

Sunrise Corridor Community Visioning

Existing Conditions Report

March 2025



Sunrise Corridor Community Visioning

Existing Conditions in the Study Area – Plan Review

Date: October 20, 2023
Project name: Sunrise Corridor Community Visioning
Attention: Jamie Stasny
Client: Clackamas County
Prepared by: Jacobs with Kittelson and Associates

The purpose of this memorandum is to list, summarize, and assess relevant planning documents in and around the Sunrise Corridor Vision Study area. It includes the review of 43 statewide, regional, and local plans and evaluates their relevance to the project’s four existing conditions topic areas of land use, community and business, economic development, and transportation. These four categories create the chapters of this document.

The following plans have been reviewed and are summarized in the four chapters of this memo.

Land Use	
1.	Clackamas County Comprehensive Plan (2018)
2.	Clackamas Industrial Area and North Bank of the Clackamas River Design Plan (2015)
3.	Clackamas Industrial Area Development Plan (2007)
4.	Happy Valley Comprehensive Plan (2020)
5.	Pleasant Valley North Carver Plan (2023)
6.	Metro 2040 Growth Management Plan (2018)
Community and Business	
7.	Oregon Resilience Plan (2013)
8.	Clackamas County Natural Hazard Mitigation Plan (2019)
9.	Clackamas County Climate Action Plan Report Draft (2023)
10.	Clackamas County Water Environment Services Capital Improvement Plan (2022-2027)
11.	North Clackamas Parks and Recreation District Master Plan (2015)
12.	Clackamas River Water System Plan (2019)
13.	Metro Regional Trails Plan (2023)
14.	State Historic Preservation Office Historic Inventory Map (Accessed 2023)
15.	Multnomah County Climate Action Plan (2015)
Economic	
16.	Greater Portland Comprehensive Economic Development Strategy (2021)
17.	Clackamas County Open for Business Economic Development Plan (2009)
18.	Rock Creek Employment Center Infrastructure Assessment and Funding Plan (2020)
Transportation	
19.	Clackamas County Comprehensive Plan (2018) <ul style="list-style-type: none">▪ Clackamas County Transportation System Plan (2013)
20.	Happy Valley Transportation System Plan (2023)
21.	Clackamas to Columbia (C2C) Corridor (2020)
22.	Sunrise Project Final Environmental Impact Statement (2010)
23.	Sunrise Gateway Corridor Concept Plan (2020)
24.	Damascus Mobility Plan (2022)
25.	Metro RTP and HCT (2018)
26.	Metro Regional Freight Strategy (2019)
27.	Rulemaking Overview: Climate-Friendly and Equitable Communities Rulemaking (2023)

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Transportation

28.	Oregon State Rail Plan (2020)
29.	ODOT Regional Mobility Pricing Project and I-205 Toll Project (2021)
30.	Oregon Revised Statute 366.215 (2013)
31.	Oregon Transportation Plan (2023)
32.	Oregon Highway Plan (2023)
33.	Oregon Freight Plan (2023)
34.	ODOT Highway Design Manual (2023)
35.	ODOT Blueprint for Urban Design (2020)
36.	Portland Region 2020 Traffic Performance Report (2021)
37.	TriMet’s Forward Together Plan (2023)
38.	TriMet Existing Service Plan (Proposed 2024-25 Transit Service Changes)
39.	TriMet Service Enhancement Plan – Southeast (2016)
40.	Clackamas County Transit Development Plan (2021)
41.	Clackamas County Connects – Industrial Area Shuttle
42.	Metro Regional Transit Strategy (2018)
43.	Clackamas County Active Transportation Plan (2013)

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1. Land Use

The land use plan review provided in this section summarizes the findings of seven plans relevant to land use in the study area. The documents reviewed include comprehensive plans that contain land use elements, industrial and employment land use plans, and transportation plans that involve significant land use sections.

Document	Findings
<p>Clackamas County Comprehensive Plan</p> <p>Clackamas County, 2018</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Establishes goals, policies, and projects that impact county land uses, economic development, transportation, and overall livability. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Industrial - Protected designated industrial areas from encroachment of incompatible uses and from transportation impacts of residential and commercial development; and conserved the supply of industrial land. ▪ Commercial - Provided opportunities for a wide range of commercial activity ranging from convenience establishments to major regional shopping centers; provided for the efficient utilization of commercial areas while protecting adjacent properties and surrounding neighborhoods; and encouraged attractive, compact shopping areas offering a wide range of goods and services. ▪ Residential - Provided more diverse and affordable housing types and neighborhood-scale commercial uses; provided for a variety of living environments; provided for development within the carrying capacity of hillsides and environmentally sensitive areas; provide for lower-cost, energy-efficient housing and efficient use of land and public facilities. <p>Zoning and Development Ordinance (Implementing document):</p> <ul style="list-style-type: none"> ▪ Business Park, Light Industrial, and General Industrial Districts (section 602): Outlines permitted uses, including manufacturing, information services, warehousing and distribution, and research facilities and laboratories. Table 602-1 outlines permitted or prohibited uses by district. ▪ Commercial Districts: Neighborhood Commercial (NC), Community Commercial (C-2), Regional Center Commercial (RCC), Retail Commercial (RTL), Corridor Commercial (CC), General Commercial (c-3), Planned Mixed Use (PMU), Station Community Mixed Use (SCMU), Office Apartment (OA), Office Commercial (OC), and Regional Center Office (RCO) Districts (section 510): Outlines permitted uses, including accessory uses, employee amenities, home occupations, and temporary storage. Table 510-1 outlines permitted or prohibited uses by district. ▪ Urban and Rural Residential Districts: Urban Low Density Residential (R-2.5, R-5, R-7, R-8.5, R-10, R-15, R-20, and R-30), Village Standard Lot Residential (VR-5/7), Village Small Lot Residential (VR-4/5), Village Townhouse (VTH), Planned Medium Density Residential (PMD), Medium Density Residential (MR-1), Medium High Density Residential (MR-2), High Density Residential (HDR), Village Apartment (VA), Special High Density Residential (SHD), and Regional Center High Density Residential (RCHDR) Districts: Table 315-1 outlines permitted uses in Urban Residential Zoning districts. <p>Chapter 10: Community Plans and Design Plans (Clackamas Industrial Area North Bank of the Clackamas River Design Plan:</p> <ul style="list-style-type: none"> ▪ Highway 212 Beautification Policies include the following: <ul style="list-style-type: none"> ○ Support the development and implementation of Highway 212 Beautification Project to enhance visual cohesiveness and economic viability of the Clackamas Industrial area ○ Establish design standards for selected streets ○ Establish “Gateway” sites to enhance the identification of industrial area

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Document	Findings
<p>Clackamas Industrial Area North Bank Of The Clackamas River Design Plan</p> <p>North Clackamas Parks and Recreation District (NCPRD), 2015</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ NCPRD is coordinating with Clackamas County Water and Environmental Services (WES) and the Clackamas County Development Agency (DA) to assess establishment of the initial segment of the Clackamas River Greenway System ▪ 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Greenway has been a goal for over 20 years and is included in the Clackamas County Comprehensive Plan. ▪ Recommendation of Board approval for staff to advance analysis of the Greenway partnership efforts regarding WES and DA properties, discuss partnership opportunities with other public agencies, and pursue funding to secure additional public ownership and/or easements on private properties along Greenway. ▪ NCPRD will pursue grant funding but has limited financial resources: acquisition opportunities must require little to no investments by the District. ▪ Document has a map showing the North Bank Clackamas River Greenway with both proposed and conceptual trail and a map showing ownership
<p>Clackamas County Industrial Development Plan</p> <p>Clackamas County, 2007</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Identifies and describes deficiencies and conditions in the district and the adverse effect this has on its developability. ▪ Invest to increase the desirability of the area for further industrial development. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Funding for the area's needed improvements is not available through traditional sources. Federal and State funding have been acquired to partially fund the most significant circulation problems, but additional local funding is needed to provide a minimal system. ▪ All projects called for in the Clackamas Area Improvement and Design Plan, County Comprehensive Plan, and County Economic Development Plan, have been reexamined and the most critical have been included in the Clackamas Industrial Area Development Plan for implementation by the Development Agency. They include: <ul style="list-style-type: none"> ○ Evelyn Street Railroad Crossing ○ 82nd Drive Improvement ○ Jennifer Extension and 135th ○ Mather to Lawnfield Connection ○ Road Improvements, 122nd and 130th ○ 102nd Avenue Access Improvements ○ Lawnfield Road and Railroad Improvements ○ Sunrise Corridor Improvements ○ SE 172nd Avenue Improvements ▪ Amended intermittently through 2007 to update projects / investments. Not currently collecting funds, will spend down remaining budget on identified projects (~\$4 million)

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Document	Findings
<p>Happy Valley Comprehensive Plan</p> <p>Happy Valley, OR, 2020</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Considers all of the elements which affect the physical characteristics of the City - land, air and water – and all public facilities and systems including water, sewer, transportation systems, schools, and parks and other public facilities. ▪ Contains goals and policies which provide direction and guidelines for future development and decision-making. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Suburban communities such as the City of Happy Valley cannot be expected to achieve the average of six units per net vacant buildable acre as assumed for the entire UGB area. This means that the City has been developed in the past on a “proportional” basis when compared to “comparable areas in the urban core”. ▪ A significant number of undeveloped lots ranging in size from nearly 10,000 square feet to one acre in platted subdivisions or simple partitions may be available for development. While it is a stated policy of the City to assume proportionate responsibility for development consistent with projected growth within the area (Policy U-1.6), the City’s projected population of 10,464 people is in response to the directives of the DLCD to assume a greater regional responsibility. ▪ Another important policy is that priority for local funding of public facilities and services, especially sanitary sewers, should be given to areas within the City “which are experiencing ongoing problems” (Policy PF-1.2). ▪ The plan establishes a land use planning process and policy framework as a basis for all decisions related to use of land and to assure an adequate factual base for such decisions and actions. These are as follows: <ul style="list-style-type: none"> ○ Availability of housing units at price ranges and rent levels that allow for flexibility of housing location, type and density. ○ A range of housing that includes land use districts that allow senior housing, assisted living and a range of multi-family housing products. ○ The LDC will be revised to comply with the Comprehensive Plan to allow for changes in the goals and objectives over time. ○ To locate land uses so as to take advantage of existing systems and physical features, to minimize development cost and to achieve compatibility.
<p>Pleasant Valley North Carver Plan (PV/ NC)</p> <p>City of Happy Valley, OR, 2023</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Summarizes the recommendations from the 2018-2020 Pleasant Valley (PV)/North Carver (NC) planning process, with updates added in 2021 ▪ Serves as an adopted appendix to the Happy Valley Comprehensive Plan ▪ Maps and evaluates natural resources, land use, history and other existing conditions; projects land needs for housing, employment, parks, and other key land uses; Prepares land use concepts for new residential neighborhoods and employment districts. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ High aspirations for the future of Carver - Vision to create a unique, mixed-use riverfront district to be enjoyed by the local community. To include excellent access to the river, a large riverfront park, trails, restaurants and other uses that face the Clackamas River. Challenge – starting with the dominance of Highway 224 through the area and the congestion associated with the bridge and Hwy 224/Market Road junction. Solution - To realign Highway 224 to the north and east, allowing through traffic to flow along the edge of the district and providing greater ease of pedestrian access to and from the riverfront. ▪ Emphasis on walkability – A connected street pattern; community destinations such as parks and schools; proximity and access to nature; and well-designed housing. The PV/NC area will have a wide variety of neighborhoods, tailored to their setting. ▪ The implementation of the City’s existing policies, Natural Resource Overlay Zone, and Steep Slopes Development Overlay will regulate and guide development to minimize impacts to streams, wetlands, flood hazard areas, steep slopes and other regulated resource areas. The plan developed a Land Use Concept Map for: <ul style="list-style-type: none"> ○ Walkable neighborhoods ○ Accommodation of projected employment and housing needs ○ Higher densities near mixed-use centers ○ Lower densities in constrained areas ○ Transitions to, and incremental growth in, existing neighborhoods

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Document	Findings
<p>Metro 2040 Growth Management Plan</p> <p>Metro, 2018</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Long-range plan for Multnomah, Clackamas, and Washington counties, which encompasses 24 cities including Portland. ▪ Some focal points for growth include the central city, town centers, neighborhoods, industrial areas and freight terminals, and parks and natural areas. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Policies within the 2040 Growth Concept encourage the following: <ul style="list-style-type: none"> ○ Safe and stable neighborhoods for families ○ Compact development that uses land and money efficiently ○ A healthy economy that generates jobs and business opportunities ○ Protection of farms, forests, rivers, streams and natural areas ○ A balanced transportation system to move people and goods ○ Housing for people of all incomes in every community. ▪ Outlines functional plan requirements for housing capacity, water quality and flood management, industrial and other employment areas, centers, corridors, station communities, and main streets, housing choice, compliance procedures. The functional plan also describes strategies for planning for new urban areas, protection of residential neighborhoods, and nature in neighborhoods.

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2. Community and Business

The Community and Business section presents the findings of 12 planning documents and how they relate to community and business characteristics in the project study area. A wide variety of documents were reviewed, including plans around climate and resilience, mobility – transit, freight, and other modes, and transportation and land use design.

Document	Findings																											
<p>Oregon Resilience Plan</p> <p>Oregon Seismic Safety Policy Advisory Commission (OSSPAC), 2013</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Emphasizes the resilient physical infrastructure needed to support business and community continuity. The policy recommendations presented here aim to enhance infrastructure resilience, help preserve communities, and protect state economy. ▪ Urges systematic efforts to assess Oregon’s buildings, lifelines, and social systems, and to develop a sustained program of replacement, retrofit, and redesign to make Oregon resilient. ▪ Local Oregon communities can use the framework and gap-analysis methodology developed herein to conduct more refined assessments and develop community-specific recommendations to meet their response and recovery needs. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Oregon is far from resilient to the impacts of a great Cascadia earthquake and tsunami today. Available studies estimate fatalities ranging from 1,250 to more than 10,000 due to the combined effects of earthquake and tsunami, tens of thousands of buildings destroyed or damaged so extensively that they will require months to years of repair, tens of thousands of displaced households, more than \$30 billion in direct and indirect economic losses (close to one-fifth of Oregon’s gross state product), and more than one million dump truck loads of debris. ▪ A particular vulnerability - Oregon depends on liquid fuels transported into the state from Washington State. Once here, fuels are stored temporarily at Oregon’s critical energy infrastructure hub, a six-mile stretch of the lower Willamette River where industrial facilities occupy liquefiable riverside soils. Disrupting the transportation, storage, and distribution of liquid fuels would rapidly disrupt most sectors of the economy critical to emergency response and economic recovery. ▪ Business continuity planning typically assumes a period of two weeks to be the longest disruption of essential services (i.e., utilities, communications, etc.) that a business can withstand. Analysis in the Oregon Resilience Plan reveals the following timeframes for service recovery under present conditions: <table border="1" data-bbox="609 1077 1399 1619"> <thead> <tr> <th>Critical Service</th> <th>Zone</th> <th>Estimated Time to Restore Service</th> </tr> </thead> <tbody> <tr> <td>Electricity</td> <td>Valley</td> <td>1 to 3 months</td> </tr> <tr> <td>Electricity</td> <td>Coast</td> <td>3 to 6 months</td> </tr> <tr> <td>Police and fire stations</td> <td>Valley</td> <td>2 to 4 months</td> </tr> <tr> <td>Drinking water and sewer</td> <td>Valley</td> <td>1 month to 1 year</td> </tr> <tr> <td>Drinking water and sewer</td> <td>Coast</td> <td>1 to 3 years</td> </tr> <tr> <td>Top-priority highways (partial restoration)</td> <td>Valley</td> <td>6 to 12 months</td> </tr> <tr> <td>Healthcare facilities</td> <td>Valley</td> <td>18 months</td> </tr> <tr> <td>Healthcare facilities</td> <td>Coast</td> <td>3 years</td> </tr> </tbody> </table>	Critical Service	Zone	Estimated Time to Restore Service	Electricity	Valley	1 to 3 months	Electricity	Coast	3 to 6 months	Police and fire stations	Valley	2 to 4 months	Drinking water and sewer	Valley	1 month to 1 year	Drinking water and sewer	Coast	1 to 3 years	Top-priority highways (partial restoration)	Valley	6 to 12 months	Healthcare facilities	Valley	18 months	Healthcare facilities	Coast	3 years
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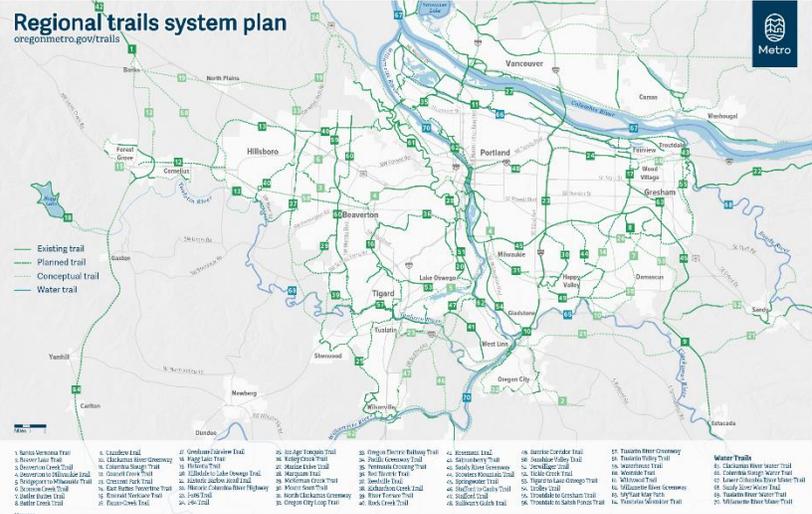
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Document	Findings
<p>Natural Hazard Mitigation Plan</p> <p>Clackamas County, 2019</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ This plan outlines the process, participation, adoption, implementation, and maintenance strategies for the mitigation of natural hazards such as droughts, earthquakes, floods, landslides, severe weather, volcanic events, and wildfire. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ The goals of the natural hazard mitigation plan (NHMP) include the following: <ul style="list-style-type: none"> ○ Protect life and property ○ Enhance natural systems ○ Augment emergency services ○ Encourage partnerships for implementation ○ Promote public awareness ▪ The plan also outlines risk assessment methodology, which identifies hazards that impact jurisdictions, identifies important community assets and system vulnerabilities, and evaluates the extent to which the identified hazards overlap with or have an impact on important assets identified by the community.
<p>Clackamas County Climate Action Plan Report (draft)</p> <p>Clackamas County, 2023</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Strategic-level document that outlines the county’s goals and objectives for addressing climate change and strategies to achieve carbon neutrality ▪ Report focuses on how county can reduce community-wide emissions from sectors such as buildings, transportation, and waste 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Critical sectors for decreasing emissions in Clackamas County, which are included in this report, are the following: <ul style="list-style-type: none"> ○ Building Retrofits, ○ Net-Zero New Construction, ○ Renewable Energy Generation, ○ Reducing Vehicle Emissions and ○ Increasing Active Transportation and Transit Use. ▪ The low-carbon scenario shows that emissions will be reduced by 83% and shows the following changes in emissions: <ul style="list-style-type: none"> ○ Buildings, which represented half of the community’s emissions in 2018 (nearly 2 million MtCo2e), will be 0.1 million MtCo2e in 2050. ○ Transportation emissions will be reduced by 93% below the baseline. ○ Emissions from waste will increase by 131%. ○ Agriculture-related emissions will decrease by 9%.

