



I-5 ROSE QUARTER IMPROVEMENT PROJECT

REVISED SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

**OREGON DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

MARCH 2024

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

2/22/2024

Date

 Digitally signed by Brendan Finn
Date: 2024.02.22 15:42:09
-08'00'

Brendan Finn, Oregon Department of Transportation, Urban Mobility
Office Director

3/6/2024

Date

KEITH LYNCH Digitally signed by KEITH LYNCH
Date: 2024.03.06 14:35:15 -08'00'

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.i-5rosequarter.org/>.

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

Thomas Parker
Environmental Program Manager
Federal Highway Administration, Oregon Division
530 Center Street NE, Suite 420
Salem, OR 97301
(503) 316-2549

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 also include a new highway cover to connect N Hancock Street to NE Hancock Street and provide buildable space, modifications to the Broadway/Weidler interchange, traffic flow revisions, and local system multimodal improvements. This Revised Supplemental Environmental Assessment (RSEA) 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 Revised Build Alternative in the 2022 Supplemental Environmental Assessment (SEA). In response to public comments received on the SEA, ODOT refined the design of the Revised Build Alternative. This RSEA reflects changes to the SEA based on those design refinements. All updated information in the RSEA is shown in bold text.

The RSEA 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 RSEA 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.....	ix
Executive Summary	1
1 Introduction.....	1
1.1 Project Location	1
1.2 Background.....	2
1.3 Need for a Supplemental EA.....	5
1.4 Project Purpose and Need.....	5
1.5 Project Goals.....	6
1.6 Public Comment on the 2022 SEA	8
2 Project Alternatives.....	9
2.1 Project Development.....	9
2.1.1 Background.....	9
2.1.2 Independent Cover Assessment.....	9
2.1.3 Advancement of Project Design.....	11
2.1.4 Development of the Revised Build Alternative for the 2022 SEA.....	12
2.1.5 Design Refinements Based on Public Comments on the 2022 SEA.....	14
2.2 Alternatives Carried Forward	14
2.2.1 No-Build Alternative	14
2.2.2 Revised Build Alternative	15
2.2.2.1 I-5 Mainline Improvements.....	17
2.2.2.2 Highway Cover.....	20
2.2.2.3 Broadway/Weidler Interchange Improvements.....	24
2.2.2.4 Related Local System Multimodal Improvements.....	29
3 Affected Environment and Environmental Consequences.....	31
3.1 Resources Not Affected.....	31
3.2 Air Quality.....	32
3.2.1 Existing Conditions	32
3.2.2 Environmental Consequences.....	32
3.2.2.1 No-Build Alternative.....	32
3.2.2.2 Revised Build Alternative.....	33
3.2.2.3 Avoidance, Minimization, and Mitigation Measures.....	34
3.3 Climate Change.....	35



3.3.1	Existing Conditions	35
3.3.2	Environmental Consequences	36
3.3.2.1	No-Build Alternative	36
3.3.2.2	Revised Build Alternative	37
3.3.2.3	Avoidance, Minimization, and Mitigation Measures	39
3.4	Archaeological Resources	39
3.4.1	Existing Conditions	39
3.4.2	Environmental Consequences	40
3.4.2.1	No-Build Alternative	40
3.4.2.2	Revised Build Alternative	40
3.4.2.3	Avoidance, Minimization, and Mitigation Measures	41
3.5	Historic Resources	42
3.5.1	Existing Conditions	42
3.5.2	Environmental Consequences	44
3.5.2.1	No-Build Alternative	45
3.5.2.2	Revised Build Alternative	45
3.5.2.3	Avoidance, Minimization, and Mitigation Measures	47
3.6	Section 4(f)	48
3.6.1	Existing Conditions	48
3.6.2	Environmental Consequences	49
3.6.2.1	No-Build Alternative	49
3.6.2.2	Revised Build Alternative	49
3.6.2.3	Avoidance, Minimization, and Mitigation Measures	52
3.7	Hazardous Materials	52
3.7.1	Existing Conditions	52
3.7.2	Environmental Consequences	53
3.7.2.1	No-Build Alternative	53
3.7.2.2	Revised Build Alternative	53
3.7.2.3	Avoidance, Minimization, and Mitigation Measures	54
3.8	Land Use	54
3.8.1	Existing Conditions	54
3.8.2	Environmental Consequences	58
3.8.2.1	No-Build Alternative	58
3.8.2.2	Revised Build Alternative	58
3.8.2.3	Avoidance, Minimization, and Mitigation Measures	63
3.9	Noise	63



3.9.1	Existing Conditions	63
3.9.2	Environmental Consequences	63
3.9.2.1	No-Build Alternative	64
3.9.2.2	Revised Build Alternative	64
3.9.2.3	Avoidance, Minimization, and Mitigation Measures	66
3.10	Right of Way	68
3.10.1	Existing Conditions	68
3.10.2	Environmental Consequences	68
3.10.2.1	No-Build Alternative	68
3.10.2.2	Revised Build Alternative	68
3.10.2.3	Avoidance, Minimization, and Mitigation Measures	72
3.11	Socioeconomics	73
3.11.1	Existing Conditions	73
3.11.1.1	Population Characteristics	73
3.11.1.2	Public Services	75
3.11.1.3	Local and Regional Economy	78
3.11.2	Environmental Consequences	80
3.11.2.1	No-Build Alternative	80
3.11.2.2	Revised Build Alternative	80
3.11.2.3	Avoidance, Minimization, and Mitigation Measures	81
3.12	Environmental Justice	82
3.12.1	Existing Conditions	82
3.12.1.1	Definitions of Minority and Low-Income Populations	82
3.12.1.2	Minority Populations	83
3.12.1.3	Low-Income Populations	86
3.12.2	Environmental Consequences	88
3.12.2.1	No-Build Alternative	88
3.12.2.2	Revised Build Alternative	88
3.12.2.3	Avoidance, Minimization, and Mitigation Measures	90
3.13	Transportation	91
3.13.1	Existing Conditions	91
3.13.1.1	Transit	91
3.13.1.2	Active Transportation	92
3.13.1.3	Transportation Safety	93
3.13.1.4	Traffic Operations	93
3.13.1.5	Transportation Access	94



3.13.2	Environmental Consequences	94
3.13.2.1	Transit	94
3.13.2.2	Active Transportation	97
3.13.2.3	Transportation Safety	107
3.13.2.4	Traffic Operations	110
3.13.2.5	Transportation Access	113
3.14	Utilities	114
3.14.1	Existing Conditions	114
3.14.2	Environmental Consequences	115
3.14.2.1	No-Build Alternative	116
3.14.2.2	Revised Build Alternative	116
3.14.2.3	Avoidance, Minimization, and Mitigation Measures	119
3.15	Water Resources	119
3.15.1	Existing Conditions	119
3.15.2	Environmental Consequences	121
3.15.2.1	No-Build Alternative	121
3.15.2.2	Revised Build Alternative	121
3.15.2.3	Avoidance, Minimization, and Mitigation Measures	122
3.16	Cumulative Impacts	122
3.16.1	Air Quality	123
3.16.2	Climate Change	123
3.16.3	Archaeological Resources	123
3.16.4	Historic Resources	124
3.16.5	Section 4(f)	124
3.16.6	Hazardous Materials	124
3.16.7	Land Use	125
3.16.8	Noise	125
3.16.9	Right of Way	126
3.16.10	Socioeconomics	126
3.16.11	Environmental Justice	127
3.16.12	Transportation	128
3.16.13	Utilities	130
3.16.14	Water Resources	130
4	Public Involvement and Agency Coordination	131
4.1	Background	131
4.2	Agency and Tribal Coordination	132



4.3	Public Involvement.....	133
4.3.1	General Public Outreach.....	134
4.3.2	Environmental Justice Outreach.....	134
4.3.2.1	Advisory Committees.....	135
4.3.2.2	Public Design Surveys.....	136
4.3.2.3	Equitable Engagement Compensation.....	136
4.3.3	Independent Cover Assessment.....	137
4.3.4	Community Events and Briefings.....	137
4.3.5	Virtual Public Hearing	138
5	Anticipated Permits and Approvals.....	139
6	List of Preparers.....	141
7	Supplemental Technical Reports Prepared for this RSEA	145
8	References.....	147

APPENDICES

- Appendix A. **Revised Supplemental Technical Reports**
- Appendix B. **Summary of Avoidance, Minimization, and Mitigation Measures**
- Appendix C. **Reasonably Foreseeable Future Actions**
- Appendix D. **Section 106 Programmatic Agreement between FHWA, ODOT, and SHPO**
- Appendix E. **Agency Coordination Plan**
- Appendix F. **Public Involvement Summary**
- Appendix G. **Comment Summary Report**
- Appendix H. **Figure Descriptions**

FIGURES

Figure 1-1.	Previous and Current Project Area.....	4
Figure 1-2.	Project Goals.....	8
Figure 2-1.	Hybrid 3 Highway Cover Design Concept.....	13
Figure 2-2.	Cross Section of I-5 under the No-Build Alternative.....	15
Figure 2-3.	Overview of the Revised Build Alternative.....	16
Figure 2-4.	Auxiliary Lane/Shoulder Improvements.....	18
Figure 2-5.	I-5 Auxiliary (Ramp-to-Ramp) Lanes – Existing Conditions and Proposed Improvements.....	19
Figure 2-6.	I-5 Cross Section (N/NE Weidler Overcrossing) – Proposed Improvements.....	20



Figure 2-7. Building Parameters on the Cover	22
Figure 2-8. Potential Highway Cover Uses.....	24
Figure 2-9. Broadway/Weidler Interchange Area Improvements.....	25
Figure 2-10. I-5 Ramp Relocation	26
Figure 2-11. Design Options for I-5 SB Off-Ramp: Traffic Heading West	27
Figure 2-12. Proposed Modifications to N Williams between N/NE Broadway and N/NE Weidler	28
Figure 3-1. Existing Land Use	56
Figure 3-2. Comprehensive Plan Designations.....	57
Figure 3-3. Land Converted to Transportation Use	60
Figure 3-4. City of Portland Zoning of Highway Cover	61
Figure 3-5. Estimated ROW Impacts	70
Figure 3-6. Public Services in the API and Surrounding Community.....	77
Figure 3-7. Subdistricts in the API	79
Figure 3-8. Subsidized Housing in the API and Surrounding Community	87
Figure 3-9. Protected Bicycle Crossings with Exclusive Turning Lanes.....	99

TABLES

Table 3-1. Comparison of Criteria Pollutants and MSAT Emissions by Alternative.....	34
Table 3-2. No-Build Alternative (2045) and Revised Build Alternative (2045) Construction and Maintenance–Generated Annual GHG Emissions	37
Table 3-3. Estimated Annual GHG Emissions for Existing Conditions and the No-Build and Revised Build Alternatives.....	38
Table 3-4. Potential Impacts to Archaeological Resources from the Revised Build Alternative	40
Table 3-5. Historic Properties Eligible for the NRHP.....	44
Table 3-6. Historic Properties Potentially Impacted by the Revised Build Alternative	47
Table 3-7. Typical Construction Equipment Noise (dBA)	65
Table 3-8. Estimated ROW Needs.....	69
Table 3-9. Population Characteristics, 2020.....	74
Table 3-10. Household Income, 2020 ¹	75
Table 3-11. Means of Travel to Work, 2020	75
Table 3-12. Race and Ethnicity, 2020	84
Table 3-13. Total Accesses to be Modified and/or Closed.....	114
Table 3-14. Utility Types and Service Providers in the API.....	115
Table 3-15. Major Utilities in the API	115
Table 3-16. Summary of Utility Impacts for the Revised Build Alternative	117
Table 4-1. Cooperating and Participating Agencies and Tribes for the Project	133
Table 5-1. Anticipated Permits and Approvals.....	139



Table 6-1. List of Preparers..... 141
Table 7-1. List of **Revised** Supplemental Technical Reports Prepared for this **RSEA** 145



This page is intentionally left blank.



ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials	FEMA	Federal Emergency Management Agency
ACBM	asbestos-containing building materials	FHWA	Federal Highway Administration
ACS	American Community Survey	FONSI	Finding of No Significant Impact
ADA	Americans with Disabilities Act	FTA	Federal Transit Administration
API	Area of Potential Impact	GHG	greenhouse gas
BES	City of Portland Bureau of Environmental Services	HAAB	Historic Albina Advisory Board
BMP	best management practice	I-405	Interstate 405
CBO	Community-Based Organization	I-5	Interstate 5
CFR	Code of Federal Regulations	I-84	Interstate 84
CEQ	Council on Environmental Quality	ICA	Independent Cover Assessment
CO	carbon monoxide	IGA	Intergovernmental Agreement
CO ₂ e	carbon dioxide equivalent emissions	LBP	lead-based paint
COAC	Community Oversight Advisory Committee	LOS	Level of Service
dBA	A-weighted decibel	LTS	Level of Traffic Stress
DBE	Disadvantaged Business Enterprise	MSA	Portland-Vancouver-Hillsboro Metropolitan Statistical Area
DEQ	Oregon Department of Environmental Quality	MSAT	mobile source air toxics
EA	Environmental Assessment	N	North
EB	eastbound	NAAC	Noise Abatement Approach Criteria
EECP	Equitable Engagement Compensation Policy	NAAQS	National Ambient Air Quality Standard(s)
EIS	Environmental Impact Statement	NACTO	National Association of City Transportation Officials
EJ	environmental justice	NB	northbound
ESC	Executive Steering Committee	NE	Northeast
		NEPA	National Environmental Policy Act of 1969



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



EXECUTIVE SUMMARY

What is the Interstate 5 Rose Quarter Improvement Project Revised Supplemental Environmental Assessment?

The **Revised** Supplemental Environmental Assessment (**RSEA**) discloses results of the environmental study for the Interstate 5 (I-5) Rose Quarter Improvement Project (Project). The Project **consists of** a Revised Build Alternative, which includes design changes to the Build Alternative analyzed in the Oregon Department of Transportation's (ODOT's) 2019 Environmental Assessment (2019 EA) and subsequently determined by the Federal Highway Administration (FHWA) to not result in a significant adverse impact on the human or natural environment in the 2020 Finding of No Significant Impact and Revised Environmental Assessment (2020 FONSI REA). In accordance with the National Environmental Policy Act, ODOT re-evaluated the **2020 FONSI in light of** Project design changes and considered the differences of the **potential impacts of these design changes** compared to **those** presented in the REA. At the conclusion of the re-evaluation, FHWA and ODOT agreed that the design changes required additional analyses beyond what was presented in the REA, and FHWA rescinded the FONSI on January 18, 2022. **A Supplemental Environmental Assessment (2022 SEA) was published on November 15, 2022, which** supplemented information presented in the 2020 FONSI REA with an evaluation of the impacts of the Revised Build Alternative compared to the No-Build Alternative. **This RSEA evaluates the impacts of the Revised Build Alternative as modified in response to public comment received from November 15, 2022, through January 4, 2023. Changes to the 2022 SEA based on those design refinements and in response to other comments on the 2022 SEA are shown in bold text.**

What is the purpose of this document?

This **RSEA** discloses results of the environmental study for the Project and **provides evidence for determining** whether or not significant impacts to the environment would occur. This **RSEA** supplements information presented in the 2020 FONSI REA with an evaluation of the impacts of two alternatives: one in which the Project would move forward as planned (Revised Build Alternative), and one in which the Project would not be built (No-Build Alternative). **The RSEA differs from the 2022 SEA in that it evaluates potential impacts from two design modifications to the Revised Build Alternative that were developed in response to public comment.**

Information contained in this document allows the public, businesses, interest groups, and agencies at all levels of government an opportunity to better understand the Project's benefits and impacts. This information also supports transportation officials in making 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. The information provided in this document and input from public review will be considered by the FHWA to make a decision on the Project.

What is the Project?

The Project includes upgrades to I-5 between **north of** Interstate 84 (I-84) and Interstate 405 (I-405) in central Portland to improve safety and operations at Oregon's top traffic bottleneck. Highway improvements would include auxiliary lanes and full shoulders to smooth traffic flow by providing vehicles additional space to accelerate or decelerate safely when merging on or off I-5, as well as space for emergency responders and disabled vehicles to move out of the way of traffic. Above I-5, the Project includes the construction of a highway cover to reconnect **the historic street grid**. The connected streets **would** improve travel for people walking, biking, and driving through the Rose Quarter area, with upgrades to sidewalks and street crossings.

The Project, or Revised Build Alternative, would include the following elements related to both the highway and local street system:

- Extending the existing auxiliary lane on I-5 southbound (SB) and adding a new auxiliary lane on I-5 northbound (NB) between I-84 and I-405.
- Adding 12-foot-wide outside shoulders on I-5 between I-84 and I-405 in the NB direction.
- Adding 12-foot-wide outside shoulders on I-5 between I-84 and I-405 (SB from N Broadway off-ramp to the I-84 off-ramp and NB from I-84 on-ramp to I-405 off-ramp).
- Removing existing overcrossing structures at North (N)/Northeast (NE) Broadway, N/NE Weidler Street, N Williams Avenue, N Flint Avenue, and N Vancouver Avenue (including the columns that support the structures) and replacing with a single highway cover structure over I-5 that incorporates these streets.
- Relocating the existing I-5 SB off-ramp at the N Vancouver/Broadway intersection to a new location south of N Broadway, **with traffic headed eastbound from the exit using a new "flyover" structure and connecting with the local street network at NE Weidler Street and traffic headed westbound from the exit connecting with the local street network at the N Wheeler Avenue/N Williams Avenue/N Ramsay Way intersection. Two design options are under consideration for the westbound vehicles:**
 1. Direct car and truck traffic up N Wheeler to N Broadway
 2. Direct car and truck traffic to N Ramsay

- Increasing route options for pedestrian and bicycle routes through a new crossing at N/NE Hancock Street; bike lanes on N/NE Broadway and N/NE Weidler; improved pedestrian and bicycle facilities on N Vancouver, **N Williams**, and N Broadway; **and the Clackamas Pedestrian and Bicycle Bridge over I-5 to provide a northern connection to the planned Green Loop.**
- Constructing a new roadway crossing to extend N Hancock west across and over I-5.
- Constructing new widened and well-lit sidewalks, Americans with Disabilities Act (ADA)-accessible ramps, high-visibility and marked crosswalks, and widened and improved bicycle facilities.
- Implementing stormwater management on the streets connected to the Broadway/Weidler interchange.

What is the purpose of the Project?

The purpose of the Project is to improve the safety and operations on I-5 between I-405 and I-84, at the interchange of I-5 and N Broadway and NE Weidler (Broadway/Weidler interchange), and on adjacent surface streets in the vicinity of the Broadway/Weidler interchange. In support of this purpose, the Project also would support improved local connectivity and multimodal access in the vicinity of the interchange, improve multimodal connections between neighborhoods located east and west of I-5, and complement the land use, urban design, and transportation system envisioned for the planning districts of Lower Albina and Lloyd in the City of Portland's Adopted Central City 2035 N/NE Quadrant Plan and *Citywide Pedestrian Plan* (PedPDX), the Pedestrian Master Plan adopted in 2019.

Why is the Project needed?

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. I-5 between I-84 and I-405 is the top traffic bottleneck in Oregon, and the 28th worst freight bottleneck in the nation. The Project is needed to address the following:

- **I-5 Safety:** Data from 2011 to 2015 indicate the segment of I-5 between I-405 and I-84 had the highest crash rate **on urban interstates** in Oregon. **Specifically between I-84 and the Broadway ramp, the crash rate is** approximately 3.5 times higher than the statewide average for comparable urban interstates.
- **I-5 Operations and Reliability:** I-5, in the vicinity of the Broadway/Weidler interchange, experiences some of the highest traffic volumes (121,400 average annual daily trips) and hours of congestion (12 hours per day) in Oregon. Travel reliability has decreased as periods of congestion have increased from morning and afternoon peak periods to longer periods throughout the day. This portion of

I-5 is also one of the top freight bottlenecks in the nation, hindering the efficient movement of people and freight.

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

What are the Project goals?

In addition to the purpose and need, the Project includes the following related goals:

- 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 following land use and urban design elements of the Adopted Central City 2035 Plan (which includes the N/NE Quadrant Plan) related to I-5 and the Broadway/Weidler interchange:
 - A 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
 - Protect and enhance the cultural heritage of the area
 - Improve 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.

Where would the Project be located?

The Project area is a stretch of I-5 that runs through the heart of Portland. It is located in the historic Albina community in an area near the Willamette River that passes through the Lloyd, Eliot, and Boise neighborhoods.

The Project would be located along I-5 in both the NB and SB directions between I-405 and I-84 in Portland, Oregon, and includes the Broadway/Weidler interchange and the surrounding transportation network from approximately N/NE Hancock to the north, N Benton Avenue to the west, N/NE Multnomah Street to the south, and NE 2nd Avenue to the east.

What happens if the Project is not constructed (No-Build Alternative)?

If the Project is not constructed (i.e., the No-Build Alternative), I-5 and the Broadway/Weidler interchange, including most of the local transportation network in the Project Area, would remain in its current configuration. Improvements to I-5 that would enhance traffic flow and safety and the new highway cover that would improve multimodal connections east and west of I-5 would not occur. Without the Project, congestion on I-5 and in the vicinity of the Broadway/Weidler interchange would continue to worsen, and frequent crashes would continue to occur for all modes. Delays in the movement of freight on I-5 would continue to impose costs on shippers, businesses, and consumers. Traffic delay and vehicle/bicycle crashes on surface streets near the interchange would also continue to worsen. In addition, the highway cover would not be built, and the reconnection of N/NE Hancock and new land created over I-5 would not occur.

If the Project is not constructed, the City of Portland would be unable to implement some aspects of the land use components of the *Adopted Central City 2035 Plan* or *PedPDX*, as adopted. Some planned re-zonings to allow higher levels of employment or population density would not be allowed, which would limit allowed development within the Lower Albina and Lloyd planning districts and would not provide for the approximately 4 acres of buildable space on the highway cover or establish connectivity between the neighborhoods of Lower Albina and Lloyd through construction of the highway cover.

Other transportation improvement projects, including separate and distinct projects identified in Metro's Regional Transportation Plan, would likely still be constructed. This would include the City's plans to make improvements in the N/NE Broadway and N/NE Weidler corridor from the Broadway Bridge to NE 7th Avenue to enhance safety for people walking, bicycling, rolling, and driving through the Project Area.

What aspects of the environment are analyzed in this Revised Supplemental Environmental Assessment?

This **RSEA** evaluates the potential for the Project to affect a wide variety of environmental resources. The environmental topics addressed in this **RSEA** include the following:

- Air Quality
- Archaeological Resources
- Climate Change
- Environmental Justice
- Hazardous Materials
- Historic Resources
- Land Use
- Noise
- Right of Way
- Section 4(f)
- Socioeconomics
- Transportation
- Utilities
- Water Resources
- Cumulative Impacts

What areas within the City of Portland were studied to assess impacts on environmental resources?

The areas within the City studied to assess environmental impacts from the Project generally include the Broadway/Weidler interchange and the surrounding transportation network, from approximately N/NE Hancock to the north, N Benton to the west, N/NE Multnomah to the south, and NE 2nd to the east. The “Project Area” represents the estimated area within which improvements associated with the Revised Build Alternative are proposed, including where permanent modifications to adjacent parcels or construction activities may occur. Impacts are described as short term or long term. Short-term impacts are primarily related to construction. Long-term benefits or impacts are considered out to year 2045, and compare outcomes of the Project No-Build and Revised Build Alternatives.

