, several Sound Transit projects have been in varying stages of planning, design, and construction. Sound Transit's system ridership has grown almost 155 percent and is expected to continue to increase. An update to the Long-Range Plan may identify potential new or modified HCT corridors and services. It may also clarify modal choices and services for HCT corridors in the current plan. These updates would guide Sound Transit in the next phase of HCT system planning.

Goals

The goals presented in the 2005 Long-Range Plan can be summarized as follows:

- Provide a public transportation system that helps ensure long-term mobility, connectivity, and convenience for residents of the Puget Sound region for generations to come
- Preserve communities and open space
- Contribute to the region's economic vitality
- Preserve our environment
- Strengthen communities' use of the regional transit network

The Sound Transit Board may consider revisions to the 2005 goals and objectives as they update the Long-Range Plan following issuance of the Final SEIS.

Alternatives Considered in the SEIS

Two alternatives have been developed for evaluation in this Final SEIS: the Current Plan Alternative (the No Action Alternative) and the Potential Plan Modifications Alternative (the Action Alternative). These alternatives include a wide range of high-capacity corridors and modes for purposes of updating the fiscally unconstrained Long-Range Plan.

Development of alternatives

Three primary HCT transit technologies and supporting services were studied in this Final SEIS—light rail, commuter rail, and regional express bus/BRT. In addition, the Final SEIS also looked at streetcar services. Each of these modes is further defined in Chapter 2 of the Final SEIS.

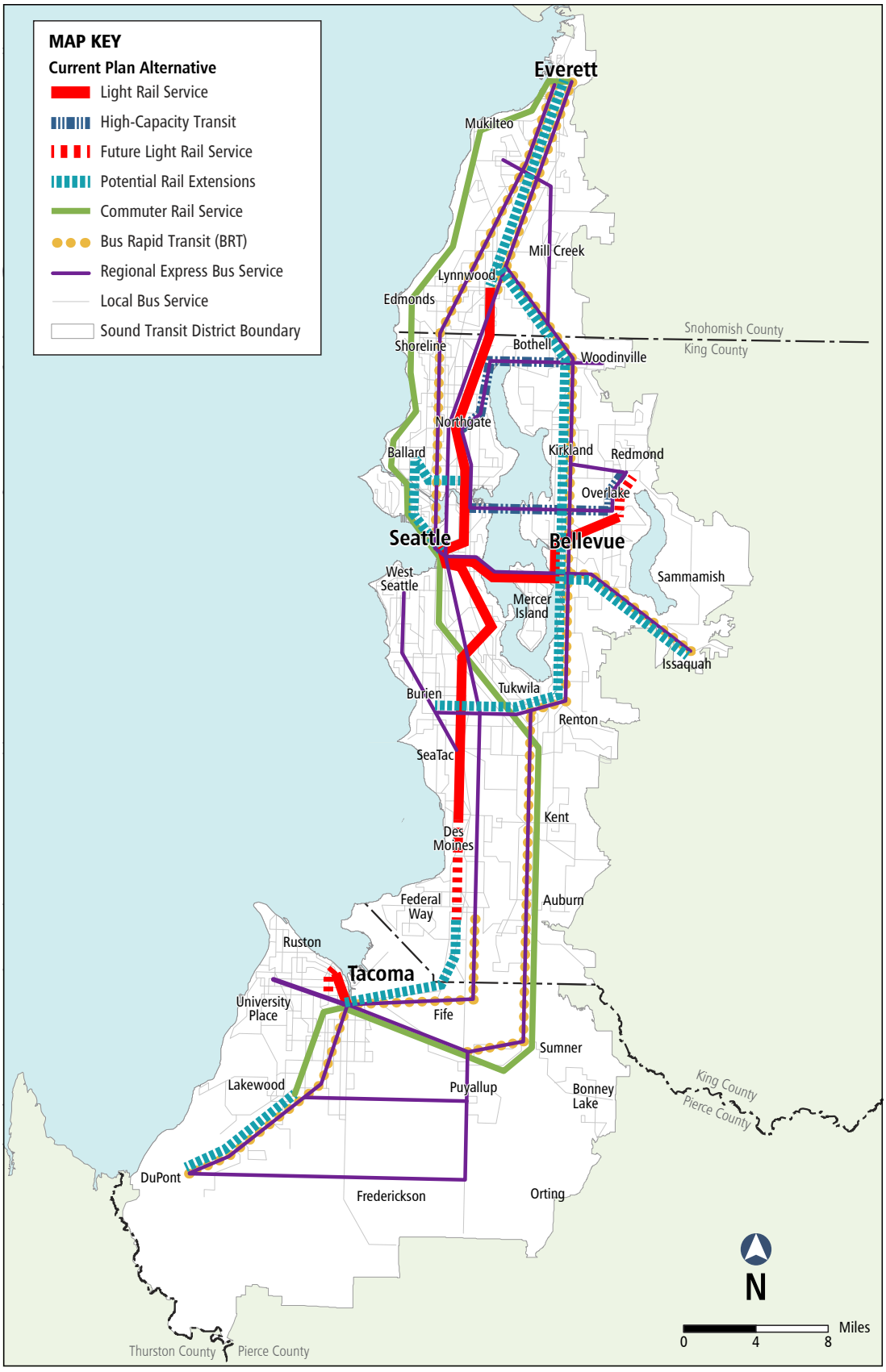
Sound Transit conducted a scoping process for the Long-Range Plan Update SEIS in fall 2013. The more than 5,000 comments received helped Sound Transit determine which alternatives and environmental issues would be studied in the Draft SEIS. The *Scoping Summary Report* for the 2014 Long-Range Plan Update presents more detailed information about the comments received.

Many suggestions made during scoping were related to corridors and specific services or facilities within HCT corridors already in the Current Plan Alternative. These corridors and "representative projects" (see page S-9) were presumed to be developable under the Current Plan Alternative. Suggestions for new transit corridors were put through a screening process in order to develop the Potential Plan Modifications Alternative. The screening criteria used during this process were based on the purpose and need for the Long-Range Plan Update and the goals and objectives described in Chapter 1 of the Final SEIS.

Suggestions for new or revised transit corridors received during the Draft SEIS comment period were put through the same screening process as suggestions received during scoping. Suggestions that met the screening criteria were added to the Potential Plan Modifications Alternative and were evaluated in the Final SEIS.

Current Plan Alternative (No Action Alternative)

The No Action Alternative, referred to in this Final SEIS as the *Current Plan Alternative*, consists of the current 2005 Long-Range Plan plus the Sound Transit Board actions taken as part of the development and implementation of the ST2 program. Key Board decisions that affected corridors in the Long-Range Plan are listed in Chapter 2 of the Final SEIS.



Source: Sound Transit 2014

Figure S-1 Current Plan Alternative

Figure S-1 shows the general corridors that would be served as part of the Current Plan Alternative. For purposes of analyzing potential impacts on the transportation system and on transit ridership, all of the corridors shown in Figure S-1 were included as part of the Current Plan Alternative. When analyzing potential environmental impacts for this alternative, the Final SEIS focuses primarily (but not exclusively) on those corridor sections that do not yet have service in operation, are not yet under construction, or have otherwise not begun project-level environmental reviews. Those corridors are shown in Figure S-2.

On Figure S-2, the light rail, commuter rail, and bus corridors in operation, under construction, or in project-level environmental review are screened back because they have already been, or are currently, subject to project-level environmental review.

Light rail

Some corridors previously designated in the 1996 and 2005 Long-Range Plans as potential rail extensions were subsequently funded through *Sound Move* and ST2. Light rail elements of the Current Plan Alternative that were funded through *Sound Move* and ST2 and are in operation, under construction, or in project-level environmental review include the following:

- Central Link from Sea-Tac Airport to Downtown Seattle
- S. 200th Link Extension from Sea-Tac Airport south to S. 200th Street
- University Link Extension from Downtown Seattle to the University of Washington
- Northgate Link Extension from Husky Stadium to Northgate
- Lynnwood Link Extension from Northgate to Lynnwood
- East Link light rail from Seattle to Downtown Redmond
- Federal Way Link Extension from South 200th Street to the Federal Way Transit Center
- Tacoma Link light rail from Tacoma Station to Downtown Tacoma and an extension to the west
- Operations and maintenance facilities in Seattle and Tacoma and a satellite facility in either Lynnwood or Bellevue

Some of the remaining corridors in the Current Plan Alternative were identified as "Potential Rail Extensions" in the 2005 Long-Range Plan but have

Current Plan Alternative

LIGHT RAIL

Potential light rail corridors in the Current Plan Alternative. Potential rail extensions, assumed light rail.

- A Tacoma to Federal Way
- B Burien to Renton
- C Bellevue to Issaquah along I-90[1]
- D Renton to Lynnwood along I-405
- E Renton to Woodinville along Eastside Rail Corridor
- F Downtown Seattle to Ballard[1]
- G Ballard to University of Washington[1]
- H Lynnwood to Everett

COMMUTER RAIL

Potential commuter rail corridor in the Current Plan Alternative. Potential rail extension, assumed commuter rail.

- I DuPont to Lakewood
- J Renton to Woodinville along Eastside Rail Corridor

HCT (mode not specified)

- K University of Washington to Redmond via SR 520[1]
- L Northgate to Bothell on SR 522