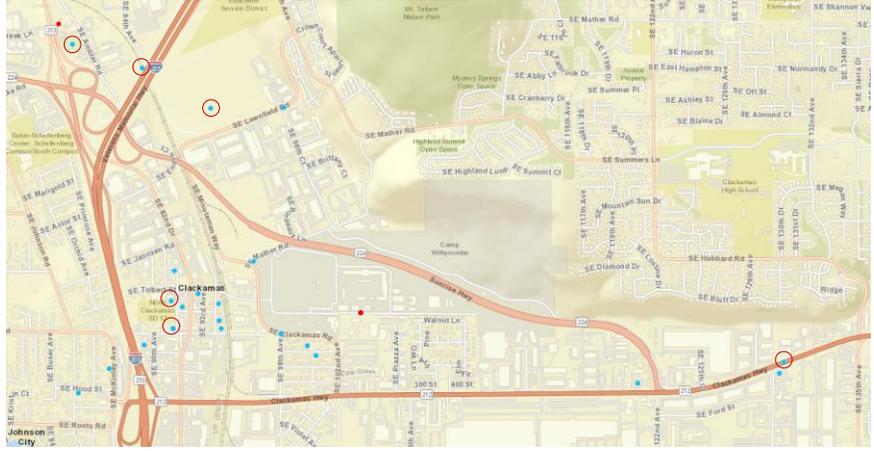
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Document	Findings
<p>Water Environment Services - Capital Improvement Plan</p> <p>Clackamas County, 2022-2027</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ 5-year CIP as part of larger 20-year CIP which will set forth capital needs and consolidate recommendations for ongoing planning efforts. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Sanitary sewer and surface water projects prioritized according to the following criteria: <ul style="list-style-type: none"> ○ Health and Safety ○ Regulatory Compliance ○ Risk Reduction ○ Reliability ○ Innovation ○ Implementation Complexity ▪ Capital expenditures are attributed to one or more capital funds depending on the purpose and location of the asset. The funds are as follows: <ul style="list-style-type: none"> ○ 632: WES Sanitary Sewer System Development Charge Fund, which provides for construction of sanitary sewer projects attributable to growth and therefore eligible for SDC funding ○ 639: WES Sanitary Sewer Construction Fund, which provides for construction of sanitary sewer project financed either by bond proceeds, grants, general fund revenues or other sources ○ 642: WES Surface Water System Development Charge Fund, which provides for construction of surface water projects attributable to growth and therefore eligible for SDC funding. ○ 649: WES Surface Water Construction Fund, which provides for construction of surface water projects financed either by bond proceeds, grants, general fund revenues, or other resources.
<p>North Clackamas Parks and Recreation Master Plan</p> <p>North Clackamas Parks and Recreation District, 2015</p> <p>Relevance:</p> <ul style="list-style-type: none"> • Summarizes previous plans of the District and their goals, and accomplishments • Identifies what District residents want in a parks and recreation system 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ While there is a high degree of satisfaction with the parks and recreation services that are currently provided by NCPRD, there are unmet needs and strong desires for additional parks, trails, natural areas, and recreational programming. ▪ NCPRD's current funding sources are inadequate to maintain the current level of service throughout the District, and/or support additional system growth. ▪ Property tax revenues make up the largest portion of the District's operating budget and property taxes cannot be increased unless the District is re-formed by a ballot measure. ▪ The District's current governance structure provides an Advisory Board of District residents dedicated to parks and recreation issues, but without authority to implement policy changes or recommendations. <ul style="list-style-type: none"> ○ Other types of park districts have governance models where their resident board is the decision-making body.

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Document	Findings
<p>Clackamas River Water System Master Plan</p> <p>Clackamas River Water, 2019</p> <p>Relevance:</p> <ul style="list-style-type: none"> 20-year planning horizon from 2019 through 2038. Plan is divided into a ten (10) year short-term planning period from 2019 through 2028, and a ten (10) year long-term planning period from 2029 through 2038. 	<p>Findings:</p> <ul style="list-style-type: none"> In accordance with Chapter 333-061 of the Oregon Administrative Rules, Oregon Health Authority (OHA) requirements and considering all other jurisdictions within CRW, this Plan: <ul style="list-style-type: none"> Considers past studies, reports, agreements, and other data concerning the water system. Develops an inventory of CRW's existing water system and infrastructure. Develops demographic and demand analysis to project future demands within CRW's service area. Verifies that CRW's policies and criteria, which the system will be evaluated with, comply with OHA standards. Evaluates current and future water resources to identify water supply improvements and potential deficiencies. Evaluates the existing distribution system using CRW's updated hydraulic model and develop improvements for identified deficiencies. Develops a Seismic Resilience Plan outlining recommended improvements for supply, pumping, storage, and the distribution system. Develops a CIP outlining recommended system improvements.
<p>Metro Regional Trails System Plan</p> <p>Metro, 2023</p> <p>Relevance:</p> <ul style="list-style-type: none"> Update to 2018 Plan. Envisions and plans for an interconnected system of off-street paths and trails, as well as water trails. 	<p>Findings:</p> <ul style="list-style-type: none"> The Plan is a detailed map showing existing, planned, and conceptual regional trails, as well as water trails. Seventy-seven miles of trails changed since the last plan update in 2018.  <p>The map, titled 'Regional trails system plan' from oregonmetro.gov/trails, shows a dense network of trails across the Metro area. A legend indicates: Existing trail (solid blue line), Planned trail (dashed blue line), Conceptual trail (dotted blue line), and Water trail (solid green line). The map includes a scale bar and a north arrow. A list of trail names and their corresponding map numbers is provided at the bottom of the map.</p>

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<p>State Historic Inventory Map</p> <p>Oregon State Historic Preservation Office (Accessed 2023)</p> <p>Relevance:</p> <ul style="list-style-type: none"> Identifies properties that are of historical significance within or near study area. 	 <table border="1" data-bbox="581 783 1455 1318"> <thead> <tr> <th>Property Name</th> <th>Description</th> <th>Location</th> <th>Year Built</th> </tr> </thead> <tbody> <tr> <td>Southern Pacific Railroad Willamette Valley Main Line</td> <td>Railroad</td> <td>Willsburg Junction (MP 765.2) to Eugene (MP 647.3), Clackamas County</td> <td>1868</td> </tr> <tr> <td>Clackamas School</td> <td>School Building</td> <td>15301 SE 92nd Ave, Clackamas County</td> <td>1939</td> </tr> <tr> <td>Clackamas Cemetery</td> <td>Cemetery Site</td> <td>SE Ambler Rd, Clackamas County</td> <td>1850</td> </tr> <tr> <td>Mather-Foster House</td> <td>Single Dwelling</td> <td>9171 SE Clackamas Rd, Clackamas County</td> <td>1892</td> </tr> <tr> <td>Haberlach, Frank A, House</td> <td>Single Dwelling</td> <td>13002 SE Hwy 212, Clackamas County</td> <td>1920</td> </tr> <tr> <td>KEX Transmission Station</td> <td>Communications Facility</td> <td>9415 SE Lawnfield Rd, Clackamas County</td> <td>1947</td> </tr> </tbody> </table> <p><i>Oregon Historic Sites Database (state.or.us)</i></p>	Property Name	Description	Location	Year Built	Southern Pacific Railroad Willamette Valley Main Line	Railroad	Willsburg Junction (MP 765.2) to Eugene (MP 647.3), Clackamas County	1868	Clackamas School	School Building	15301 SE 92nd Ave, Clackamas County	1939	Clackamas Cemetery	Cemetery Site	SE Ambler Rd, Clackamas County	1850	Mather-Foster House	Single Dwelling	9171 SE Clackamas Rd, Clackamas County	1892	Haberlach, Frank A, House	Single Dwelling	13002 SE Hwy 212, Clackamas County	1920	KEX Transmission Station	Communications Facility	9415 SE Lawnfield Rd, Clackamas County	1947
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<p>Multnomah County Climate Action Plan</p> <p>Multnomah County, City of Portland, 2015</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Neighboring county energy reduction strategies with cross-county impacts. ▪ Establishes strategies for homes and businesses, smart decisions for urban development and transportation, and considers climate-change risks in decision-making – better air quality, human health, active transportation, reinvestment in the local economy. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ Puts Portland and Multnomah County on a path to reduce carbon emissions 80 percent from 1990 levels by 2050 (and 40 percent by 2030). To draft this Climate Action Plan, City and County staff worked with a Steering Committee, an Equity Working Group and technical advisors. These groups helped to identify the near-term actions most likely to result in the long-term changes necessary to achieve climate action goals, while also advancing other community goals related to prosperity, the environment, health and equity. ▪ Local faith-based groups, neighborhood associations and community organizations showed leadership in supporting the collective action of their members. Solarize Portland, for example, the group purchase of solar photovoltaic systems, was initiated by SE Uplift, a neighborhood association. More than 1,000 solar installations later, the Solarize model has spread to Beaverton and Pendleton in Oregon and Massachusetts and beyond. ▪ City and County fostered relationships with communities of color and low-income populations, accounted for existing barriers in engagement strategies, ensured that education and outreach are culturally appropriate, and worked with community-based organizations in engaging traditionally under-represented and under-served populations and businesses. ▪ Community benefits have not been equitable - This plan aims to increase access to transit, sidewalks, bike lanes and other transportation options, reduce pollution exposure, and improve access to parks and other natural resources.

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3. Economic

Five plans were reviewed for economic and job-related elements that apply to the project. The plans identify the ways in which freight, transit, and other transportation impact, improve, and facilitate economic development, employment, and goods movement through the area, across the region, and across the state.

Document	Findings
<p>Greater Portland - Comprehensive Economic Development Strategy (CEDS)</p> <p>Greater Portland, Metro, 2021</p> <p>Relevance:</p> <ul style="list-style-type: none"> • Strategy positions the region for U.S. Economic Development Administration grants, local philanthropic and federal monies. • Establishes a 5-year period to assess and reset every 5 years • Provides “strategic direction over the next five years to meet dynamic economic and business conditions”, describes seven key industry clusters in the region. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ The CEDS planning process began in January 2020, under the joint leadership of Greater Portland Inc (GPI), the regional non-profit economic development organization, and Metro, the federally mandated metropolitan planning organization (MPO) for the region. ▪ The document is aimed at regional, city and county economic development practitioners, business leaders, elected officials and stakeholders implementing programs that support the growth of businesses and enhance opportunities for individuals to access economic mobility in the Greater Portland region. ▪ Pillars of the strategy to improve regional economy: <ul style="list-style-type: none"> ○ Strong economic growth – A regional economy with increasing Gross Domestic Product (GDP) over time and at higher rates than peers. An economy that is globally connected, driven by emerging technologies, diversified and adaptable, and welcoming to highly skilled entrepreneurial labor, and scalable firms. ○ Equity – An economic system that ensures under-represented and under-served people have the same level of access to the economy and wealth creation as all other residents. ○ Resilience – An enduring economic structure that fosters the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience. ▪ Strategy for Equitable Growth 2022-2027: <ul style="list-style-type: none"> ○ Foster Upward Economic Mobility ○ Support a Competitive Economy ○ Build a Resilient Region
<p>Open For Business – Clackamas County Economic Development Plan</p> <p>Clackamas Co. Business & Economic Development Department, 2009</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Helps decision-makers to chart a steady successful course, to weather changes in economic conditions and continuously improve, diversify and grow our economy. ▪ Overviews the County’s economic landscape, our vision, guiding principles, and specific strategies with action steps and indicators of success. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ The Vision: Clackamas County thrives as a great place to operate a business, raise a family and visit sites and attractions. Our County’s vision is to create a unique niche in the Portland Metro area as the “Pioneers of Innovation” - a business friendly place that fosters innovation, sustainable practices, attracts the creative class and embraces its diversity. <p>The plan focuses on a five pronged strategy to maximize success:</p> <ul style="list-style-type: none"> ▪ Business Retention and Growth: Helping our existing businesses to thrive is a top priority whether they are small or large, or located in urban or rural communities. ▪ Business Recruitment: Attracting strategic industry clusters and firms that have the strongest potential to thrive here, invest and create well paying jobs. ▪ Infrastructure: Advocating for funding for additional infrastructure capacity and maintenance, while developing short- and long-term supply and improving quality. Critical infrastructure includes transportation, water, and sewer, among others. ▪ Workforce and Education: Ensuring that there are available, skilled workers to meet the growing and changing needs of Clackamas County employers. ▪ Regional Collaboration: Leveraging efforts and resources in marketing, recruitment, and in addressing economic development challenges together. Collaboration will occur at the local level with cities and communities as well as with regional, state and federal partners.

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Document	Findings
<p>Rock Creek Employment Center Infrastructure Assessment and Funding Plan</p> <p>City of Happy Valley, 2020</p> <p>Relevance:</p> <ul style="list-style-type: none"> ▪ Sets key investments necessary to foster growth within the Rock Creek Employment Center. ▪ Scenario A assumes funding for Sunrise Expressway was not available through the Metro bond measure in 2020 and is therefore relevant to the Sunrise Vision project. 	<p>Findings:</p> <ul style="list-style-type: none"> ▪ The Rock Creek Employment Center (RCEC) is a 200+ acre region of underdeveloped/vacant land in the City of Happy Valley. The RCEC is a planned employment center, meaning that it has been designated for future industrial and employment development. The 200+ acres of land were included in the Portland Metropolitan Area Urban Growth Boundary (UGB) expansion in 2002, and most of it has been subsequently annexed into the city limits of Happy Valley in the following years. ▪ Existing facilities include Adrienne C. Nelson High School and Verne Duncan Elementary School. NCSD purchased vacant land west of the site for a future middle school. The surrounding area is developed or planned to be developed with significant residential development to meet increased housing needs for the region. ▪ Performed traffic analysis at OR-212 and SE 162nd Avenue, SE 172nd Avenue, and the OR-212/OR-224 interchange. ▪ Key roadway improvements recommended to extend SE 162nd Avenue (to SE Rock Creek Boulevard), improve OR-212 (add lanes), and improve the SE 162nd Avenue/OR-212 interchange (roundabout). ▪ The cost estimate for the improvements discussed above for Scenario A totals \$93.9 million (based on 10% [concept] design) ▪ The document compares the impacts to the RCEC under two scenarios: <ul style="list-style-type: none"> Scenario A: Sunrise Parkway is not constructed - mobility standards for the SE 162nd/OR 212 and OR 212/OR 224 intersections would not be met by 2040; The total cost of these improvements would increase the City of Happy Valley transportation-systems development charges (TSDC) by between \$9,610 to \$12,533 per peak hour vehicle trip (PHVT). Scenario B: Sunrise Parkway is constructed - mobility standards for the SE 162nd/OR 212 intersections would be met 2040; The total cost of these improvements would increase the City of Happy Valley TSDC by between \$9,610 to \$11,563 PHVT.

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4. Transportation

Past and ongoing transportation planning have shaped the foundation of the Sunrise Gateway Corridor. These efforts have come from the Oregon Department of Transportation (ODOT), Clackamas County, and local communities along the corridor. To explore the interconnected efforts, this document includes a review of local, regional, and state transportation plans along and around the Sunrise Gateway Corridor.

The reviewed local and regional plans include:

- Sunrise Project Final Environmental Impact Statement (2010)
- Sunrise Gateway Corridor Concept (2021, unadopted)
- Clackamas to Columbia Corridor (2020)
- Clackamas County Transportation System Plan (2013)
- Happy Valley Transportation System Plan (2023)
- Damascus Mobility Plan (2022)
- Regional Transportation Plan (2023)
- Portland Region 2020 Traffic Performance Report
- TriMet’s Forward Together Plan (2023)
- TriMet Existing Service Plan (Proposed 2024-25 Transit Service Changes)
- TriMet’s Southeast Service Enhancement Plan (2016)
- Clackamas County Transit Development Plan (2021)
- Clackamas County Connects – Industrial Area Shuttle (2023)
- Metro Regional Transit Strategy (2018)
- High-Capacity Transit Strategy (2023)
- Clackamas County Active Transportation Plan (2013)

The reviewed state plans include:

- Oregon Transportation Plan (2023)
- Oregon Highway Plan (1999)
- Oregon Freight Plan (2023)
- ODOT Blueprint for Urban Design (2020)
- ODOT Highway Design Manual (2023)
- Oregon Revised Statue 366.215

Appendix A includes a more detailed description of each of these plans and how they relate to the Sunrise Corridor.

