

Seattle Department of Transportation and the Federal Transit Administration

RapidRide Roosevelt Project

ENVIRONMENTAL ASSESSMENT

JANUARY 2020



**Federal Transit
Administration**



Seattle
Department of
Transportation

The Levy to

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**RAPIDRIDE ROOSEVELT
SEATTLE, WA
ENVIRONMENTAL ASSESSMENT**

Submitted pursuant to
the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.)
by the
FEDERAL TRANSIT ADMINISTRATION (FTA)
and
CITY OF SEATTLE DEPARTMENT OF TRANSPORTATION (SDOT)

Abstract

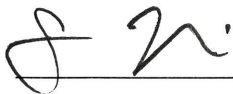
This environmental assessment (EA) evaluates the impacts associated with the construction and operation of the RapidRide Roosevelt Project, a bus rapid transit line as proposed by the City of Seattle Department of Transportation in partnership with King County Metro (KCM). KCM has named the route the RapidRide J Line per their standard route naming conventions, and the name J Line will be phased in to future outreach materials. The purpose of the Project is to improve transit travel times, reliability, and capacity to increase high-frequency, all-day transit service and enhance transit connections between Downtown Seattle and five neighborhoods (Belltown, South Lake Union, Eastlake, University District, and Roosevelt). The Project would also improve pedestrian and bicycle connections and access to RapidRide stations and would improve safety for both nonmotorized and motorized travelers along the corridor. The construction period would be up to 2 years and would be phased in work zones to minimize impacts.



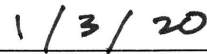
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There is a 30-day comment period wherein FTA and SDOT will accept public comments to be considered in the determination of whether there is a Finding of No Significant Impact.

Copies of the EA: Paper copies of the EA are available for \$25 and hard copies of the separately bound appendices/technical reports are available for \$15 each. A CD including the EA and the appendices/technical reports is available at no charge. For copies of the EA please email RapidRide@seattle.gov.

A paper copy of the EA and appendices/technical reports is available for review at the Seattle Central Library (1000 4th Ave Seattle, WA 98104), Seattle Public Library - University Branch (5009 Roosevelt Way NE Seattle, WA 98105), and at the Seattle Department of Transportation (700 5th Ave, Suite 3800 Seattle, WA 98104).

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EXECUTIVE SUMMARY

ES. 1 What is the Project?

The RapidRide Roosevelt Project (Project) is a partnership between the City of Seattle (City) and King County Metro to implement bus rapid transit (BRT)¹ serving the neighborhoods from Downtown Seattle to Roosevelt. The purpose of the Project is to improve transit travel times, reliability, and capacity to increase high-frequency, all-day transit service and enhance transit connections between Downtown Seattle and five neighborhoods (Belltown, South Lake Union, Eastlake, University District, and Roosevelt). The Project would also improve pedestrian and bicycle connections and access to RapidRide stations, and would improve safety for both nonmotorized and motorized travelers along the corridor.

This Environmental Assessment (EA) has been prepared to comply with requirements of the National Environmental Policy Act (NEPA) to sufficiently evaluate the Project merits and possible environmental impacts. The Federal Transit Administration (FTA), the lead federal agency providing funding for the Project, determined that an EA is the appropriate level of documentation. Because City projects also need to evaluate probable environmental impacts under the State Environmental Policy Act (SEPA), this EA was developed to meet both NEPA and SEPA requirements. Project development efforts evaluated potential alternatives to consider but resulted in a preferred alternative which was brought to City Council and adopted as the Locally Preferred Alternative (LPA; Council Resolution 31761, July 2017). Therefore, this EA considers the adopted LPA and the No Build Alternative.

ES. 2 What are the Project features?

The Project would provide high-quality, 24-hour BRT service along an approximately 6-mile-long corridor in a dedicated lane or in mixed traffic. The Project would include:

- 26 new RapidRide stations (13 per direction of travel) from 3rd Ave to NE 65th St with service to existing stations along 3rd Ave in Downtown Seattle. Stations would be identifiable as part of the RapidRide system and would include a real-time arrival information system display and all-door boarding. Stations would meet Americans with Disabilities Act (ADA) requirements.
- 33 signalized intersections (including transit signal priority and/or adaptive signals) with 5 transit queue jumps.
- Approximately 0.2 mile of new transit-only lanes and 2.1 miles of new business access and transit (BAT) lanes, for a total of 2.3 miles of transit lane improvements.
- Approximately 360 to 410 new overhead contact system (OCS) poles and 3.4 to 3.8 linear miles of overhead wires north of the University Bridge (to power electric trolley buses) depending on the northern bus turnaround option selected.

¹ BRT or bus rapid transit is a high-quality bus-based transit system that delivers fast, comfortable, and cost-effective service with a high capacity. With the right features, BRT is able to reduce the causes of delay that typically slow regular bus services, like being delayed in traffic and passengers queuing to pay onboard the bus.

- One new traction power substation (the source of electric power), a potential adjacent utility transformer to control voltage, and an upgraded communications cabinet.
- A new northern bus layover, where buses would park between runs; this layover area would need to accommodate a maximum of 4 bus spaces.
- Approximately 5 miles of protected bicycle lanes along 11th/12th Avenues NE, Eastlake Ave E, and Fairview Ave N.
- New and upgraded sidewalk improvements to meet ADA accessibility requirements including ADA-compliant curb ramps and pedestrian push-buttons.
- Up to approximately 3.4 miles of paving along sections of 11th/12th Avenues NE, Eastlake Ave E, and Fairview Ave N.²
- Ten stormwater detention facilities, with a total capacity of approximately 25,400 cubic feet, are required to meet flow control code requirements per the *City of Seattle Stormwater Manual* (City of Seattle, 2017d).

The Project would use 19 buses from the existing King County Metro fleet: 16 buses for operation in peak periods and 3 spare buses. Bus service would be provided using existing stations along 3rd Ave south of Virginia and Stewart Streets, and no improvements would occur in this area.

Construction would require up to 24 months and would be phased to minimize construction impacts along the corridor. Staging areas would generally be within street right-of-way. SDOT would look for staging opportunities on adjacent private properties not currently in use.

ES. 3 What are the environmental benefits and potential impacts of the Project?

The corridor is highly urbanized with no natural areas, wetlands, floodplains, or agricultural areas, and the Project would not affect these resources. Other elements of the environment with no discernible Project impacts include land use, air quality/greenhouse gases, utilities, energy, electromagnetic fields, geology and soils, threatened and endangered species, and Section 6(f) resources.

The LPA would result in benefits and potential minor or no impacts during operation and construction to the environmental elements listed in Table ES-1.

Table ES-1. Locally Preferred Alternative Benefits and Potential Impacts Summary

| ELEMENT | IMPACTS/BENEFITS |
|----------------|--|
| Transportation | <p>The Project would result in several transportation benefits during operation:</p> <ul style="list-style-type: none"> • Provides transit travel time savings of 17 minutes in 2024 and 24 minutes in 2040 in the corridor • Increases daily ridership by 112% (10,250 to 21,600) in 2024 and 116% (12,400 to 26,750) in 2040 |

² Paving includes concrete paving and mill-and-overlay asphalt paving.

| ELEMENT | IMPACTS/BENEFITS |
|---------------------|--|
| | <ul style="list-style-type: none"> • Increases capacity: people able to travel through the corridor via transit would increase by 10% in 2024 and 14% in 2040 • Upgrades approximately 200 curb ramps to meet ADA requirements • Adds about 5 miles of protected bicycle lanes <p>While the Project is consistent with City goals and policies on prioritizing the use of curb space (prioritize safety, support modal plans, and provide connectivity), the Project would remove up to 699 on-street parking spaces and up to 58 vehicle loading zones. Most of the impacts would occur in the Eastlake neighborhood because there is limited on- and off-street public parking available.</p> <p>Mitigation to address permanent parking loss includes identifying and implementing ways to manage street parking, preparing a shared-use parking plan, and reviewing the restricted parking zone in Eastlake to ease parking congestion. The City would relocate as many vehicle loading zones as feasible throughout the corridor.</p> <p>The Project would result in two additional intersections in 2024 that have increased delay compared to No Build conditions, but in 2040 the number of intersections would be reduced by one.</p> <p>Planned changes to bus stop locations for optimization (including consolidation of stops) along the Project corridor is proposed to reduce transit travel time and improve reliability, but it would require passengers currently using those stops to walk farther to reach transit service. The average stop spacing along the corridor would increase from the existing spacing of about 1/4 mile to slightly over 1/3 mile.</p> <p>Construction would result in short-term impacts for all transportation modes. The impacts would be reduced through a Traffic Control Plan.</p> |
| Noise and Vibration | <p>No noise and vibration impacts would occur during operation. Construction would result in temporary noise impacts that would be mitigated through development of the Construction Noise Control Plan. If required, a noise variance would be obtained prior to nighttime construction.</p> <p>Vibration from paving compaction has the potential to impact adjacent properties, but these impacts would be minimized or avoided as part of measures developed in the Construction Vibration Control Plan.</p> |
| Socioeconomics | <p>During operation, there would be benefits related to increased transit reliability, shorter transit travel times, and pedestrian and bicycle improvements. Bus stop optimization required to increase transit speed and reliability could increase the walking distance for some users. The removal of on-street parking could impact those with mobility issues as well as adjacent businesses.</p> <p>During construction, impacts could include temporary increases in noise and vibration, dust, and traffic congestion, and temporary removal of on-street parking and loading zones; these would be reduced through mitigation measures developed for other elements (i.e., noise and vibration). A public information plan will be developed prior to construction.</p> |

| ELEMENT | IMPACTS/BENEFITS |
|--------------------------------|---|
| Visual and Aesthetic Resources | <p>No adverse visual impacts would occur during operation. Much of the corridor would not change as a result of the LPA because there are existing bus stops and above ground utilities. The new stations would reinforce the urban visual character and would not impact important views or create new light and glare. The primary change would be the new OCS poles and wires north of the University Bridge, which would be visible but similar to the existing utility wires and poles and consistent with the urban visual character.</p> <p>Construction would result in minor and temporary visual impacts from the presence of construction equipment. If nighttime construction is required, lighting would be shielded and aimed away from adjacent uses.</p> |
| Stormwater/Water Quality | <p>The Project would improve the quality of stormwater runoff draining to the Ship Canal/Lake Union as a result of stormwater treatment. Ten stormwater detention facilities are required to meet code requirements and are described in the EA. The Project may use the alternative compliance options (such as fee-in-lieu) through Seattle Public Utilities for satisfying code compliance, reducing the required amount of proposed detention facilities.</p> <p>Prior to construction, plans would be prepared (e.g., Stormwater Pollution Prevention Plan) that identify measures to minimize impacts.</p> |
| Hazardous Materials | <p>No hazardous materials impacts are expected during operation. Potential impacts from excavation activities during construction could result from encountering existing soil or groundwater contamination from high-risk sites. There are 9 high-risk hazardous materials sites located in close proximity to potential stormwater detention pipes or OCS poles that would require deeper excavation; however, because the Project would be constructed mainly within existing right-of-way in areas that have been previously disturbed, encountering hazardous materials is not likely. Seattle Department of Transportation will identify the 9 high-risk sites in Project specifications, including publicly available information from the Washington State Department of Ecology. Any unanticipated contamination encountered during construction will follow the <i>City Standard Specifications for Road, Bridge, and Municipal Construction</i> (SPU, 2017).</p> |
| Section 4(f) Resources | <p>During construction, there would be impacts to NE Ravenna Blvd at the intersections of 11th/12th Avenues NE and Roosevelt Way NE (the median of the roadway is a Seattle park and historic resource known as Ravenna Boulevard). Ravenna Boulevard is part of the Olmsted park system in Seattle. Approximately 1,800 square feet of Ravenna Boulevard currently used for transportation-related facilities would be upgraded or replaced with new poles (including OCS poles to support bus trolley wire), signal infrastructure, and sidewalk widening. In addition, there would be approximately 1,500 square feet in the landscaped median of Ravenna Boulevard permanently modified by the Project for new transportation-related facilities. Within the boundaries of historic Ravenna Boulevard, which extends beyond the roadway to include sidewalks and planting strips on either side of the streets, changes to the roadway (repaving) and sidewalk corners (placement of OCS poles and sidewalk improvements) would be in keeping with existing transportation-related uses at these intersections.</p> |

| ELEMENT | IMPACTS/BENEFITS |
|-------------------------|--|
| | <p>Impacts to Ravenna Boulevard would not adversely affect either the recreational use or historic characteristics of this resource.</p> <p>FTA has made a preliminary determination that the Project would have a <i>de minimis</i> (minor) impact on the Ravenna Boulevard park and historic resource and would not adversely affect the features, attributes, or activities qualifying the resource for protection under Section 4(f).</p> |
| Cultural Resources | <p>During operation, new OCS poles and wires would not result in adverse visual effects to adjacent historic properties and the Ravenna-Cowen North Historic District. There would be minor impacts to the Ravenna Boulevard historic resource, but these changes would not result in an adverse effect. Archaeological resources are not expected to be encountered and construction activities (i.e., noise and dust) would not impact historic properties. Vibration from paving compaction has the potential to impact 26 adjacent historic properties, but these impacts would be minimized or avoided as part of measures developed in the Construction Vibration Control Plan. An Inadvertent Discovery Plan has been prepared for the Project and an Archaeological Monitoring Plan will be developed prior to construction.</p> |
| Indirect and Cumulative | <p>During operation, the Project could result in indirect impacts on businesses due to changes in on-street parking and loading zones, but the Project is consistent with the City's goals and policies related to the best use of curb space. Mitigation to address the reduction in on-street parking and loading zones is discussed above under Transportation. No indirect impacts during construction are anticipated.</p> <p>The Project is expected to result in beneficial cumulative impacts along with other existing and planned transit services and transportation projects that would reduce vehicle miles traveled. The benefits include improved access to transit, additional connections to the bicycle network, reduced vehicle miles traveled, improvements in air quality, and stormwater benefits. With the mitigation proposed by the Project, the development of additional off-street parking with permitted private projects, and the mitigation requirements under the City's recent Mandatory Housing Affordability legislation for certain areas including the Eastlake neighborhood, there would be minor cumulative impacts with regard to a reduction of on-street parking. During construction, there could be short-term cumulative impacts related to increases in noise, dust, and traffic, but mitigation required for all the projects would minimize the impacts and no cumulative impacts are anticipated.</p> |
| Environmental Justice | <p>The Project would result in transit and mobility benefits, and no disproportionately high and adverse impacts on minority and/or low-income populations are anticipated during operation or construction.</p> |

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ACRONYMS AND ABBREVIATIONS

| | |
|---------|--------------------------------------|
| ADA | Americans with Disabilities Act |
| APE | Area of Potential Effects |
| BAT | business access and transit |
| BMP | best management practice |
| BRT | bus rapid transit |
| CFR | Code of Federal Regulations |
| City | City of Seattle |
| CVLZ | commercial vehicle loading zone |
| EA | Environmental Assessment |
| EMF | electromagnetic field |
| FTA | Federal Transit Administration |
| HCT | high-capacity transit |
| I- | Interstate |
| KCM | King County Metro |
| LOS | level of service |
| LPA | Locally Preferred Alternative |
| MHA | Mandatory Housing Affordability |
| NEPA | National Environmental Policy Act |
| NRHP | National Register of Historic Places |
| OCS | overhead contact system |
| PBL | protected bicycle lane |
| PGHS | pollution-generating hard surface |
| PLZ | passenger loading zone |
| Project | RapidRide Roosevelt Project |
| PSRC | Puget Sound Regional Council |
| RPZ | restricted parking zone |
| SDOT | Seattle Department of Transportation |
| SEPA | State Environmental Policy Act |
| SMC | Seattle Municipal Code |
| SPU | Seattle Public Utilities |
| SR | State Route |
| TCE | temporary construction easement |
| TCP | Traffic Control Plan |
| TMP | Transit Master Plan |
| TOL | transit-only lane |
| TPSS | traction power substation |

| | |
|--------|---|
| U.S.C. | United States Code |
| USDOT | U.S. Department of Transportation |
| UW | University of Washington |
| VMT | vehicle miles traveled |
| WAC | Washington Administrative Code |
| WPTP | West Point Treatment Plant |
| WSDOT | Washington State Department of Transportation |

1. PROJECT BACKGROUND

1.1 Introduction

The RapidRide Roosevelt Project (Project) is a new RapidRide corridor that the City of Seattle (City) is implementing as part of its Transit Plus Multimodal Corridor Program by 2024. This effort is a partnership between the City and King County Metro (KCM) to deliver reliable, convenient, high-quality transit to Seattle's growing population. Together, the Seattle Department of Transportation (SDOT) and KCM are working to build on the success of existing RapidRide service by partnering on transit service improvements, capital investment, and design treatments. The Project would provide bus rapid transit (BRT) service along an approximately 6-mile-long corridor in a dedicated lane or in mixed traffic between Downtown Seattle and the Roosevelt neighborhood in northeast Seattle, serving the Belltown, South Lake Union, Eastlake, and University District neighborhoods. KCM has named the route the RapidRide J Line per their standard route naming conventions, and the name J Line will be phased in to future outreach materials.