REGIONAL EXPRESS BUS/BUS RAPID TRANSIT

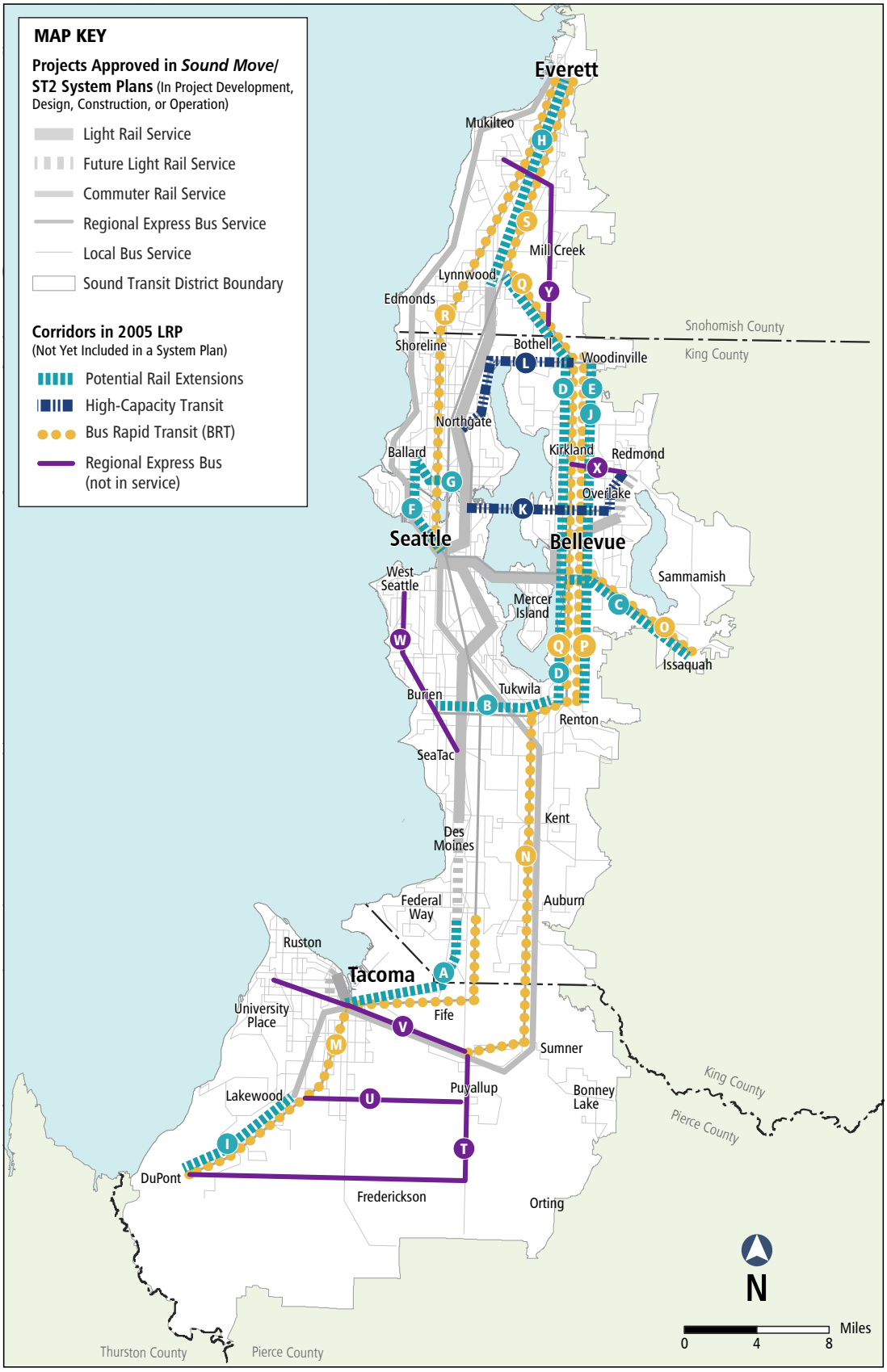
Bus rapid transit (BRT)

- M Federal Way to DuPont along I-5
- N Renton to Puyallup along SR 167
- O Bellevue to Issaquah along I-90
- P Renton to Woodinville along Eastside Rail Corridor
- Q Renton to Lynnwood along I-405
- R Seattle to Everett along SR 99
- S Lynnwood to Everett along I-5

Regional express bus

- T Puyallup to DuPont via Cross Base Highway
- U Puyallup to Lakewood
- V Puyallup to Tacoma
- W SeaTac to West Seattle
- X Redmond to Kirkland
- Y North Bothell to Mill Creek to Mukilteo

[1] Portions of these corridors could be constructed in tunnels.



Source: Sound Transit 2014

Figure S-2 Current Plan Alternative—corridors analyzed in this Final SEIS

not yet been included in a system plan for project development or construction. Therefore, decisions on mode in those corridors have not yet been made but could be light rail. For purposes of analyzing potential impacts associated with the Current Plan Alternative, corridors A through H reflect potential rail extensions that were analyzed as light rail corridors (see the Current Plan Alternative list on page S-6 and Figure S-2). Some of these corridors were also evaluated for commuter rail and/or BRT (see the "Commuter Rail" and "Regional Express Bus/BRT" sections below).

Light rail corridors would have similar service characteristics as the Link light rail system implemented as part of *Sound Move* and ST2 and would operate primarily on exclusive rights-of-way or on surface streets with protected rights-of-way.

Commuter rail

Sound Transit currently operates Sounder commuter rail service from Everett to Lakewood.

Some of the corridors in the Current Plan Alternative identified as "Potential Rail Extensions" in the 2005 Long-Range Plan have not yet been included in a system plan for construction (or the project development phase). These corridors, I and J, are shown in Figure S-2 and the Current Plan Alternative list on page S-6. Since they could be implemented as commuter rail, they were evaluated as such for purposes of analyzing potential impacts associated with the Current Plan Alternative.

Regional express bus/bus rapid transit

Numerous corridors are identified for regional express bus, BRT, or—in most cases—both under the Current Plan Alternative. Sound Transit currently operates 26 regional express bus (ST Express) routes, many of which operate in high-occupancy vehicle (HOV) lanes.

For purposes of analyzing potential environmental impacts for the Current Plan Alternative, this Final SEIS focuses on the regional express bus and BRT corridors not yet implemented and includes corridors M through Y.

For BRT corridors M through S, ST Express bus service currently operates in all of these corridors except corridor P, which is the Eastside Rail Corridor east of Seattle. Each of these corridors is also shown as a BRT corridor in the 2005 Long-Range Plan and therefore could also be considered for higher performing BRT operating within exclusive rights-of-way where feasible.

Corridors T through Y of the Current Plan Alternative are identified exclusively for regional express bus service (no BRT) in the 2005 Long-Range Plan but are not yet in service.

High-capacity transit

The Current Plan Alternative includes two corridors identified in the 2005 Long-Range Plan as "HCT" without specifying a particular mode. These corridors could be implemented as light rail or as BRT. For purposes of analyzing potential impacts associated with the Current Plan Alternative, this Final SEIS evaluates these two HCT corridors shown on the Current Plan Alternative list on page S-6 and Figure S-2, as both light rail and BRT.

Similar to the current Sound Transit system operating today, regional express bus/BRT service could be implemented as an interim HCT mode for all or portions of potential light rail corridors until funding becomes available.

Representative projects, programs, and policies

Stations, park and rides, operations and maintenance facilities, access improvements, and other supporting transit facilities may be implemented along any of the Current Plan Alternative corridors, whether or not they have been implemented as part of *Sound Move* or ST2. This includes new track, infill stations or other infrastructure that may be needed along routes already in service. The 2005 SEIS referred to these as "representative projects" since they represent the types of projects that could be built along any existing or future corridor. Building from the list in the 2005 Long-Range Plan SEIS, an updated list of representative projects for the Current Plan Alternative can be found in Appendix A of the Final SEIS. These types of projects and their potential environmental impacts are broadly discussed in the Final SEIS.

The types of representative projects are as follows, listed below by mode:

- **Light rail**—Service expansion, transit stations and park-and-and ride facilities, pedestrian and bicycle access and safety, and operations and maintenance facilities
- **Commuter rail**—Service expansion, new track, transit stations and park-and-ride facilities, pedestrian and bicycle access and safety, and operations and maintenance facilities
- **Regional express bus/bus rapid transit**—Service expansion or revised bus routes, transit stations and park-and-and ride facilities, HOV direct access, transit priority improvements, pedestrian and bicycle access and safety, rider amenities, grade or barrier separation, and operations and maintenance facilities

The following programs and policies have been adopted by the Sound Transit Board and would continue to remain in effect as part of the Current Plan Alternative:

- Transit-Oriented Development Policy (December 2012)
- Sustainability Plan (June 2011)
- System Access Policy (March 2013)
- Updated Bicycle Policy (April 2011)
- Environmental Policy (April 2004)

Potential Plan Modifications Alternative (Action Alternative)

The Potential Plan Modifications Alternative assumes implementation of all the elements of the Current Plan and adds HCT corridors and services that are potential modifications to the Current Plan. These corridors, shown in Figures S-3 and S-4, represent a menu of options that the Sound Transit Board could choose from when updating the Long-Range Plan.

Light rail

New light rail corridors considered under the Potential Plan Modifications Alternative would have the same characteristics as light rail corridors under the Current Plan Alternative.

Commuter rail

The additional commuter rail segments would have similar physical and operating characteristics to the existing Sounder line. There are existing rail lines along Corridors 19 and 21, while there are none along Corridor 20.

Regional express bus/bus rapid transit

The Potential Plan Modifications Alternative includes many new regional express and/or BRT corridors.

High-capacity transit corridors

Some suggestions for new HCT corridors or service did not specify a mode and are numbered as corridors 22, 23, 24, 25, and 26 on Figure S-3.

Similar to HCT corridors in the Current Plan Alternative, these new HCT corridors were evaluated as both BRT and light rail corridors.

Streetcar

Streetcar services were identified in the Potential Plan Modifications Alternative, typically as options to connect areas to regional transit hubs. Streetcars as

Potential Plan Modifications Alternative

LIGHT RAIL

1 Downtown Seattle to Magnolia/Ballard to Shoreline Community College
2 Downtown Seattle to West Seattle/Burien[1]
3 Ballard to Everett Station via Shoreline Community College, Aurora Village, Lynnwood
4 Everett to North Everett
5 Lakewood to Spanaway to Frederickson to South Hill to Puyallup
6 DuPont to downtown Tacoma via Lakewood, Tacoma Mall
7 Puyallup/Sumner to Renton via SR 167
8 Downtown Seattle along Madison Street
9 Tukwila to SODO via Duwamish industrial area
10 North Kirkland or University of Washington Bothell to Northgate via SR 522
11 Ballard to Bothell via Northgate
12 Mill Creek, connecting to Eastside Rail Corridor
13 Lynnwood to Everett, serving Southwest Everett Industrial Center (Paine Field and Boeing)
14 UW to Sand Point to Kirkland to Redmond[2]
15 Downtown Tacoma to Tacoma Community College[3]
16 Tacoma Mall to University Place[3]
17 Steilacoom to Ruston via University Place[3]
18 Issaquah to Issaquah Highlands

COMMUTER RAIL

19 Puyallup/Sumner to Orting
20 Lakewood to Parkland
21 Tacoma to Frederickson

HCT (mode not specified)

22 Downtown Tacoma to Parkland
23 Tukwila Sounder station to downtown Seattle via Sea-Tac Airport, Burien, West Seattle
24 Downtown Seattle to Edmonds via Ballard, Shoreline Community College
25 West Seattle to Ballard via Central District, Queen Anne
26 Edmonds to Lynnwood Link

REGIONAL EXPRESS BUS/BUS RAPID TRANSIT

Bus rapid transit (BRT)

27 Puyallup vicinity, notably along Meridian Avenue
28 Issaquah to Issaquah Highlands
29 Kent to Sea-Tac Airport
30 Downtown Seattle along Madison Street

Regional express bus/BRT (mode not specified)

31 Issaquah Highlands to Overlake via Sammamish, Redmond
32 Tacoma to Bellevue
33 Puyallup to downtown Seattle via Kent, Rainier Valley
34 Lakewood to Spanaway to Frederickson to South Hill to Puyallup
35 Tacoma to Frederickson