For the purposes of this **RSEA**, this area is referred to as the Area of Potential Impact (API). For most resource topics, the API is the same as the Project Area. However, for some resources (e.g., Air Quality), the API was expanded beyond the Project Area to include additional areas that could experience effects from the Project.

How is the Project expected to improve driver and vehicle safety on I-5?

New ramp-to-ramp connections (auxiliary lanes) are designed to separate slower vehicles entering and exiting the highway from higher-speed vehicles using the through lanes on the highway. Auxiliary lanes are proven to increase safety by

providing drivers more time to merge, which reduces rear-end and sideswipe crashes. The new ramp-to-ramp connections are expected to reduce the frequency of crashes **as compared to the No-Build Alternative. Additionally, wider shoulders included in the Project would provide space for vehicles to move to the side of the road in the event a break down or non-injury crash and can be used by emergency vehicles to access crashes or other events. This would reduce congestion and the potential for secondary rear-end crashes related to these situations.**

What is a highway cover?

The highway cover is a concrete or steel platform that is placed over a highway to accommodate community uses and structures above. As part of the Project, there is an opportunity to reconnect the street grid in the Albina area by replacing existing, aging bridges with one large, seismically resilient highway cover over I-5. The proposed highway cover design was recommended by the community after multiple highway cover options were evaluated through an Independent Cover Assessment review in 2020 and 2021, and has been incorporated into the Revised Build Alternative. The highway cover in the Revised Build Alternative would connect **N Hancock to NE Hancock, which is** currently divided by I-5. It would also add new land over I-5, allowing for wider sidewalks and potential for future economic development opportunities.

What are the Project's anticipated benefits?

The Revised Build Alternative would provide a variety of transportation and environmental benefits, the most notable of which include the following:

- Operations (speed and travel time) on I-5 would improve in both the AM and PM commute periods.
- Conditions for pedestrians and cyclists would be improved by increased physical separation between motorized and non-motorized users, sidewalk gap closures, and reduction in the complexity of intersections along N/NE Broadway, N/NE Weidler, N/NE Wheeler, N Williams, N Vancouver, and the new N/NE Hancock crossing.
- Multimodal benefits would include improved access to transit, improved mobility and safety for transit riders and people walking and biking, and improved physical connections to areas east and west of I-5 provided by the new highway cover **and the new Clackamas Pedestrian and Bicycle Bridge.**
- The Revised Build Alternative would include approximately 8,500 feet (or more than 1.5 miles) of street improvements, including wider and improved sidewalks, additional safe bicycle lanes, additional ADA-compliant street crossings, and safer ingress and egress to parcels throughout the Project Area.

-
- Police, fire, and emergency responders would experience beneficial effects from reduced delays and crashes on I-5 and in the Broadway/Weidler interchange area.
 - Safety improvements and reductions in congestion and delays on I-5 would have beneficial effects on the regional economy by improving the movement of goods and people.
 - Improved traffic operations on the local street system and the addition of new pedestrian and bicycle enhancements would provide benefits to the local business environment.
 - Restoration of east-west neighborhood street connections over I-5 and improvement of overall community cohesion within the Project Area.
 - Treatment facilities to manage stormwater runoff would be developed at three locations: N Mississippi Avenue, north of N Mississippi under the highway, and **N Wheeler/N Williams/N Ramsay** on-ramp.
 - Completing the Revised Build Alternative would be consistent with the goals and objectives identified in the Adopted Central City 2035 Plan and PedPDX.

What are the Project's anticipated adverse impacts and what would be done to mitigate these impacts?

ODOT developed the design concept for the 2019 EA Build Alternative with the objective to avoid and minimize impacts to the natural and human environment to the greatest extent possible. ODOT continued to refine the design concept for the Revised Build Alternative, still with the objective of avoiding and minimizing impacts. As a result, adverse environmental impacts from the Revised Build Alternative would primarily result from construction activities and would therefore be short term.

The most likely impacts include the following:

- Short-term air quality impacts during construction would include the release of fugitive dust generated by soil excavation, surface grading, hauling, and various other construction activities, as well as exhaust emissions from construction equipment. ODOT will require construction contractors to implement a variety of measures to control dust and exhaust emissions from construction equipment and vehicles. **If construction activities increase traffic congestion in the area, carbon monoxide and other emissions from delayed vehicles may increase slightly.**
- During construction, 13 historic properties could be affected by noise and vibration, increased truck traffic, traffic congestion, 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. ODOT would

require construction contractors to follow a variety of best management practices to minimize these types of impacts. ODOT and FHWA have also developed a Programmatic Agreement (PA) in consultation with the Oregon State Historic Preservation Office (SHPO) to avoid and/or minimize the potential for Project-related vibration to historic properties.

- During construction, there would be the potential for spills or releases of oil and fuel from mechanical equipment, including the mobilization or release of existing contamination in soil and groundwater. Such spills or releases could potentially increase human health and safety hazards for construction workers and the public. ODOT would require construction contractors to implement a range of measures to address hazardous materials concerns, including testing procedures for identifying the presence of lead-based paint and asbestos; requirements for the safe transport, use, and storage of hazardous materials; and the obligation to develop a Health and Safety Plan, a Project-specific Pollution Control Plan, and a Contaminated Media Management Plan.
- There would be a permanent conversion of approximately **2.7** acres of commercial and undeveloped land to transportation right of way (ROW).
- Construction activities would result in a short-term increase of noise levels from construction activities. **Construction contractors must implement noise abatement measures in accordance with Oregon Standard Specifications for Construction. The City of Portland may require additional measures in its noise variance.** No substantial operations-related noise impacts are anticipated.
- Short-term construction-related impacts to transit would include temporary bus stop closures or relocations, bus route detours, and changes to streetcar operations. To address short-term impacts during construction, Tri-County Metropolitan Transportation District of Oregon (TriMet) has indicated that it may consider implementing bus route detours around the impacted area for the duration of the construction period to avoid multiple temporary changes for a single bus route.
- Construction-related impacts would include short-term highway and local street motor traffic **delays**; detours and delays for cyclists, pedestrians, and transit riders; and modifications to event access at Moda Center and the Oregon Convention Center. 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.
- Highway lane closures are 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. ODOT would develop 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. Temporary local street closures, crosswalk closures, or turn restrictions would be implemented as necessary to limit traffic diversion onto local streets in residential neighborhoods.

- Existing above- and below-ground utilities would likely be **affected** during construction, with effects ranging from brief temporary service interruptions to major relocations of electric transmission and distribution lines, water supply lines, and large capacity sewer lines. Coordination with utility providers and the use of standard construction procedures and techniques would minimize disturbance to system users and avoid damage or impacts to existing utilities.
- Previously undiscovered archaeological resources could be altered, damaged, or destroyed by the operation of heavy equipment or during compaction, excavation, or grading of soils during construction and subsurface maintenance activities. Potential impacts to archaeological resources during construction would be addressed through an Inadvertent Discovery Plan and a Project-specific PA between FHWA, Oregon SHPO, and ODOT that would identify mandatory protocols to be followed in the event of an inadvertent discovery.

What are the Project's anticipated right of way needs?

ROW needs to construct various Project features along I-5, including several new or reconfigured on- and off-ramps and surface street improvements, would displace and relocate **11** commercial retail or service-related businesses, **3** landlord-only businesses (properties owned for the sole purpose of leasing), **8 to 38** personal-only properties (**items not attached to the real property that can be moved, with no need for full relocation**), and four outdoor advertising signs. No residential displacements are anticipated. Displaced businesses are not unique to the surrounding community. All ROW acquisition and relocation activities would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (49 Code of Federal Regulations 24), Oregon Revised Statute 35, and the *2018 ODOT Right of Way Manual*.

Where can you find more detailed information about Project impacts?

Additional information on the impacts and mitigation measures associated with the Project, beyond those provided in this **RSEA**, can be found in separate supplemental technical reports available in Appendix A of this **RSEA** and on the Project website at <https://www.i-5rosequarter.org/resources/library.aspx>.

How has the public been involved in this Project?

Since its inception in 2010, the Project has included an active public involvement component. Early planning efforts for the N/NE Quadrant (as part of the *Adopted Central City 2035 Plan*) and I-5 Broadway/Weidler Plans were guided by the unique collaborative partnership between ODOT and the City of Portland, and a 30-person Stakeholder Advisory Committee. This partnership allowed for joint planning and decision-making to develop a design concept for the I-5 Broadway/Weidler interchange that would complement the land use, urban design, and transportation system envisioned for the planning districts of Lower Albina and Lloyd.

Advisory committees oversee and provide input into the Project development. Committee members' expertise reflects diverse professional backgrounds, including minority-owned firms, advocacy groups, workforce development organizations, industry associations, and community-based organizations. Members are leaders and volunteers with strong ties to the historic Albina community, with a wide array of civic and community interests. All members are recognized for advocating for people, particularly for people of color and other diverse groups.

The Community Oversight Advisory Committee (COAC) works to ensure the construction contractor meets its community and project goals and expectations for contracting with disadvantaged businesses and employing minorities and women. The COAC brings a broad perspective on community, social, economic, and workforce issues in the Project Area.

The Historic Albina Advisory Board's (HAAB) purpose is to elevate voices in the Black community to ensure that project outcomes reflect community interests and values, and that their community directly benefits from the investments of this Project. The board brings community perspectives into the Project's decision-making process concerning elements that most directly support community connections, urban design, and wealth generation in the historic Albina community.

To learn more about these advisory committees, visit the Project website at <https://www.i-5rosequarter.org/community/committees.aspx>.

In addition to the committees, in early 2020, the Oregon Transportation Commission directed ODOT to conduct an independent assessment of the highway cover designs and identify new options for using highway covers to address restorative justice for the Black Albina community. This effort involved local **interested parties** including Metro, Multnomah County, City of Portland, Portland Public Schools, Albina Vision Trust, and the Oregon Transportation Commission. The Independent Cover Assessment (ICA) team worked directly with local community members from the historic Albina neighborhood to understand how the highway cover design concepts might best serve the historic Albina community. The Project's HAAB, Executive Steering Committee, and COAC Board also provided input as part of the ICA process.

In addition to the ICA, the Project team has participated in numerous community events and briefings and has hosted a series of public design surveys to gain public input on specific aesthetic design considerations associated with the highway infrastructure (columns, walls, crash barriers, etc.).

The 2022 SEA was published on November 15, 2022, and the public was invited to comment on it through January 4, 2023. After the 2022 SEA was published, ODOT hosted an online open house that was available for the entire public comment period, held a virtual public hearing with FHWA (on December 14, 2022), produced numerous forms of communications describing how the public could participate in the 2022 SEA review process, and facilitated a variety of methods for receiving public comments. ODOT's outreach efforts included presentations and briefings to the City of Portland advisory committees and commissions, community events, meetings with the HAAB and COAC, and direct outreach to community-based organizations.

How has the Project addressed the past harms to environmental justice populations in the Project Area?

In Portland, generations of Black families in the Albina community are still impacted by the lasting harm caused by the original construction of I-5 in the 1950s, which resulted in the loss of their homes, businesses, and community places. Early recognition of environmental justice issues in the Project Area led to substantial targeted outreach to raise awareness about Project alternatives and the environmental studies under way. In 2020, the Project team expanded outreach efforts during the ICA process. A team was created consisting of community engagement, urban design, engineering, and environmental experts. The ICA team reviewed Project public records for community concerns, engaged with historic Albina community members, and solicited feedback from **interested parties** to understand how the highway cover could be configured to create the greatest potential for restorative justice outcomes for the historic Black Albina community. These outreach efforts, together with technical expertise from the ICA team, resulted in identification of the Revised Build Alternative. The Project presents an opportunity to acknowledge the past harms of the destruction of the Albina community, and to deliver a restorative project through intentional investments.

What agencies and organizations did ODOT consult with during preparation of the Supplemental Environmental Assessment and Revised Supplemental Environmental Assessment?

ODOT **and** FHWA worked closely with the City of Portland, Oregon SHPO, TriMet, Metro, Port of Portland, Portland Parks and Recreation, Portland Public Schools, and Portland Streetcar, **Inc.**, to ensure that community concerns and potential environmental impacts from the Revised Build Alternative have been fully addressed and disclosed. ODOT **will** continue to work with these partners to ensure that

mitigation measures and environmental commitments are implemented during construction and operation of the Revised Build Alternative. In addition to the agencies listed above, the parties listed below were invited to **be a Cooperating or Participating Agency** for the Project. Some agencies invited declined, as indicated (note that some agencies qualify as Cooperating Agencies).

- National Oceanic and Atmospheric Administration Fisheries (cooperating)
- United States Army Corps of Engineers (cooperating)
- United States Fish and Wildlife Service (declined)
- United States Coast Guard (cooperating)
- Oregon Department of Environmental Quality (no response)
- Confederated Tribes of the Grand Ronde Community of Oregon (no response)
- Confederated Tribes of Siletz Indians (no response)
- Confederated Tribes of the Warm Springs Reservation of Oregon (no response)
- Cowlitz Indian Tribe (no response)
- Multnomah County (no response)

Cooperating and Participating Agencies provided the following support to the Project:

- Reviewed and commented on the purpose and need and range of alternatives
- Reviewed and commented on methodologies used to address technical topics consistent with special expertise or jurisdiction of the agency
- Identified issues of concern regarding the Project's potential environmental or socioeconomic impacts
- Provided timely input on unresolved issues
- Provided comment on **the 2022 SEA**

Where can I find more information about the Project?

ODOT has created a Project website (<http://1-5rosequarter.org/>) that includes detailed information on the Revised Build Alternative, including graphics and links to newsletters, maps, and other relevant documents. Interested parties can sign up for email updates and view a calendar of upcoming events.

This page is intentionally left blank.

1 INTRODUCTION

The Federal Highway Administration (FHWA) and Oregon Department of Transportation (ODOT) **issued a Supplemental Environmental Assessment (SEA) in November 2022** to disclose results of the environmental study of the **Revised Build Alternative** for the Interstate 5 (I-5) Rose Quarter Improvement Project (Project). The **2022 SEA** supplemented information presented in the original 2019 Environmental Assessment (ODOT **2019a**; EA) and 2020 Finding of No Significant Impact and Revised Environmental Assessment (FONSI REA; ODOT **2020**) by evaluating updates to the Project's Build Alternative since **publication of those documents**. FHWA and ODOT **released the 2022 SEA for a 50-day comment period from November 15, 2022, to January 4, 2023**. In response to public comments received on the 2022 SEA, ODOT refined the design of the Revised Build Alternative. This Revised Supplemental Environmental Assessment (RSEA) presents the design refinements of the Revised Build Alternative and resulting changes to the environmental consequences of the Project. This RSEA also responds to public comments on the 2022 SEA. Design refinements to the Revised Build Alternative since the 2022 SEA include modification of the I-5 southbound (SB) off-ramp and adding the Clackamas Pedestrian and Bicycle Bridge back into the Project.

This document is a revision of the 2022 Supplemental Environmental Assessment. All updated information is shown in bold text.

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 and 2020 FONSI REA) Project Area and areas that were added to encompass the Project Area for the Revised Build Alternative evaluated in this RSEA.¹ 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

¹ With the reintroduction of the Clackamas Pedestrian and Bicycle Bridge, an area along NE Clackamas Street that was not included in the 2022 SEA Project Area has been added back into the RSEA Project Area.

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).

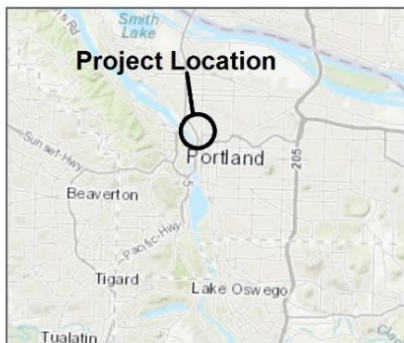
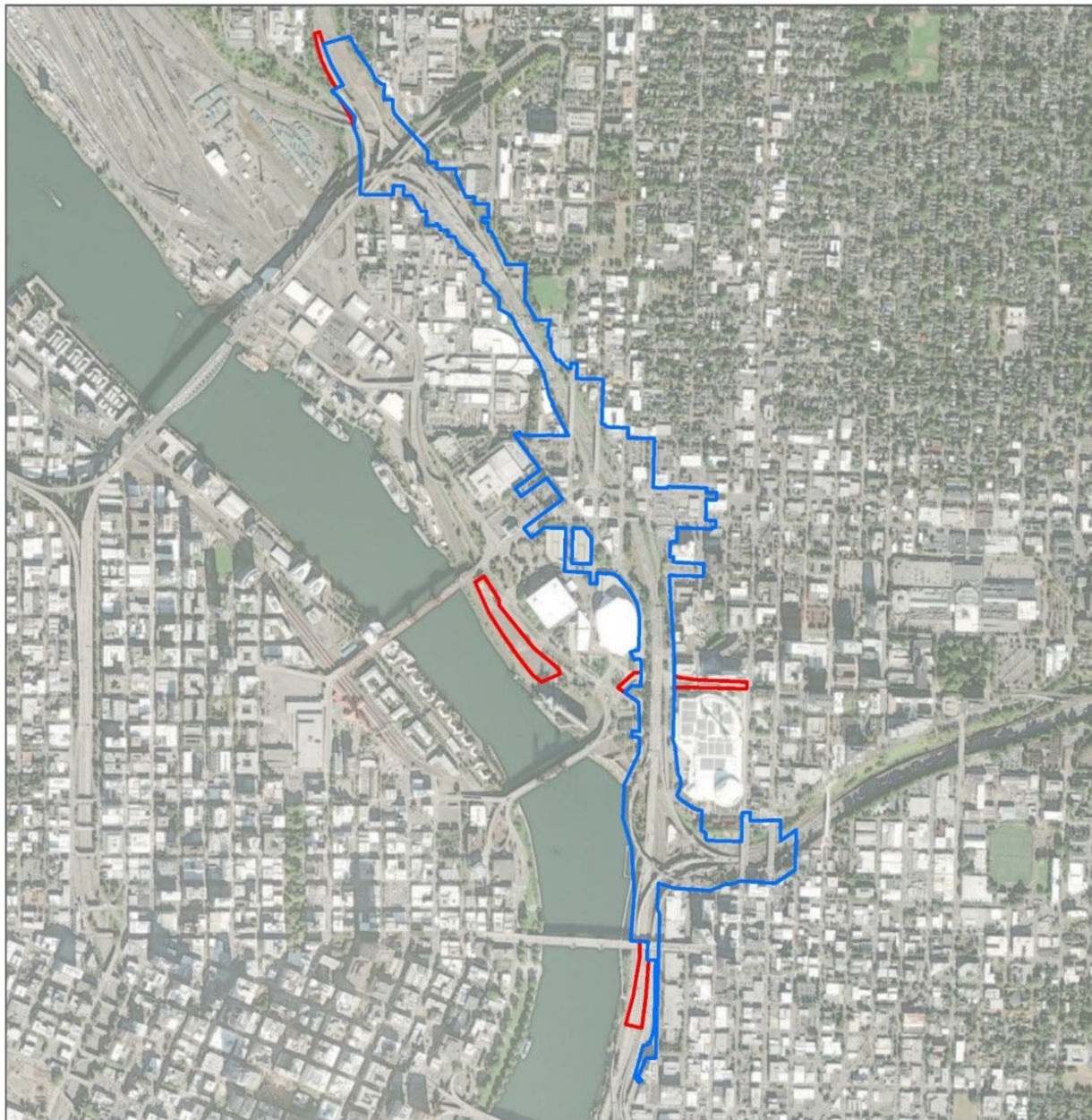
Lane configurations within the Project Area consist primarily of two through lanes (**northbound** [NB] and SB), with one auxiliary lane between interchanges in the NB direction and two auxiliary lanes in the SB direction. Within this segment, I-5 NB connects with five on- and off-ramps, and I-5 SB connects 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 **2022a**). 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 **2019a**). 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

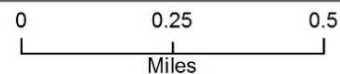
create a Revised Build Alternative. The changes focused primarily on design improvements to include a larger, contiguous highway cover with improved structural integrity to support multi-story buildings. **ODOT and FHWA published the 2022 SEA on November 15, 2022, with a public comment period that ended on January 4, 2023. Based on public comments, ODOT made refinements to the design of the Revised Build Alternative that are reflected in this RSEA.**

FIGURE 1-1. PREVIOUS AND CURRENT PROJECT AREA



- 2020 FONSI Build Alternative
- Revised Build Alternative Additional Area

I-5 ROSE QUARTER IMPROVEMENT PROJECT PROJECT AREA



1.3 NEED FOR A SUPPLEMENTAL EA

In accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508, effective 1978, amended 2005²), the 2022 SEA supplemented information presented in the 2020 FONSI REA with an evaluation of the impacts of the Revised Build Alternative compared to the No-Build Alternative. This RSEA includes an evaluation of the effects of refinements to the Project design since the 2022 SEA. These refinements were based on the comments received on the 2022 SEA during the public comment period.

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 crashes³) 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

² Pursuant to 40 CFR 1506.13 and consistent with agency practice, the CEQ regulations that were in effect on November 17, 2016, when the NEPA process for the I-5 Rose Quarter Improvement Project was initiated, continue to apply to the I-5 Rose Quarter Improvement Project RSEA, as it is a continuation of the ongoing NEPA process started under those regulations.

³ Motor vehicle crashes are reported and classified by whether they involve property damage, injury, or death.

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 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), pedestrians, and cyclists, 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 **N** Broadway and **NE** 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

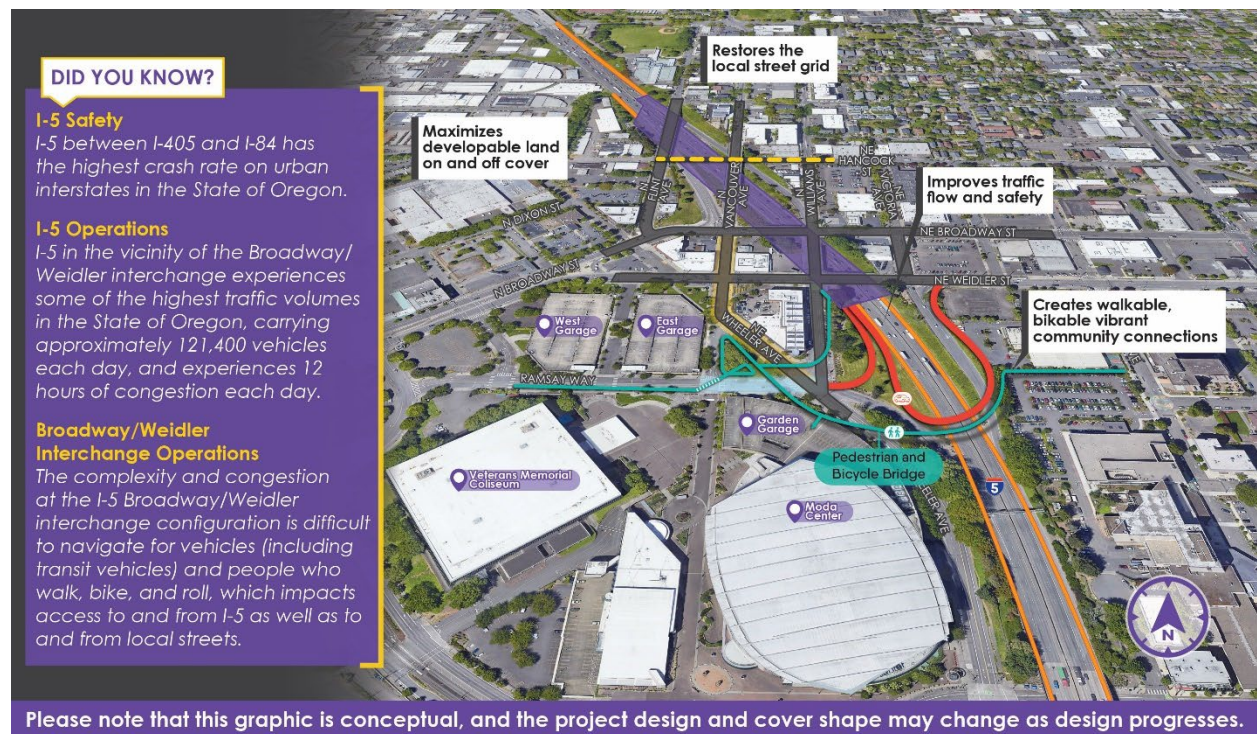
In addition to the purpose and need, which focus on the state's transportation system, the Project includes related goals developed through the joint ODOT and City of Portland N/NE Quadrant and I-5 Broadway/Weidler Interchange Plan process, which included extensive coordination with other public agencies and citizen outreach. Goals 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



1.6 PUBLIC COMMENT ON THE 2022 SEA

ODOT and the FHWA published the 2022 SEA on November 15, 2022, which included a 50-day public comment period ending on January 4, 2023. During this period, ODOT hosted an online open house and held a virtual public hearing. A total of 921 comment submissions were received over the course of the comment period through the use of an online comment form, email, mail, voice message, and orally at the virtual public hearing. Section 4 includes descriptions of the public involvement effort and agency coordination leading up to this RSEA.