SDOT, in cooperation with the Federal Transit Administration (FTA), has prepared this Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) of 1969. The FTA is the lead federal agency and SDOT is the Project sponsor. The Locally Preferred Alternative (LPA) was approved by Seattle City Council in July 2017 (Council Resolution 31761). This EA presents an evaluation of the LPA and the No Build Alternative and discusses the purpose and need for the Project, alternatives development, potential effects resulting from operation and construction, proposed mitigation, and outreach with the public, tribes, and agencies.

1.2 Project Purpose and Need

1.2.1 Project Purpose

The overall purpose of the Project is to improve transit travel times, reliability, and capacity to increase high-frequency, all-day transit service and enhance transit connections between Downtown Seattle and five neighborhoods (Belltown, South Lake Union, Eastlake, University District, and Roosevelt). An additional purpose of the Project is to improve pedestrian and bicycle connections and access to stations and improve safety along the corridor.

This Project is intended to:

- Address current and future mobility needs for residents, workers, and students
- Address capacity constraints in the transportation network along this north-south corridor
- Provide equitable transportation access to major institutions, employers, and neighborhoods

1.2.2 Project Need

The Project has been identified as a high-priority corridor for meeting the following transportation and community needs:

- Provide Transit Service to Support Housing and Employment Growth.** By 2035, the area within approximately 0.5 mile of the corridor is forecasted to grow by over 22,000 residents (29%) and 91,000 employees (50%), for a total of over 98,000 residents and 274,000 jobs (Puget Sound Regional Council [PSRC], 2017). There is inadequate capacity on existing bus service to support the planned development.
- Provide Neighborhood Connections to Future Link Light Rail Stations.** There is no direct rapid transit connection between the five neighborhoods and Downtown Seattle. KCM Routes 67 and 70 provide service to the Project neighborhoods, but traffic lanes can be congested, and passengers may need to transfer to another bus line to connect between the northern and southern neighborhoods. These limitations result in long transit times and unreliable schedules, reducing riders' ability to make connections and discouraging ridership. There is a need to provide better connections to existing and future Link light rail stations, existing and future RapidRide lines, and regional and local bus routes.
- Improve Transit Travel Time and Reliability Throughout the Corridor.** Congestion is causing delays in transit travel time and is negatively affecting transit reliability. The existing transit travel times in the corridor during peak periods may be up to 30% slower than off-peak hours, with the increased congestion resulting in less reliable transit service. Currently, over 30% of transit trips in the corridor run late during morning and evening peak periods. There are two intersections that operate at level of service (LOS) F in the corridor. By 2024, without improvements in the corridor, the PM peak delay in transit travel time is expected to increase by over 5 minutes (10%) for trips along the entire corridor, and an additional four intersections would operate at LOS F. These limitations result in long transit times and unreliable schedules, reducing riders' ability to make connections and discouraging ridership.
- Reduce Overcrowding of Existing Bus Capacity.** Over 20% of the people living within approximately 0.5 mile of the corridor already use transit, with higher transit usage within Downtown Seattle and the University District neighborhoods. The number of riders on each bus along the corridor exceed the seated capacity on 15% of daily trips and 32% of the trips during the morning and afternoon peak periods. For the existing Route 70 that provides transit service in the corridor between Downtown Seattle and the University District, average weekday ridership is expected to increase in the future by about 30% (i.e., from 5,600 riders per day in 2024 to 7,300 in 2040).
- Improve Pedestrian and Bicycle Safety and Connections to Transit.** Extensive transit service and dense, walkable neighborhoods contribute to a high level of pedestrian and bicycle activity along the corridor; the University Bridge, for example, has the second highest bicycle count in Seattle.³

³ In 2016, about 1,720 bicycle riders on average crossed the University Bridge per day. Spread evenly over an 8-hour day, this amounts to nearly 200 bicyclists passing per hour (Jacobs, 2018).

There are also intersections with above-average rates of bicycle and pedestrian collisions with vehicles. From 2012 to 2016, eight intersections along the corridor were reported to have three or more pedestrian injury collisions and six intersections had four or more bicyclist injury collisions. There is a need to provide safe bicycle facilities and better connections to transit for bicyclists. In addition, numerous sidewalks and intersections do not meet current City standards and do not comply with the Americans with Disabilities Act (ADA).

1.3 Alternatives

This section describes the alternatives development and the alternatives evaluated in this EA.

1.3.1 Alternatives Development

This section describes the development and evaluation process for high-capacity transit (HCT), mode options, and alternative routes considered in the corridor. Throughout this decision-making process, the public and stakeholders have been provided opportunities for input, including open houses, an online survey, stakeholder interviews, and a series of forums with community partners.

1.3.1.1 Seattle Transit Master Plan

The Roosevelt to Downtown Corridor was identified as a HCT corridor in the 2012 Seattle Transit Master Plan (TMP) and was determined to have the second-highest potential ridership of any corridor outside of the Center City (City of Seattle, 2012). HCT corridors were identified based on current and future land use and demographic characteristics and then evaluated against the following performance measures:

- Community (land use and nonmotorized access)
- Equity (housing and transportation costs, benefits to transit-reliant people)
- Economy (access to employment)
- Environment (human health benefits)
- Efficiency (ridership, regional connectivity strength)

Roadway grade and proximity to other transit services (e.g., Link light rail) were also considered. The 2012 TMP evaluated rapid streetcar (identified as the preferred transit mode for the corridor), BRT, and enhanced bus. The plan identified implementation strategies for the

corridor, which developed into the Roosevelt to Downtown HCT Study (Section 1.3.1.2). The updated 2016 TMP Summary Report identified RapidRide (i.e., BRT) as the preferred mode in the corridor (RapidRide Corridor 7), and it moved forward as part of SDOT's Transit Plus Multimodal Corridor Program (City of Seattle, 2016). The TMP notes the difficulty of limited street space, and explains that walking, biking, and riding transit are ways Seattle can move more people in the same amount of space within current right-of-way to accommodate planned growth.

Mode Options Evaluated in the TMP

Rapid Streetcar – high-capacity urban rail with greater stop spacing compared to local streetcars

BRT – using rubber-tired vehicle with characteristics of rail (i.e., longer stop spacing and exclusive right-of-way)

Enhanced Bus – operating in mixed traffic with increased hours and service frequency

1.3.1.2 Roosevelt to Downtown HCT Study

In 2015, SDOT began evaluating the high-capacity options for the corridor as part of the Roosevelt to Downtown HCT Study (City of Seattle, 2017a). The evaluation screened options for the corridor including mode (BRT and rapid streetcar), route alignment, and targeted investments. The mode analysis considered vehicle types, fuel and power options, and impacts to other modes. Based on this analysis, BRT was selected as the preferred mode because of its advantages in more criteria (eight for BRT compared to three for rapid streetcar) and minimal disadvantages in others. The HCT study recommended targeted investments (i.e., transit only lanes and queue jumps) where ridership was highest, pedestrian improvements near transit stations, and protected bicycle lanes. Routes studied in South Lake Union included alignments along Westlake Ave N and Fairview Ave N. Westlake Ave N has three high-frequency transit routes and limited capacity, and therefore Fairview Ave N was selected as the preferred route. An extension to the Northgate Transit Center was considered as part of a future phase but was eliminated because of costs associated with extending the overhead contact system (OCS) infrastructure. The northern terminus was identified at the Sound Transit Roosevelt Link light rail station to provide regional transit connectivity.

1.3.1.3 Locally Preferred Alternative Report

The *Roosevelt RapidRide Project LPA Report* (City of Seattle, 2017b) summarized previous studies, recommended the RapidRide route between Downtown Seattle and Roosevelt, and listed additional targeted investments to improve the corridor for all users. The LPA was adopted in July 2017 by the Seattle City Council (Council Resolution 31761).

1.3.1.4 NEPA Scoping

In December 2017, SDOT and FTA conducted scoping for the public to comment on the purpose and need and the range of alternatives under consideration (Appendix A). The scoping process considered new alternatives suggested by the public, but none were carried forward into the EA. Evaluation showed that the various alternatives suggested by the public would not meet the purpose and need, would not provide a direct connection to one or more of the neighborhoods and urban centers along the corridor, or would not serve the existing and future major transit service areas (such as transfers to Link, streetcar, and other RapidRide lines). Examples of scoping suggestions not carried forward included tunnels (which would result in greater impacts and costs) and an extension of the route to Northgate (which had been previously studied as part of the Roosevelt to Downtown HCT Study). During scoping there were commenters that supported and opposed the bicycle facilities and suggestions were made for using alternative routes, especially on Eastlake Ave E, which led to a further study (Section 1.3.1.5).

1.3.1.5 Bicycle Facility Options and Eastlake Bicycle Facility Evaluation

The Bicycle Master Plan (City of Seattle, 2014) recommends protected bicycle lanes (PBLs) for Eastlake Ave E while recognizing the overlap with this being a multimodal corridor. The 2017 Roosevelt to Downtown HCT Study considered route options for bicycles on and off the corridor, consistent with guidance provided in the Bicycle Master Plan that either (a) all modes be accommodated along the same street or (b) bicycle facilities be accommodated using a parallel route, and recommended PBLs on Eastlake Ave E. To address concerns heard during scoping, SDOT completed a detailed evaluation of nine bicycle facility options in the Eastlake neighborhood. The evaluation determined that the PBLs on Eastlake Ave E scored the highest in

terms of safety, transit access, direct bicycle route, and positive impact on transit and traffic operations. Based off the detailed assessment, the PBLs on Eastlake Ave E rated high in 11 of 14 criteria evaluated (compared to 9 for a two-way PBL on Eastlake Ave E which received the second most high ratings). Further, The PBLs on Eastlake Ave E would avoid mixed-traffic with vehicles and buses and reduce the potential for conflicts at intersections and with driveways; therefore, these PBLs were rated highest for safety. A cross section of proposed PBLs on Eastlake Ave E is shown on Figure 1-1. Appendix E, Eastlake Bicycle Facility Evaluation Memorandum, of the RapidRide Roosevelt Transportation Technical Report (Appendix C to this EA) provides more information about the bicycle evaluation study.

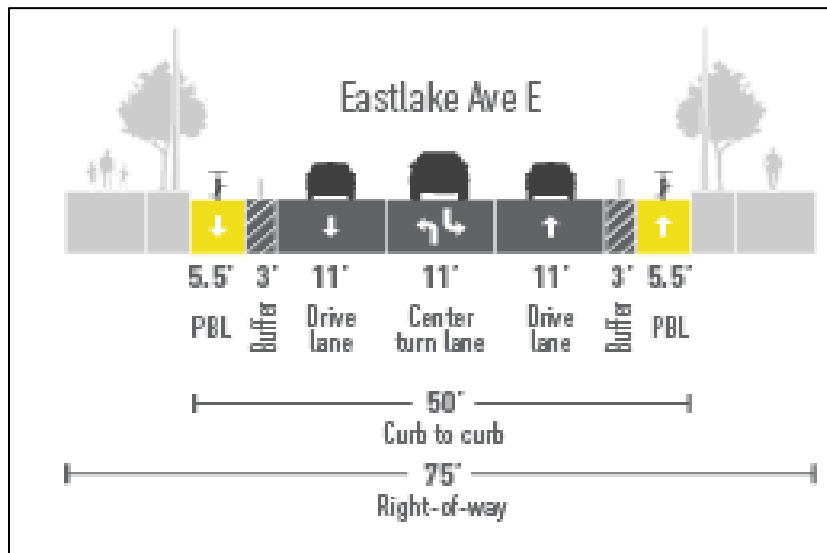


Figure 1-1. Cross Section of Proposed PBLs on Eastlake Ave E

1.3.2 Alternatives Evaluated in this EA

1.3.2.1 No Build Alternative

Under the No Build Alternative, SDOT would continue to maintain the right-of-way, but would not make new transit, pedestrian, or bicycle improvements along the corridor. KCM periodically restructures its bus network to increase efficiency and effectiveness. Without specific restructuring commitments, the No Build Alternative assumes KCM's current bus network of Routes 67 and 70 will continue to serve the corridor without a direct bus connection between the Roosevelt neighborhood and Downtown Seattle and no improvements in bus reliability and speed. The No Build Alternative assumes key future transportation infrastructure improvements within the Project vicinity, such as Link light rail service to the Roosevelt neighborhood (refer to Appendix C for the complete list of transportation projects assumed in the No Build Alternative).

No Build Alternative

Provides a baseline for establishing and comparing the environmental impacts and describes what would happen if the Project were not constructed. The No Build Alternative includes all reasonable and foreseeable transportation-related planned improvements (i.e., projects that have been through environmental review, have funding identified, or are expected to be near-term improvements).

1.3.2.2 Locally Preferred Alternative

The LPA would connect Downtown Seattle with the neighborhoods of Belltown, South Lake Union, Eastlake, University District, and Roosevelt (Figure 1-2 and Figure 1-3).

Locally Preferred Alternative (LPA)

The transportation alternative selected by the City leaders that best balances project needs and constraints.

No improvements are proposed for the corridor south of the Virginia St and 3rd Ave intersection. The Project would use the existing transit lanes on Stewart St between 9th and 3rd Avenues. Buses would travel along portions of S Main St, 2nd Ave S, and S Jackson St to transition from southbound to northbound service. Appendix I, Conceptual Design Drawings, presents design details planned for the corridor.

As part of the LPA, options are described for the traction power substation (TPSS), the northern bus turnaround route and layover space locations, and stormwater detention facilities alternative compliance. A description of the comfort station and general criteria for identifying the location are included in this section, but the final location depends on the selection of the preferred layover locations.

SDOT is the lead agency in conjunction with other relevant agencies including KCM, Seattle Public Utilities, and, if appropriate, Sound Transit. As part of the decision-making process, SDOT will consider a variety of information including public feedback during the NEPA process. A more detailed description of these Project elements, the options being considered, and considerations used to identify a preferred option are described in this section. SDOT expects to identify a preferred TPSS location, northern bus turnaround route, and layover space locations as part of the NEPA process. The comfort station location and stormwater detention facilities alternative compliance would be determined later as the design advances.

Stations

The Project would include 26 new RapidRide stations (13 for each direction of travel) from 3rd Ave in the south to NE 65th St in the north, and existing stations along 3rd Ave south of Virginia St (Figure 1-2 and Figure 1-3).

The Project stations would be consistent with the existing RapidRide station standard, typically 80 feet long and including a 12-foot-long shelter or transit canopy (see photo). Longer stations would be provided at locations serving multiple routes.