Regional express bus

36 Renton to downtown Seattle
37 University of Washington Bothell to Sammamish via Redmond
38 University Place to Titlow Beach to downtown Tacoma
39 Renton (Fairwood) to Eastgate via Factoria
40 145th Street from I-5 to SR 522
41 North Kirkland to downtown Seattle via SR 520
42 Woodinville to Bellevue
43 Woodinville to Everett
44 Connection to Joint Base Lewis-McChord
45 Puyallup/Sumner to Orting
46 Kent to Kent-Des Moines Station
47 Lynnwood to Everett, serving Southwest Everett Industrial Center (Paine Field, Boeing)

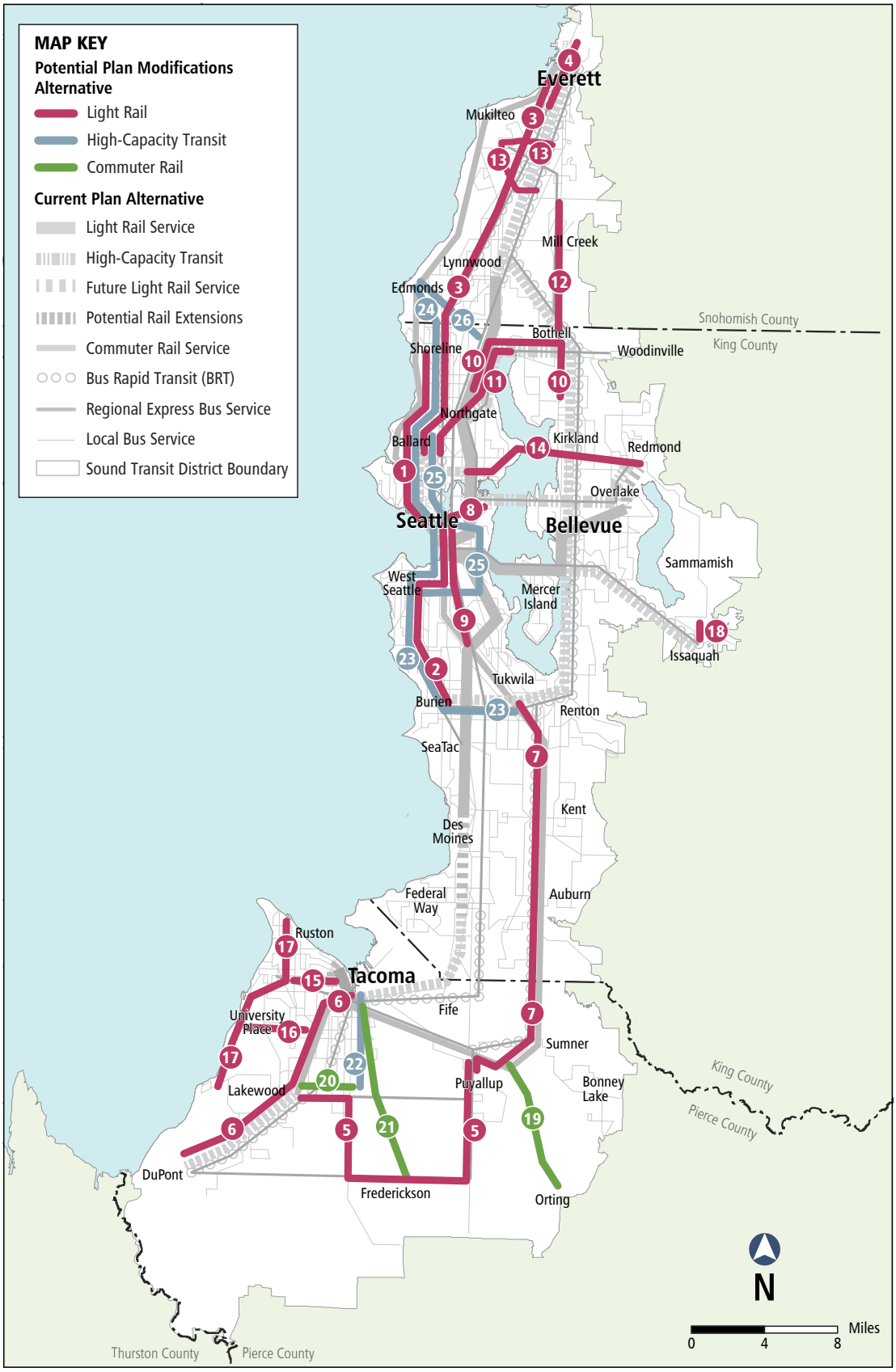
STREETCAR

Streetcar corridors were identified in the Potential Plan Modifications Alternative, typically as options to connect areas to regional transit hubs.

[1] A potential new tunnel under downtown Seattle could also or alternatively support a Ballard-to-Seattle light rail line, which is included in the Current Plan Alternative.

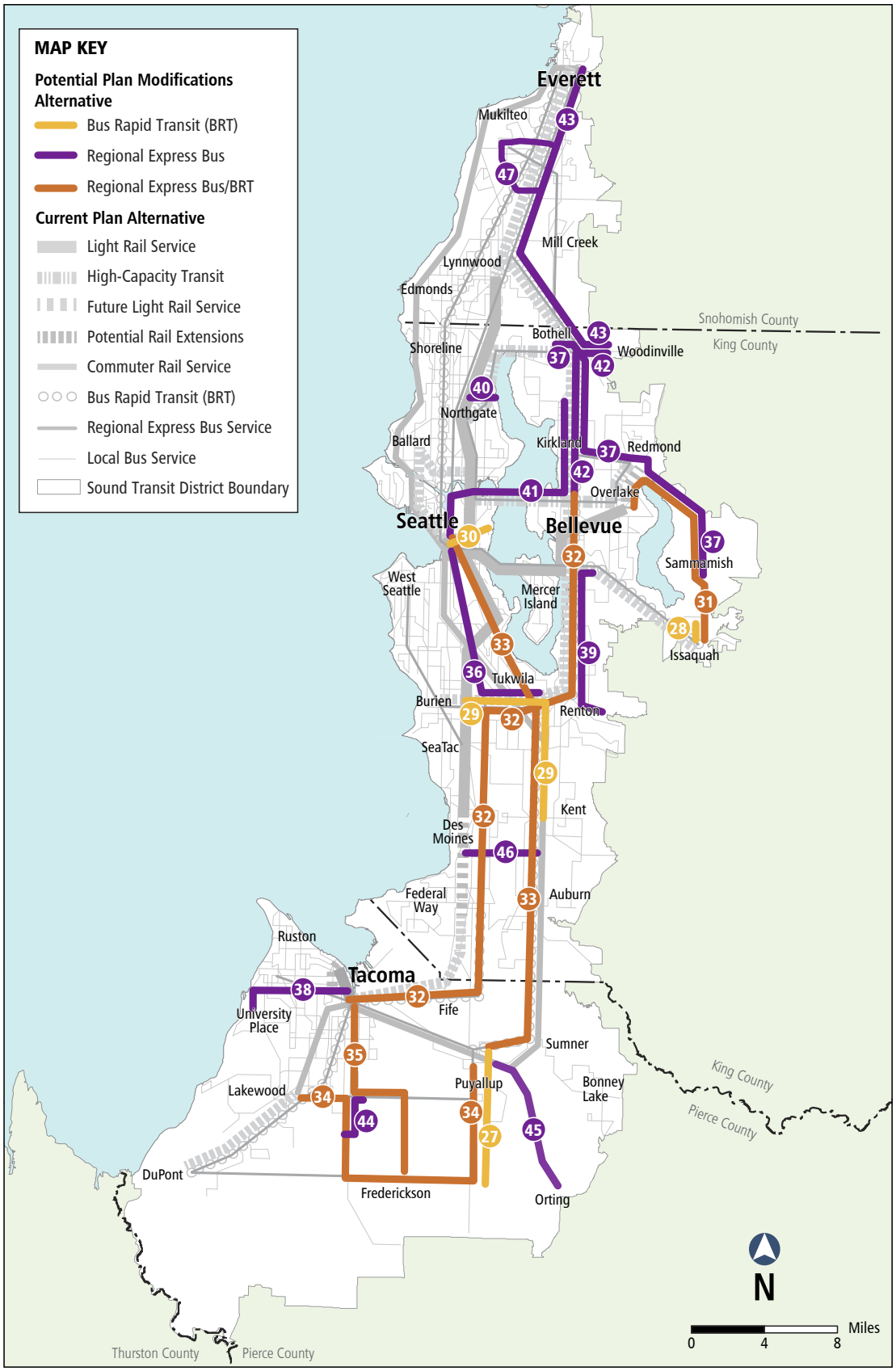
[2] Portions of this corridor could be constructed in tunnels.

[3] These corridors could connect in with Tacoma Link.



Source: Sound Transit 2014

Figure S-3 Potential Plan Modifications Alternative—light rail, commuter rail, and high-capacity transit



Source: Sound Transit 2014

Figure S-4 Potential Plan Modifications Alternative—regional express bus and bus rapid transit

typically operated may not be viable as an HCT technology; however, they may be considered if they operate principally on exclusive rights-of-way and provide a substantially higher level of passenger capacity, speed, and service frequency than traditional public transportation systems operating principally in general purpose roadways.

Representative projects, programs, and policies

The types of representative projects or support facilities described by mode for the Current Plan Alternative could similarly be implemented along any of the Potential Plan Modifications Alternative corridors. A list of representative projects for the Potential Plan Modifications Alternative can be found in Appendix A of the Final SEIS.

The Potential Plan Modifications Alternative could include new programs and policies or it could build upon existing programs and policies. For example, it could include new initiatives related to:

- System access
- Demand management
- Research and technology

High-capacity transit corridor studies

ST2 directed Sound Transit to conduct the following high-capacity transit corridor studies:

- Ballard to Downtown Transit Expansion Study
- Central to East HCT Corridor Study
  - Ballard to University District
  - University District to Kirkland to Redmond
  - Kirkland-to Bellevue to Issaquah
  - I-405 BRT
  - Eastside Rail Corridor
- Federal Way to Tacoma HCT Corridor Study
- Lynnwood to Everett HCT Corridor Study
- South King County HCT Corridor Study
  - Downtown Seattle to West Seattle to Burien
  - Burien to SeaTac to Renton to Tukwila

All of the corridors listed above were also evaluated in the Final SEIS as part of the Current Plan Alternative (except Downtown Seattle to West Seattle, which was evaluated as part of the Potential Plan Modifications Alternative). However, the HCT corridor studies and the Long-Range Plan Update SEIS evaluated potential transit improvements in these corridors at a different scale. The HCT corridor studies evaluated options within a more localized area and in greater detail, while the Final SEIS generally identified plan-level alternatives and evaluated their impacts at a broader regional level. To the extent possible, the Final SEIS incorporated information available from these HCT corridor studies.