2 PROJECT ALTERNATIVES

This section describes the two alternatives being evaluated in detail in this RSEA (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 RSEA.

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 Interchange Improvements 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 **interested parties** raised concerns about the design because of its disjunct configuration and lack of buildable space.

Beginning in 2020 and extending through 2021, an **Independent Cover Assessment** (ICA), as directed by the OTC, engaged the Project's advisory committees⁴ and community members to explore design opportunities for the highway covers that support restorative justice outcomes. The purpose of the ICA was to understand **the interested party** goals and objectives within the Project Area, generate potential highway cover scenarios, and assess the impacts and benefits of those scenarios (ODOT 2021b).

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.

⁴ Please visit <https://www.i-5rosequarter.org/community/committees.aspx> for more information about the advisory committees.

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>.

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 N 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. **Reconfiguring** N Vancouver and **moving** 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 **interested parties** 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. 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 **interested party** 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 FOR THE 2022 SEA

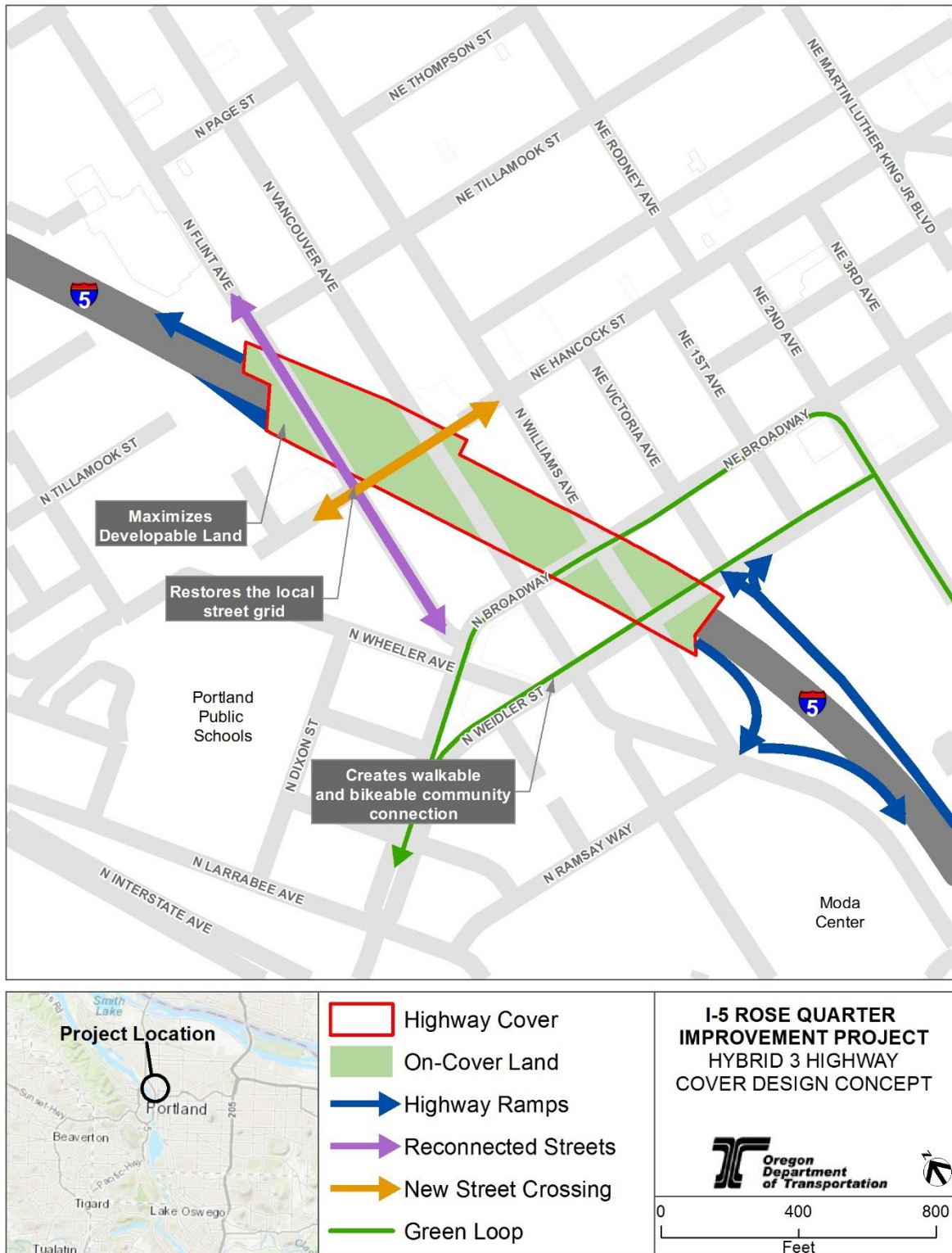
ODOT adjusted the Project design to include the Hybrid 3 concept (Figure 2-1) in a Revised Build Alternative, **which was** described in Section 2.2.2 of the 2022 SEA. The Revised Build Alternative also incorporated design improvements identified since the 2020 FONSI REA.

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 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 required relocation of the I-5 SB off-ramp at N Broadway to N/NE Weidler via N Williams **Avenue**, 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 **the 2022 SEA was** based on preliminary design of the Hybrid 3 concept as further developed by ODOT. Preliminary design included the information necessary to conduct an assessment of impacts of the Project in accordance with NEPA.

FIGURE 2-1. HYBRID 3 HIGHWAY COVER DESIGN CONCEPT



2.1.5 DESIGN REFINEMENTS BASED ON PUBLIC COMMENTS ON THE 2022 SEA

Many of the comments on the 2022 SEA that were submitted during the 50-day public comment period were focused on the design of the relocated I-5 SB off-ramp in the Revised Build Alternative (i.e., from N Broadway/N Vancouver to the intersection of N Wheeler Avenue/N Williams Avenue/N Ramsay Way) and how it would impact pedestrian and bicyclist safety on streets on and near the cover, event traffic management and circulation associated with events in the Rose Quarter, and freight movement. Specific concern highlighted in the comments, including from partners at the City of Portland and Rip City Management (the entities responsible for Moda Center and Veterans Memorial Coliseum management and operations in the Rose Quarter), was the new, increased volume of car and truck traffic at the relocated I-5 SB off-ramp and the safety of pedestrians and bicyclists at this location.

In response to these comments, ODOT and the City of Portland held a series of policy and technical meetings with the HAAB, Project partners, and key community partners, including Rip City Management. The focus of these conversations was to arrive at a consensus-based design refinement solution to address the concerns related to multimodal safety, event operations, and broader district development at the I-5 SB off-ramp at the N Wheeler/N Williams/N Ramsay intersection.

The results of these meetings and input from Project and community partners are design refinements that address the safety concerns related to the I-5 SB off-ramp relocation and are supported by the HAAB. The design refinements include a new “flyover” structure for the I-5 SB off-ramp that would separate eastbound (EB) from westbound (WB) vehicle traffic using the exit (described in Section 2.2.2.3) and the addition of the Clackamas Pedestrian and Bicycle Bridge (described in Section 2.2.2.4). The I-5 SB off-ramp refinements would have similar infrastructure components and footprints as the design analyzed in the 2022 SEA.

As compared to the Revised Build Alternative design considered in the 2022 SEA, the design refinements would improve safety for people walking, biking, and rolling; reduce car and transit delays; support redevelopment opportunities for the Albina community; and create safer access to Rose Quarter events (Moda Center and Veterans Memorial Coliseum).

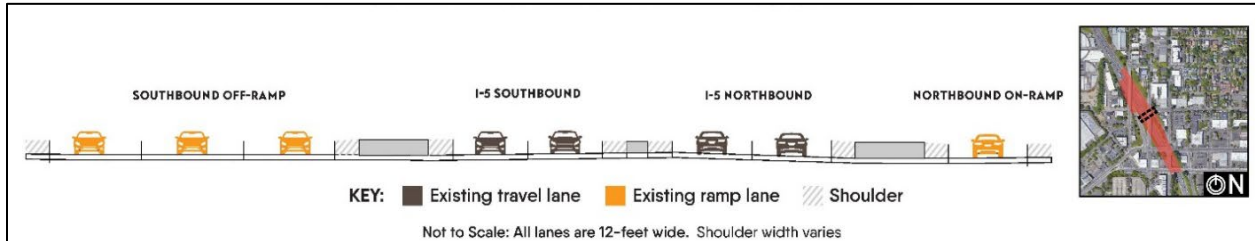
2.2 ALTERNATIVES CARRIED FORWARD

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 list⁵). 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, multimodal improvements to the surface street network in the vicinity of the Broadway/Weidler interchange, **and the Clackamas Pedestrian and Bicycle Bridge**. Figure 2-3 shows an overview of the Revised Build Alternative. **A list of environmental commitments (avoidance, minimization, and mitigation measures) included in the Revised Build Alternative is included in Appendix B.**

⁵ 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 N 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 4 to 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 WB on-ramp to the NE Weidler off-ramp and from the NE 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 **that** currently ends just south of the N Broadway off-ramp, in the vicinity of the N Broadway overcrossing structure, would **be extended** 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.

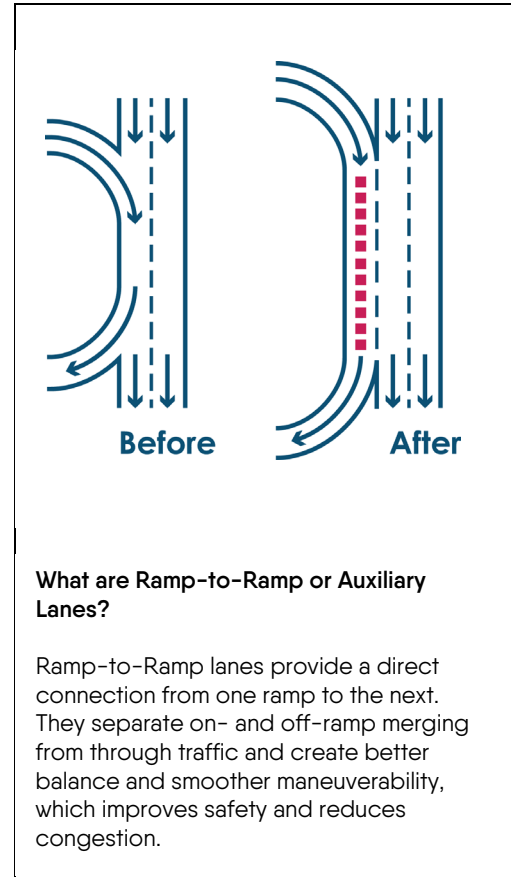


FIGURE 2-4. AUXILIARY LANE/SHOULDER IMPROVEMENTS

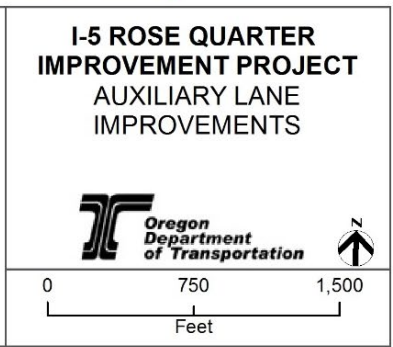
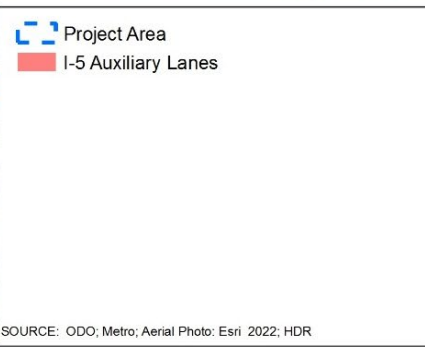
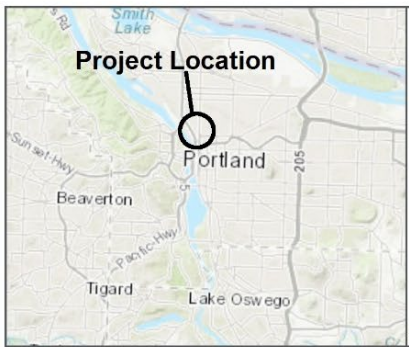
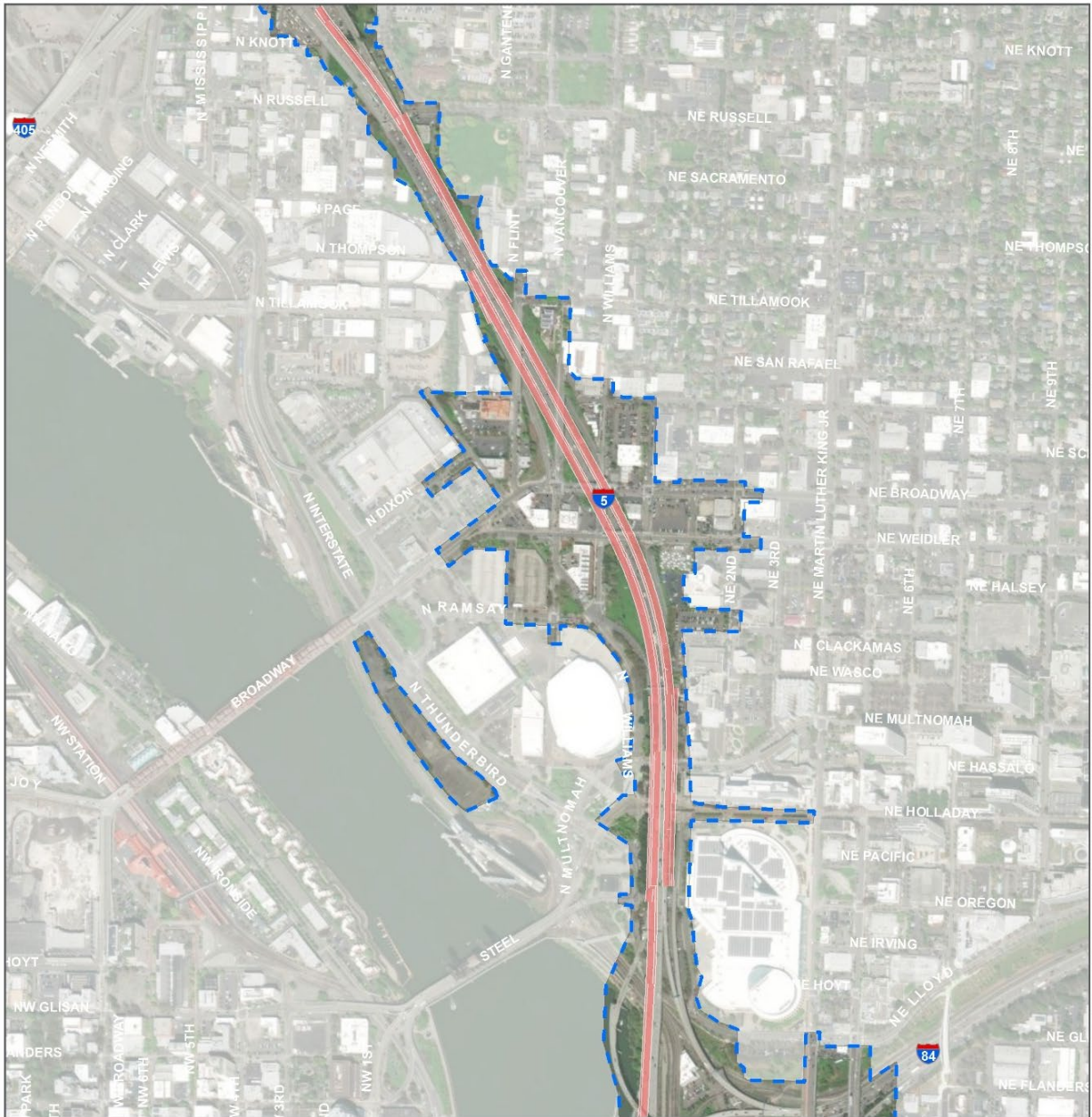
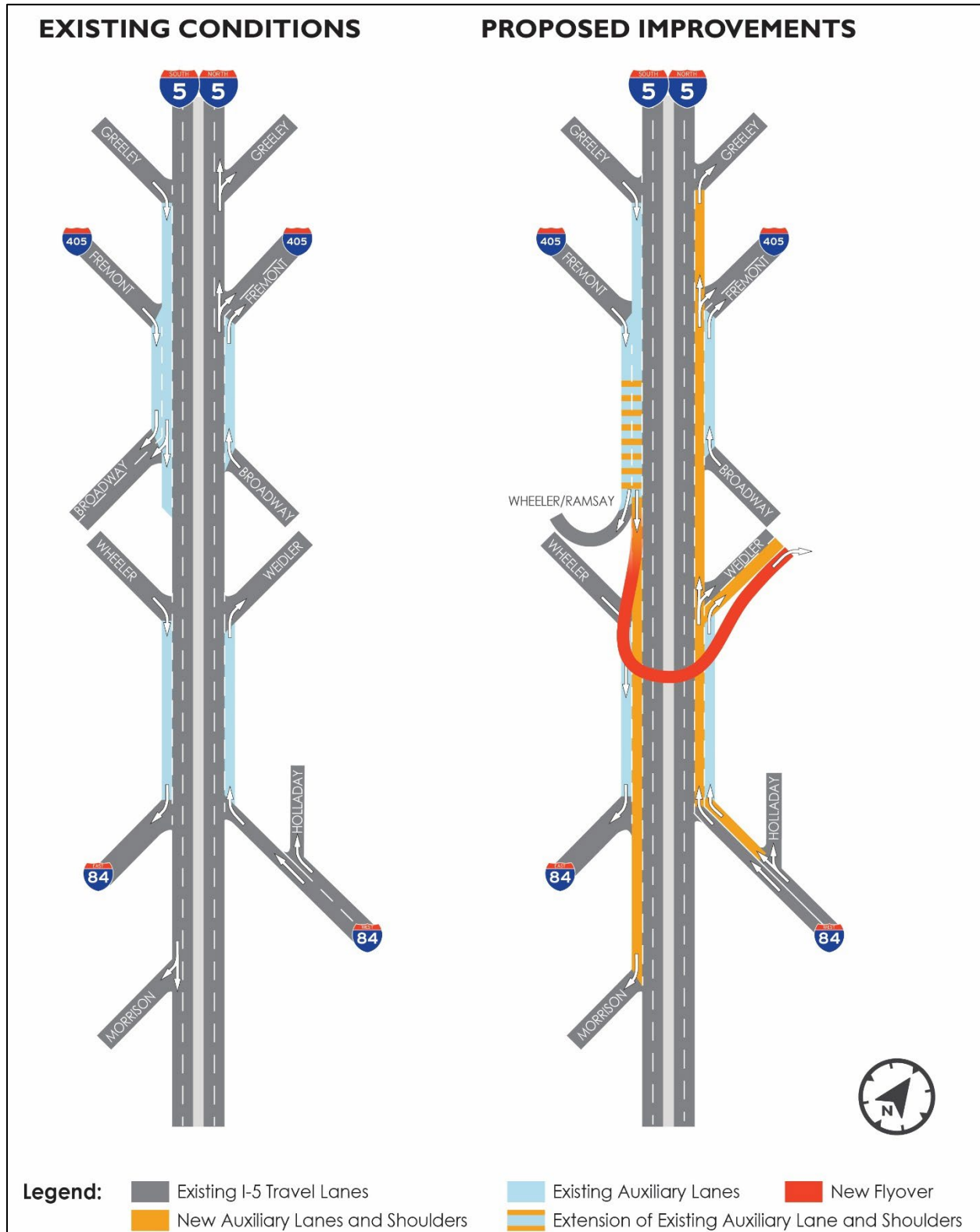


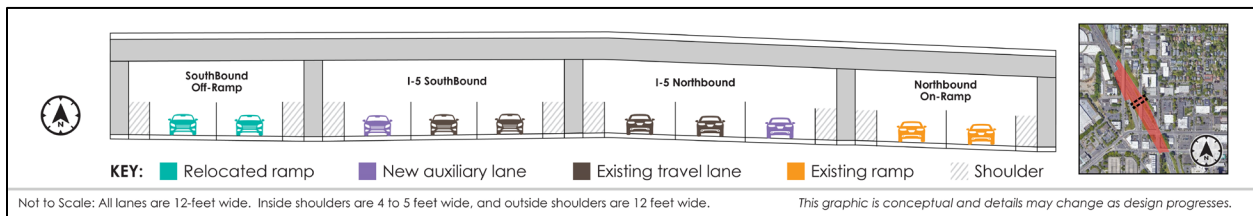
FIGURE 2-5. I-5 AUXILIARY (RAMP-TO-RAMP) LANES - EXISTING CONDITIONS AND PROPOSED IMPROVEMENTS



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. **This** improvement would be positioned over **the** 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 N 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

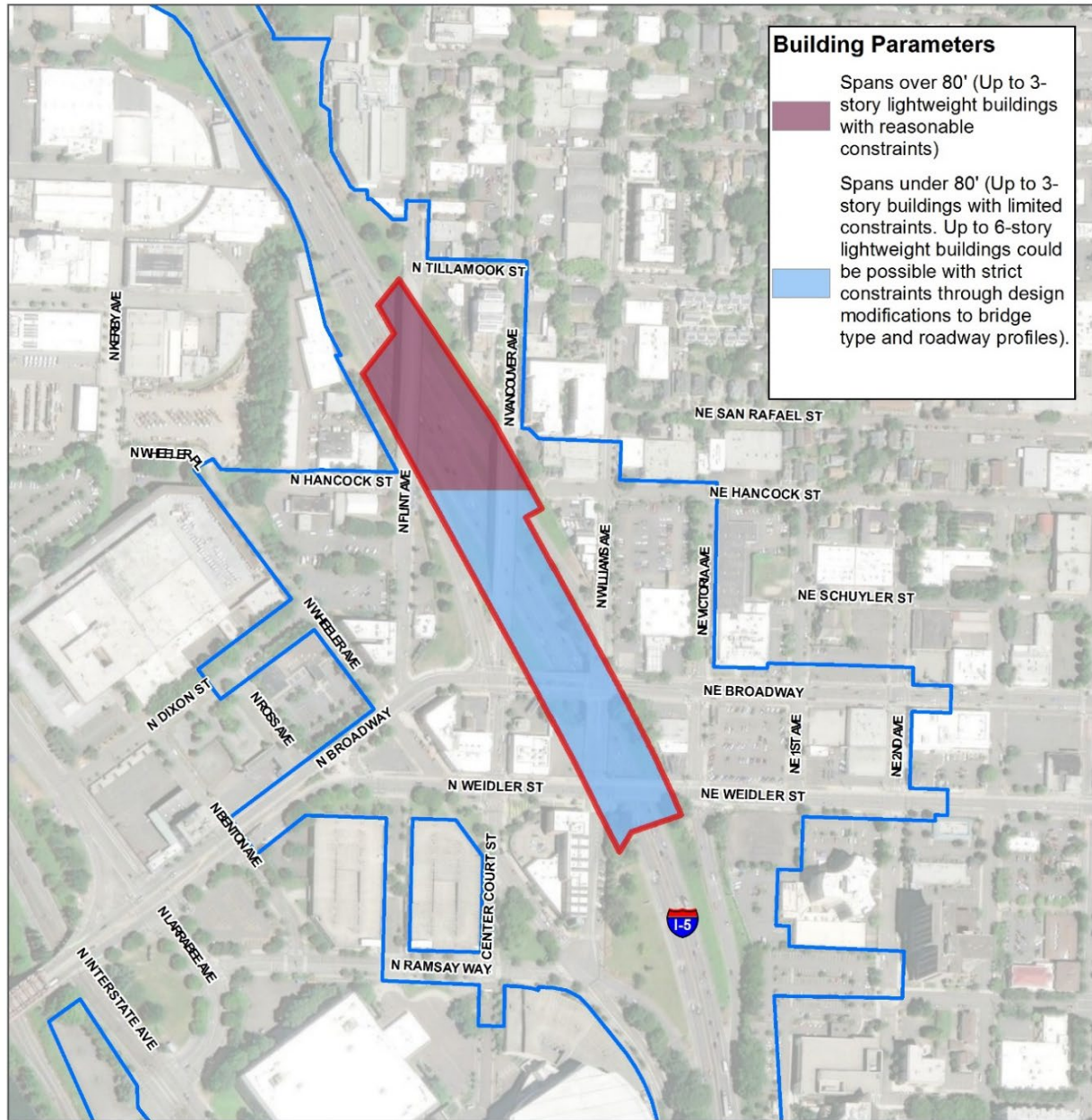
I-5 for neighborhoods east and west of the highway and providing buildable space above I-5. The highway cover would include the following improvements:

- 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 pedestrian and bicycle 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 Broadway south to **the N Wheeler/N Williams/N Ramsay intersection**. 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.