Typical RapidRide Station

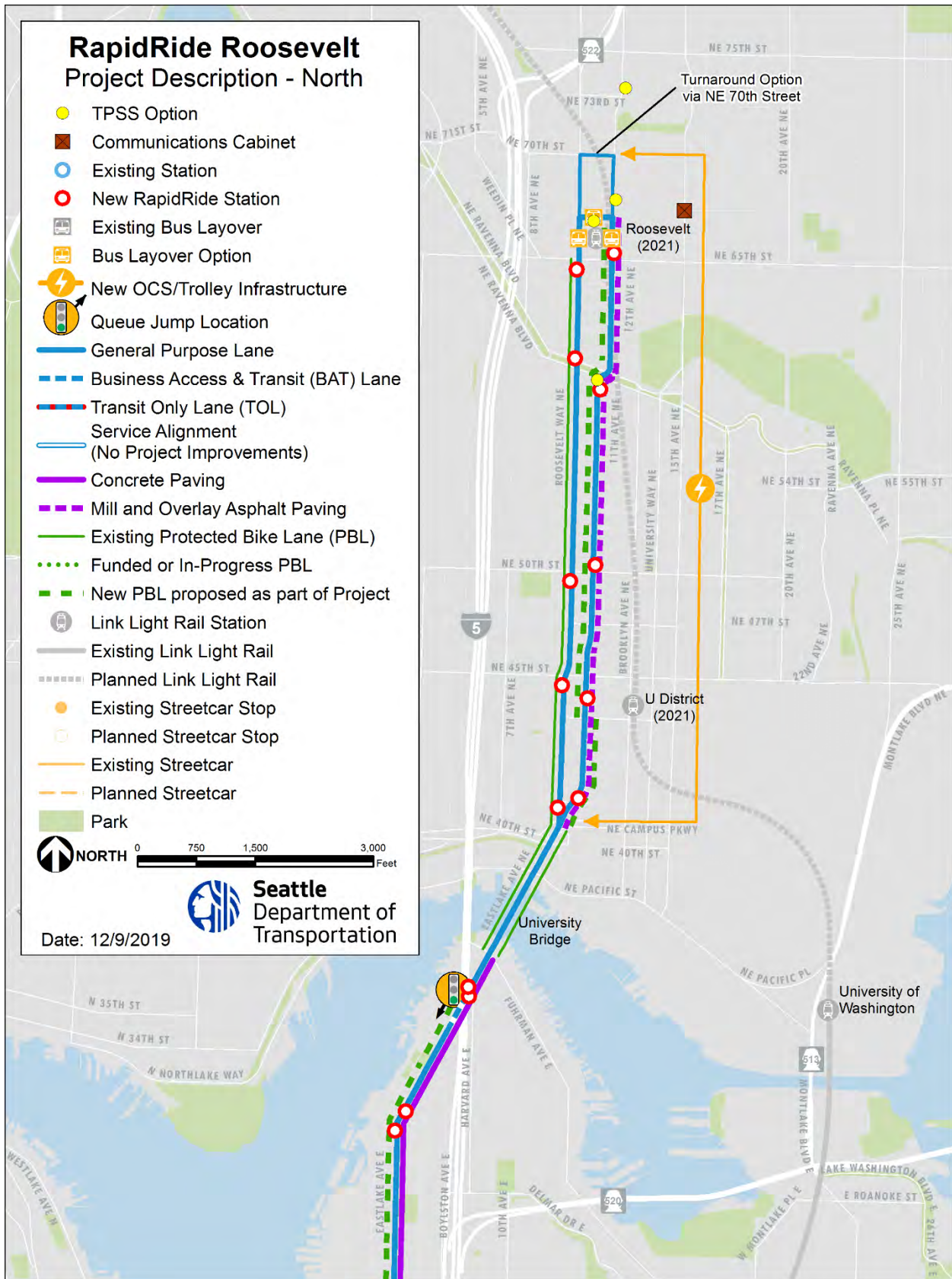


Figure 1-2. RapidRide Roosevelt Alignment – North



Figure 1-3. RapidRide Roosevelt Alignment – South

Stations would include a real-time arrival information system display, all-door boarding, a bench, pedestrian-level lighting, a trash receptacle, and RapidRide branding elements, including signature signposts and blade markers and route information maps. All stations would meet ADA requirements.

Operations

The Project would use 19 buses from the existing KCM fleet: 16 buses for operation in peak periods and 3 spare buses. All buses are 60 feet long, ADA-accessible from the front doors with a bridge plate, and articulated with front, middle, and back doors. The existing fleet has a service life until the early 2030s when the current fleet of buses would be replaced.

The Project would operate 24 hours per day with 7.5-minute headways (the length of time between transit vehicles arriving at a location) or better during AM (7 to 9 AM) and PM (5 to 6 PM) peak periods, and with 10-minute headways midday and until 10 PM on weekdays. Weekend headways would range from 10 to 15 minutes. Nighttime hourly service would be provided 7 days per week from 1 AM to 5 AM.

The Project would upgrade 33 signalized intersections (including transit signal priority and/or adaptive signals) with 5 transit queue jumps. The enhanced signal system would provide priority to transit and respond to corridor traffic congestion.

Transit Signal Priority

A modification to traffic signal timing to give transit vehicles priority over general traffic, reducing transit delay. It can be applied either to all transit vehicles or to vehicles that are running late.

Transit Queue Jump

A short additional lane at a signalized intersection that allows transit vehicles to bypass the general traffic queued at the intersection.

Roadway Improvements

Transit Lanes

The Project would provide approximately 0.2 mile of new transit-only lanes (TOLs) and 2.1 miles of new business access and transit (BAT) lanes, for a total of 2.3 miles of transit lane improvements in the South Lake Union and Eastlake neighborhoods. TOLs are typically indicated on the roadway with red pavement markings and allow buses to operate in a dedicated space and travel relatively unimpeded through congested areas. Fairview Ave N would be widened within the existing right-of-way to allow for a TOL in the center lane in the southbound direction between Valley St and Yale Ave N, which would also be utilized by the existing South Lake Union streetcar line. BAT lanes are signed curb lanes located along the route expressly reserved for buses, business access, and right turns. BAT lane markings will be determined during final design.

Paving

Full-depth concrete paving would be installed at all new stations to support the weight of the buses except where concrete already exists at stops. Full-depth concrete paving for approximately 1.4 miles is proposed on Eastlake Ave E between Fairview Ave N and Fuhrman Ave E. To add the northbound BAT lane and southbound TOL on Fairview Ave N between Mercer St and Yale Ave N, full-depth concrete paving of approximately 0.5 mile is proposed. The Project would include approximately 1.5 miles of mill-and-overlay asphalt paving along

11th/12th Avenues NE from NE Campus Parkway to NE 67th St.⁴ See Appendix I, Conceptual Design Drawings, for paving locations within the Project corridor.⁵

Electric Trolley Bus Infrastructure

Overhead Contact System

Trolley buses are powered by electricity provided by an OCS that includes both poles and contact wires above the roadway. New OCS poles and wire would be added north of the University Bridge, starting at Eastlake Ave NE and NE 40th St and continuing along 11th/12th Avenues NE, and Roosevelt Way NE. The OCS poles would be located within existing right-of-way (sidewalk) and would typically be 100 feet apart. The OCS poles would be designed as consolidated traffic signal and/or lighting poles where possible. OCS poles and wire would extend to the northern bus turnaround and layover. The Project would install approximately 360 to 410 OCS poles. Existing utility poles would be used where feasible to minimize the number of new OCS poles. Between approximately 3.4 and 3.8 miles of OCS wiring would be installed, depending on the northern bus turnaround option selected. Construction of new OCS poles and wiring could affect solid waste pickup in the Project corridor. SDOT will coordinate with Seattle Public Utilities and adjacent properties through final design.

No new poles or wire are proposed on the University Bridge. South of the University Bridge, existing OCS infrastructure would be used except in locations where roadway intersections would be widened along Fairview Ave N for the TOL and the OCS poles and wire would need to be relocated.

Traction Power Substation

Electricity to power the OCS is delivered through a TPSS (an electric substation that converts power received from Seattle City Light to the appropriate voltage, current type, and frequency for the buses; see photo). One approximately 13-foot by 21-foot TPSS with a surrounding 5-foot setback would be required for the Project (approximately 1,520 square feet in total) for the TPSS building foundation, manholes, vault, driveway, and access. An adjacent utility transformer may also be required to step down the utility voltage if an existing compatible circuit is not available near the TPSS site. This transformer would be situated adjacent to the TPSS building and would require an additional 6-foot by 4-foot space. The OCS would connect to the TPSS via new OCS poles and underground conduits and cables. The length of conduits and cables necessary depends on the location of the OCS relative to the TPSS site selected.



Typical TPSS (located at Broadway and Minor Ave)

Four sites on publicly owned property are being considered: the existing transportation right-of-way at the intersection of NE Ravenna Blvd and 12th Ave NE, Roosevelt High School property,

⁴ A project to mill and overlay the 12th Ave NE existing pavement from NE 67th St to Lake City Way may be done as a concurrent non-Project activity.

⁵ Full-depth concrete paving consists of removing and replacing the slab to the bottom of the concrete. Mill and overlay asphalt paving consists of the removal of the top 2 inches of asphalt and then overlaying with 2 inches of new asphalt.

the southern potential surplus property associated with construction of Sound Transit's Roosevelt Link Station, and the City of Seattle Green Lake Reservoir, which would use existing utility poles for OCS along 12th Ave NE. The preferred option for the TPSS site will be determined during the NEPA process and will be based on several factors, including space requirements, siting criteria (i.e., close proximity to the corridor, site accessibility, and use of public property), position in relation to the existing TPSS and OCS, right-of-way, public feedback, and costs. Through coordination with Seattle City Light, it has been determined that power would be available on the existing electrical grid at any of the four potential TPSS sites. If it is determined that none of the publicly owned properties are viable, it may be necessary to acquire an easement on private property.

Communications Cabinet

One existing communications cabinet located at the southeast corner of NE 68th St and 15th Ave NE would be replaced with a larger cabinet (approximately 3 feet by 3 feet) because the current cabinet is not large enough to serve the upgraded signals along the corridor. The cabinet sends all communication information and data through fiber optic lines. Fiber optic lines associated with the cabinet would use existing utility poles along NE 65th St and 15th Ave NE.

Bus Turnaround and Layover

Bus layover areas are places where buses park short-term while transitioning to service in a different direction and are non-boarding locations. The Project would provide layovers at the southern and northern ends of the route. Turnarounds provide a route for the buses to change direction.

Southern Layover

Buses would use the current bus layover areas located in the area bounded by S Jackson St to S Main St and 2nd Ave S to 5th Ave S. The southern layover does not affect existing bus routes and drivers would use the existing comfort station.

Northern Turnaround and Layover

Two bus turnaround options (NE 67th St and NE 70th St) are being evaluated to accommodate a maximum of 4 bus layover spaces. For the NE 67th St turnaround option, NE 67th St would be converted to one-way westbound. Compared to the NE 67th St turnaround option, the NE 70th St turnaround option would require additional OCS poles and wire. These bus turnaround options and potential layover space locations are shown in Figure 1-4.

The bus layover spaces would be on either NE 67th St, Roosevelt Way NE, or 12th Ave NE:

- **NE 67th St.** Up to four bus layover spaces are being considered along NE 67th St.
- **Roosevelt Way NE.** Up to four bus layover spaces are being considered along the west curb on Roosevelt Way NE between NE 65th St and NE 67th St.
- **12th Ave NE.** Up to four bus layover spaces are being considered along the east curb on 12th Ave NE between NE 66th St and NE 68th St.

The layover spaces on Roosevelt Way NE and on 12th Ave NE, south of NE 67th St, could be used by buses with either turnaround option. The layover spaces along NE 67th St would only be for the NE 67th St turnaround option. The layover spaces on 12th Ave NE, north of NE 67th St, would only be for the NE 70th St turnaround option.

The preferred option for the northern bus turnaround route and layover spaces will be determined during the NEPA process and based on several factors including OCS design feasibility, street design compatibility, curb space priorities such as solid waste pickup, adjacent land uses, layover accessibility and bus driver considerations, public feedback, and costs.

Comfort Station

SDOT and KCM will identify the location of a driver comfort station for the northern layover area during final design after a preferred northern turnaround route and layover spaces have been determined. Per KCM guidelines, the comfort station must be located within 1,020 feet of the layover area. The comfort station must also be connected to the local sewer system, have access to the water system for hand washing and flushing, and have an electrical connection for lighting and heating (KCM, 2018a). KCM may negotiate agreements with adjacent property owners to meet these requirements or a stand-alone facility may be constructed within public right-of-way.

Bicycle and Pedestrian Improvements

The Project would include approximately 5 miles of PBLs along 11th/12th Avenues NE, Eastlake Ave E, and Fairview Ave N that would provide access to stations and improve safety along the corridor. An example of an existing transit island/PBL configuration on Roosevelt Way NE in the Project corridor is shown on Figure 1-5. Pedestrian improvements would include sidewalk repairs at or near 23 new station locations and where Fairview Ave N is widened, ADA-compliant curb ramps, crosswalk striping, pedestrian push-buttons, and countdown pedestrian signal heads at intersections including those near stations.

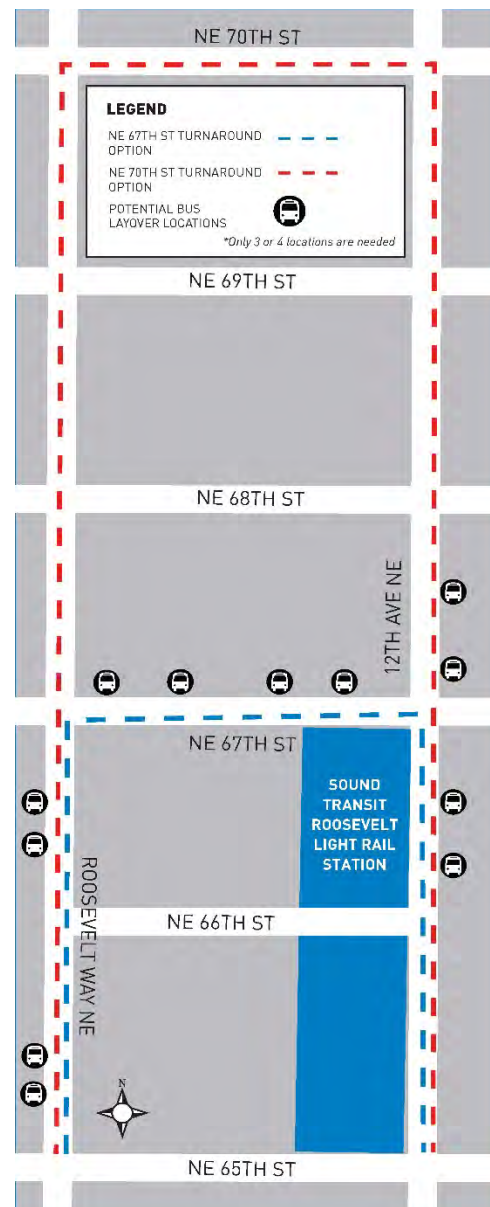


Figure 1-4. Northern Turnaround and Layover Options



Figure 1-5. Existing Transit island/PBL configuration on Roosevelt Way NE

Stormwater Improvements and Utility Relocations

Ten stormwater detention facilities (with a total capacity of approximately 25,400 cubic feet) are required to meet flow-control code requirements per the City of Seattle Stormwater Manual (City of Seattle, 2017d) as a result of increased new and replaced impervious surfaces. The detention pipes would be installed along Fairview Ave N, Eastlake Ave E, and 11th Ave NE to control the stormwater flows into the combined sewer prior to transport to the West Point Treatment Plant (WPTP). The Project may use the alternative compliance options (such as fee-in-lieu) through Seattle Public Utilities (SPU) for satisfying code compliance, reducing the required amount of proposed detention facilities.⁶ This would be determined during final design. The Project would also install or modify existing stormwater intake structures and catch basins that connect to existing stormwater facilities.

Other existing utilities that conflict with Project elements would be relocated, modified, protected, or upgraded to avoid conflicts, pavement moratoriums (timeframe when pavement cannot be disrupted), or future construction impacts. A concurrent non-Project activity by Seattle Public Utilities may also replace parts of the watermain underneath Eastlake Ave E during Project construction.

Parking and Loading Zones

To enable buses to operate in dedicated transit lanes and allow for PBLs, the Project would remove up to 699 on-street parking spaces and up to 58 vehicle loading zones in some areas of the corridor. Refer to Section 2.1.2.1 for further information on the parking and loading zone removals within the Project corridor.

⁶ The Stormwater Code allows a fee to Seattle Public Utilities to increase capacity through improvements at other locations within the stormwater basin in lieu of installing detention pipes for flow control within the Project limits.

Construction

Construction would require up to 24 months and would be phased in work zones to minimize impacts. The depth of the ground disturbance would be approximately 5 feet for station improvements and utility relocations and 10 to 15 feet for OCS pole installation. Pavement work would be at a depth of up to 1.5 feet, and stormwater detention facilities up to 10 feet. A maximum depth of 30 feet is assumed if additional utility work is identified during design or deeper foundations are required for OCS poles.

Construction equipment would include concrete trucks, flatbed trucks, vibratory rollers, dump trucks, and other equipment. Debris or spoil materials would be hauled away to approved disposal sites. Haul routes connecting the site with Interstate 5 (I-5) and State Route (SR) 520 would mainly use arterials, avoiding the use of smaller side streets as much as possible.

City of Seattle property would be used as staging areas for storage of equipment and materials. Other staging areas would be established where feasible within the roadway right-of-way. Other staging locations could include vacant or underutilized lots. Temporary construction easements (TCEs) for staging may be required and would be identified during final design. Additional activities that could require a TCE include access for workers and construction equipment for sidewalk and curb ramp improvements, and signal or OCS pole installation.