Key Transportation Impacts

Impacts of plan alternatives on total transit ridership

This section describes the impacts on total transit ridership of two scenarios: 1) the Current Plan Alternative as compared to the Sound Transit system implemented through completion of ST2, and 2) the Potential Plan Modifications Alternative compared to the Current Plan Alternative. The description of impacts focuses on how corridors included in the alternatives affect transit ridership at selected screenlines shown on Figure S-5.

Current Plan Alternative

When compared to completion of ST2, the corridors included in the Current Plan Alternative would expand HCT service to communities throughout the Plan area (Sound Transit's service area).

Screenlines represent a method to measure and show changes in ridership for multiple routes within a corridor. The screenlines discussed in this Executive Summary are intended to capture the potential effects on transit volumes of HCT elements included in the Current Plan Alternative and the Potential Plan Modifications Alternative.

The changes in ridership resulting from the Current Plan Alternative when compared to completion of ST2 reflect the relative effectiveness of Plan corridors in attracting riders.

One major change under the Current Plan Alternative is reduced transit travel times as compared to ST2. These changes in transit travel times result from exclusive right-of-way for transit as compared to mixed operations in ST2. The reduced travel times could also result from more direct transit connections under the Current Plan Alternative as compared to connections in ST2. Examples of reduced transit travel times include:

- Issaquah to Bellevue central business district (CBD)
- Tukwila to Bellevue CBD
- Lakewood to Tacoma CBD
- Ballard to Seattle CBD
- Burien to Bellevue CBD
- Federal Way to Tacoma CBD
- Tukwila to Bellevue CBD
- SeaTac to Tacoma CBD
- Ballard to Everett CBD
- Kirkland to Kent CBD

The reduced transit travel times would result in transit ridership increases. The extent of ridership changes in the year 2040 from new corridors would vary substantially, ranging from approximately 15,000 additional transit riders per day to less than 3,000 additional transit riders per day at selected screenlines.

The effectiveness of a corridor in terms of increasing ridership could be particularly high if it has one or more of the following characteristics:

- It is resulting in a major increase in daily transit ridership (5,000 or greater) at one or more screenlines
- It is resulting in transit ridership increases at more than one screenline
- It is the only corridor affecting ridership changes at a screenline; at most screenlines, multiple corridors are affecting transit ridership changes

The following information summarizes the relative effectiveness of the corridors in the Current Plan Alternative in influencing transit ridership changes. The corridors, shown on Figure S-2, are in order of daily transit ridership increases.

Corridor A—Light rail between Tacoma and Federal Way: Corridor A would contribute to a major increase in daily transit ridership (15,000) at King/Pierce Line West (screenline 16). Corridor A also would increase ridership (10,000) at North of S 128th Street (screenline 24), as riders continue from Tacoma to Seattle.

Corridor B—Light rail between Burien and Renton: On its own, this corridor would result in a major increase in daily transit ridership (10,000) at West of SR 167/Rainier Avenue (screenline 14). Corridor B would also contribute to the increase in daily transit ridership (10,000) at North of S 128th Street (screenline 24).

Corridor D—Light rail between Renton and Lynnwood along I-405: Corridor D would contribute to transit ridership increases (5,000) at King/Snohomish

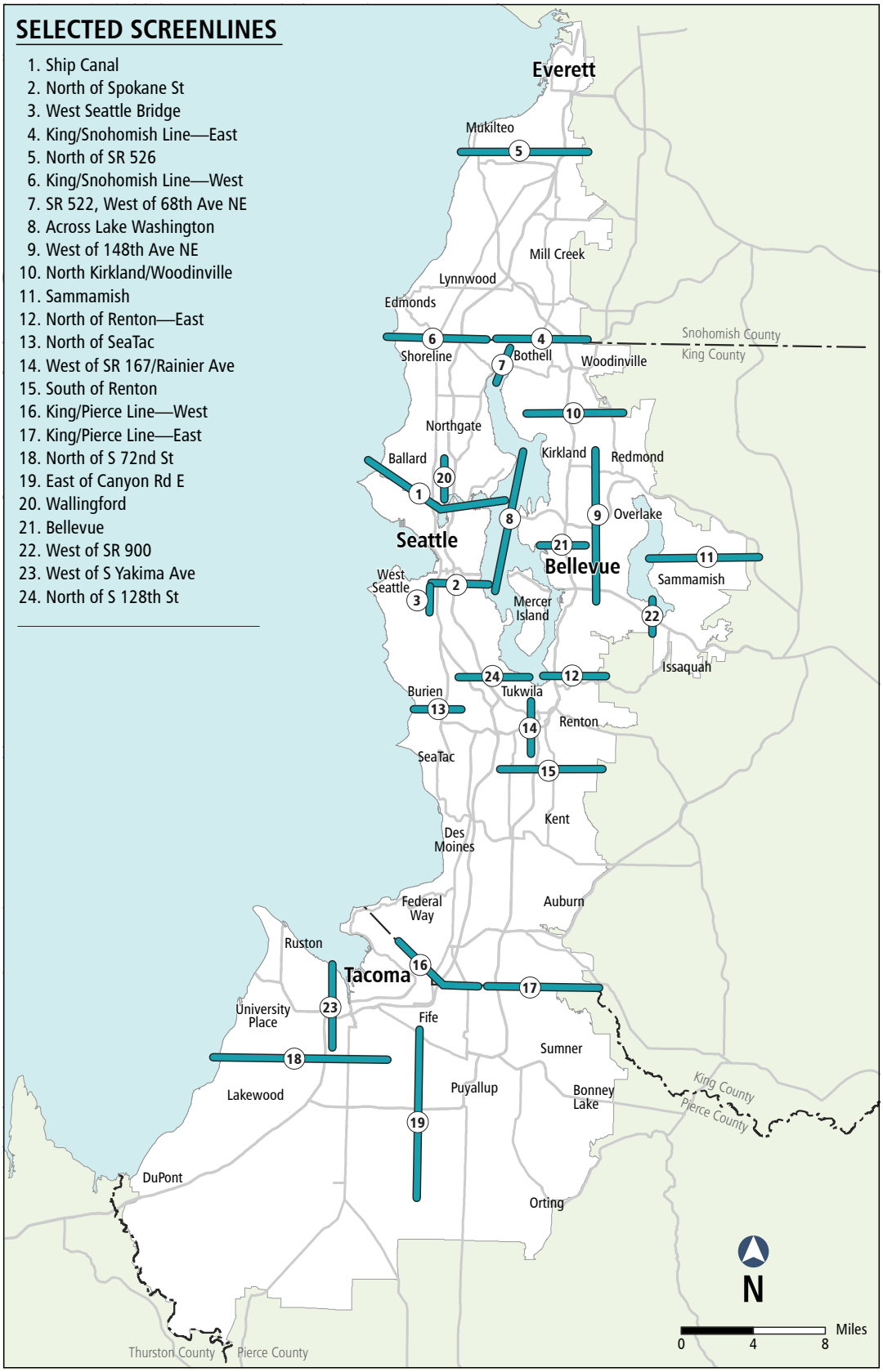


Figure S-5 Selected Screenlines

Line East (screenline 4). In addition, corridor D would contribute to transit ridership increases (5,000) at North Kirkland/Woodinville (screenline 10) and North of Renton (screenline 12).

Corridor E—Light rail between Renton and Woodinville along Eastside Rail Corridor: Corridor E would contribute to transit ridership increases (5,000) at North Kirkland/Woodinville (screenline 10) and North of Renton (screenline 12).

Corridor F—Light rail between Downtown Seattle and Ballard: Corridor F would contribute to the major increase in daily transit ridership of 10,000 at Ship Canal (screenline 1).

Corridor G—Light rail between Ballard and University of Washington: Corridor G would result in a major increase (15,000) in daily transit ridership at Wallingford (screenline 20).

Corridor H—Light rail between Lynnwood Transit Center and Everett: Corridor H would contribute to a major increase in transit ridership (10,000) at the Ship Canal (screenline 1) and at the King/Snohomish Line West (screenline 6), as well as a ridership increase (5,000) at North of SR 526 (screenline 5).

Corridor I—Potential rail extension (assumed commuter rail) between DuPont and Lakewood: Corridor I would contribute to transit ridership increases (5,000) at West of S Yakima Avenue (screenline 23).

Corridor M—BRT between Federal Way and DuPont on I-5: Corridor M would contribute to transit ridership increases (15,000) at King/Pierce Line West (screenline 16), (10,000) at North of S 128th Street (screenline 24), and (5,000) West of S Yakima Avenue (screenline 23).

The remaining transit corridors in the Current Plan Alternative would result in relatively low transit ridership increases at the selected screenlines.

Potential Plan Modifications Alternative

When compared to the Current Plan Alternative, the elements included in the Potential Plan Modifications Alternative would result in further expansion of HCT service throughout the Plan area. It should be noted that the Potential Plan Modifications Alternative

does not represent an integrated HCT system but is instead a menu of potential additions to the Current Plan Alternative. Accordingly, there are corridors that may duplicate other corridors in serving the same travel market.

One major change under the Potential Plan Modifications Alternative is reduced transit travel times to many locations as compared to the Current Plan Alternative. In some cases, operating characteristics for the corridors would involve exclusive right-of-way for transit as compared to mixed operations in the Current Plan Alternative. In other cases, the reduced transit travel time would result from more direct connections under the Potential Plan Modifications Alternative as compared to transit service connections in the Current Plan Alternative.

Examples of reduced transit travel times include:

- West Seattle to Seattle CBD
- West Seattle to Kent CBD
- Kirkland to Seattle CBD
- West Seattle to Bellevue CBD
- Redmond to Seattle CBD
- SeaTac to Seattle CBD
- Ballard to Bellevue CBD
- Renton to Kent CBD
- Bellevue CBD to Kent CBD
- Paine Field to Everett CBD

These reduced transit travel times would result in transit ridership increases. The extent of ridership changes in the year 2040 from new corridors would vary substantially, ranging from approximately 20,000 additional transit riders per day to less than 3,000 additional transit riders per day at selected screenlines.

The following information summarizes the relative effectiveness of corridors in the Potential Plan Modifications Alternative in increasing transit ridership. These corridors are shown on Figures S-3 and S-4. As is the case with corridors in the Current Plan Alternative, the effectiveness of any corridor in the Potential Plan Modifications Alternative would be particularly high if it has one or more of the following characteristics:

- It is resulting in a major increase in daily transit ridership (5,000 or greater) at one or more screenlines
- It is resulting in transit ridership increases at more than one screenline
- It is the only corridor affecting ridership changes at a screenline; at most screenlines, multiple corridors are affecting transit ridership changes

Corridor 1—Light rail from downtown Seattle to Magnolia/Ballard to Shoreline Community College: Corridor 1 would contribute to transit ridership increases at the Ship Canal (screenline 1), which would experience daily transit ridership increases of approximately 10,000.