Document	Findings
<p>Clackamas County Comprehensive Plan</p> <p>Clackamas County, 2018</p> <ul style="list-style-type: none"> ▪ Federally funded transportation projects require they be included in regionally adopted transportation plan that is consistent with regional and statewide plans. ▪ Provides a transportation system that optimizes benefits to the environment, the economy and the community. ▪ Establishes goals, policies, and projects that impact county 	<ul style="list-style-type: none"> ▪ Industrial - Protected designated industrial areas from encroachment of incompatible uses and from transportation impacts of residential and commercial development; and conserved the supply of industrial land. ▪ Commercial - Provided opportunities for a wide range of commercial activity ranging from convenience establishments to major regional shopping centers; provided for the efficient utilization of commercial areas while protecting adjacent properties and surrounding neighborhoods; and encouraged attractive, compact shopping areas offering a wide range of goods and services. ▪ Residential - Provided more diverse and affordable housing types and neighborhood-scale commercial uses; provided for a variety of living environments; provided for development within the carrying capacity of hillsides and environmentally sensitive areas; provide for lower-cost, energy-efficient housing and efficient use of land and public facilities. <p>Chapter 5: Goals:</p> <ul style="list-style-type: none"> ▪ Goal 1: Provide a transportation system that optimizes benefits to the environment, the economy and the community

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Document	Findings
<p>land uses, economic development, transportation, and overall livability.</p> <ul style="list-style-type: none"> ▪ TSP serves as a comprehensive roadmap for the county's transportation system, setting up the policies and guidelines for the maintenance and improvement of existing infrastructure. ▪ The TSP identifies the committed improvements and the priorities of these improvements in Clackamas County, covering the study area of this plan. ▪ Plans the transportation system to create a prosperous and adaptable economy and further the economic well-being of businesses and residents of the County. ▪ Tailors transportation solutions to suit the diversity of local communities. 	<ul style="list-style-type: none"> ▪ Goal 2: Plan the transportation system to create a prosperous and adaptable economy and further the economic well-being of businesses and residents of the County ▪ Goal 3: Tailor transportation solutions to suit the diversity of local communities ▪ Goal 4: Promote a transportation system that maintains or improves our safety, health, and security ▪ Goal 5: Provide an equitable transportation system ▪ Goal 6: Promote a fiscally responsible approach to protect and improve the existing transportation system and implement a cost-effective system to meet future needs <ul style="list-style-type: none"> ▪ Support and promote an integrated approach to land use and transportation planning and implementation that encourages livable and sustainable communities, decreases average trip length and increases accessibility for all modes. ▪ Support and promote transportation investments that support complete and sustainable communities as a long-term strategy to reduce reliance on long commutes out of the County to employment destinations. ▪ Recognize the County's rural economic engine and the importance of moving goods from rural businesses (including farms, nurseries, livestock, and lumber) to distribution centers. <ul style="list-style-type: none"> ▪ The TSP has six key goals, including Optimized Benefits, the Economy, Community Diversity, Safety, Equity, and Cost-Effectiveness. ▪ The TSP identifies the need to work with Metro and ODOT over five years to develop Alternate Road Capacity Performance Standards to address OR 212/SE 172nd Avenue intersection and four others, which were forecast not to meet the capacity performance standards adopted in the 2013 TSP. <p>The TSP identifies several projects that impact the Sunrise Corridor:</p> <ul style="list-style-type: none"> ▪ OR 224/SE 135th Avenue intersection: Add intersection improvements, including right-turn lanes. ▪ OR 224 from Rock Creek Junction to Midway Street in Carver: Widen to four lanes; add bikeways. ▪ SE Webster Road/OR 224 to SE 172nd Avenue/OR 212: Preliminary Sunrise Corridor engineering from Webster Road to 172nd Avenue. ▪ SE Webster Road/OR 224 to SE 172nd Avenue/OR 212: Acquire right-of-way to accommodate 6 lane expressway plus auxiliary lanes. ▪ SE 122nd Avenue to Rock Creek Junction: Construct multi-use path from 122nd to Rock Creek Junction parallel to the Sunrise project consistent with FEIS. ▪ In the vicinity of Roots Road and McKinley Avenue: Connect bikeways in accordance with the Active Transportation Plan. ▪ Rock Creek Junction to SE 172nd Avenue: Construct climbing lane. ▪ OR 212/SE 162nd Avenue intersection: Add left-turn pockets and traffic signal. ▪ I-205 to SE 172nd Avenue: Construct improvements to SE 172nd Avenue. <p>I-205 to OR 224: Perform road safety audit or transportation safety review to identify appropriate safety improvements.</p> <ul style="list-style-type: none"> ▪ County to coordinate with transit providers to achieve the goal of transit service within one-quarter mile of most residences and businesses within the Portland Metropolitan UGB. Support more frequent service within Regional Centers, Town Centers, Station Communities, and Corridors and Main Streets. ▪ Should site new commercial, institutional, and multi-family buildings at major transit stops as close as possible to transit, with a door facing the transit

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	<p>street or side street, and with no parking between the building and front lot lines.</p> <ul style="list-style-type: none"> ▪ Emphasizes transit improvements that improve east-west connections; improve service between the County’s industrial and commercial areas and neighborhoods; and best meet the needs of all County residents, employees and employers, regardless of race, age, ability, income level and geographic location. ▪ Promotes a fiscally responsible approach to protect and improve the existing transportation system and implement a cost-effective system to meet future needs.
<p>Happy Valley TSP Happy Valley, 2023 Relevance:</p> <ul style="list-style-type: none"> ▪ The Happy Valley TSP provides a framework for comprehensive transportation planning for the city. ▪ The TSP also identifies multimodal and roadway improvement needs for the region, including the Sunrise Corridor, its parallel facility, and surrounding areas (e.g. Highway 212 corridor, Rock Creek Junction, and Sunnyside Road). 	<p>The TSP identifies several projects that impact the Sunrise Corridor:</p> <ul style="list-style-type: none"> ▪ SE 172nd Avenue/OR 212: Add second eastbound left turn lane. ▪ OR 212/OR 224: Add a second eastbound right turn lane, widen OR 224 to provide a southbound receiving lane. ▪ OR 212/SE 162nd Avenue: Install a one-lane roundabout. ▪ SE 172nd Avenue Widening: Widen to 5-lane facility between SE Sunnyside Road and 172nd-190th Connector Road. ▪ OR 212: Widen to 5-lane facility from OR 224 to SE 187th Avenue. ▪ OR 224: Widen to 5-lane facility from OR 212 to Carver Junction. ▪ Sunrise Parkway Phase 2: Construct new 4-lane expressway from SE 122nd Avenue to SE 172nd Avenue.
<p>Clackamas to Columbia (C2C) Corridor Gresham, Happy Valley, Clackamas County, and Multnomah County, 2020</p> <ul style="list-style-type: none"> ▪ The C2C Corridor enhances mobility by establishing a north-south connection spanning from SE 172nd Avenue to SE 190th Avenue. ▪ The Sunrise Corridor provides a vital transportation link in northeast Clackamas County, facilitating efficient west-east connectivity along the OR 212 and 224 routes. ▪ The integration of these two corridors effectively improves overall transportation accessibility and movement in north and northeast Clackamas County. ▪ Creates a consistent, coordinated, multijurisdictional transportation plan that focuses on needed improvements for all modes 	<p>The C2C Corridor Plan proposed eight investment packages, some of which are related to the Sunrise Corridor:</p> <ul style="list-style-type: none"> ▪ Package 1 includes Sunrise Phase 2a to complete street improvements on Highway 212 and provides local street connections, and Sunrise Phase 2b planning and design. ▪ Package 3 includes Sunrise Phase 2b to construct the Sunrise Gateway access-controlled facility from SE122nd Avenue to SE 172nd Avenue with a parallel trail, and Sunrise Phase 2c to construct a roundabout at Rock Creek Junction. ▪ Package 4 includes SE 172nd Avenue Improvements to provide five-lane vehicle cross section, bicycle lanes, landscape strip, and sidewalks on SE 172nd Avenue from Connector to Sunnyside Road. ▪ Package 6 includes the SE Sunnyside Rd East Extension to build a new five-lane road with continuous left turn lane, sidewalks, bike lanes, and traffic signals, and Sunrise Phase 3 to make improvements east of SE 172nd Avenue. ▪ Package 7 includes Rock Creek Boulevard improvements to construct new five-lane vehicle cross section from Sunrise Corridor to SE 162nd Avenue, widening the existing alignment of Rock Creek Boulevard to five lanes from SE 162nd Avenue to SE 177th Avenue. Facility improvements include continuous left-turn lane, sidewalks, bicycle lanes, and traffic signals. ▪ Package 8 includes Foster Road three-lane vehicle cross section, bicycle lanes, landscape strip, and sidewalks from Cheldelin Road to OR 212. ▪ [Projects and packages with low relevance to the Sunrise Corridor, such as packages 2 and 5, have been omitted from the list here.] ▪ Developed a coordinated, consistent set of policy and project recommendations for incorporation into the next update of each jurisdiction’s TSP (including Clackamas County, Multnomah County, Gresham, and Happy Valley).

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Document	Findings
<p>along the 181st/182nd/190th/172nd corridor.</p> <ul style="list-style-type: none"> ▪ Provides the framework and performance standards by which projects from previous and ongoing planning efforts were measured, prioritized, and organized into investment packages. ▪ Develops a preferred investment package to aid in funding and implementation of the plan. 	<ul style="list-style-type: none"> ▪ Targeted a prioritized project list for consideration for upcoming funding opportunities, such as Metro’s Get Moving 2020 regional investment measures, future Metropolitan Transportation Improvement Program (MTIP) or Statewide Transportation Improvement Program (STIP) investments, urban renewal districts, or other funding sources. ▪ Via the public involvement process, the plan gathered feedback, confirmed and refined recommendations, and provided opportunities for comment and feedback. ▪ The City of Gresham, Clackamas County, and Multnomah County accepted the plan and incorporated it into future TSP updates. ▪ The City of Happy Valley accepted the C2C Corridor Plan via resolution and adopted it in its entirety by making it an ancillary document to the City’s Comprehensive Plan.
<p>Sunrise Project Final Environmental Impact Statement</p> <p>Oregon Department of Transportation, 2010</p> <ul style="list-style-type: none"> ▪ When this project was completed, the Preferred Alternative for the Sunrise Project was integrated into the state highway network, connecting I-205, the Milwaukie Expressway, and OR 212/224. ▪ The FEIS called for the highway to consist of six through lanes and two auxiliary lanes. ▪ ODOT’s existing plan for Sunrise roadway design in Regional Transportation Plan ▪ Outlines mitigation measures for the preferred alternative in categories of transportation, land use, parks and recreation, business and communities, and several others 	<ul style="list-style-type: none"> ▪ The FEIS presents a comprehensive assessment of the potential impacts and benefits associated with different alternatives aimed at addressing transportation challenges within the OR 212/224 corridor. The FEIS includes extensive research, analysis, and public involvement efforts spanning over several years. <p>The FEIS identified the following projects in the Sunrise Corridor in 2010:</p> <ul style="list-style-type: none"> ▪ The Preferred Alternative is Alternative 2 with the Tolbert overcrossing from Design Option A-2 and incorporates the alignment of Design Option C-2 and the SPUI interchange of Design Option D-3. ▪ Design Option A-2 provides access to/from SE 82nd Drive and the Lawnfield industrial area via an overcrossing of Union Pacific Railroad (UPRR) tracks to SE Tolbert Street. ▪ Design Option D-3 provides a different type of interchange design at the Rock Creek Junction than under Alternative 2 and Design Option D-2, reducing the interchange footprint further and moving it slightly south. <ul style="list-style-type: none"> ▪ Project Purpose: effectively address the existing congestion and safety problems in the OR 212/224 corridor between its interchange with I-205 and Rock Creek Junction, and to serve the growing demand for regional travel and access to the state highway system. ▪ Project Need: OR 212/224 between I-205 and Rock Creek Junction is currently experiencing unacceptable levels of congestion and delay during the peak travel periods. In 2030, the projected traffic volume will far exceed the volume that the existing four-lane arterial can be expected to handle at an acceptable level of service. <p>Goals:</p> <ul style="list-style-type: none"> ▪ Goal 1: Provide east-west transportation improvements from I-205 at the Milwaukie Expressway to the Rock Creek Junction to meet existing and future safety, connectivity, and capacity needs for statewide and regional travel within the OR 212/224 corridor ▪ Goal 2: Provide transportation improvements that support the viability of the Clackamas area for industrial uses ▪ Goal 3: Support community livability and protect the quality and integrity of residential uses within and adjacent to the corridor

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	<ul style="list-style-type: none"> ▪ Goal 4: Provide a facility that minimizes and effectively mitigates adverse impacts to natural and cultural resources within the project corridor ▪ Project addressed congestion and transportation safety issues in Sunrise corridor. ▪ Presents transportation roadway / right-of-way design that requires purchasing land from fronting property (business) owners, and redesigns access in along much of area ▪ Land use inventory grouped land uses into four general categories or residential, employment, vacant, and other – it revealed that employment uses dominate the area with some dispersed residential developments. ▪ 3 build alternatives and several design options were developed to measure land use impacts to the surrounding area ▪ Out of 5,735 dwelling units in the land use study area, the build alternatives would displace from 43 to 75 dwelling units. From 57 to 80 businesses would be displaced. ▪ Because employment uses are a large portion of land uses in the area, industrial, office, and retail uses are the most impacted land use type. ▪ No environmental justice mitigation measures are suggested beyond assistance already provided under federal law and those already suggested under Land Use, Business and Communities, and Noise categories. ▪ Updated documentation of historical and cultural properties. ▪ Purpose and Need statement for enhanced transportation infrastructure in the Sunrise Corridor ▪ Direct property acquisition and relocation impacts would be mitigated through financial compensation regulated in accordance to the federal Uniform Act, Oregon Revised Statutes, ODOT guidance, and FWHA Federal Aid Policy Guide.
<p>Sunrise Gateway Corridor Concept (unadopted)</p> <p>Clackamas County, 2021</p> <ul style="list-style-type: none"> ▪ The Sunrise Gateway Corridor Concept serves as the foundational vision for the current project, providing a starting point for another round of planning efforts. ▪ This plan provides an overview of the process and refinements made to the concept, highlighting the factors that will facilitate the implementation of a fair, safe, and multimodal roadway network within the Sunrise Corridor. ▪ Presents preliminary roadway design concepts to the 2010 FEIS Sunrise Corridor ▪ Used as part of regional funding measure, conceptual designs provide alternatives to 	<p>122nd Tie-in</p> <ul style="list-style-type: none"> ▪ Construct Sunrise Gateway Corridor at-grade with either a 2-lane or 4-lane cross section depending on traffic needs and funding. ▪ Construct parallel signalized intersections via the ultimate interchange ramp locations which would operate as a one-way couplet in the interim. ▪ Develop a full interchange at 122nd/Sunrise Gateway Corridor when demands warrants grade separation. ▪ As part of the 122nd tie-in, a design study will need to be conducted on potential modifications to the 122nd/OR212-OR224 intersection (e.g., dual eastbound left-turn lanes) to accommodate eastbound traffic transitioning from OR212 to the Sunrise Gateway Corridor. <p>135th/142nd/152nd Tie-in</p> <ul style="list-style-type: none"> ▪ Construct Sunrise Gateway Corridor at-grade with either a 2-lane or 4-lane cross section depending on traffic needs and funding. ▪ Disconnect SE 135th Ave from OR 212, realign to connect with SE 142nd Ave, and construct a pedestrian and bike bridge over Sunrise at SE 135th Ave. ▪ Construct new signalized intersection at the intersection of the northerly connector road with SE 142nd Ave and construct bridge over Sunrise that connects to OR 212 via eastbound and westbound ramps. ▪ Construct 3 leg roundabout at SE 142nd Ave and OR 212 to service the mobile home park. ▪ Construct connector road between SE 142nd Ave and SE 152nd Ave and implement right-in/ right-out access at the intersection of SE 152nd/ OR 212. ▪ Implement potential park & ride for high-capacity transit and/or bus rapid transit. <p>Rock Creek Junction</p>