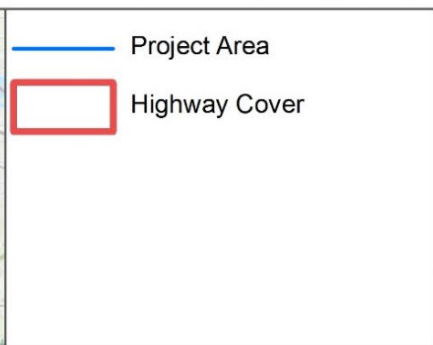
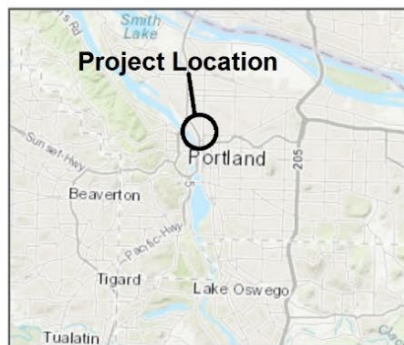
FIGURE 2-7. BUILDING PARAMETERS ON THE COVER



Building Parameters

Spans over 80' (Up to 3-story lightweight buildings with reasonable constraints)

Spans under 80' (Up to 3-story buildings with limited constraints. Up to 6-story lightweight buildings could be possible with strict constraints through design modifications to bridge type and roadway profiles).



I-5 ROSE QUARTER IMPROVEMENT PROJECT PRELIMINARY HIGHWAY COVER BUILDING PARAMETERS

0 0.075 0.15
Miles

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

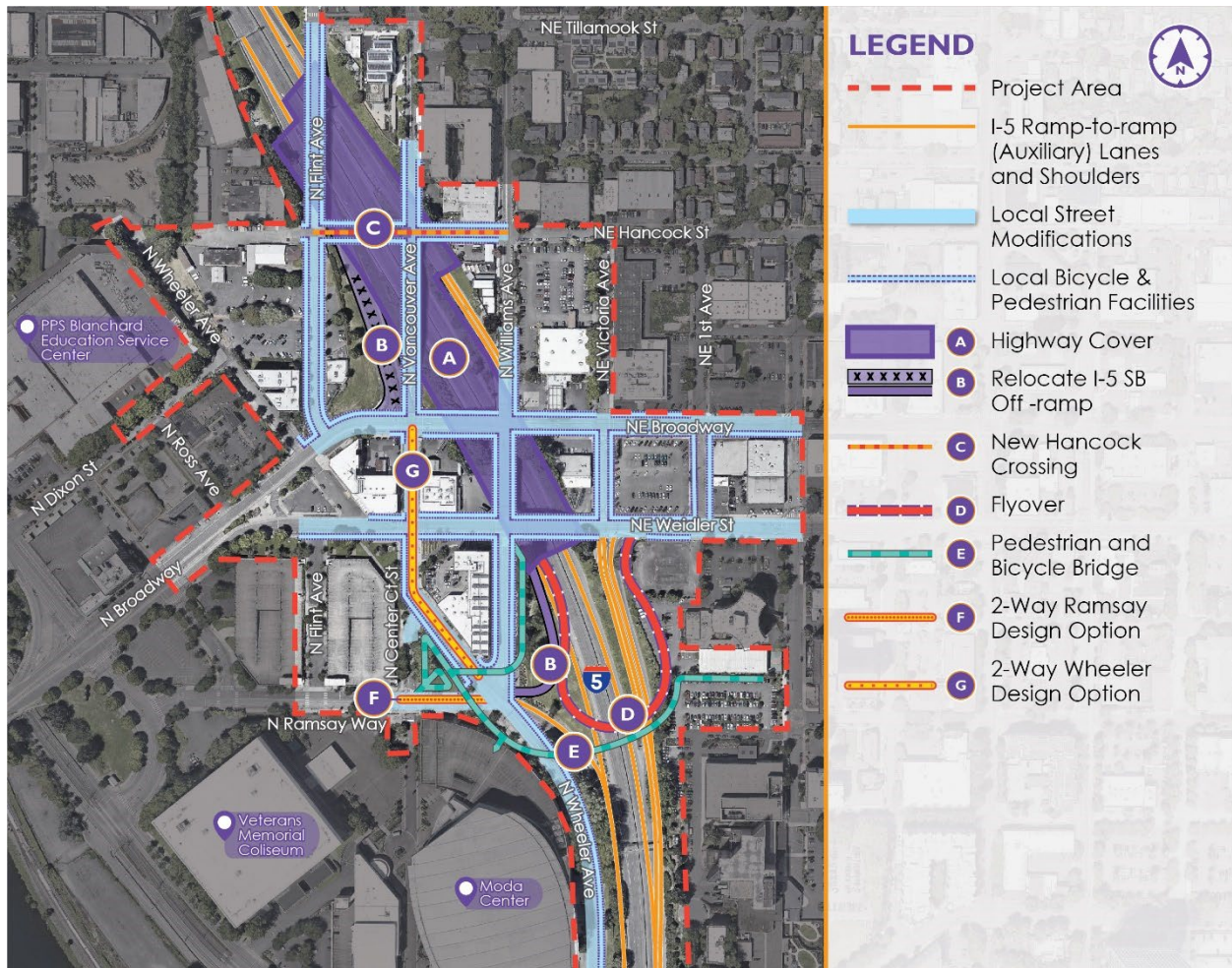


Note: Artistic rendering reflects a potential immediate use of the cover should future development led by the City not be ready upon Project completion. This rendering does not show the Clackamas Pedestrian and Bicycle Bridge.

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.

FIGURE 2-9. BROADWAY/WEIDLER INTERCHANGE AREA IMPROVEMENTS



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 to N Wheeler/N Williams/N Ramsay (WB) and NE Weidler (EB). The off-ramp would divide WB traffic from EB traffic, as seen in Figure 2-10, with a single-lane connection at N Wheeler/N Williams/N Ramsay and single lane-bridge (flyover) over I-5 to connect with NE Weidler.

FIGURE 2-10. I-5 RAMP RELOCATION



REVISE TRAFFIC FLOW AT N WHEELER/N WILLIAMS/N RAMSAY

To accommodate I-5 SB traffic exiting at N Wheeler/N Williams/N Ramsay, ODOT is considering two design options, both of which are evaluated in this report (Figure 2-11):

- 2-Way Ramsay Design Option – Convert N Ramsay between N Center Court Street and N Wheeler from an EB one-way facility to a two-way facility.
- 2-Way Wheeler Design Option – Construct a new NB travel lane on N Wheeler between N Broadway and N Ramsay and maintain the three existing SB travel lanes south of N Weidler.

These design options have the same physical infrastructure components. The differences between them are operational only.

FIGURE 2-11. DESIGN OPTIONS FOR I-5 SB OFF-RAMP: TRAFFIC HEADING WEST

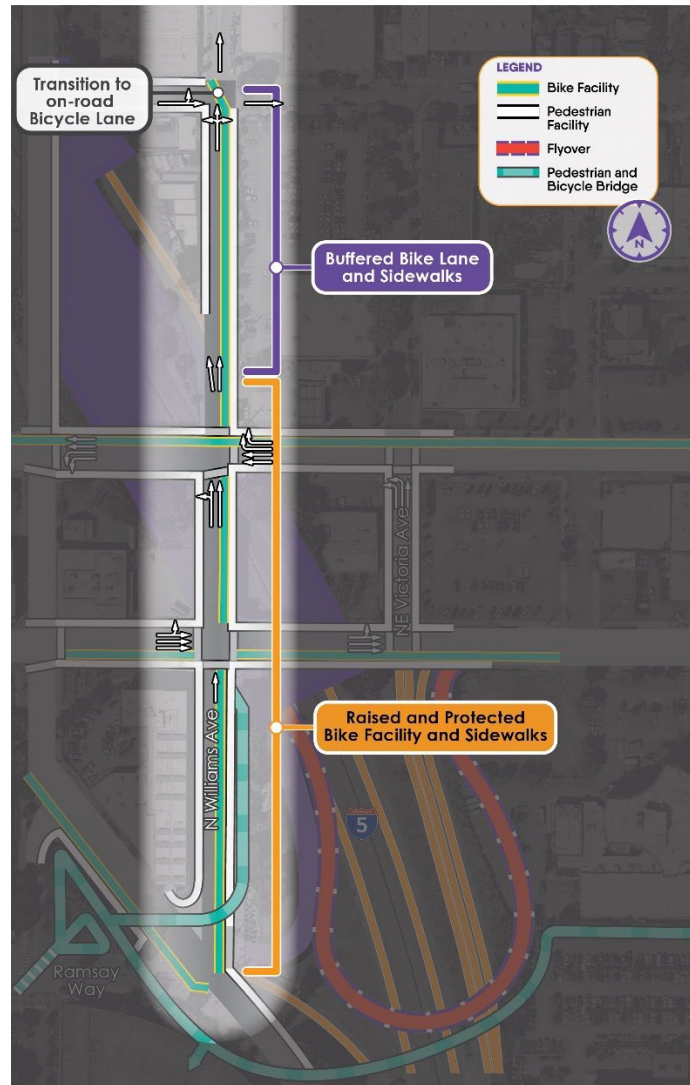


The Revised Build Alternative would alter the cross section on N Williams between N Ramsay and N/NE Broadway as follows:

- Change current lane configuration **from the intersection of N Wheeler/N Williams/N Ramsay to N Weidler** to one through lane. Parking on the west side would remain.
- **Convert** existing angled parking on the east side of the roadway to **parallel parking** and add a raised and protected bike facility and sidewalk.
- Change the lane configuration between N/NE Weidler and N/NE Broadway to one left-turn lane to N Broadway, a combined left-turn/through lane, and a through lane.
- Provide access to the I-5 NB on-ramp and allow through movements on N Williams with two NB travel lanes along the west side of N Williams, north of N Weidler.
- 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 2-12 for details of the N Williams bike facility/path and revised traffic flow.

FIGURE 2-12. PROPOSED MODIFICATIONS TO N WILLIAMS BETWEEN N/NE BROADWAY AND N/NE WEIDLER



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 reconfigure the I-5 SB off-ramp, adding a flyover with a second right-turn lane at the intersection of NE Weidler and NE Victoria Avenue, adjacent to the right-turn lane from the I-5 NB off-ramp. Right-turn-on-red would be prohibited from both lanes, with the aim of removing conflicts with pedestrian and bicycle crossings.

2.2.2.4 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, **the new Clackamas Pedestrian and Bicycle Bridge**, raised bike lanes on N/NE Broadway and N/NE Weidler, and improved pedestrian and bicycle facilities on N Vancouver, N Williams, and N/NE Broadway.

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 “C”). 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 (PBOT 2015).

Pedestrian and bicycle through travel would be permitted **in order** 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.

CLACKAMAS PEDESTRIAN AND BICYCLE BRIDGE

The Revised Build Alternative would include the construction of the Clackamas Pedestrian and Bicycle Bridge (a.k.a. Clackamas Crossing), which would provide a new, lower-stress, physically separated connection over I-5; offer an alternative route for people walking, riding, or rolling through the Broadway/Weidler interchange; and provide a direct link between the Lloyd district and the Rose Quarter (see Figure 2-9, element “E”). The geometry and location of connection points will be further evaluated through the design process. The Revised Build Alternative includes the following:

- Alignment of the crossing to the south to accommodate the fly-over
- Location of the western termination point of the crossing to the triangle of land framed by N Center Court, N Wheeler, and N Ramsay
- Construction of a new connection to the crossing from the southeast corner of the intersection of N Williams and N Weidler that spans over N Wheeler
- Addition of a direct connection to the Garden Garage, which is attached to the Moda Center

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 **turning** movements.

Additionally, the bicycle lane on N Vancouver would be upgraded to a protected bike facility on the west side of N Vancouver from N Hancock to N Broadway. **Like other bicycle facilities associated with the Project**, design would be developed in cooperation with the City of Portland and Tri-County Metropolitan Transportation District of Oregon (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/NE 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 pedestrian and bicycle facilities on the new **highway** cover 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 **revised** supplemental technical reports provided in Appendix A, also available on the Project website: <https://www.I-5rosequarter.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. **Based on comments received on the 2022 SEA, ODOT and FHWA refined the design of the Revised Build Alternative to include two options for the SB off-ramp (described in Section 2.2.2.3): the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option. Impacts are presented for each option where there would be a measurable difference.**

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 C.

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 B.

3.1 RESOURCES NOT AFFECTED

The following resource topics have not been included in the **RSEA** 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 **RSEA**:

- 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

Monitoring data from 2019 to 2021 show that air quality in the Portland metropolitan area currently meets 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_x), volatile organic compounds (VOCs)⁶, CO, coarse and fine particulate matter (PM₁₀, PM_{2.5}) and mobile source air toxics (MSAT⁷). 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 **transportation MSAT** emissions and criteria pollutant emissions (i.e., CO, VOCs, NO_x, PM₁₀, and PM_{2.5}).

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 NAAQS criteria pollutants **emissions** would also decline. **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 and vehicle turnover (see the *Revised Air Quality Supplemental Technical Report in Appendix A*).** PM₁₀ 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

⁶ Note that VOCs are not criteria pollutants but are critical to the formation of ozone, which is a criteria pollutant.

⁷ 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.

miles driven, which increases in future conditions (2045). See Table 3-1 for criteria pollutants and MSAT emissions for the No-Build Alternative.

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 dust⁸) generated by 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, NO_x, VOCs, PM₁₀, PM_{2.5}, 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.

All estimated future (2045) criteria air pollutant and MSAT emissions in the API under the Revised Build Alternative are equal to or lower than both the existing conditions and the 2045 No-Build Alternative. Therefore, air quality within the API would improve slightly under the Revised Build Alternative. Trends indicate that current concentrations of pollutants other than PM_{2.5} and PM₁₀, 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 and there is vehicle turnover Table 3-3 shows criteria pollutant and MSAT emissions by alternative.

When looking at MSAT emission estimates by roadway type (i.e., highway or surface streets), MSAT emission estimates in 2045 for surface street operations under the Revised Build Alternative are the same as or lower than estimates for the No-Build Alternative for all MSAT pollutants other than benzene and ethylbenzene, which would increase under the Revised Build Alternative 2-Way Wheeler Design Option. The estimated MSAT emissions from highway operations for the Revised Build Alternative in 2045 would be equal to or lower than the MSAT emissions for the No-Build Alternative. See Table 9 of the *Revised Air Quality Supplemental Technical Report* in Appendix A for more details on these MSAT emissions estimates.

⁸ 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.

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 (see Section 3.8.2.2) or create other effects that would cause indirect impacts.

TABLE 3-1. COMPARISON OF CRITERIA POLLUTANTS 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 2 Way Ramsay Design Option 2045 Emissions (tons per year)	Revised Build Alternative 2 Way Wheeler Design Option 2045 Emissions (tons per year)
CO	Criteria Pollutant	3,416.20	1,152.15	1,111.57	1,131.35
NO _x	Criteria Pollutant	649.39	279.22	247.07	250.70
PM ₁₀	Criteria Pollutant	75.80	82.04	73.09	75.35
PM _{2.5}	Criteria Pollutant	22.47	13.12	11.87	12.18
VOC	Criteria Pollutant	85.34	11.82	10.98	11.16
DPM	MSAT	12.825	2.046	1.910	1.922
Acetaldehyde	MSAT	1.521	0.275	0.252	0.256
Acrolein	MSAT	0.181	0.024	0.022	0.023
Benzene	MSAT	2.816	0.401	0.375	0.384
1,3-Butadiene	MSAT	0.299	0.000	0.000	0.000
Ethylbenzene	MSAT	1.601	0.450	0.411	0.428
Formaldehyde	MSAT	2.637	0.256	0.237	0.241
Naphthalene	MSAT	0.312	0.016	0.015	0.015
POM	MSAT	0.134	0.007	0.007	0.007

Notes: CO = carbon monoxide; DPM = diesel particulate matter; MSAT = mobile source air toxics; NO_x = oxides of nitrogen; PM_{2.5} = particulate matter less than or equal to 2.5 micrometers in diameter; PM₁₀ = 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 will reduce the potential for Project-related impacts to air quality.

The Project will 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 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 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
- Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne
- The prompt removal from paved streets of earth or other material that does or may become airborne

ODOT **will** 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 **will** be focused to non-peak traffic periods, when possible, to reduce the impact of construction delays on traffic flow and resultant vehicle emissions. **ODOT's construction contractors will also adhere to OAR 731-005-0800, which is the Clean Diesel Construction Standard.** Assuming compliance with OAR 340-208-0210, **OAR 731-005-0800**, and ODOT standards for construction, the Revised Build Alternative **will** 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 *Revised 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 **model inputs from the Oregon Department of Environmental Quality (DEQ)**. GHG emissions from construction and maintenance activities were also calculated for both alternatives **and assumed Project life of 30 years**.

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 *Revised 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 CO₂e was used.⁹ The GHG emissions analysis compares the estimated CO₂e emissions for 2017 to the projected CO₂e 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 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 **vehicle turnover and** 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

⁹ CO₂e converts all the emitted GHGs to a common global warming potential expressed in terms of the equivalent amount of carbon dioxide.

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.

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 ₂ e per year) (Percent of total)	Revised Build Alternative (MT CO ₂ e per year) (Percent of total)
Construction	N/A	40 (6)
Construction Materials	N/A	89 (13)
Construction Transportation	N/A	6 (1)
Construction Delay ¹	N/A	378 (56)
Maintenance	122 (100)	170 (25)
Total	122	683

Notes: CO₂e = carbon dioxide equivalent emissions; GHG = greenhouse gas; MT = million tons

¹Accounts for construction rerouting.

Table 3-3 presents the estimated operational emissions for both the No-Build and Revised Build Alternatives in 2045 compared to the estimated emission totals for 2017.

TABLE 3-3. ESTIMATED ANNUAL GHG EMISSIONS FOR EXISTING CONDITIONS AND THE NO-BUILD AND REVISED BUILD ALTERNATIVES

Source	GHG Emissions (MT CO ₂ e per year)				Percent Change				
	2017 Existing	2045 No-Build	2045 Revised Build 2-Way Ramsay	2045 Revised Build 2-Way Wheeler	2017 to 2045 No-Build	2017 to 2045 Revised Build 2-Way Ramsay	2017 to 2045 Revised Build 2-Way Wheeler	2045 No-Build to 2045 Revised Build 2-Way Ramsay	2045 No-Build to 2045 Revised Build 2-Way Wheeler
Tailpipe	417,814	334,718	325,688	331,438	-20	-22	-21	-3	-1
Fuel Cycle	112,810	90,374	87,936	89,488	-20	-22	-21	-3	-1
Total	530,624	425,092	413,624	420,926	-20	-22	-21	-3	-1

Notes: CO₂e = carbon dioxide equivalent emissions; GHG = greenhouse gas; MT = million tons

As with the No-Build Alternative, 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; **vehicle turnover**; 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 reduce future climate-related impacts.

The U.S. Environmental Protection Agency defines “heat islands” as urbanized areas that experience higher temperatures than outlying areas. The buildings, roads, and other infrastructure in urban areas absorb and re-emit the sun’s heat more than the forests and natural areas that surround them, creating “islands” of higher temperatures relative to outlying areas. Increased warming trends associated with climate change exacerbate heat island effects. The Revised Build Alternative incorporates design elements (e.g., landscaped areas on the covers) and will meet the City of Portland requirements for protecting and planting trees (City Code Title 11), which will reduce heat island effects in the Project Area.

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 (see Section 3.8.2.2) 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.

For more details on the climate change impacts, please see the *Revised Climate Change Supplemental Technical Report* in Appendix A.

There is no measurable difference in climate change impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

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 **will** 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 2019b). 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 and Construction of I-5 Structures (including ramps)	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 Pedestrian and Bicycle and Facilities	New sidewalk ramps and bicycle facilities (including the Clackamas Pedestrian and Bicycle Bridge) 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, **it is unlikely that previously undisturbed areas would be encountered during maintenance.** 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.

Additional details on this zde effects assessment for archaeological resources are included in the *Archaeological Resources Technical Report* (ODOT 2019a) and *Archaeological Resources Supplemental Technical Report* (ODOT 2022b).

There is no measurable difference in archaeological resources impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

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 will resolve impacts through implementation of stipulations from the Project-specific PA (ODOT 2019b), which provides protocols for identifying, evaluating, and resolving impacts pursuant to 36 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*.¹⁰

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.*

¹⁰ ODOT Standard Specifications for Construction:
https://www.oregon.gov/odot/Business/Specs/2021_STANDARD_SPECIFICATIONS.pdf

ODOT **will** require the contractor to follow ODOT Specification 290.51, *Protection of Sensitive Cultural Sites*,¹¹ 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 contained therein) **will** ensure substantial adverse effects to newly discovered archaeological resources **will** 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 Evaluation¹² 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

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 make these historic properties eligible for listing in the NRHP.