Corridor 2—Light rail between downtown Seattle, West Seattle, and Burien: This corridor is affecting transit ridership at four locations, North of Spokane Street (screenline 2), West Seattle Bridge (screenline 3), North of SeaTac (screenline 13), and West of SR 167/Rainier Avenue (screenline 14). The extent of ridership changes is major—between 10,000 and 20,000 per location.

Corridor 5—Light rail from Lakewood to Spanaway to Frederickson to South Hill to Puyallup: Corridor 5 would contribute to transit ridership increases at North of S 72nd Street (screenline 18), which would experience daily transit ridership increases of approximately 10,000.

Corridor 6—Light rail from DuPont to downtown Tacoma via Lakewood and Tacoma Mall: Corridor 6 would result in relatively high increases in daily transit ridership—15,000 at West of S Yakima Avenue (screenline 23) and 10,000 at King/Pierce Line West (screenline 16) and at North of S 72nd Street (screenline 18). As a result of corridor 6, there would be faster transit travel times to Tacoma Mall and more frequent rail service along the entire corridor as compared to the Current Plan Alternative. Corridor 6 would also contribute to ridership (5,000) at North of S 128th Street (screenline 24).

Corridor 7—Light rail from Puyallup/Sumner to Renton via SR 167: This corridor contributes to ridership increases (15,000) at North of SeaTac (screenline 13) and (10,000) at West of SR 167/ Rainier Avenue (screenline 14). Corridor 7 also would contribute to ridership increases at two other locations: South of Renton (screenline 15) and North of S 128th Street (screenline 24).

Corridor 9—Light rail from Tukwila to SODO via Duwamish industrial area: This corridor may slightly contribute to relatively high daily transit ridership increases of approximately 20,000 at screenline 2, north of Spokane Street.

Corridor 10—Light rail from North Kirkland or University of Washington Bothell to Northgate via SR 522: This corridor is increasing transit ridership at SR 522 (screenline 7) and at North Kirkland/Woodinville (screenline 10). Daily transit ridership increases at each screenline would be approximately 5,000.

Corridor 11—Light rail from Ballard to Bothell via Northgate: This corridor is contributing to transit ridership increases at two locations, Ship Canal (screenline 1) and SR 522 (screenline 7). Daily transit ridership increases at each screenline would be approximately 5,000 to 10,000.

Corridor 12—Light rail between Mill Creek, connecting to Eastside Rail Corridor: Corridor 12 would increase ridership at North of Kirkland/ Woodinville (screenline 10) and Bellevue (screenline 21). Daily transit ridership increases at each screenline would be approximately 5,000.

Corridor 14—Light rail from UW to Sand Point to Kirkland to Redmond: Corridor 14 would contribute to the relatively high daily transit ridership increases at Across Lake Washington (screenline 8) and at West of 148th Avenue NE (screenline 9) and Bellevue (screenline 21). Estimated transit ridership increases at these locations would be relatively high—10,000 at screenline 8 and 5,000 at screenlines 9 and 21, respectively.

Corridor 15—Light rail between downtown Tacoma and Tacoma Community College: Corridor 15 would contribute to relatively high transit ridership increases at West of S Yakima Avenue (screenline 23), which would experience an increase of 15,000 riders. In addition, corridor 15 would contribute to ridership at the King/Pierce Line West (screenline 16), which would experience an increase of 10,000 riders.

Corridor 16—Light rail between Tacoma Mall and University Place: Corridor 16, along with several other light rail corridors, would contribute to transit ridership increases at West of S Yakima Avenue (screenline 23), which would experience daily transit ridership increases of approximately 15,000.

Corridor 21—Potential rail extension, assumed commuter rail, between Tacoma and Frederickson: Corridor 21, along with several other rail corridors, would contribute to transit ridership increases North of S 72nd Street (screenline 18), which would experience daily transit ridership increases of approximately 10,000.

Corridor 22—HCT between downtown Tacoma and Parkland: Corridor 22, along with several other rail corridors, would contribute to transit ridership increases North of S 72nd Street (screenline 18), which would experience daily transit ridership increases of approximately 10,000.

Corridor 23—HCT from Tukwila Sounder Station to downtown Seattle via Sea-Tac Airport, Burien, and West Seattle: Corridor 23 would contribute to the relatively high transit ridership increases (20,000) at North of Spokane Street (screenline 2) and West Seattle Bridge (screenline 3). Corridor 23 also would contribute to ridership increases (15,000) North of SeaTac (screenline 13) and (10,000) at West of SR 167/Rainier Avenue (screenline 14).

Corridor 24—HCT from downtown Seattle to Edmonds via Ballard and Shoreline Community College: Corridor 24 would contribute to transit ridership increases at the Ship Canal (screenline 1), which would experience daily transit ridership increases of approximately 10,000.

The remaining transit corridors in the Potential Plan Modifications Alternative would result in relatively low transit ridership increases at the selected screenlines.

Impacts of plan alternatives on the regional transportation system

Implementation of the Current Plan Alternative and the Potential Plan Modifications Alternative would impact physical components of the multimodal transportation system, including public transit, operations of freeways and local streets, parking, non-motorized modes (pedestrian and bicycle facilities), safety, and freight. The items included in this section address impacts related to both operations and construction.

This assessment of potential impacts is a high-level overview of what could occur. No specific alignments have been selected for any transit mode, and there is no determination as to corridor profile (whether any particular element would be underground, at grade, or elevated).

Local bus service

New rail service and regional express bus/BRT could replace some transit services provided by local agencies, potentially freeing service hours for the local transit provider to use elsewhere. Demand could increase for local bus service connecting to new light rail and commuter rail stations and regional express/BRT services. Buses that use streets or freeways undergoing construction of new transit facilities could temporarily travel more slowly or be detoured to adjacent streets, which could increase walking or bicycling travel times to access the bus.

Highways and roads

Consistent with *Transportation 2040*, the assumption is that all limited access roadways will be tolled or managed by 2040. However, if lanes are not managed to allow 45 mile per hour speeds 90 percent of the time on limited-access roadways, then speeds for buses on these roadways could be much lower in some cases.

Both alternatives include new rail and bus corridors that, depending on the alignment and design, could impact local streets and freeways. These impacts could include use of lane capacity for HCT guideways and stations, at-grade crossings for rail or BRT, and increased congestion around stations and park-and-rides. Construction of HCT could occur on or adjacent to the freeway system, arterials, or local streets. This construction could close road and freeway lanes for short or long durations, which could reduce lane capacity, lower speeds and increase congestion, and require detours diverting traffic from the freeway system, arterials, and local streets to alternative routes.

Parking

With expanded rail or BRT service, demand for parking at stations could increase, which could spill over into surrounding neighborhoods. Decreased on-street parking in some corridors could occur to accommodate new guideways and stations. Loss of parking on-street and at park-and-ride facilities could be expected during guideway and station construction and where new or expanded park-and-ride facilities occur.

Safety

Rail and BRT facilities could create safety impacts for at-grade crossings or where operating in mixed traffic. Projects include safety features and often upgrades for unprotected pedestrian crossings on commuter rail lines. With new rail and bus service, there would be increased vehicular, walk, and bike activity in station areas potentially impacting the safety of roadway and non-motorized systems.

Non-motorized systems—pedestrian and bicycle facilities

Both the Current Plan Alternative and the Potential Plan Modifications Alternative could include potential pedestrian and bicycle facilities that improve access to transit facilities. With expanded transit operations under each alternative, there could be potential impacts on pedestrian and bicycle facilities, as well as opportunities to improve multi-modal access.

Construction could temporarily close or restrict pedestrian and bicycle facilities such as sidewalks, bike lanes, and trails. Construction also would temporarily result in other localized impacts, such as increased congestion, restricted access to facilities, and a lower quality pedestrian and bicycle environment.

Freight movement

A reduction in vehicle miles traveled from both alternatives would benefit freight movements on highways. In some cases, new guideways and stations could reduce access to driveways used to access businesses. In addition, rail development could displace on-street loading capacity for trucks delivering goods.

Construction of transit facilities could temporarily restrict freight movement and access to businesses. New commuter rail service could require that some existing freight rail lines be upgraded or improved, which would result in construction activity in the railroad right-of-way or adjacent areas.

Key Environmental Impacts

The Final SEIS describes the affected environment and potential impacts and mitigation for the Current Plan Alternative and the Potential Plan Modifications Alternative. The impact analysis is at a level of detail consistent with the broad, plan-level issues being addressed in the Long-Range Plan Update.

For the Current Plan Alternative, the environmental impact analysis focuses on corridors A through Y, as shown in Figure S-2. A qualitative summary of potential environmental impacts and benefits is depicted in Table S-1 (light rail, commuter rail, high capacity transit corridors) and Table S-2 (regional express bus/BRT corridors). For the Potential Plan Modifications Alternative, corridors 1 through 47, as shown on Figures S-3 and S-4, refer to Table S-3 (light rail corridors), Table S-4 (commuter rail, high capacity transit, BRT corridors) and Table S-5 (regional express bus and BRT corridors). The ratings used in these summary tables reflect a relative comparison between corridors based on the analysis in the Final SEIS.

Overall, increasing HCT under either the Current Plan Alternative or the Potential Plan Modifications Alternative is generally expected to decrease energy consumption and reduce greenhouse gas and other air emissions in the region as more people choose to use transit instead of travel in single-occupancy vehicles. In addition, an expansion of regional high-capacity transit is consistent with state and regional growth management goals and is consistent with the vast majority of local plans in the region. Other key environmental effects include potential noise and/or vibration impacts to surrounding land uses, impacts to wetlands and streams, adverse effects to historic properties, and the use of parks and recreational facilities.

The extent to which impacts could occur varies depending on the concentration of resources within a corridor and the transit mode being evaluated. In general, implementing any of the transit modes within existing roadway or railroad rights-of-way would likely have the least amount of environmental impacts. If additional lanes were to be constructed for exclusive BRT lanes or light rail guideways, the potential for impacts to surrounding resources could increase. Light rail, BRT, or commuter rail on new alignments have the highest likelihood of impacts to surrounding land uses or resources; however, such impacts would be avoided and minimized to the extent possible during future project-level planning and environmental reviews.

Earth

- Risks are related to geologic hazards that already exist, including steep slopes that are more prone to erosion or landslides, soft soils, and seismic and liquefaction hazards.