For some elements of work, such as traffic signals, paving, and bus stop islands, half of the roadway section would be closed for short durations, narrowing the roadway to one lane in each direction. Construction of new stations would typically require closure of the curbside traffic lane immediately adjacent to the work area. If full road closures are required, advance notice would be provided and the closure would typically be limited to non-peak-period weekday, evening, or weekend hours. Traffic signal work would be completed with a uniformed police officer directing traffic while the signal is turned off. Areas where on-street parking and loading zones are only affected during construction would be reestablished once construction in that area is complete. Business access would be maintained throughout the corridor in work zones.

Prior to temporary bus stop closures or relocation of existing stations, notifications to transit users would be posted. Temporary sidewalk closures may occur when construction occurs around stations for the installation of utilities and where OCS poles would be installed. Pedestrian access would be maintained on at least one side of the street. Pedestrians would be detoured with adequate signage. Bicycles may be detoured from existing facilities to nearby parallel routes or required to share the general purpose travel lanes during certain construction activities. Obstacles for bicyclists would be minimized, but may entail riding over disturbed asphalt or steel plates.

The overall construction impacts could be minimized by dividing the Project into two or more physical work zones, which would allow for multiple segments to be constructed concurrently. For example, the University Bridge would be a logical separation between two construction zones.

Construction phasing would also be used to minimize the duration of construction activities at a particular location by limiting the time a contractor would work within a given work zone adjacent to individual residents and businesses along the corridor. For example, the first phase of construction could include relocation and installation of new utilities followed by paving within an identified work zone such as Eastlake Ave E. Phasing within work zones will be evaluated during final design.

Project Costs and Funding

Construction costs have been developed as part of the preliminary design and would be further refined as design progresses. The estimated capital cost for the LPA is \$127 million (2018 dollars). The Project funding plan includes a combination of local, regional, and federal sources. In 2015, the City of Seattle voters approved the Levy to Move Seattle, which included funding for the Project. Other funding includes regional partnerships and grants. SDOT is also seeking funding through the FTA Small Starts Grant. In cases where only a portion of a scope item would be grant funded, a federal versus non-federal percentage would be negotiated.

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2. ENVIRONMENTAL RESOURCES, IMPACTS, AND MITIGATION

The Locally Preferred Alternative (LPA) would be constructed and operated in a highly urbanized area within existing publicly owned lands and transportation right-of-way. Although the RapidRide Roosevelt Project (Project) is adjacent to critical areas and Lake Union, there is little natural area, and no wetlands, floodplains, or agricultural areas would be affected; therefore, these environmental resources are not addressed. There are potential nesting sites on the University Bridge that would not likely be affected by adjacent construction work on Eastlake Ave E.⁷

Direct Impacts

Impacts that are caused by the Project and occur at the same time and place.

Operation and construction of the LPA would result in minor or no impacts on the following resources:

- **Land Use/Property Acquisition.** The Project is located within existing transportation right-of-way and does not require property acquisition or changes to existing or proposed uses. The proposed traction power substation (TPSS) is planned to be located on publicly owned property; however, it may be necessary to acquire an easement if it is determined that the publicly-owned properties are not viable. Seattle Department of Transportation (SDOT) is coordinating with Washington State Department of Transportation (WSDOT) on a potential right-of-way permit for the land adjacent to Eastlake Ave E (underneath Interstate [I-] 5) to accommodate new stations and sidewalks. All proposed work within the WSDOT limited-access area is within City of Seattle (City) right-of-way (see Section 1.3.2.2). The Project is consistent with the City's goals and policies supporting planned growth in the corridor by providing and prioritizing improved transit and bicycle access, as explained in Section 2.1, Transportation. Staging areas and temporary construction easements (TCEs) could result in temporary and minor effects on adjacent land uses. These areas would be coordinated in advance with affected property owners.
- **Air Quality and Greenhouse Gases.** Operation of the Project would improve air quality and reduce greenhouse gas emissions by decreasing the number of vehicle trips in the corridor compared to the No Build Alternative, and by shifting to primarily electric trolley buses that do not produce tailpipe emissions. There would be a net benefit to air quality during operation. Construction would result in temporary increases in dust and air emissions from equipment. Best management practices (BMPs) according to the *Standard Specifications for Road, Bridge, and Municipal Construction* (SPU, 2017) and dust control BMPs in the *City of Seattle Stormwater Manual* (City of Seattle, 2017d) would be implemented to minimize construction emissions and avoid adverse effects. Greenhouse gases from construction activities would primarily result from demolition and construction equipment, most of which would be diesel-powered. Other emissions would result from trucks hauling construction materials and from construction workers' vehicles. These construction-related greenhouse

⁷ Washington Department of Fish and Wildlife is providing SDOT guidance to avoid impacts to any potential nesting sites on University Bridge.

gases would be temporary and would also be reduced through BMPs implemented to protect air quality.

- **Utilities.** Utilities running parallel to and across the corridor include electricity, natural gas, water, sanitary and storm sewer, and communications. No utility impacts would occur during operation, and access to utilities would be maintained. During construction, impacts could occur as a result of demolition, excavation, and the installation of stations and overhead contact system (OCS) poles. Depending on the depth of utilities, there may be conflicts that require relocation or protection. As design progresses, SDOT would work with Seattle Public Utilities (SPU), Seattle City Light, and other utility providers as part of the utility relocation plan. Utility installation or relocation would meet the *Standard Specifications for Road, Bridge, and Municipal Construction* (SPU, 2017). SDOT would develop a plan for public outreach to inform customers of potential disruptions and construction schedules. If more than a short service disruption is required, temporary connections to residents and businesses would be provided.
- **Energy.** Seattle City Light would provide the electricity needed for trolley buses and can accommodate the increased electricity demand as a result of the LPA.⁸ The LPA would result in a slight reduction in vehicle miles traveled (VMT) compared to the No Build Alternative, and therefore the Project would result in less energy consumption (Appendix C, RapidRide Roosevelt Transportation Technical Report, provides further information on VMT). Construction would require the consumption of energy (i.e., fossil fuels and electricity) to operate and transport equipment and materials, but these impacts are temporary and minor.
- **Electromagnetic Fields (EMFs).** EMFs would be produced wherever electricity is used and surround all electrical equipment and facilities, including existing OCS wires and TPSS. EMFs can interfere with utilities, causing corrosion and reducing their life span. A study conducted for the RapidRide G Line (Madison Street Bus Rapid Transit) related to EMFs and the construction of a new TPSS (City of Seattle, 2017c) identified no adverse impacts from EMFs and none are anticipated with the Project. Electrical construction equipment would produce EMFs, but would not result in impacts because of the short duration.
- **Geology and Soils.** Much of the corridor has been previously disturbed for roadway construction and utility placement. There are limited geologic hazards in the corridor, defined in the Seattle Municipal Code (SMC) 25.09 Environmentally Critical Areas as liquefaction, landslide, steep slope, peat settlement, volcanic hazards, and seismic hazards. There are areas west of Fairview Ave N and Eastlake Ave E identified as liquefaction-prone areas, but no improvements would occur in this area. Geotechnical investigations will be conducted prior to construction. The results of the investigations will be used to ensure the Project meets current seismic design standards and complies with SMC 25.09. The exact number and location of geotechnical bores would be determined as part of the future design phase, but could include Project areas where new pavement, signal pole foundations, OCS poles, potential stormwater detention pipes, and stations are proposed. Boring depths would vary and would typically be 15 feet or less, but for signal or OCS poles, the boring depths could be up to 30 feet.

⁸ SDOT confirmed electricity demand can be accommodated by Seattle City Light via an email received on June 28, 2019.

- **Parks and Recreational Resources.** There are 13 parks and recreation facilities within 250 feet of the corridor; 4 of these resources are located south of the Virginia St and 3rd Ave intersection, where no improvements would occur. Operation of the Project would not result in adverse impacts to parks and recreational resources because it would be located predominantly within the existing transportation right-of-way. However, there would be a minor amount of parkland permanently modified for transportation-related facilities and a temporary use to construct these improvements within NE Ravenna Blvd (the median of the roadway is a Seattle park boulevard and part of the Olmsted park system). These permanent and temporary uses would have a minor impact on the park boulevard but not affect its overall use. The LPA would enhance safety for bicyclists and pedestrians and transit accessibility to parks. Construction would result in temporary impacts to adjacent parks and recreation resources, including increases in noise, dust, visual effects, and traffic. These impacts would be short-term and minimized through BMPs. Construction would not result in the loss of access to or use of parks and recreational resources.
- **Threatened and Endangered Species.** There are four federally listed threatened and endangered species that could be found near the corridor: Chinook salmon, steelhead trout, bull trout, and marbled murrelet. The Project would not involve any in-water work or improvements to the University Bridge. No impacts on threatened and endangered species are anticipated because there is no habitat in the corridor, and water quality in the Ship Canal/Lake Union would benefit from the Project's enhanced water quality treatment for runoff required for converting existing landscaping to pavement. There would be no impacts related to potential detention pipe installation within City right-of-way, which would control the stormwater flows into the combined sewer. Appendix B, Endangered Species Act Evaluation No Effects Documentation, provides further information.

The following sections of this chapter provide information on applicable regulations and the affected environment for potentially impacted resources. Potential impacts during operation and construction are discussed, including beneficial effects. Where needed, mitigation measures are identified that would avoid or minimize impacts.

2.1 Transportation

The Seattle transportation network consists of local and regional roadways that serve motor vehicles, transit systems, and nonmotorized travelers. The network includes the following transportation elements:

- Regional Traffic and Roadways
- Transit System
- Arterial and Local Streets
- Pedestrians and Bicyclists
- Parking
- Safety
- Freight

The transportation study area includes the streets and sidewalks where the Project corridor is located and, as appropriate, adjacent streets that might be affected (for example, streets used for parking displaced by the Project). Within the study area, 67 intersections are analyzed. Changes to the transportation elements, especially in the peak travel periods, have the potential

to affect the transportation network. The PM peak (5 to 6 PM) is considered the worst-case traffic condition with the highest congestion. The transportation technical analysis methodology in Appendix C, RapidRide Roosevelt Transportation Technical Report, describes the study methods and key assumptions for each of the transportation elements analyzed for 2017 (existing year), 2024 (year of opening), and 2040 (future horizon year).

2.1.1 No Build Alternative

The No Build Alternative includes all reasonably foreseeable future projects within or adjacent to the study area anticipated to be completed by 2024⁹ and continued maintenance of the right-of-way by SDOT. King County Metro (KCM) Routes 67 and 70 are assumed to maintain existing service with no transit improvements or changes to stop locations. Transit travel times would increase and ridership would decrease as riders switch to other modes by 2024. The differences between the No Build alternative and LPA are shown in parentheses in Table 2-1.

Under the No Build Alternative, traffic growth and congestion in the study area would result in an additional 4 intersections in 2024 and 12 intersections in 2040 operating at level of service (LOS) F, which indicates long delays in travel time.

There would be no pedestrian and bicycle improvements under the No Build Alternative within the corridor and therefore no safety improvements to reduce collisions or improve connectivity to transit stations. The No Build Alternative would not change the parking conditions along the corridor.

2.1.2 Locally Preferred Alternative

2.1.2.1 Operation

The LPA does not result in changes or only results in minor impacts on regional traffic and roadways, safety, and freight elements, and therefore, these are not addressed further (refer to Appendix C, RapidRide Roosevelt Transportation Technical Report, for information). The following provides information on the transit system, arterial and local streets, pedestrians and bicyclists, and parking elements. These elements were analyzed to compare the LPA (Build Alternative) against the No Build Alternative, and summaries for both 2024 and 2040 are provided in Table 2-1.

Transit System

KCM Routes 67 and 70 provide transit service along the corridor. Route 67 serves the northern portion of the corridor, while Route 70 serves the southern portion, with both routes continuing service east outside the Project corridor in the University District neighborhood. There are 82 other transit routes that currently operate along portions of the Project alignment, with most of them overlapping the corridor in Downtown Seattle.

⁹ Following completion of the transportation analysis of reasonably foreseeable projects in Appendix C, the Center City Connector project was modified to begin revenue service by 2026. This schedule modification has minimal change to the Project and the opening year analysis. The transportation conditions starting in year 2026 and beyond, including the 2040 future horizon year analysis, would not change because both projects would be in operation.

Compared to existing conditions and the No Build Alternative, transit service levels in the corridor would increase to all-day (24-hour) service and off-peak headways would improve; therefore, the number of daily transit trips would increase (Table 2-1).

Table 2-1. Transportation Elements Summary

| TRANSPORTATION ELEMENT | EXISTING CONDITIONS | 2024 | | 2040 | |
|---|--|----------|---|-------------------|---|
| | | NO BUILD | BUILD ^a | NO BUILD | BUILD ^a |
| TRANSIT SYSTEM | | | | | |
| Daily Weekday Bus Trips ^b | 401 | 401 | 463 (+62 trips) | 401 | 463 (+62 trips) |
| PM Average Transit Travel Times in Minutes | 50.7 | 55.9 | 38.6 (-17.3 min, 31% decrease) | 66.4 | 42.2 (-24.2 min, 36% decrease) |
| Daily Ridership in Boardings ^b | 13,090 | 10,250 | 21,600 (+11,350, 112% increase) | 12,400 | 26,750 (+14,350, 116% increase) |
| ARTERIAL AND LOCAL STREETS | | | | | |
| Intersections at LOS F in PM Peak Hour | 2 | 6 | 8 (2 more) | 14 | 13 (1 less) |
| PM Peak Hour Person Throughput ^c | 2,516 | 2,664 | 2,918 (10% increase) | 3,013 | 3,424 (14% increase) |
| PM Average Auto Travel Times in Minutes | 27.3 | 31.7 | 33.2 (5% increase) | 41.1 | 38.1 (7% decrease) |
| PEDESTRIANS AND BICYCLISTS | | | | | |
| # of ADA-compliant Curb Ramps | 130 | 130 | 323 (approximately 200 upgraded ramps) | 130 | 323 (approximately 200 upgraded ramps) |
| PBLs in lane-miles | 1.9 | 2.6 | 7.3 (approximately 5 new miles) ^d | 2.6 | 7.3 (approximately 5 new miles) ^d |
| PARKING^e | | | | | |
| On-street Parking Supply and Utilization ^e | 4,271–4,589 stalls with 72-85% utilization | | Removes up to 471 to 699 stalls | Same as Year 2024 | |
| On-street CVLZ and PLZ | CVLZ: 148-170 stalls PLZ: 89-100 stalls | | Removes up to 21 to 34 CVLZs and 15 to 24 PLZs | Same as Year 2024 | |

Table 2-1. Transportation Elements Summary

^a The values within the parentheses indicate the expected change compared to the No Build Alternative.

^b Daily weekday transit trips and transit ridership include KCM Routes 67 and 70 under existing conditions and the No Build Alternative, and includes Route 67 and RapidRide Roosevelt in the Build Alternative. Under the No Build Alternative, ridership would decrease by 2024 compared to existing conditions, as some riders switch to other modes including Link light rail.

^c Person throughput is the number of people that pass through that location for all vehicular modes (auto, bus, and transit).

^d New PBL lane-miles have been rounded from 4.7.

^e Range of on-street parking values is due to time-of-day restrictions. Utilization is for the entire Project corridor.

ADA = Americans with Disabilities Act

CVLZ = commercial vehicle loading zone

PBL = protected bicycle lane

PLZ = passenger loading zone

Transit travel times and reliability along the corridor would improve with new traffic signals and queue jumps, station upgrades, transit lanes, and riders no longer needing to transfer between KCM Routes 67 and 70 or other less-direct routes (i.e., KCM Route 49 or 62). As a result, transit travel times during the PM peak would decrease over 30%.

The transit benefits in conjunction with the planned growth are expected to increase transit ridership in the corridor to more than double compared to the No Build Alternative.¹⁰ In addition to travel time improvements for the Project, the streetcar travel time and reliability would improve in South Lake Union with the addition of the southbound transit-only lane (TOL) at the Valley St and Fairview Ave N intersection, which would be used by buses and the streetcar.

