



# I-5 Rose Quarter Improvement Project

## Supplemental Environmental Assessment

Oregon Department of Transportation  
Federal Highway Administration

November 15, 2022

*This page is intentionally left blank.*

I-5 Rose Quarter Improvement Project  
Multnomah County, Oregon  
Key Number 19071  
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT  
Submitted pursuant to 42 U.S.C. Section 4332(2)(C) and 49 U.S.C. Section 303  
U. S. Department of Transportation, Federal Highway Administration  
and  
Oregon Department of Transportation

11/10/2022	<b>Megan Channell</b> Digitally signed by Megan Channell Date: 2022.11.10 12:12:10 -08'00'
----- Date	Megan Channell, Oregon Department of Transportation, Rose Quarter Project Director
11/10/2022	<b>KEITH LYNCH</b> Digitally signed by KEITH LYNCH Date: 2022.11.10 15:52:58 -05'00'
----- Date	Keith Lynch, Division Administrator, Federal Highway Administration, Oregon Division

The following persons may be contacted for further information. Additional Project information is available at ODOT's website: <https://www.i5rosequarter.org/>.

Carol Snead  
Environmental Project Manager  
Oregon Dept. of Transportation  
123 NW Flanders Street  
Portland, OR 97209  
(503) 470-3127

Shaneka Owens  
Region 1 Operations Engineer  
Federal Highway Administration  
530 Center Street NE  
Salem, OR 97301  
(503) 316-2553

**Abstract:** The Oregon Department of Transportation (ODOT) is proposing improvements to Interstate 5 (I-5) through the Rose Quarter district in downtown Portland. The proposed improvements extend existing auxiliary lanes and adds a new auxiliary lane to improve safety and operations on I-5 between Interstate 84 and Interstate 405. Improvements to local streets include a new highway cover to improve multimodal connections over I-5, modifications to the Broadway/Weidler interchange, traffic flow revisions, and local system multimodal improvements. This Supplemental Environmental Assessment (SEA) evaluates the benefits and impacts of two alternatives: one in which the Project would move forward as planned (the Revised Build Alternative), and one in which the Project would not be built (the No-Build Alternative). ODOT evaluated the Project (the Build Alternative) in the 2019 Environmental Assessment (EA) and in the Finding of No Significant Impact and Revised EA in 2020, but has since made design changes that led to the Revised Build Alternative evaluated in this SEA. The SEA provides the public, businesses, interest groups, and agencies at all levels of government an opportunity to understand the Project's benefits and impacts. The SEA also provides transportation officials with information that will allow them to make informed decisions about the Project that balance engineering and transportation needs with social, economic, and natural environmental factors, such as noise, air quality, and traffic patterns.

This Supplemental Environmental Assessment and associated documents were prepared in compliance with Section 508 of the Rehabilitation Act of 1973. Additionally, an appendix containing detailed figure descriptions is provided for reference. Requests for descriptions or clarification regarding items such as technical drawings or maps should be directed to the ODOT Environmental Project Manager at (503) 470-3127.

*This page is intentionally left blank.*

# Table of Contents

Acronyms and Abbreviations .....	vii
Executive Summary.....	1
1 Introduction.....	1
1.1 Project Location.....	1
1.2 Background.....	1
1.3 Need for a Supplemental EA.....	4
1.4 Project Purpose and Need .....	4
1.5 Project Goals.....	5
2 Project Alternatives.....	7
2.1 Project Development.....	7
2.1.1 Background.....	7
2.1.2 Independent Cover Assessment.....	7
2.1.3 Advancement of Project Design .....	9
2.1.4 Development of the Revised Build Alternative.....	9
2.2 Alternatives Carried Forward.....	12
2.2.1 No-Build Alternative.....	12
2.2.2 Revised Build Alternative .....	12
2.2.2.1 I-5 Mainline Improvements .....	13
2.2.2.2 Highway Cover.....	17
2.2.2.3 Broadway/Weidler Interchange Improvements .....	21
2.2.2.4 Relocate I-5 Southbound Off-Ramp.....	23
2.2.2.5 Revise Traffic Flow on N Williams between N Ramsay and N/NE Broadway .....	24
2.2.2.6 Modify I-5 Northbound Off-Ramp.....	25
2.2.2.7 Related Local System Multimodal Improvements .....	25
3 Affected Environment and Environmental Consequences .....	27
3.1 Resources Not Affected .....	27
3.2 Air Quality .....	28
3.2.1 Existing Conditions.....	28
3.2.2 Environmental Consequences .....	28
3.2.2.1 No-Build Alternative.....	28
3.2.2.2 Revised Build Alternative.....	28
3.2.2.3 Avoidance, Minimization, and Mitigation Measures .....	30



3.3	Climate Change .....	31
3.3.1	Existing Conditions.....	31
3.3.2	Environmental Consequences .....	32
3.3.2.1	No-Build Alternative.....	32
3.3.2.2	Revised Build Alternative .....	32
3.3.2.3	Avoidance, Minimization, and Mitigation Measures .....	34
3.4	Archaeological Resources .....	34
3.4.1	Existing Conditions.....	34
3.4.2	Environmental Consequences .....	35
3.4.2.1	No-Build Alternative.....	35
3.4.2.2	Revised Build Alternative .....	35
3.4.2.3	Avoidance, Minimization, and Mitigation Measures .....	36
3.5	Historic Resources .....	37
3.5.1	Existing Conditions.....	37
3.5.2	Environmental Consequences .....	39
3.5.2.1	No-Build Alternative.....	40
3.5.2.2	Revised Build Alternative .....	40
3.5.2.3	Avoidance, Minimization, and Mitigation Measures .....	42
3.6	Section 4(f).....	43
3.6.1	Existing Conditions.....	43
3.6.2	Environmental Consequences .....	44
3.6.2.1	No-Build Alternative.....	44
3.6.2.2	Revised Build Alternative .....	44
3.6.2.3	Avoidance, Minimization, and Mitigation Measures .....	46
3.7	Hazardous Materials .....	47
3.7.1	Existing Conditions.....	47
3.7.2	Environmental Consequences .....	47
3.7.2.1	No-Build Alternative.....	47
3.7.2.2	Revised Build Alternative .....	48
3.7.2.3	Avoidance, Minimization, and Mitigation Measures .....	48
3.8	Land Use.....	49
3.8.1	Existing Conditions.....	49
3.8.2	Environmental Consequences .....	52
3.8.2.1	No-Build Alternative.....	52
3.8.2.2	Revised Build Alternative .....	52
3.8.2.3	Avoidance, Minimization, and Mitigation Measures .....	56
3.9	Noise .....	57
3.9.1	Existing Conditions.....	57



3.9.2	Environmental Consequences .....	57
3.9.2.1	No-Build Alternative.....	57
3.9.2.2	Revised Build Alternative.....	58
3.9.2.3	Avoidance, Minimization, and Mitigation Measures .....	59
3.10	Right of Way.....	61
3.10.1	Existing Conditions.....	61
3.10.2	Environmental Consequences .....	61
3.10.2.1	No-Build Alternative.....	62
3.10.2.2	Revised Build Alternative.....	62
3.10.2.3	Avoidance, Minimization, and Mitigation Measures .....	66
3.11	Socioeconomics.....	67
3.11.1	Existing Conditions.....	67
3.11.1.1	Population Characteristics .....	67
3.11.1.2	Public Services.....	69
3.11.1.3	Local and Regional Economy.....	72
3.11.2	Environmental Consequences .....	74
3.11.2.1	No-Build Alternative.....	74
3.11.2.2	Revised Build Alternative.....	74
3.11.2.3	Avoidance, Minimization, and Mitigation Measures .....	75
3.12	Environmental Justice .....	76
3.12.1	Existing Conditions.....	76
3.12.1.1	Definitions of Minority and Low-Income Populations .....	76
3.12.1.2	Minority Populations.....	77
3.12.1.3	Low-Income Populations.....	79
3.12.2	Environmental Consequences .....	82
3.12.2.1	No-Build Alternative.....	82
3.12.2.2	Revised Build Alternative.....	82
3.12.2.3	Avoidance, Minimization, and Mitigation Measures .....	84
3.13	Transportation .....	85
3.13.1	Existing Conditions.....	85
3.13.1.1	Transit.....	85
3.13.1.2	Active Transportation.....	86
3.13.1.3	Transportation Safety.....	87
3.13.1.4	Traffic Operations.....	87
3.13.1.5	Transportation Access.....	88
3.13.2	Environmental Consequences .....	88
3.13.2.1	Transit.....	88
3.13.2.2	Active Transportation.....	91



	3.13.2.3	Transportation Safety.....	101
	3.13.2.4	Traffic Operations.....	103
	3.13.2.5	Transportation Access.....	106
3.14		Utilities.....	107
	3.14.1	Existing Conditions.....	107
	3.14.2	Environmental Consequences .....	108
	3.14.2.1	No-Build Alternative.....	108
	3.14.2.2	Revised Build Alternative.....	108
	3.14.2.3	Avoidance, Minimization, and Mitigation Measures .....	111
3.15		Water Resources .....	112
	3.15.1	Existing Conditions.....	112
	3.15.2	Environmental Consequences .....	113
	3.15.2.1	No-Build Alternative.....	113
	3.15.2.2	Revised Build Alternative.....	113
	3.15.2.3	Avoidance, Minimization, and Mitigation Measures .....	114
3.16		Cumulative Impacts.....	114
	3.16.1	Air Quality .....	115
	3.16.2	Climate Change .....	115
	3.16.3	Archaeological Resources .....	115
	3.16.4	Historic Resources .....	116
	3.16.5	Section 4(f).....	116
	3.16.6	Hazardous Materials .....	116
	3.16.7	Land Use.....	117
	3.16.8	Noise .....	117
	3.16.9	Right of Way.....	118
	3.16.10	Socioeconomics.....	118
	3.16.11	Environmental Justice .....	118
	3.16.12	Transportation .....	120
	3.16.13	Utilities.....	121
	3.16.14	Water Resources .....	121
4		Public Involvement and Agency Coordination.....	123
	4.1	Background.....	123
	4.2	Agency and Tribal Coordination.....	124
	4.3	Public Involvement.....	125
	4.3.1	General Public Outreach.....	126
	4.3.2	Environmental Justice Outreach .....	126
	4.3.2.1	Advisory Committees .....	127





4.3.2.2	Public Design Surveys.....	127
4.3.2.3	Equitable Engagement Compensation.....	128
4.3.3	Independent Cover Assessment.....	128
4.3.4	Community Events and Briefings.....	129
5	Anticipated Permits and Approvals.....	131
6	List of Preparers.....	133
7	Supplemental Technical Reports Prepared for this SEA.....	137
8	References.....	139

## Appendices

- Appendix A. Supplemental Environmental Technical Reports
- Appendix B. Reasonably Foreseeable Future Actions
- Appendix C. Section 106 Programmatic Agreement between FHWA, ODOT, and SHPO
- Appendix D. Summary of Avoidance, Minimization, and Mitigation Measures
- Appendix E. Figure Descriptions

## Figures

Figure 1-1.	Previous and Current Project Area.....	3
Figure 1-2.	Project Goals.....	6
Figure 2-1.	Hybrid 3 Highway Cover Design Concept.....	11
Figure 2-2.	Cross-Section of I-5 under the No-Build Alternative.....	12
Figure 2-3.	Overview of the Revised Build Alternative.....	13
Figure 2-4.	Auxiliary Lane/Shoulder Improvements.....	15
Figure 2-5.	I-5 Auxiliary (Ramp-to-Ramp) Lanes – Existing Conditions and Proposed Improvements.....	16
Figure 2-6.	I-5 Cross Section (N/NE Weidler Overcrossing) – Proposed Improvements.....	17
Figure 2-7.	Building Parameters on the Cover.....	19
Figure 2-8.	Potential Highway Cover Uses.....	21
Figure 2-9.	Broadway/Weidler Interchange Area Improvements.....	22
Figure 2-10.	I-5 Ramp Relocation.....	23
Figure 2-11.	Proposed Modifications to N Williams between Broadway and Weidler.....	25
Figure 3-1.	Existing Land Use.....	50
Figure 3-2.	Comprehensive Plan Designations.....	51
Figure 3-3.	Land Converted to Transportation Use.....	54
Figure 3-4.	City of Portland Zoning of Highway Cover.....	55
Figure 3-5.	Estimated ROW Impacts.....	64



Figure 3-6. Public Services in the API and Surrounding Community..... 71

Figure 3-7. Subdistricts in the API..... 73

Figure 3-8. Subsidized Housing in the API and Surrounding Community.....81

Figure 3-9. Bicycle Crossings with Exclusive Turning Lanes..... 93

## Tables

Table 3-1. Comparison of Criteria Pollutant and MSAT Emissions by Alternative..... 30

Table 3-2. No-Build Alternative (2045) and Revised Build Alternative (2045) Construction and Maintenance–Generated Annual GHG Emissions..... 33

Table 3-3. Estimated Annual GHG Emissions for Existing Conditions and the No-Build and Revised Build Alternatives..... 33

Table 3-4. Potential Impacts to Archaeological Resources from the Revised Build Alternative ..... 35

Table 3-5. Historic Properties Eligible for the NRHP ..... 39

Table 3-6. Historic Properties Potentially Impacted by the Revised Build Alternative..... 42

Table 3-7. Typical Construction Equipment Noise (dBA) ..... 58

Table 3-8. Estimated ROW Needs ..... 63

Table 3-9. Population Characteristics, 2020 ..... 68

Table 3-10. Household Income, 2020 <sup>1</sup> ..... 69

Table 3-11. Means of Travel to Work, 2020 ..... 69

Table 3-12. Race and Ethnicity, 2020 ..... 78

Table 3-13. Total Accesses to be Modified and/or Closed..... 106

Table 3-14. Utility Types and Service Providers in the API..... 107

Table 3-15. Major Utilities in the API ..... 108

Table 3-16. Summary of Utility Impacts for the Revised Build Alternative..... 109

Table 4-1. Cooperating and Participating Agencies and Tribes for the Project ..... 125

Table 5-1. Anticipated Permits and Approvals ..... 131

Table 6-1. List of Preparers..... 133

Table 7-1. List of Supplemental Technical Reports Prepared for this SEA..... 137



# Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials	ESC	Executive Steering Committee
ACBM	asbestos-containing building materials	FEMA	Federal Emergency Management Agency
ACS	American Community Survey	FHWA	Federal Highway Administration
ADA	Americans with Disabilities Act	FONSI	Finding of No Significant Impact
API	Area of Potential Impact	FTA	Federal Transit Administration
BES	City of Portland Bureau of Environmental Services	GHG	greenhouse gas
BMP	best management practice	HAAB	Historic Albina Advisory Board
CBO	Community-Based Organization	I-405	Interstate 405
CFR	Code of Federal Regulations	I-5	Interstate 5
CEQ	Council on Environmental Quality	I-84	Interstate 84
CO	carbon monoxide	ICA	Independent Cover Assessment
CO <sub>2</sub> e	carbon dioxide equivalent emissions	IGA	Intergovernmental Agreement
COAC	Community Oversight Advisory Committee	LBP	lead-based paint
dba	A-weighted decibel	LOS	Level of Service
DBE	Disadvantaged Business Enterprise	LTS	Level of Traffic Stress
DEQ	Oregon Department of Environmental Quality	MSA	Portland-Vancouver-Hillsboro Metropolitan Statistical Area
EA	Environmental Assessment	MSAT	mobile source air toxics
EB	eastbound	N	North
EECP	Equitable Engagement Compensation Policy	NAAC	Noise Abatement Approach Criteria
EJ	environmental justice	NAAQS	National Ambient Air Quality Standard(s)
		NACTO	National Association of City Transportation Officials
		NB	northbound
		NE	Northeast



NEPA	National Environmental Policy Act of 1969	RTP	Regional Transportation Plan
NHPA	National Historic Preservation Act of 1966	SB	southbound
NMFS	National Marine Fisheries Service	SEA	Supplemental Environmental Assessment
NOx	oxides of nitrogen	SHPO	State Historic Preservation Office
NPDES	National Pollutant Discharge Elimination System	TMOS	transportation management and operation strategies
NRHP	National Register of Historic Places	TNM	Traffic Noise Model
OAR	Oregon Administration Rules	TriMet	Tri-County Metropolitan Transportation District of Oregon
ODOT	Oregon Department of Transportation	TSP	Transportation System Plan
ORS	Oregon Revised Statute	UMS	Urban Mobility Strategy
OTC	Oregon Transportation Commission	URA	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
PA	Programmatic Agreement	U.S.C.	United States Code
PCB	polychlorinated biphenyl	VOC	volatile organic compound
PedPDX	<i>Citywide Pedestrian Plan</i>	WB	westbound
PM <sub>10</sub>	particulate matter less than or equal to 10 micrometers in diameter		
PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 micrometers in diameter		
PPS	Portland Public Schools		
PSI	Portland Streetcar, Inc.		
REA	Revised Environmental Assessment		
RFFA	reasonably foreseeable future action		
ROW	right of way		



---

# 1 Introduction

The Federal Highway Administration (FHWA) and Oregon Department of Transportation (ODOT) have prepared this Supplemental Environmental Assessment (SEA) to disclose results of the environmental study for the Interstate 5 (I-5) Rose Quarter Improvement Project (Project). This document supplements information presented in the original 2019 Environmental Assessment (2019 EA) and 2020 Finding of No Significant Impact and Revised Environmental Assessment (2020 FONSI REA) by evaluating updates to the Project's Build Alternative since the original EA and REA were published in 2019 and 2020, respectively (ODOT 2019b, 2020). Changes to the Build Alternative include modification to the highway cover design, relocation of the I-5 southbound (SB) ramp, removal of the Clackamas Crossing multi-use bridge, re-established local street connections, and other advancements in Project design.

## 1.1 Project Location

The Project would be located along the 1.8-mile segment of I-5 approximately between Interstate 405 (I-405) to the north (milepost 303.2) and Interstate 84 (I-84) to the south (milepost 301.5). The Project Area includes the interchange of I-5 and North (N) Broadway and Northeast (NE) Weidler Street (Broadway/Weidler interchange) and the surrounding transportation network, from approximately N/NE Hancock Street to the north, N Benton Avenue to the west, N/NE Multnomah Street to the south, and NE 2nd Avenue to the east.

Figure 1-1 illustrates the original (2019 EA) Project Area and areas that were added and removed to encompass the Project Area for the Revised Build Alternative evaluated in this SEA. The Project Area represents the area in which improvements are proposed, including where permanent modifications to adjacent parcels may occur and where potential temporary impacts from construction activities could result. Impact evaluations provided in Chapter 3 focus on a resource-specific Area of Potential Impact (API) in order to adequately address potential impacts that could extend beyond the Project Area.

## 1.2 Background

I-5 is the primary north-south highway serving the west coast of the United States from Mexico to Canada. It is part of the National Truck Network, which designates highways for use by large trucks. In the Portland-Vancouver area, I-5 is the most critical component of this national network because it provides access to the transcontinental rail system, deep-water shipping and barge traffic on the Columbia River, and connections to the ports of Vancouver and Portland, as well as to most of the area's freight consolidation facilities and distribution terminals (City of Portland 1996).

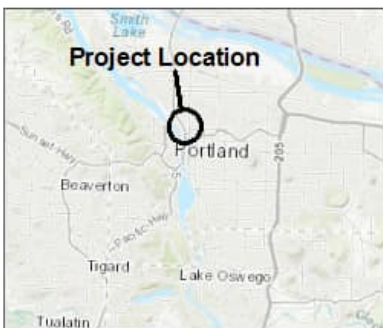
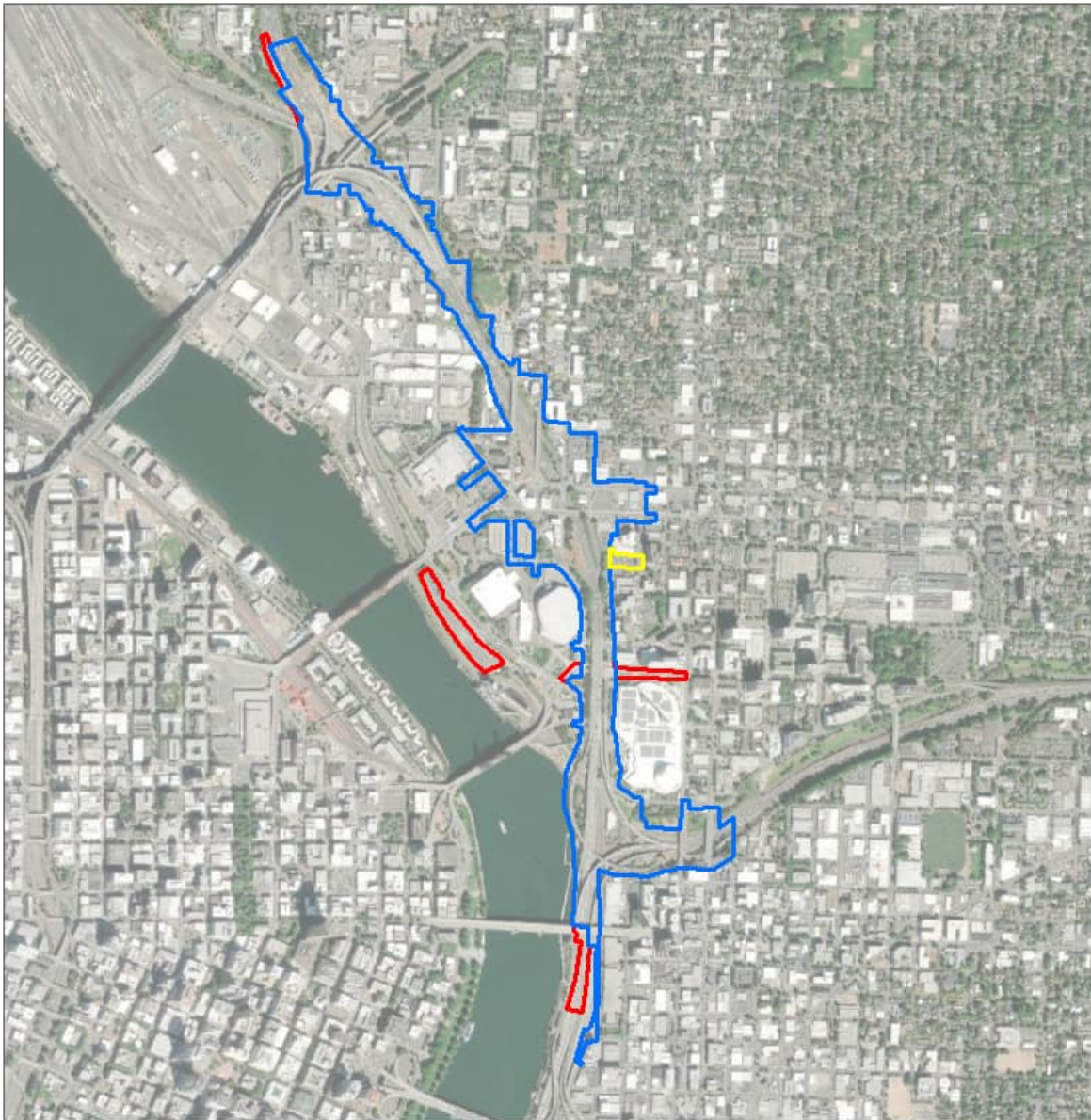
---

Lane configurations within the Project Area consist primarily of two through lanes (NB and SB), with one auxiliary lane between interchanges in the NB direction and two auxiliary lanes in the SB direction. Within this segment, I-5 NB connects with five on- and off-ramps, and I-5 SB connects with six on- and off-ramps, resulting in inadequate weave transitions (i.e., less than 2,000 feet) relative to current highway design standards (ODOT 2022). For example, one weave section provides only 1,075 feet for drivers to access I-5 from NE Broadway NB in the same area where drivers are merging onto I-405 and the Fremont Bridge from I-5. The configuration of these local interchanges within three regionally important freight and commuter routes (I-5, I-405, and I-84) results in some of the highest traffic volumes found in the state (approximately 121,400 average annual daily trips). The high volumes, closely spaced interchanges, and inadequate weaving transitions result in operational issues that delay movement of freight both within the Portland metropolitan area and on the I-5 corridor. Safety issues include some of the highest vehicle crash rates in Oregon and are compounded by the lack of shoulders for emergency access. Outside of the I-5 corridor, the Broadway/Weidler interchange and the surrounding area are characterized by frequent traffic congestion and accidents resulting in pedestrian and bicyclist injuries.

To address these issues, the City of Portland and ODOT engaged in a collaborative multi-year transportation/urban planning process beginning in 2010 to develop a design concept for the I-5 Broadway/Weidler interchange that would improve safety and operations while complementing the land use, urban design, and transportation system envisioned for the planning districts of Lower Albina and Lloyd in the City's *Adopted Central City 2035 Plan* and *Citywide Pedestrian Plan (PedPDX)* (PBOT 2019b). This planning process led to the development of the Project.

ODOT and FHWA prepared an EA for the Project in 2019 (2019 EA). On November 6, 2020, the FHWA published the 2020 FONSI REA. Since the issuance of the FONSI, ODOT has made changes to the design of the Project (discussed in Section 2.1) to create a Revised Build Alternative. The changes focused primarily on design improvements to include a larger, contiguous highway cover with improved structural integrity to support multi-story buildings.

Figure 1-1. Previous and Current Project Area



- Original Project Area
- Added Project Area
- Removed Project Area

**I-5 ROSE QUARTER  
IMPROVEMENT PROJECT  
PROJECT AREA**



0 0.25 0.5 Miles

---

## 1.3 Need for a Supplemental EA

In accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations (including the most recent rulemaking, effective May 20, 2022), ODOT re-evaluated the Project changes and considered the differences of the Project compared to the design that was presented in the 2020 FONSI REA. At the conclusion of the re-evaluation, FHWA and ODOT agreed that the design changes require additional analyses beyond what was presented in the REA, and FHWA rescinded the FONSI on January 18, 2022. This SEA supplements information presented in the 2020 FONSI REA with an evaluation of the impacts of the Revised Build Alternative compared to the No-Build Alternative.

## 1.4 Project Purpose and Need

Unchanged from the 2020 FONSI REA, the purpose of the Project is to improve the safety and operations on I-5 between I-405 and I-84, at the Broadway/Weidler interchange, and on adjacent surface streets in the vicinity of the Broadway/Weidler interchange, and to enhance multimodal facilities in the Project Area.

In achieving the purpose, the Project also would support improved local connectivity and multimodal access in the vicinity of the Broadway/Weidler interchange and improve multimodal connections between neighborhoods east and west of I-5.

The Project would address the following primary needs:

**I-5 Safety:** I-5 between I-405 and I-84 has the highest crash rate on urban interstates in the State of Oregon. Crash data from 2011 to 2015 indicate that I-5 between I-84 and the merge point from the NE Broadway on-ramp had a crash rate (for all types of crashes<sup>1</sup>) that was approximately 3.5 times higher than the statewide average for comparable urban interstate facilities (ODOT 2015):

- Between 2011 and 2015, there were 881 crashes on the highway and ramps in the Project Area.
- Most of the crashes were in the SB direction, most frequently between 11:00 AM and 6:00 PM.
- Between 2011 and 2015, there were 268 crashes on the local street network in the Project Area.

**I-5 Operations:** I-5 is the main north-south highway moving people and goods and connecting cities and towns across the west coast of the U.S. from Mexico to Canada. The Project Area is at the crossroads of three regionally important freight and commuter routes: I-5, I-84, and I-405. As a result, I-5 in the vicinity of the Broadway/Weidler interchange experiences some of the highest traffic volumes in

---

<sup>1</sup> Motor vehicle crashes are reported and classified by whether they involve property damage, injury, or death.



---

the State of Oregon, carrying approximately 121,400 vehicles each day, with 12 hours of congestion each day (ODOT 2012, 2017). I-5 NB connects with five on- and off-ramps, and I-5 SB connects with six on- and off-ramps, resulting in slow traffic and increased potential for crashes. I-5 through the Rose Quarter is the top traffic bottleneck in Oregon, and was ranked the 28th worst freight bottleneck in the nation (ATRI 2022).

**Broadway/Weidler Interchange Operations:** The complexity of the configuration of the I-5 Broadway/Weidler interchange and congestion make it a difficult area to navigate for vehicles (including transit vehicles), cyclists, and pedestrians, affecting access to and from I-5 as well as to and from local streets.

The high volumes of traffic on I-5 and Broadway/Weidler in this area contribute to congestion and safety issues (for all modes) at the interchange ramps, the Broadway and Weidler overcrossings of I-5, and on local streets in the vicinity of the interchange.

**Travel Reliability:** Travel reliability on the transportation network decreases as congestion increases and safety issues expand. The most unreliable travel times tend to occur in congested areas and at the beginning and end of the peak periods.

- Reliability has decreased on I-5 between I-84 and I-405 for most of the day.
- Periods of congested conditions on I-5 in the Project Area have grown over time from morning and afternoon peak periods to longer periods throughout the day.

## 1.5 Project Goals

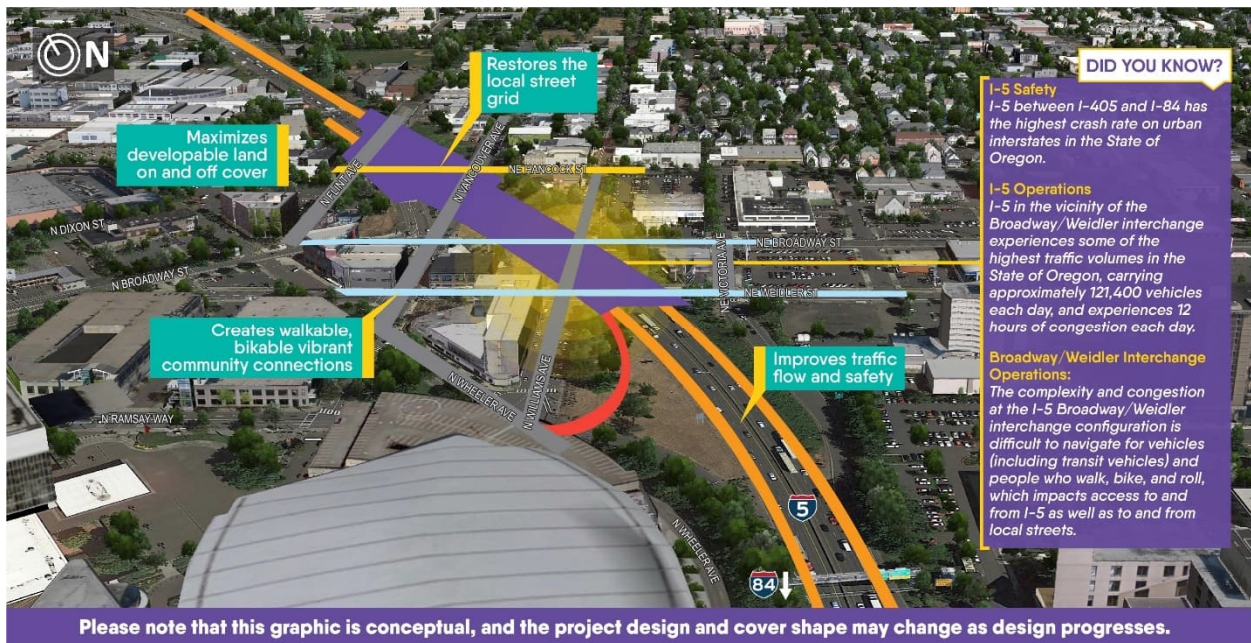
In addition to the purpose and need, which focus on the state's transportation system, the Project includes related goals developed through the joint ODOT and City of Portland N/NE Quadrant and I-5 Broadway/Weidler Interchange Plan process, which included extensive coordination with other public agencies and citizen outreach. Goals may be carried forward beyond the NEPA process to help guide final design and construction of the Project. Project goals are as follows:

- Enhance pedestrian and bicycle safety and mobility in the vicinity of the Broadway/Weidler interchange.
- Address congestion and improve safety for all modes on the transportation network connected to the Broadway/Weidler interchange and I-5 crossings.
- Support and integrate the land use and urban design elements of the *Adopted N/NE Quadrant Plan* (City of Portland et al. 2012) related to I-5 and the Broadway/Weidler interchange, which include the following:
  - Diverse mix of commercial, cultural, entertainment, industrial, recreational, and residential uses, including affordable housing
  - Infrastructure that supports economic development

- Infrastructure for healthy, safe, and vibrant communities that respects and complements adjacent neighborhoods
- A multimodal transportation system that addresses present and future needs, both locally and on the highway system
- An improved local circulation system for safe access for all modes
- Equitable access to community amenities and economic opportunities
- Protected and enhanced cultural heritage of the area
- Improved urban design conditions
- Improve freight reliability.
- Provide multimodal transportation facilities to support planned development in the Rose Quarter, Lower Albina, and Lloyd.
- Improve connectivity across I-5 for all modes.
- Provide opportunities for restorative justice by reconnecting the historic Albina neighborhood through the highway cover.

Figure 1-2 shows the approximate locations of some of the Project goals.

Figure 1-2. Project Goals



---

## 2 Project Alternatives

This section describes the two alternatives being evaluated in detail in this SEA (No-Build Alternative and Revised Build Alternative) and the process that led to the development of the Revised Build Alternative that is analyzed in this SEA.

### 2.1 Project Development

#### 2.1.1 Background

Since the Project's inception in 2010, ODOT worked closely with the City of Portland, a Stakeholder Advisory Committee, and the public to evaluate more than 70 design concepts for the Project through a multi-step screening process.

These efforts culminated in a single recommended design concept that was approved by the Portland City Council and the Oregon Transportation Commission (OTC) in 2012, and incorporated into the City's *Adopted Central City 2035 Plan* and Metro 2018 *Regional Transportation Plan (RTP)*. This design concept was analyzed as the Build Alternative in the 2019 EA and ultimately approved in the 2020 FONSI REA. A detailed discussion of the concept screening and alternatives development process is presented in the I-5 Broadway/Weidler Facility Plan (ODOT 2012).

#### 2.1.2 Independent Cover Assessment

The Build Alternative of the 2019 EA and 2020 FONSI REA included two covers over I-5 at the Broadway/Weidler interchange, but stakeholders raised concerns about the design because of its disjunct configuration and lack of buildable space.

Beginning in 2020 and extending through 2021, an ICA, as directed by the OTC, engaged the Project's advisory committees<sup>2</sup> and community members to explore design opportunities for the highway covers that support restorative justice outcomes. The purpose of the ICA was to understand stakeholder goals and objectives within the Project Area, generate potential highway cover scenarios, and assess the impacts and benefits of those scenarios.

The ICA team worked directly with local community members from the historic Albina neighborhood to understand how various potential highway cover design concepts might best serve the historic Albina community. The Project's Historic Albina Advisory Board (HAAB), Executive Steering Committee (ESC), and Community Oversight Advisory Committee (COAC) Board also provided input as part of the ICA process. The process and outcome of the ICA is summarized below. The *Independent Cover Assessment and Alternatives Report* is available at:

<https://www.i5rosequarter.org/resources/library.aspx>.

---

<sup>2</sup> Please visit <https://www.i5rosequarter.org/community/committees.aspx> for more information about the advisory committees.

---

The ICA team developed and evaluated several scenarios for the highway cover, guided by the following design criteria:

- Maximize high-quality development parcels on and around the cover for community use and control.
- Restore streets across the highway to create active frontages for development and prioritize safer, pedestrian-oriented routes.
- Provide flexibility for future development by designing the cover to support both buildings and gathering spaces.
- Minimize the highway's noise and pollution exposure.

Five preliminary concept scenarios (Concepts 1-5) were developed. Concept Scenarios 1, 4, and 5, described below, were carried forward for technical development because they ranked highest in meeting community needs and values. Local street and interchange configurations associated with each scenario are provided below.

- Scenario 1: Scenario 1 proposed a single continuous highway cover, reconnection of N/NE Hancock and N Flint Avenue and structures over the ramps to the north of Broadway to reduce air and noise pollution.
- Scenario 4: Scenario 4 proposed a single continuous highway cover, relocation of the NB and SB interchange ramps south of N/NE Weidler, reconfiguration of N Flint and N Vancouver Avenue to merge, and removal of N Vancouver south of N/NE Hancock to provide for a development parcel on and around the cover.
- Scenario 5: Like Scenario 4, Scenario 5 proposed a single continuous highway cover and relocation of the SB and NB interchange ramps south of N/NE Weidler. Like Scenario 1, Scenario 5 proposed reconnection of N/NE Hancock and N Flint, thereby restoring a portion of the historic street grid and creating opportunities for ground-floor active uses.

Three additional Hybrid Options were developed from the original design concepts to better address design criteria:

- Hybrid 1: Hybrid 1 proposed a single continuous highway cover and reconfiguration of N Flint and N Vancouver to merge (like Scenario 4), thereby creating more developable land on the cover.
- Hybrid 2: Hybrid 2 proposed a single continuous highway cover and reconfiguration of N Flint and N Vancouver similar to Hybrid 1 (and Scenario 4). Hybrid 2 moved the SB off-ramp to the south but retained the existing SB on-ramp in its existing location. Removing both N Vancouver and the SB off-ramp would create a development parcel on and around the cover.
- Hybrid 3: Hybrid 3 proposed reconnection of N/NE Hancock and N Flint (like Scenarios 1 and 5). Similar to Hybrid 2, Hybrid 3 moved the SB off-ramp to the south but retained the SB on-ramp in its existing location.

---

### 2.1.3 Advancement of Project Design

In July 2021, Oregon Governor Brown convened a series of meetings with Project stakeholders and community organizations to discuss the design concepts developed in the ICA. In August 2021, the HAAB—as supported by the ESC and the COAC—recommended “Hybrid 3” as the preferred highway cover design concept (Figure 2-1). The Hybrid 3 highway cover design concept represents a proposed community solution to maximize buildable space on a single highway cover. Following the community and stakeholder recommendations, in September 2021, the OTC directed ODOT to advance further evaluation of the Hybrid 3 highway cover design concept, with conditions related to the Project’s funding process and other technical analyses.

In January 2022, Governor Brown entered into a Letter of Agreement with the City of Portland, Metro, and Multnomah County that demonstrated their shared understanding and collective support for the Hybrid 3 concept as part of the Project. The Letter of Agreement specifically highlights the desire to connect the Lower Albina neighborhood, create buildable space, and enhance wealth-generating opportunities for the community, while simultaneously addressing the area’s transportation needs. Additionally, the Letter of Agreement supports the development of a process to define the future development vision for what could ultimately be built on top of the highway cover upon Project completion—this process is referred to as a Community Framework Agreement. The Letter of Agreement states that the City of Portland will lead a Community Framework Agreement process, and that it should be between the City of Portland, ODOT, other state agencies and local jurisdictions as necessary, with the participation of organizations that represent the Albina community and Black residents. Any future real estate or open space development on top of the cover would require executing long-term air rights and lease agreements, and any such actions or decisions would be subject at all times to applicable local, state, and federal laws including but not limited to land use and NEPA processes.

In July 2022, the City of Portland City Council unanimously approved an ordinance to engage as a Project partner and approve an Intergovernmental Agreement with ODOT to support further development of the Hybrid 3 concept.