Table S-1 Current Plan Alternative summary of impacts—light rail, commuter rail, high-capacity transit

		LIGHT RAIL								COMMUTER RAIL		HCT (LIGHT RAIL)	
		A	B	C	D	E	F	G	H	I	J	K	L
		Tacoma to Federal Way	Burien to Renton	Bellevue to Issaquah along I-90	Renton to Lynnwood along I-405	Renton to Woodinville along Eastside Rail Corridor	Downtown Seattle to Ballard	Ballard to University of Washington	Lynnwood to Everett	DuPont to Lakewood	Renton to Woodinville along Eastside Rail Corridor	University of Washington to Redmond via SR 520	Northgate to Bothell on SR 522
ENVIRONMENTAL RESOURCE	**POTENTIAL EFFECTS**												
Earth	Susceptibility to geologic hazards	◔	◔	◔	◑	◑	◑	●	◑	●	◕	●	◑
Air Quality	Benefit from reduction in greenhouse gases	◑	◑	◑	◑	◑	◑	◑	◑	●	●	◑	◑
Noise and Vibration	Potential for noise impacts to residences	●	●	●	◑	◑	◑	○	◑	◑	◔	●	◓
Water	Potential for impacts to streams	◑	◑	◔	○	◔	●	●	◑	◑	◑	◓	◔
Wetlands	Potential for impacts to wetlands	◔	◑	◔	◔	◔	●	●	◔	●	●	◓	◓
Ecosystems	Regionally important ecosystem resources	◔	◑	◔	◑	◑	◑	●	◔	●	◕	○	◓
Energy	Benefit from reduction in energy use	◑	◑	◑	◑	◑	◑	◑	◑	●	●	◑	◑
Environmental Health	Potential for encountering hazardous waste sites	◑	◑	◑	◑	◑	○	●	◑	◑	●	◑	◓
Visual Quality	Potential for impacts to visual setting	◑	◑	◑	◑	◑	◑	◑	◑	●	◕	◑	◑
Land Use	General consistency with plans and policies	●	●	●	●	●	●	●	●	●	●	●	●
Public Services/ Utilities	Potential for conflicts with major utilities	●	◑	●	◑	●	●	●	◑	●	●	●	●
Parks and Recreation	Potential for impacts to parks and recreation areas	◑	◑	◑	◑	◑	○	◑	◑	●	◕	◓	◓
Historic Resources	Potential for impacts to historic properties	◑	●	◑	◑	◑	○	◑	◑	●	●	◑	◑

○ Worst Performance (highest impacts/lowest benefits) ◔ ◑ ◕ ● Best Performance (lowest impacts/highest benefits)

Table S-2 Current Plan Alternative summary of impacts—regional express bus and bus rapid transit

		HCT (BRT)		BRT									REGIONAL EXPRESS BUS						
ENVIRONMENTAL RESOURCE	POTENTIAL EFFECTS	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
		University of Washington to Redmond via SR 520	Northgate to Bothell on SR 522	Federal Way to DuPont along I-5	Renton to Puyallup along SR 167	Bellevue to Issaquah along I-90	Renton to Woodinville along Eastside Rail Corridor	Renton to Lynnwood along I-405	Seattle to Everett along SR 99	Lynnwood to Everett along I-5	Puyallup to DuPont via Cross Base Highway	Puyallup to Lakewood	Puyallup to Tacoma	SeaTac to West Seattle	Redmond to Kirkland	North Bothell to Mill Creek to Mukilteo
Earth	Susceptibility to geologic hazards	●	●	◔	○	◔	◑	◑	●	●	●	●	○	●	●	●
Air Quality	Benefit from reduction in greenhouse gases	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Noise and Vibration	Potential for noise impacts to residences	◑	◔	●	●	●	◑	◔	○	◔	●	●	●	●	●	●
Water	Potential for impacts to streams	◔	◑	●	◔	◑	◑	◔	●	●	●	●	●	●	●	●
Wetlands	Potential for impacts to wetlands	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ecosystems	Regionally important ecosystem resources	◑	◑	◑	◑	◑	◑	◑	◑	●	●	●	●	●	●	●
Energy	Benefit from reduction in energy use	◔	◑	◑	◑	◑	◔	◑	◑	◑	◑	◑	◑	◑	◑	◑
Environmental Health	Potential for encountering hazardous waste sites	●	◑	◑	●	●	●	●	◑	◑	●	●	●	●	●	●
Visual Quality	Potential for impacts to visual setting	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Land Use	General consistency with plans and policies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Public Services/ Utilities	Potential for conflicts with major utilities	●	●	◑	◑	●	◑	◑	●	◑	●	●	●	●	●	●
Parks and Recreation	Potential for impacts to parks and recreation areas	◑	◑	●	●	◑	◑	●	◑	●	●	●	●	●	●	●
Historic Resources	Potential for impacts to historic properties	●	●	●	●	●	●	●	◑	●	●	●	●	●	●	●

○ ◔ ◑ ◕ ●

Worst Performance (highest impacts/lowest benefits) ⟷ Best Performance (lowest impacts/highest benefits)

Table S-3 Potential Plan Modifications Alternative summary of impacts—light rail

		LIGHT RAIL																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Downtown Seattle to Magnolia/Ballard to Shoreline Community College	Downtown Seattle to West Seattle/Burien	Ballard to Everett Station via Shoreline Community College, Aurora Village, Lynnwood	Everett to North Everett	Lakewood to Spanaway to Frederickson to South Hill to Puyallup	DuPont to downtown Tacoma via Lakewood, Tacoma Mall	Puyallup/Sumner to Renton via SR 167	Downtown Seattle along Madison Street	Tukwila to SODO via Duwamish industrial area	North Kirkland or University of Washington Bothell to Northgate via SR 522	Ballard to Bothell via Northgate	Mill Creek, connecting to Eastside Rail Corridor	Lynnwood to Everett, serving Southwest Everett Industrial Center (Paine Field and Boeing)	UW to Sand Point to Kirkland to Redmond	Downtown Tacoma to Tacoma Community College	Tacoma Mall to University Place	Steilacoom to Ruston via University Place	Issaquah to Issaquah Highlands
ENVIRONMENTAL RESOURCE	**POTENTIAL EFFECTS**																		
Earth	Susceptibility to geologic hazards	◔	◔	●	●	◑	●	○	◑	◔	◔	◔	◔	●	◓	●	●	◑	◓
Air Quality	Benefit from reduction in greenhouse gases	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Noise and Vibration	Potential for noise impacts to residences	◓	◓	○	◓	◑	◑	●	◓	●	◑	◔	◓	◓	◑	◔	◓	◓	●
Water	Potential for impacts to streams	●	◑	◑	●	◑	◑	○	●	◑	◔	◔	○	◓	◔	◑	●	◑	◓
Wetlands	Potential for impacts to wetlands	◑	◑	◓	●	◓	◔	○	●	◑	◓	◓	○	◑	○	◑	◑	◔	◑
Ecosystems	Regionally important ecosystem resources	◓	◔	◓	◑	◓	◓	◔	◑	◓	◓	◓	◓	◓	◔	●	◑	◑	◑
Energy	Benefit from reduction in energy use	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Environmental Health	Potential for encountering hazardous waste sites	○	◑	●	●	◑	○	◑	●	◑	◑	◑	●	◑	◑	●	◑	◑	●
Visual Quality	Potential for impacts to visual setting	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Land Use	General consistency with plans and policies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Public Services/Utilities	Potential for conflicts with major utilities	●	●	●	●	◑	●	◑	●	●	●	●	◑	●	●	●	●	●	●
Parks and Recreation	Potential for impacts to parks and recreation areas	◔	◔	◑	◑	◑	◑	◑	○	◑	◑	◑	◑	◑	◑	◔	◑	◑	◑
Historic Resources	Potential for impacts to historic properties	◔	◔	◑	◔	◑	◑	◑	○	◑	◑	◑	◑	●	◑	◑	◑	◑	◑

○ ◔ ◑ ◕ ● Worst Performance (highest impacts/lowest benefits) ⟷ Best Performance (lowest impacts/highest benefits)

Table S-4 Potential Plan Modifications Alternative summary of impacts—commuter rail, high-capacity transit and bus rapid transit

ENVIRONMENTAL RESOURCE	POTENTIAL EFFECTS	COMMUTER RAIL 19	COMMUTER RAIL 20	COMMUTER RAIL 21	HCT (LIGHT RAIL) 22	HCT (LIGHT RAIL) 23	HCT (LIGHT RAIL) 24	HCT (LIGHT RAIL) 25	HCT (LIGHT RAIL) 26	HCT (BRT) 22	HCT (BRT) 23	HCT (BRT) 24	HCT (BRT) 25	HCT (BRT) 26	BRT 27	BRT 28	BRT 29	BRT 30
		Puyallup/Sumner to Orting	Lakewood to Parkland	Tacoma to Frederickson	Downtown Tacoma to Parkland	Tukwila Sounder station to downtown Seattle via Sea-Tac Airport, Burien, West Seattle	Downtown Seattle to Edmonds via Ballard, Shoreline Community College	West Seattle to Ballard via Central District, Queen Anne	Edmonds to Lynnwood Link	Downtown Tacoma to Parkland	Tukwila Sounder station to downtown Seattle via Sea-Tac Airport, Burien, West Seattle	Downtown Seattle to Edmonds via Ballard, Shoreline Community College	West Seattle to Ballard via Central District, Queen Anne	Edmonds to Lynnwood Link	Puyallup vicinity, notably along Meridian Avenue	Issaquah to Issaquah Highlands	Kent to Sea-Tac Airport	Downtown Seattle along Madison Street
Earth	Susceptibility to geologic hazards	○	●	●	◕	◕	◑	◑	◕	◕	◕	◑	◑	◕	◕	◑	◔	◕
Air Quality	Potential for impacts to historic properties	●	●	●	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕
Noise and Vibration	Potential for noise impacts to residences	◑	◑	◔	◑	◑	◔	◑	◔	◔	○	○	◔	○	◕	◕	◕	◕
Water	Potential for impacts to streams	◑	●	◕	◑	◑	◑	●	◑	●	●	●	●	◑	●	●	◕	●
Wetlands	Potential for impacts to wetlands	●	◑	●	◑	◑	◑	◑	◑	●	●	●	●	●	●	●	●	●
Ecosystems	Regionally important ecosystem resources	◑	○	●	●	◑	◑	◔	○	●	◑	◑	◑	●	●	◕	●	●
Energy	Benefit from reduction in energy use	●	●	●	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◕	◕	◕	◕
Environmental Health	Potential for encountering hazardous waste sites	●	●	●	◔	◑	◑	◑	◑	◑	◑	◑	◑	◑	●	●	●	●
Visual Quality	Potential for impacts to visual setting	●	◑	●	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	●	●	●	●
Land Use	General consistency with plans and policies	◑	◔	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Public Services/Utilities	Potential for conflicts with major utilities	◑	●	◕	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Parks and Recreation	Potential for impacts to parks and recreation areas	◑	●	●	◑	◔	◑	○	◑	◑	◔	◑	◑	◑	◑	◑	◑	◑
Historic Resources	Potential for impacts to historic properties	●	●	◕	◑	◔	◔	◔	●	◑	◔	◔	◔	●	●	●	●	●