¹¹ Ibid.

¹² 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 **feasible** and prudent alternatives if a transportation project **uses** a historic property under Section 4(f) of the **U.S. Department of Transportation Act of 1996**.

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 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 Technical Report (ODOT 2019a)* and *Historic Resources Supplemental Technical Report (ODOT 2022b)*.

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 13 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 **12,458**-square-foot permanent fee acquisition and a **15,361**-square-foot temporary construction easement to construct a wall, and a **370**-square-foot permanent fee easement to maintain the wall. On **October 26, 2023**, the Oregon SHPO agreed with ODOT's finding that these easements and acquisitions would result in "No Adverse Effects" (**Collins 2023**). 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. **The easements would provide construction and maintenance access.** 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). **Please see Section 6.2 and Appendix C of the *Historic Resources Supplemental Technical Report* for a detailed description of the “No Adverse Effect” finding for the Revised Build Alternative on the historic railroad corridor (ODOT 2022b).**

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 **not** experience **a change** 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. **On October 26, 2023, the Oregon SHPO concurred with the finding that the refinements made to the Revised Build Alternative for this RSEA would result in “No Adverse Effect” on the Travelodge at the Coliseum (Collins 2023).**

There is no measurable difference in historic resources impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

TABLE 3-6. HISTORIC PROPERTIES POTENTIALLY IMPACTED BY THE REVISED BUILD ALTERNATIVE

Property Name	Property Address	Short Term Impacts	Effect Determination ¹
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.

¹ 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 **noise abatement measures** during construction **will** reduce the potential for Project-related noise and inadvertent impacts to historic properties.

The Project **will** follow ODOT construction specifications for **noise abatement** to minimize high noise levels during construction (**see Section 3.9.2.3**). Avoidance and minimization measures for potential construction-related vibration **will** include pre- and post-construction assessments, on-site monitoring during construction, and stop work authorization. If it is likely that the Project **will** affect historic properties by vibration, ODOT **will** 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 (Appendix D), 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 **will** be unknown prior to the implementation of the Revised Build Alternative. With the execution of the PA, and the avoidance and minimization measures contained herein and in the *Historic Resources Technical Report* (ODOT 2019a) and the *Historic Resources Supplemental Technical Report* (ODOT 2022b), the Project **will** 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 2019a) and *Historic Resources Supplemental Technical Report* (ODOT 2022b).

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 **16** individual historic sites, **including** the Eliot Historic District, described in Section 3.10, are Section 4(f) resources. **Additionally**, 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 2019a) and the *Historic Resources Supplemental Technical Report* (ODOT 2022b).

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

There is no measurable difference in Section 4(f) impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

TRAVELODGE AT THE COLISEUM

The Revised Build Alternative would directly impact the Travelodge at the Coliseum historic site. It would require a **12,458**-square-foot permanent property acquisition, a **15,361**-square-foot temporary construction easement, and a **370**-square-foot permanent easement to construct and maintain **the flyover ramp and 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 **short-term** 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).¹³

A noise analysis performed by the Project team estimated that long-term operations-related noise generated by nearby vehicle traffic would **not affect** noise levels at an outside recreation area (basketball court) near the historic hotel from the current **55** dBA (see the *Revised Noise Study Supplemental Technical Report* in Appendix A), 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) (**please see Section 6.2 and Appendix C of the *Historic Resources Supplemental Technical Report* [ODOT 2022b] for more information**).

¹³ All noise levels referred to in this RSEA 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.

The small permanent acquisition and temporary easement from the Travelodge at the Coliseum would qualify as a “*de minimis*”¹⁴ use of a Section 4(f) historic site. Avoidance and minimization conditions contained in the 2022 *Historic Resources Supplemental Technical Report* (ODOT 2022b) and in the PA described in Section 3.4.1 (**and included in Appendix D**) 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”¹⁵ 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. **Please see Section 6.2 and Appendix C of the *Historic Resources Supplemental Technical Report* for a detailed description of the “No Adverse Effect” finding for the Revised Build Alternative on the historic railroad corridor (ODOT 2022b).**

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.

¹⁴ 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 affect the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).

¹⁵ “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).

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.

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. **There would be no temporary or permanent easement for the Project taken from the 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- to 13-foot-tall noise wall (Noise Wall 2) was installed between I-5 and the Lillis-Albina Park, as recommended in the *Revised Noise Study 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 **but would not block views of the Willamette River or Pearl District. The views of I-5 are not the focus of the viewpoints: loss of views of I-5 would not constitute a Section 4(f) constructive use.**

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 **will** be implemented to reduce the potential for adverse impacts to Section 4(f) resources:

- ODOT **will** require construction contractors to follow ODOT specifications **for noise abatement** to minimize high noise levels near Section 4(f) properties during construction (see **Section 3.9.2.3**).
- ODOT **will** coordinate with FHWA and the Oregon SHPO to implement the avoidance and minimization conditions contained in the *Historic Resources Technical Report* (ODOT 2019a), the *Historic Resources Supplemental Technical Report* (ODOT 2022b), and the PA described in Section 3.4.1 to avoid and/or minimize the potential for Project-related vibration impacts to the Travelodge at the Coliseum.
- ODOT **will** consider—and further evaluate during final design—the recommendation in the *Revised Noise Study Supplemental Technical Report* (Appendix A) that a noise wall be considered in one location along the eastern edge of I-5 that **will** 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 2019a).

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. **Eight** 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. **ODOT conducted Phase I Environmental Site Assessments for seven of those eight sites and will conduct a Phase I Environmental Site Assessment for the remaining site prior to property acquisition. All of the seven Phase I studies indicated that contamination may be present and recommended a Phase II Environmental Site Assessment.¹⁶ Phase II Environmental Site Assessments were completed at two of the sites, site access was denied by the owners at two of the sites, work on one site was put on hold pending highway cover design, and ODOT determined the risk of encountering hazardous materials during construction at the remaining three sites did not warrant a Phase II investigation.** 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.

¹⁶ 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.

There is no measurable difference in hazardous materials impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

3.7.2.3 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Prior to acquiring properties ODOT **will complete** Phase II Environmental Site Assessments **where warranted**. ODOT **will take action on removing hazardous materials based on the results of the Phase II studies**.

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

- Prior to any demolition or removal activities, all structures **will** 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 polychlorinated biphenyl (PCB)-containing hydraulic or electrical equipment **will** be tested for PCBs by a qualified contractor prior to handling or disposal.
- During construction, the contractor **will** be required to follow the applicable regulations regarding the transport, use, and storage of hazardous materials.
- The contractor **will** 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 **will** be required to follow a Project-specific Pollution Control Plan to prevent spills and contain their potential spread.
- The contractor **will** 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 **will** help ensure that adverse effects from hazardous materials **will** 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

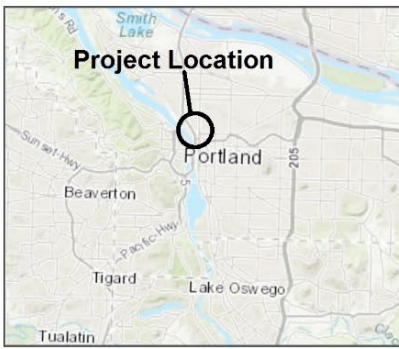
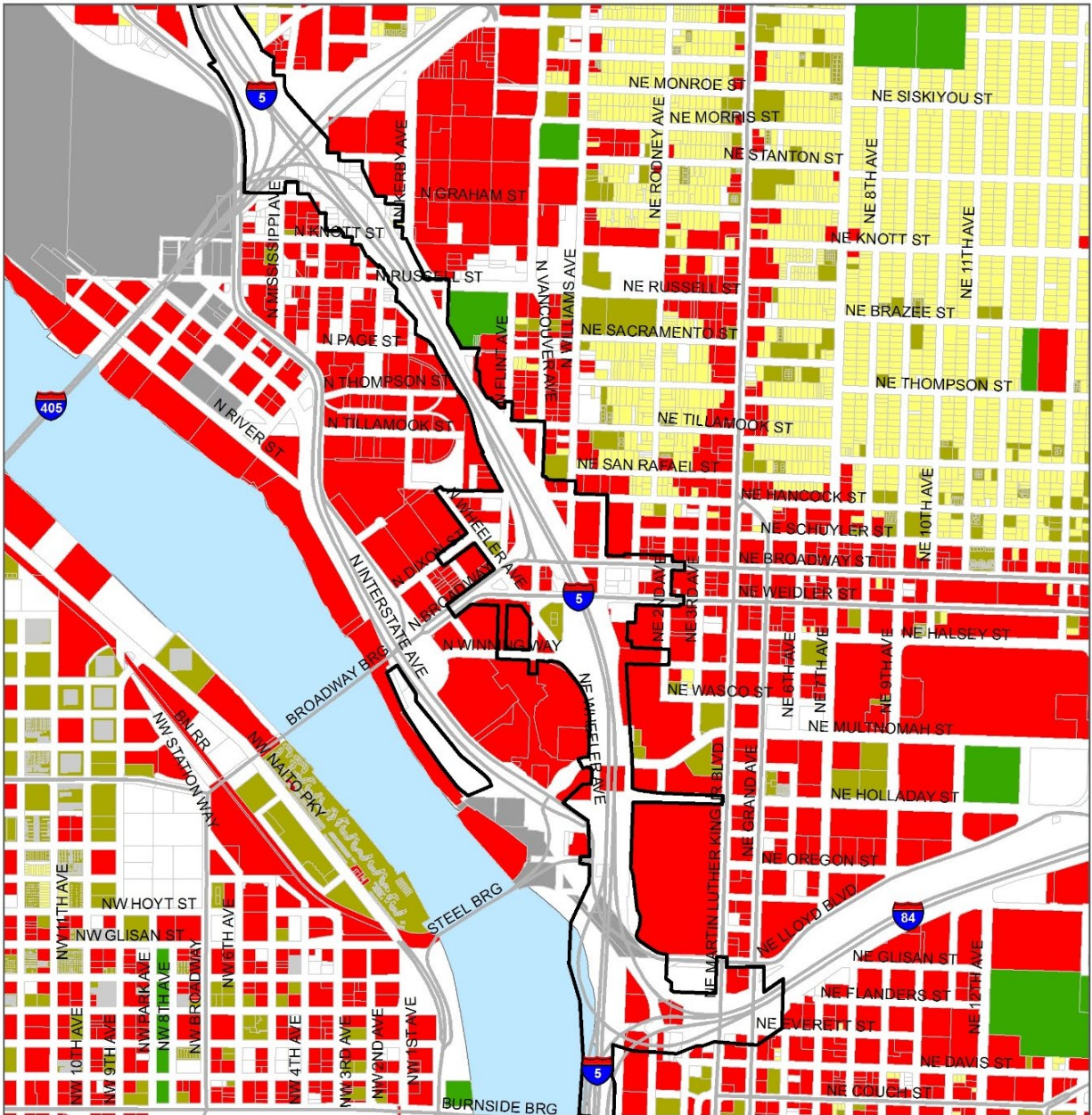
The land use API extends from the Willamette River east to NE 7th Avenue, north to NE Stanton Street, and south to the I-5 and I-84 interchange. Figure 3-1 shows existing land use within the API, and Figure 3-2 shows the current land use designations for parcels within the API from the City of Portland's 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 (**PPS**)
- 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



Legend

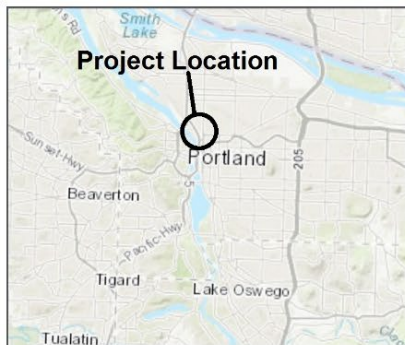
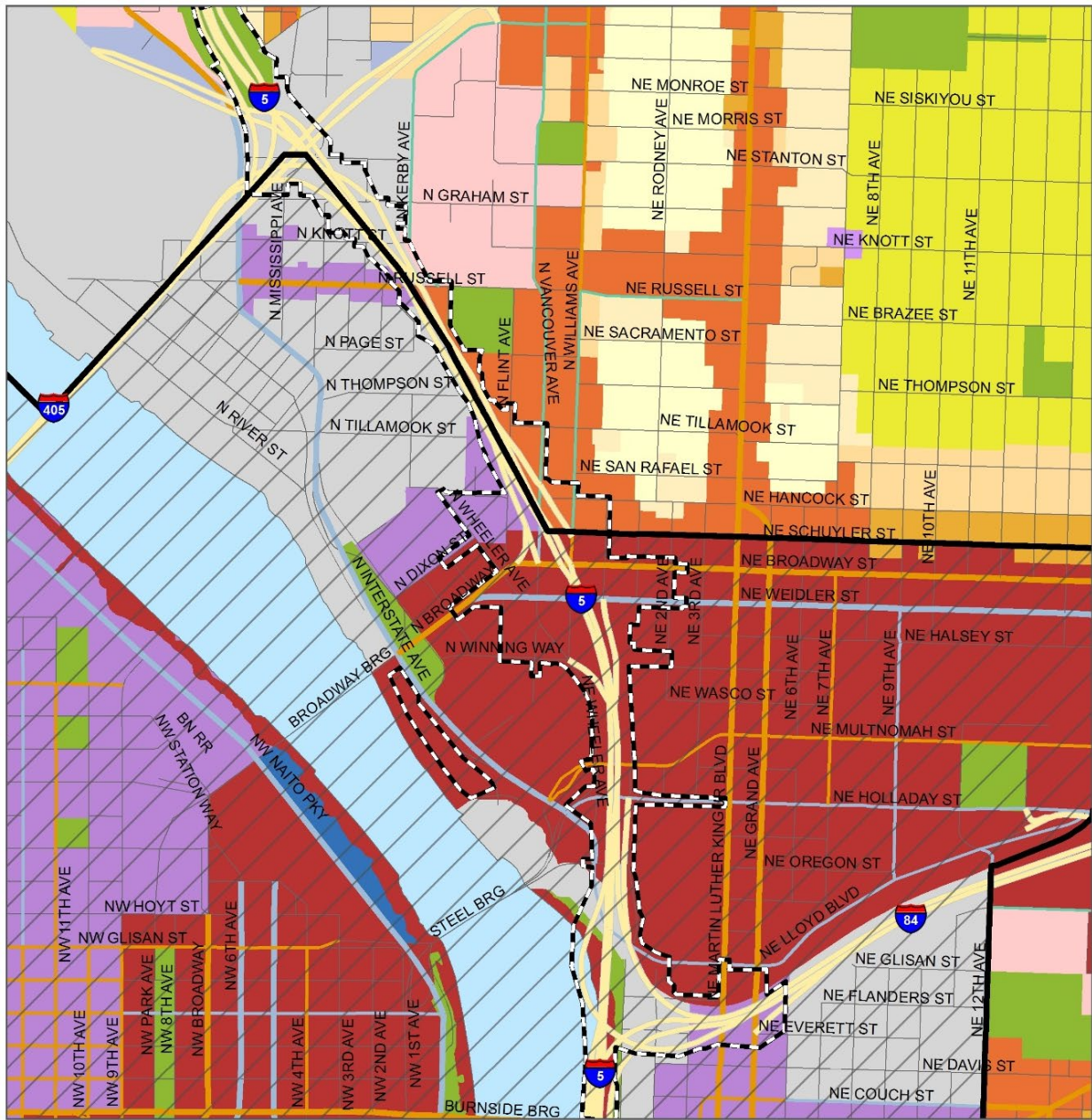
- API
- Oregon Metro Land Use Designation**
- Commercial
- Industrial
- Public
- Park
- Multi-Family Residential
- Single-Family Residential
- Undeveloped

Source: Oregon Metro; HDR

I-5 ROSE QUARTER IMPROVEMENT PROJECT EXISTING LAND USE

0 1,000 2,000
Feet

FIGURE 3-2. COMPREHENSIVE PLAN DESIGNATIONS



<ul style="list-style-type: none"> API Central City Plan Area City of Portland Transportation System Plan Classification Urban Throughway Main - Civic Main - District/Neighborhood Corridor - Civic Corridor - District/Neighborhood Corridor - Community Local Street 	<p>City of Portland Comprehensive Plan Designation</p> <ul style="list-style-type: none"> Central Commercial Mixed Use - Urban Center Institutional Campus Industrial Sanctuary Mixed Employment Central Employment Mixed Use - Dispersed Open Space Single - Dwelling 2,500 Single - Dwelling 5,000 Multi-Dwelling - Urban Center Multi-Dwelling - Corridor Multi-Dwelling - Neighborhood Central Residential
---	--

I-5 ROSE QUARTER IMPROVEMENT PROJECT COMPREHENSIVE PLAN DESIGNATIONS

0 1,000 2,000
Feet

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. 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 **some aspects of the land use components in the Central City 2035 Plan. Some planned rezoning to allow higher levels of employment or population density and land uses that generate higher traffic volumes would not be allowed. Transportation Planning Rule Section 660-012-0050(5) would likely require the City to amend the land use provisions in the Central City 2035 Plan.** These changes could have the effect of limiting allowed development within the API, particularly near the **Broadway/Weidler interchange.**

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 **108,844** square feet (approximately **2.7** acres) of commercial **and undeveloped** 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.

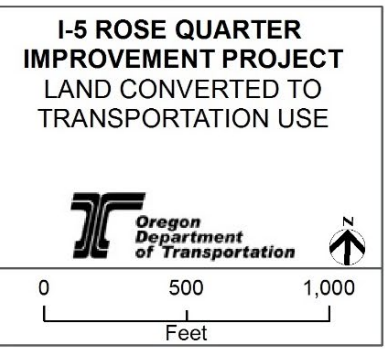
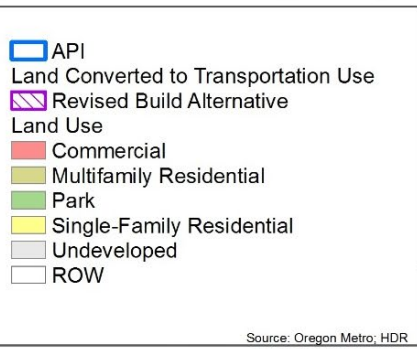
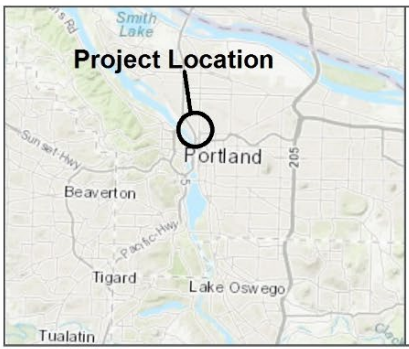
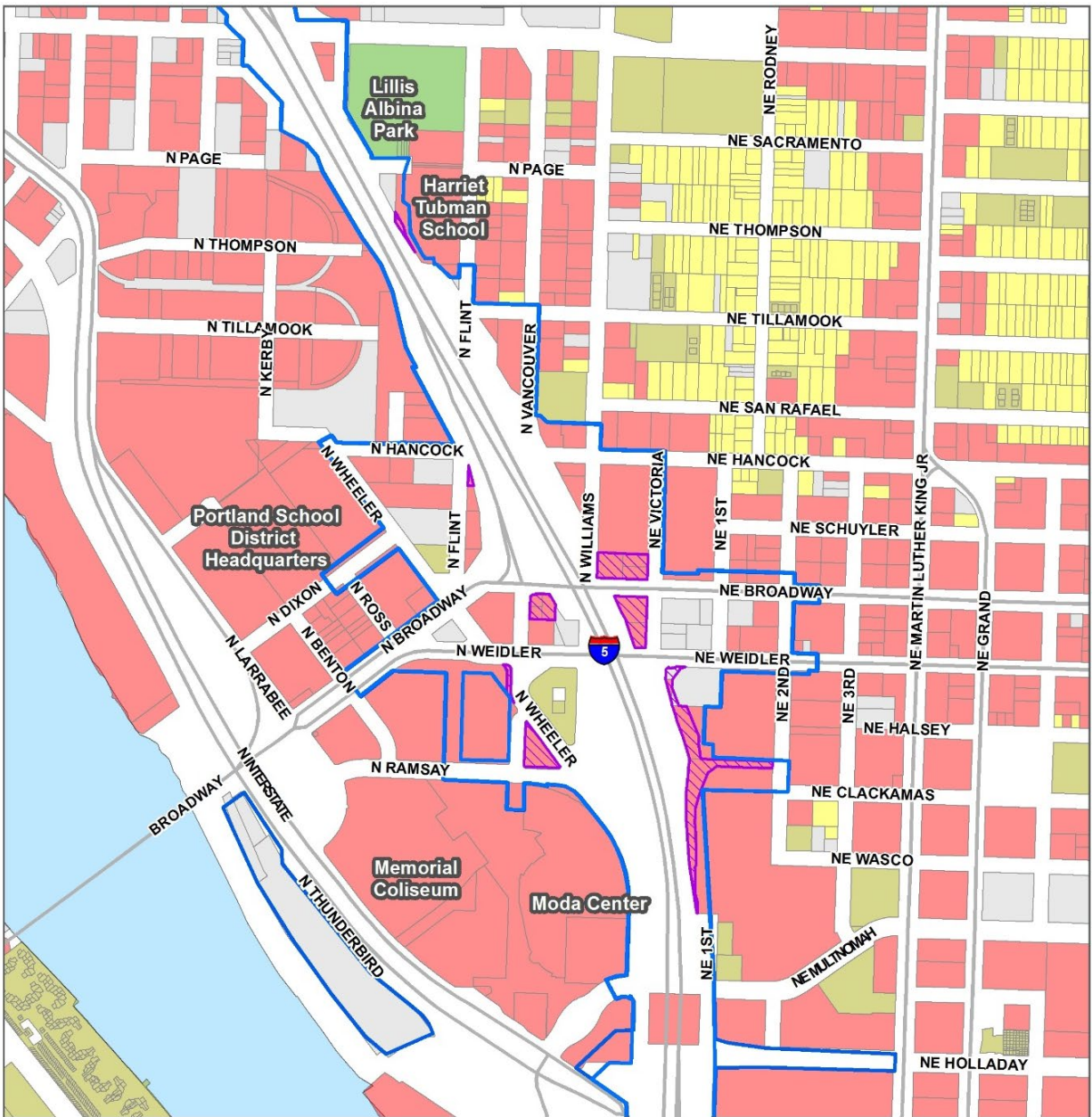
After ODOT coordination with the property owners, a 3.7-acre paved parking lot located at 1225 N Thunderbird Way would potentially receive a temporary construction easement to be used for construction staging but would not be permanently converted to transportation use. In addition, approximately **2 acres** of surface and/or subsurface permanent easements and **8** acres of temporary easements are estimated to accommodate 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).