### 2.1.4 Development of the Revised Build Alternative

ODOT adjusted the Project design to include the Hybrid 3 concept in a Revised Build Alternative. The Revised Build Alternative, described in Section 2.2.2, also incorporated design improvements identified since the 2020 FONSI REA. In July 2022, ODOT and the City of Portland executed an Intergovernmental Agreement (IGA) to engage the City in project planning and design and designating the City as the lead agency for future highway cover land use programming and development processes, in consultation with the ODOT, to ensure the highway, local streets, and new land

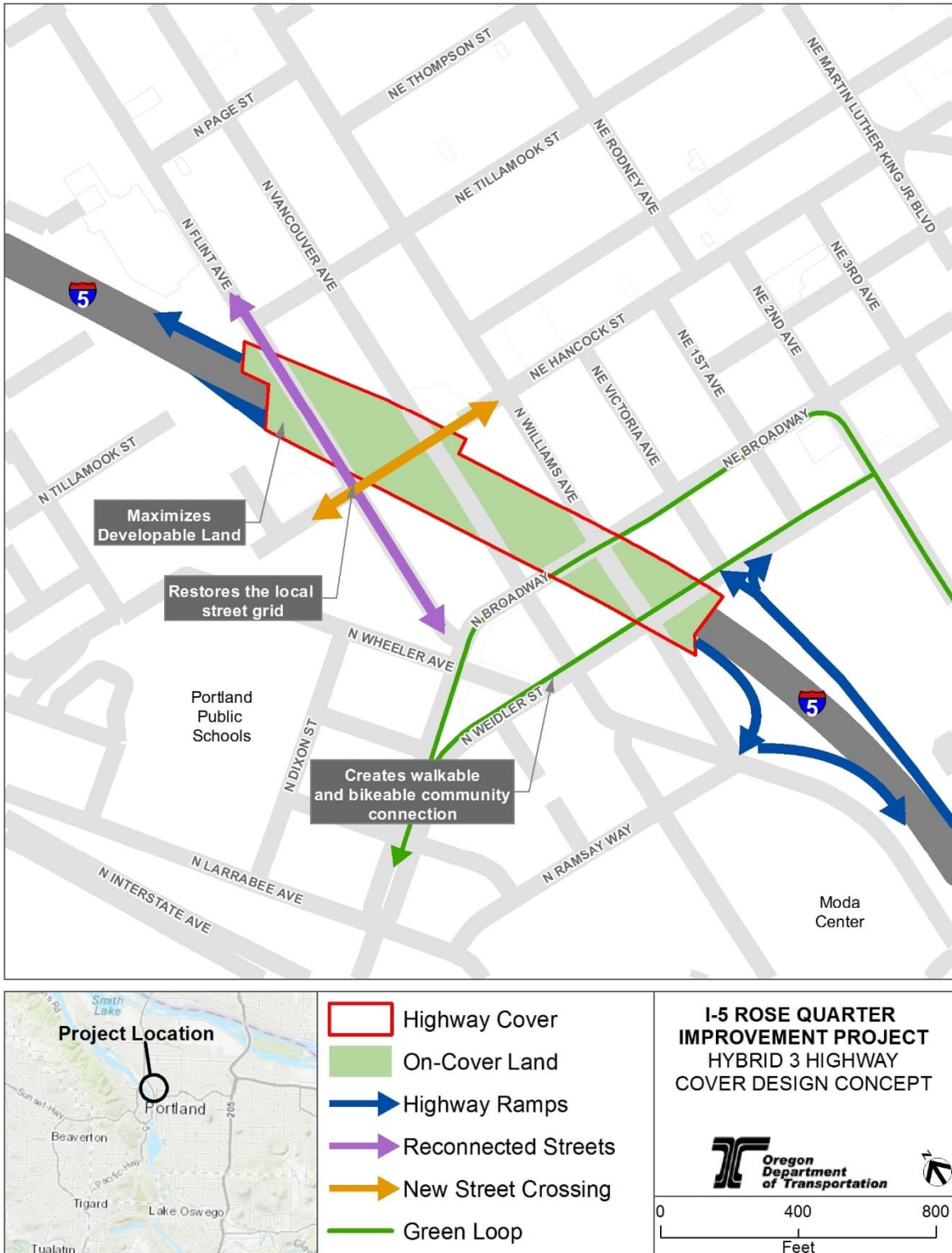
---

parcels within the Project are coordinated. This includes working with ODOT on next steps regarding highway cover development as part of the Community Framework Agreement. ODOT will construct the highway cover as part of the Project, and the City of Portland will lead the process to define what is ultimately built on the new land created by the Project's highway cover. In the IGA, both ODOT and the City agreed that ODOT will retain ownership of the highway cover structure and the new land created on the highway cover structure upon Project completion. As stated in the Governor's Letter of Agreement (and in Section 2.1.3 above), any future real estate or open space development on top of the cover would require executing long-term air rights and lease agreements, and any such actions or decisions would be subject at all times to applicable local, state, and federal laws, including but not limited to land use and NEPA processes.

The Hybrid 3 concept also requires relocation of the I-5 SB off-ramp at N/NE Broadway to N/NE Weidler via N Williams, with the off-ramp extending under the full length of the highway cover, as part of the Revised Build Alternative (see Section 2.2.2 for more detail). Per the Governor's Letter of Agreement, as part of future final design of the Revised Build Alternative, ODOT would continue to refine the design with input from the City as it relates to local circulation; signal phasing and signal timing at the relocated I-5 SB off-ramp location; pedestrian, bicycle, and public transit facilities and operations through the Rose Quarter area; and Rose Quarter event access and traffic management.

The analysis of the Revised Build Alternative in this SEA is based on preliminary design of the Hybrid 3 concept as further developed by ODOT. Preliminary design includes the information necessary to conduct an assessment of impacts of the Project in accordance with NEPA. Extensive engagement with the City, Metro, Multnomah County, Tri-County Metropolitan Transportation District of Oregon (TriMet), Portland Streetcar Inc. (PSI), major land owners, businesses and stakeholders, the Albina Vision Trust, and the public will inform design refinement, which will happen as the Project is advanced to construction; i.e., after a NEPA decision. Final design elements involving the local street network will require City review and approval as part of the local permitting processes.

Figure 2-1. Hybrid 3 Highway Cover Design Concept

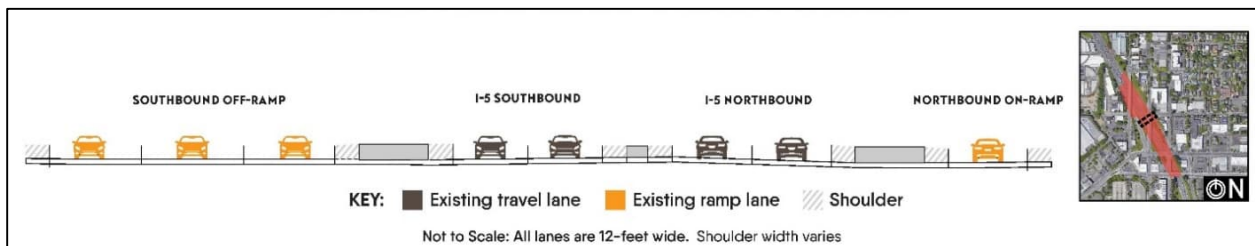


## 2.2 Alternatives Carried Forward

### 2.2.1 No-Build Alternative

NEPA regulations require an evaluation of the No-Build Alternative to provide a baseline for comparison with the potential impacts of the Revised Build Alternative. The No-Build Alternative consists of existing conditions and any planned actions with committed funding in the Project Area (see Oregon Metro 2018 RTP financially constrained project list<sup>3</sup>). Figure 2-2 shows a cross-section of the existing configuration of I-5 that would not be improved under the No-Build Alternative.

Figure 2-2. Cross-Section of I-5 under the No-Build Alternative



I-5 and the Broadway/Weidler interchange and most of the local transportation network in the Project Area would remain in their current configurations, with the exception of those actions included in the Metro 2018 RTP financially constrained project list (Metro 2018).

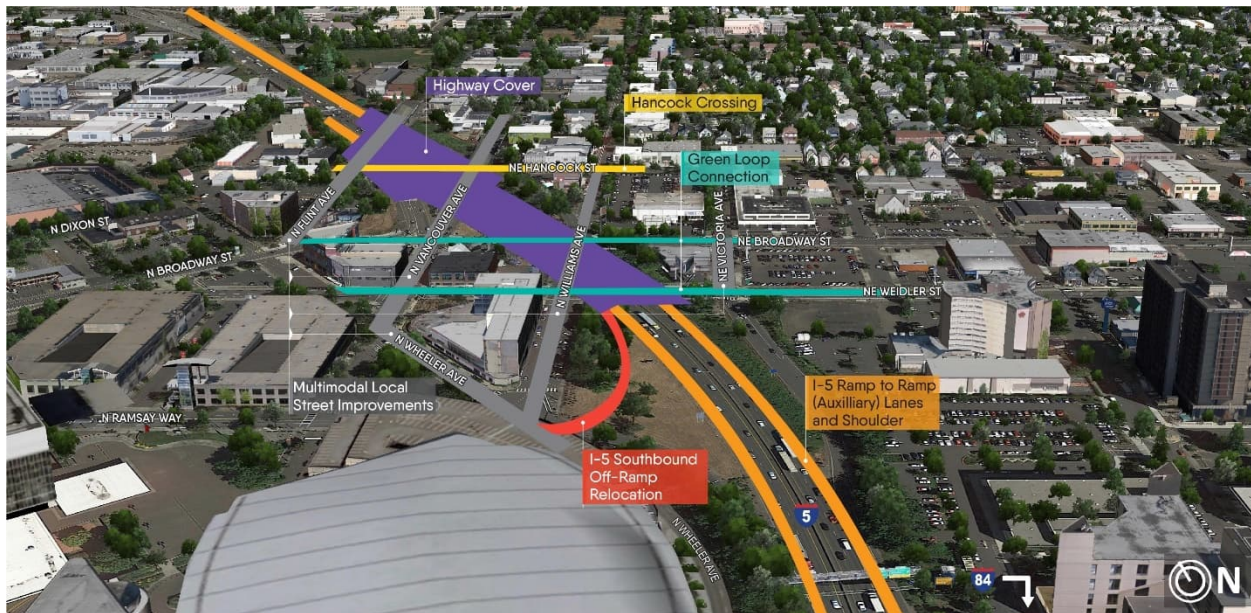
### 2.2.2 Revised Build Alternative

The Revised Build Alternative includes I-5 mainline improvements, a single highway cover at the Broadway/Weidler interchange, and multimodal improvements to the surface street network in the vicinity of the Broadway/Weidler interchange. Figure 2-3 shows an overview of the Revised Build Alternative.

<sup>3</sup> Available at <https://www.oregonmetro.gov/sites/default/files/2019/04/02/2018-RTP-Appendices-A-and-B-Constrained-Project-List.pdf>



Figure 2-3. Overview of the Revised Build Alternative

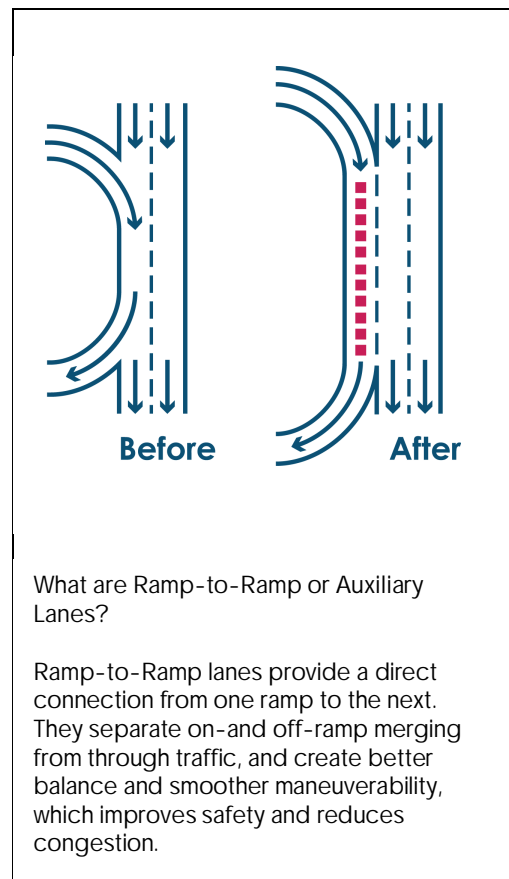


### 2.2.2.1 I-5 Mainline Improvements

The Revised Build Alternative would modify I-5 between I-84 and I-405 by adding safety and operational improvements as follows:

- Extending the existing auxiliary lane on I-5 SB and adding a new auxiliary lane on I-5 NB
- Adding 12-foot-wide outside shoulders SB from Broadway off-ramp to the I-84 off-ramp and NB from I-84 on-ramp to I-405 off-ramp.
- Adding 8-foot-wide inside shoulders in both directions, except under the highway cover, where shoulders would be 5 feet wide.

Figure 2-4 illustrates the auxiliary lanes proposed under the Revised Build Alternative. Figure 2-5 depicts the highway configuration under existing and proposed conditions, including the location of through lanes, auxiliary lanes, and highway shoulders.



---

The existing auxiliary lane on I-5 NB from the I-84 westbound (WB) on-ramp to the NE Weidler off-ramp and from the N Broadway on-ramp to the I-405 off-ramp would remain. A new NB auxiliary lane would be added to connect the I-84 WB on-ramp to the N Greeley Avenue off-ramp.

The existing SB auxiliary lane currently ends just south of the N Broadway off-ramp, in the vicinity of the Broadway overcrossing structure, and would extend to the Morrison Bridge/Oregon Museum of Science and Industry off-ramp.

There are no planned improvements for I-5 SB between I-405 and the Broadway/Weidler interchange.

Figure 2-4. Auxiliary Lane/Shoulder Improvements

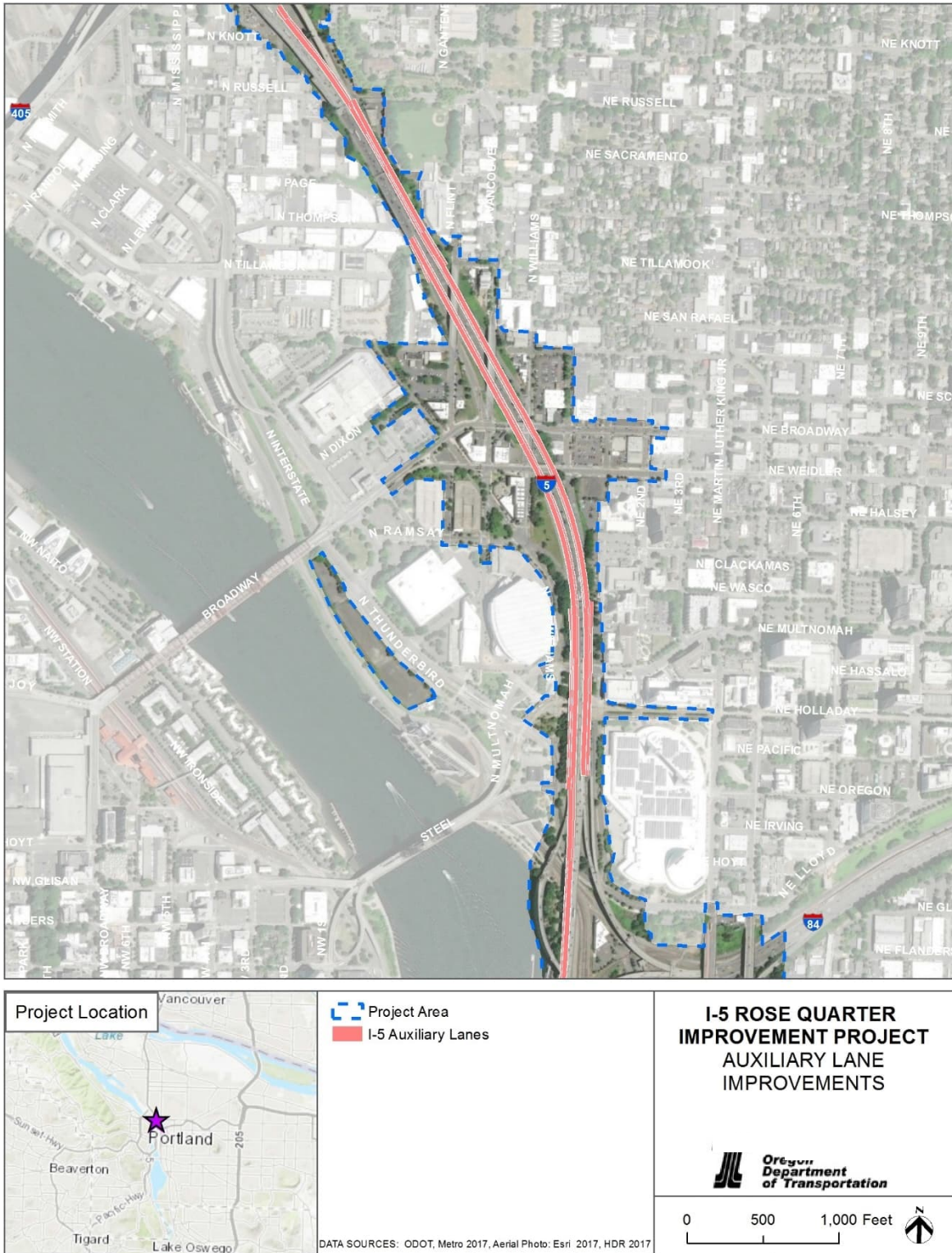
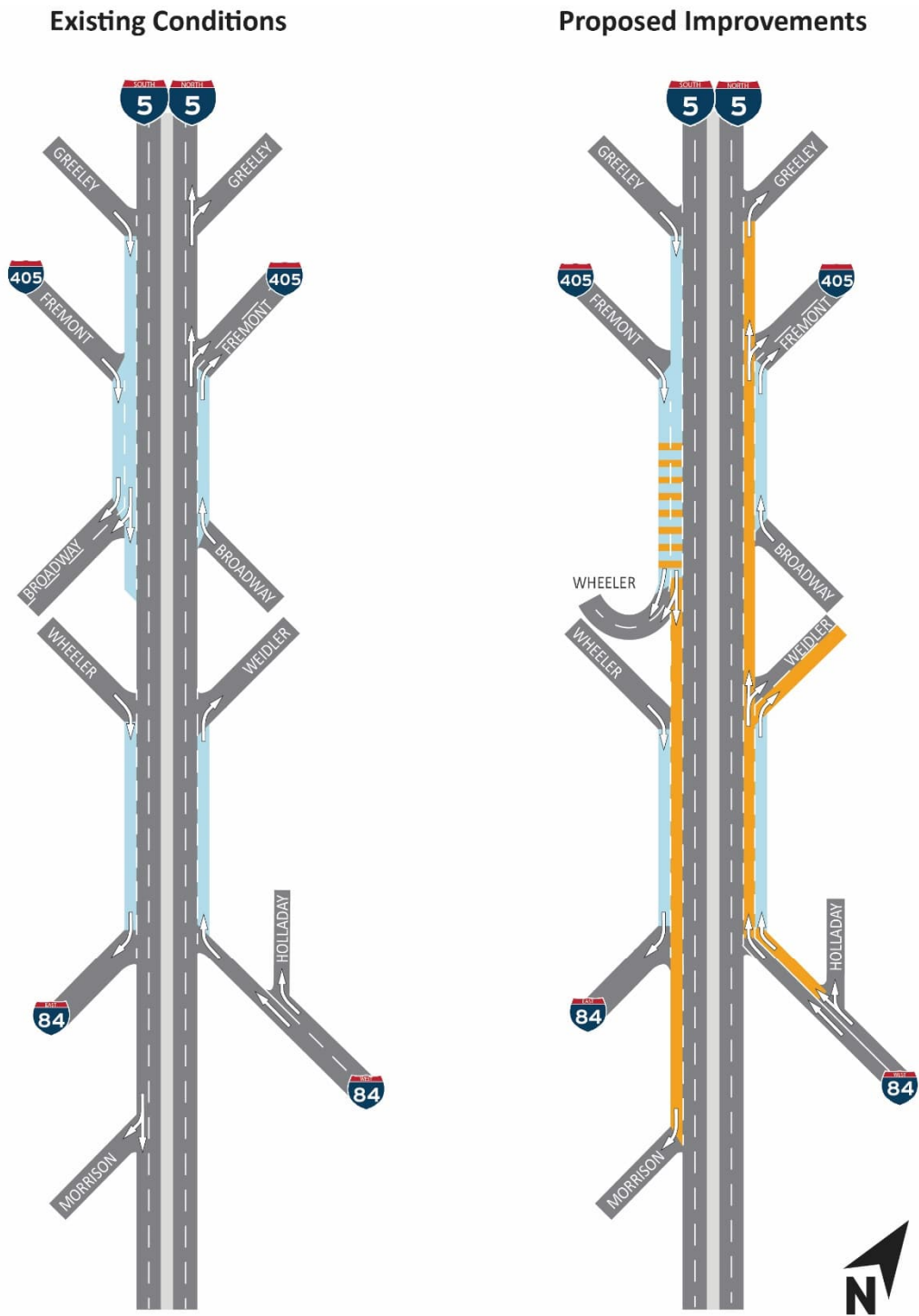


Figure 2-5. I-5 Auxiliary (Ramp-to-Ramp) Lanes - Existing Conditions and Proposed Improvements

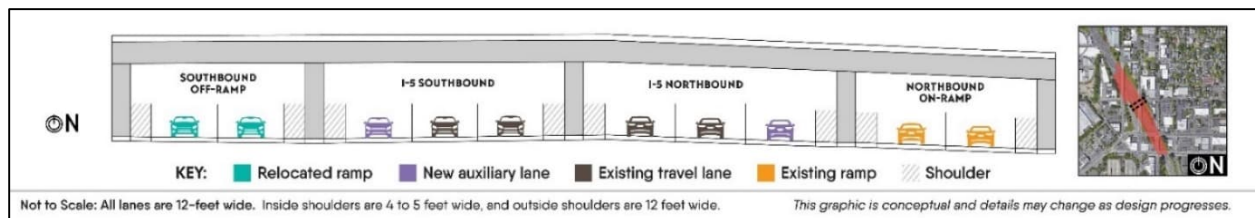


- Legend:**
- Existing I-5 Travel Lanes
  - Existing Auxiliary Lanes
  - New Auxiliary Lanes and Shoulders
  - Extension of Existing Auxiliary Lane and Shoulders

Under the Revised Build Alternative, the SB auxiliary lane would be extended as a continuous auxiliary lane from the N Greeley on-ramp to the Morrison Bridge/Oregon Museum of Science and Industry off-ramp. These improvement would be positioned over Union Pacific Railroad Company corridor, requiring coordination for access to work locations. Figure 2-6 presents a representative cross section of I-5 south of the Broadway/Weidler interchange area with the proposed auxiliary lanes and shoulder. The cross-section for existing conditions and the No-Build Alternative is shown in Figure 2-2.

South of the I-84 off-ramp, the I-5 SB auxiliary lane would be added by re-striping the I-5 mainline in both the NB and SB directions. Through re-striping, the I-5 center median would be shifted to the east, and the existing shoulders on I-5 in the approximately 1,200-foot segment between the I-84 off-ramp and the Morrison Bridge/Oregon Museum of Science and Industry off-ramp would be narrowed to approximately 3 to 9 feet in both the NB and SB directions. No highway widening would occur in this segment.

Figure 2-6. I-5 Cross Section (N/NE Weidler Overcrossing) - Proposed Improvements



The addition of 12-foot-wide outside shoulders on I-5 (SB from Broadway off-ramp to the I-84 off-ramp and NB from I-84 on-ramp to I-405 off-ramp) would provide more space to allow vehicles that are stalled or involved in a crash to move out of the travel lanes. New shoulders would also provide space for emergency response vehicles to access an incident in or beyond the Project Area, compared to the No-Build Alternative.

No new through lanes would be added to I-5 as part of the Revised Build Alternative; I-5 would continue to have two through lanes in both the NB and SB directions. There are no planned improvements for I-5 SB between I-405 and the Broadway/Weidler interchange.

### 2.2.2.2 Highway Cover

To complete the proposed I-5 mainline improvements, the existing structures crossing over I-5 in the Broadway/Weidler interchange area must be removed, including the roads and the columns that support the structures.

The existing structures would be replaced with a single highway cover (Figure 2-7). The highway cover would connect both sides of I-5, reducing the physical barrier of

---

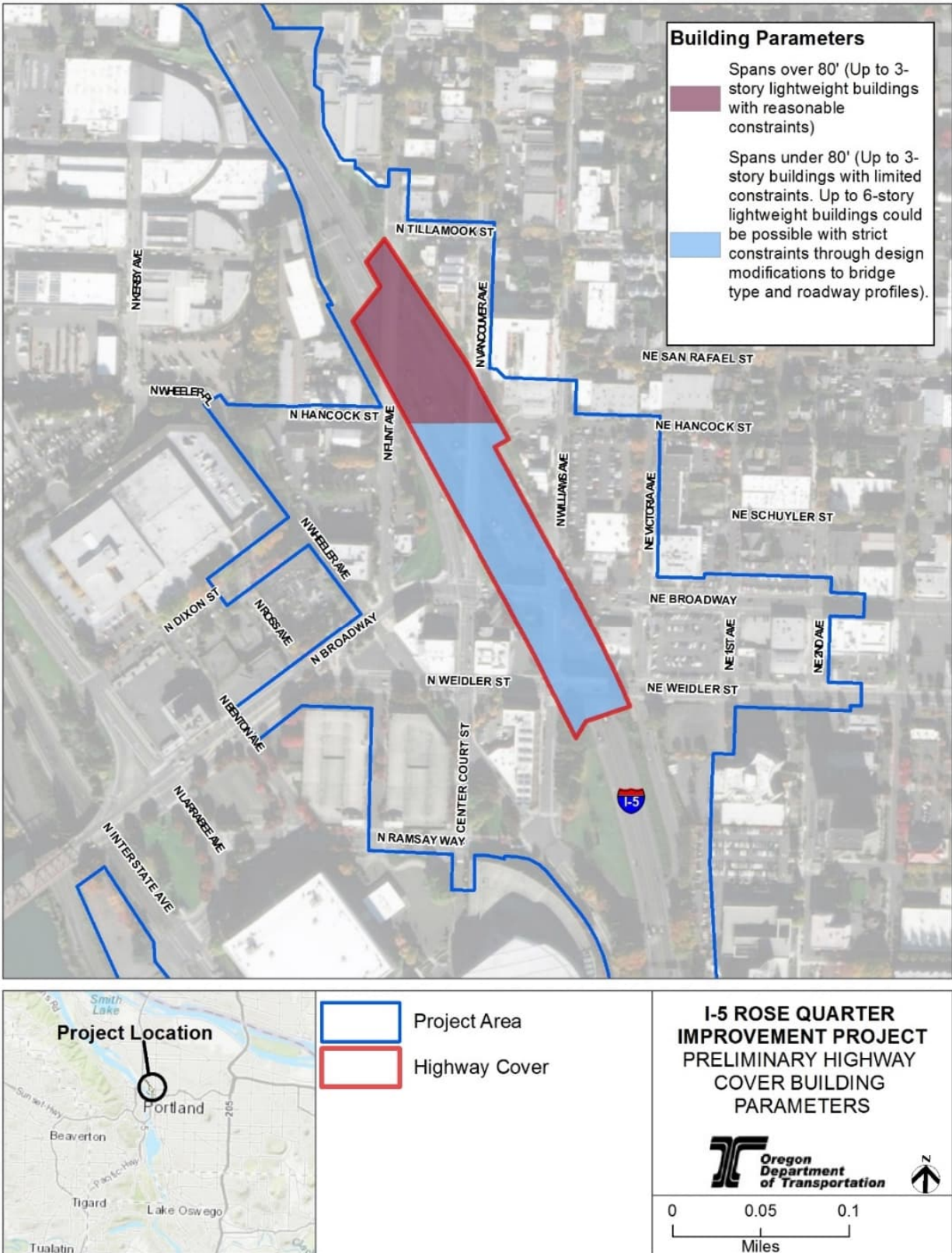
I-5 for neighborhoods east and west of the highway and providing buildable space above I-5. The highway cover would include the following improvements:

- A wide bridge that spans east-west across I-5, extending from immediately south of N/NE Weidler to immediately north of N Flint
- Surface street improvements, including upgrades to existing bicycle and pedestrian facilities
- A new roadway connecting N Hancock to NE Hancock on the highway cover to accommodate passage of the existing roadways crossing I-5
- An earthquake resilient design with necessary life/safety features such as emergency egress routes and fire suppression systems

The highway cover design requires relocation of the I-5 SB off-ramp from N/NE Broadway south to N/NE Weidler via N Williams Avenue. The off-ramp would extend under the full length of the cover.

The highway cover would be designed to accommodate future multi-story buildings. Due to span length and site constraints, design would constrain building size, location, type, and use on portions of the cover. Figure 2-7 shows the cover parameters. Generally, buildings up to three stories could be accommodated throughout the highway cover. Buildings of up to six stories could be accommodated, with strict design constraints, where span lengths are shorter than 80 feet. As noted in Section 2.1.4, future development on the highway cover would be designed and constructed following a City-led process under a Community Framework Agreement.

Figure 2-7. Building Parameters on the Cover



---

ODOT anticipates programming interim uses on the highway cover for the time period between Project completion and when the City-led development process would be implemented. Upon Project completion, the added surface space created by the highway cover over I-5 could provide an opportunity for new and modern bicycle facilities and transit stops, making the area more connected, walkable, and bike friendly. It could also provide opportunity for various types of public spaces, to be precisely determined during the Project's final design phase and through robust community engagement, consisting of one or more of the following types of uses:

- Landscaped areas for active and passive recreation and/or to provide a buffer, backdrop and visual comfort, such as gardens, lawns or planter beds
- Plazas and hardscaped open space for active and passive recreation, such as courts, plazas, splash pads, picnic areas, and community gathering spaces
- Interpretive signage, historical markers, landmarks, and other areas of historical recognition and narrative such as art pieces and other historical signage/kiosks and pavement focused on the historic Albina community
- Temporary and lightweight vertical features to support episodic, mobile commercial activities such as a food market shed, eating pavilion, food carts, or picnic venues

These features may be removed upon implementation of the development determined by the community process or may be incorporated into that development. Figure 2-8 shows an artistic rendering of the types of uses that the cover could accommodate; design is subject to change based on community input.



Figure 2-8. Potential Highway Cover Uses

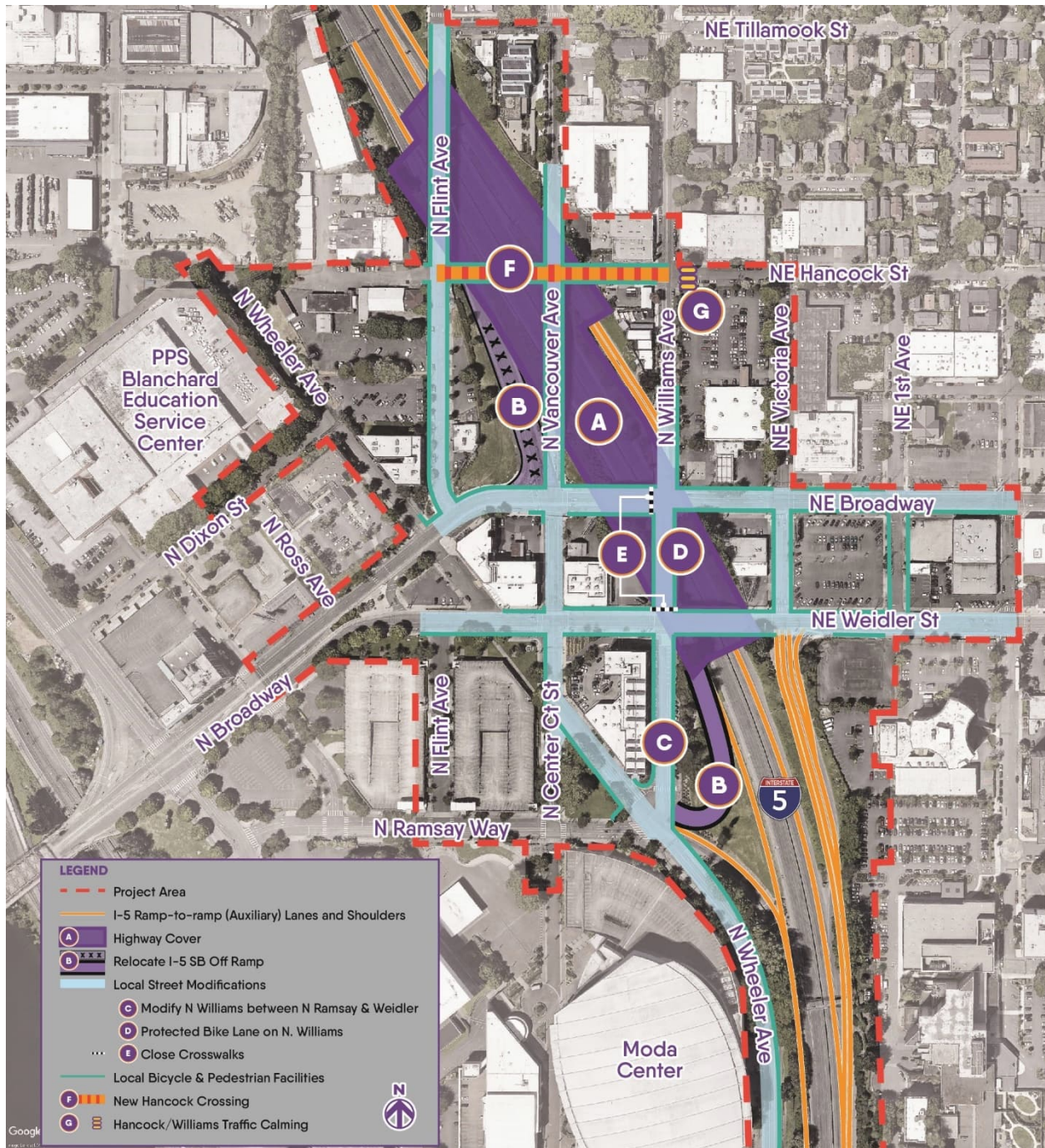


Note: Artistic rendering reflects a potential immediate use of the cover should future development led by the City not be ready upon Project completion.

### 2.2.2.3 Broadway/Weidler Interchange Improvements

Improvements to the Broadway/Weidler interchange to address connections between I-5, the interchange, and the local street network are described in the following subsections and illustrated in Figure 2-9. In addition, the Revised Build Alternative would add a signal to the NB off-ramp at Weidler.

Figure 2-9. Broadway/Weidler Interchange Area Improvements



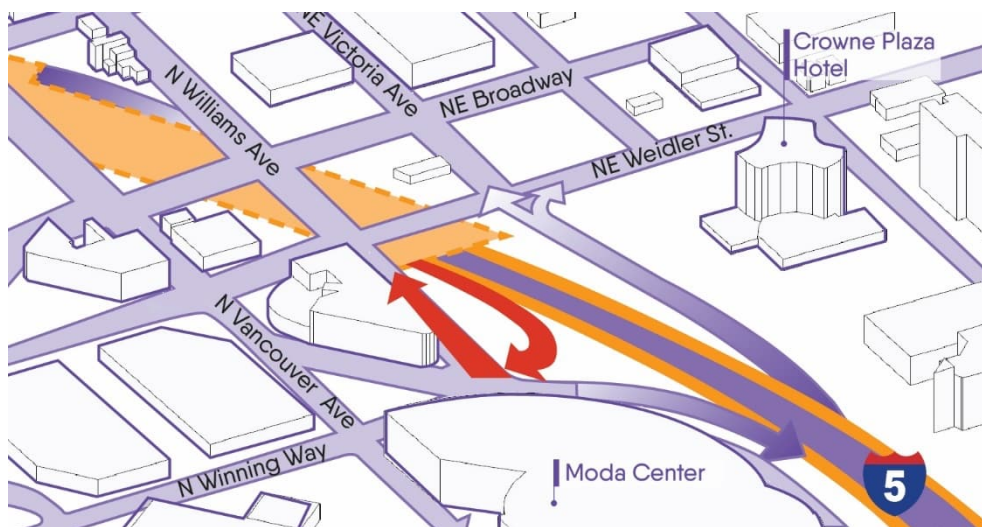
#### 2.2.2.4 Relocate I-5 Southbound Off-Ramp

The I-5 SB off-ramp currently exits to N Broadway at the N Vancouver/N Broadway intersection. Under the Revised Build Alternative, the off-ramp would be relocated as summarized below:

- Remove the existing off-ramp and relocate it south of NE Weidler, where N Williams, N Ramsay, NE Wheeler, and the I-5 SB on-ramp currently come together.
- Begin the relocated ramp on the north side of the proposed highway cover and extend it south under the highway cover.
- End the relocated ramp once it comes out from under the highway cover on the south side of NE Weidler.
- Curve the ramp to the west to connect with the local street network at the intersection of N Wheeler, N Williams, and N Ramsay.

Improvements would be made to the intersection of N Wheeler, N Williams, and N Ramsay to accommodate traffic exiting I-5 and existing traffic movements on surface street. Traffic exiting I-5 would have two lanes of traffic limited to NB movements to N Williams; Figure 2-10 illustrates the off-ramp relocation.

Figure 2-10. I-5 Ramp Relocation



---

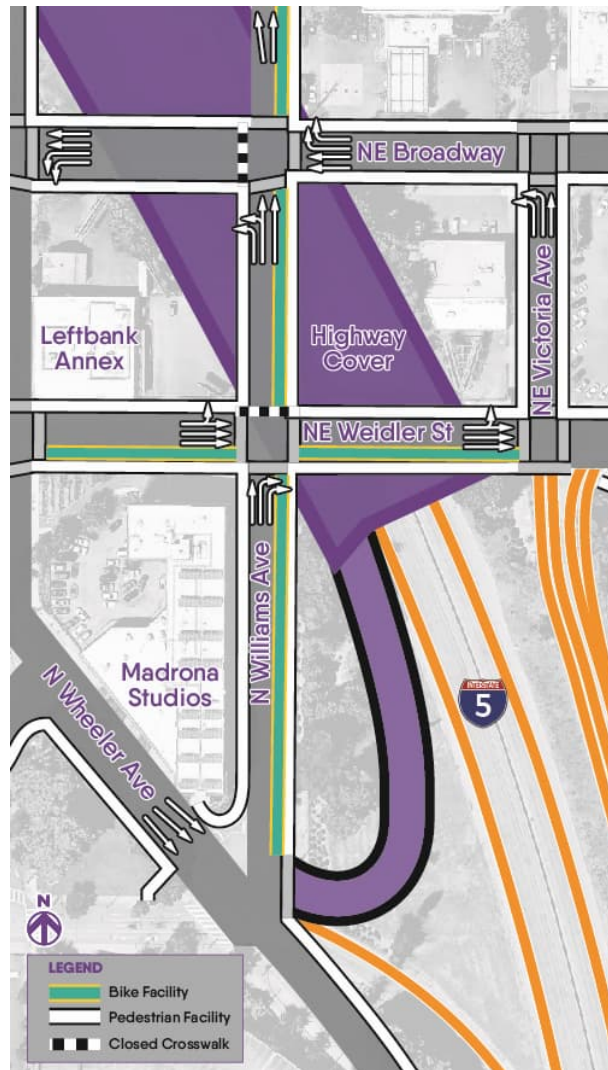
### 2.2.2.5 Revise Traffic Flow on N Williams between N Ramsay and N/NE Broadway

The Revised Build Alternative would alter the cross section on N Williams between N Ramsay and N/NE Broadway to accommodate traffic exiting from SB I-5 as follows:

- Change current lane configuration to one through lane and two right-turn lanes onto NE Weidler. Parking on the west side would remain.
- Remove existing angled parking on the east side of the roadway and add a raised and protected bike facility and sidewalk.
- Change the lane configuration between N Weidler and N Broadway to one left turn lane to Broadway, a combined left turn/through lane, and a through lane.
- The two NB travel lanes along the west side of N Williams would provide access to the I-5 NB on-ramp and allow through movements on N Williams.
- Add a raised and protected bike facility on the east side of N Williams from N Weidler to just north of the I-5 NB on-ramp at the intersection of N Williams and N/NE Broadway.
- Transition the raised and protected bike facility to a buffered bike lane just north of the I-5 ramp entrance.
- The buffered bike lane would cross diagonally from the east side to the existing buffered bike lane on the west side through a new signal at NE Hancock.

See Figure 2-11 for details of the N Williams bike facility/path and revised traffic flow.

Figure 2-11. Proposed Modifications to N Williams between Broadway and Weidler



**2.2.2.6** Modify I-5 Northbound Off-Ramp

The current I-5 NB off-ramp configuration includes two through lanes and a single right-hand turn lane. The Revised Build Alternative would be signalized and would add an additional right-turn lane with a “no turn on red” signal to the I-5 NB off-ramp to NE Weidler.

**2.2.2.7** Related Local System Multimodal Improvements

Primary pedestrian and bicycle routes would continue to follow north-south and east-west paths through the Project Area. Increased route options would be provided by the new N/NE Hancock connection over I-5 on the highway cover, raised bike lanes on N/NE Broadway and N/NE Weidler, and improved bicycle and pedestrian facilities

---

on N Vancouver and N/NE Broadway. Both the western crosswalk at the N Williams and N/NE Broadway intersection and the northern crosswalk at the N Williams and N/NE Weidler intersection would be closed to reduce the potential for pedestrian/vehicle conflicts and for efficient traffic operations.