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Document	Findings
<p>further develop in Sunrise Corridor Vision</p>	<ul style="list-style-type: none"> ▪ Disconnect direct access between OR 224 and the Sunrise Gateway Corridor. ▪ Construct multi-lane roundabout at the intersection of OR 224/OR 212, following construction of the two-lane Sunrise extension to SE 172nd. Rock Creek Boulevard-162nd to 172nd Tie-in ▪ Realign Rock Creek Blvd to connect into SE 162nd Ave as a continuous roadway. ▪ Extend Rock Creek Blvd from SE 172nd Ave to OR 212 near SE Tong Rd. ▪ Remove OR 212 between SE 162nd Ave and SE 172nd Ave and extend SE Tong Rd to connect with 187th Ave south of the of the current OR 212 alignment. ▪ Survey Respondents described freight, warehouse business activity, and the timing of lights along this corridor as a source of delay and congestion. Some survey participants see this corridor as unpleasant and dangerous for biking and walking due to congestion and vehicle speeds. ▪ Overall, survey responses highlighted strong support for transportation improvements and investments that prioritize pedestrian and bicycle safety, as well as improvements that aim to mitigate and decrease greenhouse gas emissions and to support safe traffic flow with strong support for prioritizing transit during peak travel times. ▪ Opens Access to New Jobs and Housing: By 2040, this corridor is projected to have over 14,000 new jobs (i.e. Rock Creek Employment Center at 172nd Ave) and 14,000 additional housing units (approximately an additional 43,000 people). ▪ Supports Metro’s 2040 Growth Concept: Happy Valley cannot implement the growth concept without having the transportation infrastructure to address the existing mobility barriers in this corridor.
<p>Damascus Mobility Plan Clackamas County, 2022</p> <ul style="list-style-type: none"> ▪ Document contains public engagement efforts, existing and future conditions, and next steps for incorporating the Damascus Mobility Plan into the Clackamas County Transportation System Plan (TSP) ▪ The Damascus Mobility Plan identifies transportation improvements for Damascus off of Highway 212, and Highway 212-focused improvements between SE 172nd and SE 242nd Avenues. ▪ These improvements will connect to Sunrise Corridor or generate impacts on Sunrise Corridor. 	<p>Damascus Mobility Plan projects that will impact the Sunrise Corridor include:</p> <ul style="list-style-type: none"> ▪ SE Sunnyside Road from SE 187th Avenue to OR 212: Widen shoulder based on operational and safety analysis during project development. ▪ SE 187th Avenue from SE Sunnyside Road to OR 212: Improve SE 187th Avenue to two- to three-lane roadway with sidewalks and bike lanes; construct roundabout at SW Sunnyside Road/SE 187th Avenue. ▪ SE Tong Road south of OR 212/SE Tong Rd intersection: Realign SE Tong Road at OR 212 to align with SE 187th Avenue to address skew. ▪ OR 212 Alternative Mobility and Fee in Lieu Strategy from Rock Creek Junction to SE Foster Road: A planning effort to establish alternative mobility standard, acceptable traffic operations levels, improvements, and cost estimates for over-capacity intersections. ▪ OR 212 at the OR 212/SE Tong Road/SE 187th Avenue intersection: Signalize intersection. ▪ OR 212 Corridor Plan from SE 172nd Avenue to US 26: A planning effort to establish the long-term vision, conceptual alignment, cross-section, and access locations for OR 212 between SE 172nd Avenue and US 26. ▪ The Damascus Mobility Plan provides a long-term roadway network for the Damascus area that meets projected mobility and safety needs. Several other plans will provide recommendations for transit and active transportation improvements. ▪ Recent disincorporation of Damascus has resulted in Damascus being governed by the County’s comprehensive plan and transportation plan. ▪ Key components of public engagement activities included project mailings and notifications, the project website, two virtual open houses, planning

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	<p>commission and board of county commissioner hearings, and a technical advisory committee.</p> <ul style="list-style-type: none"> Feedback from the first open house included improving safety across the roadway system, addressing congestion concerns, and improving walkability and bicyclist infrastructure. Feedback from the second open house included addressing capacity constraints, seeking higher prioritization for shoulder widening on 242nd avenue, and supporting new roadway configurations on Sunnyside Road and the new connection of 187th Avenue to the south.
<p>Regional Transportation Plan (RTP) Metro, 2023 (draft)</p> <ul style="list-style-type: none"> Metro’s 2023 Regional Transportation Plan (RTP) identifies urgent and long-term transportation needs, investments to meet those needs and the funds the region expects to have available through 2045. There are numerous projects that impact the Sunrise Corridor, from planning/engineering work to construction of the corridor, a multi-use path network adjacent to the corridor, and roadway connections to the north and south of the planned corridor. Updated RTP nearly complete (2023) Identifies the region’s most urgent transportation needs and priorities for investment in all parts of the system with the funds the region expects to have available over the next 25 years. Establishes goals and policies to help meet those needs and guide priority investments. 	<p>The RTP lays out several projects that will impact the Sunrise Corridor and connections to it, including:</p> <ul style="list-style-type: none"> OR 212/224 Sunrise Hwy Phase 2 Planning, Engineering, and Construction: Conduct preliminary engineering (PE) and acquire right-of-way (ROW), and construct phase 2 of the OR 212/224 Sunrise Corridor from SE 122nd Ave to SE 172nd Ave. OR 212/224 Sunrise Project Phase 3: Construct remaining improvements in the Sunrise Corridor consistent with the FEIS/ROD. Evaluate and implement improvements to address bicycle and pedestrian needs, which will be identified. OR 212 Intersection Improvements: Improve safety and reduce delay by making improvements as recommended in the Damascus Mobility Plan to the intersections of Sunnyside Rd/OR 212, Foster Rd/OR 212, 222nd Ave/OR 212 and 242nd Ave/OR 212. Sunrise Multi-use path Phase II: Improve safety for bicyclists and pedestrians by constructing a new multi-use path from 122nd Ave to 172nd paralleling the Sunrise Phase 2 project. 162nd Ave Extension South: Phase 1: Extend 162nd Ave from Rock Creek Blvd to Hwy-212; construct new, 3 lane roadway with continuous left turn lane, sidewalks, bike lanes, intersection improvements at Hwy. 212/162nd on all four approaches. By 2040, reduce the combined housing and transportation expenditure for lower-income households by 25 percent, compared to 2015 combined housing and transportation expenditure levels. Targeted a prioritized project list for consideration for upcoming funding opportunities, such as Metro’s Get Moving 2020 regional investment measures, future Metropolitan Transportation Improvement Program (MTIP) or Statewide Transportation Improvement Program (STIP) investments, urban renewal districts, or other funding sources. Observed data shows that the region needs to make big strides to reduce disparities in affordability for people of color. The City of Gresham, Clackamas County, and Multnomah County accepted the plan and incorporated it into future TSP updates. The average household in equity focus areas sees a greater increase in the number of community places reached in a short transit trip compared to the average household in the region and non-equity focus areas.
<p>High-Capacity Transit Strategy Metro, 2023 (draft)</p> <ul style="list-style-type: none"> Ever since Metro adopted the 2040 Growth Strategy, high-capacity transit has been a 	<p>There are three long-term high-capacity transit projects in the broader vicinity of the Sunrise Corridor:</p> <ul style="list-style-type: none"> C12 – Clackamas Town Center to Happy Valley: The 2009 Plan first designated Sunnyside Road north of the Sunrise Corridor as a vision corridor for future high capacity transit investment. Future corridor planning work could look at opportunities for mixed uses in future station areas and nodes for transit-oriented development. C15 – Happy Valley to Columbia Corridor via Pleasant Valley: As part of expanding the high-capacity vision to include rapid bus, the 2023 High

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<p>crucial element as the region continues to grow.</p> <ul style="list-style-type: none"> This plan refreshes the 2009 Strategy and provides a shared vision and action plan for developing new high-capacity transit corridors. 	<p>Capacity Transit Strategy Update identified the full corridor as a future candidate for high capacity investments. The Clackamas to Columbia (C2C) project developed a plan for improving north-south travel in the Portland Metro area east of I-205 that identified transportation improvements (including enhanced transit) to improve mobility and access, prioritizes which improvements to fund and build soonest and developed a consistent set of policies and street designs for each partner agency.</p> <ul style="list-style-type: none"> C26 – Clackamas Town Center to Oregon City: The 2018 Regional Transportation Strategy designated I-205 as a high-capacity transit vision corridor beyond the 2040 strategic investment strategy, recognizing the need for more comprehensive corridor planning. This corridor already has an existing adjacent inter-city Amtrak Cascades rail line identified as one of 11 national future high speed rail corridors and Oregon City to Eugene was noted as one of the largest travel markets in the 2020 Oregon State Rail Plan.
<p>Metro Regional Freight Strategy Metro, 2019</p> <ul style="list-style-type: none"> Policy and strategy provisions to develop and implement a coordinated and integrated freight network that helps the region’s businesses attract new jobs and remain competitive in the global economy. Includes project list with projects for roadways and facilities in the Sunrise Corridor (162nd, 172nd, Rock Creek Blvd., Industrial Area Bike Path, Sunrise Phase 2) 	<ul style="list-style-type: none"> Major update - addition of a new freight roadway designation for Regional Intermodal Connectors. The Regional Intermodal Connectors represent National Highway System (NHS) intermodal connectors and other Tier 1 intermodal connectors that were designated by ODOT as part of the Oregon Freight Intermodal Connector System (OFICS) Study completed in 2017. By 2040, the region’s goods movement system will need to absorb a near doubling of freight volumes, measured in tonnage by all freight modes, with approximately 75 percent of that dependent on trucks to link producers and consumers, or to reach intermodal nodes for import and export. Cooperation with agencies and stakeholders across the state border with Washington is critical - recommended actions will necessarily require collaboration between public and private sectors, the coordination of freight modes that are often competitors, and the reconciliation of institutional, jurisdictional and political perspectives. Recommends better integrate freight issues in regional and local planning and communication to inform the public and decision-makers on the importance of freight and goods movement issues. Recommends pursuing a sustainable multimodal freight transportation system that supports the health of the economy, communities and the environment through clean, green and smart technologies and practices.
<p>Rulemaking Overview: Climate-Friendly and Equitable Communities Rulemaking Oregon Department of Land Conservation and Development 2023</p> <ul style="list-style-type: none"> Describes a variety of corrections and clarifications to requirements and explore a limited number of policy adjustments. 	<ul style="list-style-type: none"> The rules includes both temporary and key rule changes to the Oregon Planning Rule Temporary rule changes, beginning in May 2023, include more flexibility in the “alternative dates” process to remove the deadline for local governments to request alternative deadlines for certain elements of the rules, increasing certainty for planned transportation projects to clarify how a project may be considered already in development and not in need of review, among additional updates Permanent rule changes, beginning in November 2023, include reviewing temporary rules for permanent adoption, 29 minor corrections and clarifications identified in the Land Conservation and Development Commission (LCDC) staff report, and additional corrections, clarifications, and adjustments as warranted The Land Conservation and Development Commission (LCDC) will be considering a limited set of changes to the existing rules: minor clarifications and corrections and process improvements for affected local governments

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<p>Oregon Revised Statute 366.215</p> <p>State of Oregon</p> <ul style="list-style-type: none"> ▪ OR 224 from I-205 to SE 122nd Avenue, and OR 212 from SE 122nd Avenue to US 26 are Reduction Review Routes. ▪ Any features included in the final Sunrise plan that could reduce vehicle-carrying capacity must comply with the statute 	<ul style="list-style-type: none"> ▪ Oregon Revised Statute (ORS) 366.215 identifies the Oregon Transportation Commission’s (OTC’s) authority to build and modify state highways. The statute states that the Commission may not permanently reduce the “vehicle-carrying capacity” of an identified freight route (a.k.a. Reduction Review Route) unless safety or access considerations require the reduction. ▪ In the context of this statute, “vehicle-carrying capacity” refers to the vertical and horizontal clearance of a highway section that can physically carry motor vehicles. A reduction of vehicle-carrying capacity means a permanent reduction in the horizontal or vertical clearance of a highway section. ▪ Examples of permanent structures that can result in a reduction in vehicle-carrying capacity could include bridge structures, traffic signals, signposts, stationary bollards, curbs, bulb-outs, trees, raised or depressed medians, pedestrian refuge islands, traffic separators, roundabouts, streetlights, and overhead wiring.
<p>Oregon Transportation Plan</p> <p>Oregon Department of Transportation, 2023</p> <ul style="list-style-type: none"> ▪ The 2023 Oregon Transportation Plan (OTP) provides strategic direction and policy guidance for Oregon's multimodal transportation system through 2050. ▪ Sunrise Corridor project development would need to align with OTP goals and strategies in equity, climate, safety, multimodal travel, stewardship, and coordination with land use planning. ▪ A 25-year transportation plan that comprehensively assesses state, regional and local and both public and private transportation facilities and services. ▪ Federal funding for transportation projects must be consistent with statewide policy plans. 	<p>The 2023 OTP has six main goals:</p> <ul style="list-style-type: none"> ▪ Economic and Community Vitality – Improve prosperity, opportunity, and livability for all people who live, work, and recreate in Oregon. ▪ Social Equity – Improve access to safe and affordable transportation for all, recognizing the unmet mobility needs of people who have been systemically excluded and underserved. ▪ Mobility – Create a resilient multimodal transportation system that enables the diverse range of community members and businesses with different needs to get where they need to go safely, reliably, and affordably. ▪ Stewardship of Public Resources – Secure sufficient and reliable revenue for transportation funding and invest public resources to achieve a resilient and sustainable multimodal transportation system. ▪ Safety – Enable safe travel for all people, regardless of their age, ability, race, income, or mode of transportation. ▪ Sustainability and Climate Action – Minimize transportation’s negative role in climate change by reducing GHG emissions for all sectors of transportation. <p>The OTP sets statewide policy direction to guide modal plans, regional plans, and local transportation system plans.</p> <ul style="list-style-type: none"> ▪ Recommends maintaining the existing transportation system to maximize the value of the assets. If funds are not available to maintain the system, develop a triage method for investing available funds - preserve passenger rail services both within the Willamette Valley and from California to Washington; work with the Northwest Congressional delegations, federal agencies and the Army Corps of Engineers for funding for river and harbor dredging. ▪ Oregon transportation needs a sustainable funding plan - engage the public outlining clear choices on levels of investment; identify funding shortfall possibilities, identify sources to keep pace with inflation. ▪ Oregon should invest strategically in capacity enhancements - identify what investments are strategic to the state’s livability and economic vitality; balancing maintenance and preservation needs with critical capacity enhancements and operations; look at solutions that improve safety, provide mode choice, foster integration of service delivery, and support job development. ▪ Focuses on integrating the transportation system across jurisdictions, ownerships and modes, creating sustainable funding, and investing in strategic capacity enhancements.

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	<ul style="list-style-type: none"> Emphasizes maintaining and maximizing the assets in place, optimizing the performance of the existing system through technology, and integrating transportation, land use, economic development and the environment.
<p>Oregon Highway Plan ODOT, 1999</p> <ul style="list-style-type: none"> In the context of the Sunrise Gateway Corridor plan, the OHP's policies will play a crucial role in shaping proposed enhancements, alterations, and local regulations that may impact any of the state facilities. The OHP is currently being updated, and any information in this review is subject to change. 	<ul style="list-style-type: none"> The Oregon Highway Plan (OHP) was originally adopted in 1999 to provide policy direction for planning, operations, maintenance and improvements to state highways for ODOT's Highway Division. Key policies in the 1999 OHP focus on efficiently managing the highway system to improve safety and increase capacity, establishing partnerships with other agencies and local governments, and utilizing new techniques to enhance road safety and capacity. The plan also connects land use and transportation, sets highway performance and access management standards, and emphasizes the relationship between state highways and local roads, bicycle/pedestrian facilities, transit, rail, and air systems.
<p>Oregon Freight Plan Oregon Department of Transportation, 2011 (revised March 2023)</p> <ul style="list-style-type: none"> Given the nearby Clackamas Industrial Area, one of the objectives of the Sunrise Gateway Corridor plan will be to maintain and improve the efficiency of the truck freight system in the study area. The project advisory committee will consist of members who represent various freight interests, including military freight interests. By 2045, Oregon benefits from a reliable, multimodal freight transportation system that supports its quality of life. This multimodal freight transportation system supports a healthy economy by safely and efficiently moving goods within Oregon, regionally, nationally, and internationally. Provides updated information about transportation freight 	<ul style="list-style-type: none"> The Oregon Freight Plan (OFP) serves as the guiding framework for the transportation of goods on the state highway system. Its main goal is to enhance connections to various markets, from local to global, thereby boosting trade-related jobs and income for both workers and businesses. OR 224 is identified as key access and egress routes to military facilities statewide. As mandated by the Infrastructure Investment and Jobs Act (IIJA), it is essential to take into account the significance of OR 224 when planning movements associated with military freight. Public-sector stakeholders rely on freight to support local, regional, and state industries; provide jobs to constituents; and maintain a high standard of living. Private-sector stakeholders rely on freight movements to and from various markets in an efficient and affordable manner. In turn, public and private stakeholders' decisions affect the freight system and surrounding communities. This policy document outlines the potential impacts of not meeting state needs by looking at several levels of funding. A result of major investments would allow for rural areas to better able to retain air and rail services and related jobs. A goal of the National Highway Freight program is to increase productivity, particularly for domestic industries and businesses that create high-value jobs. A goal of the National Multimodal Freight Policy is to increase productivity, particularly for domestic industries and businesses that create high-value jobs. The quality, dependability, and efficiency of Oregon's multimodal freight transportation system encourage businesses to remain in and move to Oregon, providing jobs in a diverse set of industries. In 2030, the Oregon population is expected to include fewer children between the ages of 5 and 17, more adults aged 20 to 64, and a significant increase in the number of residents over age 65. Population increases are expected across various demographic groups within the state, which indicates a likely