Planned changes to bus stop locations for optimization (which may include consolidation of stops) would occur with the Project and have been developed consistent with KCM standards for RapidRide stop and station spacing (KCM, 2018b). These standards state that the desired transit stop spacing is 1/3 to 1/2 mile in higher-density (built-up) areas and that the minimum spacing between each transit stop pair should be 1/4 mile. Following these standards, the 50 existing bus stops along the corridor would be consolidated to 38, with the changes for the Project occurring along 11th Ave NE, Eastlake Ave E, and Fairview Ave N to optimize stop spacing and transit operations. This consolidation would reduce transit travel time and improve reliability, but would require passengers currently using stops that would be eliminated to walk farther to reach transit service. The average stop spacing along the corridor would increase from the existing spacing of about 1/4 mile to slightly more than 1/3 mile. There are 12 bus stops in the Project corridor that are not RapidRide that would remain and provide service for other routes (e.g., KCM Route 67).

Because of bridge opening restrictions between 7 AM and 9 AM, and 4 PM and 6 PM, travel along the corridor would not typically be interrupted by the University Bridge during those travel times. Outside of those periods, the bridge opens an average of fewer than four times per day (as recorded in 2017 between 9 AM and 4 PM and 6 PM and 11 PM). In comparison, the Project would have over 100 bus trips crossing the University Bridge during those periods. Based on existing KCM Route 70 data, the bridge opening affects about 8% of the Route 70 trips over

¹⁰ Link light rail will provide direct service between the Roosevelt and Downtown Seattle stations in the future No Build Alternative, with travel times of approximately 15 minutes between these two stations. The Project would provide new RapidRide stations in South Lake Union and Eastlake neighborhoods (which are not directly served by Link light rail) and new RapidRide stations in the University District and Roosevelt neighborhoods, thereby providing better access to the Link light rail stations.

the bridge. While the bridge opening typically takes up to 4.6 minutes, the average travel time for Route 70 buses is about 1 minute longer with bridge openings compared to times when bridge openings are restricted. This indicates that the bridge opening has a minor impact on overall reliability and transit speed, and Project improvements along the corridor would help ensure the schedule is maintained.

Arterial and Local Streets

The primary roads in the study area are Roosevelt Way NE, 11th Ave NE, 12th Ave NE, Eastlake Ave E, Fairview Ave N, Virginia St, Stewart St, and 3rd Ave. There are two intersections operating at LOS F in the corridor (Fairview Ave N/Mercer St and Fairview Ave N/Denny Way). Traffic volumes and congestion are expected to increase, but traffic operations with the LPA would be similar to the No Build Alternative. Travel patterns and roadway operations would adjust along the corridor as more people use transit and roadways are modified with the Project’s transit improvements. As a result, some intersections would experience lower amounts of delay while others would increase. Table 2-1 shows the LPA results in two additional intersections operating at LOS F in 2024 but one fewer intersection operating at LOS F in 2040, compared to the No Build Alternative. Intersections operating at LOS F in the No Build Alternative and LPA are primarily located in the Downtown and South Lake Union neighborhoods.

Level of Service (LOS)
 A qualitative measurement of intersection operation based on control delay. LOS is reported as letter grades A (low delay per vehicle) through F (very high delay per vehicle; could involve long queues).

The ability for more people to travel through the corridor (person throughput) by all modes would increase under the LPA compared to the No Build Alternative because of the projected increase in transit ridership. In 2024, average auto travel time would increase by less than 2 minutes with the LPA in the PM peak; however, by 2040 auto travel times would improve by 3 minutes with the LPA (versus the No Build Alternative) as the Project reduces congestion in certain areas. The changes in auto travel times over the full 6-mile corridor are not considered to be substantially different between the No Build Alternative and the LPA.

Person Throughput
 The number of people able to enter or exit the transportation system during an analysis period compared to an alternative.

The Project crosses the WSDOT modified limited-access area of I-5 along Fairview Ave N between Mercer St and Valley St.¹¹ At the Fairview Ave N and Mercer St intersection there are no infrastructure or channelization changes proposed to the east leg of the intersection that serves as the southbound and northbound I-5 off- and on-ramps and I-5 express lane exit ramp. Additionally, no roadway modifications are proposed to the west leg of the intersection (Mercer St). There are channelization changes proposed in the WSDOT limited-access area on the north and south approaches at the Fairview Ave N and Mercer St intersection and on the south leg at the Fairview Ave N and Valley St intersection. Based on the traffic analysis, vehicle queues on the east leg, I-5 westbound off-ramp at the Fairview Ave N and Mercer St

¹¹ Limited-access highways (such as I-5) mean the abutting property owner’s right of access to the highway has been purchased, with the result being that the abutting property owner may, or in most cases may not, have access to the highway. See Appendix C Section 2.2.3 for more information.

intersection would not be longer with the LPA than with the No Build Alternative. Therefore, the Project is not expected to impact I-5 ramps or the I-5 travel lanes at this location.

Pedestrians and Bicyclists

Currently, there are sidewalks and crosswalks along both sides of the corridor, but bicycle facilities are not continuous. The LPA would replace and improve sidewalks adjacent to and in close proximity to 23 new stations. Approximately 200 curb ramps would be upgraded to be Americans with Disabilities Act (ADA)-compliant at intersections along the corridor. Crosswalk markings at intersections with traffic signals would also be upgraded to current standards to improve safety.

The Seattle Bicycle Master Plan (City of Seattle, 2014) recommends protected bicycle lanes (PBLs) on Fairview Ave N, Eastlake Ave E, and 11th/12th Ave NE. About 1,720 bicycle riders cross the University Bridge per day (the second highest bicycle count in the city) and most of these continue to Downtown. There are no PBLs currently along Eastlake and Fairview Avenues, which experience some of the highest numbers of bicycle collisions in the corridor (40 between 2012 and 2017). The PBLs would improve safety for all users by allowing for greater separation between bicyclists and motor vehicles/buses and reducing conflicts, providing greater predictability of people on bicycles and reducing the potential for conflicts at intersections.

The Project would add about 5 lane-miles of PBLs, including the following:

- A two-way cycle track on the north side of Fairview Ave N would connect Valley St to the Fairview Ave N bridge. The cycle track would be separated from the road by proposed sidewalks and landscaping between Valley St and Yale Ave N, and separated by a buffer from vehicular traffic on Yale Ave N up to the planned PBLs on the north side of the bridge (except between Yale Ave N and Ward St, where there would not be a cycle track and bicycles and pedestrians would both use a shared-use path that is separated from vehicular traffic by a landscaped strip).
- PBLs on Eastlake Ave E would be provided on both street curbsides between the Fairview Ave N bridge and Harvard Ave E. Transit islands for four in-lane stations in each direction would route the PBLs between the bus island and the curb. Between Harvard Ave E and the University Bridge, bicycle lanes would not be protected from vehicular traffic and would connect to the existing PBLs across the bridge.
- A northbound curbside PBL on 11th/12th Avenues NE between NE Campus Parkway and NE 67th St would serve as the couplet to the existing southbound PBL on Roosevelt Way NE. The PBL would be located on the east curbside between NE Campus Parkway and NE 43rd St to connect more safely with the U District Link station near NE 43rd St, then shift to the west curbside between NE 43rd St and NE 67th St to connect with the Roosevelt Link station near NE 67th St. Having the PBL on the west curbside locates the PBL on the left side of a one-way street consistent with City guidance for one-way streets with transit service and bicycle lanes.¹² A transit island for one in-lane northbound station in each direction would route the PBL between the bus island and the east curbside at NE

¹² Seattle Right-of-Way Improvements Manual - <https://streetsillustrated.seattle.gov/design-standards/bicycle/bike-lanes-and-transit-service/>

41st St, but remaining stations would be along the east curbside on the opposite side of the street from the PBL.

The bicycle facilities would serve the Project by providing access to the transit stations along the corridor, connect with existing bicycle facilities, and fill an existing gap in the regional bicycle network, thereby improving bicycle connections with the transit system. The PBLs would buffer the bicycle lane from the travel lanes and improve safety for bicyclists by separating them from other modes and removing them from mixed traffic. City Council Ordinance 125902 requires SDOT to construct PBLs that were identified in the Bicycle Master Plan whenever constructing a major paving project or alternatively provide a report to City Council if SDOT determines that the characteristics of the physical features or usage of a street, or financial constraints of full compliance, prevent the incorporation of PBLs with adequate directionality. The PBLs on Fairview Ave N, Eastlake Ave E, and 11th/12th Ave NE are consistent with the ordinance and therefore do not require reporting to the City Council.

Parking

There is on-street parking on both sides of the roadway and numerous off-street parking facilities except in the Eastlake neighborhood. A curb space management study was conducted (refer to Appendix C, RapidRide Roosevelt Transportation Technical Report) which found there are between 4,271 and 4,589 on-street parking stalls within the study area¹³ with an average utilization rate of 72% to 85%. The utilization rates vary depending on the time of day, with highest rates occurring during midday. Also, depending on peak parking restrictions, between 148 and 170 commercial vehicle loading zones are provided and between 89 and 100 passenger loading zones are available in the study area.

| Utilization |
|---|
| Number of vehicles parked (occupancy) in an area compared to the available inventory. |
| Utilization rates over 85% generally indicate conditions where people find it difficult to find parking spaces. |

The LPA would remove between 471 and 699 on-street parking stalls (depending on peak parking restrictions). Between 21 and 34 commercial vehicle loading zones and 15 to 24 passenger loading zones would be removed in the Project corridor. Within the Eastlake neighborhood, the LPA would remove all on-street parking and loading zones along Eastlake Ave E between Fairview Ave N and Fuhrman Ave E. This is estimated to include the removal of 325 on-street parking stalls and relocation of up to 18 commercial vehicle and 4 passenger vehicle loading zones. During mid-day, on-street parking along Eastlake Ave E is well utilized with more than 90% of the on-street parking stalls on Eastlake Ave E in the Eastlake commercial district¹⁴ occupied. Additionally, approximately 25% of these vehicles parked on-street along Eastlake Ave E during the mid-day are for durations over 4 hours. Longer durations are assumed to be associated with employee or residential parking. An overnight study of parking in the Eastlake neighborhood had relatively low utilization on Eastlake Ave E (34%), likely because

¹³ The parking study area includes all the block faces along the Project corridor except for south of 3rd Ave and Virginia/Stewart St and also includes cross streets and parallel streets one block away (east and west directions) from the Project corridor. This area was selected as the study area to provide an understanding of the immediate impacts to the Project and account for available parking within a reasonable walking distance to and from the corridor. The overnight study was a larger area and therefore has more parking inventory.

¹⁴ The Eastlake commercial district is identified as the area on Eastlake Ave E between E Roanoke St and E Newton St.

residents may not use available parking after businesses and restaurants close in the evenings and because of early morning parking restricted zones for the southbound curb lane.¹⁵

With the northern layover options, the school bus loading zones along 12th Ave NE between NE 67th St and NE 68th St would be impacted if layover was provided along this section of the street with the NE 70th St bus turnaround option. With the NE 67th St bus turnaround option, the proposed curb space uses, including passenger load zones associated with developments along NE 67th St as part of the Roosevelt Link light rail station, could be impacted if layover is provided along NE 67th St.

2.1.2.2 Construction

Construction would affect all modes of travel within the corridor and would result in short-term impacts. Lane closures would affect transit service, including temporary stop closures and delays to buses from congestion. It is expected that the existing transit routes would continue along the corridor and not require detours. If full road closures are required, advance notice would be provided, and the closure would typically be limited to non-peak-period weekday, evening, or weekend hours. The upgrade to RapidRide stations at many existing stops would require their temporary relocation. Station construction would typically occur over 4 to 6 weeks and require the closure of the sidewalk surrounding the station area that is under construction. One or more crossings could be temporarily closed and pedestrian detours would direct persons at intersections to cross to the sidewalk opposite from the construction work.

Bicycles would be required to detour to general purpose travel lanes where dedicated bicycle lanes overlap with station, OCS, and signal construction work. Cyclists continuing to ride on the corridor may need to ride over disturbed asphalt or steel plates, or alternatively could use parallel streets where available to avoid construction.

Most construction activities would temporarily remove on-street parking and loading zones along the portion being constructed. Parking along cross-streets or parallel streets is less likely to be affected by construction but could see a temporary increase in demand.

2.1.2.3 Mitigation

Operation

During operation, the Project would improve transit service and offer new and upgraded pedestrian and bicycle facilities to provide alternatives to driving and parking in the corridor. Therefore, no mitigation is necessary for transit, pedestrian, and bicycle operations. While the consolidation of existing bus stops may result in a longer walk time for some riders to access transit, there would be new and upgraded sidewalk improvements. The Project would also upgrade approximately 200 curb ramps to be ADA-compliant, providing more accessible sidewalks and transit for people with impaired mobility.

Regarding the reduction of on-street parking, the City refers to policies that guide the management of right-of-way to best accommodate transportation needs for the community. The City's 2019 Comprehensive Plan, *Seattle 2035* (City of Seattle, 2019), establishes policies to

¹⁵ The overnight parking utilization study collected parking data on July 17, 2019 for a one-hour period between 3 AM and 4 AM to determine the overnight parking needs during weekdays. A second data sample was collected on July 31 to collect data for a few blockfaces that were missing from the first collection. Overnight parking utilization was 34% on Eastlake Ave E and 76% in the overall extended study area.

address the competing and diverse needs of transportation, including modes and users at the curb. The Comprehensive Plan identifies priorities for the use of the “flex zone,” which is the portion of the right-of-way between travel lanes and the sidewalk. These priorities depend on the predominant land use of the surrounding area, but in all cases modal plans are the top priority for use of the flex zone. This means that recommendations in Seattle’s modal plans for bicycles, freight, pedestrians and transit are given priority over other possible uses of the flex zone, including parking and loading.

SDOT’s overall goals are to develop projects and programs to more efficiently move people and goods, support the vitality of business districts, and create livable, sustainable neighborhoods. Because not every function can fit on every street, the Comprehensive Plan establishes a framework policy to prioritize and determine how to meet functions on each corridor or nearby. Specifically, T 2.6 states:

Allocate space in the flex zone to accommodate access, activation, and greening functions, except when use of the flex zone for mobility is critical to address safety or to meet connectivity needs identified in modal master plans. When mobility is needed only part of the day, design the space to accommodate other functions at other times.

Seattle’s Complete Streets policy was adopted in 2007 by Seattle City Council Ordinance 122386. This policy directs SDOT to design streets for pedestrians, bicyclists, transit riders, and persons of all abilities, while promoting safe operation for all users, including freight. It establishes two priorities for the design of Seattle’s streets: the highest priority is safety and the second priority is mobility for people and goods. The Complete Streets policy directs SDOT to consider improving the safety and efficiency of the transportation system whenever improvements are made to transportation facilities.

The Comprehensive Plan and Seattle’s Complete Streets policy ensure that the right-of-way accommodates multiple travel modes. However, the City also recognizes that within the right-of-way the reduction in on-street parking, particularly in the Eastlake neighborhood, would be a change from current conditions and proposes the following mitigation measures.

Parking in Eastlake Neighborhood.

Within the Eastlake neighborhood, there is limited on-street parking and few off-street facilities that might supplement the parking supply. To mitigate, the City would work with Eastlake businesses and residents on the following parking and access strategies:

- Identify and implement ways to manage street parking in the Eastlake business and residential areas during construction and post-construction for commercial deliveries, passenger pick-up and drop-off, and visitor and customer access. SDOT would identify opportunities to install additional loading zones, short-term parking, designated disabled zones, or a combination of these, on nearby streets off of Eastlake Ave E. The effort would include field work such as considering existing slopes, community discussions, investigating options, and installing signage as feasible. Options include allowing street parking on both sides of a street where it currently exists on only one side (where there is sufficient curb-to-curb width) and adjusting the restricted parking zone (RPZ) to emphasize short-term parking for visitors and customers.
- Prepare a shared-use parking plan for the Eastlake neighborhood looking at the potential for businesses and residential properties to identify and share off-street parking spaces.

Implementing shared parking strategies would entail the private businesses and residential properties directly contracting with vendors that provide these services.

- Review RPZ 8 to ease parking congestion in the Eastlake residential area and more appropriately balance and prioritize the needs of curb space users in the neighborhood. SDOT's RPZ Program team would:
 - Conduct an on-street parking data collection effort throughout the zone
 - Identify draft changes to zone regulations
 - Review potential changes with community members (including a required public hearing)
 - Make changes to RPZ 8 based on data and community input

As part of this study, SDOT would review the community-generated RPZ strategies identified during public outreach.

Parking in other Neighborhoods

Within the Roosevelt, University District, South Lake Union, and Downtown Seattle neighborhoods, parking mitigation is not required because either the on-street parking removed in the neighborhood is not substantial or there is sufficient available parking (on-street or off-street) in the neighborhood to accommodate the lost on-street parking.