#### *New Hancock Connection*

A new roadway connection would be constructed to extend N/NE Hancock west across the highway cover over I-5 (see Figure 2-9, element "F"). The new connection would provide a new east-west crossing over I-5. Traffic calming and diversion measures may be incorporated east of the intersection of N/NE Hancock and N Williams to discourage use of N/NE Hancock by through motor vehicle traffic and ensure it continues to meet City of Portland performance standards for Neighborhood Greenways (Portland Bureau of Transportation 2015).

Bicycle and pedestrian through travel would be permitted to improve connectivity between Lower Albina, Lloyd, and the N/NE neighborhoods, provide greater east-west multimodal access across I-5, and provide multimodal route alternatives to the congested Broadway/Weidler corridor (see Figure 2-9, element "G").

#### *Other Local Street, Bicycle, and Pedestrian Improvements*

The Revised Build Alternative would include new widened and well-lit sidewalks, Americans with Disabilities Act (ADA)-accessible ramps, high-visibility and marked crosswalks, widened and improved bicycle facilities, and stormwater management on the streets connected to the Broadway/Weidler interchange.

Most of the signalized crossings would be timed to separate pedestrians and bicycles from the vehicular right-turn movements.

The bicycle lane on N Vancouver would be upgraded to a protected bike facility on the west side of N Vancouver from NE Hancock to NE Broadway. South of Broadway, the bike facility design would be developed in cooperation with the City of Portland and TriMet as part of the design refinement process.

Existing bicycle facilities on N/NE Broadway and N/NE Weidler within the Project Area would also be upgraded, including replacing the existing bike lanes with wider, separated and raised bicycle lanes.

Approximately 800 feet of existing sidewalk gaps along portions of N Wheeler and N Williams would be filled. This would improve walking connections in the vicinity of the Moda Center and increase pedestrian convenience, comfort, and safety by allowing for direct ADA-accessible crossings.

These improvements would be in addition to the new upgrades to bicycle and pedestrian facilities on the new covers described above and illustrated in Figure 2-9.

---

## 3 Affected Environment and Environmental Consequences

This section describes the affected environment (i.e., existing conditions) for the Project Area and the potential effects of the No-Build Alternative and the Revised Build Alternative. Impacts of the No-Build Alternative are evaluated based on available information and the conceptual nature of projects that may occur within the Project Area through year 2045.

For each resource potentially affected by the Project, resource specialists identified the API and evaluated the effects of the project on the resources within that API. Detailed descriptions of the APIs, methods of analysis, and analytical results can be found in the supplemental technical reports provided in Appendix A, also available on the Project website: <https://www.i5rosequarter.org/resources/library.aspx>.

Impacts of the Revised Build Alternative are described as “short-term” impacts that would occur during the construction phase and “long-term” impacts that would begin once the Project becomes operational. This section also describes the cumulative effects of the projects; i.e., the incremental effect of the Revised Build Alternative when added to other past, present, and reasonably foreseeable future actions affecting those same resources. For a list of reasonably foreseeable future actions, see Appendix B.

Measures that can be taken by ODOT, the City of Portland, and the construction contractor to avoid, reduce, or remedy the impacts from the construction and operation of the Revised Build Alternative are also included in this section. These measures are intended to minimize the harmful and disruptive effects of the proposed action on the natural and human environment. They are also summarized in Appendix D.

### 3.1 Resources Not Affected

The following resource topics have not been included in the SEA because they are not present in the Project Area, or because the Project’s potential effects would be so minor as to not warrant a full evaluation in this SEA:

- Agricultural Lands (not present in the Project Area)
- Aquatic Biology
- Coastal Zone Management
- Geology and Soils
- Terrestrial Biology
- Visual Resources
- Wetlands

---

## 3.2 Air Quality

### 3.2.1 Existing Conditions

Air quality in the Portland metropolitan area currently meets all National Ambient Air Quality Standards (NAAQS) for criteria pollutants carbon monoxide (CO), nitrogen dioxide, ozone, particulate matter, lead, and sulfur dioxide.

### 3.2.2 Environmental Consequences

Air pollutant emissions were analyzed for existing conditions (2017) and future conditions (2045) for both the No-Build and Revised Build Alternatives. The transportation pollutants analyzed include oxides of nitrogen (NO<sub>x</sub>), volatile organic compounds (VOCs), CO, coarse and fine particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>)<sup>4</sup> and mobile source air toxics (MSAT<sup>5</sup>). The API for this analysis includes the Project Area shown in Figure 1-1 and roadways outside the Project Area that could experience changes in congestion (e.g., traffic volumes and speed) sufficient to alter mobile source emissions. The impact analysis is based on modeling of MSAT emissions and transportation criteria pollutant emissions (i.e., CO, VOCs, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>).

#### 3.2.2.1 No-Build Alternative

Under the No-Build Alternative, the estimated emissions for MSAT from vehicles operating on I-5 and surface streets in the API would be substantially lower than existing conditions. The concentrations of NAAQS criteria pollutants would also decline. PM<sub>10</sub> would increase slightly over 2017 existing conditions, but this pollutant includes tire wear and brake wear as a source, and even though tailpipe emissions are decreasing over time, tire and brake wear remain related to vehicle miles driven, which increases in future conditions (2045). See Table 3-1 for criteria pollutants and MSAT emissions for the No-Build Alternative. This reduction in MSAT and criteria pollutants is consistent with national trends and is attributed to the implementation of tighter tailpipe emissions standards over time (see the *Air Quality Technical Report* [ODOT 2019b]).

#### 3.2.2.2 Revised Build Alternative

Short-term air quality impacts during construction of the Revised Build Alternative would include the release of small particulate emissions (fugitive dust<sup>6</sup>) generated by

---

<sup>4</sup> Particulate matter (PM) less than or equal to 10 or 2.5 micrometers in diameter, respectively.

<sup>5</sup> The U.S. Environmental Protection Agency has identified nine compounds with substantial contributions from mobile sources that are among the national- and regional-scale cancer risk contributors and noncancer hazard contributors from the 2011 National Air Toxics Assessment. These compounds are 1,3 butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter.

<sup>6</sup> Fugitive dust is an environmental air quality term that refers to very small particles suspended in the air, the source of which is primarily the Earth's soil.



---

soil excavation, surface grading, hauling, and various other construction activities, as well as exhaust emissions from construction equipment. Exhaust from construction equipment typically includes CO, NOx, VOCs, PM<sub>10</sub>, PM<sub>2.5</sub>, and diesel particulate matter. Removal of existing concrete structures and construction of new structures (e.g., highway cover) may release dust during demolition, debris removal, and concrete-mixing operations. These construction-phase impacts would be temporary, minimized by Oregon Administration Rules (OAR) and ODOT standard specifications for construction, limited to areas in the immediate vicinity of construction activity (including haul routes), and would end once construction is complete. If construction activities increase traffic congestion in the area, CO and other emissions from delayed vehicles may increase slightly (see Section 6.2 of the 2019 *Air Quality Technical Report* for construction-related emissions). These emissions would also be temporary and are not expected to exceed NAAQS.

Most estimated future (2045) air pollutant emissions in the API under the No-Build and Revised Build Alternatives are nearly identical or substantially lower than existing conditions. Air quality within the API would improve slightly under the Revised Build Alternative. Trends indicate that current concentrations of pollutants other than PM<sub>2.5</sub> and PM<sub>10</sub>, which are dominated by brake and tire wear, would continue to decline over time, including in the vicinity of Harriet Tubman Middle School, as more restrictive tailpipe emission standards are implemented. Table 3-1 shows criteria pollutant and MSAT emissions by alternative.

MSAT emission estimates for surface street operations for the Revised Build Alternative in 2045 also remain similar to estimates for the No-Build Alternative for all pollutants other than benzene, ethylbenzene, and formaldehyde, which would increase under the Revised Build Alternative for vehicle miles traveled on surface streets.

Long-term indirect air pollution effects from implementation of the Revised Build Alternative are not anticipated. The Revised Build Alternative is a safety improvement project that does not substantially improve highway capacity and is not expected to induce growth or create other effects that would cause indirect impacts.

Table 3-1. Comparison of Criteria Pollutant and MSAT Emissions by Alternative

Pollutant	Criteria Pollutant or MSAT	Existing 2017 Emissions (tons per year)	No-Build Alternative 2045 Emissions (tons per year)	Revised Build Alternative 2045 Emissions (tons per year)
CO	Criteria Pollutant	3,416.20	1,152.15	1,152.59
NO <sub>x</sub>	Criteria Pollutant	649.39	279.22	253.78
PM <sub>10</sub>	Criteria Pollutant	75.80	82.04	77.37
PM <sub>2.5</sub>	Criteria Pollutant	22.47	13.12	12.47
VOC	Criteria Pollutant	85.34	11.82	11.48
DPM	MSAT	12.825	2.046	1.935
Acetaldehyde	MSAT	1.521	0.275	0.262
Acrolein	MSAT	0.181	0.024	0.023
Benzene	MSAT	2.816	0.401	0.400
1,3-Butadiene	MSAT	0.299	0.000	0.000
Ethylbenzene	MSAT	1.601	0.450	0.446
Formaldehyde	MSAT	2.637	0.256	0.248
Naphthalene	MSAT	0.312	0.016	0.016
POM	MSAT	0.134	0.007	0.007

Notes: CO = carbon monoxide; DPM = diesel particulate matter; MSAT = mobile source air toxics; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 micrometers in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 micrometers in diameter; POM = polycyclic organic matter; VOC = volatile organic compound

### 3.2.2.3 Avoidance, Minimization, and Mitigation Measures

The implementation of best management practices (BMPs) during construction would reduce the potential for Project-related impacts to air quality.

The Project would implement the following measures, as appropriate, to control dust emissions consistent with OAR 340-208-0210, *Requirements for Fugitive Emissions*:

- Use of water or chemicals, where possible, for dust control during demolition of existing buildings or structure, construction operations, grading of roads, or clearing of land
- Application of asphalt, oil, water, or other suitable chemicals on unpaved roads, material stockpiles, and other surfaces that can create airborne dust

- 
- Full or partial enclosure of materials stockpiles in cases where application of oil, water, or chemicals is not sufficient to prevent particulate matter from becoming airborne
  - Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials
  - Adequate containment during sandblasting or similar operations
  - Using covers on open-bodied trucks during transport of materials that are likely to become airborne
  - Prompt removal of soil, dust, or other airborne-prone material from paved streets

ODOT would also monitor construction contractors to ensure contractor compliance with ODOT standard specifications for Construction Section 290, *Environmental Protection*, which includes the following: limits the idling time of trucks and other diesel-powered equipment to 5 minutes when not in use or in motion, requires truck staging areas to be located in areas where emissions would have a minimum impact on sensitive populations (such as schools and residences), and requires the removal of all loose dirt and debris from trucks prior to leaving the construction areas. In addition, road or lane closures would be focused to non-peak traffic periods, when possible, to reduce the impact of construction delays on traffic flow and resultant vehicle emissions. Assuming compliance with OAR 340-208-0210 and ODOT standards for construction, the Revised Build Alternative would not have substantial adverse short-term or long-term impacts on air quality.

## 3.3 Climate Change

### 3.3.1 Existing Conditions

The Intergovernmental Panel on Climate Change Sixth Assessment Report concluded that, "It is unequivocal that human influence has warmed the atmosphere, ocean and land. [...] Observed increases in well-mixed GHG concentrations since around 1750 are unequivocally caused by human activities" (IPCC 2021). The transportation sector is a leading contributor to GHG emissions such as carbon dioxide, methane, and nitrous oxide, which are generated from the burning of fossil fuels. There are currently no federal or state regulations that control Project-level greenhouse gas (GHG) emissions for transportation projects, though the State of Oregon, Multnomah County, the City of Portland, and Metro have developed policies and strategies to aggressively reduce GHG emissions from motor vehicles (see the *Climate Change Supplemental Technical Report* in Appendix A for more details on existing state and local strategies).

Although GHG reduction efforts are typically planned and implemented at the regional or state-wide level, a Project-level GHG analysis was conducted. GHG emission projections were modeled on a life-cycle basis for both alternatives using

---

traffic data provided by the City of Portland and an assumed Project life of 30 years. GHG emissions from construction and maintenance activities were also calculated for both alternatives.

The API used for the GHG analysis is the same as the API used for the air quality analysis and includes the Project Area and roadways beyond the Project Area that could experience sufficient changes in traffic volumes and speeds to meaningfully change vehicle-sourced GHG emissions. For additional details on the GHG analysis, see the *Climate Change Supplemental Technical Report* (Appendix A).

### 3.3.2 Environmental Consequences

To compare the effects between the No-Build and Revised Build Alternatives, a single common descriptor referred to as “carbon dioxide equivalent emissions” or CO<sub>2</sub>e was used.<sup>7</sup> The GHG emissions analysis compares the estimated CO<sub>2</sub>e emissions for 2017 to the projected CO<sub>2</sub>e emissions for the No-Build and Revised Build Alternatives in 2045.

#### 3.3.2.1 No-Build Alternative

The No-Build Alternative would not result in construction-related GHG emissions. Estimated long-term operational GHG emissions for the Existing Conditions 2017 and the No-Build Alternative for 2045 are shown in Table 3-2. Annual GHG emissions in 2045 are projected to be approximately 20 percent lower than the 2017 annual emission total. The decrease in future annual GHG emissions can be attributed to federal, state, and local efforts to develop more stringent fuel economy standards and vehicle inspection and maintenance programs, as well as transition to cleaner, low-carbon fuels for motor vehicles.

The No-Build Alternative would have on-going maintenance needs over time. GHG emissions would occur during routine maintenance activities, such as restriping, sweeping, snow removal, and vegetation management. For the No-Build Alternative, it was assumed that roadways in the API would require resurfacing once within the first 5 years and again after 15 years (i.e., two resurfacings during the 30-year analysis period). Annual GHG emissions for maintenance of the No-Build Alternative are shown in Table 3-2.

#### 3.3.2.2 Revised Build Alternative

Total GHG emission estimates for construction and maintenance of the Revised Build Alternative, including emissions that would be emitted during traffic delays associated with the construction effort (usage) and one roadway resurfacing mid-way through the 30-year analysis period (i.e., 15 years after Project opening) are summarized in Table 3-2.

---

<sup>7</sup> CO<sub>2</sub>e converts all the emitted GHGs to a common global warming potential expressed in terms of the equivalent amount of carbon dioxide.

Table 3-2. No-Build Alternative (2045) and Revised Build Alternative (2045) Construction and Maintenance-Generated Annual GHG Emissions

Source	No-Build Alternative (MT CO <sub>2</sub> e per year) (% of total)	Revised Build Alternative (MT CO <sub>2</sub> e per year) (% of total)
Construction	N/A	39 (6%)
Construction Materials	N/A	86 (13%)
Construction Transportation	N/A	6 (1%)
Construction Usage	N/A	378 (56%)
Maintenance	122 (100%)	170 (25%)
Total	122	679

Notes: CO<sub>2</sub>e = carbon dioxide equivalent emissions; GHG = greenhouse gas; MT = million tons

Table 3-3 presents the estimated long-term operational emissions for both the No-Build and Revised Build Alternatives in 2045 compared to the estimated emission totals for 2017. The difference between the annual GHG emissions in 2045 under the Revised Build and No-Build Alternatives is small and within the level of variability of modeling results.

Table 3-3. Estimated Annual GHG Emissions for Existing Conditions and the No-Build and Revised Build Alternatives

Source	GHG Emissions (MT CO <sub>2</sub> e per year)			Percent Change		
	2017 Existing	2045 No-Build	2045 Revised Build	2017 to 2045 No-Build	2017 to 2045 Revised Build	2045 No-Build to 2045 Revised Build
Tailpipe	417,814	334,718	338,106	-20	-19	1
Fuel Cycle	112,810	90,374	91,289	-20	-19	1
Total	530,624	425,092	429,395	-20	-19	1

Notes: CO<sub>2</sub>e = carbon dioxide equivalent emissions; GHG = greenhouse gas; MT = million tons

The substantial decline in GHG emissions projected between 2017 and 2045 for the Revised Build Alternative is due to a reduction in vehicle GHG emissions resulting from federal, state, and local efforts to develop more stringent fuel economy standards and vehicle inspection and maintenance programs and transition to cleaner low-carbon fuels for motor vehicles. Because transportation GHG emissions have been identified as a primary cause of climate change effects, any potential decrease in these emissions would be expected to support emission-reduction efforts intended to reduce future climate-related impacts.

---

The indirect GHG emissions effects of the Revised Build Alternative would be minor. The Revised Build Alternative would not substantially improve highway capacity and is not expected to induce growth or create other effects that would cause indirect impacts. The estimated GHG emissions presented above include indirect emissions sources based on a life-cycle approach for materials, construction, and maintenance activities.

### 3.3.2.3 Avoidance, Minimization, and Mitigation Measures

Large reductions in GHG emissions are required to mitigate global climate change, so the State of Oregon, Multnomah County, and the City of Portland are taking multiple steps to reduce GHGs statewide via various programs and initiatives. These programs and initiatives act to reduce transportation sources by encouraging electric vehicle use, shift from single-passenger commuting to carpooling, and mode shift from passenger vehicles to public transport and bicycles and/or pedestrian facilities, to name a few. Cumulatively, these would act to reduce GHG emissions statewide during the life of the Revised Build Alternative. No Project-level mitigation is proposed.

## 3.4 Archaeological Resources

### 3.4.1 Existing Conditions

The API for archaeological resources is the same as the Project Area shown in Figure 1-1.

No archaeological resources have been identified to date within the API. The potential for encountering archaeological resources during construction is variable due to the intensive historical and modern use of the area, which has resulted in disturbances ranging from the ground surface to depths of up to 50 feet.

In 2019, ODOT entered into a Programmatic Agreement (PA) executed by the FHWA, Oregon State Historic Preservation Office (SHPO), and ODOT for *Identifying and Evaluating Archaeological Resources During the Development and Construction of the Interstate 5 Rose Quarter Improvement Project* (ODOT 2019c). Due to the amount of development and impervious surfaces in the Project Area, the PA has stipulations for archaeological monitoring of certain preconstruction and construction activities. Since 2019, ODOT's archaeological consultant has monitored approximately 100 pre-construction environmental and geotechnical borings. No archaeological resources have been identified during these activities. This information is being used to help characterize low, moderate, and high probability areas for buried archaeological resources and the depths at which they could potentially be encountered. For example, certain portions of the Project Area with low probability for archaeological resources include areas where previous cut-and-fill disturbances associated with interstate construction occurred. High probability area designation focuses on areas where historical maps and aerial photographs show clusters of buildings and structures, and where historic-era archaeological resources are more likely to exist

below impervious surfaces. High probability areas also include those areas where historical riverbank extends into the API because there is a higher potential for precontact-era archaeological resources along this landform. ODOT would contract for archaeological monitoring during construction based on the results of these ongoing studies.

### 3.4.2 Environmental Consequences

#### 3.4.2.1 No-Build Alternative

The No-Build Alternative would result in no impacts to archaeological resources.

#### 3.4.2.2 Revised Build Alternative

It is possible that archaeological resources could be discovered during construction of the Revised Build Alternative. Most of the impacts to archaeological resources, if present, would occur during short-term construction activities. Archaeological resources could be altered, damaged, or destroyed by the operation of heavy equipment or during the compaction, excavation, or grading of soils. The range of potential short-term impacts to archaeological resources from construction of the Revised Build Alternative is presented in Table 3-4.

Table 3-4. Potential Impacts to Archaeological Resources from the Revised Build Alternative

Project Activity	Potential Impact
Widening I-5 Structures	New foundations or temporary construction requirements for excavations may impact buried archaeological resources, if present.
New I-5 Auxiliary Lanes	New retaining walls, retaining wall tieback anchors, widened roadway prisms, and stormwater and utilities installations may impact buried archaeological resources, if present.
New Highway Cover	Ground-disturbing construction associated with new highway cover may impact buried archaeological resources, if present.
Removal of Existing Local Street Overcrossings	Demolition activities and new grading may impact buried archaeological resources, if present.
Surface Street Modifications	New traffic signals and street lighting could have foundations that impact buried archaeological resources, if present.
New Bicycle and Pedestrian Facilities	New sidewalk ramps and bicycle facilities could have foundations that impact buried archaeological resources, if present.

Notes: I-5 = Interstate 5

During operation of the Revised Build Alternative, it is possible that additional subsurface disturbance related to repairs and maintenance activities could encounter archaeological resources not previously identified, and these actions could diminish integrity of those properties. However, due to the ground alterations required for

---

construction of the Revised Build Alternative, this outcome is unlikely. Indirect impacts to archaeological resources from the Revised Build Alternative would not be expected to result in measurable changes to, and diminished integrity of, archaeological resources.

### 3.4.2.3 Avoidance, Minimization, and Mitigation Measures

ODOT has an Inadvertent Discovery Plan for the Project. If impacts to archaeological resources discovered during construction of the Revised Build Alternative are unavoidable and would diminish integrity of a site that is eligible for the National Register of Historic Places (NRHP), ODOT would resolve impacts through implementation of stipulations from the Project-specific PA (ODOT 2019c), which provides protocols for identifying, evaluating, and resolving impacts pursuant to 36 Code of Federal Regulations (CFR) 800.13 and 36 CFR 800.14.

ODOT's standard protocol in the event of an inadvertent discovery is described in ODOT Specification 290.50, *Protection of Cultural Resources*<sup>8</sup>:

*Comply with all laws governing preservation of cultural resources. Cultural resources may include, but are not limited to, dwellings, bridges, trails, fossils, and artifacts.*

*If cultural resources are encountered on the Project Area or in material sources, and their disposition is not addressed in the Special Provisions, do the following:*

- *Immediately discontinue operations or move to another area of the Project Site or material source.*
- *Protect the cultural resource from disturbance or damage.*
- *Notify the Engineer.*

*The Engineer will do the following:*

- *Arrange immediate investigations.*
- *Arrange for disposition of the cultural resources. The Engineer may direct the Contractor to perform salvage operations according to 00140.30 or 00140.60.*
- *Notify the Contractor when to begin or resume construction operations in the affected area.*

ODOT would require the contractor to follow ODOT Specification 290.51, *Protection of Sensitive Cultural Sites*,<sup>9</sup> throughout the duration of construction. ODOT's requirement that the contractor follow the above specification along with the Inadvertent Discovery Plan and Project-specific PA (and the mandatory protocols

---

<sup>8</sup> ODOT Standard Specifications for Construction:  
[https://www.oregon.gov/odot/Business/Specs/2021\\_STANDARD\\_SPECIFICATIONS.pdf](https://www.oregon.gov/odot/Business/Specs/2021_STANDARD_SPECIFICATIONS.pdf)

<sup>9</sup> Ibid.



---

contained therein) would ensure substantial adverse effects to newly discovered archaeological resources would be avoided.

## 3.5 Historic Resources

### 3.5.1 Existing Conditions

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to consider the effects on historic properties of projects they carry out, assist, fund, permit, license, or approve. If a federal project has the potential to affect historic properties, a Section 106 review will take place.

The API (also known as the Area of Potential Effects) for historic resources extends beyond the Project Area to include approximately 39 additional acres of residential and commercial land in the historic neighborhood of Albina that may be subject to Project impacts such as noise and vibration. The Project team conducted a records search in the Oregon Historic Sites Database and identified 54 previously recorded historic resources within the API. This includes two resources that are now listed in the NRHP: Mt. Olivet Baptist Church and the Billy Webb Elks Club/Lodge.

During a subsequent field survey, the Project team identified in the API 115 individual resources that would be at least 50 years old at the time construction on the Revised Build Alternative would be finished (estimated 2034). Of these, the Project team identified 21 resources as potentially meeting the NRHP Criteria for Evaluation<sup>10</sup> and requisite levels of historic integrity. Based on further evaluation, the Project team recommended 15 of the 21 resources as individually eligible for the NRHP and one potential historic district (the Eliot Historic District) as likely eligible for the NRHP (with eight of its contributing resources located within the API). On January 23, 2019, ODOT received concurrence from the Oregon SHPO on the recommended NRHP eligibility for 14 of the individual properties and the Eliot Historic District.

In 2022, as part of the supplemental baseline architectural survey, the Project team identified and photographed eight individual resources built prior to 1984 and not

---

Eliot Historic District and 15 individual properties in the Project vicinity are eligible for the National Register of Historic Places (NRHP). No short- or long-term impacts would adversely affect the characteristics that makes these historic properties eligible for listing in the NRHP.

---

---

<sup>10</sup> If a site meets the NRHP criteria and retains its historical integrity (a historic property), then the federal agency is required to avoid, minimize, or resolve adverse effects to the property under the NHPA. Historic properties are those properties that are included in, or eligible for inclusion in, the NRHP. Federal transportation agencies (i.e., FHWA, Federal Transit Administration, and Federal Aviation Administration) are also required to pursue all reasonable and prudent alternatives if a transportation project adversely affects a historic property under Section 4(f) of the National Transportation Act.

---

documented in the previous survey. The Project team recommended that seven of the eight resources were not eligible for the NRHP due to diminished integrity or because they were examples of common building types. However, the Project team identified and determined that one additional resource, a historic railroad corridor, was eligible for the NRHP. On September 1, 2022, ODOT received concurrence from the Oregon SHPO on the recommended eligibility of the historic railroad corridor (Jalving 2022). Table 3-5 lists the 16 historic properties within the API considered eligible for the NRHP. Additional details on historic properties within the API are described in the *Historic Resources Supplemental Technical Report* (Appendix A).

Table 3-5. Historic Properties Eligible for the NRHP

Property Name	Property Address	NRHP Eligibility
Urban League of Portland	10 N Russell Street	Eligible (Criterion A)
Serene Court Apartments	1130 NE 1st Avenue	Eligible (Criteria A and C)
W.E. Field Tile Co. Building	122-140 NE Broadway	Eligible (Criteria A and C)
Calaroga Terrace	1400 NE 2nd Avenue	Eligible (Criterion A)
Travelodge at the Coliseum	1441 NE 2nd Avenue	Eligible (Criteria A and C)
Mt. Olivet Baptist Church	1734 NE 1st Avenue	NRHP Listed (Criteria A)
Eliot Historic District (eight contributing properties in the API)	2008 N Williams Avenue 16 NE Tillamook Street (NC) 20 NE Thompson Street 20 NE Tillamook Street (NC) 2156 N Williams Avenue (NC) 23 NE San Rafael Street 66 NE San Rafael Street 69 NE Hancock Street (NC) 72 NE San Rafael Street 73 NE Hancock Street 76 NE San Rafael Street 77 NE Hancock Street	Eligible (four non-contributing resources and 8 contributing resources) (Criteria A, B, and C)
Charles E. and Emma E. Holzer House	2027 N Williams Avenue	Eligible (Criterion C)
Beatrice Mott Reed House	2107 N Vancouver Avenue	Eligible (Criterion A)
Sullivan Pumping Station	211 NE Everett Avenue	Eligible (Criterion A)
Malcolm X Dental Clinic	214 N Russell Street	Eligible (Criteria A and B)
The Hazelwood/The Dude Ranch	222-240 N Broadway	Eligible (Criteria A and C)
Paramount Apartment House	253 N Broadway	Eligible (Criteria A and C)
Fremont Bridge	Crossing Willamette River	Eligible (Criteria A and C)
Billy Webb Elks Club/Lodge	6 N Tillamook Street	NRHP Listed
Historic Railroad Corridor	Linear Resource	Eligible (Criterion A)

Note: N = North; NE = Northeast; NRHP = National Register of Historic Places; NC = non-contributing

### 3.5.2 Environmental Consequences

The Project team assessed each identified historic property in the API for potential effects using the criteria of adverse effect from 36 CFR Section 800.5. An adverse effect occurs when an activity alters, directly or indirectly, any of the characteristics of

---

the historic property that qualify the property for inclusion in the NRHP. Examples of adverse effects include the following:

- Physical destruction of or damage to all or part of the property
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines
- Removal of the property from its historic location
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's important historic features
- Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious or cultural significance to an Indian tribe or Native Hawaiian organization
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance

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

No direct or indirect impacts to NHPA Section 106 listed or eligible historic properties would occur under the No-Build Alternative.

### **3.5.2.2** Revised Build Alternative

Table 3-6 identifies 12 eligible historic properties in the API that would be impacted by construction of the Revised Build Alternative. These historic properties could experience short-term impacts such as noise and vibration from nearby construction activities, increased truck traffic, traffic congestion and changes to access, increased dust, and temporary changes to the historic setting due to the presence of construction equipment, staging areas, and materials storage areas.

Two historic properties would be affected by temporary easements or permanent property acquisition—the Travelodge at the Coliseum and a historic railroad corridor near Sullivan's Gulch. The Revised Build Alternative would require from the Travelodge at the Coliseum historic property a 5,763-square-foot permanent fee acquisition and a 7,579-square-foot temporary construction easement to construct a wall, and a 1,726-square-foot permanent fee easement to maintain the wall. On January 21, 2022, the Oregon SHPO agreed with ODOT's finding that these easements and acquisitions would result in "No Adverse Effects" (Raasch 2022). The Revised Build Alternative would also require a 125,125-square-foot permanent fee easement

---

and an 84,907-square-foot temporary easement from the historic railroad corridor, which encompasses a total of 5,718 linear feet within the API. On September 1, 2022, the Oregon SHPO agreed with ODOT's finding that these easements and acquisitions would result in "No Adverse Effects" to the historic railroad corridor (Jalving 2022).

The Revised Build Alternative also has the potential to impact underground sewer lines in the API, several of which may be eligible for the NRHP. Some of these lines may need to be relocated to avoid conflicts with structural support columns and footings for new elevated structures. Although several of these sewer lines are likely over 50 years old, they are part of a larger sewer system that has seen many updates and upgrades over the past 100 years. These changes may have altered the historic characteristics that would otherwise make the sewers eligible for the NRHP. As design of the Revised Build Alternative progresses, the Project team would look for ways to avoid conflicts with underground sewer lines, particularly those with potential historic significance.

Long-term impacts to historic properties from operation of the Revised Build Alternative could include changes to the settings of historic properties by the introduction of new transportation structures, including the proposed highway cover, lane/shoulders, ramp improvements, and long-term atmospheric or audible impacts. A noise analysis performed by the Project team estimated that the Travelodge at the Coliseum would experience a very small increase in operations-related noise generated by nearby vehicle traffic. None of the potential short- or long-term impacts described above would adversely affect the characteristics that make these historic properties eligible for listing in the NRHP. Indirect impacts to historic resources from the Revised Build Alternative would not result in measurable changes to, and diminished integrity of, archaeological resources.

Table 3-6. Historic Properties Potentially Impacted by the Revised Build Alternative

Property Name	Property Address	Short-Term Impacts	Effect Determination <sup>1</sup>
Serene Court Apartments	1130 NE 1st Avenue	Audible, Visual, Vibration	No Adverse Effect
Calaroga Terrace	1400 NE 2nd Avenue	Audible, Visual, Vibration	No Adverse Effect
Travelodge at the Coliseum	1441 NE 2nd Avenue	Audible, Visual, Vibration	No Adverse Effect
Mt. Olivet Baptist Church	1734 NE 1st Avenue	Audible, Visual, Vibration	No Adverse Effect
Historic Railroad Corridor	Linear Resource	Audible, Visual	No Adverse Effect
Eliot Historic District (two contributing properties affected)	2008 N Williams Avenue 23 NE San Rafael Street	Vibration	No Adverse Effect
Charles E. and Emma E. Holzer House	2027 N Williams Avenue	Vibration	No Adverse Effect
Beatrice Mott Reed House	2107 N Vancouver Avenue	Vibration	No Adverse Effect
Billy Webb Elks Club/Lodge	6 N Tillamook Street	Vibration	No Adverse Effect
Sullivan Pumping Station	211 NE Everett Avenue	Vibration	No Adverse Effect
The Hazelwood/The Dude Ranch	222-240 N Broadway	Vibration, Visual	No Adverse Effect
Paramount Apartment House	253 N Broadway	Audible, Visual, Vibration	No Adverse Effect

Note: N = North; NE = Northeast.

<sup>1</sup> In determining the effects of the undertaking upon historic properties, the agency finding would be "No Historic Properties Affected" [36 CFR 800.4(d)(1)], "No Adverse Effect" [36 CFR 800.5(b)], or "Adverse Effect" [36 CFR 800.5(d)(2)].

### 3.5.2.3 Avoidance, Minimization, and Mitigation Measures

The implementation of BMPs during construction would reduce the potential for Project-related noise and inadvertent impacts to historic properties.

The Project would follow the ODOT construction specifications and BMPs to minimize high noise levels during construction. Avoidance and minimization measures for potential construction-related vibration would include pre- and post-construction assessments, on-site monitoring during construction, and stop work authorization. If it is likely that the Project would affect historic properties by vibration, ODOT would prepare a treatment plan consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, and thus consistent with the requirements of 36 CFR 800.5(b), to make the applicable repairs. If repairs are necessary due to the vibration, alterations to historic resources may require a land use review, such as a Historic Resource Review, from the City of Portland.

---

ODOT, FHWA, and Oregon SHPO have signed a project-level PA, in consultation with Tribes and other parties, to avoid and/or minimize the potential for Project-related effects to archaeological resources and built historic properties, as the extent of these potential effects would be unknown prior to the implementation of the Revised Build Alternative (Appendix C). With the execution of the PA, and the avoidance and minimization measures contained herein and in the *Historic Resources Technical Report* (ODOT 2019b) and the *Historic Resources Supplemental Technical Report* (Appendix A), the Project would result in no adverse effects to the characteristics that make historic properties within the API eligible for the NRHP. Therefore, a finding of “no historic properties adversely affected” pursuant to 36 CFR 800.5(b) is appropriate. Additional details on the effects assessment for historic properties are included in the *Historic Resources Technical Report* (ODOT 2019b) and *Historic Resources Supplemental Technical Report* (Appendix A).

## 3.6 Section 4(f)

### 3.6.1 Existing Conditions

The API for the Section 4(f) analysis is the same as the API for historic resources and extends east beyond the boundary of the Project Area to include the historic neighborhood of Albina. The 15 individual historic sites and the Eliot Historic District described in Section 3.5 are Section 4(f) resources.

Four publicly owned parks in the API also qualify as Section 4(f) resources:

- Vera Katz Eastbank Esplanade
- Willamette River Greenway Trail
- Lillis-Albina Park
- Portland Peace Memorial Park

The Vera Katz Eastbank Esplanade overlaps a segment of the Willamette River Greenway Trail. Both resources are located in the southern portion of the API. The Vera Katz Eastbank Esplanade is a City of Portland park. The Willamette River Greenway Trail is an interconnected network of trails managed and/or owned by a number of entities (including the City of Portland). Lillis-Albina Park is a City of Portland park and is at the northern end of the API, and the Portland Peace Memorial Park is a City of Portland park just east of the Vera Katz Eastbank Esplanade in the southern end of the API. Additional information on these Section 4(f) resources is located in the *Section 4(f) Technical Report* (ODOT 2019b) and the *Historic Resources Supplemental Technical Report* (Appendix A).

---

## 3.6.2 Environmental Consequences

### 3.6.2.1 No-Build Alternative

No direct or indirect impacts to Section 4(f) properties would occur under the No-Build Alternative.

### 3.6.2.2 Revised Build Alternative

#### *Travelodge at the Coliseum*

The Revised Build Alternative would directly impact the Travelodge at the Coliseum historic site. It would require a 5,763-square-foot permanent property acquisition, a 7,579-square-foot temporary construction easement, and a 1,726-square-foot permanent easement to construct and maintain a wall near the NB I-5 off-ramp to NE Weidler. The Revised Build Alternative would not physically impact the historic hotel building or affect the physical features that contribute to the hotel's significance.

Additional impacts to historic properties in the API, including the Travelodge, would include noise and vibration impacts due to nearby construction activities, increased truck traffic, traffic congestion and changes to access, increased dust, and short-term visual changes due to construction equipment, staging areas, and material storage. Short-term noise levels from construction activities could range from approximately 70 to 100 A-weighted decibels (dBA).<sup>11</sup>

A noise analysis performed by the Project team estimated that long-term operations-related noise generated by nearby vehicle traffic would increase noise levels at an outside recreation area (basketball court) near the historic hotel from the current 61 dBA to 62 dBA (see the *Noise Technical Report* in ODOT 2019b), which would be lower than the Noise Abatement Approach Criteria (NAAC) threshold of 65 dBA for a Section 4(f) property.

The permanent property acquisition, temporary easement, noise effects, and potential for vibration from construction activities described above would not adversely affect the features, attributes, or activities qualifying the Travelodge at the Coliseum for protection under Section 4(f).

The small permanent acquisition and temporary easement from the Travelodge at the Coliseum would qualify as a "*de minimis*"<sup>12</sup> use of a Section 4(f) historic site. Avoidance

---

<sup>11</sup> All noise levels referred to in this SEA are stated as hourly equivalent sound pressure levels in terms of dBA. The equivalent sound pressure level is defined as the average noise level, on an energy basis, for a stated period of time (hourly). Noise levels stated in terms of dBA approximate the response of the human ear by filtering out some of the noise in the low and high frequency ranges that the ear does not detect well. A-weighting is used in most environmental ordinances and standards.

<sup>12</sup> A *de minimis* impact is one that, after taking into account any measures to minimize harm (such as avoidance, minimization, mitigation, or enhancement measures), results in either 1) a Section 106 finding of no adverse effect or no historic properties affected on a historic property; or 2) a determination that the project would not adversely



---

and minimization conditions contained in the 2022 *Historic Resources Supplemental Technical Report* (Appendix A) and in the PA described in Section 3.6.2.3 would ensure that potential construction-related vibration impacts to the Travelodge at the Coliseum do not exceed the *de minimis* impact threshold. There is no Section 4(f) “constructive use”<sup>13</sup> of the Travelodge at the Coliseum.

#### *Historic Railroad Corridor*

The Revised Build Alternative would not include any actions that constitute a Section 4(f) use of the historic railroad corridor. The Section 4(f) statute imposes conditions on the use of land from historic sites for highway projects. For a historic bridge, highway, railroad, or other transportation facility, the FHWA established a regulatory provision that Section 4(f) approval is required only when the proposed Project would adversely affect the historic integrity for which the facility was determined eligible for the NRHP (see 23 CFR 774.13(a)). The Revised Build Alternative would not adversely affect the historic railroad corridor.

#### *Vera Katz Eastbank Esplanade*

The Revised Build Alternative would not include any actions that would constitute a Section 4(f) use of the Vera Katz Eastbank Esplanade. Project-related construction and operation noise would occur near the eastern perimeter of the park, but because sensitive receptors in the vicinity would not experience a substantial increase in perceptible noise, no constructive use would occur. Similarly, the Revised Build Alternative would not result in direct or indirect noise impacts to the Vera Katz Eastbank Esplanade such that the protected activities, features, or attributes that qualify the park for protection under Section 4(f) would be substantially impaired.

#### *Willamette River Greenway Trail*

The Revised Build Alternative would not include any actions that would constitute a Section 4(f) use of the Willamette River Greenway Trail. Although construction and facility operations-related noise would occur in proximity to the eastern perimeter of the Willamette River Greenway Trail, the Revised Build Alternative would not result in noise impacts such that a constructive use would occur. Similarly, the Revised Build Alternative would not result in direct or indirect noise impacts to the Willamette River Greenway Trail such that the protected activities, features, or attributes that qualify the trail for protection under Section 4(f) would be substantially impaired.

---

affect the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).

<sup>13</sup> “Constructive use” of a Section 4(f) property involves no actual physical use of the Section 4(f) property via permanent incorporation or temporary occupancy of land into a transportation facility. A constructive use occurs when a project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired and the resource can no longer perform its designated function (23 CFR 774.15).

---

### *Lillis-Albina Park*

The Revised Build Alternative would not entail any actions that would result in a Section 4(f) use of Lillis-Albina Park. Although Project-related construction and operation noise would occur in proximity to the western perimeter of the park, noise levels would not exceed thresholds that would constitute a constructive use. If a 12-foot-tall noise wall (Noise Wall 2) was installed between I-5 and the Lillis-Albina Park, as recommended in the *Noise Supplemental Technical Report* (Appendix A), the predicted noise levels at the park would decrease from the current 72 dBA to 67 dBA. Although this noise level would still be above the NAAC of 65 dBA for a public park, the noise wall would provide a 5 dBA reduction in noise levels at the park. The Revised Build Alternative would not result in direct or indirect noise impacts to the Lillis-Albina Park such that the protected activities, features, or attributes that qualify the park for protection under Section 4(f) would be substantially impaired.