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<p>movements with statewide policies guiding investments.</p>	<p>increase in consumption of goods and services, fueling continued economic growth.</p> <ul style="list-style-type: none"> ▪ By 2045, Oregon benefits from a reliable, multimodal freight transportation system that supports its quality of life. This multimodal freight transportation system supports a healthy economy by safely and efficiently moving goods within Oregon, regionally, nationally, and internationally. ▪ The quality, dependability, and efficiency of Oregon’s multimodal freight transportation system encourage businesses to remain in and move to Oregon, providing jobs in a diverse set of industries.
<p>Highway Design Manual ODOT, 2023</p> <ul style="list-style-type: none"> ▪ The HDM and BUD outline design standards and guidance for state highway projects. 	<ul style="list-style-type: none"> ▪ Any proposed improvements on state highways, such as OR 212 and OR 224 within the Sunrise Corridor, will follow the guidance specified in the HDM. ▪ The ODOT Highway Design Manual (HDM) is the primary reference for designing state highway projects in Oregon, and it covers aspects like geometry, intersections, safety features, and traffic control. ▪ The HDM allows flexibility through performance-based and context-sensitive design; this aims to balance mobility, safety, cost, and consistency across the state highway system. ▪ The HDM includes mobility standards that apply to all modernization projects and are generally recommended for other project categories. These mobility standards differ from the v/c ratios in the Oregon Highway Plan, where those ratios are used to identify potential system deficiencies during planning. ▪ According to the HDM, the v/c ratio for both OR 212 and OR 224 is 0.75 as a statewide expressway within an urban growth boundary and inside an MPO area.
<p>ODOT Blueprint for Urban Design Oregon Department of Transportation, 2020</p> <ul style="list-style-type: none"> ▪ Document applies to urban land use contexts that broadly identify built environments along ODOT roadways ▪ Guidance focus on all roadways within the urban context except interstates and limited-access freeways with interchanges ▪ Blueprint will serve as interim guidance until principles can be incorporated during next updates of Highway Design Manual, Analysis Procedure Manual, Traffic Manual, and other documents ▪ The BUD offers a context-sensitive approach to transportation planning and design, particularly relevant as the Sunrise Gateway Corridor traverses diverse urban contexts. ▪ The BUD provides specific design guidance organized by 	<ul style="list-style-type: none"> ▪ The BUD aims to offer flexibility in design criteria to effectively address the unique needs of individual communities by considering specific urban contexts. ▪ Within the built environment, trade-offs between design elements are inevitable, and the BUD provides information and criteria to help project teams make well-informed choices in developing final project designs, aligning them with established project goals and desired outcomes. <p>The context classifications for the Sunrise Corridor:</p> <ul style="list-style-type: none"> ▪ Commercial Corridor: Mostly commercial and industrial uses with large building footprints and large parking lots set within large blocks and a disconnected or sparse roadway network. <i>Applies to I-205 to SE 135th Avenue.</i> ▪ Suburban Fringe: Sparsely developed lands, typically at the edge of an urban growth boundary. May be large lot residential, small-scale farms, or intermittent commercial or industrial uses. <i>Applies to SE 135th Avenue to SE 172nd Avenue.</i> ▪ Document outlines involvement of ODOT and other local agencies in transportation projects, organized by project type and role. Certified local public agencies (CLPAs) manage federally funded design and construction projects on their own, and sometimes other agencies’ facilities, including ODOT. LALs are the primary ODOT point of contact for CLPAs, but CLPAs lead their own projects and related design decisions. ODOT maintains control of design decisions on its own facilities. ▪ For all other local agencies, ODOT provides state funds to most non-certified local agencies to allow for greater local control and ownership of their projects. The local agency manages the design and construction phases, and these projects are not on ODOT’s system. LALs are the primary ODOT point of

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<p>urban context and unique criteria, helping with decisions on elements like lane widths, bicycle facilities, pedestrian crossings, and designation of roadway classification along the corridor.</p>	<p>contact, but local agencies lead their own projects and related design decisions.</p> <ul style="list-style-type: none"> ▪ The document identifies opportunities for incorporating performance-based design into ODOT’s project flow, and include verification that preliminary design meets original project goals and desired outcomes and a review of past studies and plans to understand urban context and modal expectations
<p>Portland Region 2020 Traffic Performance Report ODOT, 2021</p> <ul style="list-style-type: none"> ▪ The 2020 Traffic Performance Report provides information on the health of the region’s freeway system. It continues a baseline for long-term monitoring that will enable ODOT to better understand the urban traffic mobility conditions of the freeway system. ▪ The report focuses solely on freeways within the Portland region, so Highway 212 and Highway 224 are not included. As traffic increases on I-205 (as well as I-84), it is likely that vehicles will turn to alternate routes, including the Sunrise Corridor to travel between US 26 and I-205. 	<p>Findings specific to I-205 include:</p> <ul style="list-style-type: none"> ▪ For northbound traffic, the weekday daily average for hours of congestion was 10.8 hours. For southbound traffic, the weekday daily average for hours of congestion was 7.5 hours. ▪ The most severe recurring bottleneck on I-205 NB was between Division and Sunnyside, lasting over 10 hours over the AM and PM peak periods. In the PM peak, the bottleneck starts further north at the Glenn Jackson Bridge, resulting in a queue that is over 11 miles long. ▪ For the PM peak, reliable travel time in the northbound direction is nearly 87 minutes, or more than triple free-flow travel time. In the southbound direction, reliable travel time in the PM peak is nearly 57 minutes, or slightly more than double free-flow travel time. ▪ The NB I-205 bottlenecks are at Glenn Jackson Bridge, Division/Powell and Abernethy Bridge. The SB bottlenecks occur at Powell, 82nd Ave, and 10th St. ▪ Average speed during the weekday AM peak period is stable and above 55 MPH in both directions at Highway 212. Average speed during the weekday PM peak period is stable for northbound traffic at Highway 212 around 55 MPH but is considerably slower for southbound traffic, around 30 MPH at Highway 212.
<p>TriMet’s Forward Together Plan TriMet, 2023</p> <ul style="list-style-type: none"> ▪ As TriMet emerges from the COVID-19 pandemic, the agency sees an opportunity to rethink its routes and service distribution to better meet the Portland metro area’s needs. ▪ Previous planning work along the Sunrise Corridor has shown that OR 212 is reaching capacity, specifically at Rock Creek Junction. ▪ Additional bus transit service will help move more people into, out of, and through the corridor, and added service on SE Jennifer Street and on SE 172nd Avenue (the future C2C 	<ul style="list-style-type: none"> ▪ Overall, the <i>Forward Together</i> plan results in a net service increase. ▪ The existing Route 79, running along 82nd Drive across OR 224, would be elevated to a frequent service route in the long-term, an improvement over its 40-minute headways currently. ▪ Route 145 (a new route) would run between Clackamas Town Center and Oregon City, with service on SE 102nd Avenue and SE Evelyn Street at OR 224. ▪ Route 150 (another new route) would run between Milwaukie and Powell Boulevard in Gresham, with services along SE Jennifer Street and on OR 212 before turning north onto SE 172nd Avenue and the C2C corridor. ▪ The <i>Forward Together</i> plan proposes removing Route 156, which runs between Clackamas Town Center and Sunnyside Road, with service on OR 212 between SE 135th Avenue and SE 152nd Avenue. ▪ The survey, conducted in early 2022, contained two big themes: wide support for ridership as a primary goal of the service in order to reduce pollution and GHG emissions and supporting dense and walkable redevelopment and equity, especially prioritizing the needs of low-income people to support access to opportunity of marginalized groups.

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<p>Corridor) will meet specific needs there, as well.</p> <ul style="list-style-type: none"> ▪ Comprehensive review of TriMet bus service design ▪ Service concept informed by existing conditions analysis and public outreach survey to understand how network could be redesigned to better meet the public’s priorities and accommodate shifts in demand ▪ TriMet has an objective of “economic opportunity for all” and decision-making processes are informed by a 10-factor equity analysis. ▪ Comprehensive review of TriMet bus service design ▪ Service concept informed by existing conditions analysis and public outreach survey to understand how network could be redesigned to better meet the public’s priorities and accommodate shifts in demand ▪ Service concept informed by existing conditions analysis and public outreach survey to understand how network could be redesigned to better meet the public’s priorities and accommodate shifts in demand 	<ul style="list-style-type: none"> ▪ The study’s access analysis estimated that approximately 75% of people in the service area would gain access to at least 1,000 more jobs with a 45 minute transit trip, and about 45% of people would gain access to at least 10,000 more jobs. In most measures we used, looking at access to jobs as well as other destinations, lower-income people and people of color would be able to reach more places with transit more quickly than all service area residents. ▪ Respondents mostly reported that ridership and coverage should receive equal focus, with some respondents preferring higher emphasis on ridership. Respondents also noted that policy decisions advancing equity for people with low incomes of any race was the highest priority, with the needs of seniors and people with disabilities ranking a close second. ▪ Job-related objectives from the service concept include expanding access to opportunity, including greater access to jobs, and creating better regional links to job centers, as some of the regions’ busiest employment areas are currently served by transit routes that only run hourly or only during rush hour. ▪ The document walks through all neighborhoods in the region and measures the change in jobs and residents reached by transit in 45 minutes at 12PM on a weekday. ▪ With the Service Concept, median job access in 45 minutes from Central City equity areas would increase by about 5%, mainly due to the handful of new Frequent Service lines ending near downtown (Line 77, 54, 35, etc.). By contrast, access in the rest of the equity areas outside the Central City would increase by about 36% for 45 minute trips, and by about 26% for 60 minute trips. ▪ The survey, conducted in early 2022, contained two big themes: wide support for ridership as a primary goal of the service in order to reduce pollution and GHG emissions and supporting dense and walkable redevelopment and equity, especially prioritizing the needs of low-income people to support access to opportunity of marginalized groups. ▪ The study’s access analysis estimated that approximately 75% of people in the service area would gain access to at least 1,000 more jobs with a 45 minute transit trip, and about 45% of people would gain access to at least 10,000 more jobs. In most measures we used, looking at access to jobs as well as other destinations, lower-income people and people of color would be able to reach more places with transit more quickly than all service area residents. ▪ Respondents mostly reported that ridership and coverage should receive equal focus, with some respondents preferring higher emphasis on ridership. Respondents also noted that policy decisions advancing equity for people with low incomes of any race was the highest priority, with the needs of seniors and people with disabilities ranking a close second.
<p>TriMet Existing Service Plan (Proposed 2024 – 25 Transit Service Changes)</p>	<ul style="list-style-type: none"> ▪ The upcoming 2024-2025 service changes aim to further the implementation of TriMet’s <i>Forward Together</i> service concept, focused on growing ridership and improving connections for populations with low and limited incomes. While full implementation will take an estimated three to six years, dependent on recovery from ongoing operator shortages, TriMet is proposing impactful service improvements beginning in 2024-2025. ▪ These enhancements include the addition of two new all-day frequent service lines (15-minute headways), improved frequencies on nine existing lines to provide more frequent service for more hours each day, and other changes. ▪ The 2024-2025 service plan calls for increased frequency, route changes, and a new line in the Clackamas, Milwaukie, and Sellwood areas, including: ▪ Upgrading Line 71 to 15-minute all-day frequent service to replace parts of Lines 34 and 152 and better connect to Clackamas Community College-Harmony campus.

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	<ul style="list-style-type: none"> ▪ Adding new Line 5 to connect key destinations from Swan Island to the Fuller Rd MAX station; discontinuing Line 99 and replacing it with new Line 5 and changes to Line 33. ▪ Other realigned routes aimed at growing ridership, improving equity and connectivity for populations with low incomes in Southeast Portland and adjacent suburbs as part of the <i>Forward Together</i> plan.
<p>TriMet Service Enhancement Plan - SouthEast</p>	<ul style="list-style-type: none"> ▪ TriMet’s Southeast Service Enhancement Plan outlines a vision to expand transit service in the southeast portion of the agency’s service district and was developed through extensive outreach and research. Key elements include adding east-west routes, improving frequency and spans on existing routes, modifying routes to increase access, and implementing community/job connector services. The vision has been implemented incrementally since 2016. The report provides guidance for annual service planning to make enhancements working toward the long-term goal of improving mobility and connections in the Southeast portion of TriMet’s service district through better transit service. <p>The key recommended service improvements in the Southeast Service Enhancement Plan that are specific to Sunrise Corridor include the following projects:</p> <ul style="list-style-type: none"> ▪ Adding new east-west bus routes between Happy Valley and Oregon City Transit Center (SE Jennings/Hwy 212, Line X). ▪ Increasing frequency and extending hours on bus lines serving Clackamas Community College, Milwaukie, Oregon City (Line 32), lines between Happy Valley and Clackamas Transit Center (Line 156), lines providing weekend service between Estacada and the Clackamas Transit Center (Line 30). ▪ Implementing new community/job connector services in the Clackamas Industrial Area (between OR 212 and Sunnyside Rd) and South Oregon City. ▪ Making ongoing improvements to bus stops, sidewalks, bike access, and transit priority signals. ▪ Phasing in service expansions over 10 years as dedicated funding allows, focusing on equity, demand, productivity, connections, and growth.
<p>Clackamas County Transit Development Plan</p> <p>Clackamas County, 2021</p> <ul style="list-style-type: none"> ▪ The Clackamas County TDP identified the transit needs in 20 years and made service recommendations for all the Clackamas County, including the focus area of the Sunrise Project (e.g. OR 212, the Clackamas Industrial Area, and Damascus area) and its vicinity (e.g. Happy Valley) inside and outside the TriMet service area. ▪ Guides investments of Statewide Transportation Improvement Fund (STIF) grants by identifying needed and priority connections in portions of the county 	<p>TDP projects that will impact the Sunrise Corridor include:</p> <ul style="list-style-type: none"> ▪ Happy Valley transit service (medium-term project): Establish hourly service, about 10 runs per day. ▪ Damascus transit service (medium-term project): Establish hourly service, about 10 runs per day. ▪ Highway 212 from I-205 to US 26 (medium-term project): Establish hourly service, about 8 runs per day; establish Mobility Hub in Boring. ▪ Happy Valley transit service (long-term project): Evaluate service and consider increased service span and frequency to add about 10 runs per day. ▪ Damascus transit service (long-term project): Evaluate service and consider increased service span and frequency to add about 10 runs per day. ▪ Highway 212 from I-205 to US 26 (long-term project): Evaluate service and consider increased service span and frequency to add about 10 runs per day. ▪ Highway 212 from Highway 212 to Estacada (long-term project): Monitor potential increases to transit demand. <ul style="list-style-type: none"> ▪ It is expected that the largest employment increases will occur in the transportation, warehousing, and utilities (23%), building construction (21%), professional and technical services (21%), and private educational and health services (19%) sectors (In Clackamas, Washington, and Multnomah counties).

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currently lacking transit service.	<ul style="list-style-type: none"> ▪ There are few direct connections from Clackamas County to major employment areas in Gresham and Washington County, and a lack of transit connections to the Clackamas Industrial Area and Wilsonville within Clackamas County. Future land use growth near Wilsonville / Stafford, Oregon City, and Damascus/Boring is anticipated to increase transit demand in these areas. ▪ There are several federal, state, and local funding sources that can be tapped for funding transit service improvements in Clackamas County - Surface Transportation Block Grant (STBG); State Highway Fund; Statewide Transportation Improvement Fund (STIF); State Special Transportation Funds (STF); Connect Oregon Funds; Congestion Mitigation & Air Quality (CMAQ); etc. ▪ Provides detailed analysis and transit level-of-service information to inform future STIF plans and TriMet service implementation. ▪ Recommends how transit service providers can cover unincorporated areas located between existing service providers and with no current transit service provider in the future and how existing transit services across the country can be better connected.
Clackamas County Connects- Industrial Area Shuttle (2023)	<ul style="list-style-type: none"> ▪ The Clackamas Industrial Area shuttle provides enhanced transit access to the industrial area east of I-205 along OR 212, linking the Clackamas Town Center Transit Center to major employers in the area. The shuttle operates daily, with weekday service running from 4:50am to 11:23am and 1:00pm to 8:33pm. Weekend service operates in the morning only, from 4:50am to 11:23am.
Metro Regional Transit Strategy (2018)	<ul style="list-style-type: none"> ▪ The 2018 Regional Transit Strategy (RTS) provides a comprehensive plan to develop an integrated regional transit system in the Portland metropolitan area. Developed by Metro, the RTS sets transit policy and priorities through 2040 to support the region's growth management goals. ▪ The 2018 RTS is a component of Metro's 2018 Regional Transportation Plan update. It provides the transit modal plan to complement and implement the overall regional transportation vision. The RTS establishes a policy framework to guide transit planning and investments to build an integrated regional transit system. It was developed through a comprehensive planning process and engagement with the public, stakeholders, and partner agencies. The RTS provides the transit priorities and strategies to work toward the regional vision for transit set forth in the 2040 Growth Concept. ▪ RTS applies the mobility corridor framework to organize information and to coordinate transportation and land use planning. Corridor refinement plans are recommended for corridors needing further evaluation of multimodal transportation solutions and investment strategies. ▪ Specific to Sunrise Corridor, RTS recommends Clackamas to Fairview/Wood Village/Troutdale, which includes OR 212 and Sunrise Corridor, as Mobility Corridor #24 (Clackamas to Columbia) for future corridor refinement planning. The Clackamas to Columbia effort would create a coordinated, multi-jurisdictional transportation plan focused on improving all modes along the 181st/182nd/190th/172nd corridor connecting I-84 in Multnomah County and OR 212 in Clackamas County. This planning effort builds on local plans and evaluate multimodal improvement packages to increase mobility and access along the corridor for existing and planned land uses. It identifies preferred phased investments for auto, freight, bike, pedestrian and transit modes. The effort provides urban street design recommendations and suggests amendments to local TSPs and the RTP to implement the improvements. The goal is to develop an integrated mobility strategy for the corridor through engagement with stakeholders and the public. More information on this effort can be found Clackamas to Columbia (C2C) Corridor plan (2020).