Loading Zones

The City will relocate affected passenger, commercial vehicle, shuttle services, and truck loading zones along the Project corridor, where feasible.

Construction

SDOT would complete detailed construction plans during the final design and permitting phases in advance of starting construction. A Traffic Control Plan (TCP) consistent with the Seattle requirements under Client Assist Memo 2111 and the Traffic Control Manual for In-Street Work (SDOT, 2012) would be prepared and approved prior to construction. The TCP would include detailed measures to address lane closures and pedestrian and bicycle detours and closures, information on flaggers and signal control, and agency coordination plans.

In addition to the TCP, construction mitigation for the Project would include coordination with other ongoing construction projects and advance coordination with special event planners to reduce impacts at periods of high travel demand. SDOT and KCM would work together to monitor the impact of construction on transit service and implement additional actions if needed. For areas where on-street parking and loading zones are affected during construction, SDOT would provide information to the neighborhood and businesses about other parking opportunities and available transportation options in lieu of driving.

2.2 Noise and Vibration

Noise is defined as unwanted sound, which is an experience of exposure to different sound levels. Vibrations from transit vehicles and construction equipment can cause windows, doors, and items on shelves to rattle in adjacent buildings, and potentially damage buildings.

Applicable Regulations

FTA Transit Noise and Vibration Impact Assessment Manual

Seattle Noise Control Code SMC 25.08.

The noise and vibration impact analysis (see Appendix D, RapidRide Roosevelt Noise and Vibration Technical Report) uses the methods described in Federal Transit Administration's (FTA's) *Transit Noise and Vibration Impact Assessment Manual* (FTA, 2006).¹⁶ Measurements were conducted at five locations in the Project corridor to establish existing noise conditions. Existing noise levels in the corridor ranged from 66 to 74 decibels over the 24-hour period measured. The study area was defined as 100 feet on either side of the LPA. The analysis assessed potential impacts on noise- and vibration-sensitive land uses (nearby residential, public, and commercial uses).

2.2.1 No Build Alternative

As the population increases and employment continues to grow within the corridor, noise is expected to increase.

2.2.2 Locally Preferred Alternative

Operation. Based on the analysis, operation would not result in noise impacts to sensitive land uses. Seven vibration-sensitive receptors were identified (two condominium complexes, one recording studio, two University of Washington (UW) Medical Center buildings, and two commercial buildings) that could be impacted. However, further assessment using receptor-specific adjustments for each receptor (i.e., type of building foundation) resulted in no exceedance of the FTA criteria; therefore, no vibration impacts are anticipated.

Construction. Construction activities would result in short-term increases in noise and vibration. It is anticipated that construction would be phased in work zones so that no individual area would be affected for the entire duration. Noise is predicted to exceed FTA and City of Seattle daytime construction noise criteria at residential and commercial receptors. Paving compaction is the only source during construction that has the potential to damage buildings (e.g., cracked plaster). Other construction activities are not anticipated to produce enough vibration to affect buildings but may cause annoyance.

Mitigation. During operation, no mitigation is required because there would be no noise or vibration impacts. Construction mitigation would include development of construction noise and vibration control plans with each plan including measures to mitigate construction noise (e.g., limit engine idling or use of engine exhaust mufflers) and vibration (e.g., phase vibration-producing activities or use lower-vibration equipment if possible). Appendix D, Noise

¹⁶ FTA updated its manual in 2018 to include source reference levels for new transit technologies, and to change some mitigation policies. The electric bus source reference levels that were used in this analysis were not changed; therefore, the impact assessment methodology did not need to be updated.

and Vibration Technical Report, includes measures that could be included in the plans. If construction occurs at night, a Noise Variance from the City will be required. With the implementation of these mitigation measures, construction impacts would be minimized or avoided.

2.3 Socioeconomics

The corridor connects the neighborhoods of Downtown Seattle, Belltown, South Lake Union, Eastlake, University District, and Roosevelt. The neighborhoods are all urban in nature, with a mixture of residential, retail, and office uses. The highest densities are found in Downtown Seattle.

The lowest densities are in Roosevelt because of the adjacent single-family residential neighborhood. The study area for socioeconomics is 0.25 mile around the corridor, where most of the impacts and benefits would occur. Community facilities in the study area include religious institutions, libraries, schools, and social service organizations. The Seattle Police and Fire Departments respond to calls and there are hospitals within the study area. Government offices are located mainly in Downtown Seattle. As noted in Section 1.2, Purpose and Need, population and employment are forecasted to increase by 29% and 50%, respectively, by 2035.¹⁷

Based on U.S. Census data, there are 50,544 residents within the study area, 5% under age 18 and 12% 65 and over (U.S. Census, 2018). The population 65 and over is similar to Seattle as a whole (11.9%), but the population under 18 is much lower (4.8%) when compared to Seattle (15.3%). This might be a result of the proximity to the UW and the number of college students living in the University District and not families with children. The percentage of households with no vehicle (transit-dependent) in the study area is much higher than Seattle (38.2% compared to 16.8%). Section 3, Environmental Justice, provides information on minority and low-income populations. Most of the businesses adjacent to the corridor in neighborhoods outside of Downtown Seattle tend to provide goods and services to those living and working in the immediate area and include restaurants, coffee shops, and services such as cleaners and dentists. Major employers in the study area include Amazon, the City of Seattle, King County, the UW, and the regional medical centers. Additionally, Westlake Center in Downtown Seattle is a major employment hub. The unemployment rate in Seattle was 3.8% in December 2018 (Bureau of Labor and Statistics, 2019).

Applicable Regulations

Title VI of the Civil Rights Act of 1964 prohibits discrimination based on race, color, and national origin.

2.3.1 No Build Alternative

Neighborhoods would continue to lack bicycle and pedestrian safety improvements and continue to experience increased levels of congestion and delayed transit service because the No Build Alternative would not implement Project improvements.

¹⁷ The increase in population and employment are based on the area within 0.5 mile of the corridor given the size of the areas where data is available from the PSRC.

2.3.2 Locally Preferred Alternative

Operation. The LPA would benefit residents and employees along the Project corridor with increased connectivity, providing a direct bus connection between the Roosevelt and Downtown Seattle neighborhoods and increased transit speed, reliability, and passenger-carrying capacity. While the LPA would remain within right-of-way, changes to transit, bicycle, and on-street parking facilities could result in impacts.

To increase transit service speed and reliability, bus stop optimization as discussed in Section 2.1 would be required under the LPA. In some cases, the optimization of bus stops would increase the distance for some riders to access their stops. For people with mobility issues, the increase in distance could make it more difficult to use transit or take longer to access. There would be pedestrian safety improvements to crosswalks and sidewalks, and ADA-compliant curb ramps and stations. The addition of TOLs and business access and transit (BAT) lanes would increase transit speed and reliability and not impact travel through the neighborhoods or access to businesses. While PBLs would require on-street parking removal in some areas, there would be improvements to transit and safety by separating bicycles from auto and transit traffic.

The removal of on-street parking could impact those with mobility issues and adjacent businesses. The LPA would not remove signed disabled parking spaces, but there would be an increased demand for the remaining parking, potentially resulting in longer distances to access destinations. Displaced passenger loading zones would be relocated nearby, where feasible, to minimize impacts. The reduction of on-street parking could indirectly impact businesses along the corridor (see Section 2.8, Indirect and Cumulative Impacts). However, many of the businesses in the neighborhoods outside of Downtown Seattle are focused on those living and working in the surrounding neighborhood and therefore vehicle access is less likely to be needed for patronage. In addition, the LPA would provide multimodal access to businesses for customers and employees who might otherwise be deterred by increasing traffic congestion.

Operation is not anticipated to result in the creation of new transit employment opportunities.

Construction. Impacts during construction would include temporary increases in noise and vibration, dust, and traffic congestion and temporary removal of on-street parking and loading zones. Pedestrians and bicyclists may be detoured to avoid the areas under construction, and transit stops would need to be temporarily relocated. Some businesses could be affected during construction, but business access would be maintained to the greatest extent feasible.

Mitigation measures and BMPs would be implemented to avoid or minimize construction impacts (see Sections 2.1, Transportation, and 2.2, Noise and Vibration). Construction workers would likely frequent businesses along the corridor, and the need for construction materials and jobs would be a benefit for the larger region. Construction workers could park vehicles within TCEs and staging areas but could also use existing on-street parking spaces or off-street paid parking lots temporarily affecting the parking supply in construction zones.

Mitigation. The LPA would minimize operational impacts to businesses from the removed on-street parking through the mitigation identified in Section 2.1. Because loading zones would be relocated where feasible, impacts on businesses or persons with mobility issues would be minimized, and additional mitigation is not required. No other mitigation is required during operation. During construction, SDOT would develop and implement a public information plan

that will prescribe outreach to businesses and residents near construction areas, and regular communications with community organizations and service providers.

2.4 Visual and Aesthetic Resources

The corridor travels through the high-density and tall buildings in Downtown Seattle, the mixed-use districts in South Lake Union, Eastlake and University District, and mixed-use and residential areas in the Roosevelt neighborhood. Fairview Ave N and Eastlake Ave E are City scenic routes, defined as areas where protection of views of scenic natural and human-made features is encouraged.

Transportation-related elements in the corridor right-of-way include roads, sidewalks, bus stops, traffic signals, and signage. There are above ground utilities in the corridor, including OCS poles and wires on and south of the University Bridge.

Applicable Regulations

SMC 25.05.675K. Addresses light and glare from developments that can affect motorists, pedestrians, and the surrounding area.

SMC 25.05.675.P. Protects public views of significant natural and human-made features including Puget Sound and the Space Needle.

2.4.1 No Build Alternative

Under the No Build Alternative, there would be no Project-related visual changes along the corridor.

2.4.2 Locally Preferred Alternative

Operation. Much of the corridor would not change as a result of the LPA because there are existing bus stops and above ground utilities. The new stations would reinforce the urban visual character of the areas where they would be constructed and would not impact important views or create new light and glare. The primary change would be the OCS poles and wires north of the University Bridge (Figure 1-2), which would be visible but similar to the existing utility wires and poles and consistent with the urban visual character (see Appendix E, Visual Simulations). A visual simulation depicting the LPA at 12th Ave NE and NE Ravenna Blvd is provided on Figure 2-1.

The TOLs, BAT lanes, and PBLs would be noticeable, because new street markings and signage are required and on-street parking and loading zones would be removed in some areas. These improvements would be at ground-level and would have no impacts on the visual character of adjacent areas or important views and would not create impacts from light or glare. Along Fairview Ave N, landscaped areas in the sidewalk would be removed. The landscaped medians on Eastlake Ave E would be maintained.

The new TPSS would have the appearance of a small building and would not be out of scale or visual character at the four potential sites under consideration. The replaced communications cabinet would be in the same location as the existing cabinet, and the scale of the upgraded cabinet would not be substantially larger than the current cabinet and would not result in changes to the visual character. Layover sites would not result in visual impacts because the southern site is an existing layover and the northern layover options would be consistent with the adjacent urban character in the Roosevelt neighborhood.



Figure 2-1. Simulation of Project Improvements Looking North up 12th Ave NE at NE Ravenna Blvd

Construction. There would be minor impacts to the existing visual character in the corridor because of the temporary nature and anticipated phasing of work zones. If nighttime construction is required, lighting will be directed downward to reduce impacts on adjacent residences.

Mitigation. No mitigation is required for operation and construction because there are no visual impacts.

2.5 Stormwater/Water Quality

The highly urbanized corridor consists almost entirely of impervious surface except for planting strips with landscaping in the right-of-way. Stormwater runoff generally flows in sheets off the roadway to the roadside curb and gutter. Runoff is collected by inlets or catch basins and conveyed through storm drainage or combined storm-sewer systems to points of discharge.

Drainage in the corridor collects in six stormwater basins that discharge to either Puget Sound or the Ship Canal/Lake Union. Three basins drain to the

Applicable Regulations

- Sections 401 and 402 of the Clean Water Act
- Washington State Water Quality Standards
- Washington State Department of Ecology Stormwater Management Manual for Western Washington
- National Pollutant Discharge Elimination System Program's General Permit for Stormwater Discharges Associated with Construction Activities
- Stormwater Code and 2017 City of Seattle Stormwater Manual (SMC 22.800-22.808)

Ship Canal/Lake Union through the SPU stormwater collection system outfalls and are not treated prior to discharge. The other three basins drain to the WPTP, which discharges to Puget Sound, through a combined sewer that transports sanitary sewer and stormwater flows in the same pipelines. Stormwater draining to the WPTP receives secondary treatment.

2.5.1 No Build Alternative

Under the No Build Alternative, there would be no changes in pollution-generating hard surfaces (PGHS), defined as impervious surfaces considered to be a significant source of pollutants in stormwater runoff, and no stormwater discharges from the Project.

2.5.2 Locally Preferred Alternative

Operation. The LPA increases PGHS by approximately 25,220 square feet as a result of converting existing planting strips/landscaping to pavement. Almost half of the new PGHS (12,320 square feet) would be located along Fairview Ave N, which discharges to a separated stormwater system managed by SPU. Approximately seven Filterra treatment units (a self-contained stormwater treatment system with bioretention) are proposed to meet water quality standards in the Stormwater Code (SMC 22.800) and the 2017 City of Seattle Stormwater Manual for the three basins draining to the Ship Canal/Lake Union through the stormwater system. The Filterra treatment units would provide water quality treatment to runoff that is not currently treated, resulting in water quality benefits over existing conditions.

The LPA would also replace PGHS as part of the paving on Eastlake Ave E and 11th/12th Avenues NE. The total area of new PGHS and replaced hard surface is approximately 625,000 square feet. Because the replaced hard surfaces exceed 10,000 square feet in combined sewer basins, flow control to avoid system overflow is required. Flow control manages the discharge rate and/or duration of drainage water from a site. Approximately 10 stormwater detention facilities (with a total capacity of approximately 25,400 cubic feet) would be installed along Fairview Ave N, Eastlake Ave E, and 11th Ave NE to control the stormwater flows into the combined sewer prior to transport to the WPTP. The Project may use the alternative compliance options (such as fee-in-lieu) through SPU for satisfying code compliance, reducing the required amount of proposed detention facilities.

Construction. Sediment from construction activities (i.e., utility relocation, paving, and curb ramps improvements) may drain into the separated stormwater and combined sewer systems.

Mitigation. Operation would result in beneficial effects to stormwater and water quality, and therefore no mitigation is required. A Stormwater Pollution Prevention Plan would be prepared as part of the National Pollutant Discharge Elimination System Construction Stormwater General Permit that would be required. The plan would identify BMPs consistent with the 2017 Stormwater Manual to minimize soil erosion and sediment entering the separated stormwater and combined sewer systems during construction. No additional mitigation measures are required.

2.6 Hazardous Materials

Hazardous materials that may be encountered during operation and construction would require special handling and disposal. While newer developments recently constructed or under construction may have cleaned up hazardous materials, some contaminants from older developments or sites not fully cleaned could be encountered. The hazardous materials assessment (see Appendix F, RapidRide Roosevelt Hazardous Materials Technical Memorandum) identified 502 potential hazardous material sites within the 0.125-mile study area that includes 31 high-risk sites. High-risk sites are those that have existing soil or groundwater contamination and are located adjacent to areas proposed for utility construction that have the greatest potential to result in impacts.

2.6.1 No Build Alternative

Under the No Build Alternative, there would be no potential impacts to hazardous material or contaminated sites and no releases or spills of hazardous substances.

2.6.2 Locally Preferred Alternative

Operation. Impacts during operation of the LPA are unlikely because most of the buses would be powered by electricity, but fuel spills could occur when diesel buses are in use.

Construction. Potential impacts during excavation activities could result from encountering existing soil or groundwater contamination from high-risk sites. Soil or groundwater contamination could be found on or adjacent to contaminated sites and in utility corridors, which can be conduits for underground contamination. Because the LPA would be constructed mainly within existing right-of-way in areas that have been previously disturbed, encountering hazardous materials containers (such as underground storage tanks) is not likely. Groundwater depths in the corridor range from 10 to 45 feet and fluctuate seasonally. Groundwater would be deeper during the dry summer season. Groundwater is not likely to be encountered during most of the construction work because of the anticipated maximum depth of 5 feet in most of the corridor.