There are two viewpoints located at the western edge of Lillis-Albina Park that feature I-5 in the foreground and a view of the Fremont Bridge and Forest Park through the trees, with glimpses of the Willamette River and Pearl District also visible (City of Portland 2020). Noise Wall 2, if built, could block all or a portion of I-5 that is visible from these viewpoints. ODOT will work with the City of Portland through the final design process to mitigate impacts of the Revised Build Alternative on the view.

### *Portland Peace Memorial Park*

The Revised Build Alternative would not include any actions that would constitute a Section 4(f) use of Portland Peace Memorial Park. No right of way (ROW) acquisition would be required in the Park. Project-related construction and operation noise would occur near the eastern perimeter of the park, but because sensitive receptors near the park would not experience a substantial increase in perceptible noise, no constructive use would occur. Similarly, the Revised Build Alternative would not result in direct or indirect noise impacts to the Portland Peace Memorial Park such that the protected activities, features, or attributes that qualify the park for protection under Section 4(f) would be substantially impaired.

### **3.6.2.3** Avoidance, Minimization, and Mitigation Measures

The following measures would be implemented to reduce the potential for adverse impacts to Section 4(f) resources:

- ODOT would require construction contractors to follow ODOT specifications and BMPs to minimize high noise levels near Section 4(f) properties during construction (see the *Noise Supplemental Technical Report* in Appendix A).
- ODOT would coordinate with FHWA and the Oregon SHPO to implement the avoidance and minimization conditions contained in the *Historic Resources Technical Report* (ODOT 2019b), the *Historic Resources Supplemental Technical*

---

*Report* (Appendix A), and the PA described in Section 3.6.2.3 to avoid and/or minimize the potential for Project-related vibration impacts to the Travelodge at the Coliseum.

- ODOT would consider—and further evaluate during final design—the recommendation in the *Noise Supplemental Technical Report* (Appendix A) that a noise wall be considered in one location along the eastern edge of I-5 that would shield Lillis-Albina Park from traffic noise.

## 3.7 Hazardous Materials

### 3.7.1 Existing Conditions

The API for hazardous materials extends approximately 1 mile beyond the boundary of the Project Area to include areas where existing subsurface contamination could potentially migrate to areas where Revised Build Alternative construction activity or property acquisitions would occur.

The Project team identified 182 “Sites of Concern” within the API. Sites of Concern are properties with known or suspected hazardous materials contamination based on a search of state and federal databases. Many of these Sites of Concern are associated with former underground storage tanks or heating oil tanks that had released petroleum hydrocarbons into the soil and/or groundwater. Other common sources of contamination include past spills or chemical releases from commercial businesses, such as auto repair shops and dry cleaners. Of the 182 Sites of Concern, 43 (24 percent) are located within the Project Area and 139 (76 percent) are located outside of the Project Area, but within the API. In addition to specific Sites of Concern, a field survey conducted by the Project team identified several area-wide sources of potentially hazardous materials, including transient camps, overhead powerlines, pole-mounted transformers, street and property lights, and traffic signal lights. It is also standard ODOT practice to assume that surface soil adjacent to major highways is contaminated with hazardous materials to a depth of 18 inches below ground surface. For additional details, see the *Hazardous Materials Technical Report* (ODOT 2019b).

### 3.7.2 Environmental Consequences

#### 3.7.2.1 No-Build Alternative

Under the No-Build Alternative, disturbance of existing soil or groundwater contamination in the API is not anticipated, and therefore, no releases or spills are expected to occur. Private redevelopment activity within and near the Project Area is anticipated to continue. As private development occurs, cleanup of some sites containing hazardous materials may occur, depending on the location of future development.

---

### 3.7.2.2 Revised Build Alternative

Under the Revised Build Alternative, hazardous materials impacts could result if existing contaminated soil is encountered during construction, if structures to be demolished contain hazardous materials, or if contaminated property is acquired for additional ROW. Eleven of the 182 Sites of Concern are located on properties that would be acquired by ODOT (in full or partially) to enable the construction of various components of the Revised Build Alternative. Of these sites, six are reported to have soil contamination, one is reported to have both soil and groundwater contamination, and three are occupied by buildings that likely have lead-based paint (LBP) and asbestos-containing building materials (ACBM). Excavation near these sites could encounter contaminated soil or groundwater, and if existing structures were to be demolished, LBP and ACBM would likely be encountered.

Impacts during construction could include potential spills or releases of oil and fuel from mechanical equipment and the mobilization or release of previously unexposed contamination in soil and groundwater. Encountering contaminated soil and groundwater during construction activities could also increase human health and safety hazards for construction workers and the general public.

Long-term beneficial effects from the Revised Build Alternative include improved traffic safety, which would reduce the likelihood of spills related to vehicular crashes.

### 3.7.2.3 Avoidance, Minimization, and Mitigation Measures

Prior to acquiring properties or commencing construction activities, ODOT would conduct a full Hazardous Materials Corridor Study. The study would review historical information and existing databases to identify potential hazardous materials in the Project Area and on surrounding properties. ODOT would conduct Phase I Environmental Site Assessments<sup>14</sup> for any properties to be acquired to construct the Revised Build Alternative, and Phase II Environmental Site Assessments<sup>15</sup> would be conducted on properties where the Phase I Environmental Site Assessment indicated that contamination may be present.

ODOT would require the construction contractor to implement the following measures to address hazardous materials concerns:

- Prior to any demolition or removal activities, all structures would be tested for LBP and ACBM with a Hazardous Building Materials Assessment by a qualified contractor in accordance with worker protection and material disposal regulations (refer to ODOT's *HazMat Program Procedures Guidebook* [ODOT 2010]). Potential

---

<sup>14</sup> Phase I Environmental Site Assessments include on-site inspections and interviews with property owners and operators; review of historical aerial photos, Sanborn Fire Insurance Maps, and City directories; and review of state and federal regulatory databases to identify known or suspected hazardous materials.

<sup>15</sup> Phase II Environmental Site Assessments include surficial and subsurficial soil or groundwater analysis; monitoring well installation; or indoor air, mold, asbestos, lead, and other similar material sampling.

---

polychlorinated biphenyl (PCB)-containing hydraulic or electrical equipment would be tested for PCBs by a qualified contractor prior to handling or disposal.

- During construction, the contractor would be required to follow the applicable regulations regarding the transport, use, and storage of hazardous materials.
- The contractor would be required to develop a Health and Safety Plan for all construction activities consistent with applicable laws and best practices in effect at the time of construction.
- The contractor would be required to follow a Project-specific Pollution Control Plan to prevent spills and contain their potential spread.
- The contractor would be required to develop a Contaminated Media Management Plan that specifies the correct handling and disposal of hazardous materials encountered during construction and includes procedures to be used if encountering previously unexpected hazardous materials.

Implementation of the measures listed above would help ensure that adverse effects from hazardous materials would not occur during construction and operation of the Revised Build Alternative. Additional measures related to protection of water resources are provided in Section 3.15.2.3.

## 3.8 Land Use

### 3.8.1 Existing Conditions

The land use API extends from the Willamette River east to NE 7th Avenue, north to NE Stanton Street, and south to the I-5 and I-84 interchange. Figure 3-1 shows existing land use within the API, and Figure 3-2 shows the current land use designations for parcels within the API from the City of Portland's comprehensive plan. The City's comprehensive plan generally calls for a continuation of the existing pattern of land uses within the API. Figure 3-2 also identifies the street classifications for roadways within the API from the City's Transportation System Plan (TSP). Zoning in the API is consistent with the comprehensive plan land use designations.

The API contains a diverse array of existing land uses, including the following:

- The region's two major sports and entertainment arenas: the Moda Center and Veterans Memorial Coliseum
- The Oregon Convention Center
- The central offices and maintenance facilities for Portland Public Schools
- A mix of commercial and residential uses along and near the Broadway/Weidler corridor
- Residential neighborhoods in the northeast portion of the area
- Industrial uses in the northwest portion of the area

Figure 3-1. Existing Land Use

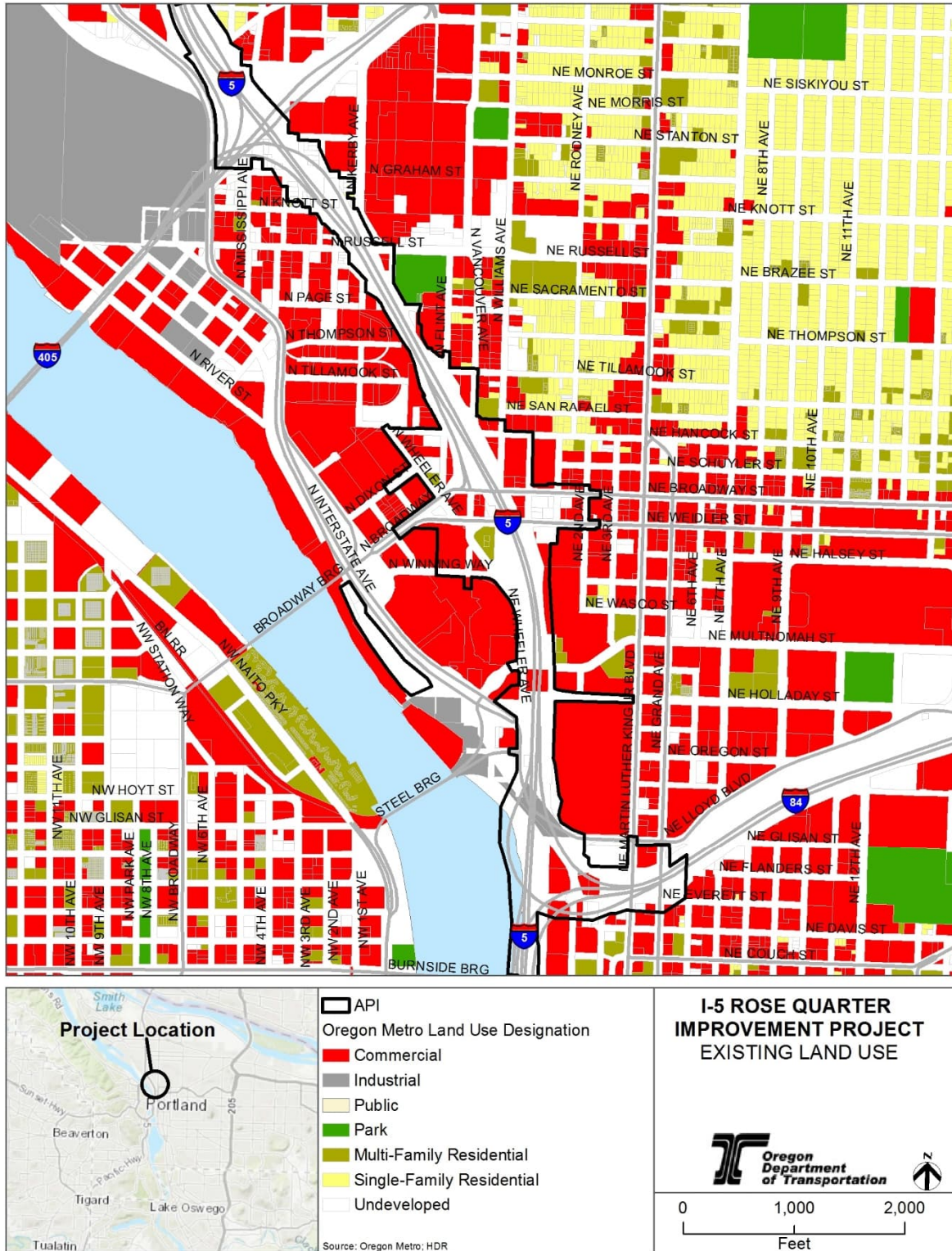
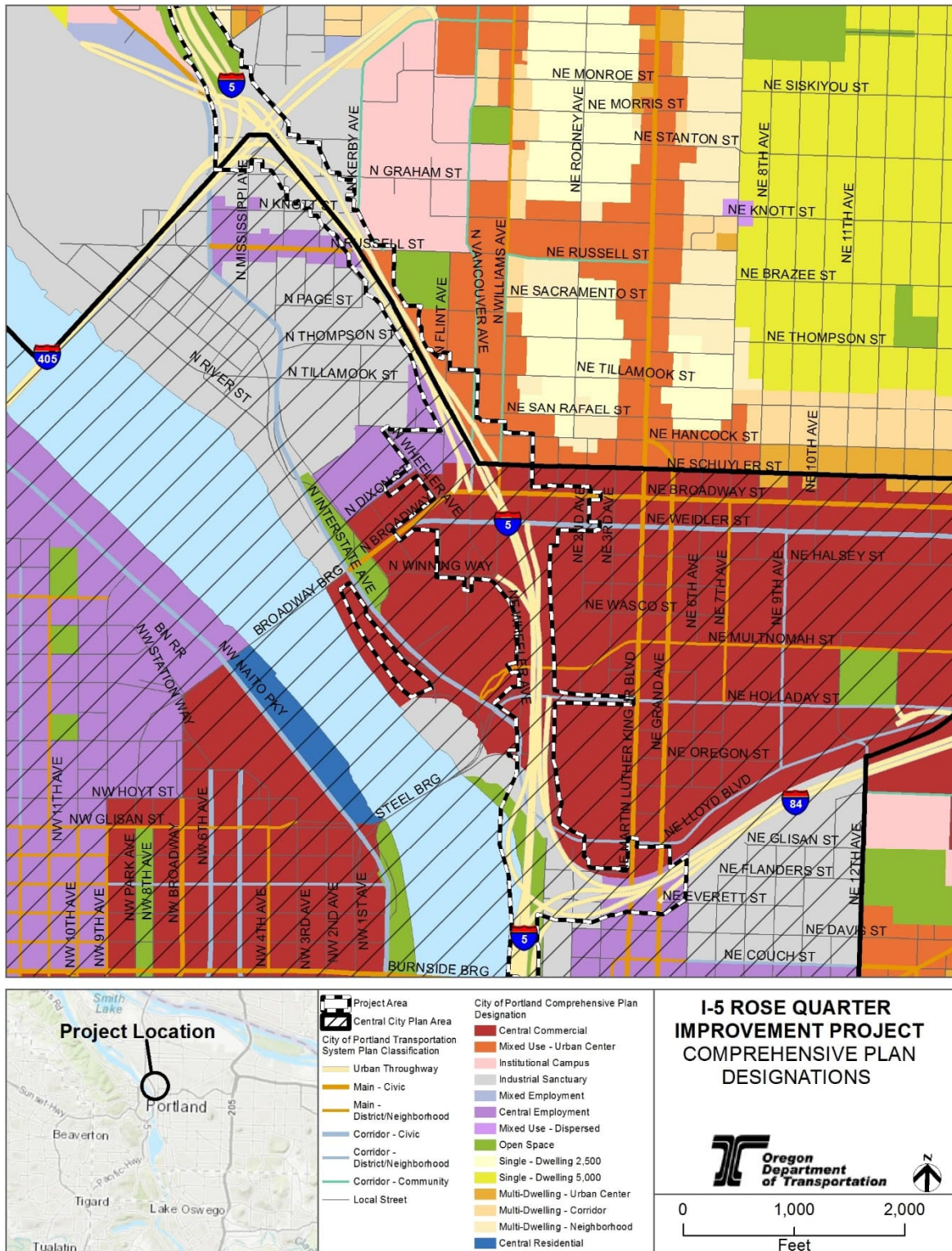


Figure 3-2. Comprehensive Plan Designations



---

## 3.8.2 Environmental Consequences

This section documents compliance or compatibility of the No-Build and Revised Build Alternatives with state, regional, and local transportation and land use laws, adopted plans, goals, and policies; identifies direct land use impacts by quantifying the amount of land acquired and converted to ROW or transportation use; and demonstrates how ODOT and the City of Portland integrated land use considerations into the design of the Revised Build Alternative.

### 3.8.2.1 No-Build Alternative

Under the No-Build Alternative, no non-transportation land uses would be acquired or converted to ROW or transportation use; therefore, no direct land use impacts would occur. However, the No-Build Alternative would have an adverse effect on the City of Portland's long-term vision for land development within the API. The No-Build Alternative would have two major consequences for future land development in the API and other areas of the City. First, the City would be unable to implement the goal of supporting high-density, mixed-use development with safer and greater pedestrian and bicycle connectivity through implementation of policies specific to the Rose Quarter, including enhancement of tourism, retail, and entertainment (Policy 1.LD-3), improvement of pedestrian connections (Policy 3.LA-2), provision of access and support for regional development (Policy 3.LD-2), or fostering more intense development (Policy 5.LD-1) as identified in the *Adopted Central City 2035 Plan* (2018). For example, some planned re-zonings to allow higher levels of employment or population density or land uses that generate high traffic volumes would not be accommodated under the No-Build Alternative, and the City would be required to amend the land use provisions of the plan. Second, ODOT would require the City to apply ODOT vehicle traffic mobility (congestion) standards and possibly amend land use designations, as defined in the *Adopted Central City 2035 Plan*, particularly near the Broadway/Weidler interchange. These changes would likely have the effect of limiting allowed development within the API.

### 3.8.2.2 Revised Build Alternative

The majority of land within the API that would be affected by the Revised Build Alternative is currently owned by ODOT or the City of Portland and is already in transportation use. However, the Revised Build Alternative would convert about 80,459 square feet (approximately 1.8 acres) of commercial land to transportation ROW. Figure 3-3 shows land converted to transportation use.

Converted land would become ODOT or City of Portland ROW. The exact amount of property converted to transportation use under the Revised Build Alternative would be determined during final design and would be subject to negotiations between ODOT and affected property owners, pursuant to federal law and regulations. The conversion of land to transportation use under the Revised Build Alternative would



---

need to be evaluated for non-conforming development as the design progresses and may require future land use reviews to determine conformance with current development standards.

After ODOT coordination with the property owners, a 3.7-acre paved parking lot located at 1225 N Thunderbird Way would potentially receive a temporary construction easement to be used for construction staging but would not be permanently converted to transportation use. In addition, approximately 0.7 acre of surface and/or subsurface permanent easements and 7.3 acres of temporary easements are estimated to accommodate supporting structures for the highway improvements and staging/work area needs. This area would include an easement for retaining walls adjacent to Harriet Tubman Middle School (Figure 3-3).

An area of approximately 7.1 acres would be created with the construction of the highway cover, about 4 acres of which would be buildable and could accommodate buildings up to three stories in the northern portion and up to six stories on the southern portion (refer to Section 2.2.2.2).

Interim and futures uses on the new buildable area would be subject to City of Portland's Comprehensive Plan, the Adopted Central City 2035 Plan (2018), and implementing ordinances, including Portland Code 33 Planning and Zoning requirements. Only those temporary uses allowed in Portland Zoning Code 33.296, Temporary Activities, are allowed to not meet zoning code standards. Refer to *Land Use Supplemental Technical Report* (Appendix A) and Figure 3-4 for current zoning in the new buildable areas. ODOT anticipates programming interim uses on the highway cover for the time period between Project completion and when development would occur. Uses could include landscaping, plazas and hardscaped areas, interpretive signage, historical markers, and temporary structures such as food market sheds, eating pavilions, and such. Use of covers would be guided by a City-led Community Framework Agreement process, as described in Sections 2.1.3 and 2.2.2.2.

Figure 3-3. Land Converted to Transportation Use

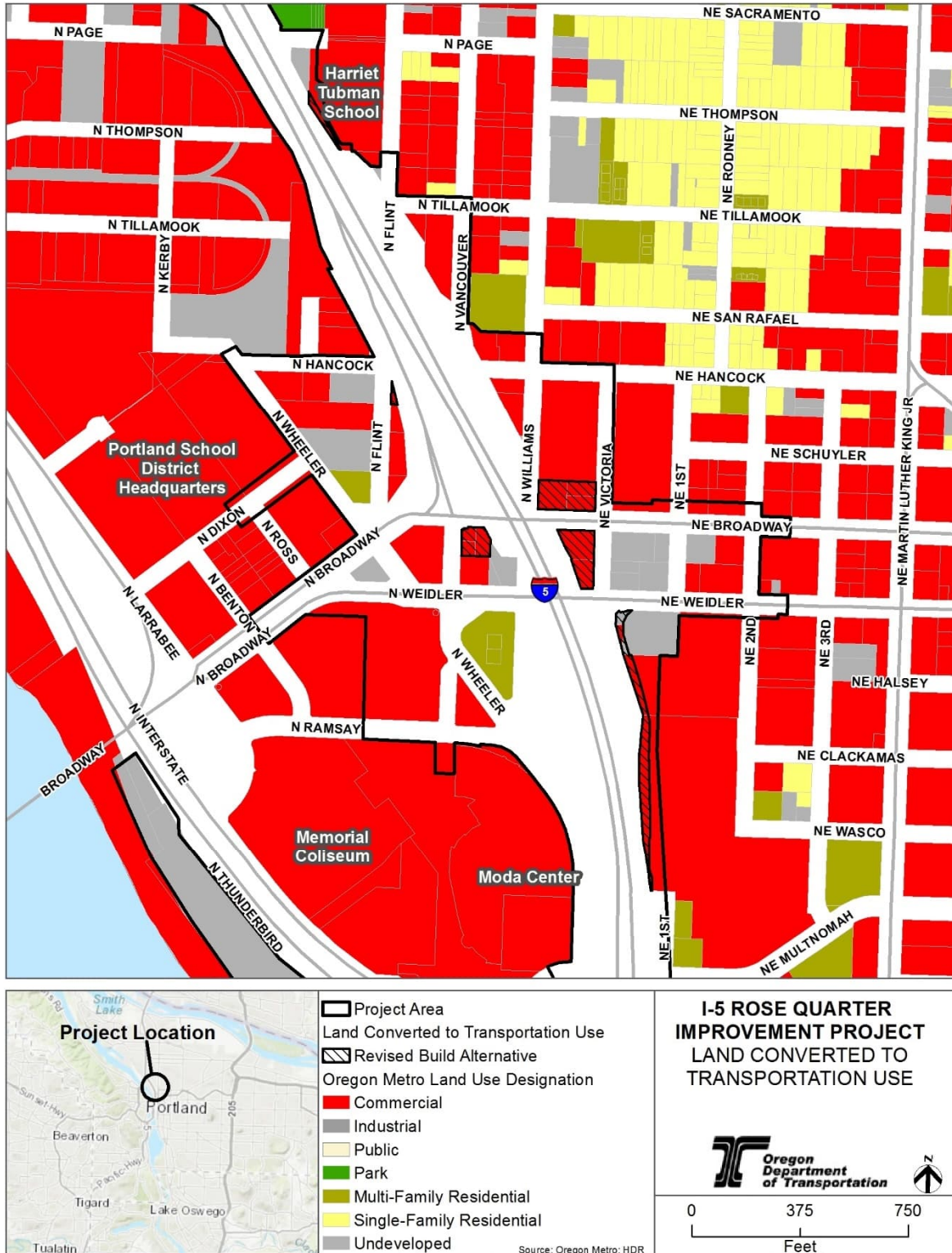
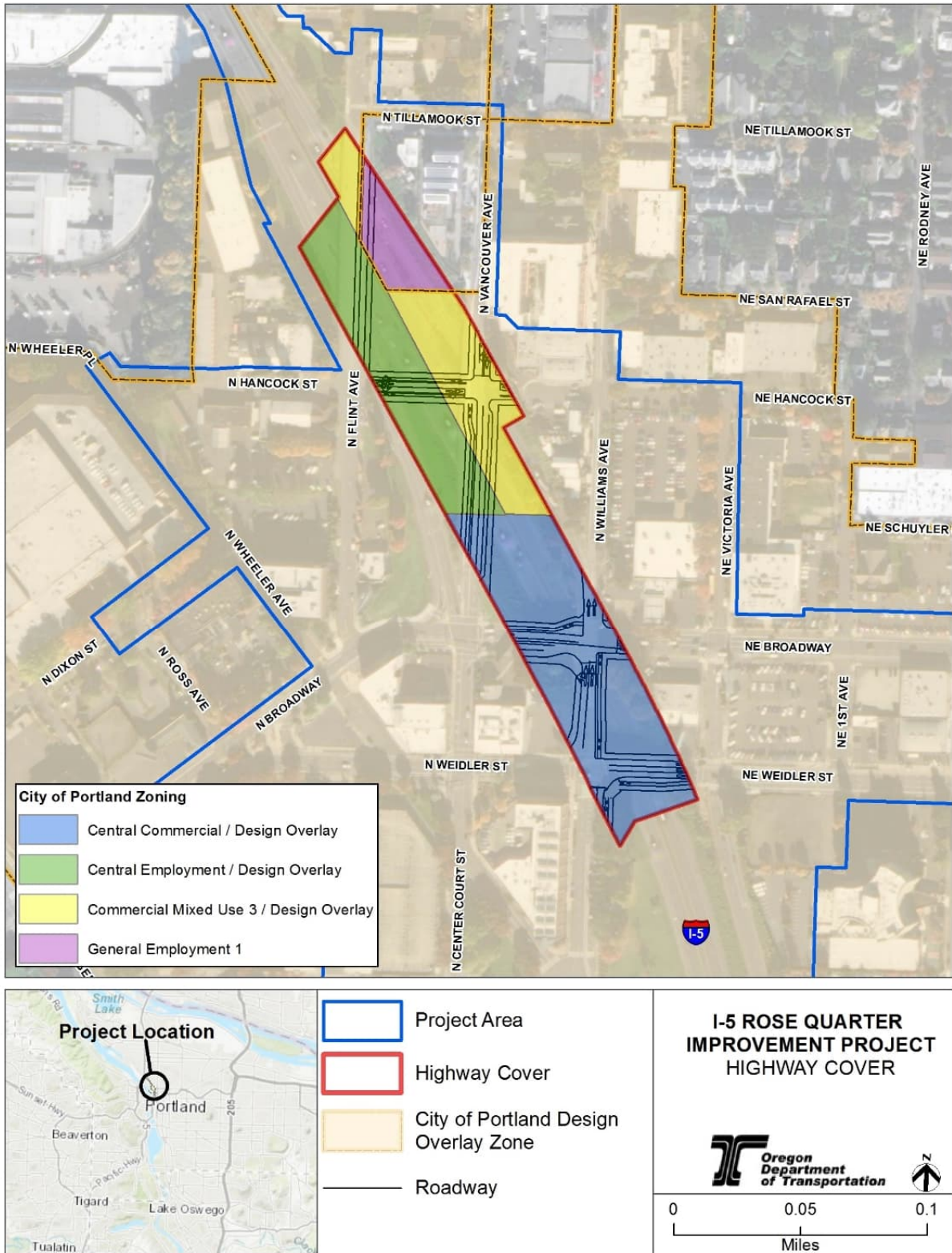


Figure 3-4. City of Portland and Zoning of Highway Cover



---

The Revised Build Alternative meets the City of Portland's goal of supporting high-density, mixed-use development with safer and greater pedestrian and bicycle connectivity. The Revised Build Alternative is consistent with policies specific to the Rose Quarter, including enhancement of tourism, retail, and entertainment (Policy 1.LD-3), improving pedestrian connections (Policy 3.LA-2), providing access and support for regional development (Policy 3.LD-2), and fostering more intense development (Policy 5.LD-1), as identified in the *Adopted Central City 2035 Plan* (2018). The Revised Build Alternative would not affect land use in ways that are contrary to planned land use and would not have growth-inducing impacts that are contrary to planned land use. ODOT would comply with the City of Portland zoning code, including seeking design review for portions of the Project that are not exempt from the design review process.

Indirect impacts resulting from future uses on the highway cover may include changes or increases in traffic, demand for parking, and density in the surrounding area. However, impacts would be tied to the type of uses, which are unknown at this time. Traffic impact analysis and impact mitigation by developers would be required through City of Portland development review. If the City undertakes a rezoning process for the new buildable land, part of that process would include modelling for mobility under the Transportation Planning Rule 660-12-0060.

Because the Revised Build Alternative is compliant with policies identified in the *Adopted Central City 2035 Plan* (2018) specific to the Rose Quarter, is fiscally constrained in the 2018 RTP, is identified as a planned transportation improvement in the City of Portland's comprehensive plan, and was developed in cooperation with the City of Portland as part of an integrated transportation and land use planning process, the Revised Build Alternative would not result in adverse direct or indirect land use impacts, and would comply with existing and planned land use in the API.

### **3.8.2.3** Avoidance, Minimization, and Mitigation Measures

Because the Revised Build Alternative complies with the City of Portland comprehensive plan, the Oregon Transportation Plan and RTP, and applicable state land use laws, plans, and policies, no additional avoidance, minimization, or mitigation measures are proposed.

If the Revised Build Alternative is determined to be subject to the design overlay zone requirements of the Lloyd District Design Subdistrict or the River Overlay zone of the *Adopted Central City 2035 Plan*, adjustments to its design may be necessary. Such design adjustments would be intended to help the Revised Build Alternative comply with land use regulations; therefore, revisions to do so would not be expected to have adverse impacts on land use.

---

## 3.9 Noise

### 3.9.1 Existing Conditions

The API used to assess noise impacts includes the Project Area shown in Figure 1-1 and an additional 500-foot buffer beyond the perimeter of the Project Area. Existing (2017) peak noise hour levels were modeled at 130 noise receivers<sup>16</sup> (i.e., prediction sites) in the API selected based on their land use category, proximity, and relative aspect to roadways affected by the Revised Build Alternative, and/or the presence or absence of frequently used exterior areas. Predicted existing noise levels for these receivers ranged from 54 to 75 dBA for outdoor use (exterior) areas and 33 to 49 dBA for interior areas.

The assessment of existing conditions determined that noise levels in exceedance of the ODOT NAAC presently occur throughout the API, particularly in areas east of the I-5 corridor. Fifty-eight receivers, representing 92 residential receptors, two exterior medical facilities, two parks, and one day care outdoor use area were predicted to have noise levels that exceed the NAAC under existing conditions.

### 3.9.2 Environmental Consequences

The applicable ODOT NAAC<sup>17</sup> for exterior areas is 65 dBA, while the NAAC for interior areas is 50 dBA. Sound levels that approach or exceed the FHWA Noise Abatement Criteria are considered a noise impact: ODOT defines “approach” as within 2 dBA. Pursuant to the federal noise standard (23 CFR 772), noise impacts are considered to occur when traffic noise levels for a build alternate in the design year approach or exceed the FHWA Noise Abatement Criteria for specific land use types or when the predicted traffic noise levels during the peak noise hour substantially exceed the existing noise levels. ODOT considers a 10 dBA increase over existing noise levels to be a substantial increase. A 10 dBA increase over existing noise levels is typically required for an average listener to perceive a “doubling” of sound.

#### 3.9.2.1 No-Build Alternative

Under the No-Build Alternative, the model predicted future (2045) noise levels in the API to range from 55 to 75 dBA for outdoor use areas and 33 to 49 dBA for interior areas. Sixty-one receivers representing 98 residential receptors, two exterior medical facilities, two parks, and one day care outdoor use area were predicted to exceed the exterior NAAC of 65 dBA under the No-Build Alternative.

---

<sup>16</sup> A “receiver” is a discrete point modeled in FHWA’s Traffic Noise Model (TNM), whereas a “receptor” is defined as a representative location of a noise-sensitive area for various land uses. In areas where there is a common noise environment, one modeled TNM receiver can be considered representative of multiple receptors.

<sup>17</sup> The NAAC are ODOT’s noise levels for abatement consideration for noise sensitive receivers. The NAAC are 2 dBA lower than the FHWA Noise Abatement Criteria levels.

Noise levels in exceedance of the NAAC under the No-Build Alternative were predicted throughout the API and occur predominantly east of the I-5 corridor. Exceedances of the NAAC for the No-Build Alternative are not considered to be “impacts” as defined in the *ODOT Noise Manual* (ODOT 2011). Therefore, consideration of noise abatement measures for the No-Build Alternative is not required.

### 3.9.2.2 Revised Build Alternative

During construction of the Revised Build Alternative, normal construction activities would generate noise levels in the range of 70 to 100 dBA at a distance of 50 feet. Typical noise levels associated with common construction equipment are listed in Table 3-7. These noise levels, although short term in nature, can cause disturbances to people nearby. ODOT specifications would be followed to minimize high noise levels during construction (see Section 3.9.2.3).

Table 3-7. Typical Construction Equipment Noise (dBA)

Types of Activities	Types of Equipment	Maximum Sound Level at 50 feet <sup>1</sup>	Actual Measured Maximum Sound Level at 50 feet
Materials Handling	Concrete mixer truck	85	79
	Concrete pump truck	82	81
	Crane	85	81
Stationary Equipment	Pumps	77	81
	Generators	82	81
	Compressors	80	78
Impact Equipment	Pneumatic tools	85	85
	Rock drills	85	81
Land Clearing	Bulldozer	85	82
	Dump truck	85	76
Grading	Scraper	85	84
	Bulldozer	85	82
Paving	Paver	85	77
	Dump truck	85	76

Source: Roadway Construction Noise Model 1.0, 2006.

Notes: dBA = A-weighted decibel

<sup>1</sup> According to Noise Control Specification 721.560.

The long-term noise levels for the Revised Build Alternative predicted by the noise model ranged between 54 to 75 dBA for outdoor use areas and 32 to 50 dBA for

---

interior areas. Fifty-one receptors representing 86 residences, one interior area at the Harriet Tubman Middle School, two exterior medical facilities, and two parks were predicted to exceed the NAAC. Noise levels in exceedance of the NAAC under the Revised Build Alternative were predicted throughout the API, predominantly east of the I-5 corridor.

Long-term noise levels under the Revised Build Alternative were predicted to range from 12 dB less than to 2 dB greater than the existing (2017) noise level. Compared to the No-Build Alternative, the Revised Build Alternative noise levels would range from 11 dB less than to 3 dB greater than the existing noise level. See Table 4 in the *Noise Supplemental Technical Report* (Appendix A) for a detailed listing of noise levels under existing conditions, the No-Build Alternative, and the Revised Build Alternative. No substantial increases (10 dB or greater) are predicted. Reductions in noise levels relative to the existing conditions and No-Build Alternative would be most pronounced where the highway cover would be constructed. In these areas, noise-sensitive receptors would experience a benefit from the Project via reduced traffic noise levels, because I-5 would be shielded by the highway cover.

Therefore, substantial long-term noise impacts in the API from the Revised Build Alternative are not anticipated. The Revised Build Alternative would have less noise impact than the No-Build Alternative. This would also be the case for indirect noise impacts because the traffic data used in the noise analysis captures the indirect noise impacts that may result from the Revised Build Alternative.

### 3.9.2.3 Avoidance, Minimization, and Mitigation Measures

ODOT would monitor the construction contractor to ensure the following noise abatement measures identified in the *ODOT Standard Specifications for Construction* (2021) are implemented to minimize the adverse effects of construction activity on the local community:

- Do not perform construction within 1,000 feet of an occupied dwelling on Sundays or legal holidays, or between the hours of 10:00 PM and 6:00 AM on other days, without an approved noise variance from the City of Portland.
- Use equipment with sound control devices no less effective than those provided on the original equipment. Equipment with un-muffled exhausts is prohibited.
- Use equipment complying with pertinent equipment noise standards of the U.S. Environmental Protection Agency.
- Do not drive piling or perform blasting operations within 3,000 feet of an occupied dwelling on Sundays or legal holidays, or between the hours of 8:00 PM and 8:00 AM on other days, without an approved noise variance from the City of Portland.

- 
- Mitigate the noise from rock crushing or screening operations performed within 3,000 feet of all occupied dwellings by placing material stockpiles between the operation and the affected dwellings, or by other means approved by the City of Portland.
  - No construction that requires access to or use of Portland Public Schools (PPS) property at Harriet Tubman Middle School would occur during the school year.

If a specific noise impact complaint occurs during the construction of the Revised Build Alternative, one or more of the following noise mitigation measures may be required at the construction contractor's expense as directed by the ODOT construction Project manager:

- Locate stationary construction equipment as far from nearby noise sensitive properties as feasible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residents whenever extremely noisy work would be occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electric-powered equipment using line voltage power or solar power.

Because properties in the API were predicted to meet or exceed the NAAC under the Revised Build Alternative, noise abatement measures were considered and evaluated for feasibility and reasonableness per FHWA and ODOT guidelines. Seven noise wall alignments were evaluated to mitigate predicted noise impacts. One of the noise walls was judged to be acoustically feasible by meeting the design goal of at least a 7 dBA reduction at one receiver, as well as achieving a better than 50 percent rate of benefits (i.e., at least a 5 dBA noise reduction) at impacted receivers. The wall was found to be reasonable based on the ODOT cost-effectiveness requirements and has therefore been recommended for further consideration. Noise Wall 5 was not evaluated for noise mitigation, as there were no impacted receptors at this location under the Revised Build Alternative. The remaining five walls were not able to achieve the required noise reductions at adjacent properties because of challenges with complex traffic noise sources or because elevation issues precluded the breaking of the line-of-sight between noise sources and receivers. Additionally, ODOT cost-effectiveness requirements for reasonableness determination are not met for the remaining walls. As a result, those walls were not recommended for further consideration. For detailed information on the evaluation of noise walls for the Revised Build Alternative, see the *Noise Supplemental Technical Report* (Appendix A).



---

The one noise wall considered acoustically feasible and reasonable is described as follows:

- Noise Wall 2: Noise Wall 2 would be a 12-foot-tall and approximately 1,456-foot-long noise barrier, extending along the eastern edge of I-5 ROW from approximately N Russell Street to N Flint. The wall would be designed to shield Lillis-Albina Park, Harriet Tubman Middle School, and a single-family residence (and historic building) located east of I-5 adjacent to N Flint. This alignment is within the ODOT ROW, which allows construction to take place on I-5 rather than from the non-highway side. This alignment makes it possible to site the wall on top of a retaining wall, which would increase stability.

Further evaluation of the feasibility and reasonableness of Noise Wall 2 would be made during final design and is subject to change to include a more detailed analysis of constructability, as well as the potential visual impacts of Noise Wall 2 on affected property owners and residents. A final decision of the installation of the abatement measure(s) would be made upon completion of the Project's final design, a cost-estimating process, constructability review, and the public involvement processes. For more information on this recommended noise wall, see the *Noise Supplemental Technical Report* (Appendix A).

## 3.10 Right of Way

### 3.10.1 Existing Conditions

The ROW API includes the Project Area shown in Figure 1-1 and extends beyond the Project Area in a few small areas based on the need for temporary and permanent easements. Most of the API is occupied by highway and other public ROWs. The Project would therefore be located on publicly owned property and ROWs, including the highway itself and publicly owned lots under and/or adjacent to the highway corridor, the majority of which are used by public agency maintenance departments for access and parking.

Nearly all the affected properties within the API (i.e., not highway or public ROW) are currently zoned for commercial or industrial use and are slated for some type of mixed-use development, allowing greater densities and more intensive uses. The remaining few affected parcels adjacent to the API that are zoned residential are currently used for either institutional or commercial purposes.

### 3.10.2 Environmental Consequences

The potential ROW impacts, just compensation, and benefits due to affected property owners and/or tenants as a result of the Revised Build Alternative were estimated in accordance with the ODOT *Right of Way Manual* (ODOT 2018a); Oregon Revised Statute (ORS) Volume 1, Chapter 35; Uniform Relocation Assistance and Real

---

Property Acquisition Policies Act of 1970 (URA), as amended (42 United States Code [U.S.C.] 4601 et seq.); and 49 CFR 24.

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

The No-Build Alternative consists of existing conditions and other planned and funded transportation improvement projects that would be completed in and around the Project Area by 2045. The No-Build Alternative would not require property acquisitions; therefore, there would be no direct impacts associated with ROW acquisitions or easements. Non-ODOT actions considered under the No-Build Alternative (i.e., those associated with the City of Portland's list of financially constrained projects under the current RTP) may require ROW acquisition, depending on Project design. Existing ROW would remain the same aside from these non-ODOT actions.

### **3.10.2.2** Revised Build Alternative

The ROW impact assessment is based on an approximate 15 percent conceptual design level. ROW impacts would be further clarified once the final design/construction phase is funded and the design progresses.

Short-term impacts would include temporary construction-related actions both within the existing ROW and within the API, due to the staging of construction activities, diversion of traffic, and restricted access to local businesses. Measures such as temporary traffic control plans and temporary access plans would minimize ROW impacts to businesses, residents, community facilities, and services during construction.

Long-term direct impacts occur when property and/or property rights need to be acquired for privately and publicly owned tax lots. A displacement occurs if relocation of persons or property results from a ROW acquisition. In addition to potential property impacts, tree removal may occur within public ROW, and Project activities must meet the requirements of Portland Code Title 11 Trees. Tree removal would be minimized through future design refinements. The exact number of trees that would be impacted would be determined at a later stage of Project design. Utilities relocations, which would partially take place in the ROW, are discussed in Section 3.14.