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	<p>The High-Capacity Transit Strategy identifies four tiers:</p> <ul style="list-style-type: none"> ▪ Tier 1: Near-Term Corridors ▪ Tier 2: Next Phase Corridors ▪ Tier 3: Developing Corridors ▪ Tier 4: Vision Corridors <p>▪ Tiers 1 and 2 are ready to move forward, while Tiers 3 and 4 need more work before they're ready for investment.</p> <p>▪ Within the greater Sunrise Corridor area, there are three Tier 4 projects identifies Tier 4 projects:</p> <ul style="list-style-type: none"> ▪ C12 – Clackamas Town Center to Happy Valley: The 2009 Plan first designated Sunnyside Road north of the Sunrise Corridor as a vision corridor for future high-capacity transit investment. Since much of the existing land use designations for this corridor are lower density residential (with some medium density notes and terminating in a mixed-use town center), future corridor planning work could look at opportunities for mixed uses in future station areas and nodes for transit-oriented development ▪ C15 – Happy Valley to Columbia Corridor via Pleasant Valley: As part of expanding the high-capacity vision to include rapid bus, the 2023 High Capacity Transit Strategy Update identified the full corridor as a future candidate for high capacity investments. The Clackamas to Columbia (C2C) project developed a plan for improving north-south travel in the Portland Metro area east of I-205 that identified transportation improvements (including enhanced transit) to improve mobility and access, prioritizes which improvements to fund and build soonest and developed a consistent set of policies and street designs for each partner agency. ▪ C26 – Clackamas Town Center to Oregon City: The 2018 Regional Transportation Strategy designated I-205 as a high-capacity transit vision corridor beyond the 2040 strategic investment strategy, recognizing the need for more comprehensive corridor planning. This corridor already has an existing adjacent inter-city Amtrak Cascades rail line identified as one of 11 national future high speed rail corridors and Oregon City to Eugene was noted as one of the largest travel markets in the 2020 Oregon State Rail Plan (outside Portland to Salem or Eugene). Since much of the existing land use designations for this corridor are commercial and lower density residential (with mixed use town center nodes), future corridor planning work could look at opportunities for mixed uses in station areas and town centers and nodes for transit-oriented development.
<p>Clackamas County Active Transportation Plan</p>	<ul style="list-style-type: none"> ▪ The 2013 Active Transportation Plan (ATP) provides the walking and biking components of the County's TSP. Clackamas County has an ongoing update via the Walk Bike Clackamas County Plan, seeking adoption through Summer 2024. The plan will provide policies, programs, and investment priorities for walking and biking facilities. ▪ Planned improvements from the ATP include a multi-use path along the Sunrise Phase 1 alignment, which has been constructed since, and a path connecting the existing I-205. Additional pathways are planned near 142nd Avenue and along 152nd Avenue, as well as bikeways along the remainder of OR 212, OR 224, and SE 172nd Avenue.
<p>Clackamas Industrial Area North Bank of the Clackamas River Design Plan (NCPRD – 2015)</p>	

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Existing Conditions in the Study Area – Community and Business

Date: January 19, 2024
Project name: Sunrise Corridor Community Visioning
Attention: Clackamas County Sunrise Visioning Team
Client: Clackamas County
Prepared by: Jacobs

The purpose of this memorandum is to assess some of the existing community and business elements of the Sunrise Corridor Vision Study Area. The project study area is around the OR212/OR224 corridor in Clackamas County, stretching from the eastern edge of I-205 west to roughly SE 172nd Avenue, and from the Clackamas County line to the Clackamas River. This memorandum presents findings about population, race and ethnicity, age, housing, education, median household income, people below the poverty level, employment industries, and characteristics of employees within the study area. The study team generally selected data from the ten-year period from 2011 to 2021 to illustrate recent trends. This document does not capture the full economic conditions that will accompany the economic competitiveness report.

Figure 1. Aerial View of Corridor, Year 2000



Source: University of Oregon Library Services

Summary

Below are some of the key findings from the assessment of the existing conditions of community and business.

- Between 2011 and 2021 the population of the study area increased by 2,159 people or 40% over a ten-year period due to overall housing growth and will likely increase in the future.
- Metro forecasted Happy Valley population to increase by over 57,000 people, or 154% by 2045. Clackamas County and the Portland Metropolitan Statistical Area (MSA) are forecast to increase population 5% and 26%, respectively. With more people throughout the region, housing, business, and transportation demands in the study area will increase.
- There are almost two times more jobs in the study area than residents. In 2020, the study area had 14,250 jobs and about 7,500 residents.
- The top four industries in the study area include manufacturing, wholesale trade, transportation warehousing, and construction. The mix of light industrial jobs has changed over the past 10 years, while the Clackamas Industrial Area continues to be a Regionally Significant Industrial Area in Oregon Metro's planning framework.
- Trails in the study area include the Hidden Falls to Rose Creek Loop Hike, the Carver Park and the Clackamette Park floating route, and the Sunrise Expressway Multi-Use Path.
- Rock Creek Confluence Restoration Project was completed in 2015 and connects Rock Creek to its floodplain, improves water quality, and provides critical habitat for the regional salmon population.



View of the Sunrise Corridor. Source: Clackamas County

1.1 Population and Jobs

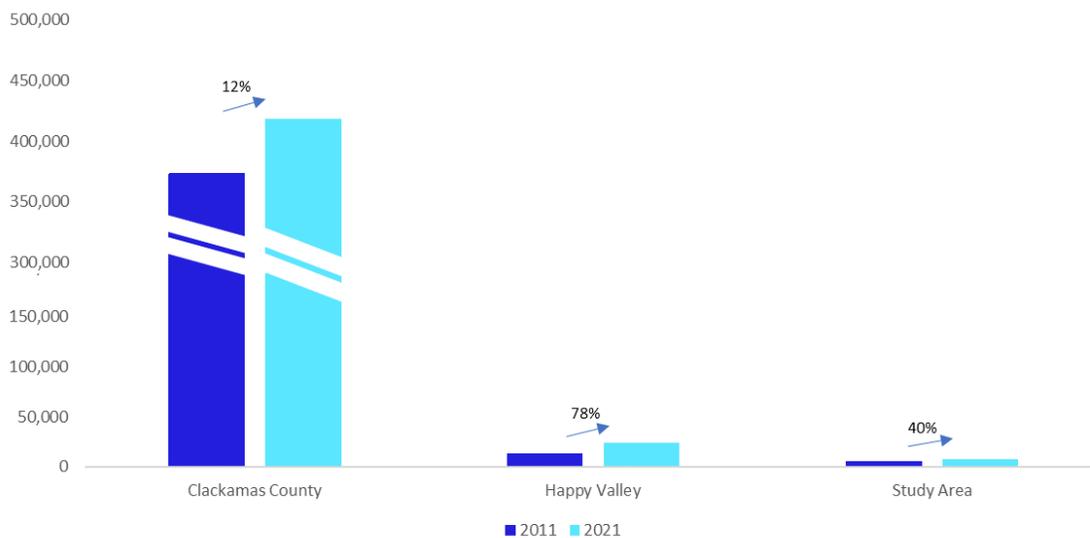
The population and jobs section provides a snapshot of the demographic and employment within the study area, Happy Valley, Clackamas County, Portland Metro, and the State of Oregon as whole. This section presents U.S. Census data for population, race and ethnicity, age, housing, educational attainment, and income. Future population was collected through Portland Metro's land use model, and job data was collected and analyzed through the U.S. Census Bureau's LEHD Origin-Destination Employment Statistics. The study team presented data for 2011 and 2021 to show changes over 10 years. The year 2021 is the most recent year for job data by location, and thus used as the most recent year for the analysis.

1.1.1 Population Trends

Between 2011 and 2021 the study area average population increased by 40%, the second highest increase among all geographies next to Happy Valley (Figure 2). Happy Valley has seen high population growth at nearly 80% or 10,000 people between 2011 and 2021. The growth coincides with increased housing development since the turn of the century, leading to commensurate growth in infrastructure and services. Growth has been consistent at the county, region and state levels, with about 12% growth since 2011.

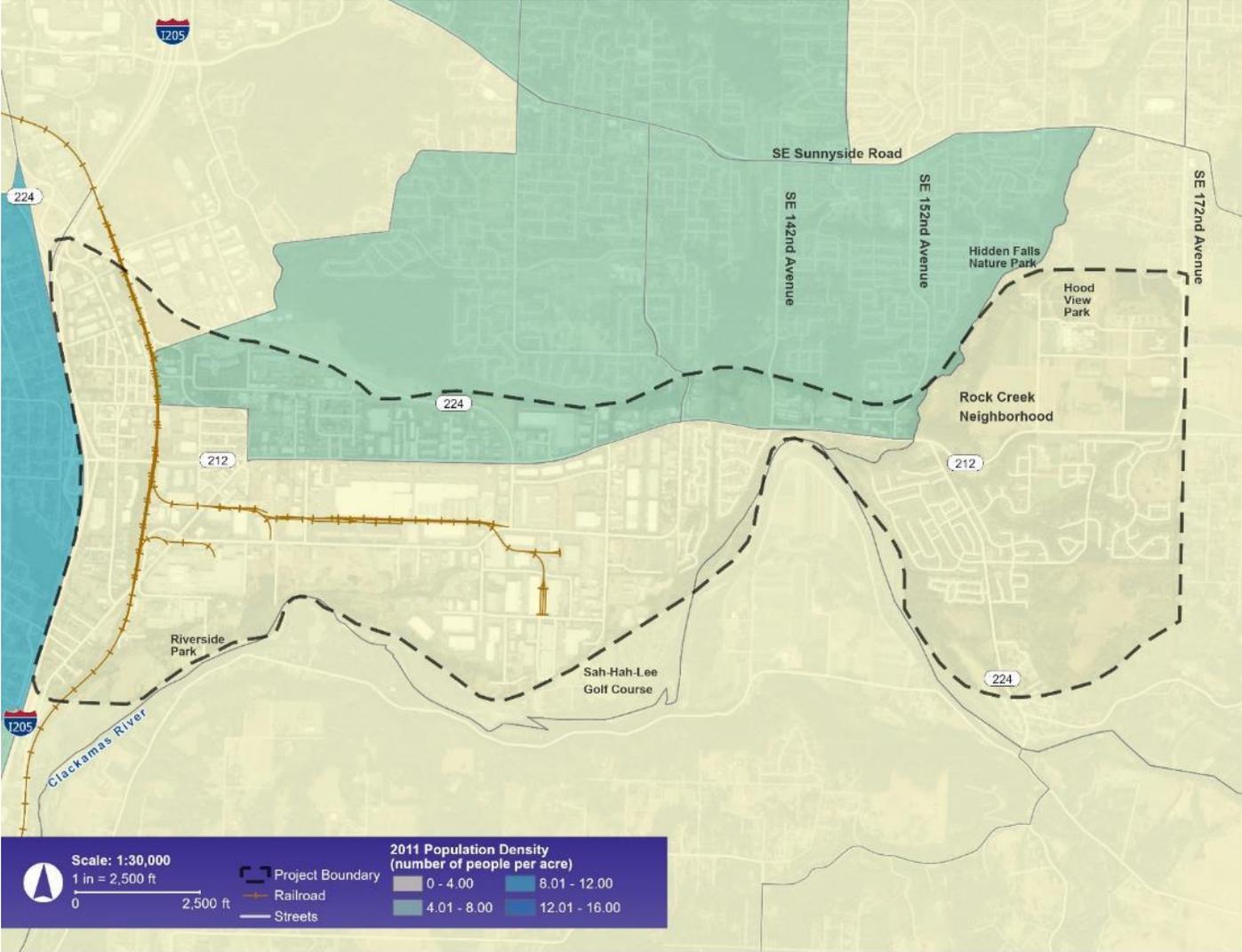
The population's geographic center in the study area shifted south from 2011 to 2021, as shown in Figure 3 and Figure 4. The study area's densest population area in 2011, where just over 1,800 people lived, was located north of OR212, south of OR224, and stretched east from I-205 to SE 135th Avenue. In 2021 the higher density area shifted to south of OR212, from I-205 east to SE 142nd Avenue, with 2,900 people.

Figure 2. Population and Population Percent Change, 2011-2021



Source: ACS 5-Year Estimates Subject Tables, Table S0101

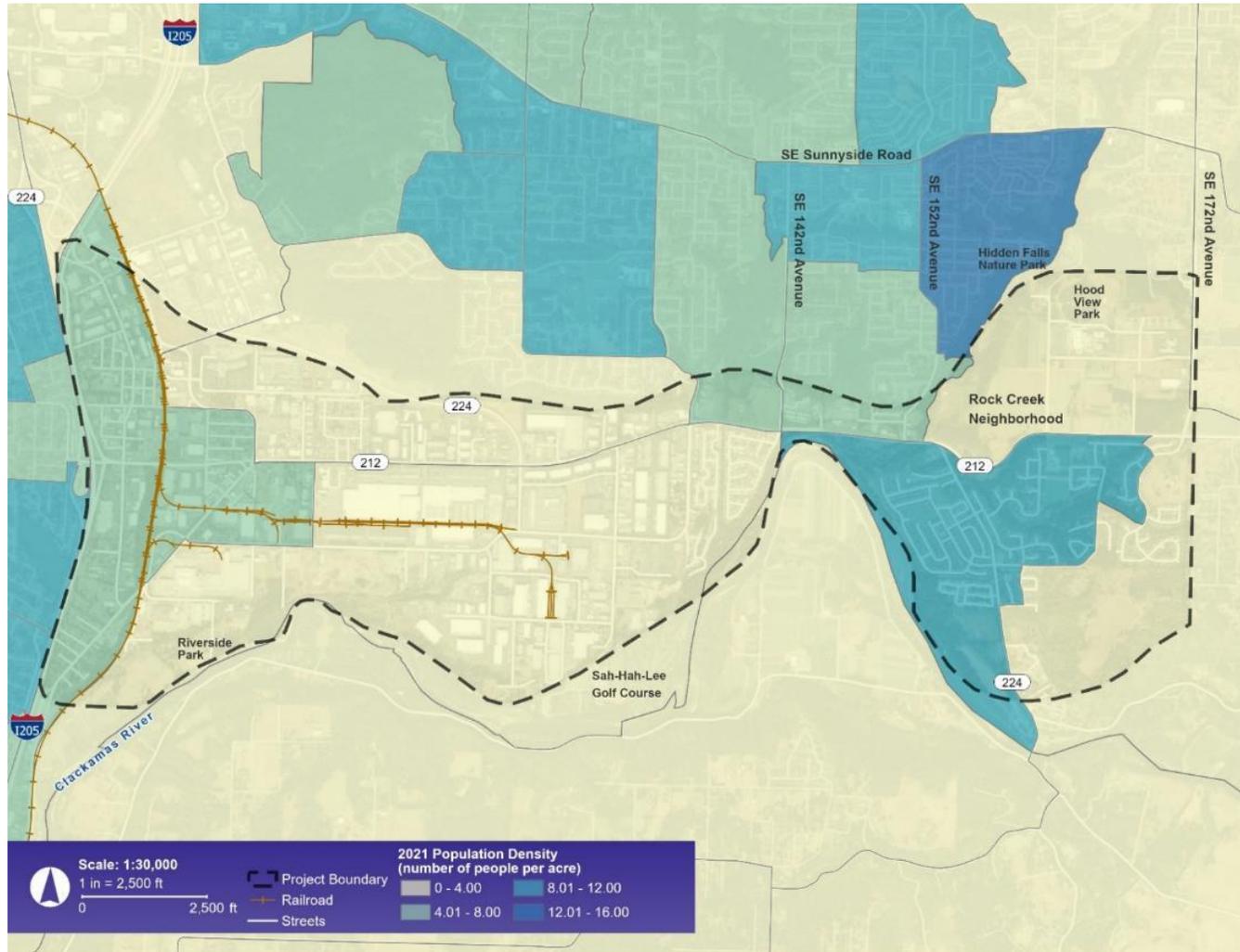
Figure 3. 2011 Study Area Population Density



Source: Metro RLIS, ACS 5-Year Estimates; Data available at tract level

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Figure 4. 2021 Study Area Population Density

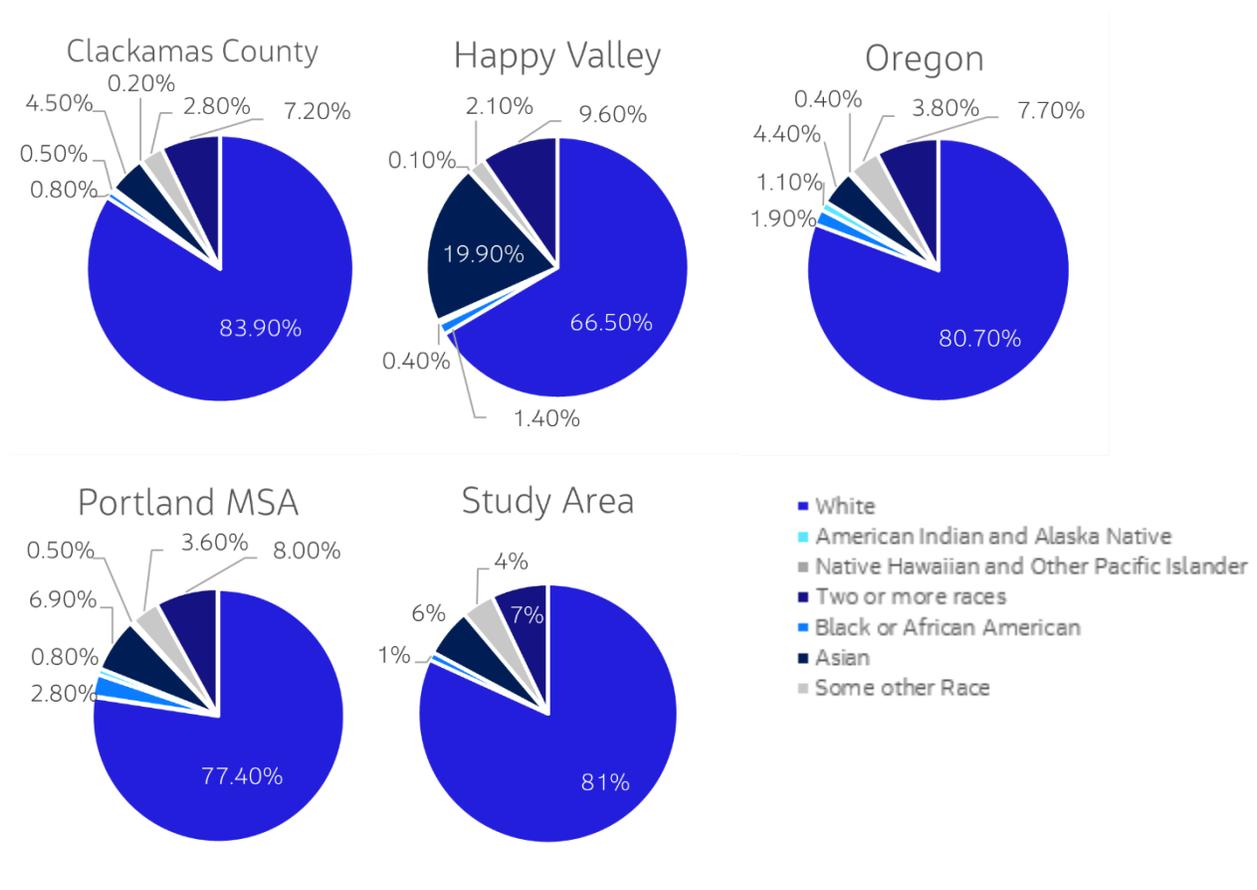


Source: Metro RLIS, ACS 5-Year Estimates; data shown at Census block group level given data available from US Census.