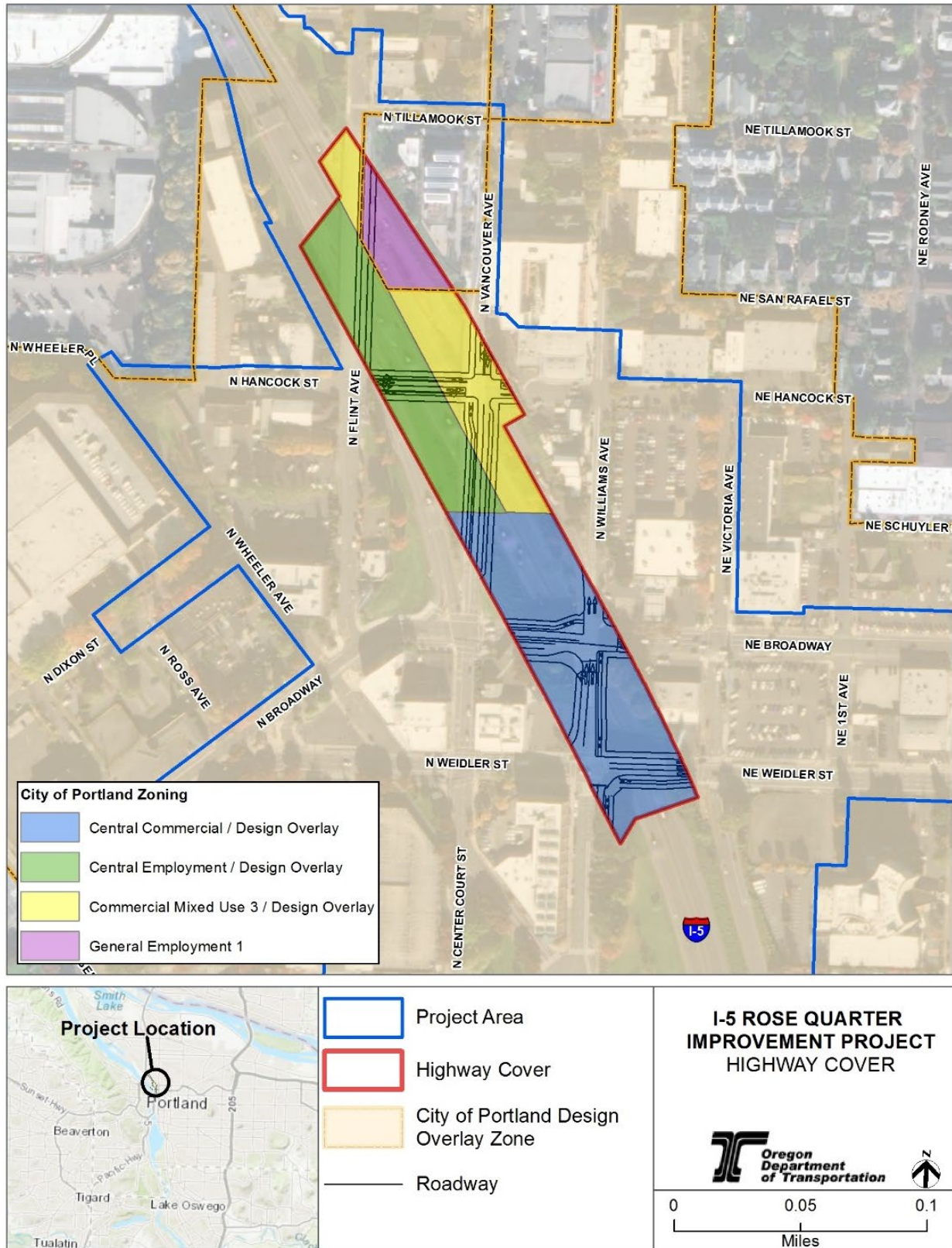
Interim and futures uses on the new buildable area would be subject to City of Portland's Comprehensive Plan, the Adopted Central City 2035 Plan (2018), and implementing ordinances, including Portland Code 33 Planning and Zoning requirements. Only those temporary uses allowed in Portland Zoning Code 33.296, Temporary Activities, are allowed to not meet zoning code standards. Refer to **the Revised 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



Source: Oregon Metro; HDR

FIGURE 3-4. CITY OF PORTLAND 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. **A portion of the Project that includes lighting installation partially falls within the City's River Overlay Zone (Title 33, Chapter 33.475). As the Project in this segment is within the existing ROW, impacts are not anticipated. ODOT will endeavor to minimize light glare and spill and light pollution to the extent possible, consistent with the purpose statement of 33.475.230. ODOT will submit an application for river review at the same time the design review is submitted and will address any approval criteria at that time.**

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 modeling 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. **The Project is subject to ODOT's Coordination Procedures for Adopting Plans for Class 1 and 3 Projects (OAR 731-015-0075), which are part of the procedures used to implement the provisions of its State Agency Coordination Program. OAR 731-015-0075 requires ODOT to analyze goal compliance and local plan compatibility in conjunction with the development of an EA or Environmental Impact Statement (EIS). OAR 731-015-0075 also stipulates that any land use actions required for the project to be compatible with the local comprehensive plan(s) must be taken between the EA and Revised EA, or Draft EIS and Final EIS. Goal compliance and plan compatibility have been analyzed in conjunction with the development of NEPA documents for this Project, including the 2019 EA, 2020**

REA, 2022 SEA, and this RSEA, and further documented in the *Land Use Technical Report* (ODOT 2019a), *Land Use Supplemental Technical Report* (ODOT 2022b), and the *Revised Land Use Supplemental Technical Report* (see Section 6.4 of the *Revised Land Use Supplemental Technical Report* in Appendix A).

There is no measurable difference in land use impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

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. ODOT will continue to work with the City to resolve issues with the River Overlay Zone Code.

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 **132** noise receivers¹⁷ (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, 2 exterior medical facilities, 2 parks, and 1 day care outdoor use area, were predicted to have noise levels that exceed the NAAC under existing conditions.

3.9.2 ENVIRONMENTAL CONSEQUENCES

Sound levels that approach or exceed the FHWA Noise Abatement Criteria are considered a noise impact: ODOT defines “approach” as within 2 dBA. **Therefore, the applicable ODOT NAAC¹⁸ is 2 dBA lower than the FHWA Noise Abatement Criteria.**

¹⁷ 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.

¹⁸ 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.

Table 3 from the *Noise Study Technical Report* shows the NAAC for each type of noise sensitive land use (ODOT 2019a).

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.

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 ¹	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

¹ According to Noise Control Specification 721.560.

The long-term noise levels for **both the Revised Build Alternative 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option** predicted by the noise model ranged between 54 to 75 dBA for outdoor use areas and 32 to 50 dBA for interior areas. **Fifty-three** receptors representing 90 residences, the interior of Harriet Tubman Middle School, 2 exterior medical facilities, and 2 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 **both the Revised Build Alternative 2-Way Ramsay Design Option and 2-Way Wheeler Design Option** were predicted to range from 11 dB less than to 4 dB greater than the existing (2017) noise level. Compared to the No-Build Alternative, the Revised Build Alternative **2-Way Ramsay Design Option and the 2-Way Wheeler Design Option** noise levels would range from 11 dB less than to 3 dB greater.

See Table 4 in the *Revised Noise Study 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 **will** monitor the construction contractor to ensure the following noise abatement measures 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 **6:00 PM** and **7:00 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 PPS property at Harriet Tubman Middle School **will** 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. **Only Noise Wall 2** 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. For detailed information on the evaluation of noise walls for the Revised Build Alternative, see the *Revised Noise Study Supplemental Technical Report* (Appendix A).

Noise Wall 2 is described as follows:

- Noise Wall 2 will be a 12- to 13-foot-tall and approximately 864-foot-long noise barrier, extending along the eastern edge of I-5 ROW from **between** N Russell Street **and** N Flint. The wall **will** be designed to shield Lillis-Albina Park **and** Harriet Tubman Middle School. 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 **will** increase stability.

Further evaluation of the feasibility and reasonableness of Noise Wall 2 **will** 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) **will** 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 *Revised Noise Study 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.

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

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: **2.7 acres** in fee simple (permanent acquisition); **2 acres** of permanent easement for surface and/or subsurface uses, primarily related to retaining walls and maintenance access; and **8 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 **38 ROW Files**¹⁹ (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.

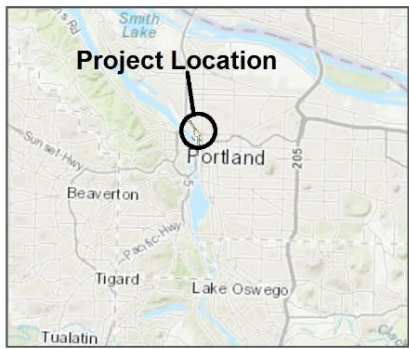
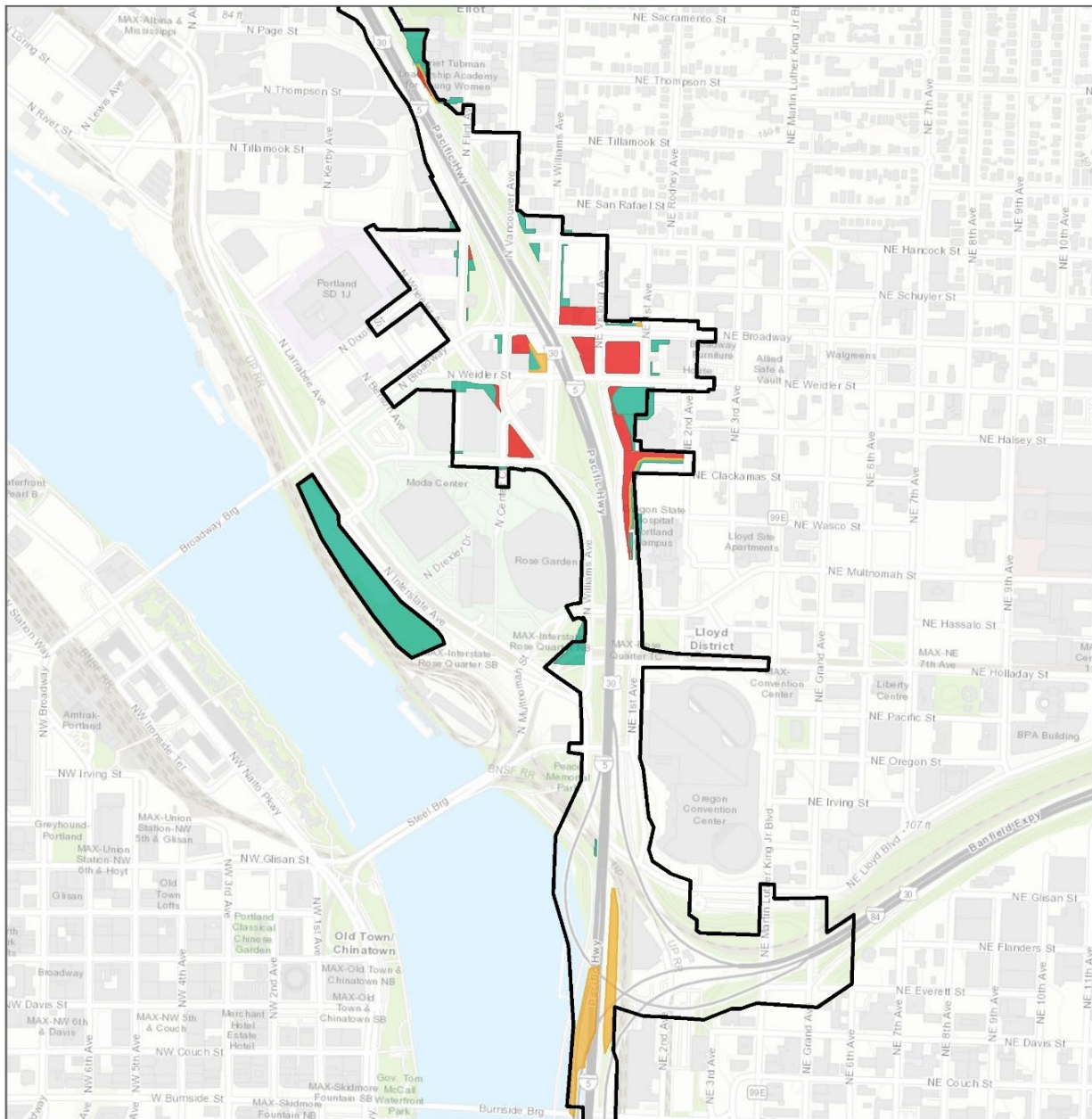
TABLE 3-8. ESTIMATED ROW NEEDS

ROW Property Types	Total Number of ROW Files
Privately Owned Property	28
Publicly Owned Property	10
Full Site Acquisitions	4
Partial Acquisitions (Fee, PE, and/or TE)	34

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

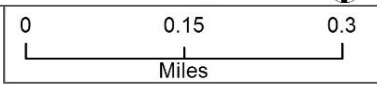
¹⁹ A ROW File is a collection of adjacent parcels/tax lots. Therefore, a ROW File may contain more than one property.

FIGURE 3-5. ESTIMATED ROW IMPACTS



- API
- Permanent Acquisition
- Permanent Easement
- Temporary Easement

**I-5 ROSE QUARTER
IMPROVEMENT PROJECT
ESTIMATED
RIGHT OF WAY IMPACTS**



The Revised Build Alternative would displace and relocate **11** commercial retail or service-related businesses, 3 landlord-operated businesses (properties owned for the sole purpose of leasing), **8 to 38** personal-only properties (**items not attached to the real property that can be moved, with no need for full relocation**), and 4 outdoor advertising signs. No residential displacements are anticipated. Displaced businesses are not unique to the surrounding community. Business relocations based on the conceptual layout would include a **landlord-only location**, 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 Weidler, N Vancouver/N 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, **safer** 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 **\$71** million in **2023** dollars. **Accounting for ROW cost increases that may occur between the current year dollars and year of expenditure, the estimated cost of the ROW acquisition is between \$75 and \$80 million 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), 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. **For more details on the ROW impacts, please see the *Revised Right of Way Supplemental Technical Report* in Appendix A.**

There is no measurable difference in ROW impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

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 **will** 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 **will** 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 1-1.²⁰ 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.²¹ Additional information on existing socio-economic conditions within the API can be found in the *Revised 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.²²

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.

²⁰ 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.

²¹ 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.

²² 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 multi-year 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.

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 of the MSA consisted of 2,472,774 persons, which represents an increase of 6.6 percent during the same time frame (see the *Revised Socioeconomics Supplemental Technical Report* in Appendix A). Most residents in the API (81 percent) were adults aged 21 to 64, compared to 62 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 *Revised 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 API 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 ¹

	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

¹Income 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 (9 percent and 10 percent, respectively).

TABLE 3-11. MEANS OF TRAVEL TO WORK, 2020

Means of Travel	Percent in API	Percent in 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 PPS 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.

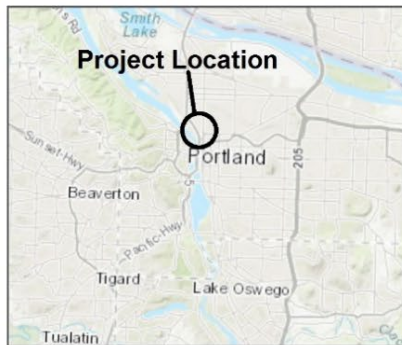
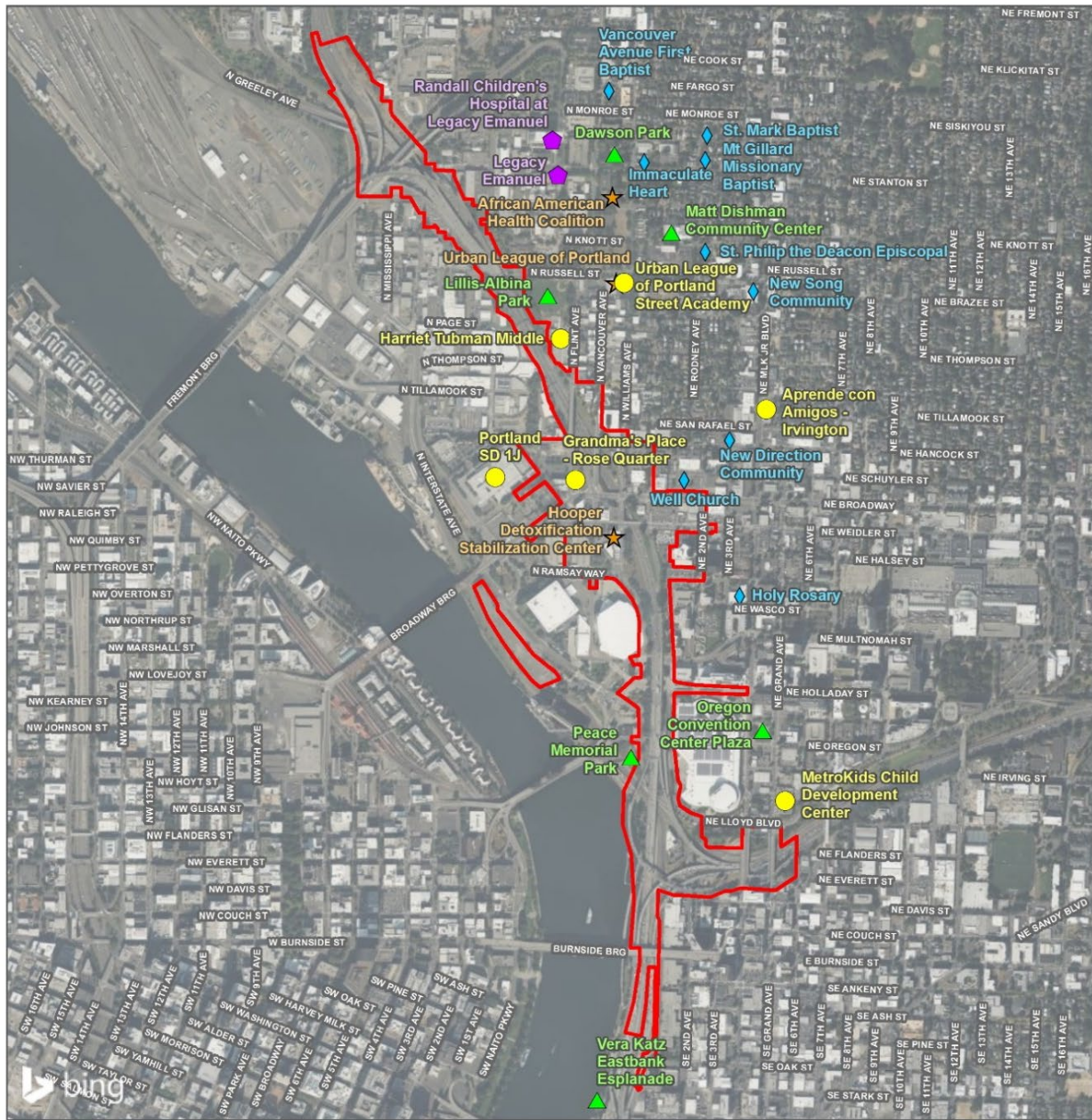
SOCIAL SERVICES

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



- API
- ◆ Hospitals
- ▲ Parks
- ◆ Religious Institutions
- Schools
- ★ Social Services

**I-5 ROSE QUARTER
IMPROVEMENT PROJECT
PUBLIC SERVICES
IN THE API**

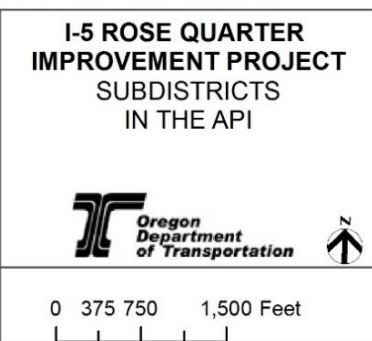
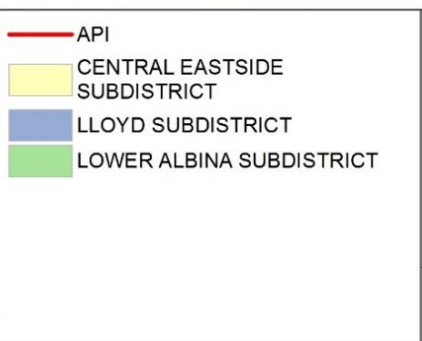
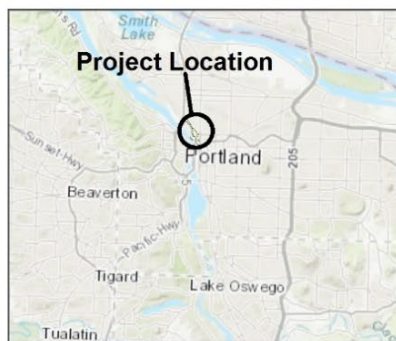
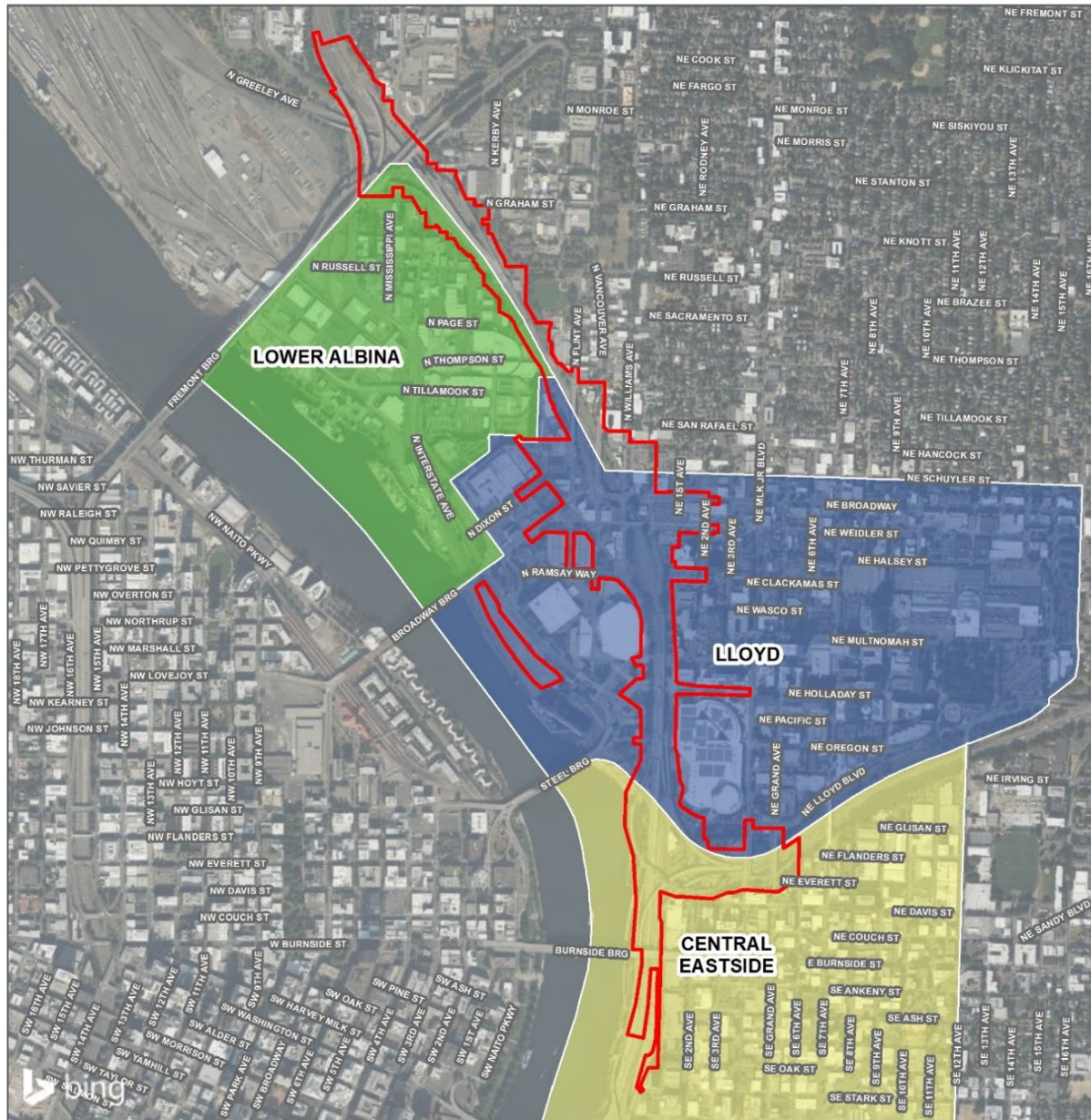
0 1,250 2,500
Feet

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 *Revised 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 **August 2023**, the unemployment rate has decreased to **3.7** percent (OED **2023**).