The Revised Build Alternative would have the following approximate impacts to property and/or property rights: 1.8 acres in fee simple (permanent acquisition); 0.57 acre of permanent easement for surface and/or subsurface uses, primarily related to retaining walls and maintenance access; and approximately 6.87 acres of temporary easement for construction work areas, driveway reconnections, and staging.

Figure 3-5 illustrates the estimated ROW impacts for the Revised Build Alternative.

The estimated ROW impacts would consist of approximately 33 ROW Files<sup>18</sup> (Table 3-8 and Figure 3-5). The actual number of ROW Files would be determined during the ROW acquisition phase, which would follow completion of environmental review.

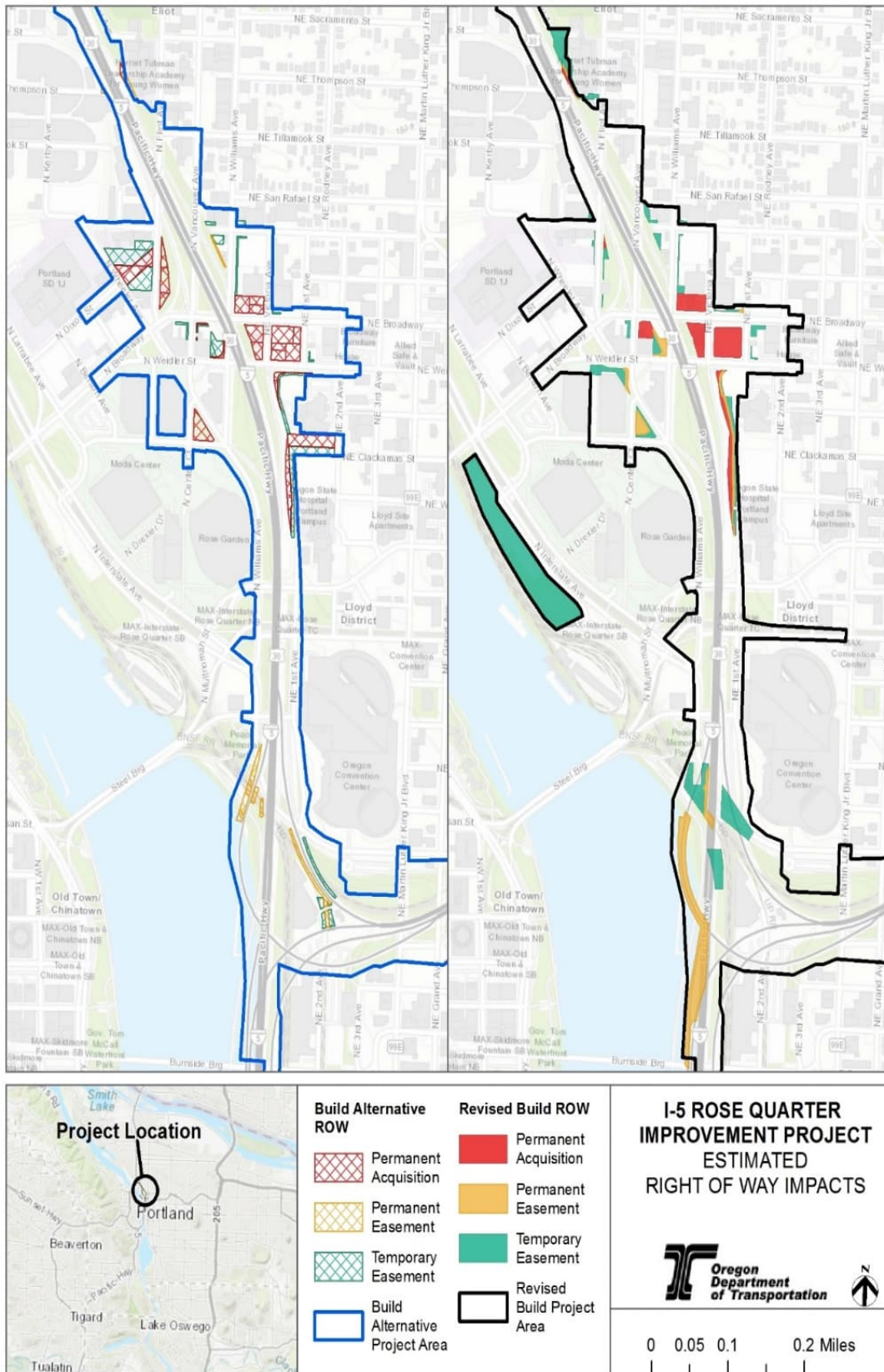
Table 3-8. Estimated ROW Needs

ROW Property Types	Total Number of ROW Files
Privately Owned Property	27
Publicly Owned Property	6
Full Site Acquisitions	4
Partial Acquisitions (Fee, PE, and/or TE)	27

Notes: PE = permanent easement; ROW = right of way; TE = temporary easement

<sup>18</sup> A ROW File is a collection of adjacent parcels/tax lots. Therefore, a ROW File may contain more than one property.

Figure 3-5. Estimated ROW Impacts



---

The Revised Build Alternative would displace and relocate five commercial retail or service-related businesses, three landlord-operated businesses (properties owned for the sole purpose of leasing), eight personal properties (impacts requiring relocation of personal property from ROW, but no need for full relocation), and four outdoor advertising signs. No residential displacements are anticipated. Displaced businesses are not “sole source” type businesses or unique to the surrounding community. Business relocations based on the conceptual layout would include a gas station/convenience store, paint store, a real estate/mortgage office, a tenant in the LeftBank Annex event center, and a plumbing supply store. Properties owned for the sole purpose of leasing to others are considered landlord-only business relocations of this type may be triggered depending on the purpose of the property ownership. For those properties displaced by the Revised Build Alternative, ODOT would provide a relocation assistance program. The URA ensures the fair and equitable relocation and re-establishment of persons, businesses, farms, and nonprofit organizations displaced as a result of federal or federally assisted programs. ODOT policy on relocations can be found in Chapter 6 of its *Right of Way Manual* (ODOT 2018a).

Access (driveway) modifications, both temporary and permanent, are anticipated within the API to facilitate safer egress and ingress. Excluding the full acquisitions, five parcels have been identified that may require driveway access modifications. One of these is Madrona Studios, which is on the block bordered by N/NE Weidler, N Vancouver/NE Wheeler, and N Williams. Impacts to access would be minimized or avoided during final design in collaboration with property owners. No driveways would need to be relocated.

Improvements near the I-84 interchange would be positioned over the Union Pacific Railroad Company corridor, requiring coordination with the railroad for access to work locations.

Beneficial impacts to real estate from the Revised Build Alternative would include improved sidewalks, safe bicycle lanes, additional ADA-compliant street crossings, and safer ingress and egress to parcels. Such impacts would not require acquisition from most parcels within the API. These types of improvements can eventually lead to increased property values.

The cost for these ROW impacts is estimated as at least \$60 million in 2021 dollars. These ROW costs include the following: land acquired in fee and temporary construction easements (i.e., estimated value to acquire bare land), improvements within the acquisition area (i.e., estimated contributory value of any improvements to the bare land—buildings, structures, landscaping, fences, signs, retaining walls, asphalt, concrete, etc.), damages to the remainder property, relocation benefits, demolition, personnel and related costs, legal, and contingency. The ROW cost estimate excludes the cost of utility relocations, environmental investigations, and

---

remediation that might be required for acquired properties. Costs associated with utility relocation are summarized in Section 3.14.2.2.

The Revised Build Alternative would not have adverse long-term and operational indirect impacts to the ROW associated with I-5 or City of Portland streets. New buildable area on the highway cover would be developed following a City-led process in accordance with a Community Framework Agreement (see Sections 2.1.3 and 2.2.2.2). Ownership of the highway cover structure itself would remain with ODOT for legal and practical purposes.

In summary, short- and long-term impacts would occur as a result of ROW considerations associated with the Revised Build Alternative. However, these impacts would not be substantial.

### **3.10.2.3** Avoidance, Minimization, and Mitigation Measures

ROW impact research for the NEPA process was conducted and summarized in 2017 and 2018. During that time, multiple workshops, community outreach efforts, and avoidance and minimization measures were considered and incorporated into planning efforts. These avoidance and minimization measures reduced the number of initially projected property impacts and have been incorporated into the current Project design. No additional mitigation is proposed. Measures that would be implemented by ODOT during ROW acquisition include the following:

- Ensure fair and equitable treatment of all persons affected by the Revised Build Alternative by performing all ROW acquisition and relocation activities in accordance with the URA (49 CFR 24), ORS 35, and the ODOT *Right of Way Manual* (2018a).
- Conduct relocation interviews early in the ROW acquisition process to identify and address any special needs.
- Provide interpreter and translation services for owners and tenants, as needed.
- Identify ways to minimize or mitigate impacts to individual properties through design and/or construction staging, such as through BMPs, temporary traffic control plans, and temporary access plans.
- Explore the use of alternative acquisition methods such as early or advanced acquisition for full site acquisitions where design decisions have advanced such that ROW location options are limited.
- Schedule construction work that requires access to or use of PPS property at Harriet Tubman Middle School to occur outside of the school year.

- When the design level is more advanced, revisit, in coordination with FHWA, whether construction activities would have an effect on adjacent properties and businesses with sensitive patients, medical equipment, or machinery including hospitals, elderly or psychiatric patient care services, and emergency response units. If additional impacts are identified, they would be appropriately mitigated, including, if required, acquisition and relocation in accordance with the URA.
- Conduct early discussions with Oregon Department of State Lands and Union Pacific Railroad Company regarding ROW needs and processes for work near their lands, including new and existing structures over the Union Pacific Rail Corridor.

## 3.11 Socioeconomics

### 3.11.1 Existing Conditions

The API for the socioeconomic analysis is the same as the Project Area shown on Figure 1-1.<sup>19</sup> Because I-5 is an important regional transportation facility, the indirect economic and employment impacts (beneficial and adverse) were considered across the Portland-Vancouver-Hillsboro Metropolitan Statistical Area (MSA), a broader geographic area than the API.<sup>20</sup> Additional information on existing socio-economic conditions within the API can be found in the *Socioeconomics Supplemental Technical Report* (Appendix A).

#### 3.11.1.1 Population Characteristics

U.S. Census 2016-2020 5-year American Community Survey (ACS) data were used to characterize the affected demographic environment for the Revised Build Alternative.<sup>21</sup>

Table 3-9 summarizes the population and age data for the API and MSA, which provides a regional point of comparison for characteristics of the Project Area. The racial and ethnic characteristics of people living in the API and MSA are presented in Table 3-12 of Section 3.12.

As shown on Table 3-9, the population in the API was 3,752 persons, which represents an increase of 78.8 percent between 2015 (2,099 persons) and 2020. The population

<sup>19</sup> The API is in Census Tract 23.03, and the portions of the API that extend north and south of the API include only ODOT ROW; data from that tract are considered representative of the demographic characteristics within the API.

<sup>20</sup> The Portland-Vancouver-Hillsboro MSA is defined by the U.S. Office of Management and Budget and used by the Census Bureau. It includes the large jurisdictions of Multnomah, Clackamas, and Washington Counties in Oregon and Clark County in Washington, as well as the smaller jurisdictions of Columbia and Yamhill Counties, Oregon, and Skamania County, Washington.

<sup>21</sup> Estimates from the ACS are all “period” estimates that represent data collected over a period of time (as opposed to “point-in-time” estimates, such as the decennial census, that approximate the characteristics of an area on a specific date). The primary advantage of using multiyear estimates in this analysis of minority and low-income populations is the increased statistical reliability of the data for less populated areas and small population subgroups.

of the MSA consisted of 2,472,774 persons, which represents an increase of 6.6 percent during the same time frame (see the *Socioeconomics Supplemental Technical Report* in Appendix A). Most residents in the API (81 percent) were adults aged 21 to 64, compared to 61.6 percent in the MSA.

Table 3-9. Population Characteristics, 2020

Population Characteristics	API		MSA	
	Population	Percent of Population	Population	Percent of Population
Total Population	3,752	--	2,472,774	--
Age under 5	42	1.1%	138,733	5.6%
Age 5-20	108	2.9%	422,699	17.9%
Age 21-64	3,037	80.9%	1,523,022	61.6%
Age 65 and over	525	14.0%	368,320	14.9%

Notes: API = Area of Potential Impact; MSA = Portland-Vancouver-Hillsboro Metropolitan Statistical Area  
Source: U.S. Census Bureau 2020.

As shown in Table 3-12 in Section 3.12, residents were primarily white (80 percent), but a higher percentage of Black residents lived in the API compared to the Portland-Vancouver-Hillsboro MSA as a whole (5 percent compared to 3 percent). In 2020, the percentage of renters in the API was 89 percent compared to 39 percent in the MSA.

More than 97 percent of API residents had achieved at least a high school education. As shown on Table 3-10, the median household income in the API in 2020 was \$54,984, compared to \$77,511 in the MSA, and the mean household income was \$72,364, compared to \$101,594 in the MSA (see the *Socioeconomics Supplemental Technical Report* in Appendix A).

Per capita income is often used as an indicator of the economic well-being of a region. Per capita personal income for Oregon grew from \$45,998 in 2016 to \$56,312 in 2020, a 5.7 percent annual increase. Between 2016 and 2020, the per capita personal income in the MSA grew from \$50,489 in 2016 to \$62,603 in 2020, a 5.9 percent annual increase, and per capita income in the MSA grew at a slightly lesser rate from \$37,315 in 2016 to \$44,547 in 2020, a 4.6 percent annual increase (U.S. Census Bureau 2020).



Table 3-10. Household Income, 2020 <sup>1</sup>

	API	MSA
Median Household Income	\$54,984	\$77,511
Mean Household Income	\$72,364	\$101,594
Per Capita Personal Income	\$44,547	\$62,603

Notes: API = Area of Potential Impact; MSA = Portland-Vancouver-Hillsboro Metropolitan Statistical Area

<sup>1</sup> Income expressed in 2020 year dollars.

Source: U.S. Census Bureau 2020.

As shown in Table 3-11, the API also has a substantially higher percentage of workers who commute by public transportation, bicycle, and walking (47 percent) compared to the MSA as a whole (11 percent). It should be noted that the COVID-19 pandemic caused an increase in work-at-home employees in both the API and MSA in 2020 (8.8 percent and 10.4 percent, respectively).

Table 3-11. Means of Travel to Work, 2020

Means of Travel	API	MSA
Drove Alone	40.4%	68.6%
Carpooled	2.3%	8.8%
Public Transportation	26.7%	5.8%
Bicycle	10.0%	2.0%
Walked	10.1%	3.3%
Motorcycle, taxi, or other means	1.7%	1.2%
Work at home	8.8%	10.4%

Notes: API = Area of Potential Impact; MSA = Portland-Vancouver-Hillsboro Metropolitan Statistical Area

Source: U.S. Census Bureau 2020.

### 3.11.1.2 Public Services

Public services in the API and surrounding community are depicted on Figure 3-6.

#### *Police/Fire and Rescue*

The Portland Police Bureau and the Oregon State Police Patrol Division provide police services in the API. The Oregon State Police has primary jurisdiction on state highways but will respond to incidents in other areas when local agencies are unable to respond or need extra assistance. Fire and rescue services within the API are provided by the Portland Fire Bureau, primarily from Station 13, located at 926 NE Weidler Street. There are no fire stations within the API.

---

### *Medical Services*

Legacy Emanuel Medical Center, northeast of the API at 2801 N Gantenbein Avenue, provides emergency care and a wide variety of medical specialty services to residents in the greater Portland metropolitan area. The Legacy Clinical Research and Technology Center on the eastern edge of the API at 1225 NE 2nd Avenue is a major medical research facility that serves patients throughout the metropolitan area

### *Schools*

Residents in the API are within the attendance boundaries of Boise-Eliot, Humboldt, and Buckman Elementary Schools; Harriet Tubman Middle School, which is located adjacent to I-5 on the eastern edge of the API; Hosford Middle School; and Jefferson, Grant, and Cleveland High Schools. The Portland Public Schools administrative headquarters is in the Blanchard Education Service Center at 501 N Dixon Street on the western edge of the API.

### *Parks*

Lillis-Albina City Park is in the northern portion of the API between I-5 and N Flint, adjacent to Harriet Tubman Middle School. It includes baseball and soccer fields and a playground. Portland Peace Memorial Park, a public open-space park, is situated near the intersection of NE Oregon Street and N Interstate Avenue. The Vera Katz Eastbank Esplanade and portions of the Willamette River Greenway are in the southern portion of the API.

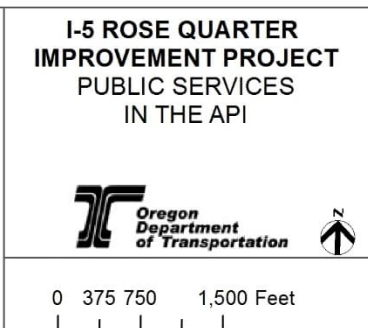
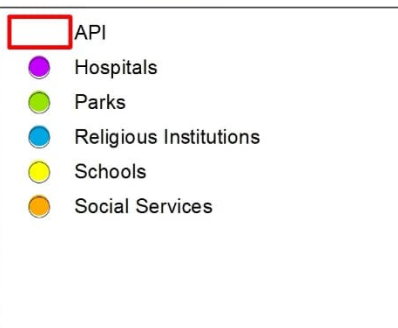
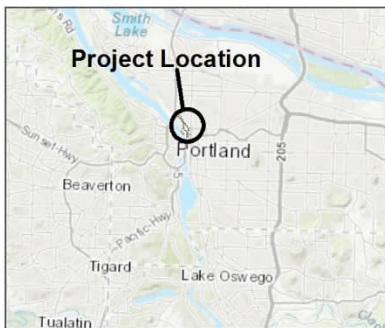
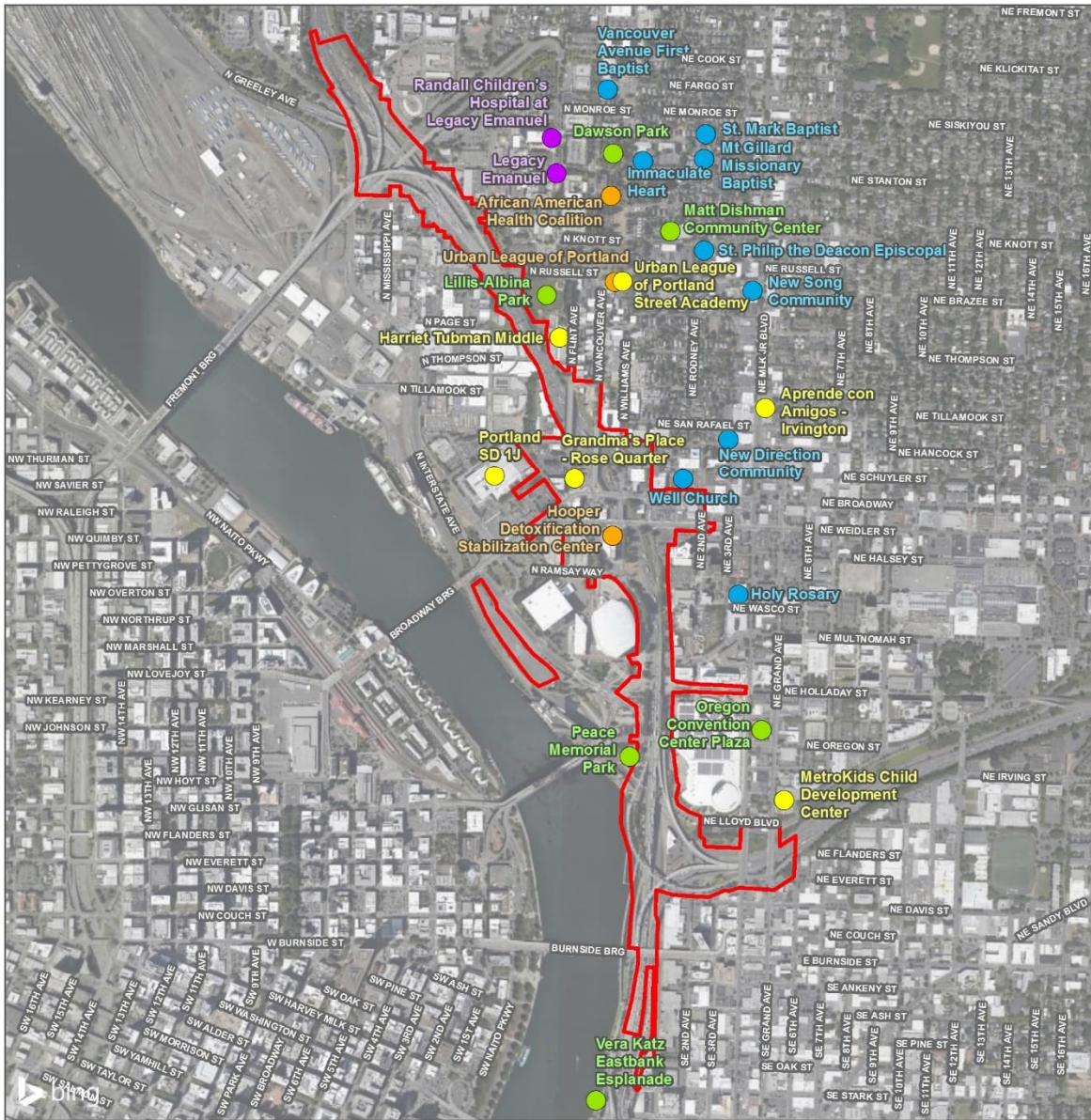
### *Social Services*

Social service providers near the API include the Urban League of Portland, one of the Portland Black community's principal advocacy and service organizations, located at 10 N Russell Street; the African American Health Coalition, located at 77 NE Knott Street; and the Hooper Detoxification Stabilization Center, located at 1535 N Williams Avenue. Low-income multi-family housing is provided at the Madrona Studios apartments, located in the API at 10 N Weidler Street.

### *Religious Institutions*

Religious institutions within and close to the API include Well Church, New Direction Community Church, Holy Rosary Church, and Temple Baptist Church.

Figure 3-6. Public Services in the API and Surrounding Community



---

### 3.11.1.3 Local and Regional Economy

Portions of three Central City districts—Lower Albina, Lloyd, and Central Eastside—are located within the API and contribute to the local and regional economy. Figure 3-7 shows the district boundaries within the API. The Lower Albina district is primarily industrial, with a working harbor, freight rail facilities, and a small mixed-use historic area along N Russell. The Lloyd district is characterized by several large region-serving facilities, including the Moda Center, Oregon Convention Center, Lloyd Center shopping mall, and several large office buildings (City of Portland et al. 2012).

The estimated total employment in the MSA in 2020 was 1,544,000 employees, an increase of over 20,000 employees from the 1,520,613 employed in 2016 (see the *Socioeconomics Supplemental Technical Report* in Appendix A). The unemployment rate more than doubled from 3.8 percent in 2017 to 7.8 percent in 2020, and this increase can be attributed to the COVID-19 pandemic. As of May 2022, the unemployment rate has decreased to 3.6 percent (OED 2022).

---

## 3.12 Environmental Justice

### 3.12.1 Existing Conditions

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 Federal Register 7629), requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority communities and low-income populations. Under Executive Order 12898, demographic information is used to determine whether minority populations or low-income populations are present in the areas potentially affected by the Project. If so, a determination must be made as to whether implementation of the Project may cause disproportionately high and adverse human health or environmental effects on those populations.

The following analysis of environmental justice (EJ) includes discussion of minority and poverty status of affected groups, and determines if the Revised Build Alternative would result in disproportionate environmental effects to minority and low-income populations. Preparation of this EJ analysis is in accordance with the CEQ's *Guidance for Agencies on Key Terms in Executive 14 Order 12898* (CEQ 1997); the Federal Transit Administration's (FTA's) *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*, issued on August 15, 2012 (FTA 2012); and U.S. Department of Transportation Order 5610.2(a), "Actions to Address Environmental Justice in Minority Populations and Low Income Populations," 77 Federal Register 27534, issued May 10, 2012 (DOT 2012).

#### 3.12.1.1 Definitions of Minority and Low-Income Populations

For purposes of this analysis, the definitions of minority individuals and minority and low-income populations was provided in CEQ's guidance on key terms in Executive Order 12898 (CEQ 1997) and the FTA's EJ policy guidance. Substantial concentrations of minority or low-income individuals are sometimes referred to as EJ populations.

A minority population is present in a study area under either of the following conditions:

- The minority population percentage of the study area is meaningfully greater than the affected area's general population.
- The minority population percentage of the affected area exceeds 50 percent.

The CEQ defines minority individuals as persons from any of the following U.S. Census categories for race: Black/African American, Asian, Native Hawaiian or Other Pacific Islander, and American Indian or Alaska Native. Additionally, for the purposes of this analysis, minority individuals also include all other nonwhite categories that were added in the most recent census, such as "some other race" and "two or more races." The CEQ also mandates that persons identified through the U.S. Census as ethnically Hispanic, regardless of race, should be included in minority counts (CEQ 1997).

---

## 3.11.2 Environmental Consequences

### 3.11.2.1 No-Build Alternative

Proposed transportation improvements within the Broadway/Weidler corridor under the No-Build Alternative would enhance safety for people walking, bicycling, and driving within the API. These improvements would also create short-term beneficial effects within the API and broader MSA in the form of construction jobs and expenditures. However, future conditions on I-5 would continue to deteriorate (in terms of safety, delay, and levels of service), which would adversely affect the movement of people and goods within the API and could have long-term adverse effects on the regional transportation system and economic conditions within the larger MSA. The physical separation of areas east and west of I-5 created when the highway was first constructed would remain.

### 3.11.2.2 Revised Build Alternative

Short-term adverse impacts from the Revised Build Alternative would include construction-related delays on I-5 and the local street network, detours and diversion of traffic, limitations on access, construction noise, and utility relocations. These impacts have the potential to disrupt social cohesion and could temporarily affect neighborhoods, businesses, schools, emergency responders, and utility and public service providers located or operating in the API. Potential short-term beneficial impacts during construction could include spending on construction materials and local services. ODOT has committed to expanding contracting opportunities for small firms, including Disadvantaged Business Enterprise (DBE) firms, throughout construction of the Project as a part of a jobs creation program for small firms, with a focus on creating construction jobs in Portland's Black community to the extent permitted by law. The Project aims to deliver a revenue stream for participating companies as soon as construction begins. Therefore, the Revised Build Alternative would have short-term beneficial impacts to business activity for small firms, including DBE firms, and the Black community during construction.

The Revised Build Alternative would also have a long-term beneficial effect on police, fire, and emergency responders by reducing delays and crashes on I-5 and in the Broadway/Weidler interchange area.

The Revised Build Alternative would not divide or isolate existing business districts or adversely change the character of business districts within the API. The Project's highway cover and new active transportation facilities would improve urban design and community cohesion by reducing the physical and visual barrier I-5 presents to the surrounding urban area and providing space and opportunities for greater continuity of the surrounding urban forms. Improved traffic operations on I-5 and the local street system on the highway cover would benefit the overall business environment in the API.

The Revised Build Alternative would displace and relocate five commercial retail or service-related businesses (see Section 3.10 for further discussion of business displacement and ROW impacts). These impacts have potential to disrupt social

---

cohesion, and displaced businesses can change the character of the neighborhood/business community and disrupt the patterns of transit and active transportation commuters in the API. In addition, these displacements could reduce the number of jobs in the API. However, improvements to pedestrian facilities and increased building capacity on the expanded cover could provide suitable conditions for commercial and retail development. As noted in Section 2.1.4, future development on the highway cover would be designed and constructed following a City-led process under a Community Framework Agreement. The buildable area of the highway cover in the Revised Build Alternative (approximately 4 acres) would be subject to the City of Portland zoning and long-range planning requirements and goals. The acquisition of property for ROW and business displacements would reduce the amount of tax revenues collected within the API because privately owned, taxable property would be converted to publicly owned, non-taxable property. According to the Right of Way Supplemental Technical Report (Appendix A), changes in ROW under the Revised Build Alternative are minor and would have a negligible difference in tax base.

Overall, improvements in safety and reductions in congestion and delays on I-5 would have a direct and indirect beneficial effect on the regional economy by contributing to the movement of goods and people both throughout the region and the West Coast, directly and indirectly contributing to the overall economic well-being of the Portland region.

### **3.11.2.3** Avoidance, Minimization, and Mitigation Measures

The following measures would be implemented to reduce the potential for substantial, short-term, adverse socioeconomic impacts during the construction phase of the Project:

- Temporary traffic management plans would be prepared to minimize construction impacts on I-5 operations and traffic delays on local streets. These plans would address all modes of transportation, including bicycles, pedestrians, and public transit. The plans would be prepared by the construction contractors.
- ODOT would monitor construction contractors to ensure *Oregon Standard Specifications for Construction* (ODOT 2021) are followed to minimize impacts to neighborhoods, businesses, schools, emergency responders, and utilities and public service providers located or operating in the API.
- ODOT would coordinate with TriMet and Portland Streetcar to follow standard procedures regarding temporary impacts to transit services, including procedures for temporary transit stop closures or relocations, schedule changes, route diversions, and relocation of existing motor vehicle/transit lanes that would be required during construction.
- Construction activities near Harriet Tubman Middle School would be scheduled for summer months to avoid potential disruptions during the school year.

ODOT would continue to conduct public outreach to residents and businesses in the API throughout final design and construction.

---

## 3.12 Environmental Justice

### 3.12.1 Existing Conditions

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 Federal Register 7629), requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority communities and low-income populations. Under Executive Order 12898, demographic information is used to determine whether minority populations or low-income populations are present in the areas potentially affected by the Project. If so, a determination must be made as to whether implementation of the Project may cause disproportionately high and adverse human health or environmental effects on those populations.

The following analysis of environmental justice (EJ) includes discussion of minority and poverty status of affected groups, and determines if the Revised Build Alternative would result in disproportionate environmental effects to minority and low-income populations. Preparation of this EJ analysis is in accordance with the CEQ's *Guidance for Agencies on Key Terms in Executive 14 Order 12898* (CEQ 1997); the Federal Transit Administration's (FTA's) *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*, issued on August 15, 2012 (FTA 2012); and U.S. Department of Transportation Order 5610.2(a), "Actions to Address Environmental Justice in Minority Populations and Low Income Populations," 77 Federal Register 27534, issued May 10, 2012 (DOT 2012).

#### 3.12.1.1 Definitions of Minority and Low-Income Populations

For purposes of this analysis, the definitions of minority individuals and minority and low-income populations was provided in CEQ's guidance on key terms in Executive Order 12898 (CEQ 1997) and the FTA's EJ policy guidance. Substantial concentrations of minority or low-income individuals are sometimes referred to as EJ populations.

A minority population is present in a study area under either of the following conditions:

- The minority population percentage of the study area is meaningfully greater than the affected area's general population.
- The minority population percentage of the affected area exceeds 50 percent.

The CEQ defines minority individuals as persons from any of the following U.S. Census categories for race: Black/African American, Asian, Native Hawaiian or Other Pacific Islander, and American Indian or Alaska Native. Additionally, for the purposes of this analysis, minority individuals also include all other nonwhite categories that were added in the most recent census, such as "some other race" and "two or more races." The CEQ also mandates that persons identified through the U.S. Census as ethnically Hispanic, regardless of race, should be included in minority counts (CEQ 1997).



---

The term “low-income” is defined in accordance with Executive Order 12898 and agency guidance as a person with household income at or below the U.S. Department of Health and Human Services poverty guidelines. Low-income populations are identified based upon statistical poverty thresholds established by the U.S. Census Bureau, and are identified in one of the following ways (CEQ 1997):

- The population percentage below the poverty level is meaningfully greater than that of the population percentage in the general population.
- The population percentage below the poverty level in the affected area exceeds 50 percent.

The CEQ further adds that, “[T]he selection of the appropriate unit of geographical analysis may be a governing body’s jurisdiction, a neighborhood, a census tract, or other similar unit that is chosen so as not to artificially dilute or inflate the affected minority population.”

The minority and low-income populations in the API, as defined below, were compared to the City of Portland and MSA as a whole to identify where higher percentages of EJ populations exist in the API. Although the assessment of meaningfully greater percentages of EJ populations is helpful to understanding the demographic composition of the API relative to the City and MSA, FTA’s 2012 Environmental Justice Circular makes the point that a small minority or low-income population does not eliminate the possibility of disproportionately high and adverse impacts, so that all minority and low-income populations need to be identified, along with impacts to those populations. Therefore, this analysis both characterizes the demographic composition of the API corridor and presents the EJ populations, consistent with 1997 CEQ guidance.

### 3.12.1.2 Minority Populations

The API for the EJ analysis is generally defined by the boundaries of Census Tract 23.03. U.S. Census 2016-2020 5-year ACS data were used to compare the proportion of minority and low-income populations located in the API with that of the City of Portland and the MSA for the Revised Build Alternative.

As shown in Table 3-12, the population within the API is predominantly white (80 percent), with 20 percent of the population meeting the definition of minority. A substantial number of Black residents (5 percent) live within the API, mostly in the Albina neighborhood north of NE Broadway and east of I-5.<sup>22</sup> It is also notable that the percentage of Black residents within the API is the same as the percentage of Black residents living in the City of Portland (5 percent) and higher than the Portland metropolitan area (3 percent) (U.S. Census Bureau 2020).

---

<sup>22</sup> For implementation of EJ policies, the FHWA definition of minorities includes “Blacks,” defined as “a person having origins in any of the black racial groups of Africa” (FHWA 2012, p. 2). The U.S. Census uses “Black or African American.” This report uses “Black.”

Because Hispanics may be of any race, population data are also specifically provided identifying residents of Hispanic ethnicity. The percentage of Hispanic or Latino residents and other racial minorities (e.g., Asian Americans, American Indians, Alaskan Natives, Native Hawaiians, and other Pacific Islanders) in the API are not meaningfully greater than the MSA (Table 3-12).<sup>23</sup> There are no known concentrations of these groups living at locations that could make them subject to disproportionate impacts from the Project. For these reasons, this SEA does not further address impacts on minority residents other than the Black population.

Table 3-12. Race and Ethnicity, 2020

Population	API		MSA	
	Population	Percent	Population	Percent
Total Population	3,752	--	2,472,774	--
Not Hispanic/Latino	3,431	91.4	2,171,611	87.8
Hispanic/Latino	321	8.6	301,163	12.2
White	3,018	80.4	1,960,674	79.3
Black/African American	185	4.9	70,60	2.9
American Indian/Alaskan Native	11	0.3	17,943	0.7
Asian	197	5.3	170,953	6.9
Native Hawaiian/Pacific Islander	17	0.5	12,7165	0.5
Some Other Race	43	1.1	81,428	3.3
Two or more Races	281	7.5	158,456	6.4

Notes: API = Area of Potential Impact; MSA = Portland-Vancouver-Hillsboro Metropolitan Statistical Area  
Source: U.S. Census Bureau 2020.

A number of notable Black-owned businesses and civic organizations are in the API. The Urban League of Portland, one of the Portland Black community's principal advocacy and service organizations, is located at 10 N Russell Street, and the Harriet Tubman Middle School is adjacent to I-5 at 2231 N Flint Avenue (see Figure 3-6 in Section 3.11). Harriet Tubman Middle School has important historical significance to the Black community in Portland, and its current enrollment includes a substantial number of students of color.

Residents in the Albina area have a long history of experiencing adverse effects from major public infrastructure projects. Beginning in the late 1940s, and continuing into

<sup>23</sup> Minority status is composed of both race and ethnicity. Minority ethnicity includes Hispanic origin (CEQ 1997). Race and ethnicity are not mutually exclusive; therefore, individuals who identify as Hispanic origin can be of any race. The CEQ also mandates that persons identified through the U.S. Census as ethnically Hispanic, regardless of race, should be included in minority counts (CEQ 1997).

---

the early 1970s, a series of public infrastructure projects displaced hundreds of residents within the API. These projects included the widening of Interstate Avenue and the construction of ramps to the Broadway and Steel Bridges, construction of Veterans Memorial Coliseum and I-5 in the early 1960s, and construction of the Fremont Bridge and ramps connecting it to I-5 in the early 1970s. In all, public infrastructure projects displaced more than 900 dwelling units in and near the API during this period, mostly single-family homes. These projects indirectly led to the displacement of an undetermined number of additional residences. Most of the displaced households were Black, and most were low-income. A survey of households displaced by I-5 construction through the API found that 55 percent of the displaced households and 70 percent of the persons displaced were “non-white.” These projects also created substantial physical separations between historically connected Black neighborhoods in the API. Additional information on the effects of past projects on minority and low-income populations is presented in the *Environmental Justice Technical Report* (ODOT 2019b).

In addition to public infrastructure projects, the process of urban renewal, which sometimes leads to gentrification, has had a substantial adverse effect on the Albina neighborhood by displacing low-income Black residents (Bates 2013; Gibson 2007; Portland Housing Bureau n.d.-a).<sup>24</sup> Remaining concentrations of minority residents in the API include the Urban Plaza Apartments at the corner of N Russell and N Williams and the Albina Corner Apartments at the corner of NE Martin Luther King Jr. Boulevard and NE San Rafael Street, where more than half of the current residents are minorities. A new apartment building on N Williams at NE San Rafael and recent infill housing on NE Hancock near its intersection with NE 3rd Avenue reflect a continuing strong demand for housing, and suggests the process of urban renewal—caused gentrification in the Albina neighborhood is continuing.

The City of Portland has initiated a number of plans and programs to address past and ongoing displacement in the Albina neighborhood. One of the most recent is the N/NE Neighborhood Housing Strategy, which will invest over \$100 million over 10 years to build apartments, preserve buildings, and help residents stay in their homes or return to neighborhoods in North and Northeast Portland. A central feature of the N/NE Neighborhood Housing Strategy is the N/NE Preference Policy, which gives priority for the City's affordable housing investments in portions of the API to current and former residents of the N/NE Portland community (Portland Housing Bureau n.d.-b).

### **3.12.1.3** Low-Income Populations

For analysis of EJ impacts, FHWA defines a person with low income as “a person whose median household income is at or below 150 percent of the poverty line as defined by the Department of Health and Human Services poverty guidelines” (FHWA

---

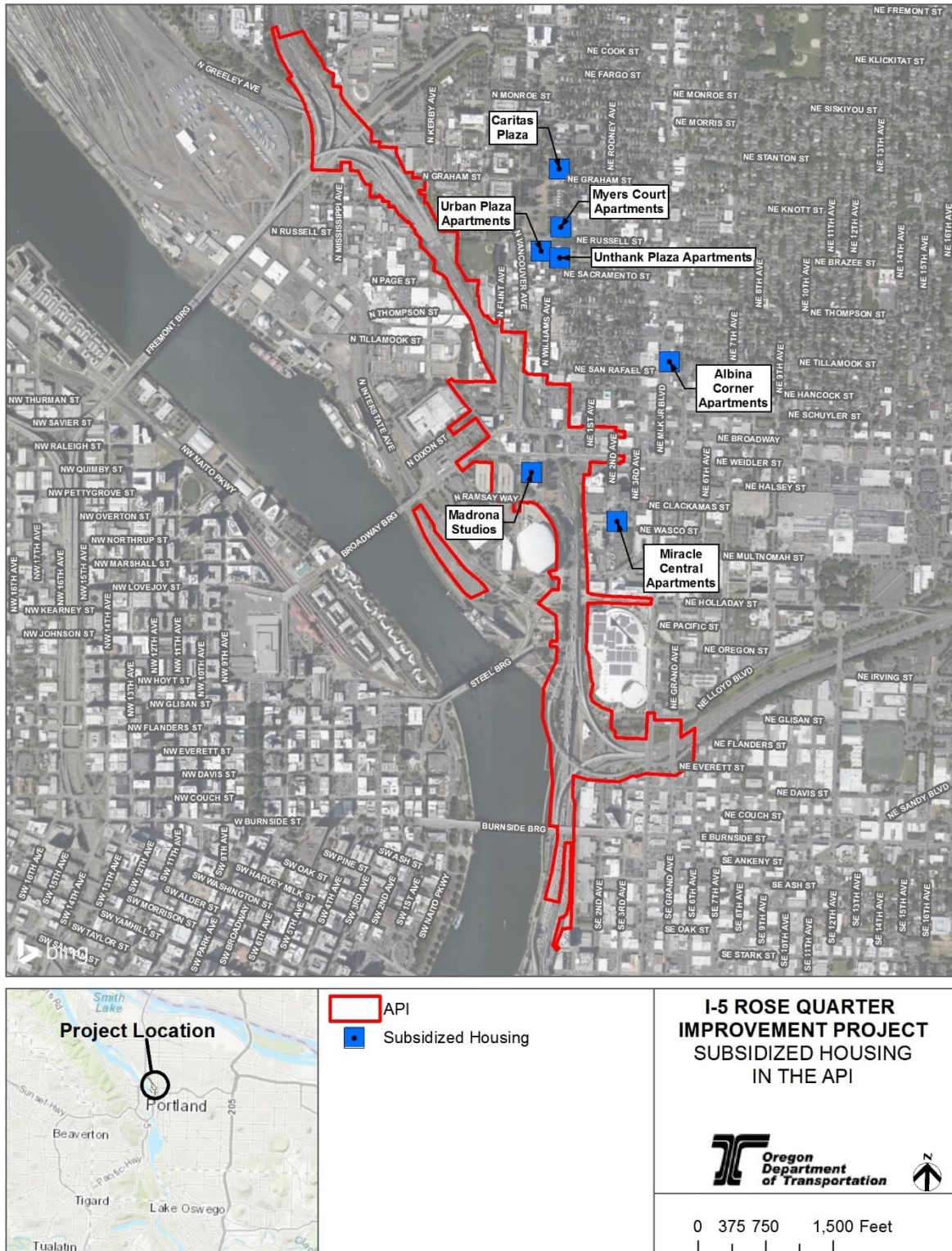
<sup>24</sup> Gentrification is the process of repairing and rebuilding homes and businesses in a deteriorating area (such as an urban neighborhood), accompanied by an influx of middle-class or affluent people, which often results in the displacement of earlier, usually poorer residents.