1.1.2 Study Area Demographics

People identifying as white make up most of all people across geographies studied, with over 80% in Oregon and Clackamas County, and 81% in the study area (Figure 5). Those who identify as two or more races make up the second most populace category for each geography, with 7% accounting for the study area’s total population. People who identify as Asian account for the third highest race and ethnicity category for each geography, with its accounting for nearly 20% of Happy Valley’s total population.

Figure 5. Race and Ethnicity Share of Total Population by Geography, 2021



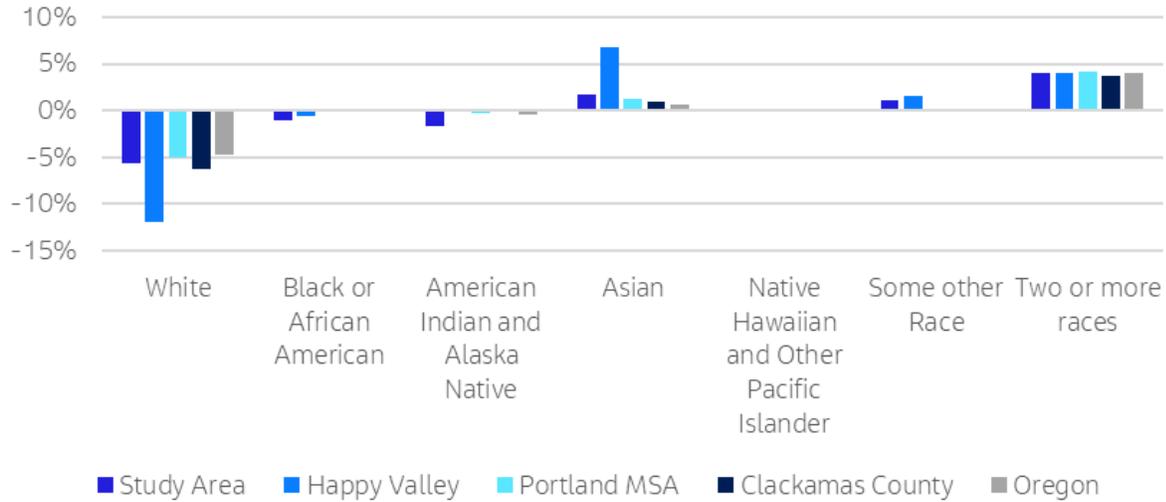
Source: ACS 5-Year Estimates Subject Tables, Tables S0501 and S0601

People identifying as Hispanic or Latino made up 9.1% of the Clackamas County population in 2021, up from 7.5% in 2011. This is lower than the 12% average statewide. In Happy Valley people of Hispanic or Latino origin made up 3.6% of the city in 2011, growing to 6.4% in 2021.

The white population share in the study area decreased by about 6 percentage points over the 10-year period, with a 1.7 percentage point increase in the Asian population share and a 4-percentage point increase in the share of people identifying two or more races. The County and State data show similar trends. In Happy Valley, the data shows a 12-percentage point decrease in the share of people identifying as White alone, with a 7-percentage point increase in the share of population identifying as Asian, and four percentage points greater share of people identifying two or more races (Figure 6).

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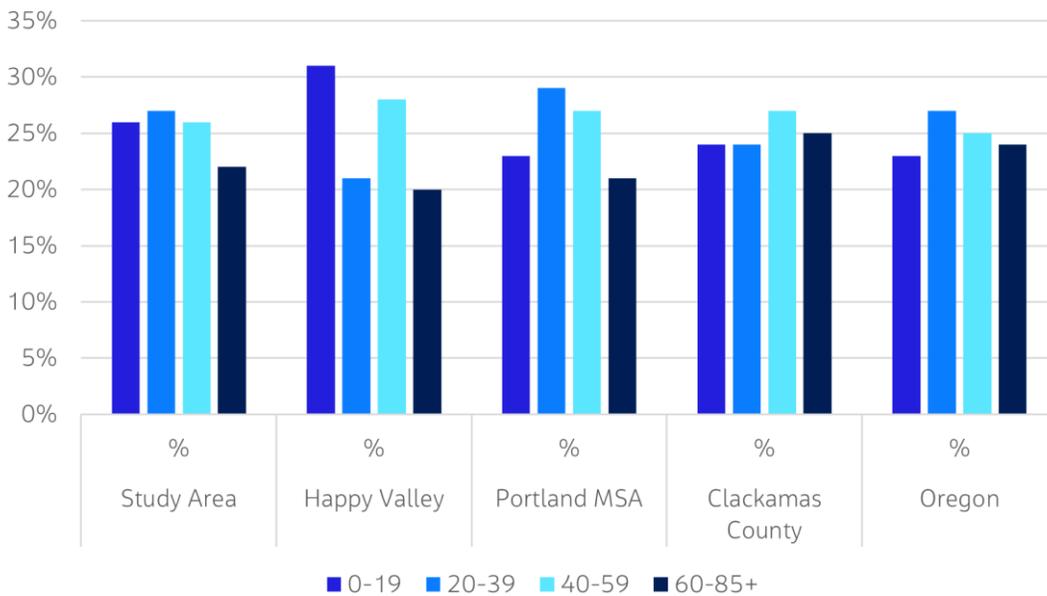
Figure 6. Race and Ethnicity Percent Change in Population Share, 2011-2021



Source: ACS 5-Year Estimates Subject Tables, Tables S0501 and S0601 Study Area Population Age

According to the 2021 U.S. Census Bureau's American Community Survey, the number of people by age category is evenly spread (Figure 7). Each age category accounts for roughly one quarter of the total population for the Portland Metropolitan Statistical Area (MSA), Clackamas County, and Oregon. The 0–19-year-old group makes up 31% of Happy Valley's population, while those within the 20–39 age range make up 21%. People within the 0-19 age range make up a relatively higher proportion of the population for both the study area and Happy Valley compared to all other geographies. The study area generally follows the same pattern as the Portland metro, the county, and the State percentages with each category comprising around one quarter of the study area's population.

Figure 7. 2021 Population Age by Geography



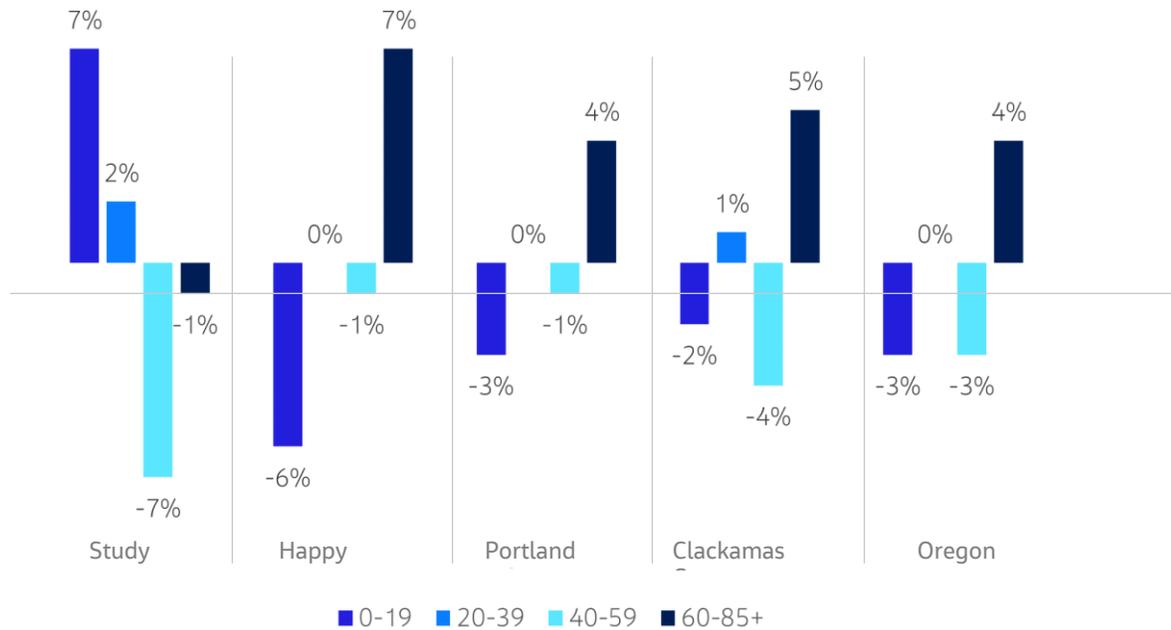
Source: ACS 5-Year Estimates Subject, Tables S0101

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Ten Year Age Trends

The study area population trended younger between 2011 and 2021, with the share of under 19-year-olds increasing 7 percentage points, with a commensurate decrease in people aged 40 to 59. Happy Valley population shifted older, however, with the over 60-year-old group increasing its share 7 percentage points over the period, and the under-9-year group decreasing share 6 percentage points. The County, region and State had similar shifts to a greater share of older adults in the population. The youngest category decreased share by about 3 percentage points, while the over-60 group increased 4 to 5 percentage points (Figure 8).

Figure 8. 2011-2021 Percentage Point Change in Population Share



Source: ACS 5-Year Estimates Subject, Tables S0101

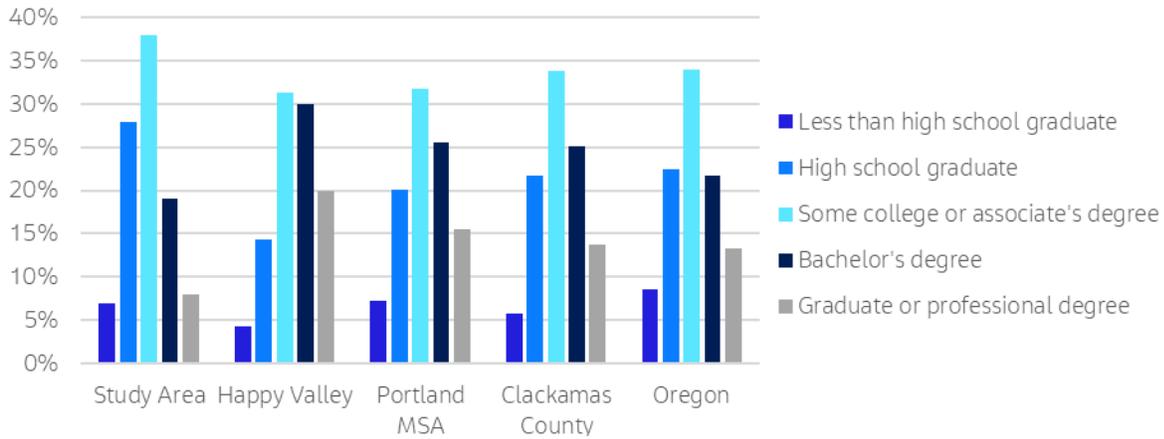
1.1.3 Study Area Educational Attainment

2021 Educational Attainment Data

People with some college or associate degree account for the highest number for all geographies, between 32% and 34% (Figure 9). The study area has a higher proportion of the population with a high school diploma or some college or associate degree compared to all other geographies, while Happy Valley has the highest proportion of people who have earned either bachelor's or graduate degrees. In 2021, Happy Valley had the highest number of people with graduate or professional degrees at 20% of its total population, while it was 8% in the study area's population. People with less than a high school diploma account for the smallest number across all geographies, between 4 and 8.5%.

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Figure 9. Educational Attainment for Population 25 Years and Over by Geography, 2021

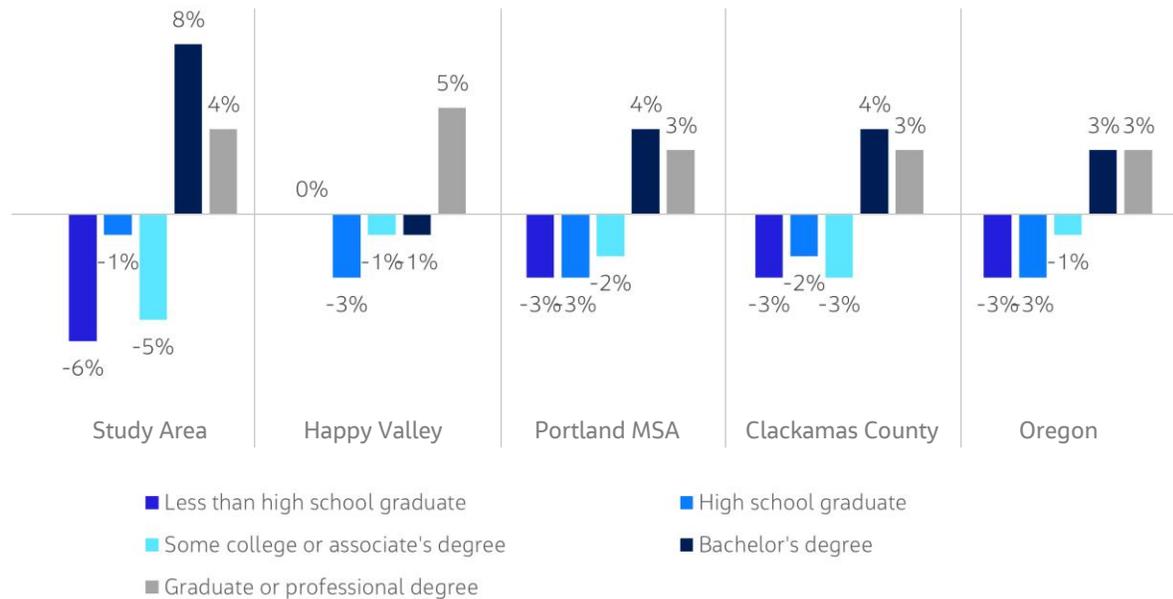


Source: ACS 5-Year Estimates Subject Tables, Tables S0501 and S0601

Ten Year Educational Attainment Trend

The study area, Portland metro, Clackamas County, and Oregon, saw a decrease in the share of people with less than a high school diploma from 2011 to 2021, while Happy Valley had no change. At the same time, the share of people with bachelor's degrees or higher had an increased share at all geographies, suggesting a more educated population. Compared to all other geographies over the ten-year period, the study area saw the greatest shift in the share of people with higher education, increasing the share of people with bachelor's degrees by 8 points (Figure 10).

Figure 10. 2011-2021 Percent Point Change Educational Attainment



Source: ACS 5-Year Estimates Subject Tables, Tables S0501 and S0601

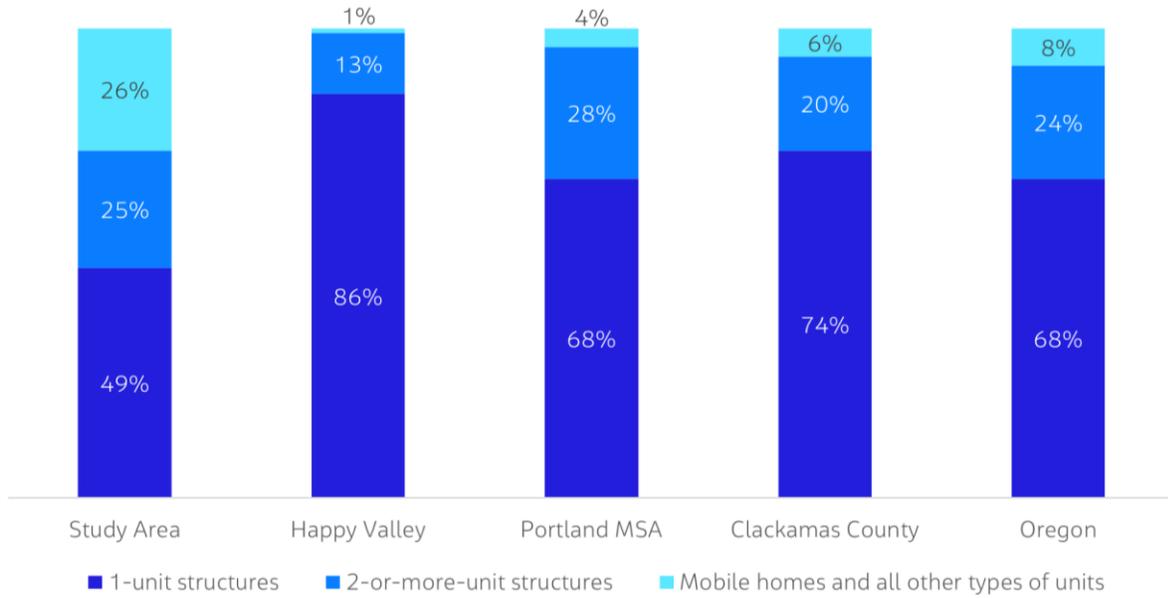
1.1.4 Study Area Housing

Housing types include 1-unit structures, 2-or-more-unit structures, and mobile homes (Figure 11). 1-unit structures is the study area's predominate housing type, accounting for 49% of all housing. 2-or-more-

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unit structures and mobile homes/other categories account for the other half – 25% and 26% respectively.