FIGURE 3-7. SUBDISTRICTS IN THE API



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, **including those** in Portland's Black community. 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, 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 **11** commercial retail or service-related businesses (see Section 3.10 for further discussion of business displacement and ROW impacts). These impacts **could** disrupt social cohesion and change the character of the neighborhood/business community. In addition, these displacements could reduce the number of jobs in the API. However, increased building capacity on the expanded cover could provide suitable conditions for commercial and retail development **that could also increase jobs in the API**. 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 *Revised 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.

There is no measurable difference in socioeconomic impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

3.11.2.3 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

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

- Temporary traffic management plans **will** be prepared to minimize construction impacts on I-5 operations and traffic delays on local streets. These plans **will** address all modes of transportation, including pedestrians, bicycles, and public transit. The plans **will** be prepared by the construction contractors.
- ODOT **will** monitor construction contractors to ensure *Oregon Standard Specifications for Construction* (ODOT 2021a) are followed to minimize impacts to neighborhoods, businesses, schools, emergency responders, and utilities and public service providers located or operating in the API.
- ODOT **will** coordinate with TriMet and Portland Streetcar, Inc., (PSI) 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 **will** be required during construction.

- No construction that requires access to or use of PPS property at Harriet Tubman Middle School will occur during the school year.
- ODOT **will** 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" **were** 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-5.²³ 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).

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).²⁴ 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 **RSEA** 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.

²³ 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.”

²⁴ 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).

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 the early 1970s, a series of public infrastructure projects displaced hundreds of residents within the API. These projects included the widening of N Interstate 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 2019a).

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).²⁵ 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

²⁵ 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.

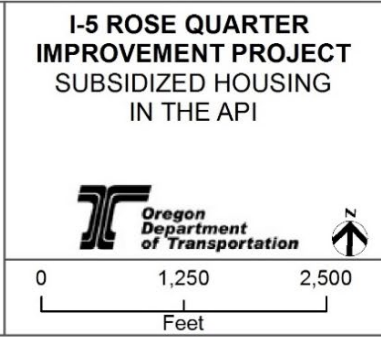
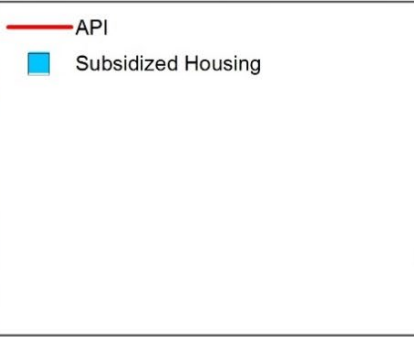
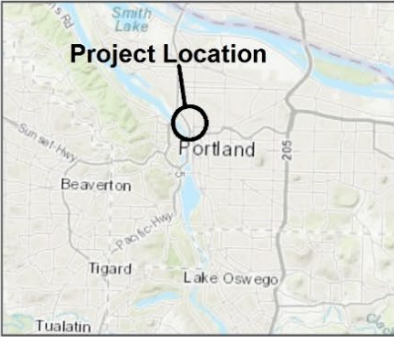
Neighborhood Housing Strategy is the N/NE Preference Policy, which gives priority for the City's affordable housing investments in portions of the API to current and former residents of the N/NE Portland community (Portland Housing Bureau n.d.-b).

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 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 percent and 10 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 2019a) and remains relevant for the Revised Build Alternative. **As noted in the avoidance, minimization, and mitigation measures listed in Sections 3.9.2.3, 3.10.2.3, and 3.11.2.3, construction activities near the Harriet Tubman Middle School will be scheduled for summer months to avoid potential disruptions during the school year.**

Long-term operational impacts would be the same as described in the *Environmental Justice Technical Report*, with the exception of noise and air quality.

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. **The Revised Build Alternative includes a 12- to 13-foot-tall and approximately 864-foot-long noise barrier, extending along the eastern edge of I-5 ROW from approximately N Russell to the southern boundary of the school property, that 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 *Revised Noise Study 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, improved pedestrian and bicycle facilities on N Vancouver, **N Williams**, and N Broadway, **and construction of the Clackamas Pedestrian and Bicycle Bridge** 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 **interested party** 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 **historic Albina** community members **and Black community members** 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 **interested parties** 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 **interested party** 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 2019a) summarizes the Project’s EJ outreach efforts up to the publishing of the 2019 EA, and Section 4.3.2 of the 2022 SEA and Section 4.3 of this RSEA provide 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 **temporary** adverse impacts during construction 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.²⁶ **The Project’s 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 would be long-term benefits to the EJ populations in the API.**

No short- or long-term adverse indirect impacts to EJ populations from the Revised Build Alternative are anticipated. **There is no measurable difference in EJ impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.**

3.12.2.3 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

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

- ODOT **will** 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 (**including diesel particulates**), dust emissions, and hazardous materials during construction of the Revised Build Alternative.
- ODOT will coordinate with the City of Portland, TriMet, and PSI in the future design phase to maintain transit and streetcar service connections through the Project Area during the anticipated 4-year construction period. ODOT, the City, TriMet, and PSI will coordinate with the community, with specific outreach to EJ populations, to identify areas where increase in the frequency of service or free shuttle service is needed.

²⁶ 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 **will** 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 **will** monitor and determine the effects the temporary closure of key walking and biking routes could have on EJ populations. This **will** 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 **will** 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 **will** 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 **will** 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.²⁷

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 *Revised Transit Supplemental Technical Report*, *Revised Active Transportation Supplemental Technical Report*, *Revised Transportation Safety Supplemental Technical Report*, and *Revised 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 Quarter Transit Center is served by six bus lines and three MAX light rail lines. High-

²⁷ 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.”

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 **stops** 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 2019a]). Due to the COVID-19 pandemic, ridership 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. **Review of Spring 2023 ridership indicates that ridership continues to be at lower levels than those in pre-pandemic years; therefore, 2019 ridership has been used to represent existing conditions.**

FTA **Capital Investment Grants programs Small Starts and New 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. **NE Flint, NE Vancouver, and NE Williams north of NE Broadway** do not meet the City’s pedestrian crossing spacing standards (PBOT 2023).

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 **12** 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 and N/NE Weidler experiences high volumes of cyclists and insufficient bicycle storage. **There is one unsignalized intersection within the API at N Ramsay and N Flint that provides pedestrians with marked crosswalks across N Ramsay.**

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 **13** intersections **studied** have an LTS of 3 for pedestrians. **Each of 13** intersections **has** a rating of 1 for bicycles. For more details on **existing conditions** for active transportation in the API, see the *2019 Active Transportation Technical Report* (ODOT 2019a).

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 2019a])

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 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 2019a).

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

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 under existing conditions for AM peak hours. N Broadway/N Vancouver **exceeds** the **Oregon Highway Plan** mobility target between 8:00 AM to 9:00 AM, and N Weidler/N Victoria operates at LOS E during that time, which exceeds the City’s operational target of LOS D for signalized intersection. **In addition**, the N Wheeler/N Williams/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 **during the 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 **N/NE** Broadway and **NE** Weidler overcrossings of I-5, and on local streets in the vicinity of the interchange (see the *Traffic Analysis Technical Report* [ODOT 2019a]).

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 2019a]).

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 *Revised 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, **as described in the following sections. Short-term shutdowns and interruptions of the Rose Quarter Transit Center are anticipated. Detailed descriptions of the construction-related impacts are provided in the *Revised Transit Supplemental Technical Report* in Appendix A.**

MAX and Bus

The complete closure of N Williams during construction of the new highway cover and the relocation of the SB off-ramp to N Wheeler/N Williams/N Ramsay 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 **will** 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. 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 **and will be determined during final design in conjunction with TriMet.**

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 **will** 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 (**included** on a temporary **detour bridge** 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 **up to 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 **in both the 2-Way Wheeler and 2-Way Ramsay Design Options**. EB streetcar travel times in the AM would be **slightly** longer compared to the No-Build Alternative, with increases ranging from 20 to **25 seconds**. **In the PM peak hours, the EB streetcar travel times would be shorter with the time reduction ranging from 1 to 2 minutes.**

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

AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

ODOT **will** 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 **will** 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 **will** 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 **and new transit stops**. ODOT **will** 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 **will** inform design refinements needed to accommodate transit and streetcar service. ODOT **will**

continue to coordinate with the City of Portland, TriMet, and PSI to identify and implement measures that **will** 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.²⁸

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 Clackamas Pedestrian and Bicycle Bridge** 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 **and the Clackamas Pedestrian and Bicycle Bridge**, 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.

Design refinements would address design details of the bike lane configuration **along N Williams from N Ramsay to N Hancock** 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 N/NE Broadway and N/NE Weidler and portions of N Vancouver and N Williams.

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

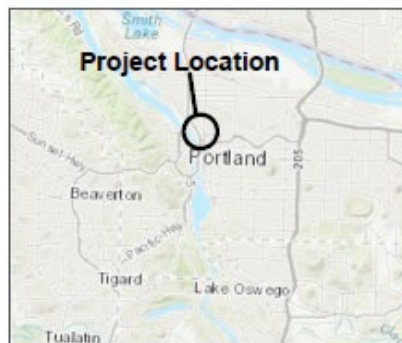
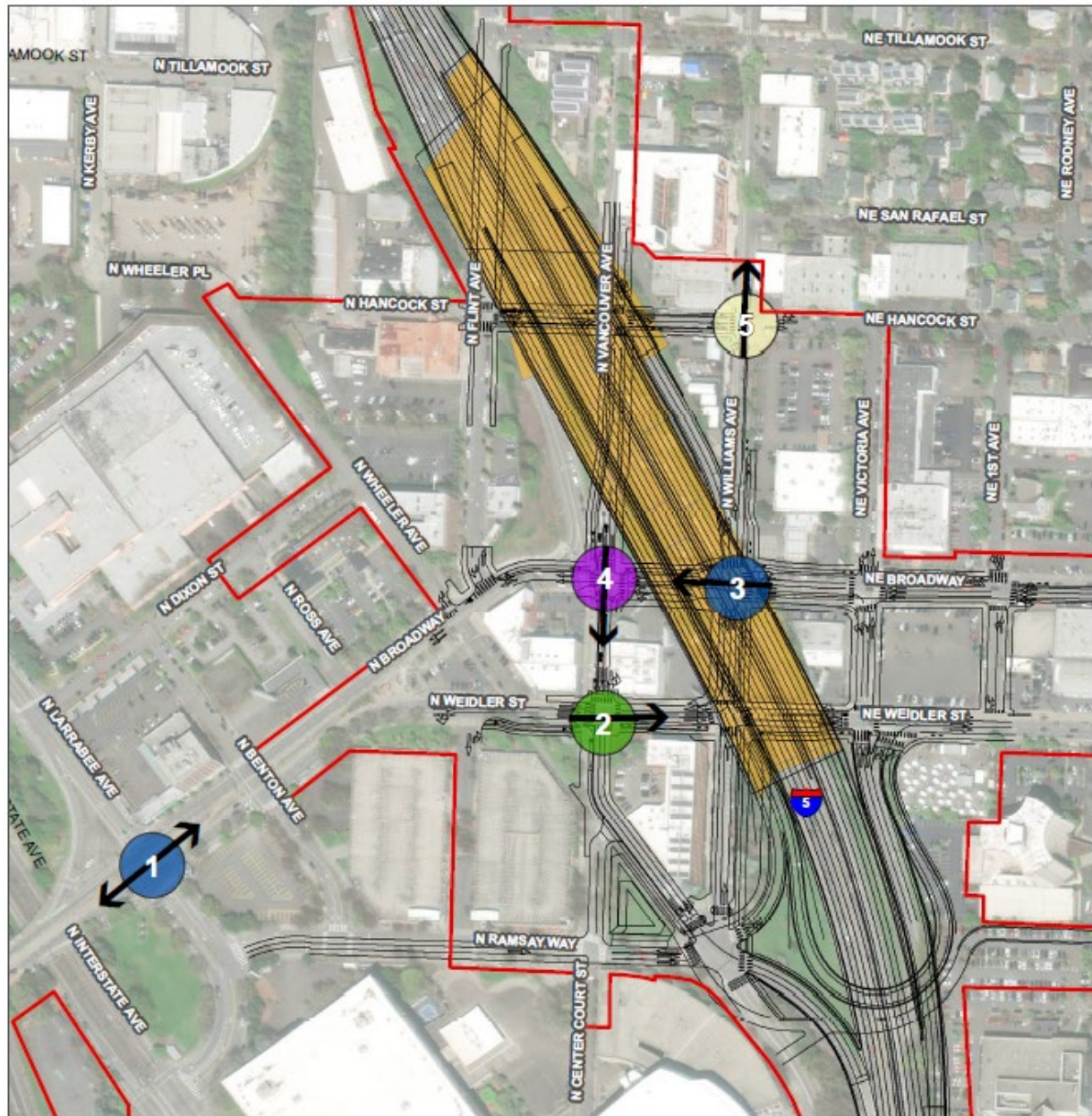
- EB at N Weidler and N Vancouver (2 on Figure 3-9)

²⁸ A total of 14 intersections in the API were studied (including N Hancock and N Flint) (see the *Revised Active Transportation Supplemental Technical Report* in Appendix A).

-
- **SB at N Broadway and N Vancouver (4 on Figure 3-9) under the 2-Way Ramsay Design Option only**


Existing protected bicycle crossings with exclusive turning lanes would be maintained WB at N/NE Broadway and N Williams (3 on Figure 3-9) in **the Revised Build Alternative**. In addition, **protected** bicycle crossings with exclusive turn lanes would be added EB/WB at N Broadway and N Larrabee (1 on Figure 3-9) by the NE Broadway Multimodal Improvements Project; **therefore, that protection** would be present in **both** the No-Build Alternative and the Revised Build Alternative. The additional **bicycle** signals at the intersection of N Weidler and N Vancouver (EB), N Williams and N/NE Hancock (NB), and **N Broadway and N Vancouver in the 2-Way Ramsay Design Option** would create a safer and more comfortable biking experience for EB, NB, **and SB** cyclists traversing the cover area.

FIGURE 3-9. PROTECTED BICYCLE CROSSINGS WITH EXCLUSIVE TURNING LANES




- Intersection With Exclusive Turning Lane - in No-Build and Revised Build Both Options
- Intersection With New Bike Signal – in Revised Build Both Options
- Intersection With Exclusive Turning Lane and New Bike Signal - in Revised Build Both Options
- Intersection With Exclusive Turning Lane and New Bike Signal – 2-way Ramsay Only
- ➔ Protected Bike Crossing
- Project Design
- API
- Highway Cover

ODOT I-5 ROSE QUARTER IMPROVEMENT PROJECT
BIKE CROSSINGS WITH EXCLUSIVE TURNING LANES



0 250 500
 Feet



The relocation of the I-5 SB off-ramp to the intersection of **N Wheeler/N Williams/N Ramsay and to NE Weidler/NE Victoria** under the Revised Build Alternative would increase **traffic entering the intersections and the length of the crossing** for NB pedestrians and cyclists on N Williams south of N/NE Weidler and **EB pedestrians and cyclists on NE Weidler at NE Victoria** compared to the No-Build Alternative. **Signal operations and design refinements to protect these crossings and minimize conflicts would be evaluated** in coordination with the City of Portland during final design.

Generally, bicycle delays at studied intersections would be similar **or shorter in the Revised Build Alternative compared to the No-Build Alternative**. 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 **30 seconds** for travel through the API. **Bicycle travel times in the EB and WB direction in the Revised Build Alternative would be shorter in both AM and PM peak periods as compared to the No-Build Alternative**. In addition, greater separation between motorized vehicles and people walking, biking, and rolling at most intersections would be provided. The following routes would be affected **by the addition of signalized intersections**:

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

The implementation of the Clackamas Pedestrian and Bicycle Bridge would improve the travel route from the Broadway Bridge to/from the Lloyd district, as EB and WB travelers would have a parallel route that would not require crossing ramp terminals at N Wheeler/N Williams/N Ramsay, NE Weidler and NE Victoria, and N/NE Broadway and N Williams. In addition, the Project would create conditions that make **cycling** 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”(City of Portland 2023).

Active transportation safety facilities, including treatment for separation **from** 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 2019a) and the *Revised 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 **N/NE Broadway, NE Weidler, N Flint, N Vancouver, and N Williams** structures over I-5.

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

However, N Williams between N Ramsay and **N/NE Weidler** would be closed for an extended duration (multi-year period) due to construction of the I-5 SB off-ramp. **Pedestrians would be rerouted to N Vancouver, and only local access for pedestrians to Madrona Studios** would be maintained on the existing sidewalk along the west side of N Williams. SB bicycle movements **on N Williams between N/NE Multnomah and N Ramsay** 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 **Revised Active Transportation Supplemental Technical Report** in Appendix A, there are trade-offs between pedestrians and cyclists 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 **except for the Broadway Bridge to/from the Lloyd district route, where pedestrians and cyclists could avoid all ramp terminals in the Revised Build Alternative by using the Clackamas Pedestrian and Bicycle Bridge.**

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. **EB and WB** bicycle travel times would generally be **similar or shorter in the Revised Build Alternative compared to** the No-Build Alternative. 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 N/NE Broadway and N/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 N Weidler and N 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 **I-5 NB on-ramp** at the intersection of N Williams and N/NE Broadway
- Enhanced cyclist safety and separation for SB cyclists traveling on a protected bike facility on the west side of N Vancouver from N 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 N Weidler and N Vancouver (EB), N Williams and **N/NE Hancock (NB) and for the SB direction at N Broadway and N Vancouver (SB) in the 2-Way Ramsay Design Option**
- Improved east-west pedestrian and bicycle 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 east-west pedestrian and bicycle connections through the addition of the Clackamas Pedestrian and Bicycle Bridge
- Improved walking connections in the Moda Center's vicinity from sidewalk gap closures on N Wheeler/N Williams

Ramp Terminal Changes

Under the Revised Build Alternative, the I-5 SB off-ramp **WB traffic** would be relocated to **the intersection of N Wheeler/N Williams/N Ramsay, and EB traffic would connect to NE Weidler/NE Victoria with a flyover. The flyover would connect to NE Weidler at the intersection with NE Victoria, creating a second NB right-turn lane. These dual right-turn lanes and increased traffic volume at NE Weidler/NE Victoria would create a longer crossing** for pedestrians and cyclists under the Revised Build Alternative. **However, signal operations for these intersections would be adjusted to minimize conflicts. For example, at the NE Weidler/NE Victoria intersection, the NB dual right turns would have a protected phase, so conflicts with the EB bicycle and pedestrian crossings would be removed. In addition, the**

implementation of the Clackamas Pedestrian and Bicycle Bridge would provide a parallel east-west route that avoids crossing ramp terminals.

Bicycle delay would increase along the NB route on N Williams compared to the No-Build Alternative with the addition of the signal at the intersection of N Hancock and N Williams and by adding signal phases to accommodate the ramp traffic terminal at the intersection of N Wheeler/N Williams/N Ramsay. Design of the bike facilities and transitions on N Williams would be refined in coordination with City of Portland. See the *Revised Active Transportation Supplemental Technical Report* in Appendix A.

Consideration for protected signal phases for pedestrians and cyclists 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 *Revised 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 N/NE Broadway and N/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 N/NE Broadway and N/NE Weidler would benefit east-west traveling pedestrians and cyclists. In addition, the Clackamas Pedestrian and Bicycle Bridge would provide a parallel east-west non-motorized-only route.

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 **separation of pedestrian and bicycle routes from motor vehicle traffic along the N/NE Broadway, N/NE Weidler, N Williams, and N Vancouver corridors**. However, potential for degraded conditions exists at the following intersections **based on the level of exposure and complexity of each intersection**:

- **N 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 **minimize** potential conflicts of the multiple modes, the intersection design **would** consider signal **timing operations** for pedestrians and cyclists 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 **would** increase the **crossing length for pedestrians and cyclists, increasing the complexity of the intersection and conflict points for those users**. Bicycle facility design options and the transition on N Williams to address conflict points will be further evaluated in coordination with the City of Portland.

In addition, relocation of the existing I-5 SB off-ramp at the intersection of N Vancouver and N Broadway would decrease **the exposure and complexity of this intersection**. However, the 2-Way Wheeler Design Option would maintain the level of complexity as high along N Vancouver as additional conflicts are introduced by accommodating NB traffic from N Ramsay to N/NE Broadway. Details regarding local street safety assessment are presented in the *Revised Transportation Safety Supplemental Technical Report* in Appendix A.

Bicycle and Pedestrian Stress Levels

Level of Traffic Stress for pedestrians and bicycles was studied at multiple intersections (16 for pedestrians and 15 for bicycles) and 35 segments in the API. Using readily available GIS data, ODOT conducted **an analysis at the intersection and segment level** (see the *Active Transportation Technical Report* [ODOT 2019a] for more details on the methodology).

The LTS analysis found that in the Revised Build Alternative in the **2-Way Ramsay Design Option, 5 of the 16** studied intersections would improve from “exceeding tolerable stress levels” (LTS 3 or 4) to “meeting tolerable stress levels” (LTS 1 or 2) for pedestrians. **In the 2-Way Wheeler Design Option, 4 of the 16 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 Broadway/N Vancouver** to **N Wheeler/N Williams/N Ramsay** 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. **Under the Revised Build Alternative, crosswalks would be provided at all the intersections.**

With the Revised Build Alternative, LTS for people biking through the API would be similar to the No-Build Alternative because the intersections **with exclusive turning lanes would** include signalized traffic control **for cyclists.** 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 *Revised Transportation Safety Supplemental Technical Report* for further details on qualitative safety factors (Appendix A).

AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

ODOT **will** 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 **will** guide the development of the Temporary Traffic Control Plan:

- Use the City of Portland guidelines identified in Portland’s Neighborhood Greenways Assessment Report (PBOT 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 (PBOT 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 **will** incorporate best available design standards in accordance with City of Portland requirements (**including Portland Bureau of Transportation lighting guidelines**) 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 **will** be further evaluated during final design phase. As noted in Section 2.1.4, ODOT **will** 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 **will** be explored include adjustments to traffic operations to support keeping **all** crosswalks open. **If design refinements result in any** potential crosswalk closures, **those will** be evaluated in coordination with the City of Portland during final design and approved by the City prior to implementation.

Design refinement **will** consider **bike facilities and transitions along N Williams** that improve safety by **minimizing conflicts between cyclists and motor vehicles** and **also** minimize delay.

Where applicable and in compliance with the City of Portland pedestrian and bicycle standards, ODOT **will** 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-stage²⁹ bicycle turn boxes for left-turn movements at locations where bicycle routes intersect.
- To minimize delay for people cycling through the Broadway/Weidler and N Vancouver/N 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) **will** be filled, some existing sidewalk gaps within the API **will** remain. During the design and construction phases, and where feasible, ODOT **will** address the remaining gaps in the sidewalk network and crosswalk spacing within the API.