---

2012). As a frame of reference, 150 percent below the federal poverty level in 2022 was \$41,625 for a family of four (HHS 2022).

Table 3-10 shows the median, mean, and per capita household income in the API and the MSA. The number of households living below the poverty level in the API was 18 percent, compared to 13.1 percent and 10.1 percent in the City of Portland and MSA, respectively. Subsidized apartment buildings for qualifying low-income residents in the API include the Unthank Plaza Apartments, Myers Court Apartments, Caritas Plaza, Madrona Studios, Urban Plaza Apartments, the Albina Corner Apartments, and the Miracle Central Apartments at the corner of NE 2nd and NE Wasco Street (Figure 3-8; U.S. Environmental Protection Agency 2022). Because of the income limits to be eligible to live in these apartment buildings, many of the current occupants are likely to meet the definition of low-income.

Figure 3-8. Subsidized Housing in the API and Surrounding Community



---

## 3.12.2 Environmental Consequences

### 3.12.2.1 No-Build Alternative

The No-Build Alternative would have no direct or indirect effects to EJ populations. Under the No-Build Alternative, construction impacts such as temporary air emissions and noise from construction equipment, traffic and transit disruptions, temporary closures of pedestrian and bicyclist routes, and potential disruptions in utility service that could potentially affect EJ populations in the API would not occur. Similarly, any potential long-term benefits to EJ populations from the Revised Build Alternative, such as expanded travel choices and improved mobility and safety for all modes of transportation, enhanced east-west connectivity across I-5, improved traffic operations and safety on the I-5 mainline and surface streets in the API, and benefits from the Project's highway cover to reconnect the historic Albina neighborhood would not occur under the No-Build Alternative.

### 3.12.2.2 Revised Build Alternative

Potential short-term impacts to EJ populations from construction of the Revised Build Alternative could include temporary exposure to noise, exhaust, and dust emissions from construction activities and equipment; temporary disruptions in transit service, including changes to normal bus routes and schedules; temporary closures of key walking and biking routes; and potential short-term interruptions in utility service. A detailed discussion of short-term construction impacts is provided in the *Environmental Justice Technical Report* (ODOT 2019b). The Revised Build Alternative would result in the same impacts as described in the *Environmental Justice Technical Report* (ODOT 2019b). Long-term operational impacts would be the same as described in the *Environmental Justice Technical Report*, with the exception of noise and air quality. As discussed below, the Revised Build Alternative would result in benefits to EJ populations.

Under the Revised Build Alternative, future noise levels on the interior of Harriet Tubman Middle School, which has a substantial number of minority and/or low-income students, would increase from the current level of 49 dBA to 50 dBA, which is the Oregon NAAC threshold for requiring noise abatement. Construction activities near the Harriet Tubman Middle School would be scheduled for summer months to avoid potential disruptions during the school year. Installation of a 12-foot-tall and approximately 1,456-foot-long noise barrier, extending along the eastern edge of I-5 ROW from approximately N Russell to N Flint, would decrease noise levels on the interior of the school to 40 dBA, which would be 10 dBA below the Oregon NAAC. This would be a beneficial reduction in noise compared to existing noise levels at the school. For more details on the noise analysis conducted for the Project, see the *Noise Supplemental Technical Report* in Appendix A.

---

As discussed in Section 3.2, because of heightened public concern surrounding MSAT emissions near Harriet Tubman Middle School, a highway-only emissions analysis was conducted for I-5 comparing existing (2017) to future (2045) conditions within the API. The data showed a large decrease in estimated MSAT emissions over time for both the No-Build and the Revised Build Alternatives; the average reduction in estimated MSAT emissions for the Revised Build Alternative was 75 percent.

The Revised Build Alternative would provide long-term direct and indirect benefits to EJ populations in the API in the form of improved access to transit; slightly improved air quality; improved mobility and safety for pedestrians, cyclists, and transit riders; improved physical connections to areas east and west of I-5 provided by the new highway cover; and increased building capacity on the cover space. Constructing new widened and well-lit sidewalks, ADA-accessible ramps, high-visibility and marked crosswalks, and widened and improved bicycle facilities, as well as increasing route options for pedestrian and bicycle routes through a new crossing at N/NE Hancock, bike lanes on N/NE Broadway and N/NE Weidler, and improved bicycle and pedestrian facilities on N Vancouver and N Broadway, would benefit all members of the community, including EJ communities.

Early recognition of EJ issues in the Project Area led to substantial targeted outreach to raise awareness about the Project and the environmental studies underway. The Project team's approach to EJ community engagement is centered on a transparent, inclusive engagement process. The process aims to minimize barriers to participation and is committed to connecting with community members in diverse spaces to amplify marginalized voices. In 2021, the Project evolved the governance structure, which includes advisory bodies focused on various aspects of community and stakeholder engagement, as well as the ongoing Project development process.

With influence from the HAAB and guidance from the ESC, the ICA Team engaged directly with Black community members from historic Albina and throughout Portland to understand how proposed highway covers over I-5 could rebuild the neighborhood and better serve the historic Albina community. The ICA Team collected input from Black community members and other stakeholders through a series of three virtual work sessions, three online open houses, and public comments. The Revised Build Alternative was identified through this engagement as the best option to support the stakeholder visions for historic Albina and to support restorative justice goals for a diverse, inclusive, and accessible neighborhood.

Project outreach specifically directed to EJ communities included a community liaisons group, participation in local summer events, a Pastors' breakfast, briefings, a targeted open house and local door-to-door business canvassing, three advisory committees, public design surveys, equitable engagement compensation, the ICA process, and other community events. Section 8 of the *Environmental Justice Technical Report* (ODOT 2019b) summarizes the Project's EJ outreach efforts up to the publishing of the 2019 EA, and Section 4.3.2 of this SEA provides additional

---

information related to the Project's EJ outreach efforts since the publishing of the 2020 FONSI REA.

Although EJ populations in the API may experience some small adverse impacts during construction and operation of the Revised Build Alternative, none of these impacts are expected to rise to the level of "disproportionately high and adverse effects" as defined in Executive Order 12898 and FHWA Order 6640.23A.<sup>25</sup>

No short- or long-term adverse indirect impacts to EJ populations from the Revised Build Alternative are anticipated.

### 3.12.2.3 Avoidance, Minimization, and Mitigation Measures

Potential impacts to minority or low-income populations would be minimized or avoided through the following measures:

- ODOT would monitor construction contractors to ensure ODOT standard construction specifications are followed to limit vehicle and equipment idling time, prevent dirt and other materials from being tracked out of construction zones on vehicle tires, minimize the release of fugitive dust, and prevent the release of hazardous materials from spills and leaks or exposure to existing contamination to address the potential for short-term exposure of EJ populations to noise, exhaust, dust emissions, and hazardous materials during construction of the Revised Build Alternative.
- ODOT would coordinate with the City of Portland and TriMet to develop an appropriate method to monitor and determine the effects of relocated bus routes on EJ populations during the anticipated 4-year construction period. If it is determined that EJ populations are experiencing disproportionate impacts, ODOT, the City, and TriMet would coordinate with the community to identify alternative bus routes to better serve EJ populations, possibly including an increase in the frequency of service on those routes.
- ODOT would coordinate with the City of Portland and Portland Streetcar to develop an appropriate method to monitor and determine the effects of streetcar closures on EJ populations during the anticipated 4-year construction period. If it is determined that EJ populations are experiencing disproportionate impacts, ODOT, the City, and Portland Streetcar would coordinate with the community to identify alternative routes, and/or ODOT would identify additional reasonable measures to reduce those impacts, including providing free shuttle service through areas of construction.

---

<sup>25</sup> FHWA Order 6640.23A states that a disproportionately high and adverse effect on minority and low-income populations is "an adverse effect that: 1) is predominantly borne by a minority population and/or a low-income population; or 2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population."



- ODOT would coordinate with the City of Portland and members of the community to identify alternative routes for people who walk, bike, and roll to use during periods when key walking and biking routes are closed during construction.
- ODOT would monitor and determine the effects the temporary closure of key walking and biking routes could have on EJ populations. This would be accomplished by assigning observers to monitor the use of alternative routes and conducting surveys and voluntary one-on-one interviews. If it is determined that disproportionate impacts to EJ populations are occurring, ODOT would identify additional reasonable measures to reduce those impacts, including providing free shuttle service through areas of construction.

In addition to the measures described above, ODOT's DBE and Workforce program for the Project would maximize DBE contracting opportunities, including for small and minority-owned businesses.

Considering the measures described above and the notable beneficial effects for EJ populations living and working in the API in terms of improved access to employment and services (for all modes) and enhanced public safety, it has been determined that the Revised Build Alternative would not cause disproportionate high and adverse effects on any minority or low-income populations, in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23A.<sup>26</sup>

## 3.13 Transportation

### 3.13.1 Existing Conditions

The API for transportation generally corresponds to the Project Area, as shown on Figure 1-1, except along N Broadway, where the API extends west to N Larrabee Avenue. For more details on transportation impacts in the API, see the *Transit Supplemental Technical Report*, *Active Transportation Supplemental Technical Report*, *Safety Supplemental Technical Report*, and *Traffic Supplemental Technical Report* in Appendix A.

#### 3.13.1.1 Transit

Within the API, major transit trip generators and destinations include the Moda Center, Veterans Memorial Coliseum, Oregon Convention Center, Rose Quarter Transit Center, and businesses along the Broadway/Weidler couplet.

TriMet operates several fixed-route bus and rail lines within the API. Whereas most north-south and east-west transit lines pass through the Rose Quarter Transit Center, service is also provided on the Broadway/Weidler couplet (bus line 17). The Rose

<sup>26</sup> Pursuant to FHWA Order 6640.23A, the analysis accounted for "mitigation and enhancement measures and potential offsetting benefits to the affected minority and/or low-income populations."

---

Quarter Transit Center is served by six bus lines and three MAX light rail lines. High-frequency TriMet bus service (Line 4) is also provided on N Vancouver and N Williams. In addition to the Rose Quarter Transit Center and its four bus stops, there are ten bus stops and four streetcar stations located in the API.

The City of Portland provides streetcar service. The Portland Streetcar follows a loop linking several districts in Portland's central core, including Downtown Portland, the Pearl District, Lloyd, Central Eastside Industrial District, and South Waterfront. The "A" Loop travels clockwise, while the "B" Loop travels counterclockwise. Within the API, the streetcar alignment follows the Broadway/Weidler couplet and the NE Martin Luther King Jr./NE Grand Avenue couplet.

In 2017, the Rose Quarter Transit Center was accommodating over 11,000 passengers each weekday (see Final Transit Technical Report [ODOT 2019b]). Due to the COVID-19 pandemic, ridership has decreased an average of 64.8 percent across all routes in the API between Fall of 2017 and Fall of 2020. Routes 4, 44, and Portland Streetcar "A" and "B" Loops lost over 75 percent of their ridership over the 3-year period but have since restored service frequency for transit routes in the API to 90 percent of pre-pandemic service levels as of August 2020 (TriMet 2020).

FTA Small Starts funds were used to construct existing streetcar and MAX light rail facilities; therefore, there is an obligation to continue to provide service.

### **3.13.1.2** Active Transportation

The term "Active Transportation" refers to human-powered, self-propelled travel and includes walking, bicycling, rolling, and other mobility assistance devices (e.g., wheelchairs). The API is within a City-designated Pedestrian District (City of Portland 2018), including the Lower Albina and Lloyd districts, where the City's 2035 Comprehensive Plan prioritizes walking over competing multimodal needs. In addition, Portland's PedPDX identifies the API as part of the Central City Pedestrian Priority Network (PBOT 2019a).

Most of the API has existing sidewalk coverage, with less than 10 percent having gaps in sidewalk coverage. N Vancouver, N Williams, and NE Lloyd Boulevard do not meet the City's pedestrian crossing spacing standards (PBOT 2019a). Formalized bikeways exist on most major streets, consisting of a mix of bike lanes and neighborhood greenways. The Vera Katz Eastbank Esplanade is a shared-use path serving users traveling to, from, and through the API.

The 14 signalized intersections in the API include infrastructure that serves pedestrians, including crosswalks, pedestrian signal heads on all corners where crossings are permitted, pedestrian push buttons at crosswalks, and dual curb ramps with detectable warning strips at most corners. Not all signals include timing to separate bicycle and pedestrian movements from vehicular turn movements.

---

Specifically, the intersection of N Williams/NE Weidler experiences high volumes of cyclists and insufficient bicycle storage.

The Level of Traffic Stress (LTS) within the API was measured at each intersection. Measured on a scale from 1 (best) to 4 (worst), the analysis considers perceived safety issues associated with distance to vehicles and vehicle speed. Under existing conditions, 7 of the 14 intersections have an LTS of 3 for pedestrians. All 14 intersections have a rating of 1 for bicycles. For more details on active transportation in the API, see Figure 8 of the *Active Transportation Supplemental Technical Report* in Appendix A.

### 3.13.1.3 Transportation Safety

Within the API, segments of I-5 in both the SB and NB direction have crash rates that exceed the state-wide average for comparable facilities. Between 2011 and 2015, there were 881 crashes on the highway and ramps in the API. Most of the crashes were in the SB direction, most frequently between 11:00 AM and 6:00 PM.

There were 268 crashes on the local street network study intersections between 2011 and 2015; 18 of these crashes involved cyclists, and 2 involved pedestrians. Turning movement conflicts were the most common collision type at the studied intersections (see the *Transportation Safety Technical Report* [ODOT 2019b])

### 3.13.1.4 Traffic Operations

Existing traffic conditions on I-5 mainline within the API were analyzed for AM peak hours (7:00 AM to 9:00 AM) and PM peak hours (4:00 PM to 6:00 PM). The second hour in each peak hour period (8:00 AM to 9:00 AM and 5:00 PM to 6:00 PM) is the most congested period. Travel times during these periods ranged from 1 minute to 10 minutes (AM) and 1 minute to 17 minutes (PM), depending on route. The PM peak period travel times on I-5 in the API are slower than those in the AM peak period. Traffic operations are evaluated

using Level of Service (LOS) A through F. LOS A represents optimal or free-flow conditions and F represents a breakdown of traffic flow and unacceptable conditions. The routes where these travel times were analyzed are shown on Figure 13 of the 2019 *Traffic Analysis Technical Report* and represent common travel routes for commuter and freight traffic (ODOT 2019b).

Local streets were evaluated based on overall intersection delays and intersection LOS. In the API, 10 of the 12 intersections evaluated operate at acceptable levels

---

Level of Service Definitions:  
LOS A: Free-flow traffic, no delays  
LOS B: Stable traffic flow, minimal delays  
LOS C: Restricted flow, regular delays  
LOS D: Restricted flow, regular delays, limited mobility  
LOS E: Maximum capacity, extended delays  
LOS F: Forced flow, excessive delays

---

---

under existing conditions for AM peak hours. N Broadway/N Vancouver would exceed the City's mobility target between 8:00 AM to 9:00 AM, and NE Weidler/NE Victoria Avenue would operate at LOS E during that time, which exceeds the City's operational target of LOS D for signalized intersection. Additionally, the N Wheeler, N Williams, and N Ramsay intersection has queues spilling back from I-5 onto N Ramsay, N Wheeler, and N Weidler at times during peak periods. All 12 intersections operate at acceptable levels for PM peak hours.

Weaving segments on I-5 within the API operate near or over capacity during both AM peak hours. Queues from I-5 spill back to N Wheeler, N Weidler, and N Ramsay.

The high volumes of traffic on I-5 and Broadway/Weidler in the API contribute to congestion and safety issues (for all modes) at the interchange ramps, the Broadway and Weidler overcrossings of I-5, and on local streets in the vicinity of the interchange (see the *Traffic Analysis Technical Report* [ODOT 2019b]).

### **3.13.1.5** Transportation Access

Currently, there are 132 access points within the API (37 intersections and 95 driveways). The majority of access points are business driveways, of which 60 percent are located on N/NE Weidler and N/NE Broadway.

The complexity and congestion at the I-5 Broadway/Weidler interchange configuration is difficult to navigate for vehicles (including transit vehicles), cyclists, and pedestrians, which impacts access to and from I-5, as well as to and from local streets (see the *Transportation Access Technical Report* [ODOT 2019b]).

## 3.13.2 Environmental Consequences

### **3.13.2.1** Transit

#### *No-Build Alternative*

Under the No-Build Alternative, ridership is expected to grow with projected population growth, compared to existing conditions. Impacts to transit travel time under No-Build conditions would roughly correspond to congestion experienced by motor vehicles, as described for traffic operations in Section 3.13.2.4 and the *Transit Supplemental Technical Report* in Appendix A.

As congestion increases, transit travel time also would increase, and transit reliability would decrease. No direct impacts to light rail operations would occur under the No-Build Alternative.

---

### *Revised Build Alternative*

#### Short-term Construction Impacts

Short-term construction-related impacts would include temporary bus stop closures or relocations, bus route detours, and changes to streetcar operations.

#### *MAX and Bus*

The complete closure of N Williams during construction of the new highway cover and the relocation of the SB off-ramp on N Williams would impact bus routes 4 and 44. Two bus stops (one servicing route 17 and one servicing routes 4 and 44) would be relocated during construction. Routes 4 and 44 would also be affected by a detour required for N Vancouver. Specific detouring and routing of routes 4 and 44 during construction would be determined by TriMet.

In addition, the following bus routes could experience temporary short-term impacts during construction: 17 WB and 85, 8, 35, and 77. There is a risk that the MAX Red, Blue, and Green lines, which operate on NE Holladay through the Rose Quarter Transit Center, could have temporary service disruptions due to construction activities. However, specific details regarding temporary service disruptions are unknown at this time.

Temporary bus stop closures and relocations could require some passengers to walk farther to reach a bus stop. Bus route detours could result in increased bus travel times and potential closures or relocation of bus stops outside of construction areas.

To minimize bus route delays, the Project design team would coordinate with the City and TriMet to evaluate potential signal timing adjustments or dedicated transit lanes along detour routes during final design.

#### *Portland Streetcar*

Streetcar operations through the Project construction work zone are expected to be interrupted for a 2- to 3-year period. The Portland Streetcar "B" Loop (on N/NE Broadway) may experience temporary short-term impacts during construction. However, specific details regarding temporary service disruptions are unknown at this time.

Streetcar operations would continue during construction either through:

- temporary tracks (including on a temporary cover structure over I-5), or
- through use of a "bus bridge" that would require streetcar passengers to transfer to a bus to pass through areas of active construction within the API, and could include construction of new turnbacks on the western and eastern sides of the Broadway/Weidler interchange.

---

## Long-term Operational Impacts

### *MAX and Bus*

During operations, both AM and PM peak travel times under the Revised Build Alternative would be similar to the No-Build Alternative. Depending on time of day and direction of travel, travel times increase or decrease by about 1 minute.

The increased building capacity on the highway cover under the Revised Build Alternative has potential to produce new transit generators (housing and potentially transit-oriented development) that could increase transit ridership in the API compared to the No-Build Alternative.

### *Portland Streetcar*

Compared to the No-Build Alternative, WB streetcar travel times would be shorter during AM and PM peak hours due to the addition of a third WB lane when Project construction is complete. Eastbound (EB) streetcar travel times in the AM and PM peak hours would be longer compared to the No-Build Alternative, with increases ranging from 20 to 46 seconds.

For additional information on transit impacts under the Revised Build Alternative, see the *Transit Technical Report* (ODOT 2019b) and the *Transit Supplemental Technical Report* in Appendix A.

### *Avoidance, Minimization, and Mitigation Measures*

ODOT would coordinate with City of Portland, TriMet and PSI in the future design phase to minimize construction impacts and maintain transit and streetcar service connections through the Project Area. This would include temporary bus detours during the construction period to avoid multiple temporary changes for a single bus route.

As noted in Section 2.1.4, ODOT would continue to refine the design with input from the City, TriMet, and PSI to improve or further avoid, minimize, or mitigate impacts to transit operations through the Rose Quarter area that result from implementation of the Project. Such design refinements could include, but are not limited to, signal timing, consideration of transit stop locations relative to protected bike lanes and other design elements, and support features for predictable operations for transit vehicles, such as transit priority lanes. ODOT would coordinate with TriMet and PSI to minimize short- and long-term reliability and travel time impacts throughout final design.

ODOT's continued collaboration with the City of Portland, TriMet, and PSI would inform design refinements needed to accommodate transit and streetcar service. ODOT would continue to coordinate with the City of Portland, TriMet, and PSI to identify and implement measures that would improve transit operations, or avoid or minimize impacts to transit and streetcar service connections, through the Project Area.

---

### 3.13.2.2 Active Transportation

#### *No-Build Alternative*

Under the No-Build Alternative, additional protected bike lanes and upgraded sidewalks in the Broadway/Weidler couplet associated with the Broadway Multimodal Improvements Project would improve conditions for pedestrians and cyclists.

Despite these improvements, half the intersections in the API would continue to exceed tolerable stress levels for pedestrians. Those intersections exceeding tolerable stress levels for pedestrians are primarily located along the N/NE Broadway corridor.

All intersections would continue to operate at stress levels for bicycles that are defined as acceptable according to the ODOT methodology for evaluating LTS.<sup>27</sup> High bicycle volume at the intersection of NE Williams/NE Weidler would increase with projected growth under the No-Build Alternative for 2045. Because bicycle storage at this location is currently insufficient, increased congestion is expected to cause potentially unsafe and/or uncomfortable conditions for cyclists.

#### *Revised Build Alternative*

The Revised Build Alternative would be consistent with the goals and objectives identified in PedPDX by improving the pedestrian network in the API. In addition, the bicycle and pedestrian improvements on NE Broadway and NE Weidler would provide connection with the Green Loop, outlined in the *Adopted Central City 2035 Plan*.

Under the Revised Build Alternative, conditions for pedestrians and cyclists would generally improve in the API due to increased route options and connectivity on the highway cover, addition of signals, signal timing to separate bicycles and pedestrians from turning movements at some intersections, physical separation from motorized users, and reduced complexity of some intersections.

High bicycle volume at the intersection of NE Williams/NE Weidler would continue with projected growth under the Revised Build Alternative. Design refinements would address design details of the bike lane configuration and storage at this location, in coordination with City of Portland. The Revised Build Alternative would include upgraded physically separated and raised bike facilities with shorter intersection crossings along NE Broadway and NE Weidler and portions of N Vancouver and N Williams.

---

<sup>27</sup> A total of 14 intersections in the API were studied (including N Hancock and N Flint) (see the *Active Transportation Supplemental Technical Report* in Appendix A).

---

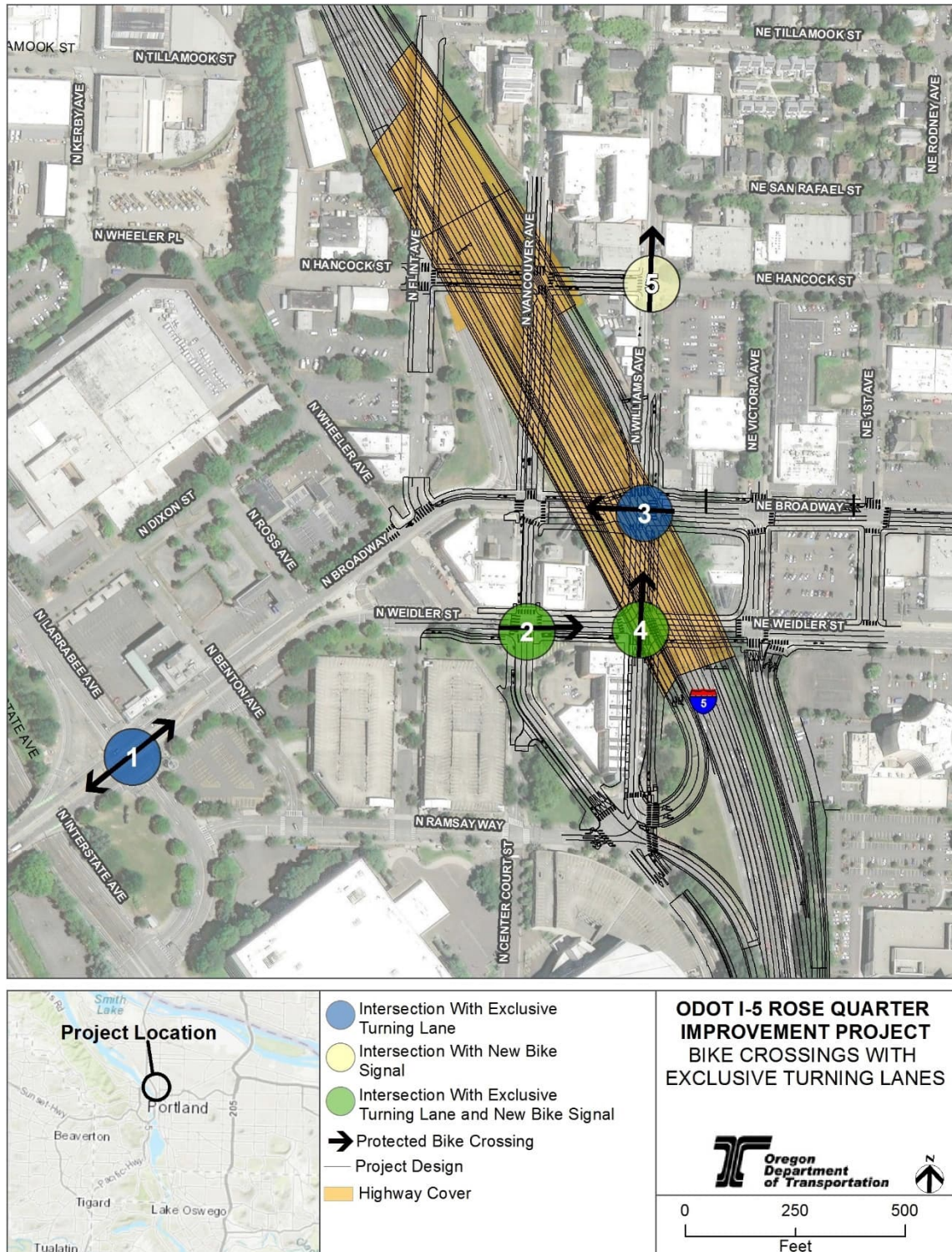
As shown in Figure 3-9, bicycle crossings with exclusive turning lanes—a lane for cyclists that is physically separated from sidewalks and motor vehicle traffic and that has a turn signal that is exclusive to bicycle traffic—would be added at the following intersections:

- EB at N Weidler and N Vancouver (2 on Figure 3-9)
- NB at NE Weidler and N Williams (4 on Figure 3-9)

Bicycle crossings with exclusive turning lanes would be maintained WB at NE Broadway and N Williams (3 on Figure 3-9). In addition, bicycles crossings with exclusive turn lanes would be added EB/WB at NE Broadway and N Larrabee Avenue (1 on Figure 3-9) by the NE Broadway Multimodal Improvements Project that would also be present in the No-Build Alternative and is not part of the Revised Build Alternative. The additional signals at the intersection of NE Weidler and N Vancouver (EB), NE Weidler and N Williams (NB), and N Williams and NE Hancock (NB) would create a safer and more comfortable biking experience for EB and NB cyclists traversing the cover area.



Figure 3-9. Bicycle Crossings with Exclusive Turning Lanes



---

The relocation of the I-5 SB off-ramp at the intersection of NE Wheeler/N Ramsay/N Williams (formerly NE Wheeler) and N Vancouver under the Revised Build Alternative would increase the length and complexity of crossings and reduce safety for NB cyclists and pedestrians on N Williams south of N/NE Weidler compared to the No-Build Alternative. Closures of the crosswalk on the west side of N Williams, crossing N Broadway, and the crosswalk on the north side of NE Weidler, crossing N Williams, are proposed to improve pedestrian and cyclist safety. These crosswalk closures would introduce more complicated crossings (e.g., out-of-direction travel) on this section of N Williams compared to the No-Build Alternative. Any crosswalk closures would be evaluated in coordination with the City of Portland during final design and approved prior to implementation.

Generally, bicycle delays at studied intersections would be similar between the No-Build and Revised Build Alternatives. However, in areas where new signals would be added to provide greater separation between motorized vehicles and people biking, bicycle delay would increase by up to a minute for travel through the API. Although bike travel times would be slightly higher than the No-Build Alternative during the AM and PM analysis periods, greater separation between motorized vehicles and people walking, biking, and rolling at most intersections would be provided. The following routes would be affected:

- Broadway Bridge to/from Williams/Vancouver corridor and Tillamook Neighborhood Greenway (one additional signalized intersection as compared to the No-Build Alternative at NE Hancock and N Williams)
- Steel Bridge/Eastbank Esplanade to/from Williams/Vancouver corridor and Tillamook Neighborhood Greenway—NB (one additional signalized intersection at NE Hancock and N Williams)

Improved travel on the Broadway Bridge to/from the Lloyd corridor would occur because WB travelers would pass one less ramp terminal. In addition, the Project would create conditions that make biking more attractive than conditions under the No-Build Alternative for most trips of approximately 3 miles or less, in compliance with Policy 9.20 “Bicycle Transportation.”

Active transportation safety facilities, including treatment for separation between motorized vehicles, consideration of additional signals, and specific signal timing, would be refined through the final design phase of the Project. For additional information on impacts to active transportation under the Revised Build Alternative, see the *Active Transportation Technical Report* (ODOT 2019b) and the *Active Transportation Supplemental Technical Report* in Appendix A.

#### Short-term Construction Impacts

Pedestrians and cyclists traveling through and near the API would experience temporary impacts during construction. Short-term impacts include detours due to

---

demolition of the existing Broadway, Weidler, Flint, Vancouver, and Williams structures over I-5.

These impacts would be mitigated, as the highway cover would be built north of N Broadway prior to the demolition of the Broadway/Williams structure. In addition, temporary structures would be designed to minimize multimodal conflicts.

However, N Williams between N Ramsay and NE Weidler would be closed for an extended duration (multi-year period) due to construction of the I-5 SB off-ramp. Pedestrian movements would be maintained on the existing sidewalk along the west side of N Williams. SB bicycle movements would be maintained in the existing configuration. NB bikes may experience temporary detours and delays.

Construction activities would not require closure of the Eastbank Esplanade. In addition, construction activities alongside the Moda Center would result in few or no construction impacts along the detour route because the Broadway/Weidler corridor improvements would already be complete. More specifically, pedestrian movements along the Moda Center on the west side of N Williams would be maintained without detour. SB bicycle movements would be maintained in their existing configuration. NB bicycle users would potentially have to use the bus only lane if the NB bike lane is disrupted during construction.

#### Long-term Operational Impacts

##### *Increased Non-Motorized Route Options*

As detailed in the *Active Transportation Supplemental Technical Report* in Appendix A, there are trade-offs between cyclists and pedestrians depending on route, direction of travel, and time of day. In general, it was found that conditions related to route directness, motorist separation, and ramp terminal avoidance would be similar between the No-Build Alternative and the Revised Build Alternative.

The Revised Build Alternative would result in increased connectivity of local roads and improvements to usability of non-motorized routes. Because of this, active transportation operations are enhanced under the Revised Build Alternative. Bicycle travel times would generally be within +/- 30 seconds of the travel times for the No-Build Alternative, except for the EB travel time during the AM peak hour, which would be approximately 45 seconds longer. Long-term direct and indirect impacts related to improvements to non-motorized route options include the following:

- Enhanced cyclist separation and improved safety from upgraded, physically separated, and raised bike facilities and shorter intersection crossings along NE Broadway and NE Weidler between N Flint and NE 1st Avenue.
- Updated biking facilities along NE Weidler and NE Broadway along Broadway Bridge to/from the Lloyd district

- Updated biking facilities along NE Weidler and NE Broadway along Broadway Bridge to/from the Broadway/Weidler corridor immediately east of I-5 interchange
- Enhanced cyclist safety and separation for cyclists traveling NB on N Williams on a NB raised and protected bike facility on the east side of N Williams from N Ramsay to the on-ramp at the intersection of N Williams and N Broadway
- Enhanced cyclist safety and separation for SB cyclists traveling on a protected bike facility on the west side of N Vancouver from NE Hancock to N Broadway
- Safer and more comfortable biking experience for EB and NB cyclists traversing the highway cover area from additional bicycle signals at the intersection of NE Weidler and N Vancouver (EB), NE Weidler and N Williams (NB), and N Williams and NE Hancock (NB)
- Improved east-west bicycle and pedestrian connections in the northern portion of the highway cover area through addition of a direct multimodal NE Hancock extension traversing I-5 to existing N Flint
- Improved walking connections in the Moda Center's vicinity from sidewalk gap closures on N Wheeler/N Williams

The I-5 SB off-ramp relocation could include closure of crosswalks at the following locations:

- West side of N Williams, crossing NE Broadway
- North side of NE Weidler Street crossing N Williams

Any crosswalk closures would be evaluated in coordination with the City of Portland during final design and approved prior to implementation.

#### *Ramp Terminal Changes*

Under the Revised Build Alternative, the I-5 SB off-ramp would be relocated to N Williams south of NE Weidler. The double right-hand turn lanes, higher traffic volume, and elimination of the northern crossing at the intersection of N Williams and NE Weidler would create difficult crossing for pedestrians under the Revised Build Alternative. Under the Revised Build Alternative, an additional ramp crossing would be required due to the relocated SB off-ramp on N Williams. The relocation of the I-5 SB ramp terminal on N Williams would decrease intersection quality and ramp terminal avoidance for NB cyclists but increase ramp terminal avoidance for SB cyclists.

Bicycle delay would increase along this route compared to the No-Build Alternative with the addition of the signal at the intersection of N Hancock Street and N Williams Avenue. See the *Active Transportation Supplemental Technical Report* in Appendix A.

As described above, the increased traffic generated by the ramp would cause the potential closure of the crosswalk on N Williams and the crosswalk on the north side of

---

NE Weidler. These crosswalk closures would require NB and SB pedestrians to cross NE Broadway on the east side of the intersection or walk one block west and cross on the west side of N Vancouver. EB and WB pedestrians on NE Weidler would have to cross to the south side of the street at NE Williams. Any crosswalk closures would be evaluated in coordination with the City of Portland during final design and approved prior to implementation.

Impacts to active transportation from the Revised Build Alternative on this section of N Williams would also include the following:

- Decreased intersection quality for NB cyclists
- Increased bicycle delay due to addition of the signal at the intersection of N Hancock and N Williams
- Increased potential for pedestrian auto conflict due to the placement of the I-5 SB off-ramp and updated turning movements

Consideration for protected signal phases for cyclists and pedestrians and extending sidewalk corners to provide shorter crosswalks would be evaluated during final design. In addition, signing, striping, and lighting would be considered to provide clear information to drivers and improved way finding to pedestrians and cyclists to help mitigate the impacts listed above.

Details regarding each ramp terminal are presented in the *Active Transportation Supplemental Technical Report* in Appendix A.

#### Physical Separation of Motorized and Non-Motorized Use

Physically separated raised bicycle facilities would be added on NE Broadway and NE Weidler, benefiting east-west travelers, and N Vancouver and N Williams, benefitting north-south travelers, compared to the No-Build Alternative. The development of upgraded physically separated and raised bike facilities with shorter intersection crossings along NE Broadway and NE Weidler would benefit east-west traveling pedestrians and cyclists.

#### *Reduced Complexity of Intersections*

Conditions in the API would also be improved by reducing the complexity of intersections by reducing elements that introduce conflict points with people walking, biking, or rolling (e.g., narrow refuge islands, crossing more than six travel lanes at once, or non-standard roadway geometry). Such improvements (e.g., providing physical separation and signal timing to separate modes, and standardizing geometry) could encourage more walking and biking in the area and could allow active transportation opportunities to be more evenly distributed throughout the API.

Sidewalks, crossings, signals with timing to separate pedestrian and right-turn phases, and other active transportation infrastructure along new or reconstructed streets

---

would be built (or rebuilt) according to applicable design standards. These enhancements would reduce the degree of intersection complexity, particularly for pedestrians, as compared to the No-Build Alternative for the majority of the API. For example, including separate pedestrian and vehicle phases at most intersections would reduce conflicts between modes. By reducing intersection complexity, upgraded intersections along new or reconstructed streets on the expanded cover could improve pedestrian convenience, comfort, and safety. Collectively, these enhancements could make walking more practical and attractive. People with disabilities would also encounter fewer barriers in these areas. The expanded cover space in the Revised Build Alternative would give pedestrians and cyclists greater connectivity compared to the No-Build Alternative.

Route-based analysis indicates that compared to the No-Build Alternative, the Revised Build Alternative is expected to improve safety conditions at the intersections of N Broadway/N Vancouver and N Weidler/N Vancouver. However, potential for degraded conditions exists at the following intersections:

- NE Weidler/N Williams: It is projected that traffic would increase at this intersection, potentially increasing conflicts between NB right-turn vehicles and pedestrians/cyclists on the crosswalk. The Project would provide separate pedestrian and bicycle signal phases to mitigate this conflict. In addition, the NB protected bike lane would improve the safety of bicyclists on the northern and southern legs of the intersection by providing additional separation to traffic.
- NE Wheeler/N Williams/N Ramsay: The I-5 SB off-ramp in the Revised Build Alternative would be part of a six-leg signalized intersection with an increase in traffic volume, thereby increasing exposure to all modes of transportation traveling through this intersection. To mitigate potential conflicts of the multiple modes, the intersection design considers protected signal phases for cyclists and pedestrians and extended sidewalk corners to provide shorter crosswalks.
- N/NE Broadway/N Williams: The Revised Build Alternative configuration would have three WB through lanes, which might increase the exposure between cyclists, pedestrians, and motor-vehicle traffic. In addition, the proposed protected bike lanes on the eastern side of N Williams would mitigate the existing conflict between NB traffic and the bikes.

In addition, relocation of the existing I-5 SB off-ramp at the intersection of N Vancouver and N Broadway would decrease intersection complexity.

#### *Bicycle and Pedestrian Stress Levels*

Bicycle and pedestrian analyses studying LTS were conducted for the 14 existing intersections. Using readily available GIS data, ODOT conducted analysis at the intersection level (see the *Active Transportation Technical Report* [ODOT 2019b] for more details on the methodology).

---

The LTS analysis found that in the Revised Build Alternative, three of the 14 studied intersections would improve from “exceeding tolerable stress levels” to “meeting tolerable stress levels” for pedestrians. Similar to the No-Build Alternative, most intersections with higher-stress conditions would be concentrated along the N/NE Broadway corridor. Under the Revised Build Alternative, the relocation of the SB off-ramp from N Vancouver to N Williams would improve LTS conditions at the intersection of N Broadway and N Vancouver compared to the No-Build Alternative. Overall, the pedestrian network LTS would remain the same or improve, compared to the No-Build Alternative, though one intersection (N Williams and N/NE Weidler) would have increased stress conditions under the Revised Build Alternative due to the double right-hand turn, higher traffic volume, and elimination of the northern crosswalk at the intersection.