○ ◔ ◑ ◕ ● Worst Performance (highest impacts/lowest benefits) ⟷ Best Performance (lowest impacts/highest benefits)

Table S-5 Potential Plan Modifications Alternative summary of impacts—regional express bus and bus rapid transit

ENVIRONMENTAL RESOURCE	POTENTIAL EFFECTS	REGIONAL EXPRESS BUS/BRT					REGIONAL EXPRESS BUS										
		31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
		Issaquah Highlands to Overlake via Sammamish, Redmond	Tacoma to Bellevue	Puyallup to downtown Seattle via Kent, Rainier Valley	Lakewood to Spanaway to Frederickson to South Hill to Puyallup	Tacoma to Frederickson	Renton to downtown Seattle	University of Washington Bothell to Sammamish via Redmond	University Place to Titlow Beach to downtown Tacoma	Renton (Fairwood) to Eastgate via Factoria	145th Street from I-5 to SR 522	North Kirkland to downtown Seattle via SR 520	Woodinville to Bellevue	Woodinville to Everett	Connection to Joint Base Lewis-McChord	Puyallup/Sumner to Orting	Kent to Kent-Des Moines Station	Lynnwood to Everett, serving Southwest Everett Industrial Center (Paine Field, Boeing)
Earth	Susceptibility to geologic hazards	◑	◑	◔	◕	◕	◑	◔	●	◔	●	◔	●	●	●	●	●	●
Air Quality	Potential for impacts to historic properties	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕	◕
Noise and Vibration	Potential for noise impacts to residences	◕	◔	◕	◑	◑	●	●	●	●	●	●	●	●	●	●	●	●
Water	Potential for impacts to streams	◕	◕	◕	●	◕	●	●	●	●	●	●	●	●	●	●	●	●
Wetlands	Potential for impacts to wetlands	●	●	●	◕	●	●	●	●	●	●	●	●	●	●	●	●	●
Ecosystems	Regionally important ecosystem resources	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Energy	Benefit from reduction in energy use	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Environmental Health	Potential for encountering hazardous waste sites	●	●	●	◕	◕	●	●	●	●	●	●	●	●	●	●	●	●
Visual Quality	Potential for impacts to visual setting	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Land Use	General consistency with plans and policies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Public Services/Utilities	Potential for conflicts with major utilities	●	◕	◕	◕	●	●	●	●	●	●	●	●	●	●	●	●	●
Parks and Recreation	Potential for impacts to parks and recreation areas	◕	●	◕	●	◕	●	●	●	●	●	●	●	●	●	●	●	●
Historic Resources	Potential for impacts to historic properties	●	●	◕	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ Worst Performance (highest impacts/lowest benefits) ◔ ◑ ◕ ● Best Performance (lowest impacts/highest benefits)

- Depending on location, all modes would have comparable susceptibility to geologic hazards.
- Corridors in areas with the highest susceptibility to certain geologic hazards include N in the Kent Valley along SR 167 and V in the Puyallup River Basin, both in the Current Plan Alternative; and 7 (also in the Kent Valley along SR 167) and 19 between Puyallup and Orting, both in the Potential Plan Modifications Alternative.

Air quality

- The Current Plan Alternative would reduce greenhouse gas and other air emissions in the region as more people choose to use transit instead of travel in single-occupancy vehicles.
- The Potential Plan Modifications Alternative would provide an incremental reduction as transit corridors are added.

Overall, increasing transit options is generally expected to decrease energy consumption and reduce greenhouse gas emissions in the region as fewer people travel in single-occupancy vehicles.

Noise

- Commuter rail has the highest maximum noise levels of all transit modes; however, it operates less frequently, with service occurring during peak commute hours. In terms of potential noise impacts, light rail and BRT are similar, although BRT generates more noise for a similar number of passengers served.
- The highest potential for noise impacts occurs in corridors with dense residential development. This includes BRT or light rail corridors along SR 99 such as R (BRT from Seattle to Everett) and 3 (light rail from Ballard to Everett Station), and 24 (HCT from Downtown Seattle to Edmonds).
- HCT corridors 23 from Tukwila to Downtown Seattle via West Seattle and 26 Edmonds to Lynnwood Link are also very densely developed, potentially resulting in a high number of residences impacted.

Water quality and hydrology

- Runoff from new impervious surfaces can cause bank erosion and increase stream bed depth.
- Pollutants on new impervious surfaces can decrease water quality; however, operation of light rail alone is not a pollutant-generating activity.
- Light rail corridors D (Renton to Lynnwood along I-405 under Current Plan Alternative) and 7 (Puyallup to Renton via SR 167 in the Potential Plan Modifications Alternative) could cross the greatest number of streams. Potential Plan Modifications Alternative corridors 12 (Mill Creek, connecting to the Eastside Rail Corridor) and 18 (Issaquah to Issaquah Highlands) could cross the greatest number of streams per mile of corridor.
- Corridors in the Plan area near the Puget Sound shoreline and large rivers (such as the Puyallup, Snohomish, and Duwamish Rivers) are at risk for inundation from rising sea levels that may occur as the result of climate change.
- Fill within floodplains could impede flows and increase the risk of flooding. Climate change could also result in localized flooding in floodplain areas due to increased precipitation from storm events. Corridors in the Current Plan Alternative that include a higher concentration of floodplains include light rail corridors C and D along Lake Sammamish and the Snohomish River, respectively. In the Potential Plan Modifications Alternative, light rail corridor 7 and regional express bus/BRT corridor 33 along SR 167 between Puyallup and Renton, as well as corridor 32 from Tacoma to Bellevue, also have a high concentration of floodplains.

Ecosystems

- The removal, degradation, or fragmentation of habitat could disturb fish and wildlife movement. Areas potentially affected include those with high concentrations of natural resources, high-quality native ecosystems, and major lakes or rivers.
- Potential Plan Modifications Alternative corridors 7 (Puyallup/Sumner to Renton via SR 167), 12 (Mill Creek, connecting to Eastside Rail Corridor), and 14 (UW to Sand Point to Kirkland to Redmond) have the greatest density of wetland areas and could potentially impact the most amount of wetlands.
- Priority conservation areas within corridors near Cougar Mountain and Issaquah Creek (Current Plan Alternative light rail corridor C and BRT

corridor O and Potential Plan Modifications Alternative light rail corridor 18), Edmonds Point (HCT corridors 24 and 26), Solo Point-Farrell Marsh (light rail corridor 17), and a portion of the Joint Base Lewis-McChord between Lakewood and Parkland (commuter rail corridor 20) could be affected.

Energy

- Under either the Current Plan Alternative or the Potential Plan Modifications Alternative, transportation-related energy consumption is generally expected to decrease as more people choose to use transit instead of traveling in single-occupancy vehicles.

Environmental health

- During construction, the disturbance or release of hazardous materials could occur, particularly in areas with high concentrations of contaminants such as industrialized areas. The Current Plan Alternative includes industrialized areas around the Port of Tacoma (corridor A) and Ballard (corridor F). The Potential Plan Modifications Alternative includes industrialized areas around the Port of Tacoma (corridors 6, 15, and 22) and Ballard (corridors 1, 3, 11, 24, and 25).
- Electromagnetic fields (EMF) associated with light rail operations could require mitigation to avoid impacts to sensitive electronics located in medical and research facilities.

Visual quality

- Transit features, such as walls, stations, at-grade or elevated guideways, infill stations, operation and maintenance facilities, park-and-ride facilities, and other structures, could result in the alteration or removal of some visual resources (such as a view or structure).
- In general, new transportation facilities constructed in existing transportation corridors would be less likely to negatively affect visual quality than those built in new corridors.

Land use

- In general, both alternatives would be consistent with state, regional, county, and municipal plans, policies, and legislation. However, Potential Plan Modifications Alternative corridor 19, commuter rail service from Puyallup/Sumner to Orting, may not be consistent with Orting's goal to preserve its small-town character. Corridor 20 (Lakewood to Parkland) is currently not consistent with the City of Lakewood's Comprehensive Plan.

- The alternatives would improve transit service to regional growth centers and manufacturing and industrial centers (MIC), and would focus growth within the boundaries of Urban Growth Areas.
- With the Current Plan Alternative, connections generally would be added between regional growth centers and/or MICs. Connections include potential light rail corridors between and through the Everett, Lynnwood, Bothell Canyon Park, Seattle Northgate, Kirkland Totem Lake, Seattle's University Community, Seattle downtown, Redmond downtown, Redmond Overlake, Bellevue downtown, Renton, Burien, Tukwila, Federal Way, and Tacoma downtown regional growth centers. Under the Current Plan Alternative, light rail connections also would be added to MICs (Ballard-Interbay and the Port of Tacoma). In addition, the potential light rail connection between Bellevue and Issaquah would connect the Bellevue regional growth center with Issaquah. A commuter rail connection along the Eastside Rail Corridor would connect Renton, Bellevue and Kirkland-Totem Lake. Potential BRT corridors follow most of the potential rail corridors connecting many of the regional growth centers in the Plan area.
- Under the Potential Plan Modifications Alternative, connections generally would be added between regional growth centers and/or MICs. If all light rail corridors were implemented under the Potential Plan Modifications Alternative, they would provide light rail connections to regional growth centers not served by light rail in the Current Plan Alternative, including Kent, Auburn, Tacoma Mall, Lakewood, Puyallup downtown, and Puyallup South Hill. The Potential Plan Modifications Alternative also would provide light rail connections to MICs not served in the Current Plan Alternative, including Paine Field/Southwest Everett, Frederickson and Kent. Potential light rail and HCT connections between downtown Seattle and Burien would also serve West Seattle. The Potential Plan Modifications Alternative also includes a commuter rail corridor connecting downtown Tacoma (regional growth center) and Fredrickson (MIC). Together, the Current Plan and Potential Plan Modifications Alternatives would provide BRT service to most of the regional growth centers in the Plan area.
- Commercial, industrial, and residential land uses could be affected by property acquisitions, displacements, and land use conversions. In densely populated urban areas, light rail could result in a relatively high number of property acquisitions for track and support facilities.

Although new commuter rail lines would use existing freight or passenger rail corridors, right-of-way easements or property acquisitions may be needed to accommodate rail improvements. BRT in mixed traffic or in semi exclusive facilities (including in HOV facilities) is expected to result in fewer property acquisitions than BRT in exclusive guideways. The land use impacts of BRT in exclusive guideways would be similar to those of light rail due to some of the more permanent infrastructure improvements, whereas regional express bus would use the existing roadway system. Either mode could require additional or expanded maintenance facilities.