Of the 31 high-risk sites, 14 are in Downtown Seattle and South Lake Union, south of Harrison St, where construction activities are not anticipated to exceed 5 feet deep. This would minimize the potential for encountering hazardous materials. Of the other 17 high-risk sites north of Harrison St, there are 9 sites located in close proximity to either the stormwater detention pipes or OCS poles that would require deeper excavation; however, because the Project would be constructed mainly within existing right-of-way in areas that have been previously disturbed,

Applicable Regulations

- Comprehensive Environmental Response, Compensation, and Liability Act (42 United States Code [U.S.C.] 9601, et seq.)
- Superfund Amendments and Reauthorization Act
- Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901, et seq.)
- Clean Water Act (33 U.S.C. Section 1 251, et seq.)
- Toxic Substances Control Act (15 U.S.C. 2601-2629)
- Dangerous Waste Regulations (Washington Administrative Code [WAC] 173-303)
- Model Toxics Control Act (WAC 173-340)
- Underground Storage Tanks (WAC 173-360)
- SMC 25.05.675(F) - Environmental Health

encountering hazardous materials is not likely. SDOT will identify the 9 high risk sites in Project specifications and will include publicly available information from the Washington State Department of Ecology. Any unanticipated contamination encountered during construction will follow the *City Standard Specifications for Road, Bridge, and Municipal Construction* (SPU, 2017).

Potential construction impacts could result from accidental release of hazardous substances (such as lubricants and fuels needed for equipment). Spills of any size, if not contained, could harm water quality in the immediate area and large spills could require an emergency response.

Mitigation. Operation of the LPA would not result in impacts and no mitigation is required. Prior to construction, an SDOT-approved Spill Plan, Waste Management Plan, Stormwater Pollution Prevention Plan, and Health and Safety Plan will be prepared and implemented.

2.7 Section 4(f) Resources

2.7.1 No Build Alternative

Under the No Build Alternative, there would be no potential impacts to Section 4(f) resources.

2.7.2 Locally Preferred Alternative

Operation. There would be no impacts to Section 4(f) resources during operation of the LPA.

Construction. At the intersections of 11th/12th Avenues NE and Roosevelt Way NE, the Project would construct transportation-related facilities within the median of NE Ravenna Blvd, which is both a Section 4(f)-protected park and historic resource (known as Ravenna Boulevard). Ravenna Boulevard is part of the Olmsted park system in Seattle.

At the Ravenna Boulevard park resource (i.e., median), there is currently approximately 1,800 square feet (0.04 acre) of park property being utilized for transportation-related purposes (sidewalk, curb, poles, and signal infrastructure); the Project would permanently incorporate an additional 1,500 square feet (0.03 acre) of park property. At the intersections of 11th/12th Avenues NE and Roosevelt Way NE, the Project includes placement of new poles (including OCS poles to support bus trolley wire), signal infrastructure (such as cabinets, conduit, and junction boxes), and sidewalk widening within the Ravenna Boulevard park resource. The size of the impacted parkland is minor relative to the overall size of the Ravenna Boulevard park resource, which extends east-west for approximately 1.4 miles and is approximately 40 feet wide. There are no recreational amenities or features where parkland would be permanently incorporated and the temporary occupancy of this resource during construction would not interfere with recreational activities. The Project would not result in any noise, visual, or access-related impacts to this park resource.

Per the Section 4(f) regulations (Code of Federal Regulations [CFR] Title 23 §774.17), a *de minimis* impact for a park resource is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). Based on the assessment of Project impacts described above, FTA has made a preliminary determination that the Project would have a *de minimis* impact on the Ravenna Boulevard park resource. FTA and SDOT will solicit public feedback on the *de minimis* determination for this resource through the Environmental Assessment (EA) publication and subsequent public outreach. FTA will request concurrence from Seattle Parks and Recreation Department on the *de minimis* impact after the

EA public comment period. Refer to Appendix J, Section 4(f) Documentation, for information on the *de minimis* determination.

Project impacts at the Ravenna Boulevard historic resource are the same as described for the Ravenna Boulevard park resource. However, the Project defined the boundaries of the historic resource as extending beyond the roadway to include sidewalks and planting strips on either side of the streets. Within the boundaries of historic Ravenna Boulevard, changes to the roadway (repaving) and sidewalk corners (placement of OCS poles and sidewalk improvements) would be in keeping with existing transportation-related uses at these intersections.

FTA has made a preliminary determination that the Project would have a *de minimis* impact on the Ravenna Boulevard historic resource based on the Finding of No Adverse Effect made under Section 106. Per the Section 4(f) regulations (23 CFR §774.17), a *de minimis* impact for a historic resource means that the FTA has determined, in accordance with 36 CFR part 800, that the Project will have “no adverse effect” on the historic property in question. The FTA has informed the Washington State Historic Preservation Officer of its intent to make a *de minimis* determination for the Ravenna Boulevard historic resource. More detail on Project impacts to this historic resource is provided in Section 2.8.2 and Appendix J.

Aside from the Ravenna Boulevard park and historic resource, there would be no Project impacts to other Section 4(f) resources.

Mitigation. Operation of the LPA would not result in impacts to Section 4(f) resources and therefore no mitigation is required.

SDOT is working to minimize impacts within the Ravenna Boulevard park resource and historic resource during construction when locating new transportation-related facilities. SDOT’s overall goal is to limit impacts to the park boulevard and surrounding grass and trees, and maintain the existing look and feel of Ravenna Boulevard to the greatest extent possible.

2.8 Cultural Resources

Cultural resources include historic and prehistoric archaeological sites, districts, buildings, structures, objects, and landscapes. They also include cultural or traditional places or resources that have value to a community, such as an Indian tribal group. The Project is located within a highly developed area with a mix of newer and older developments. A cultural resources study was conducted to comply with Section 106 of the National Historic Preservation Act of 1966, (refer to Appendix G, RapidRide Roosevelt Cultural Resources Technical Report). The purpose of the study was to determine whether the LPA would have adverse effects on cultural resources within an identified Area of Potential Effects (APE). An APE is the geographic area within which a

project may cause direct or indirect alterations to the character or use of historic properties¹⁸ or archaeological resources.

The APE (Figure 2-2) includes both above ground and below-ground areas. The above ground portion of the APE includes the existing right-of-way and parcels immediately adjacent to areas of Project-related above ground structures (i.e., new stations, new or relocated OCS poles, the potential TPSS sites, an upgraded communications cabinet, and traffic signal improvements). The below-ground APE consists of construction ground disturbance areas and varies from 2 feet to a maximum of 30 feet deep, with most of the disturbances about 5 feet deep. On

October 10, 2018, the Washington Department of Archaeology and Historic Preservation concurred with the APE.

No archaeological sites were identified within the APE. While much of the APE has been previously disturbed by roadway construction and installation of utilities, some areas are considered by the Department of Archaeology and Historic Preservation to have a high probability for containing archaeological materials.

A total of 303 properties within the APE met the age criteria as historic properties. Forty-two of these either had previous National Register of Historic Places (NRHP) determinations within 5 years of being surveyed for this Project or were already listed in the NRHP. The remaining 261 properties that met the age criteria for listing in the NRHP were evaluated. Research identified 25 historic properties previously listed in or determined eligible for listing in the NRHP: one local Special Review District, two NRHP-listed historic districts, two individually listed NRHP properties, 10 residential properties (that contribute to the Ravenna-Cowen North Historic District), and 10 NRHP-eligible properties. In addition to the 25 historic properties previously identified, 32 historic properties were surveyed and determined eligible for listing in the NRHP. The fieldwork and literature search together identified a total of 57 historic properties listed in or eligible for listing in the NRHP.

The federally recognized Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Suquamish Indian Tribe of the Port Madison Reservation, Stillaguamish Tribe of Indians of Washington, Tulalip Tribes of Washington, and Confederated Tribes and Bands of the Yakama Nation were consulted about the presence of any known archaeological sites or other cultural resources that could be affected by construction of the LPA. These federally recognized tribes were invited to participate in the Section 106 process as a consulting party and to provide comments on the Project's Cultural Resources Technical Report.

Applicable Regulations

- National Historic Preservation Act of 1966, U.S.C. Title 54, Section 306108, and its implementing regulations, Code of Federal Regulations Title 36, Part 800
- SMC 25.05.675H. Policies to preserve historic sites, structures, districts, and archaeological sites.
- Seattle Landmarks Preservation Ordinance (SMC 25.12). Process for the designation of local City landmarks and districts.

¹⁸ Historic properties generally need to be at least 50 years of age to be eligible for listing in the NRHP unless they are proven to have exceptional importance.

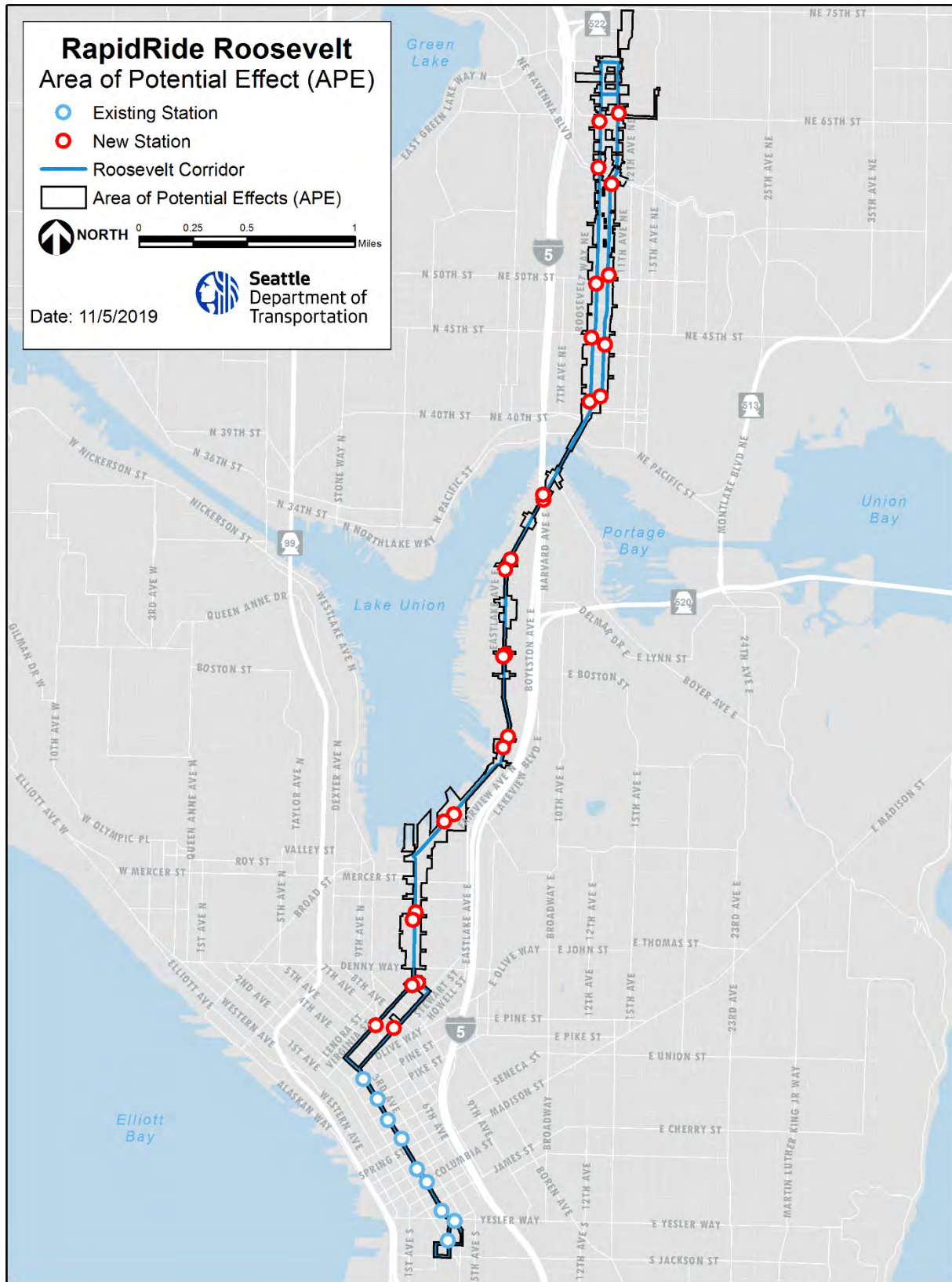


Figure 2-2. Area of Potential Effects

The non-federally recognized Duwamish Tribe, Friends of Seattle's Olmsted Parks, and Seattle's Historic Preservation Officer were also consulted. The Snoqualmie Indian Tribe commented that the corridor is considered to be culturally significant and recommended that SDOT conduct an archaeological survey. SDOT will coordinate with the Snoqualmie Indian Tribe for those areas where an archaeological monitor is required during construction.

2.8.1 No Build Alternative

Under the No Build Alternative, SDOT would continue to maintain the right-of-way but there would be no Project-related changes in the corridor.

2.8.2 Locally Preferred Alternative

Operation. The corridor travels through the Pioneer Square-Skid Road Historic District and the Seattle International Special Review District, but because no improvements are proposed in these areas there would be no adverse effects to the historic districts.

During operation, new OCS poles and wires would run along 11th/12th Avenues NE and Roosevelt Way NE adjacent to historic properties and the Ravenna-Cowen North Historic District. A new station would be added within the viewshed of historic Ravenna Boulevard and the University of Washington Parking Garage, and a TPSS option would be adjacent to historic Ravenna Boulevard. These Project features would have no adverse effect on historic properties because they are in keeping with the current transportation-related uses.

Construction. At the historic Ravenna Boulevard, approximately 1,800 square feet currently used for transportation-related facilities within the median would be upgraded or replaced with new poles, signal infrastructure, and sidewalk widening. In addition, there would be approximately 1,500 square feet in the landscaped median of historic Ravenna Boulevard permanently modified by the Project for new transportation-related facilities. Paving would occur directly adjacent to the Ravenna Boulevard median, but would be similar to existing conditions and would not adversely affect the historic property. The Project would be consistent with existing transportation-related uses and the changes represent a small portion of the 1.4-mile-long boulevard; as such, there would be no adverse effects to the Ravenna Boulevard historic resource.

Intact archaeological sites are not expected to be encountered during construction because the LPA is within an urban setting and most of the corridor has been previously disturbed. Construction activities, including temporary visual, noise, vibration, and dust impacts, would not have adverse effects on historic properties and districts. Most construction and staging areas would be contained within the existing right-of-way. If staging areas or TCEs are required, these would avoid effects on historic properties and districts. As noted in Section 2.2, vibrations from paving compaction have the potential to cause cosmetic building damage (such as cracked plaster), which could affect 26 adjacent historic properties, mostly single-family residences located on 11th Ave NE, listed in or determined eligible for listing in the NRHP. These impacts would be minimized or avoided through the implementation of mitigation measures set forth in the Construction Vibration Control Plan. Appendix D, Noise and Vibration Technical Report, provides further information.

Mitigation. No mitigation is required during operation because the LPA would not result in effects on archaeological or historic resources. FTA, in consultation with the Washington State

Historic Preservation Officer, determined on September 26, 2019, that the LPA would result in No Adverse Effect on historic buildings or structures, and therefore no mitigation is required (the October 1, 2019, concurrence letter from the Washington State Historic Preservation Officer regarding this determination is provided in Appendix G).

SDOT will prepare an Archaeological Monitoring Plan and consult with the Department of Archaeology and Historic Preservation and tribes prior to construction. Construction would be monitored by a qualified archaeologist when ground disturbance exceeds 18 inches in depth, except for areas already disturbed for existing utility corridors and OCS poles. An Inadvertent Discovery Plan has been developed and identifies the procedures that SDOT will follow if archaeological resources are encountered during construction.

2.9 Indirect and Cumulative Impacts

National Environmental Policy Act (NEPA) requires that indirect and cumulative impacts be evaluated along with the direct impacts for each project alternative.

2.9.1 No Build Alternative

No indirect or cumulative impacts would occur under the No Build Alternative.

2.9.2 Locally Preferred Alternative

2.9.2.1 Indirect Impacts

The LPA would have few indirect impacts on environmental resources because the Project is located within existing right-of-way.

Operation. Because the LPA supports the City's policies and goals and planned growth in the corridor, the Project would not have indirect impacts on land uses, population density, or growth rates.