With the Revised Build Alternative, LTS for people biking through the API would be similar to the No-Build Alternative because the intersections include signalized traffic control. However, characteristics would vary at each intersection, and other factors (e.g., intersection complexity) could further influence a users’ perception of safety and comfort. See the Local Street Multimodal Risk/Safety Assessment in the *Transportation Safety Supplemental Technical Report* for further details on qualitative safety factors (Appendix A).

#### *Avoidance, Minimization, and Mitigation Measures*

ODOT would require the construction contractor to develop a Temporary Traffic Control Plan following the City of Portland’s current Traffic Design Manual, Vol 2 Temporary Traffic Control (PBOT 2019b) to minimize construction-phase impacts to people who walk, bike, and roll. The following City of Portland priorities would guide the development of the Temporary Traffic Control Plan:

- Use the City of Portland guidelines identified in Portland’s Neighborhood Greenways Assessment Report (Portland Bureau of Transportation 2015) for both daily and hourly traffic volumes to limit vehicle volumes on bikeways.
- Monitor and employ traffic diversions to maintain recommended hourly and daily automobile volumes on existing routes and other corridors that serve as bicycle detour routes.
- Maintain speed and volumes of traffic at or below the Neighborhood Greenway thresholds for both daily and hourly motor vehicle traffic (Portland Bureau of Transportation 2015).
- Prohibit established Neighborhood Greenways from being used as formal motor vehicle detour routes.

- 
- Maintain safe and comfortable conditions for people walking, biking, and rolling through the area throughout the construction timeline (consistent with City policies) by providing physical separation from vehicular traffic and implementing traffic calming measures on multimodal detour routes also used by vehicles.
  - Include design details for temporary pedestrian and bicycle facilities (e.g., facility typologies, widths, and signage) in the Temporary Traffic Control Plan.

The Project would incorporate best available design standards in accordance with City of Portland requirements to reduce stressful conditions for people who walk, bike, and roll at Project intersections. Refinements to signal timing within the Project Area may shorten bicycle travel times and would be further evaluated during final design phase. As noted in Section 2.1.4, ODOT would continue to refine the design with input from the City as it relates to implementing pedestrian and bicycle policies and design guidance for facilities and operations through the Rose Quarter area. Design refinements that would be explored include adjustments to traffic operations to support keeping crosswalks open. Any potential crosswalk closures would be evaluated in coordination with the City of Portland during final design, and approved by the City prior to implementation.

Design refinement would also consider moving the transition of the N Williams bike lane from the east side to the west side to a location north of NE Hancock that improves safety and minimizes delay.

Where applicable and in compliance with the City of Portland bicycle and pedestrian standards, ODOT would collaborate with the City of Portland to incorporate the following best practices during final design of intersection improvements:

- Reduce potential bicycle/motor vehicle conflicts through proactive signing, striping, and signal phasing. Provide physical separation and signal timing to separate modes at higher risk intersections.
- Include wayfinding signage for crosswalk closures that is accessible to all users, including those who are blind or low vision, people who use lower-profile mobility devices, people who are deaf and hard of hearing, and others.
- Review, and remove if necessary, adjacent on-street parking to improve stopping and intersection sight distance. Follow the City of Portland's Vision Clearance Guidelines for uncontrolled intersections.
- Provide intersection turning radii that are consistent with desired interactions between motorists and people who walk, bike, and roll.
- Establish signal timing protocols that provide sufficient crossing time.



- Provide adequately scaled two-stage<sup>28</sup> bicycle turn boxes for left-turn movements at locations where bicycle routes intersect.
- To minimize delay for people cycling through the Broadway/Weidler and Vancouver/Williams corridors, consider timing signals for the pace of bicycle travel.

Although sidewalk gaps along portions of N Wheeler and N Williams (formerly NE Wheeler segment) would be filled, some existing sidewalk gaps within the API would remain. During the design and construction phases, and where feasible, ODOT would address the remaining gaps in the sidewalk network and crosswalk spacing within the API.

The Temporary Traffic Control Plan and design refinements would result in temporary facilities that provide fully accessible, safe, and comfortable routes for people who walk, bike, and roll throughout the API over the course of construction and would aim to preserve or improve the current levels of active transportation in the area. During construction, the Project would prioritize providing the highest level of accommodation for people who walk, bike, or roll. The Project would also include filling gaps in the sidewalk network, with a focus on establishing and maintaining a robust pedestrian network during construction.

### 3.13.2.3 Transportation Safety

#### *No-Build Alternative*

The No-Build Alternative would not improve transportation safety in the API. The No-Build Alternative would not address the numerous on- and off-ramps on I-5 that currently result in slow traffic, and the potential for crashes would increase. Safety issues associated with lack of shoulders and auxiliary lanes would continue, and worsen as congestion increases. It is estimated that there would be approximately 10 percent more highway crashes under the No-Build Alternative compared to existing condition (see the *Transportation Safety Technical Report* [ODOT 2019b]).

Outside of the Broadway/Weidler couplet, pedestrian and bicycle safety would generally be the same as existing conditions. For numerous intersections in the Broadway/Weidler corridor, the number of pedestrians, cyclists, and motor vehicles entering an intersections would increase under the No-Build Alternative, though other factors that may affect pedestrian and bicycle safety (i.e., complexity of the intersection and posted speed limits) would remain the same as existing conditions.

---

<sup>28</sup> The two-stage bicycle turn box is an area set aside for bicyclists to queue to turn at a signalized intersection outside of the traveled path of motor vehicles and other bicycles. When using a two-stage bicycle turn box to make a left turn, a bicyclist would proceed on a green signal indication to the turn box on the right-hand side of the travel lanes, and then turn left within the turn box and wait for the appropriate signal indication on the cross street to proceed. Two-stage bicycle turn boxes can also be used with a left-side bicycle facility to facilitate bicyclists turning right. In addition to mitigating conflicts inherent in merging across traffic to turn, two-stage bicycle turn boxes reduce conflicts between bicycles and pedestrians and separate queued bicyclists waiting to turn from through bicyclists moving on the green signal (FHWA 2017).

---

### *Revised Build Alternative*

It is estimated that the crash rate under the Revised Build Alternative would be lower than under the No-Build Alternative, providing an overall safety benefit in the corridor. The Revised Build Alternative would result in enhanced traffic operations, more uniform lane speeds, and reduction in lane changes as compared to the No-Build Alternative. In addition, the Revised Build Alternative would improve traffic operations at both I-5 SB and NB off-ramps by reducing ramp queue lengths and providing increased ramp storage, which would reduce the potential for queues extending onto the I-5 mainline.

Numerous improvements to the local street network are expected to increase safety for all road users by providing safer connections for pedestrians and cyclists. Specifically, the Revised Build Alternative is expected to improve safety conditions at the intersections of N Broadway/N Vancouver and N Weidler/N Vancouver. However, the I-5 SB off-ramp would be part of a six-leg signalized intersection with an increase in traffic volume, thus increasing exposure to all modes of transportation traveling through this intersection. This intersection would be one of the most complex intersections within the Project Area.

For additional information on impacts to transportation safety under the Revised Build Alternative, see the *Transportation Safety Supplemental Technical Report* in Appendix A.

### *Avoidance, Minimization, and Mitigation Measures*

In support of the City of Portland's Vision Zero Action Plan (City of Portland 2016a), the following best practices would be considered for the local street system in consultation with the City of Portland during final design to maximize short-term and long-term safety:

- Apply best practice design treatments using a Safe Systems Approach identified in the City of Portland's Vision Zero action plan "Moving to Our Future" (<https://www.portland.gov/transportation/director/goal-1>), consistent with the U.S. Department of Transportation (<https://www.transportation.gov/NRSS/SafeSystem>). Treatments are recommended by the Portland Bureau of Transportation, the National Association of City Transportation Officials (NACTO), and the American Association of State Highway and Transportation Officials (AASHTO), to integrate transit vehicles, separated bicycle lanes, pedestrians, and motorists on the local road system, specifically as this relates to the potential risks associated with right-turn movements or other potential conflict points between modes.
- Address conflicts at I-5 SB off-ramp (NE Wheeler/N Williams/N Ramsay); the intersection design considers protected signal phases for bicyclists and pedestrians and extending sidewalk corners to provide shorter crosswalks.

- The following documents provide example best practices for transportation facility design for this Project.
  - Portland Protected Bicycle Lane Planning and Design Guide (see <https://www.portland.gov/sites/default/files/2022/portland-protected-bicycle-lane-design-guide-v2021-050521-small.pdf>)
  - NACTO Urban Bikeway Design Guide (see <https://nacto.org/publication/urban-bikeway-design-guide/>)
  - AASHTO Guidance (see [https://safety.fhwa.dot.gov/roadway\\_dept/countermeasures/reduce\\_crash\\_severity/aashto\\_guidancecfm.cfm](https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/aashto_guidancecfm.cfm))
  - Portland Pedestrian Design Guide (see <https://www.portland.gov/sites/default/files/2022/PBOT%20Pedestrian%20Design%20Guide%202022.pdf>)
  - Portland Traffic Design Manual (see <https://www.portland.gov/sites/default/files/2022/pbot-traffic-design-manual-june-2021-update-website-document.pdf>)

ODOT would require the construction contractor to develop construction and traffic management plans that would be approved by the City of Portland and include best practices for work zone safety to reduce risk to construction workers and the traveling public.

#### **3.13.2.4** Traffic Operations

##### *No-Build Alternative*

Future traffic conditions under the No-Build Alternative are anticipated to continue to deteriorate through 2045, resulting in increased congestion. Under the No-Build Alternative, the growing traffic demand on I-5 creates more severely congested travel conditions, heavier weaving density, and potentially worse peak spreading. Subsequently, there are multiple intersections in the 2045 No-Build Alternative that would operate at LOS E or F during the AM and PM peak hours. This congestion would extend beyond the Project Area. The No-Build Alternative would also result in less overall travel time reliability, longer travel times, traffic diversion to other routes, and potential shifts to other modes compared to existing conditions. I-5 NB connects with five on- and off-ramps, and I-5 SB connects with six on- and off-ramps within the API, resulting in slow traffic and increased potential for crashes. See Appendix A, *Traffic Supplemental Technical Report* for details on intersection level of service under the No-Build Alternative.

---

### *Revised Build Alternative*

Construction of the Revised Build Alternative would have short-term impacts on highway traffic, local street motor vehicle traffic, cyclists, pedestrians, transit, and event access. Highway lane closures would be likely on I-5 during removal and construction of the overcrossing structures and retaining walls, including potential late-night and weekend closure of all directional lanes.

Temporary local street closures or turn restrictions would be implemented as necessary. Street closures would be minimized to the extent possible and managed through extensive outreach, traffic management strategies, and coordination with the City of Portland. Temporary pedestrian accommodations would be ADA-compliant.

Event access would be maintained during construction, and ODOT would coordinate closely with the Moda Center, City of Portland, and Oregon Convention Center to avoid traffic disruptions to major events, to the extent practicable.

The Revised Build Alternative would improve traffic operations on I-5 in both the AM and PM analysis periods when compared to No-Build Alternative. However, due to the overall increase in 2045 traffic volumes, I-5 NB weave segment between the I-84 on-ramp and NE Weidler off-ramp, the I-5 NB weave segment between the Broadway on-ramp and the I-405 off-ramp, and the I-5 SB weave segment between the NE Weidler on-ramp and I-84 off-ramp are expected to worsen in both the AM and PM peak hours.

All local street intersections would operate at acceptable LOS or better (LOS D or better) with the exception of N Broadway and N Victoria in the AM peak hour (8:00 to 9:00 AM).

The Revised Build Alternative would have long-term indirect impacts on pre-event traffic operations at the Moda Center. The relocation of the I-5 SB off-ramp to N Broadway to the proposed N Williams/N Wheeler/N Ramsay intersection would necessitate a change in pre-event motor vehicle circulation patterns. Potential traffic operations mitigation including wayfinding signage to guide traffic from the proposed N Williams/N Wheeler/N Ramsay SB off-ramp to access the Moda Center would be necessary. Traffic signal adjustments and traffic management may be required to accommodate the additional traffic volumes during both event ingress and egress conditions.

For additional information on impacts to traffic operations, see the *Traffic Supplemental Technical Report* in Appendix A.

### Induced and Latent Demand

Induced demand occurs when a road project results in increased use of the transportation network due to unplanned changes to land use. Latent demand occurs when a lower perceived "cost" of driving (in time/convenience or money) results in people choosing to drive more often, drive farther, or choose driving over another

---

mode, like walking/rolling, biking, carpooling, or public transit. Induced demand and latent demand can lead to an increase of vehicles miles traveled and potential increase in vehicle emissions.

As noted in Section 3.8.2.2, the Revised Build Alternative would not affect land use in ways that are contrary to planned land use and would not have growth-inducing impacts that are contrary to planned land use. Modeling to assess potential for latent demand that could result from the Revised Build Alternative indicated an estimated 14 percent increase in vehicle miles traveled on I-5 within the API in 2045 compared to the No-Build Alternative. This increase is attributed to improved local traffic flow on auxiliary lanes between on- and off-ramps. Outside of the API, model results does not indicate a substantial difference in traffic volumes between the No-Build and Revised Build Alternatives in 2045, demonstrating the project would not result in latent demand. Additional detail about the model and the results can be found in the *Traffic Supplemental Technical Report* in Appendix A.

#### *Avoidance, Minimization, and Mitigation Measures*

The following strategies would be implemented by ODOT, as appropriate, to avoid, minimize, and/or mitigate short-term construction impacts to highway drivers and local street road users in all the modes of travel:

- Require the construction contractor to develop, in consultation with the City of Portland, a comprehensive transportation management plan that documents construction staging and schedule, alternate routes for all modes of travel during road closure, and lane closure restrictions, as well as transportation management and operation strategies (TMOS). Specific TMOS elements may include public information and outreach to encourage changes in travel behavior, provision of real-time information to road users with Intelligent Transportation System technology, and incident/emergency management to detect and remove incidents and restore traffic quickly.
- Maintain event access during construction with enhanced TMOS strategies before and after events. ODOT would coordinate with the Moda Center, City of Portland, and Oregon Convention Center to avoid traffic disruptions during major events, to the extent practicable.

Specific strategies, including advertising campaigns and funding sources to support TMOS, would be further refined during final Project design.

As noted in Section 2.1.4, ODOT would continue to refine the design with input from the City as it relates to local circulation; signal timing at the relocated I-5 SB off-ramp location; and Rose Quarter event access and traffic management. ODOT would coordinate with the Rip City Management and the City to develop appropriate ingress and egress routes and traffic management plans for Moda Center pre- and post-event conditions.

ODOT and the City of Portland would evaluate the local intersection configuration and signal timing during the final design phase to determine the most appropriate configuration and timing to address City modal priorities as well as maintaining safe operations on the I-5 ramps.

### 3.13.2.5 Transportation Access

#### *No-Build Alternative*

The No-Build Alternative would not result in construction that could cause temporary disruption to transportation and transit access.

Future traffic conditions under the No-Build Alternative would continue to deteriorate through 2045, resulting in less accessible transportation facilities within the API. Increased congestion would perpetuate access issues on I-5, and the Broadway/Weidler interchange in this area would contribute to congestion and safety issues (for all modes) at the interchange ramps.

#### *Revised Build Alternative*

Construction of the Project would have short-term impacts to highway traffic, local street motor vehicle traffic, cyclists, pedestrians, transit, and business and event access, occurring in phases for up to 4 to 8 years. A detailed transportation management plan would be prepared prior to construction that would describe the construction sequence and strategies for maintaining through travel and local access for all modes of transportation.

Implementation of the Revised Build Alternative is not anticipated to require driveway modifications or relocations. Table 3-13 summarizes the modifications and closures that could occur to driveways and intersections from the Revised Build Alternative. Where closures would occur, additional access to the property is available.

Table 3-13. Total Accesses to be Modified and/or Closed

Status	Driveways	Intersections
No Change	77	26
Modified	5	11
Closed	13	0
Total	95	37

There would be no long-term indirect impacts to transportation access with the Revised Build Alternative. For additional information on impacts to transportation access, see the *Transportation Access Technical Report* (ODOT 2019b) and the *Transportation Access Technical Memorandum* in Appendix A.

### *Avoidance, Minimization, and Mitigation Measures*

ODOT would work closely with businesses in the Project Area to implement strategies to limit disruption to business access. Temporary signage would be used as needed, and access to businesses during construction would be maintained to the degree possible.

Event access would be maintained during construction and could require an increased level of active traffic management before and after events. ODOT would coordinate closely with the Moda Center, City of Portland, and Oregon Convention Center to coordinate major traffic disruptions to avoid major events, to the extent practicable.

## 3.14 Utilities

### 3.14.1 Existing Conditions

The API for utilities is the same as the Project Area shown in Figure 1-1. Utilities in the API generally occupy existing ODOT and City of Portland roadway ROW. Utility locations vary within the ROW and may occur under the pavement or above ground, where they do not impede vehicular, pedestrian, or transit traffic. The types of utilities in the API and the corresponding service providers are shown in Table 3-14. Major utilities in the API that could be affected by construction of the Revised Build Alternative are listed in Table 3-15.

Table 3-14. Utility Types and Service Providers in the API

Utility Type	Service Provider
Natural gas pipelines	NW Natural
Electric transmission and distribution lines	PacifiCorp (Pacific Power) Portland General Electric
Potable water distribution mains and service lines	Portland Water Bureau
Stormwater and sanitary sewer lines	Portland Bureau of Environmental Services

Notes: API = Area of Potential Impact

Table 3-15. Major Utilities in the API

Utility Owner	Facility Size
CenturyLink Local Underground Ductbank	4-inch-diameter
PacifiCorp Aerial Power Transmission	69 kV to 115 kV
Portland General Electric Aerial Power Transmission	57 kV to 115 kV
PacifiCorp Multiple Parallel Distribution Lines	less than 13 kV
Portland Bureau of Environmental Services Sewer Lines	72-inch- to 264-inch-diameter
Portland Bureau of Environmental Services Sanitary Pump Station and Piping	Building 72-inch-diameter inflow 48-inch-diameter pressure mains 70-inch-diameter bypass
Portland Bureau of Environmental Services Sewer Lines	24-inch- to 62-inch-diameter

Notes: API = Area of Potential Impact; kV = kilovolt

### 3.14.2 Environmental Consequences

Relocation of utilities within a transportation ROW may be eligible for reimbursement of the cost of that relocation, depending on which ROW they are located, when they were located in that ROW, and whether the utility holds an easement for the location. For the purposes of this SEA, relocation of these utilities is assumed to be compensable until further investigation can be performed during later design phases.

#### 3.14.2.1 No-Build Alternative

No planned utility relocation projects within the Project Area under the No-Build Alternative have been identified. Under the No-Build Alternative, it is assumed that existing utilities for projects listed on the Metro RTP financially constrained project list would be relocated during construction of those projects.

#### 3.14.2.2 Revised Build Alternative

Under the Revised Build Alternative, both above- and below-ground impacts are assumed to occur for every utility within the API until the Project design is sufficiently developed to show where avoidance or protection of existing utilities is feasible. The Revised Build Alternative API includes areas added to accommodate overhead utility relocations and fiber optic conduit, as compared to the 2019 Build Alternative API. The effects on these utilities services do not change the overall analysis of utilities



impacts or mitigation approach from what was discussed in the 2019 EA. Utility relocation prior to and during construction could result in temporary interruptions of service. Potential disruptions are expected to be minimal for most of the utilities, with utility providers scheduling outages with customers to accommodate the planned disruption in service. Temporary connections would likely be established before relocating minor utility conveyances. The magnitude and duration of direct impacts on utilities (both short-term construction impacts and long-term operational impacts) would vary by the type of utility and are summarized in Table 3-16. The Revised Build Alternative could have an indirect impact on utility providers by affecting their long-range plans and locations for installing new or expanding existing utilities within the API. With mitigation, the impacts of the Revised Build Alternative would be similar in context and severity to other complex highway improvement projects in urban areas.

Table 3-16. Summary of Utility Impacts for the Revised Build Alternative

Utility Owner	Impact Level Prior to Mitigation	Explanation of Impact
<i>COMMUNICATIONS AND POWER</i>		
CenturyLink Local	Substantial	Impacts to the underground ductbank, a major utility, are assumed to be unavoidable due to the removal of the Broadway overcrossing structures and construction of the highway cover.
CenturyLink National	Less than Substantial	No major utilities. Anticipated impacts are primarily to overhead infrastructure. It may be feasible to avoid or minimize impacts to underground infrastructure.
Comcast Cable	Less than Substantial	No major utilities. It may be feasible to avoid or minimize impacts to underground infrastructure.
Level 3 Communications	Less than Substantial	No major utilities. Relocations should be manageable.
PacifiCorp	Substantial	<p>Impacts to the 69 -115 kV aerial power transmissions, a major utility on N Williams and NE Hancock, is assumed to be unavoidable due to the new bridge overcrossing at NE Hancock.</p> <p>Impacts to the 69-115 kV aerial power transmissions, a major utility on NE 1st, is assumed to be unavoidable for the western side poles for highway improvements.</p> <p>Impacts to the 69-115 kV aerial power transmissions, a major utility on NE Russell and N Albina, is assumed to be unavoidable due to impacting poles with highway improvements.</p> <p>Impacts to the multiple parallel distribution lines, a major utility, is assumed to be unavoidable due to the removal of the Broadway overcrossing structures and construction of the highway cover.</p> <p>Impact to other roadway segments with multiple parallel distribution lines could also occur.</p>

Utility Owner	Impact Level Prior to Mitigation	Explanation of Impact
Portland General Electric	Substantial Impact	Impact to the 57 kV aerial power transmission, a major utility on N Williams and NE Hancock, is assumed to be unavoidable due to the removal of the Broadway overcrossing structures and construction of the highway cover.
Verizon National Fiber Security	Potential for Substantial	No major utilities; however, facilities are located within the Union Pacific Railroad ROW and have a high amount of communication traffic.
Unresponsive Utilities (AT&T, Zayo, and XO Communications)	Potential for Substantial	Unknown infrastructure; no determination of magnitude or duration of potential impacts.
<i>PIPING</i>		
NW Natural	Less than Substantial	The Revised Build Alternative would not result in any long-term and operational direct impacts to this utility infrastructure.
Portland Bureau of Environmental Services	Substantial	<p>The piping external to the pump station at I-84 could be impacted by interchange ramp construction. Pump station may not allow for disruptions in service.</p> <p>The 96-inch sewer at the I-84 interchange could be impacted by the I-5 improvements and the interchange ramp and off-ramp construction.</p> <p>The 72-inch CSO and 38-inch sewer on NE Lloyd Boulevard could be impacted by I-84 interchange ramp and NE 1st off-ramp construction.</p> <p>The 56-inch sewer crossing I-5 at the planned NE Hancock overcrossing structure could be impacted by the new bridge foundation.</p> <p>The 54-inch sewer on NE Holladay could be impacted by bridge construction.</p> <p>The 36-inch CSO and 30-inch CSO on N Mississippi and along the former N Mississippi alignment could be impacted by I-5/I-405 interchange area stormwater treatment or conveyance.</p> <p>The 24-inch sewer on NE 1st at NE Weidler could be impacted by new traffic signals.</p> <p>Additional impacts to minor utilities within the API are assumed to occur.</p>
Portland Water Bureau	Potential for Substantial	No major utilities, but the N Williams and NE Weidler bridge overcrossings together create a looped system for the infrastructure on both sides of I-5. Only one of the two waterlines can be out of service at a time. Standard fire flow cannot be met if both of these water main crossings are out of service at the same time. Most of the water infrastructure is reimbursable, and impacts would increase the Project cost.

Notes: API = Area of Potential Impact; CSO = Combined Sewer Overflow; I = Interstate; kV = kilovolt; N = North; NE = Northeast; ROW = right of way; UPRR = Union Pacific Railroad

The estimates for cost of utility relocations are currently approximately \$35 million for reimbursable facilities and \$19 million for non-reimbursable facilities. The Revised Build Alternative would incorporate the avoidance, minimization, and mitigation

---

recommendations identified in Section 3.14.2.3 to address identified potential impacts. Assuming these recommendations are implemented, the Revised Build Alternative would not be expected to result in major impacts to utilities. Further investigation of utilities and confirmation of anticipated impacts would occur in the final design phases of the Revised Build Alternative development process. ODOT would work with the utility owners to develop plans and incorporate design and engineering controls to either protect or relocate utility facilities within the Project Area. Additional information on the potential impacts to utilities in the API from the Revised Build Alternative is presented in the *Utilities Technical Report* (ODOT 2019b).

### **3.14.2.3** Avoidance, Minimization, and Mitigation Measures

Proactively addressing special constraints and design considerations to avoid or minimize impacts to major utilities would occur during final design. In particular, impacts to the City of Portland Bureau of Environmental Services (BES) 264-inch sewer, sanitary pump station, and pump station piping would need to be minimized or avoided. Additionally, direct impact to the BES 56-inch sewer line that crosses I-5 at N Hancock would be avoided or minimized. Although a cost has been included for impacts to these BES facilities, relocation of these utilities would not be a viable option. ODOT standard process in these instances is to prepare a "Design Acceptance Package" report in the initial stages of design for Project-critical success factors. Obtaining vertical and horizontal limits of these key underground utilities would occur in subsequent phases of the design process for the Revised Build Alternative, and recommended actions to minimize utility conflicts would be included as part of the design acceptance package.

Proper coordination and the use of standard construction procedures and techniques would minimize disturbance to system users and avoid damage or impacts to existing facilities that are deemed, during final design, to not require relocation or upgrades. Typically, new facilities such as poles or ducts are installed, and then service is switched over to the new facilities, thereby minimizing any disruption of service to the utility users.

Utility coordination would occur in accordance with the ODOT *Right of Way Manual*, Chapter 11 (ODOT 2018a) and is expected to occur early enough in the development of the Revised Build Alternative to allow new or relocated utilities to be brought on-line prior to any major disruptions from the Revised Build Alternative. Compliance with ODOT guidance should minimize or avoid disruption in service to the utility providers or users. Relocation plans would be prepared and service disruptions approved by affected utility providers before construction begins. Coordination would occur with utility owners to ensure that contingency plans for management of potential utility service disruptions during construction are accommodated.

---

## 3.15 Water Resources

### 3.15.1 Existing Conditions

The Willamette River, located in the western portion of the Project Area (which is the API for water resources), is the primary water resource. According to the Oregon Department of Environmental Quality (DEQ), the Willamette River is listed as an impaired waterbody under Section 303(d) of the Clean Water Act.<sup>29</sup> Stormwater directly discharged into the Willamette River or into a storm sewer that discharges to the Willamette River must be treated to not exceed total maximum daily loads for the following constituents: bacteria, DDT, dieldrin, dissolved oxygen, mercury, temperature, and turbidity (DEQ 2006). The City and ODOT each hold a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Permit issued by DEQ to manage their respective storm sewer systems.

Stormwater runoff from ODOT ROW in the API is collected and conveyed in stormwater-only systems to four outfall locations on the Willamette River. The conveyance systems are located within the highway alignments and do not connect to the City's combined stormwater-sanitary system. Stormwater runoff from the City ROW drains to both stormwater-only and combined stormwater-sanitary systems. Flows from the combined stormwater-sanitary system are conveyed via a large-diameter north-south conduit to the Columbia Boulevard Wastewater Treatment Facility.

Water quality treatment is currently provided for less than an acre of the 50-acre API using a combination of biofiltration swales<sup>30</sup> and City-owned "Green Street" water quality facilities. Most stormwater runoff from the ODOT and City ROW in the API is discharged to the Willamette River without water quality treatment.

Although Oregon Water Resources Department databases show more than 3,000 wells located within the two 1-square-mile sections that contain the API (Township 1 North Range 1 East, Sections 27 and 34), only 3 percent of wells are water wells (the others are monitoring or geotechnical test wells). The reported depth to groundwater at 1,009 of these wells ranges between 1 and 163 feet below ground surface, with a mean depth to groundwater of 21 feet (OWRD 2017).

Small portions of the API in the southern portion of the Project Area are located within the Federal Emergency Management Agency (FEMA) 100-year floodplain of the

---

<sup>29</sup> Section 303(d) of the 1972 Clean Water Act (33 U.S.C. 1251 et seq.) requires states to identify waters where current pollution control technologies alone cannot meet the water quality standards set for that waterbody. Every 2 years, states are required to submit a list of impaired waters, plus any that may soon become impaired, to the U.S. Environmental Protection Agency for approval. The impaired waters are prioritized based on the severity of the pollution and the designated use of the waterbody (e.g., fish propagation or human recreation). States must establish the total maximum daily load(s) of the pollutant(s) in the waterbody for impaired waters on their list.

<sup>30</sup> A biofiltration swale is a sloped channel that uses vegetation (typically grass) to capture and biologically degrade pollutants carried by stormwater runoff.

---

Willamette River. A small portion of the API may be located in the FEMA floodway. For additional details, see the *Water Resources Technical Report* (ODOT 2019b).

## 3.15.2 Environmental Consequences

### 3.15.2.1 No-Build Alternative

Under the No-Build Alternative, stormwater runoff from more than 40 acres of impervious area from ODOT and City ROW within the API would continue to be discharged to the Willamette River without water quality treatment. Almost all development within the API on the ODOT ROW predates current water quality requirements; therefore, existing water quality infrastructure is limited.

### 3.15.2.2 Revised Build Alternative

During the construction phase, vegetation removal, soil compaction from heavy equipment, excavation, and use of staging areas could temporarily increase sediment loads in stormwater runoff, which, if uncontrolled, could have adverse impacts on water quality in receiving waters. Impacts to groundwater and floodplains during construction are not anticipated due to implementation of standard best management and erosion control practices.

The construction of auxiliary lanes and full shoulders between I-84 and I-405, ramp modifications, and full pavement reconstruction of I-5 from the Fremont Bridge to the I-84 overcrossing would result in a net increase in impervious area within the ODOT ROW of approximately 6.69 acres and a total contributing impervious area of approximately 22 acres. Surface street improvements, including new overcrossing structures and roadway, bike, and pedestrian improvements, would result in a net increase in impervious area within the City ROW of approximately 5.3 acres and a total contributing impervious area of 16 acres.

Water quality treatment facilities to manage stormwater runoff from the ODOT ROW would be developed at three locations: N Mississippi Avenue, north of N Mississippi under the highway, and the NE Weidler on-ramp. Due to site constraints, the facilities at N Mississippi and north of N Mississippi under the highway would be designed to treat stormwater runoff from impervious areas both within and outside the Revised Build Alternative's contributing impervious area that is currently untreated. This treatment approach would improve water quality to the required degree from the ODOT ROW prior to discharge to the Willamette River and would treat approximately 57 percent of the contributing impervious area from ODOT ROW within the API. However, the three treatment facilities would be treating 22 acres of area outside of the API, which would make the total ODOT area treated 157 percent of the ODOT contributing impervious area. If available, ODOT could also acquire credits at an ODOT regional water quality facility under development within the larger basin area to

---

meet the Revised Build Alternative's remaining unmet stormwater management requirements.

Water quality treatment for stormwater runoff from City ROW would be accomplished with additional stormwater planters located between the curb and sidewalk along N Center Court Street and N Williams.

Groundwater impacts are not expected to result from long-term operation of the Revised Build Alternative. Water quality facility design per the ODOT *Hydraulics Design Manual* (ODOT 2014) and the City's *Stormwater Management Manual* (City of Portland 2016b) incorporates a minimum distance from groundwater to protect groundwater quality and ensure functionality of the facility. Additionally, water quality facilities could be designed with an impermeable membrane to protect groundwater quality.

Floodplain impacts are also not expected to result from long-term and operational activities associated with stormwater management for the Revised Build Alternative. Stormwater facilities built within the floodplain are expected to result in a net removal of material; however, this action would not result in impacts to the floodplain. The Revised Build Alternative would not result in any long-term indirect impacts to the Willamette River, groundwater, or floodplains in the API.

### **3.15.2.3** Avoidance, Minimization, and Mitigation Measures

Potential impacts to water quality during construction would be avoided by requiring contractors to follow standard best management and erosion control practices in the ODOT *Erosion Control Manual* (2019a), ODOT *Standard Specifications* (2021), ODOT *Boilerplate Special Provisions* (2018b), and City of Portland stormwater requirements.

## 3.16 Cumulative Impacts

Cumulative impacts could result from the incremental effect of the Revised Build Alternative when added to other past, present, and reasonably foreseeable future actions (RFFAs), regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The geographic area used for the cumulative impact analysis is the same as the API described for each resource topic in this SEA. The time frame for the cumulative impact analysis extends from the beginning of large-scale urban development in and around the Project Area in the late 1950s/early 1960s, beginning with I-5 construction, to 2045, the horizon year for the analysis of transportation system changes.

The RFFAs that were considered in assessing cumulative effects from the Revised Build Alternative are described in Appendix B.

---

### 3.16.1 Air Quality

Air quality impact analysis presented in Section 3.2.2 is inherently cumulative, because it considers changes in highway and local traffic volumes based on Metro's regional travel demand model, and on analysis tools that rely on the regional model data projected to the year 2045. The combined influence of the Revised Build Alternative, transportation-related forecasts, and potential redevelopment and infrastructure improvement projects summarized in Appendix B would result in emission increases during construction. However, additive impacts on emissions would not occur under operational conditions. The Revised Build Alternative is not expected to contribute to cumulative effects on air quality beyond construction effects, which would be addressed by requiring contractors to implement a variety of measures to minimize emissions from construction equipment and control fugitive dust.

### 3.16.2 Climate Change

Contributions of GHGs from transportation sources are currently a major component of statewide emissions and will remain so with or without implementation of the Revised Build Alternative. Federal, state, and local strategies are expected to reduce transportation sector GHG emissions through fuel economy standards, inspection and maintenance programs, and transition to cleaner, low-carbon fuels for motor vehicles. Therefore, decreases in predicted GHG emissions from existing conditions to future conditions (2045) for both the No-Build and the Revised Build Alternatives are expected as result of these regulatory efforts. Although estimated 2045 emissions under the Revised Build Alternative would be 1 percent greater than the No-Build Alternative, this is not considered to be a substantial countervailing influence to forecasted decreases in predicted GHG emissions.

### 3.16.3 Archaeological Resources

The combined effect of the Revised Build Alternative and RFFAs could result in an increase in the identification of buried archaeological resources. Over time, this could result in an incremental impact as these resources are discovered and potentially removed as a result of land-use and development-related actions, which could also result in the identification of buried archaeological resources. It is expected that soil-disturbing activities associated with the proposed action and RFFAs described in Appendix B would be mitigated through measures such as an Inadvertent Discovery Plan. Because lands within the API have been previously disturbed, there is a low probability for encountering intact archaeological resources, and there are currently no previously documented archaeological resources within the API; therefore, the Revised Build Alternative's contribution to overall cumulative impacts is not expected to be substantial.

---

### 3.16.4 Historic Resources

Throughout the twentieth century, increased urbanization has affected the types and distribution of historic resources in the API. Historic properties identified in the API exist in an environment that has experienced substantial changes as a result of urbanization, but are nonetheless individually eligible for the NRHP. The combined effect of the Revised Build Alternative and RFFAs could modify the overall setting of historic resources in the immediate vicinity of the Project; however, additive impacts would not diminish the integrity of historic properties so that they would be adversely impacted. The visual setting of historic properties would not be adversely impacted by the Revised Build Alternative, and therefore, the Project would not contribute to cumulative impacts when considered in conjunction with the RFFAs. Given the changes to the urban environment and the measures taken in implementing the vibration monitoring measures in the PA, the Revised Build Alternative's anticipated contribution to cumulative impacts to historic properties would be negligible.

### 3.16.5 Section 4(f)

As described for historic resources in Section 3.16.4, increased urbanization has affected the types and distribution of Section 4(f) resources in the API. Past transportation projects in the API have occurred without consideration of Section 4(f) resources—primarily historic buildings. For example, the U.S. Department of Transportation Act (49 U.S.C. 303[c]), which includes Section 4(f) guidelines, was not adopted by the U.S. Congress until 1966, after the segment of I-5 in the API was completed and many homes were displaced. Because only qualifying properties affected by federal transportation agency-funded projects are subject to Section 4(f), RFFAs pertaining to non-transportation-related redevelopment and infrastructure improvement would not consider the protective provisions provided by this statute, and impacts could be additive. The Revised Build Alternative's contribution to cumulative Section 4(f) impacts in the API would be minimal.

### 3.16.6 Hazardous Materials

The Sites of Concern identified in the hazardous materials API have resulted from many years of past actions. The Revised Build Alternative and RFFAs identified in Appendix B are not expected to contribute hazardous materials to the environment. If contaminated media are uncovered as a result of construction of the Revised Build Alternative or other RFFAs, there would be an incremental improvement in environmental quality when the contamination is addressed according to current applicable regulatory standards. Consequently, the cumulative effects of the Revised Build Alternative would be beneficial as a result of increased removal or remediation of existing hazardous materials.



---

### 3.16.7 Land Use

All future transportation improvements in the API must be included in the City of Portland TSP, and all future land development must comply with the City's zoning code, which implements the comprehensive plan, including the provisions of the *Adopted Central City 2035 Plan* (2018). ODOT considered planned and programmed projects, including private development, in the API and surrounding areas that are likely to be implemented by 2045 to be reasonably foreseeable. In addition, the forecast of the performance and operation of the highway and local transportation system is based on Metro's regional travel demand model, and on analysis tools that rely on the regional model data projected to the year 2045. Traffic modeling for the SEA reflect the City of Portland TSP, and reflect refinements proposed under the Revised Build Alternative. The travel demand model for the API is built on population and employment growth forecasts adopted by the Metro Council, and the financially constrained project list included in the RTP. Therefore, the preliminary components of the Revised Build Alternative are consistent with the City of Portland TSP (project 20204.0) and consider the *Adopted Central City 2035 Plan*. Therefore, the Revised Build Alternative is consistent with current zoning for most of the expanded cover area. The proposal for creation of 4 acres of new buildable space associated with the single highway cover, including supporting buildings of up to six stories and new connectivity of surface streets, was not a part of the Project when the City of Portland adopted the TSP and *Central City 2035 Plan*. However, these aspects of the Revised Build Alternative would allow for the neighborhoods to connect across I-5, resulting in beneficial cumulative impacts through improved safety on I-5, while supporting high-density, mixed-use development with safer and greater pedestrian and bicycle connectivity and remaining consistent with the Central City 2035 Plan. ODOT would continue coordinating with City of Portland during final design, and any future development would be subject to City of Portland zoning requirements. See the *Land Use Technical Report* (ODOT 2019b) for further detail on compatibility with City plans and ordinances.

There are no other known or reasonably foreseeable projects that create new buildable area in the area. Therefore, no significant cumulative effects are anticipated.

### 3.16.8 Noise

Changes in the distribution of vehicle trips in the API would occur in conjunction with incremental annual traffic volume growth over time that would occur with or without the Revised Build Alternative. Changes in localized vehicle noise from the Revised Build Alternative and other RFFAs described in Appendix B would occur in the context of the broader noise levels associated with the built environment and would be cumulative relative to other changes that may occur. Because the Revised Build Alternative would contribute a relatively small amount of additional noise to existing and predicted noise levels in the API, the contribution of the Project to cumulative noise impacts would be negligible.

---

### 3.16.9 Right of Way

Past and present actions have resulted in the current land use designations, parcel boundaries, and ROW designations in the API. The RFFAs described in Appendix B are not expected to change existing ROW conditions in the API. Although the Revised Build Alternative would result in changes in ROW in the Rose Quarter area of the API, it would not substantially contribute to the cumulative effects to ROW.

### 3.16.10 Socioeconomics

Past actions have resulted in the development of neighborhoods, urban infrastructure, community facilities, public services, and the business and economic environment that exists in the API and surroundings. The development of I-5, along with I-84 and the roadway system in Portland, enhanced access and mobility throughout the region. However, I-5 also introduced a substantial east-west barrier through the neighborhoods adjacent to the facility; in particular, the Lower Albina and Lloyd districts, where residents have a long history of experiencing adverse effects from major public infrastructure projects.

Reasonably foreseeable future actions are likely to sustain and enhance the urban development in the API through redevelopment that would update infrastructure and commercial developments. Reasonably foreseeable future actions are also likely to contribute to patterns of growth and development that have and would continue to result in changes to the regional and local economies, including property value increases and neighborhood transitions.