The Temporary Traffic Control Plan and design refinements **will** 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 **will** aim to preserve or improve the current levels of active transportation in the area. During construction, the Project **will** prioritize providing the highest level of accommodation for people who walk, bike, or roll. The Project **will** also include filling gaps in the sidewalk network, with a focus on establishing and maintaining a robust pedestrian network during construction.

ODOT **will** coordinate with City of Portland, TriMet, and PSI in the final design and construction phases to minimize and mitigate for temporarily suppressed transit ridership and help restore and grow transit ridership in the API. This **will** include funding educational, encouragement, and incentive campaigns to promote transit ridership during construction and following Project completion to help with activation of the new walking, biking, and transit infrastructure and restored regular transit routes and service. These campaigns may also be coordinated with other transportation systems management and operations (TSMO) strategies for the Project.

3.13.2.3 TRANSPORTATION SAFETY

NO-BUILD ALTERNATIVE

The No-Build Alternative would not improve transportation safety in the API **compared to the existing condition. Under the No-Build Alternative, there would be** 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

²⁹ 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).

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 2019a]).

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 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.

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 on I-5. 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.

Crash rates on the I-5 SB off-ramp would increase under the Revised Build Alternative relative to the No-Build Alternative due primarily to motorists traveling longer routes to exit WB or EB and navigating a horizontal curve on the flyover (EB). To reduce the potential for crashes on the new I-5 SB off-ramp and flyover, the design would include shoulder and travel lane widths that are wider than the standard width along the curves. In addition, the proposed advance guide signing, delineation of the ramps, pavement markings, and illumination would be further refined during the design phase.

The flyover to NE Weidler would route approximately 60 percent of the overall I-5 SB off-ramp traffic away from highly congested blocks between N Broadway/N Weidler and N Vancouver/N Williams compared to the No-Build Alternative. The reduction of vehicular conflicts at intersections such as N Broadway/N Vancouver and N/NE Weidler/N Williams with anticipated high numbers of pedestrians and cyclists could reduce the potential for crashes and their severity at these locations.

A qualitative analysis of local street intersections indicated that the majority of intersections would have the same or better performance under the Revised Build Alternative as compared to the No-Build Alternative. Numerous improvements to the local street network are expected to increase safety for all road users by providing safer connections for pedestrians and cyclists with sidewalk-level and physically separated bicycle lanes along major routes and protected crossings at locations where conflicting turning movements are accommodated in exclusive lanes. The Revised Build Alternative is expected to improve safety conditions by reducing the complexity at the intersections of NE Broadway/NE Victoria and N/NE Weidler/N Williams, while increasing the complexity of the intersection of N

Williams and N/NE Broadway by adding a third through lane on N/NE Broadway. The additional ramp traffic at N Wheeler/N Williams/N Ramsay would see an increase in conflicts between vehicles, pedestrians, and cyclists. The Revised Build Alternative would be designed to minimize these conflicts through signal timing and by providing separated bicycle facilities along N Williams. This intersection would be one of the most complex intersections within the Project Area. With the 2-Way Ramsay Design Option only, the complexity of the intersections on N Vancouver, including N Broadway and N Weidler, would be reduced by removing number of conflicts, providing separation for bike facilities, and protected crossing for pedestrians and bicycles traveling SB at N Broadway. Even though the 2-Way Wheeler Design Option also provides similar separation for bike facilities and protected crossings for pedestrians and bicycles at these locations on N Vancouver, the level of complexity would continue to be high, as there would be additional conflicts introduced by the accommodation of the NB traffic between N Ramsay and N Broadway.

For additional information on impacts to transportation safety under the Revised Build Alternative, see the *Revised 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 **will** 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 (N Wheeler/N Williams/N Ramsay); the intersection design considers **signal timing to minimize conflicts** for pedestrians and bicyclists and extending sidewalk corners to provide shorter crosswalks.
- Address conflicts at NE Weidler/NE Victoria/I-5 NB off-ramp; potential conflicts for the pedestrians and bicyclists traveling EB will be minimized using the refuge

island and signal timing phasing that protects pedestrians and cyclists from NB right-turning movements through the traffic signal.

- 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)
 - 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 **will** require the construction contractor to develop construction and traffic management plans that **will** 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 **period** 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 **increased congestion** 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 **includes** five on- and off-ramps, and I-5 SB **includes** six on- and off-ramps within the API, resulting in slow traffic and increased potential for crashes. See **the Revised Traffic Supplemental Technical Report** in Appendix A for details on intersection LOS 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. **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 is **expected to** 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, **the I-5 NB weaving** segment between the I-84 on-ramp and NE Weidler/NE Victoria off-ramp, and the I-5 SB **weaving** segment between the N Wheeler/N Williams/N Ramsay on-ramp and I-84 off-ramp are **not** expected to **meet ODOT *Highway Design Manual* mobility targets** in both the AM and PM peak hours (ODOT 2023).

Under the Revised Build Alternative for both design options, all local street intersections would operate at acceptable LOS or better (LOS D or better), with the exception of N Wheeler/N Williams/N Ramsay in both the AM and PM peak hours (8:00 to 9:00 AM and 5:00 to 6:00 PM), which would operate at LOS E. Under the Revised Build Alternative, the intersections of N Broadway/N Vancouver and the I-5 NB off-ramp/NE Weidler/NE Victoria would operate at acceptable LOS in both design options in the AM peak hour; this would be an improvement relative to the No-Build Alternative, which would not operate at acceptable LOS in the AM peak hour. As part of the adoption of the Central City 2035 Plan, the Central City, which includes the I-5 ramp terminal intersections including N Wheeler/N Williams/N Ramsay and NE Weidler/NE Victoria, has been designated as a Multimodal Mixed-Use Area. This designation provides flexibility for determining effects of land use actions by lifting mobility standards requirements at ODOT facilities.

Transportation standards such as safety and multimodal access still apply.

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 from N Broadway to the proposed N Wheeler/N Williams/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 Wheeler/N Williams/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 *Revised Traffic Supplemental Technical Report* in Appendix A. **There is no measurable difference in traffic operations impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.**

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. **Travel demand** modeling to assess the potential for latent demand that could result from the Revised Build Alternative indicated an estimated **increase ranging from 5 to 14 percent in the peak hour volumes** 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. **However**, outside of the API, **the travel demand** model results indicate a **de minimis** difference in traffic volumes between the No-Build and Revised Build Alternatives in 2045, demonstrating the Project would not result in latent demand **but simply a shift in travel patterns to less congested routes**. Additional detail about the model and the results can be found in the *Revised Traffic Supplemental Technical Report* in Appendix A.

AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

The following strategies **will** 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 **TSMO** strategies. Specific **TSMO** 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 **TSMO** strategies before and after events. ODOT **will** 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 **will** be further refined during final Project design.

As noted in Section 2.1.4, ODOT **will** 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 **will** coordinate with 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 **will** 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. **There would be no improvement that would affect access to driveways or other facilities as a result of the No-Build Alternative.**

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.

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. The local street circulation would be modified under the 2-Way Wheeler Design Option, affecting the direction in which driveways to Madrona Studios are accessed along N Wheeler. Under existing conditions and the No-Build Alternative, those Madrona Studios driveways are entered from SB N Wheeler and egress to SB N Wheeler. In the Revised Build Alternative under the 2-Way Wheeler Design Option, the

driveways to Madrona Studios along N Wheeler would be accessed from and egressed to NB N Wheeler.

TABLE 3-13. TOTAL ACCESSES TO BE MODIFIED AND/OR CLOSED

Status	Driveways	Intersections under 2-Way Ramsay Design Option	Intersections under 2-Way Wheeler Design Option
No Change	77	26	25
Modified	5	13	14
Closed	13	0	0
Total	95	39	39

There would be no **other** impacts to transportation access with the Revised Build Alternative. For additional information on impacts to transportation access, see the *Transportation Access Technical Report* (ODOT 2019a) and the *Transportation Access Technical Memorandum* (ODOT 2022b).

AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

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

Event access **will** be maintained during construction and could require active traffic management before and after events. ODOT **will** 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 RSEA, 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>
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.

Utility Owner	Impact Level Prior to Mitigation	Explanation of Impact
PIPING		
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. It is possible that most of the water infrastructure may be 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 2019a).

There is no measurable difference in utilities impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

3.14.2.3 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Proactively addressing special constraints and design considerations to avoid or minimize impacts to major utilities **will** 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 **will** need to be minimized or avoided. Additionally, direct impact to the BES 56-inch sewer line that crosses I-5 at N Hancock **will** be avoided or minimized. Although a cost has been included for impacts to these BES facilities, relocation of these utilities **will** 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 **will** occur in subsequent phases of the design process for the Revised Build Alternative, and recommended actions to minimize utility conflicts **will** be included as part of the design acceptance package.

Proper coordination and the use of standard construction procedures and techniques **will** 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 **will** 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 **will** be prepared and service disruptions approved by affected utility providers before construction begins. Coordination **will** 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 DEQ, the Willamette River is listed as an impaired waterbody under Section 303(d) of the Clean

Water Act.³⁰ 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 swales³¹ and City-owned "Green Street" water quality facilities. Most stormwater runoff from 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 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 2019a).

³⁰ 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.

³¹ A biofiltration swale is a sloped channel that uses vegetation (typically grass) to capture and biologically degrade pollutants carried by stormwater runoff.

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 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 ODOT ROW of approximately **7.3** acres and a total contributing impervious area of approximately **23** acres. Surface street improvements, including new overcrossing structures and roadway, pedestrian, and bicycle improvements, would result in a net increase in impervious area within the City ROW of approximately **7.4** acres and a total contributing impervious area of **18** acres.

Water quality treatment facilities to manage stormwater runoff from ODOT ROW would be developed at three locations: N Mississippi Avenue, north of N Mississippi under the highway, and the N **Wheeler/N Williams/N Ramsay** 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 ODOT ROW prior to discharge to the Willamette River and would treat approximately **54** percent of the contributing impervious area from ODOT ROW within the API. However, the three treatment facilities would be treating **23.5** acres of area outside of the API, which would make the total ODOT area treated **156** percent of 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. **The added water quality treatment facilities would reduce the pollutants in runoff, including sediment, which is known to increase temperatures when suspended in water. Temperature reduction of runoff prior to it entering the**

Willamette River can be an additional benefit of the stormwater management facilities; however, this benefit is subject to seasonal temperatures and runoff volumes.

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 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.

There is no measurable difference in water resources impacts between the 2-Way Ramsay Design Option and the 2-Way Wheeler Design Option.

3.15.2.3 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Potential impacts to water quality during construction **will** be avoided by requiring contractors to follow standard best management and erosion control practices in the ODOT *Erosion Control Manual* (2019c), ODOT *Standard Specifications* (2021), ODOT *Boilerplate Special Provisions* (2018b), City of Portland **Title 10 Erosion and Sediment Control Regulations**, City of Portland *Erosion and Sediment Control Manual* (2022), 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 **RSEA**. 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 C.

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 C 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. **The total estimated GHG annual emissions for the Revised Build Alternative are 0.8 to approximately 3 percent less than GHG emissions of the No-Build Alternative, which is attributed to traffic under the Revised Build Alternative moving more efficiently along I-5. Relative to global GHG emissions, this decrease in the GHG emissions for the Revised Build Alternative could be characterized as minor and will have very little effect on the state's total 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 C 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 Revised Build Alternative **would not adversely affect the characteristics that make these historic properties eligible for listing in the NRHP**, 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. **Certain historical** transportation projects in the API 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 **historic** 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 **would have a *de minimis* use of a Section 4(f) historic site, resulting in a minimal** contribution to cumulative Section 4(f) impacts in the API.

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 C 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 **RSEA** reflects the City of Portland TSP and reflects 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 2019a) 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, **the Project would not contribute to an adverse cumulative effect.**

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 C 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 C 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, **such as increased density**.

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 2019a), 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 2019a] 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).

The air quality and traffic effects of the Revised Build Alternative are largely beneficial and would improve conditions for EJ populations that live in and travel to or through the API. Considered in the context of past actions and RFFAs, this represents beneficial cumulative impact.

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

Cumulative transit impacts resulting from 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 **or other transit speed and reliability improvements** 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. **Also, increases in population within the API and**

future development on the highway cover could contribute to overall longer-term ridership gains.

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. **These new active transportation corridors outside of the API would spread out regional active transportation more evenly. Additional connections to active transportation corridors within the API 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. Existing bikeways and walkways within the API, particularly those designated as Major City Bikeways and City Walkways, would continue to fulfill prominent roles in the local and regional network due to future population and employment growth in Lloyd and Eliot neighborhoods and given the API's proximity to Portland's Central Core.**

The conditions for walking in the area would benefit from the addition of new pedestrian connections (Clackamas Pedestrian and Bicycle Bridge) and improved sidewalk connections and pedestrian crossings, coupled with a reduction in intersection complexity. Increased walking activity would support local and regional pedestrian mode share goals. These improvements would occur along with slightly increased grades and would outweigh the adverse effects of those changes.

Because people walking and bicycling are sensitive to conditions on a more granular scale, the active transportation network's functionality and attractiveness would largely depend on design details, which are less defined at this level of analysis. Route directness, level of stress and risk, grades, delay, and other factors would collectively inform the user's perception.

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. **In other words, the cumulative effects of the Project to safety, traffic operations, and access are represented in the assessment of the future (2045) condition under the Revised Build Alternative in Sections 3.13.2.1 through 3.13.2.5 of this RSEA.**

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.

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.I-5rosequarter.org/resources/library.aspx>).

Since November 2020, when the 2020 FONSI REA was completed, primary public decision points 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 **RSEA**. 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 (Appendix E).

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.³²

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 (ODOT 2022b)*.

ODOT contacted Cooperating and Participating Agencies in June 2022 to inform them of the Project changes and the development of the **2022 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. **The 2022 SEA** document reflects that review.

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

³² The January 2022 Letter of Agreement and July IGA are both found at this link:
https://www.portland.gov/sites/default/files/council-documents/2022/1-5rq-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, Inc.	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.

After the 2022 SEA was published on November 15, 2022, ODOT hosted an online open house, held a virtual public hearing with FHWA (December 14, 2022), produced numerous forms of communications describing how the public could participate in the 2022 SEA review process, and facilitated a variety of methods for the public to submit comments. The public comment period ran from November 15, 2022, through January 4, 2023. ODOT’s outreach efforts included

presentations and briefings to the City of Portland advisory committees and commissions, community events, meetings with the HAAB and COAC, and direct outreach to community-based organizations. These efforts are summarized in Section 3 of the 2022 SEA Public Involvement Summary, included as Appendix F.

ODOT and FHWA received a total of 921 comments on the 2022 SEA during the 50-day public comment period. Comments were received from individuals, public agencies, advisory committees, community groups, non-government organizations, and private industry and businesses. The public comment methods are summarized in Appendix F. The Comment Summary Report, which contains a copy of all comments and a list of summary comments and ODOT responses, is included as Appendix G.

As the Project moves forward to final design, ODOT will continue to engage interested parties 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.

The following sections provide a summary of the public involvement activities associated with the 2022 SEA.

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. **Between** publication of the 2020 FONSI REA **and the 2022 SEA**, community engagement for this Project has included 20 HAAB, 11 COAC, 6 ESC, and 3 combined HAAB/ESC meetings (**some of which were** 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 **grew** from 4,800 to 6,500 addresses, and 256 public comments **were** 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 **moved forward for further study** 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 **held 28 public meetings** since then. The HAAB meets **regularly** 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 **included** 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 **sponsored** 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.

4.3.5 VIRTUAL PUBLIC HEARING

ODOT and FHWA scheduled a virtual public hearing on Tuesday, December 14, 2022, from 5:00 PM to 7:30 PM. The hearing was hosted via a Zoom webinar and aired live on YouTube. The purpose of the hearing was to provide an opportunity for the public and invited speakers to give spoken testimony on the 2022 SEA. ODOT and FHWA opened the hearing at 5:00 PM, and the hearing ended at 5:30 PM after all participants in the hearing were given an opportunity to testify. The hearing began with opening statements and was followed by invited testimonies, equity testimonies, general public testimonies, and then closing statements.

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 8 acres of temporary easement for construction work areas, driveway reconnections, and staging.
Archaeology Clearance (SHPO)	Y	Compliance with Section 106. A Programmatic Agreement has been signed.
Endangered Species Act Permits (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	Compliance with Section 106. A Programmatic Agreement has been signed.
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 has been signed.
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.
Magnuson-Stevens Act clearance (NMFS)	Y	Consultation with NMFS; authorization under the FAHP 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 relocations.

Notes: API = Area of Potential Impact; DOGAMI = Oregon Department of Geology and Mineral Industries; FAHP = 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; UST = underground storage tank

6 LIST OF PREPARERS

TABLE 6-1. LIST OF PREPARERS

Name	Agency	Area of Responsibility	Project Role
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
Tina Gutierrez	ODOT	Right of way	Reviewer
Robert W. Hadlow	ODOT	Historic Resources, Section 4(f) Resources	Reviewer
Natalie Liljenwall	ODOT	Air Quality, Climate Change, Noise	Reviewer
Stephanie Millar	ODOT	Land Use	Reviewer
Theresa Rohlfs	ODOT	Transportation Safety, Active Transportation, Transit	Reviewer
Robert Schiavone	ODOT	Air Quality, Climate Change , Noise	Reviewer
Carol Snead	ODOT	ODOT Environmental Project Manager	Document Review and Preparation
Melanie Ware	ODOT	NEPA	Reviewer
Susan White	ODOT	Environmental Justice	Reviewer
Thomas Parker	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
Jenifer King	AECOM	Socioeconomics, Environmental Justice	Author

Name	Agency	Area of Responsibility	Project Role
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
Omar Jaff	David Evans and Associates, Inc.	Transit	Reviewer

Name	Agency	Area of Responsibility	Project Role
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
Kirk Paulsen	Parametrix	Active Transportation	Author
John McPherson	HDR, Inc	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 RSEA

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

TABLE 7-1. LIST OF REVISED SUPPLEMENTAL TECHNICAL REPORTS PREPARED FOR THIS RSEA

Report	Author(s)	Date
<i>Revised Active Transportation Supplemental Technical Report</i>	Garrett Augustyn, Parametrix Jennifer Hughes, Parametrix John McPherson, Parametrix Kirk Paulsen, Parametrix Marcela Rodrigues Torres, HDR Inc.	December 7, 2023
<i>Revised Air Quality Supplemental Technical Report</i>	Scott Noel, HMMH Phil DeVita, HMMH Dillon Tannler, HMMH	December 12, 2023
<i>Revised Climate Change Supplemental Technical Report</i>	Scott Noel, HMMH Phil DeVita, HMMH Dillon Tannler, HMMH Natalie Liljenwall (Reviewer), ODOT Melanie Ware (Reviewer), ODOT	December 5, 2023
<i>Revised Land Use Supplemental Technical Report</i>	Jennifer Hughes, Parametrix Glen Bolen, AICP (Reviewer), ODOT Brian Carrico (Reviewer), WSP	December 7, 2023
<i>Revised Noise Study Supplemental Technical Report</i>	Scott Noel, HMMH Dillon Tannler, HMMH Joseph Czech, HMMH	December 7, 2023
<i>Revised Right of Way Supplemental Technical Report</i>	Leigh Enger, HDR Inc. Hannah Halpenny, HDR, Inc.	December 7, 2023
<i>Revised Socioeconomics Supplemental Technical Report</i>	Garrett Augustyn, Parametrix Brian Bauman, HDR Inc.	December 7, 2023
<i>Revised Traffic Analysis Supplemental Technical Report</i>	Jeremy Jackson, HDR Inc. Mingwei Shen, HDR Inc. Simon Eng, HDR Inc.	December 7, 2023
<i>Revised Transit Supplemental Technical Report</i>	Garrett Augustyn, Parametrix Jennifer Hughes, Parametrix Marcela Rodriguez, HDR Inc.	December 7, 2023

Report	Author(s)	Date
<i>Revised Transportation Safety Supplemental Technical Report</i>	Elizabeth Wemple, HDR Inc. Harshala Sardar, HDR Inc. Marcela Rodriguez, HDR Inc.	December 7, 2023

Notes: RSEA = Revised Supplemental Environmental Assessment

8 REFERENCES

- ATRI (American Transportation Research Institute). 2022. "2022 Top 100 Truck Bottleneck List." (accessed August 31, 2022). **File previously referenced is no longer available online.**
- 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).
- 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 (accessed February 2022).
- 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. 2020. Central City 2035 Re-Adoption Draft. April 2020.
- City of Portland. 2022. Erosion and Sediment Control Manual. Available: <https://www.portland.gov/bds/documents/erosion-and-sediment-control-manual/download> (accessed November 2, 2023).
- City of Portland. 2023. 2035 Comprehensive Plan. Updated through May 2023. Available: <https://www.portland.gov/bps/planning/comp-plan-2035/about-comprehensive-plan/2035-comprehensive-plan-and-supporting#toc-2035-comprehensive-plan-as-amended-through-may-2023-> (accessed November 2, 2023).
- 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).
- Collins, James. 2023. Section 106 Finding of No Adverse Effect–Second Revision, Travelodge at the Coliseum, Interstate 5 Rose Quarter Project, Portland, Multnomah County, Oregon, ODOT Key No. 19071, Federal–Aid No. S001(483). September 28, 2023.**
- 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 (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. (accessed November 29, 2018). **File previously referenced is no longer available online.**
- ODOT. 2011. ODOT Noise Manual. July 2011. Available: 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/transportation/article/729086> (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/hydraulics/Docs_Hydraulics_Manual/HDM_Complete.pdf (accessed November 29, 2018).

-
- ODOT. 2015. "State Highway Crash Rate Table." Available:
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
(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. **2019a**. I-5 Rose Quarter Improvement Project Environmental Assessment.
February 15. Available: <https://www.i-5rosequarter.org/resources/library.aspx>.
- ODOT. **2019b**. 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. **2019c**. 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. 2020. I-5 Rose Quarter Improvement Project Finding of No Significant Impact
and Revised Environmental Assessment. Available:
[https://www.i5rosequarter.org/pdfs/fonsi/COMPLETE_I5RQ-Final-Decision-
Document_10.30.20.pdf](https://www.i5rosequarter.org/pdfs/fonsi/COMPLETE_I5RQ-Final-Decision-Documents_10.30.20.pdf)
- ODOT. 2021a. 2021 Standard Specifications. Available:
https://www.oregon.gov/odot/Business/Pages/Standard_Specifications.aspx
(Accessed August 2022).
- ODOT. 2021b. I-5 Rose Quarter Improvement Project Independent Cover
Assessment. Available:
[https://www.i5rosequarter.org/pdfs/independent_cover_assessment/RQ-CAP-
Report.pdf](https://www.i5rosequarter.org/pdfs/independent_cover_assessment/RQ-CAP-Report.pdf) (Accessed December 2023).
- ODOT. **2022a**. 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).
- ODOT. **2022b**. I-5 Rose Quarter Area Improvements Project Supplemental
Environmental Assessment. Available: <https://www.i-5rosequarter.org/library/>
(accessed November 2, 2023)
- ODOT. **2023**. Highway Design Manual. Available:
<https://www.oregon.gov/odot/engineering/pages/hwy-design-manual.aspx>
(accessed July 2023).

-
- OED (Oregon Economic Department). 2023. **September 2023 Employment and Unemployment in Oregon's Counties**. Available: <https://www.qualityinfo.org/documents/20126/114224/Labor+Force+and+Unemployment+by+Area/32601647-7c36-5685-7712-167f85391887> (accessed November 2023).
- OWRD (Oregon Water Resources Department). 2017. Well Log Query. Available: 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 (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).
- 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).