The loss of on-street parking would not directly impact businesses along most of the corridor because they have available parking on-site, parking is available at one of the private off-street lots in the neighborhood, or there is on-street parking on adjacent streets although it is typically heavily utilized. There may be indirect impacts on businesses in the Eastlake neighborhood because the elimination of on-street parking could impact auto-dependent customers and therefore associated revenues could be redirected to other businesses with more parking availability. There may also be indirect impacts to e-commerce and app-based food deliveries and transportation network companies picking up/dropping off passengers. As noted in Section 2.1, approximately 25% of the vehicles on Eastlake Ave E are parked longer than 4 hours and most likely belong to employees or residents. Improved transit service and new PBLs would offer more varied points of access to greater numbers of people on Eastlake Ave E. Potential indirect impacts from parking loss are not expected to affect the underlying adjacent land uses along

Indirect Impacts

Those effects that "are caused by the action and are later in time and farther removed in distance, but are still reasonably foreseeable." (Code of Federal Regulations Title 40, Section 1508.8)

Cumulative Impacts

"...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (Code of Federal Regulations Title 40, Section 1508.7)

the corridor. Parking mitigation would reduce the potential for indirect impacts on businesses, and the Project would implement modal priorities consistent with the Comprehensive Plan; therefore, although the Project could result in indirect impacts on businesses due to changes in on-street parking and loading zones, it is consistent with the City's goals and policies related to the best use of curb space.

There are several studies in neighborhood commercial areas similar to Eastlake assessing business impacts from the removal of on-street parking and the addition of bicycle facilities (Drennen, 2003; Clifton et al., 2012; Toronto Center for Active Transportation, 2016; Stantec Consulting Ltd., 2011; Popovich and Handy, 2014; and Arancibia et. al., 2019). These studies have found that there can be benefits for businesses as a result of new bicycle lanes even with the removal of on-street parking, and the change may not negatively affect businesses. With the implementation of mitigation measures related to parking, improvements in transit and bicycle access, and the planned growth in the corridor, no long-term indirect impacts on businesses are anticipated.

Construction. Construction of the LPA would not result in indirect impacts.

Mitigation. No mitigation for indirect impacts is required during operation or construction. Mitigation for associated parking impacts during operation is addressed in Section 2.1.2.

2.9.2.2 Cumulative Impacts

To contribute to a cumulative impact on an environmental resource, there must be an impact on the resource as a result of the LPA. Because the Project is located primarily within existing right-of-way, there are few associated cumulative impacts on environmental resources. The Project would not result in adverse impacts on land use, utilities, EMFs, geology and soils, parks and recreation, Section 4(f)/Section 6(f) resources, threatened and endangered species, noise and vibration, visual and aesthetic resources, hazardous materials, and cultural resources; therefore, no cumulative impacts are anticipated. For other resources, including transportation, air quality and greenhouse gases, socioeconomic, stormwater/water quality, and environmental justice, the Project would result in potential impacts; therefore, these resources are analyzed for cumulative impacts. Cumulative impacts consider impacts from projects that are reasonably foreseeable (those actions that are likely or probable, versus actions that are merely possible), in combination with impacts from the LPA to understand if the incremental difference results in new or larger impacts.

Operation. Operation of the LPA would result in beneficial cumulative impacts related to connections to existing and planned transit services. The improved access would be especially beneficial to those who are transit-dependent by providing more connections to employment and educational opportunities. The addition of approximately 5 lane-miles of PBLs would support existing and future expansions of the bicycle network and connections to transit along the corridor. The Project would also result in beneficial air quality and stormwater benefits in combination with other transportation projects that reduce VMT and require stormwater treatment. The cumulative impacts of the LPA on traffic conditions in the corridor are already included in the impacts discussed in Section 2.1 because transportation modeling includes the reasonably foreseeable transportation projects for year of opening (2024) and future horizon year (2040). With other planned transit projects (i.e., Link and Center City Connector, and other King County RapidRide corridors), transit ridership is expected to increase, and, as a result, no cumulative impacts on the roadway network in the corridor are anticipated.

As noted in Section 2.1, on-street parking is already heavily utilized in the corridor under existing conditions and the supply is not likely to increase in the future. The Project would remove on-street parking along the corridor, and the construction of private development projects could increase or decrease off-street parking supply. It is anticipated that in the near term WSDOT will end private lease agreements with businesses that allow off-street parking underneath east side of I-5 bridge in the Eastlake neighborhood due to the State Route (SR) 520 project. Private developments in the corridor would benefit from access to RapidRide and future Link light rail stations. This transit-oriented development of residential and commercial space within walking distance of public transit is consistent with the City's goals and policies related to the best use of curb space.

The City recently adopted citywide Mandatory Housing Affordability (MHA) legislation that covers certain areas and requires that new multifamily and commercial development either include affordable homes or contribute to a City fund for affordable housing.¹⁹ To implement MHA, the City made zoning changes and modifications to the Land Use Code (SMC Chapter 23). Future developments must comply with MHA, and the construction of additional affordable units could reduce the availability of off-street parking within future developments by allowing for more housing units and less parking. However, mitigation strategies identified as part of MHA would reduce these potential parking impacts, including travel demand management and parking strategies such as SDOT's Community Access and Parking Program and Performance-Based Parking Program. With the mitigation proposed by the Project, the development of additional off-street parking with permitted private projects, and the mitigation requirements under MHA for certain areas including the Eastlake neighborhood, there would be minor cumulative impacts with regard to a reduction of on-street parking.

Construction. Construction activities that overlap with other projects would result in cumulative impacts due to noise, dust, and traffic congestion. Construction of the Project and other developments would temporarily reduce on-street parking during overlap periods. The impacts during construction would be minimized through the implementation of mitigation measures and BMPs as part of the LPA and the other projects. As a result, cumulative impacts during construction would be minor.

Mitigation. No mitigation for cumulative impacts is required during operation or construction.

¹⁹ The Downtown neighborhood, the South Lake Union neighborhood, and a portion of the University District neighborhood have already implemented MHA requirements through separate processes.

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3. ENVIRONMENTAL JUSTICE

An environmental justice analysis was conducted to determine the potential for disproportionately high and adverse impacts on minority and low-income populations (Appendix H, RapidRide Roosevelt Environmental Justice Technical Report). The analysis was prepared using guidance from the 2012 Federal Transit Administration (FTA) circular *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (Circular FTA C4703.1).

This analysis collected input from public outreach efforts (Section 4.2) and demographic data, and assessed whether potential impacts from operation or construction would be adverse and could result in disproportionately high and adverse impacts on minority or low-income populations. The study area extends approximately 0.25 mile from the Locally Preferred Alternative (LPA) and was based on the extent of potential impacts of other environmental resources.

| Applicable Regulations |
|--|
| <ul style="list-style-type: none">• Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations• U.S. Department of Transportation (USDOT) Order 5610.2(a) to Address Environmental Justice in Minority Populations and Low-Income Populations• USDOT FTA, Circular FTA C 4703.1, Environmental Justice Policy Guidance for Federal Transit Administration Recipients, August 15, 2012• Executive Order 13166, Improving Access to Services for Persons with Limited-English Proficiency |

Demographic data on minority and low-income populations was collected using American Community Survey 5-year (2013-2018) estimate data (U.S. Census, 2018). Minority populations in the study area (40.2%) are higher than Seattle (34.7%), with higher concentrations in the University District (54.3%) and Belltown (43.8%) neighborhoods. The low-income population in the study area (23.9%) is almost double that of Seattle (12.5%), with higher concentrations found in the University District (50.3%) and Downtown Seattle (23.6%) neighborhoods. Because of the higher minority and low-income populations in the University District and the potential for students to be living in the study area attending school and not working or working part-time, demographic data from the University of Washington (UW) were collected and reviewed. Based on the most current data for undergraduate students (UW, 2018), the minority population attendance was over 60% (including students who reside outside of the study area). Approximately 27% of undergraduate students are eligible to receive grants and would be considered low-income (UW, 2018). UW housing developments within the study area indicate a higher presence of students. There are several social service organizations in the study area, such as shelters and food banks, with most located in Downtown Seattle.

3.1 No Build Alternative

The No Build Alternative would not remove on-street parking or result in changes to bus stop locations. The No Build Alternative would also not provide the benefits associated with improved transit speed and reliability, and the existing transit service is assumed to remain in

place along the RapidRide Roosevelt Project (Project) corridor. There would also be no safety improvements for bicycles and pedestrians associated with the No Build Alternative.

3.2 Locally Preferred Alternative

3.2.1 Operation

Operation of the LPA would potentially result in impacts associated with the removal of on-street parking and bus stop optimization. In most parts of the corridor (except in the Eastlake neighborhood), there is enough available on-street or off-street parking to offset the loss of on-street parking. Businesses in Eastlake do not provide services unique to minority and low-income populations, and Eastlake has the lowest percentage of minority and low-income populations within the study area. Bus stop optimization, which is consistent with King County Metro (KCM) RapidRide guidelines, would increase walking distances to bus stops along portions of the corridor and may result in minor impacts to users, especially those with mobility issues. The removal of on-street parking and bus stop optimization would impact minority and low-income populations to the same degree as all populations.

The Project would result in several benefits, including improved transit speed and reliability, expanding connections to neighborhoods and transit, and bicycle safety. These benefits would apply to a greater degree to low-income populations and others who depend on transit. The transit, bicycle, and pedestrian improvements would help to maintain movement in the corridor neighborhoods, which are identified for high growth and expected to become more congested. Based upon the analysis conducted, the Project would not result in disproportionately high and adverse effects on minority and low-income populations.

3.2.2 Construction

Construction impacts would be short-term in nature and reduced through implementation of mitigation measures. The impacts would affect all populations to the same degree, and are not anticipated to be disproportionately adverse to minority or low-income populations.

3.2.3 Mitigation

No mitigation for environmental justice impacts is required during operation or construction.

4. PUBLIC, TRIBAL, AND AGENCY COORDINATION

Public outreach and participation are integral parts of the transportation planning process. Federal guidelines and procedures have been followed to involve the public throughout the RapidRide Roosevelt Project (Project).

4.1 Roosevelt to Downtown High-capacity Transit Study

Seattle Department of Transportation (SDOT) held six open house meetings during the initial planning process for the corridor study, two each in May 2015, December 2015, and June 2016. Meeting notices were posted on the Project website, social media, and community calendars, and distributed via notices mailed to organizations, agencies, and the public-at-large. Open houses were held on consecutive days at Americans with Disabilities Act (ADA)-compliant locations along the corridor to provide convenient accessibility and minimize travel distances. The public was invited to provide feedback through comment cards, online through website links, or through one-on-one conversations at the meetings.

4.2 Public Outreach

An Inclusive Outreach and Public Engagement plan (Outreach Plan) was developed that provides information on how SDOT achieves meaningful public engagement. The Outreach Plan is updated periodically and includes information on key messages, anticipated concerns, stakeholder list, and planned outreach. Stakeholders include community groups and neighborhood organizations, bicycle and pedestrian advocacy groups, adjacent property owners including businesses and residents, City of Seattle (City) departments, and other agencies. The planned outreach methods, both in-person and online, are designed to engage, inform, and solicit feedback from stakeholders on the Project and the various Project elements.

The Project website (<http://www.seattle.gov/transportation/projects-and-programs/programs/transit-program/transit-plus-multimodal-corridor-program/rapidride-roosevelt>) provides stakeholders with information on progress, upcoming meetings, contact information, and a place for those interested to sign up for future updates over email. Through design and construction SDOT will continue to reach out to engage and solicit feedback.

4.2.1 Public Scoping Meeting

SDOT and Federal Transit Administration (FTA) held a public scoping meeting for the Project on December 11, 2017. Approximately 43,000 mailers were sent to residents and businesses within 0.25 mile of the corridor. The mailers provided information on the meeting time and location, background, and how to provide comments and be involved. The mailer included information in Spanish, Chinese, and Arabic on how to receive translated meeting materials.

The public scoping meeting provided the opportunity for the public to review and comment on the purpose and need, the alternatives to be analyzed, and the range of issues to be addressed in the Environmental Assessment (EA). Approximately 37 people attended the meeting. For those unable to attend, SDOT provided links to posted materials on the Project website, email addresses, and a mailing address where written comments could be provided. SDOT received 141 comments (from 25 businesses and 116 individuals). The primary comments received were about loss of parking, the need for protected bicycle lanes, the range of alternatives and design elements, and support or opposition for the Project. Appendix A, RapidRide Roosevelt Project Scoping Report, provides further information.

4.2.2 Eastlake Neighborhood Project Briefing

SDOT held a briefing meeting with a question and answer session on October 23, 2018 to share information on the proposed bicycle facility for the neighborhood and discuss the strategies to address the loss of on-street parking. SDOT sent a mailer to residents and businesses in the Eastlake neighborhood and included text in Spanish, Chinese, and Arabic on how to receive translated materials. The meeting was held in an ADA-compliant facility at TOPS-8 in the Eastlake neighborhood and approximately 100 community members attended. Outcomes of the meeting included SDOT's commitment to (1) continue to engage Eastlake residents and business owners in a parking workshop on strategies to address the loss of on-street parking, (2) conduct business surveys along Eastlake Ave E, and (3) continue coordination with residents and businesses throughout design and construction.

4.2.3 Eastlake Neighborhood Parking Workshop

SDOT held a parking workshop with the Eastlake neighborhood on January 24, 2019 to provide information on potential parking strategies. The goals of the meeting were to better understand the community concerns and solicit feedback and other ideas from community members on how to address on-street parking removal in the Eastlake neighborhood. Information was sent to businesses and community members who requested to participate. The meeting was held at the Center for Wooden Boats in South Lake Union. Approximately 40 community members provided input on the proposed parking strategies and suggested new ones.

The meeting began by introducing strategies to address the loss of parking, followed by small group discussions and then input to the larger group on those strategies. The restricted parking zone (RPZ) and relocation of loading zones received the most input from community members. New strategies suggested by the community members included incentives to use transit or bikeshare, using the area under Interstate (I-) 5 for parking, changing code requirements for parking in new buildings, and revising the Project design to maintain parking.

4.2.4 Eastlake Business Survey

SDOT conducted door-to-door outreach to about 150 business in the Eastlake neighborhood in spring 2019. The goal of the outreach was to inform business owners about the Project and the removal of on-street parking on Eastlake Ave E, gather information related to business needs (i.e., delivery location, access needs, etc.), answer general questions, and determine if businesses would be interested in participating in a forum discussing potential parking strategies. On July 31, 2019, two forums (one in the daytime and one in the evening) were conducted for business owners to discuss Project impacts on parking in the neighborhood.

4.2.5 Design Update Open Houses and Outreach

SDOT facilitated design update outreach in October 2019 by having two open houses, sending mailers and emails, and sharing an online interactive map for the public to provide feedback about Project features, including station locations and ADA/accessibility needs. The goal of the outreach was to provide the public an opportunity to review the Project's history and current plans, and to see how community feedback has been incorporated into those plans. Open houses were held for the University District and Roosevelt neighborhoods on October 17 at the University Heights Center and for the Eastlake, South Lake Union, and downtown neighborhoods on October 28 at the TOPS K-8 School gymnasium. SDOT will consider the feedback received from October 2019 outreach as Project design progresses.

4.3 Agency and Tribal Coordination

As part of the environmental process, SDOT developed an Agency and Tribal Coordination Plan that provides details on agency and tribal roles and responsibilities for the Project. Throughout the planning process, SDOT has worked closely with King County Metro (KCM), who is a funding partner for the Project and the RapidRide operator. An agency and tribal scoping meeting was held on December 13, 2017, with KCM, FTA, Sound Transit, and Washington State Department of Transportation (WSDOT). SDOT and FTA have also provided opportunities for agencies and tribes to provide comments on materials related to the development of the EA.

FTA is responsible for government-to-government coordination with affected federally recognized Native American tribes regarding transit projects. There are no tribal lands located in the Locally Preferred Alternative (LPA) corridor, but tribes have been consulted about their interests related to natural and cultural resources. FTA initiated consultation with the Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Stillaguamish Tribe of Indians of Washington, Suquamish Indian Tribe of the Port Madison Reservation, Tulalip Tribes of Washington, and Confederated Tribes and Bands of the Yakama Nation to invite them to provide input during scoping in writing on December 4, 2017. FTA followed this with additional correspondence concerning cultural resources on September 24, 2018, December 19, 2018, and October 1, 2019. FTA contacted the tribes by letter and invited them to provide feedback and attend the agency scoping meeting and comment on the Area of Potential Effects (APE). During the scoping period, the Muckleshoot Indian Tribe provided a comment concerning possible fishery impacts on the University Bridge. During the Section 106 process, the Snoqualmie Indian Tribe provided input related to archaeological resources. The non-federally recognized Duwamish Tribe, Friends of Seattle's Olmsted Parks, and Seattle's Historic Preservation Officer were also consulted during the Section 106 process.

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