Pressures in the API, surrounding areas, and throughout the region affecting housing affordability and community-scale business would likely continue to be influenced by broad regional economic trends. The Revised Build Alternative would improve connectivity across I-5 and reduce congestion and improve safety on I-5 but would not meaningfully alter the cumulative socio-economic effects of past and present. The Revised Build Alternative would have beneficial socio-economic cumulative effects when considered with RFFAs. Overall, improvements in safety and reductions in congestion and delays on I-5 would have a direct and indirect beneficial effect on the regional economy by contributing to the movement of goods and people, both throughout the region and the West Coast, directly and indirectly contributing to the overall economic well-being of the Portland region.

### 3.16.11 Environmental Justice

As discussed in the *Environmental Justice Technical Report* (ODOT 2019b), the past actions that have affected EJ communities and are considered in the cumulative effects analysis included neighborhood and community development, such as development of parks, trails, and the local transportation system; commercial and residential development, including the Veterans Memorial Coliseum, Lloyd Center, Emanuel

---

Hospital, Oregon Convention Center, and Rose Garden; and regional transportation projects, including freight lines; I-84, I-5, I-405, Portland Streetcar, and light rail. Present actions consist of ongoing transportation improvements and maintenance. RFFAs were identified collaboratively with the City of Portland and consist of redevelopment of existing urban areas in the API, permitted public and private construction projects, any project in the permit application process, and ongoing maintenance and development of existing urban infrastructure in the API and vicinity. These actions include private redevelopment, public development, and infrastructure projects, as well as combined public/private redevelopments. As stated in Section 3.16.7, given the highly developed nature of the API and vicinity, the RFFAs are not expected to substantially change the types or intensities of existing land uses.

The API has a long history of major public infrastructure projects that displaced Black and low-income residents. Starting in the late 1940s, the sequence of public infrastructure projects gradually displaced nearly all the residents of Lower Albina from I-5 west. Property acquisition in 1971 and 1972 for the expansion of Emanuel Hospital (now Legacy Emanuel Medical Center) immediately north of the API removed 188 properties, mostly residences. In all, public infrastructure projects displaced more than 900 dwelling units in and near the API from the 1940s to the 1970s: mostly single-family homes. These projects indirectly led to the displacement of an undetermined number of additional residences. For example, the Veterans Memorial Coliseum created market demand for nearby commercial uses, which led to the development of a motel on the strip of land. Similarly, the construction of the Fremont Bridge and its interchange with I-5 made the environment inhospitable to the remaining residential uses and attractive for industrial uses.

The Revised Build Alternative was conceived and developed with consideration of the detrimental effects of past public infrastructure projects on Black residents in the API. The Revised Build Alternative would provide substantial long-term benefits to EJ populations in the API, including enhanced east-west connectivity across I-5, new and enhanced transit, pedestrian and bicycle facilities, improved safety benefits for all transportation modes, and improved traffic operations and safety on I-5 and local surface streets. The displacement effects of the Revised Build Alternative would be limited to five commercial retail or service-related businesses and would not include homes or apartments.

The Revised Build Alternative is consistent with planned land use and would support growth consistent with adopted plans and policies and would therefore not have a long-term adverse effect on population, demographics, housing or income beyond what is already planned for in the API (see the *Land Use Technical Report* [ODOT 2019b] for additional information on the Revised Build Alternative's consistency with adopted plans and policies). The proposed concept for the Revised Build Alternative is consistent with City of Portland's Central City 2035 N/NE Quadrant Plan (City of Portland et al. 2012). The N/NE Quadrant Plan sets the vision for future land use, urban design, transportation, public infrastructure, and development entitlements in the

---

Lloyd and Lower Albina subdistricts of the Central City. As stated in the plan, “The goals, policies and actions included in the N/NE Quadrant Plan are in many ways intended to help repair a neighborhood that has been done significant harm by large public projects of the past.” Neighborhood connectivity, housing production, and preservation of historic and cultural resources are key areas in which the plan attempts to correct damage done in the past. Policies are included that attempt to discourage displacement, while allowing for significant new development, including the Revised Build Alternative. This approach is intended to accommodate substantial new development with access to transit, jobs, and other Central City amenities, with very limited displacement (City of Portland et al. 2012).

As discussed throughout this cumulative impact analysis, the Revised Build Alternative is not expected to substantially contribute to cumulative effects and would have beneficial socio-economic cumulative effects. Overall, the Revised Build Alternative would not contribute to displacement of minority or low-income residents. When combined with other RFFAs described in Section 3.16, the Revised Build Alternative would have a net beneficial effect on EJ populations by improving access, mobility, safety, and neighborhood connectivity within the API.

### 3.16.12 Transportation

#### *Transit*

Long construction periods (coupled with circuitous bus detour routes) could temporarily suppress transit ridership due to passenger inconvenience. Although transit operations (e.g., travel times) would generally trend with motor vehicle impacts, opportunities could arise to implement Enhanced Transit Corridors Plan recommendations on API corridors in tandem with the Revised Build Alternative. This could result in improved operations, which could, in turn, grow ridership due to transit’s increased attractiveness.

#### *Active Transportation*

Cumulative active transportation impacts of past and future actions, combined with the Revised Build Alternative, include more even distribution of active transportation corridors due to establishment of new active transportation corridors outside of the API, particularly those designated as Major City Bikeways and City Walkways, and enhance the overall attractiveness of walking and biking due to additional connections, increased coverage of lower-stress bikeways, improved sidewalk and pedestrian crossings, and reduced complexity of intersections.

#### *Safety, Traffic Operations, Access*

The evaluation of the transportation impacts of the Revised Build Alternative is largely cumulative in nature. The forecast of the performance and operation of the transportation system is based on Metro’s regional travel demand model and on

---

analysis tools that rely on the regional model data. The travel demand model is built on population and employment growth forecasts adopted by the Metro Council, and the financially constrained project list included in the RTP (Metro 2018). These growth forecasts and planned transportation projects incorporate the reasonably foreseeable future growth and major actions that would potentially impact transportation operations in the API.

### 3.16.13 Utilities

The API is a highly developed area with many past projects that have caused utility disruptions or utility relocations. RFFAs could cause disruptions to utility services, but these are expected to be minimal, with utility providers scheduling outages when they are required. Potential interruptions of service for major utility infrastructure would be more disruptive, and temporary connections more difficult and costly to establish. The estimates for cost of utility relocations are currently approximately \$35 million for reimbursable facilities, and \$19 million for non-reimbursable facilities. Further investigation of utilities and confirmation of anticipated impacts would occur in the final design phases of the Revised Build Alternative development process. ODOT would work with the utility owners to develop plans and incorporate design and engineering controls to either protect or relocate utility facilities in the Project Area. The contribution of the Revised Build Alternative to cumulative impacts would be minimized through avoidance and mitigation measures, as described in Section 3.14.2.3.

### 3.16.14 Water Resources

Historically, water quality has been negatively affected as urban development replaced pervious surfaces with impervious surfaces. Impervious surfaces create increased amounts of stormwater runoff during rainfall events, creating conditions that erode natural channels and prevent groundwater recharge. The introduction of the Clean Water Act of 1972 led to the creation of the NPDES. Requirements of NPDES permits include mitigating for water quality upon construction of new development or redevelopment.

Therefore, the anticipated trends in the condition of water quality in the API are generally beneficial because existing developments without water quality facilities (particularly developments that pre-date the Clean Water Act) are required to implement measures to comply with local and state water quality regulations. The Revised Build Alternative would include water quality facilities designed to meet current regulatory requirements and would treat or use off-site treatment credits to mitigate stormwater impacts from approximately 35 acres of impervious area not currently treated for water quality. As a result of updated stormwater treatment that would occur, the Project's contribution to beneficial cumulative effects is considered large.

---

*This page is intentionally left blank.*

---

## 4 Public Involvement and Agency Coordination

### 4.1 Background

Public involvement has been an active component of the Project since its inception in 2010. ODOT, in partnership with the City of Portland, conducted extensive public engagement in support of the environmental review process and development of the 2019 EA, which began in July 2017. Public outreach for the 2019 EA focused on sharing information about the Project, with an emphasis on EJ communities affected by past infrastructure development in the Project Area. These efforts included open houses, interviews with members and leaders of the Black community, community events, formation of a community liaisons group, participations in local summer events, briefings, and business canvassing. At the close of the 2019 EA comment period, ODOT continued its outreach efforts with website updates, mailers and email newsletters, briefings, presentations, open houses, and other varied public events. These outreach efforts continued leading up to the publishing of the 2020 FONSI REA. Detailed descriptions of all public involvement efforts for these documents are included in the 2019 EA and the 2020 FONSI REA (available at <https://www.i5rosequarter.org/resources/library.aspx>).

Since November 2020, when the 2020 FONSI REA was completed, active public involvement for the Project has continued. Primary public decision points have centered on the selection of a community-supported alternative for the highway cover design (see Section 2.1.4), as well as public input regarding highway infrastructure design details. During this period, the ESC was convened to advise the OTC and ODOT on major decisions related to the Project's design and construction. The ESC met from spring 2020 through summer 2021, then handed over its advisory role to the HAAB. The HAAB was established as the Project's chief community advisory body. The HAAB meets virtually each month and provides recommendations to ODOT about Project design, funding, and policy considerations. The COAC has continued to meet, providing ODOT with guidance on contracting and workforce development opportunities.

The COVID-19 pandemic largely limited Project-related outreach to virtual formats since March 2020. Virtual committee meetings, online open houses and workshops, community and neighborhood Zoom meetings, website updates, and digital communications have been mainstays of Project engagement with the public. In-person gatherings began again in 2022, with options to participate remotely (a.k.a. hybrid meetings). The Project team continues to follow guidance from the Oregon Health Authority, Governor's office, and other state and local health authorities in considering the safest and most effective ways of engaging with the public.

---

## 4.2 Agency and Tribal Coordination

FHWA and ODOT are the lead agencies for the SEA. FHWA serves as the lead federal agency, because federal funding is anticipated. ODOT is the joint lead agency, as the direct recipient of the Project's federal funds.

Numerous agencies were invited by letter to participate as Cooperating or Participating Agencies in the 2019 EA process. Several agencies are designated as cooperating agencies per the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users and therefore are automatically considered in that role unless they formally decline. Table 4-1 lists the Cooperating and Participating Agencies for the Project as well as the Tribes that have been invited to participate.

Following the publication of the 2019 EA, the City of Portland withdrew from its role as a participating agency, effective July 6, 2020, with a City Council-issued stop work directive. As a result, the City of Portland was removed as a participating agency in the Project's Agency Coordination Plan.

In January 2022, Governor Brown entered into a Letter of Agreement with the City of Portland, Metro, and Multnomah County that included a commitment from the City of Portland to reengage with ODOT on the Project. In July 2022, ODOT and the City of Portland executed an IGA, building upon the January 2022 Letter of Agreement and resulting in the City of Portland again becoming an active Participating Agency.<sup>31</sup>

ODOT engaged in additional coordination with the Oregon SHPO in regard to the updated highway cover design (summarized in Section 2.1.4). This engagement is described in the *Historic Resources Supplemental Technical Report*, found in Appendix A.

ODOT contacted Cooperating and Participating Agencies in June 2022 to inform them of the Project changes and the development of the SEA; notify them of their continued status as a cooperating or participating agency; and inform them of an opportunity to review a draft SEA prior to publication. A draft SEA was sent to Cooperating and Participating agencies in September 2022 for review. This document reflects that review.

ODOT continues to engage in outreach to the Tribes listed in Table 4-1.

---

<sup>31</sup> The January 2022 Letter of Agreement and July IGA are both found at this link: [https://www.portland.gov/sites/default/files/council-documents/2022/i5rq-iga-exhibit\\_a\\_0.pdf](https://www.portland.gov/sites/default/files/council-documents/2022/i5rq-iga-exhibit_a_0.pdf)



Table 4-1. Cooperating and Participating Agencies and Tribes for the Project

Agency/Tribe	Role
NOAA Fisheries	Cooperating Agency
United States Army Corp of Engineers	Cooperating Agency
United States Coast Guard	Cooperating Agency
Oregon State Historic Preservation Office	Participating Agency
TriMet	Participating Agency
Metro	Participating Agency
City of Portland	Participating Agency
Port of Portland	Participating Agency
Portland Parks and Recreation	Participating Agency
Portland Streetcar	Participating Agency
Confederated Tribes of the Grande Ronde Community of Oregon	Invited to be Participating Agency (no response received)
Confederated Tribes of Siletz Indians	Invited to be Participating Agency (no response received)
Confederated Tribes of the Warm Springs Reservation of Oregon	Invited to be Participating Agency (no response received)
Cowlitz Indian Tribe	Invited to be Participating Agency (no response received)

Notes: NOAA = National Oceanic and Atmospheric Administration

### 4.3 Public Involvement

ODOT is intentionally centering Project outreach and engagement with Portland’s Black community and people with ties to historic Albina—the primary community displaced by past public and private development decisions in the immediate area of the API. Centering this Project on and elevating the voices of the Black Albina community, with restorative justice as a foundational value, is a step toward righting past wrongs and ensuring that Project outcomes better meet today’s needs and aspirations of people who have been harmed by the original construction of I-5. Public outreach that has taken place leading up to the publishing of this SEA is summarized in the sections below. As the project moves forward to final design, ODOT will continue to engage stakeholders through methods including, but not limited to, HAAB and COAC meetings, tabling at community events, public design workshops, project tours, project-sponsored community events, youth/student engagement, presentations to partner agency committees and

---

civic/business/neighborhood groups, and engagement with community-based organizations.

#### 4.3.1 General Public Outreach

The Project requires broad outreach that communicates news and updates to a large regional and statewide audience. News releases, display advertising, website updates, and social media posts are among the methods employed to communicate Project news to broader audiences. This Project is also one of several major congestion relief projects in metropolitan Portland included in the *Comprehensive Congestion and Mobility Management Plan* being managed as part of ODOT's Urban Mobility Strategy (UMS). Project communications are also coordinated with the other priority projects of the UMS as needed for efficiency.

#### 4.3.2 Environmental Justice Outreach

The Project team's approach to community engagement is centered on a transparent, inclusive engagement process, centered on the historic Albina community and the Black diaspora of Portland. This approach includes meeting people where they are, when they are available, and with a two-way dialogue grounded in intentional engagement and relationship-building. This is aligned with the adopted Project values of restorative justice and community-informed and transparent decision-making, which are central to the Project's public engagement strategy throughout design and construction. The process aims to minimize barriers to participation and is committed to connecting with community members in diverse spaces to amplify marginalized voices.

In 2021, the Project evolved the governance structure that includes advisory bodies focused on various aspects of community and stakeholder engagement, as well as the ongoing Project development process. Since publication of the 2020 FONSI REA, community engagement for this Project has included 20 HAAB, 11 COAC, 6 ESC, and 3 combined HAAB/ESC meetings (all open to the public and offering public comment opportunities), 4 online open houses, 3 community design workshops, 4 neighborhood association briefings, 5 community events, 8 community-based organization presentations, 2 industry association briefings, and 2 job fairs for minority contractors. Additionally, Project staff have distributed 2 print newsletters, 21 e-news articles, 3 field work mailers, and 3 news releases. The Project mailing list has grown from 4,800 to 6,500 addresses, and 256 public comments have been received, with responses provided.

Outcomes from this engagement include informed community input to the Project's adopted Values, a community preference for the Hybrid 3 cover design concept presented at the conclusion of the ICA process (endorsed by the HAAB and adopted by the OTC in September 2021), and preliminary input to highway infrastructure aesthetic design elements, including columns, crash barriers, and walls.

---

#### 4.3.2.1 Advisory Committees

The roles of the three advisory committees are summarized below.

##### *Historic Albina Advisory Board*

The 13-member HAAB is composed entirely of Black community leaders with strong ties to historic Albina to elevate voices in the Black community and help Project outcomes reflect community interests and values, and that historic Albina directly benefits from the investments of this Project. The HAAB was formed in late 2020 and has met 20 times since then. The HAAB meets monthly to discuss Project design considerations and provide recommendations to ODOT to advance community goals and interests. The HAAB also helps inform Project outreach and engagement strategies with Albina and the broader community. The Board is facilitated by Ericka Warren of Try Excellence, LLC.

##### *Community Oversight Advisory Board*

The 10-member COAC is composed of minority contracting and workforce community leaders. The COAC ensures accountability concerning job creation and workforce development targets for the pre-construction, early work package, and construction phases of the Project and also shapes the Project's DBE/Workforce Training Program. The COAC was formed in 2019 and has convened 11 times in 2021/2022. The COAC is facilitated by Johnell Bell of Espousal Strategies.

##### *Executive Steering Committee*

The ESC was composed of state, regional, and local elected leaders and local community representatives to advise the OTC and ODOT on major decisions related to the Project's design and construction. The ESC met monthly from January through August 2021 and was facilitated by Dr. Steven Holt of Try Excellence, LLC. Following their August Joint Committee meeting with the HAAB, the members of the ESC agreed to sunset the committee and empower the HAAB to advise ODOT on Project recommendations.

#### 4.3.2.2 Public Design Surveys

To make Project input opportunities more accessible and convenient to the community, a series of design element online surveys is being conducted to gain public input on specific aesthetic design considerations associated with the highway infrastructure (columns, walls, crash barriers, etc.).

The first design elements survey was conducted from April 15 to May 15, 2022. The 318 respondents, 90 of whom (23 percent) identified as Black or African, provided input on proposed details for the crash barriers and columns associated with the Project's design. The vast majority of survey participants learned about the opportunity through

---

the Project website, e-Alerts, and social media. Survey outreach was also targeted to Black media outlets and communication channels.

The second online design elements survey focused on aesthetic design treatments for Project bridges and walls; it ran from July 7 through September 5, 2022.

#### 4.3.2.3 Equitable Engagement Compensation

In 2021, ODOT initiated an Equitable Engagement Compensation Policy (EECP) to remove barriers that have systematically prevented marginalized populations and others from participating in public engagement and advisory activities. Many individuals cannot participate in these activities due to the financial hardship associated with several factors, including, but not limited to, taking unpaid time off work, travel expenses, and cost associated with childcare. The EECP is designed to offset some of these barriers to allow inclusive participation in ODOT-sponsored community engagement activities. The EECP provides three tools to address these barriers:

- Incentives – payments to individuals for one-time meetings and events
- Stipends – payments to members of formal advisory committees
- Community engagement contracts – payments to Community-Based Organizations (CBOs) for specific responsibilities and deliverables

The Project is among the first to make use of the EECP and is currently implementing two of the three tools, with the third in the planning stages. Participants at the ICA Cover Design Workshops were provided gift cards for their participation, as were participants at the May 2022 youth design forum. Members of the HAAB and COAC are being provided stipends for their time participating in committee meetings. A third program is currently being developed to provide community engagement contracts to CBOs, including those in the Black community, that would incentivize their participation in Project activities.

The Project team would use ODOT's Office of Social Equity to look for additional opportunities to provide equitable compensation to individuals and community groups as needed.

#### 4.3.3 Independent Cover Assessment

The ICA was a response to the OTC's directive to complete an independent, community-informed process to develop recommendations for a highway cover alternative. Led by ZGF Architects and made up of community engagement, urban design, engineering, and environmental experts, the team managed an independent, public planning process to examine potential highway cover scenarios. The ICA was not controlled by ODOT and was independent from the existing Project team. With influence from the HAAB and guidance from the ESC, the ICA Team engaged directly with Black community members from historic Albina and throughout Portland to

---

understand how proposed highway covers over I-5 could rebuild the neighborhood and better serve the historic Albina community. The ICA Team collected input from stakeholders, including Black community members, through a series of three virtual work sessions, three online open houses, and public comments.

The ICA team's community outreach (conducted December 2020 through July 2021) was a major focus of Project-related community engagement during this period. ODOT and the Project team supported this work by communicating each work session to the public via website, paid social media, digital and print newsletters, e-Alerts, digital advertising, emails, and canvassing.

The final highway cover recommendation from the ICA (Hybrid 3 Cover Design Concept) was identified through this engagement as the best option to support the stakeholder visions for historic Albina and to support restorative justice goals for a diverse, inclusive, and accessible neighborhood. The selection of Hybrid 3 was informed by the HAAB, with input from many other community members. The recommendation was forwarded by the ESC to the OTC in September 2021. The OTC directed ODOT to evaluate Hybrid 3.

#### 4.3.4 Community Events and Briefings

The Project team is participating in a number of community events and briefings, many focused specifically on Black community groups and organizations. Summer 2022 engagement includes Good in the Hood, which celebrates local multiculturalism in inner N/NE Portland, and Juneteenth, which commemorates the abolition of slavery and the emancipation of African American slaves. The Project team is sponsoring booths at both events to hand out Project information, discuss the Project with festival attendees, and identify further outreach opportunities in the community.

Project team members have also participated in Sneaker Week PDX (2021), Ruby Bridges Walk to School Day at Kairos PDX, as well as a "theater talk-back" following a performance of *Thurgood* at Portland Playhouse, where audience members engaged in an informal discussion with the cast, director, and others involved in the production process at the conclusion of the performance. In May 2022, the Project partnered with Camp ELSO and Word is Bond to host a half-day youth design forum for students of color at the Emmanuel Church. At this event, 45 students of color provided input to Project urban design considerations and learned more about career opportunities associated with the Project and in transportation.

Project team members also regularly present to neighborhood and community-based organizations throughout the Portland region.

---

*This page is intentionally left blank.*

## 5 Anticipated Permits and Approvals

Table 5-1 lists permits and clearances that are anticipated to be required prior to implementation of the Revised Build Alternative.

Table 5-1. Anticipated Permits and Approvals

Type of Permit/Approval	Permit Required (Y=yes, N=no, P=potentially)	Comments
Access Permit or Temporary Easement	Y	Approximately 6.9 acres of temporary easement for construction work areas, driveway reconnections, and staging.
Archaeology Clearance (SHPO)	Y	Compliance with Section 106.
Endangered Species Act Permits (USFWS, NMFS)	Y	Confirm FAHP for Revised Build Alternative with NOAA Fisheries
Floodplain Permits (Local)	Y	Construction activities could occur within the floodplain.
U.S. Army Corps of Engineers Permits (Section 10 and/or 404)	N	No excavation or fill would be required in waters of the U.S. and no structures placed in navigable waterways.
Historical/Cultural Resources Approval (SHPO, FHWA)	Y	A Programmatic Agreement is required.
Oregon Department of State Lands Fill and Removal Permits	P	Could be required if the final Project design includes removal or fill in a wetland or waterbody.
Historical/Cultural Resources Approval (SHPO, FHWA)	Y	A Programmatic Agreement is required.
Land Use Permits (Local)	Y	Local land use permits would be required.
Local Permits	Y	Local building permits.
Tree Plan	Y	A tree plan is required in conjunction with all development permits, unless there are no Private Trees 12 inches or more in diameter, no City Trees 6 inches or more in diameter, and/or no Street Trees 3 inches or more in diameter, and the site or activity is exempt.
Crosswalk Closure Approval	Y	Any crosswalk closure would need to be coordinated with the City and approved prior to implementation.
Magnuson-Stevens Act clearance (NMFS, USFWS)	Y	Consultation with NMFS; authorization under the FHAP PBO.

Type of Permit/Approval	Permit Required (Y=yes, N=no, P=potentially)	Comments
Materials Source Permit (DOGAMI)	P	Required if fill would be excavated off-site exceeding 1 acre and/or 5,000 cubic yards of new disturbance.
Stormwater Permit	Y	1200-C permit for construction. ODOT already has this permit.
UST Decommissioning Notification	P	There are numerous USTs within the API. If a UST needs to be decommissioned as part of the Project, a decommissioning notice would be required. This is considered unlikely.
Utility Permits	Y	Utility permits would be required for relocates.

Notes: API = Area of Potential Impact; DOGAMI = Oregon Department of Geology and Mineral Industries; FHAP = Federal-Aid Highway Program; FHWA = Federal Highway Administration; NOAA = National Oceanic and Atmospheric Administration; NMFS = National Marine Fisheries Service; ODOT = Oregon Department of Transportation; PBO = Programmatic Biological Opinion; SHPO = State Historic Preservation Office; USFWS = U.S. Fish and Wildlife Service; UST = underground storage tank



## 6 List of Preparers

Table 6-1. List of Preparers

Name	Agency	Area of Responsibility	Project Role
Andrew Bastasch	ODOT	Transportation Safety	Reviewer
Glen Bolen	ODOT	Land Use	Reviewer
Tobin Bottman	ODOT	Archaeology	Reviewer
Daniel Burgin	ODOT	Noise	Reviewer
Megan Channell	ODOT	Rose Quarter Project Director	Document Review and Preparation
Dave Daly	ODOT	Active Transportation, Transit	Reviewer
Sarah Eastman	ODOT	Socioeconomics	Reviewer
Tina Gutierrez	ODOT	Right-of-way	Reviewer
Robert W. Hadlow	ODOT	Historic Resources, Section 4(f) Resources	Reviewer
Natalie Lijjenwall	ODOT	Air Quality, Climate Change	Reviewer
Theresa Rohlfs	ODOT	Transportation Safety, Active Transportation, Transit	Reviewer
Robert Schiavone	ODOT	Air Quality, Noise	Reviewer
Carol Snead	ODOT	ODOT Environmental Project Manager	Document Review and Preparation
Melanie Ware	ODOT	NEPA	Reviewer
Susan White	ODOT	Environmental Justice	Reviewer
Emily Cline	FHWA	FHWA Lead	Project Management and Review
Shaneka Owens	FHWA	FHWA Operations Engineer	Reviewer
Autumn Buckridge	AECOM	Historic Resources, Archaeology	Author
Pamela Cory	AECOM	Document Editing	Technical Editing
Kathryn Floor	AECOM	Noise, Right of way	Author
Jason Green	AECOM	Project Alternatives	Author
Linda Harriss	AECOM	Document Formatting	Formatting
Dana Holmes	AECOM	Introduction, Transportation	Author
Terry Kearns	AECOM	Transportation	Reviewer

Name	Agency	Area of Responsibility	Project Role
Jenifer King	AECOM	Socioeconomics, Environmental Justice	Author
Danni Kline	AECOM	Document Editing	Technical Editing
Louise Kling	AECOM	Project Manager	Project Lead/Author/Senior Reviewer
Sarah McDaniel	AECOM	Archaeology	Author
Anne Minihan	AECOM	Project Coordinator, Air Quality, Climate Change, Administrative Record	Project Coordinator/Author/Administrative Record
Kirk Ranzetta	AECOM	Historic Resources	Author, Reviewer
Jan Reed	AECOM	Land Use	Author
Erin Swicegood	AECOM	Historic Resources	Author
Tim Wood	AECOM	Historic Resources	Author
Brian Bauman	HDR Inc.	Project Manager	Project Lead, Senior Reviewer
Simon Eng	HDR Inc.	Traffic	Author
Leigh Enger	HDR Inc.	Right of way	Author
Jeremy Jackson	HDR Inc.	Traffic	Author
Joe Kirkland	HDR Inc.	Traffic	Author
Marcela Rodriguez	HDR Inc.	Safety	Author
Harshala Sardar	HDR Inc.	Safety	Author
Elizabeth Wemple	HDR Inc.	Safety	Author
Brian Carrico	WSP	Owners Representative	Senior Reviewer
Phil DeVita	HMMH	Air Quality, Climate Change, Noise	Author
Scott Noel	HMMH	Air Quality, Climate Change	Author
Dillon Tannler	HMMH	Climate Change, Noise	Author
Josh Anderson	David Evans and Associates, Inc.	Transportation Safety	Reviewer
Alex Cousins	David Evans and Associates, Inc.	Public Involvement	Public Involvement

Name	Agency	Area of Responsibility	Project Role
Omar Jaff	David Evans and Associates, Inc.	Transit	Reviewer
Tom McKerlick	David Evans and Associates, Inc.	Active Transportation	Reviewer
Garrett Augustyn	Parametrix	Active Transportation, Socioeconomics	Author
Jennifer Hughes	Parametrix	Active Transportation, Land Use	Author
John McPherson	Parametrix	Active Transportation	Author

Notes: FHWA = Federal Highway Administration; NEPA = National Environmental Policy Act; ODOT = Oregon Department of Transportation

---

*This page is intentionally left blank*

## 7 Supplemental Technical Reports Prepared for this SEA

The following technical reports and memoranda were prepared and are summarized in this SEA. Copies can be found in Appendix A.

Table 7-1. List of Supplemental Technical Reports Prepared for this SEA

Report	Author(s)	Date
<i>Active Transportation Supplemental Technical Report</i>	Garrett Augustyn, Parametrix Jennifer Hughes, Parametrix John McPherson, Parametrix	September 16, 2022
<i>Air Quality Supplemental Technical Report</i>	Scott Noel, HMMH Phil DeVita, HMMH Dillon Tannler, HMMH	July 12, 2022
<i>Archaeological Resources Supplemental Technical Report</i>	Sarah McDaniel, AECOM	July 1, 2022
<i>Climate Change Supplemental Technical Report</i>	Scott Noel, HMMH Phil DeVita, HMMH Dillon Tannler, HMMH Natalie Liljenwall (Reviewer), ODOT Melanie Ware (Reviewer), ODOT	July 12, 2022
<i>Historic Resources Supplemental Technical Report</i>	Kirk Ranzetta, AECOM Timothy Wood, AECOM Autumn Buckridge, AECOM Erin Swicegood, AECOM Robert W. Hadlow, ODOT	August 4, 2022
<i>Land Use Supplemental Technical Report</i>	Jennifer Hughes, Parametrix Glen Bolen, AICP (Reviewer), ODOT Brian Carrico (Reviewer), WSP	August 5, 2022
<i>Noise Supplemental Technical Report</i>	Scott Noel, HMMH Dillon Tannler, HMMH Joseph Czech, HMMH	June 21, 2022
<i>Right of Way Supplemental Technical Report</i>	Leigh Enger, HDR Inc.	June 23, 2022
<i>Socioeconomics Supplemental Technical Report</i>	Garrett Augustyn, Parametrix	June 30, 2022
<i>Traffic Analysis Supplemental Technical Report</i>	Jeremy Jackson, HDR Inc. Joe Kirkland, HDR Inc. Simon Eng, HDR Inc.	September 26, 2022

Report	Author(s)	Date
<i>Transit Supplemental Technical Report</i>	Garrett Augustyn, Parametrix Jennifer Hughes, Parametrix	August 15, 2022
<i>Transportation Access Technical Memorandum</i>	Marcela Rodriguez, HDR Inc.	October 28, 2022
<i>Transportation Safety Supplemental Technical Report</i>	Elizabeth Wemple, HDR Inc. Harshala Sardar, HDR Inc. Marcela Rodriguez, HDR Inc.	August 15, 2022
<i>Supplemental Technical Report Errata</i>	Marcela Rodriguez, HDR Inc.	November 9, 2022

Notes: SEA = Supplemental Environmental Assessment

---

## 8 References

- ATRI (American Transportation Research Institute). 2022. "2022 Top 100 Truck Bottleneck List." Available: <https://truckingresearch.org/2022/02/08/top-100-truck-bottlenecks-2022> (accessed August 31, 2022).
- Bates, L.K. 2013. Gentrification and Displacement Study: Implementing an Equitable Inclusive Development Strategy in the Context of Gentrification. Available: <https://www.portlandoregon.gov/bps/article/454027> (accessed April 7, 2018).
- City of Portland. 1996. Broadway Weidler Corridor Plan. Available: <https://www.portlandoregon.gov/transportation/article/671735> (accessed February 2022).
- City of Portland. 2016a. Vision Zero Action Plan: Saving Lives with Safe Streets. December. Available: <https://www.portland.gov/transportation/vision-zero/making-streets-safe> (accessed October 2022).
- City of Portland. 2016b. Stormwater Management Manual. Available: <https://www.portlandoregon.gov/bes/64040> (accessed November 29, 2018).
- City of Portland. 2018. Adopted Central City 2035 Plan and Transportation System Plan. June 6.
- City of Portland, ODOT, and Portland Bureau of Planning and Sustainability. 2012. Central City 2035: N/NE Quadrant Plan. Adopted by City Council October 25, 2012. Available: <https://www.portlandoregon.gov/bps/article/422031> (accessed April 7, 2018).
- City of Portland. 2020. Central City 2035 Re-Adoption Draft. April 2020.
- CEQ (Council on Environmental Quality). 1997. Environmental Justice Guidance Under the National Environmental Policy Act. Available: [https://www.epa.gov/sites/production/files/2015-02/documents/ej\\_guidance\\_nepa\\_ceq1297.pdf](https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf) (accessed February 2022).
- DEQ (Oregon Department of Environmental Quality). 2006. Willamette Basin TMDL. Available: <http://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Willamette-Basin.aspx> (accessed October 2, 2018).
- DOT (U.S. Department of Transportation). 2012. Order 5610.2(a), "Actions to Address Environmental Justice in Minority Populations and Low Income Populations," 77 Federal Register 27534, issued May 10.
- FHWA (Federal Highway Administration). 2012. Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
- FHWA. 2017. Interim Approval for Optional Use of Two-Stage Bicycle Turn Boxes (IA-20). Issued July 13, 2017. Available: [https://mutcd.fhwa.dot.gov/resources/interim\\_approval/ia20/index.htm](https://mutcd.fhwa.dot.gov/resources/interim_approval/ia20/index.htm) (Accessed November 2022).
- FTA (Federal Transit Administration). 2012. Environmental Justice Policy Guidance for Federal Transit Administration Recipients, issued on August 15.

- 
- Gibson, K.J. 2007. Bleeding Albina: A History of Community Disinvestment, 1940-2000, *Transforming Anthropology*, Vol. 15, No. 1, pp 3–25.
- HHS (U.S. Department of Health and Human Services). 2022. HHS Poverty Guidelines for 2022. Office of the Assistance Secretary for Planning and Evaluation. Available: <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines>.
- IPCC (Intergovernmental Panel on Climate Change). 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, In press, doi:10.1017/9781009157896
- Jalving, Sarah. "RE: Revised Area of Potential Effect– ODOT Key Number K19071 – SHPO Case Number #17-1520." Received by Robert Hadlow, November 3, 2022.
- Metro. 2018. Metro 2018 Regional Transportation Plan [RTP] financially constrained project list. Available: <https://www.oregonmetro.gov/sites/default/files/2019/04/02/2018-RTP-Appendices-A-and-B-Constrained-Project-List.pdf>.
- ODOT. 2010. ODOT HazMat Program Procedures Guidebook. Available: [https://www.oregon.gov/ODOT/GeoEnvironmental/Docs\\_GeologyGeotech/HazMatProgProcedures.pdf](https://www.oregon.gov/ODOT/GeoEnvironmental/Docs_GeologyGeotech/HazMatProgProcedures.pdf) (accessed November 29, 2018).
- ODOT. 2011. ODOT Noise Manual. July 2011. Available: [https://www.oregon.gov/ODOT/GeoEnvironmental/Docs\\_Environmental/Noise-Manual.pdf](https://www.oregon.gov/ODOT/GeoEnvironmental/Docs_Environmental/Noise-Manual.pdf) (accessed November 28, 2018).
- ODOT. 2012. Facility Plan: I-5 Broadway/Weidler Interchange Improvements. Available: <https://www.portlandoregon.gov/bps/article/415777> (accessed April 7, 2018).
- ODOT. 2014. Hydraulics Design Manual. Prepared by Engineering and Asset Management Unit Geo-Environmental Section. April. Available: <https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Hydraulics-Manual.aspx> (accessed November 29, 2018).
- ODOT. 2015. "State Highway Crash Rate Table." Available: [http://www.oregon.gov/ODOT/Data/Documents/Crash\\_Rate\\_Tables\\_2015.pdf](http://www.oregon.gov/ODOT/Data/Documents/Crash_Rate_Tables_2015.pdf) (accessed March 3, 2018).
- ODOT. 2017. 2016 Transportation Volume Tables. Available: [http://www.oregon.gov/ODOT/Data/Documents/TVT\\_Complete\\_2016.pdf](http://www.oregon.gov/ODOT/Data/Documents/TVT_Complete_2016.pdf) (accessed April 7, 2018).
- ODOT. 2018a. Right of Way Manual. Salem, Oregon. Available: <https://www.oregon.gov/ODOT/ROW/Pages/ROW-Manual.aspx> (accessed March 3, 2018).
- ODOT. 2018b. ODOT Boilerplate Special Provisions. Available: <https://www.oregon.gov/ODOT/Business/Pages/Boilerplate-SP-2018.aspx> (accessed October 2, 2018).



- 
- ODOT (Oregon Department of State Lands). 2019a. ODOT Erosion Control Manual. March 2019. Available: [https://www.oregon.gov/odot/GeoEnvironmental/Docs\\_Environmental/Erosion\\_Control\\_Manual.pdf](https://www.oregon.gov/odot/GeoEnvironmental/Docs_Environmental/Erosion_Control_Manual.pdf) (accessed November 2022).
- ODOT. 2019b. I-5 Rose Quarter Improvement Project Environmental Assessment. February 15. Available: <https://www.i5rosequarter.org/resources/library.aspx>.
- ODOT. 2019c. Programmatic Agreement among the Federal Highway Administration, the Oregon State Historic Preservation Office, and the Oregon Department of Transportation for Identifying and Evaluating Archaeological Resources During the Development and Construction of the Interstate 5 Rose Quarter Improvement Project, Portland, Multnomah County, Oregon, ODOT Key No. 19071, Federal-Aid No. S001(483).
- ODOT. 2020. I-5 Rose Quarter Improvement Project Finding of No Significant Impact and Revised Environmental Assessment. Available: <https://www.i5rosequarter.org/resources/library.aspx>
- ODOT. 2021. 2021 Standard Specifications. Available: [https://www.oregon.gov/odot/Business/Pages/Standard\\_Specifications.aspx](https://www.oregon.gov/odot/Business/Pages/Standard_Specifications.aspx) (Accessed August 2022).
- ODOT. 2022. Traffic Control Plans Design Manual. Delivery & Operations Division, Traffic Roadway Section. January. Available: <https://www.oregon.gov/odot/Engineering/Pages/TCP-Manual.aspx> (accessed February 2022).
- OED (Oregon Economic Department). 2022. Current Employment Estimates. Available: <https://www.qualityinfo.org/ed-ffd> (accessed July 2022).
- OWRD (Oregon Water Resources Department). 2017. Well Log Query. Available: [http://apps.wrd.state.or.us/apps/gw/well\\_log/](http://apps.wrd.state.or.us/apps/gw/well_log/) (accessed December 1, 2017).
- PBOT (Portland Bureau of Transportation). 2015. Portland's Neighborhood Greenways Assessment Report. Available: <https://www.portland.gov/transportation/pbot-projects/neighborhood-greenways/documents/neighborhood-greenway-assessment> (accessed February 2022).
- PBOT. 2019a. PedPDX: Portland's Citywide Pedestrian Plan. Available: <https://efiles.portlandoregon.gov/Record/13065504/> (accessed February 2022).
- PBOT. 2019b. Traffic Design Manual, Volume 2: Temporary Traffic Control. Available: [https://www.portland.gov/sites/default/files/2022/temp-traffic-control-2018-12-19\\_final.pdf](https://www.portland.gov/sites/default/files/2022/temp-traffic-control-2018-12-19_final.pdf) (accessed August 2022).
- Portland Housing Bureau. n.d.-a. Displacement in North and Northeast Portland – An Historical Overview, North/Northeast Neighborhood Housing Strategy.
- Portland Housing Bureau. n.d.-b. Frequently Asked Questions. N/NE Preference Policy. Available: <https://www.portlandoregon.gov/phb/article/671059> (accessed April 4, 2018).

---

Raasch, John. 2022. Section 106 Finding of No Adverse Effect—REVISED, Travelodge at the Coliseum, Interstate 5 Rose Quarter Project, Portland, Multnomah County, Oregon, ODOT Key No. 19071, Federal-Aid No. S001(483). January 11, 2022.

TriMet. 2020. Fall 2020 Service Restoration. Available:

<https://trimet.org/alerts/service-change/2020fall/index.htm> Accessed February, 2022 (accessed February 2022).

U.S. Census Bureau. 2020. 2019 ACS 5-Year Estimates. Available:

<https://www.census.gov/data/developers/data-sets/acs-5year.html> (accessed July 2022).

U.S. Environmental Protection Agency. 2022. EJScreen. Subsidized Housing. Available:

<https://ejscreen.epa.gov/mapper/> (accessed February 2022).