Public services and utilities

- Depending on location, all modes would have comparable impacts to public services and utilities. Overall, long-term impacts on utility services and systems are expected to be minimal.
- In the Current Plan Alternative, corridors B (Burien to Renton), D (Renton to Lynnwood), and H (Lynnwood to Everett) cross either natural gas inter/intra state pipelines or transmission lines.
- In the Potential Plan Modifications Alternative, corridors 5 (Lakewood to Spanaway to Frederickson to South Hill to Puyallup), 7 (Puyallup/Sumner to Renton via SR 167), 12 (Mill Creek, connecting to Eastside Rail Corridor), 19 (Puyallup/Sumner to Orting), 21 (Tacoma to Frederickson), 27 (Puyallup vicinity, notably along Meridian Avenue), and 32 (Tacoma to Bellevue), 33 (Puyallup to downtown Seattle via Kent, Rainier Valley), and 34 (Lakewood to Spanaway to Frederickson to South Hill to Puyallup) cross either natural gas inter/intra state pipelines, petroleum product pipelines, or transmission lines. If necessary, these utilities would be relocated.

Park and recreation facilities

- Both alternatives could result in the acquisition of all or a portion of a park or recreation facility, particularly when other physical constraints limit avoidance or minimization options. King County parks and recreation facilities could be particularly affected given their high density.
- In the Current Plan Alternative, light rail corridors F (Downtown Seattle to Ballard), and G (Ballard to UW) have the greatest potential to impact park and recreation facilities.
- For the Potential Plan Modifications Alternative, corridors 1 (Downtown Seattle to Magnolia/Ballard to Shoreline Community College), 2 (Downtown Seattle to West Seattle/Burien), 8 (Downtown Seattle along Madison Street), and 25 (West Seattle to Ballard via Central District, Queen Anne) have the greatest potential to impact park and recreational facilities.

Historic resources

- Property acquisitions could result in the alteration or demolition of architectural properties.
- Portions of the corridors between downtown Seattle and Northgate and near downtown Tacoma could be particularly affected given the high concentrations of architectural historic properties listed on the National Register of Historic Places.
- In the Current Plan Alternative, light rail corridor F (Downtown Seattle to Ballard) would have the greatest potential to affect historic properties.
- For the Potential Plan Modifications Alternative, corridors 1 (Downtown Seattle to Magnolia/Ballard to Shoreline Community College), 2 (Downtown Seattle to West Seattle/Burien), 4 (Everett to North Everett), 8 (Downtown Seattle along Madison Street), 15 (Downtown Tacoma to Tacoma Community College), and 25 (West Seattle to Ballard via Central District, Queen Anne), 23 (Tukwila Sounder station to downtown Seattle via Sea-Tac Airport, Burien, West Seattle), and 24 (Downtown Seattle to Edmonds via Ballard, Shoreline Community College) would have the greatest potential to affect historic properties.
- Archaeological sites and traditional cultural properties could be affected by ground-disturbing activities, such as the installation of piers to support elevated rail lines or other activities associated with new stations, park-and-ride facilities, or other support facilities.

Cumulative impacts

- Differences in cumulative impacts between the two alternatives would be relatively minor when considered on a regional scale.
- Both alternatives would offer environmental benefits. These benefits, combined with other regional plans and projects to help manage growth in a more sustainable manner, could result in greater cumulative benefits because they would help to reduce vehicle trips and urban sprawl.

Avoidance, Minimization, and Mitigation Measures

Sound Transit has established programs, best practices, and policies that would guide the implementation of this Long-Range Plan Update and the projects that would follow. These include the agency's commitment to satisfying all applicable laws and regulations and to mitigate significant adverse impacts responsibly and reasonably, consistent with Sound Transit's policies. In addition to meeting environmental commitments, Sound Transit will continue to avoid and minimize impacts where possible. Several environmental elements analyzed in this Final SEIS are not likely to have significant adverse long-term impacts requiring mitigation after standard project measures are applied, such as earth, air quality, energy, public services, utilities, and water resources. The following text summarizes key areas where mitigation measures are expected to be required. More specific measures would be identified during future project-level environmental reviews.

Transportation

Mitigation would be required to address impacts to local transit service, local roadway and freeway facilities, parking, safety, non-motorized facilities in station areas, and freight movement resulting from plan implementation and project development.

For construction activities affecting freeways, Sound Transit would work with the Washington State Department of Transportation to develop a plan to coordinate construction with incident management, construction staging, and traffic control where the construction could affect freeway traffic, as well as provide construction closure information to the public. Truck access points from the freeway would be identified to minimize impacts on general purpose traffic and interchange operations.

Mitigation for impacts on local roadway facilities, parking, safety, non-motorized facilities, and freight movement would comply with local regulations governing construction mitigation, including traffic control and truck routing. For local transit service and facilities, potential route service changes would be coordinated with affected transit systems. For freight-related items, mitigation would be coordinated with local jurisdictions and affected businesses and operators.

Noise and vibration

Potential measures to control noise and vibration could include acquisition of land for buffer zones, project realignment, bus and roadway design and maintenance, track and wheel design and maintenance for rail systems, minimization of audible warning systems to only the levels necessary, construction of noise walls and other barriers, and sound insulation for buildings. Track sub-base and support structures could be designed to reduce vibration and ground-borne noise levels.

Ecosystems

Sound Transit would mitigate impacts in accordance with applicable federal and state regulations and local critical area ordinances and their permit requirements. Sound Transit is committed to no net loss of wetland functions and wetland areas. Potential measures to minimize impacts could include minimizing land clearing, avoiding sensitive habitat and wetlands, designing fish-passable structures, establishing time-of-year construction restrictions in sensitive areas, enhancing remaining habitat, and compensating or replacing lost wetland areas.

Environmental health

The Current Plan Alternative and the Potential Plan Modifications Alternative would adhere to all applicable regulations regarding hazardous materials handling and spill response during construction and long-term operation. Any hazardous materials sites in the construction area would be identified and addressed to avoid the potential for exposure or spread of hazardous materials during construction. Should EMF impacts from light rail be identified, modified power delivery designs would be expected to mitigate such impacts.

Visual quality and aesthetics

Measures to reduce or minimize adverse long-term impacts on visual quality could include avoidance of visually sensitive areas; design or aesthetic treatments to reduce the impacts of transit facilities by integrating them with existing plans, minimizing their size, making them compatible with their surroundings, and shielding light from reaching surrounding properties; and the provision of landscaping and other screening features.

Land use

Sound Transit would provide relocation assistance and advisory services where property acquisitions and displacements would be unavoidable. The relocation

program would be in accordance with state and federal laws and Sound Transit policy.

Parks and recreation

Sound transit would coordinate with the agencies with jurisdiction over parklands to minimize impacts. Mitigation could include restoration of disturbed parks and open space to pre-project conditions, park enhancement, or replacement of acquired parkland. Construction-period mitigation measures could include maintaining access during road and trail closures and providing coordinated information on access options.

Historic resources

Sound Transit would determine appropriate mitigation measures in consultation with the lead federal agencies, the Washington State Department of Archaeology and Historic Preservation, Native American tribes, affected local governments, and other interested parties. Potential mitigation measures could include designing facilities to be compatible with historic resources, employing construction methods to minimize impacts, conducting rehabilitation or relocation to appropriate standards, preparing interpretive information for the public, and fully documenting properties if no alternative to relocation or demolition exists. Mitigation measures for archaeological sites could include performing archaeological testing and monitoring in high-probability areas prior to and during construction and data recovery of significant sites.

Significant Avoidable Adverse Impacts that Cannot be Mitigated

No significant unavoidable adverse impacts to earth, air quality, energy, and public services and utilities are expected with either the Current Plan Alternative or the Potential Plan Modifications Alternative.

With implementation of the avoidance, minimization, and mitigation measures listed above, significant unavoidable adverse impacts to noise and vibration, water quality and hydrology, ecosystems, environmental health, visual quality, parks and recreation facilities, and historic and cultural resources could be minimized for most plan elements under the Current Plan Alternative and the Potential Plan Modifications Alternative. However, significant unavoidable adverse impacts to noise and vibration, environmental health, visual quality, land use, parks and recreation facilities, and historic and cultural resources could occur in some corridors and with some modes. Temporary unavoidable adverse impacts could occur to water quality and hydrology and ecosystems during construction.

Even with the mitigation measures described above, there could be unavoidable adverse transportation impacts, primarily during construction of the corridors and facilities included in the Current Plan Alternative or the Potential Plan Modifications Alternative. Construction impacts could include temporary lane or roadway closures, loss of parking, increased truck traffic and congestion, and reduced access to businesses.

Areas of Controversy and Uncertainty and the Issues to be Resolved

The Sound Transit Board will evaluate many issues as it considers updates to the Long-Range Plan. Those issues include understanding the need for projects, achieving balance among the various service areas of the region, and obtaining funding to make the plans a reality. Unresolved regional issues that may affect the updated Long-Range Plan are discussed below.

Several corridors were analyzed as part of the Potential Plan Modifications Alternative for possible inclusion in the updated Long-Range Plan. Using the transportation and environmental analysis, as well as other studies, the Sound Transit Board may consider adding some of the Potential Plan Modification Alternative corridors to the updated Long-Range Plan.

Sound Transit will consider the specific modes for the HCT corridors included in the Plan. Corridors evaluated in this Final SEIS include light rail, commuter rail, BRT, regional express bus, and streetcar. Each of the mode technologies has distinct advantages. In some corridors, the mode decision could include two or more possibilities. For example, a corridor may be identified as an HCT corridor and/or designated as a potential future light rail extension in the Long-Range Plan.

Sound Transit can also consider annexing areas into the Sound Transit district or extending services beyond the current district boundary. Annexation and service extensions can occur under the Long-Range Plan Update alternatives as long as the legislatively mandated requirements are met. Extensions of service can occur

without changing or annexing the district boundary. During the scoping process, Sound Transit received suggestions both to expand the district boundary and to extend service outside the current boundary. Sound Transit would work with interested jurisdictions to annex or extend service beyond the current boundary if a proposal is made.

Next Steps: Plan Adoption and Implementation

With publication of this Final SEIS, Sound Transit is completing the plan-level environmental impact analysis on updating the Long-Range Plan.

Following the issuance of this Final SEIS, the Sound Transit Board will make final decisions on updating the Regional Transit Long-Range Plan. The updated Long-Range Plan can then be used as a guide for developing the next system-level plan. Funding to implement a system plan would need to be approved by voters. If funding is approved, project-level planning and environmental reviews would be completed, and projects would be implemented as appropriate.