Figure 11. Housing Data by Geography, 2021



Source: ACS 5-Year Estimates Table S1101



Mobile home park in study area. Source: Jacobs

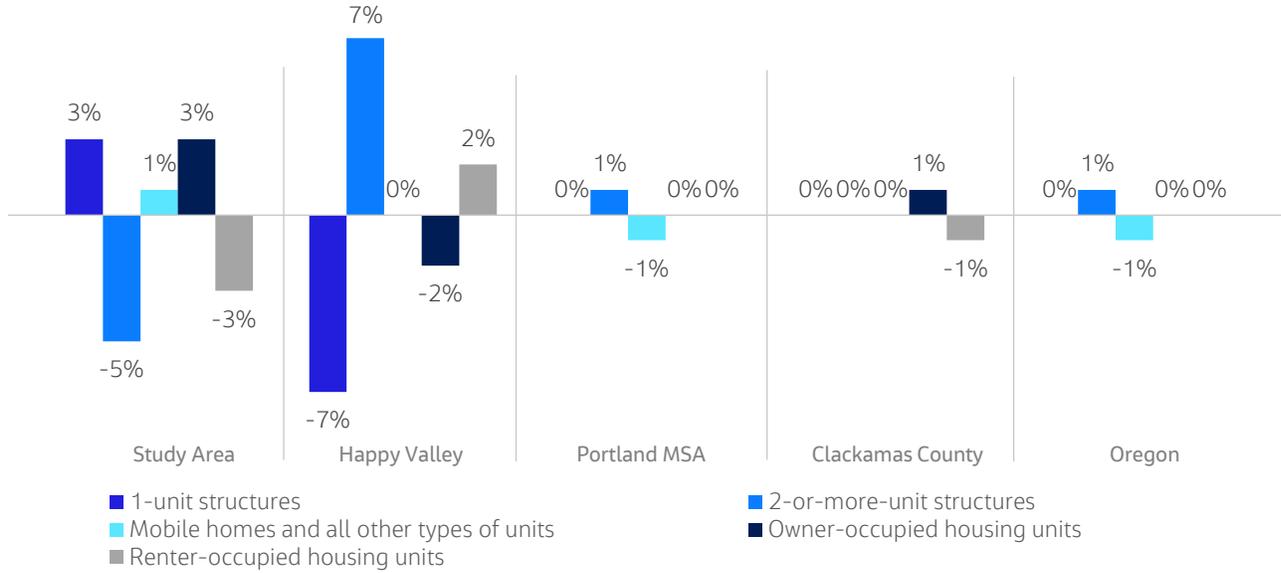
Ten Year Housing Trends

Since 2011, the state and region have seen the housing mix by type remain steady. Figure 12 In the study area, single unit houses and mobile homes increased their share by 3 and 1 percentage points, respectively. The share of 2 or more-unit housing decreased increased about five percentage points.

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The share of renters in Happy Valley increased 2 points, matching the decrease in the share of homeowners. The study area shifted 3 points to more owner-occupied housing units (from renter-occupied).

Figure 12. Percentage Point Change in Share by Type



Source: ACS 5-Year Estimates Table S1101

Housing Cost Burden

Households are defined as experiencing a housing cost burden if housing costs are equal to or exceed 30% of their annual income¹. In Happy Valley (the geography to the study area for which data is available) the proportion of the population experiencing housing cost burdens increases as household income increases, from 2.8% of lowest-income households, to 7.8% for the highest earning households (Table 1). This sets Happy Valley apart from the other geographies analyzed, where lower income household groups have the highest housing cost burden. In general the housing cost burden in this area is lower than the state overall. Between 2011 and 2021, nearly all geographies and income brackets experienced a decrease in households experiencing a housing cost burden, with Happy Valley seeing the greatest decrease for households earning an annual income of \$75,000 or greater.

Table 1 Percentage of Total Households who are Housing Cost Burdened by Income Bracket, 2021

HH Income	Happy Valley	Portland MSA	Clackamas County	Oregon
Less than \$20,000	2.8%	7.8%	7.0%	9.5%
\$20,000 to \$34,999	4.0%	7.4%	7.1%	8.2%
\$35,000 to \$49,999	4.4%	6.8%	6.2%	6.3%
\$50,000 to \$74,999	6.2%	7.0%	6.4%	5.8%
\$75,000 or more	7.8%	4.3%	5.6%	3.3%

Source: ACS 5-Year Estimates Table S1101

1.1.5 Study Area Economic Data

The study area is a relatively small area in which to analyze and understand economic data. However, the comparisons to neighboring and surrounding jurisdictions help understand who uses the Sunrise corridor, and how investments in the area may relate to or be prioritized with investments in neighboring areas. The following paragraphs and charts show the median household income, households in poverty, median

¹ [Defining Housing Affordability | HUD USER](#)

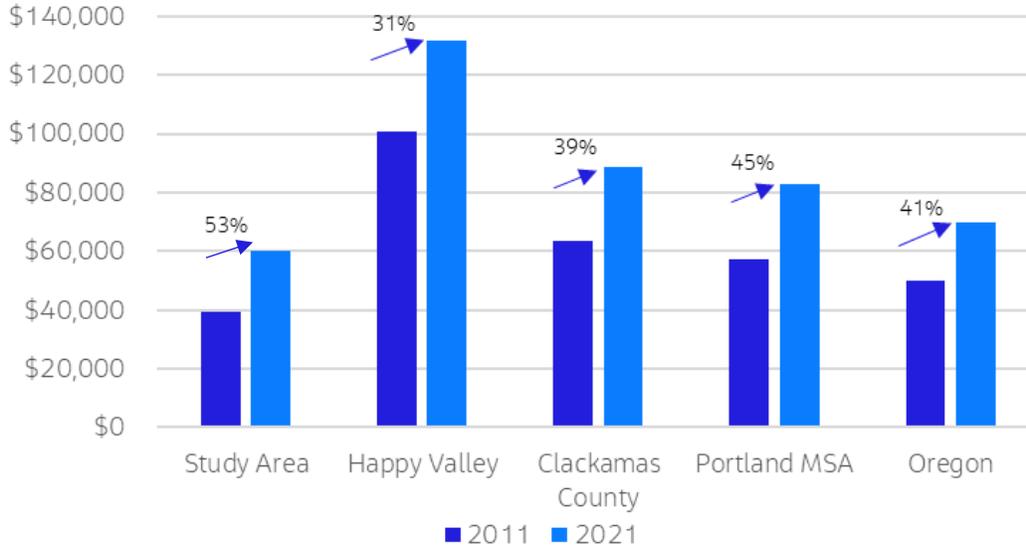
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individual incomes, and unemployment. Generally, the data shows that residents in the Sunrise study area have lower incomes than surrounding areas, though this and other data shows that the corridor is used by people accessing higher income areas around the region.

Median Household Income

The Median Household Income (MHI) increased for all geographies between 2011 and 2021 (Figure 13). The study area MHI increased 53% or nearly \$21,000 although this geography experienced the smallest relative increase in MHI among all other geographies measured.

Figure 13. Median Household Income by Geography



Source: American Community Survey, ACS 5-Year Estimates Subject Tables, Tables S0501 and S0601

Poverty Level

The share of people in households earning less than the federal poverty level was 18% in the study area in 2011, decreasing to 14% in 2021. This is 6 percentage points higher than the County share, and 10 percentage points higher than Happy Valley's 4% rate in 2021. Happy Valley has had the lowest share of households living in poverty.

The share of people living in poverty generally decreased in every geography studied, at 4% in the study area, 3% in the MSA and State, and 2% in the County. Happy Valley's population in poverty increased 1% over the ten-year period, though its rate is 8 percentage points lower than the State (Table 2).

Table 2 Percent Point Change in Persons Earning Below Poverty Level, 2011-2021

Percent of Persons below poverty Level	2011	2021	2011-2021 Change	
			Number	Percent
Study Area	18%	14%	-652	-4%
Happy Valley	3%	4%	540	1%
Clackamas County	10%	8%	-4,097	-2%
Portland MSA	13%	10%	-29,908	-3%
Oregon	15%	12%	-52,130	-3%

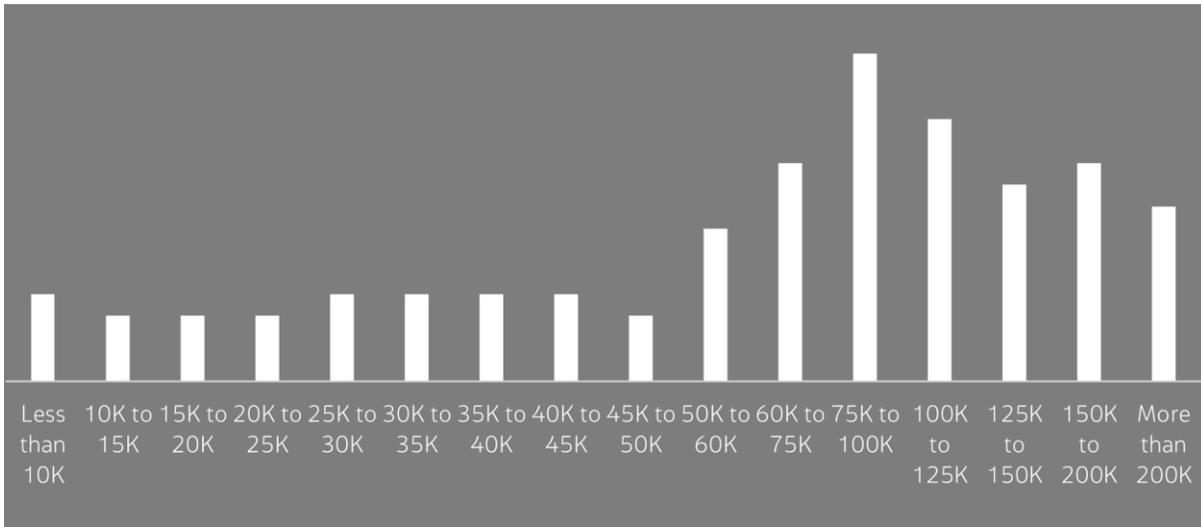
Source: American Community Survey, ACS 5-Year Estimates Subject Tables, Tables S0501 and S0601

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Streetlight Traveler Economic Data

Streetlight traffic data at the intersection of OR212 and SE 142nd Avenue was analyzed to represent and understand the demographics of people who passed through the area from April 1, 2021 to May 31, 2021. People traveling through this intersection typically had higher incomes compared to all geographies, with 70% of drivers earning an annual income of \$50,000 or greater (Table 3).

Figure 14. Income of Drivers along Study Intersection, April 1 to May 31, 2021



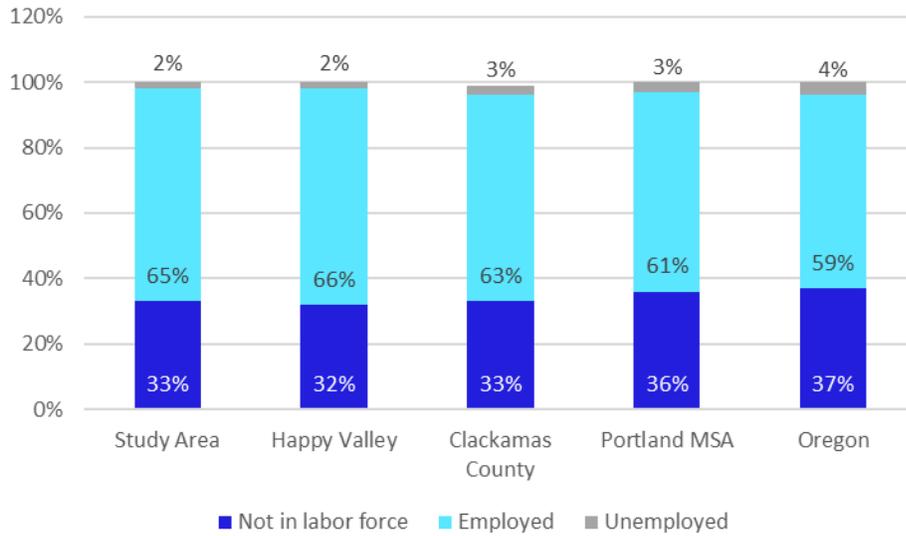
Source: StreetLight Data; Streetlight is based on mobile communication device location data (e.g. cell phones).

Employment

One way employment data is analyzed is through number of people employed, number of people unemployed, and those not in the labor force. Employment among these three categories, and across all geographies is about the same level – 59% to 66%. The percentages for those unemployed and not in the labor force are similar across all geographies (Figure 15).

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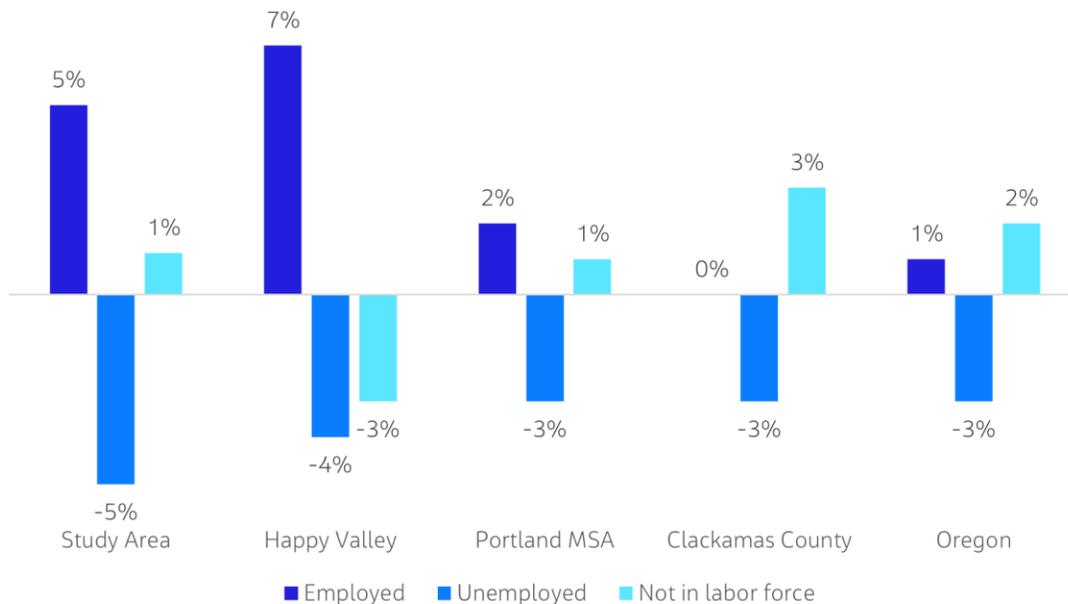
Figure 15. 2021 Employment Type by Geography



Source: American Community Survey, ACS 5-Year Estimates Subject Tables, Tables S0501 and DP03

At 5 percent, the study area has seen the greatest reduction in unemployment rate compared to all other geographies, which have seen between a 3 and 4 percent reduction. The study area and Happy Valley have seen a relatively high increase in the employment rate at 5% and 7% respectively (Figure 16).

Figure 16. Percentage Point Change in Employment Share, 2011-2021



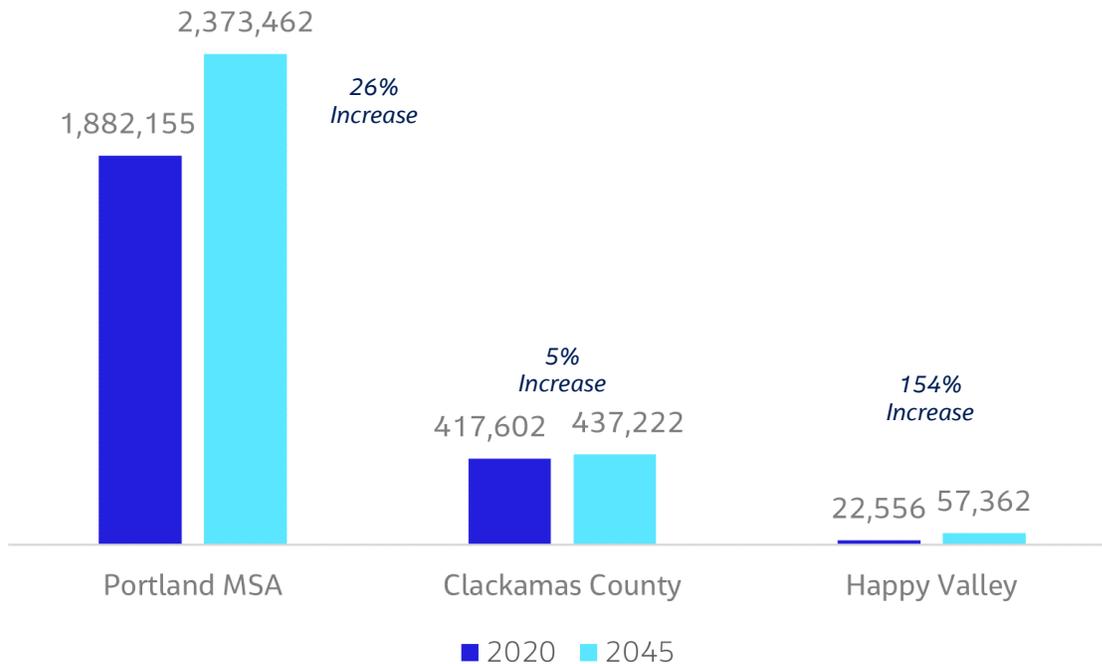
Source: American Community Survey, ACS 5-Year Estimates Subject Tables, Tables S0501 and DP03

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1.1.6 Future population

Oregon law requires that at least every six years Metro forecast the population and employment growth for the Portland region for the following 20 years². Metro’s forecasts support regional and local planning, accommodating for population growth and necessary development. Future populations for Happy Valley, Clackamas County, and the Portland metro area all increase (Figure 17). Happy Valley projects a population increase of over 34,000 people, a 154% increase by 2045, Clackamas County with an increase of 5%, and the Portland metro with an increase of 26%. Happy Valley is an outlier in terms of housing growth, and the study area is primarily industrial. Therefore, it may not experience the forecasted level of growth based on zoning. The study area is not forecasted, but the increases for Happy Valley and Clackamas County indicate an increase for the study area is also likely.

Figure 17. Future Population Forecast



Source: Oregon Metro, 2045 Distributed Forecast of Population, Households, and Employment

² Oregon Metro, 2045 Distributed Forecast. Accessed October 2023. <https://www.oregonmetro.gov/2045-distributed-forecast#:~:text=Oregon%20law%20requires%20that%20at,within%20the%20urban%20growth%20boundary>.

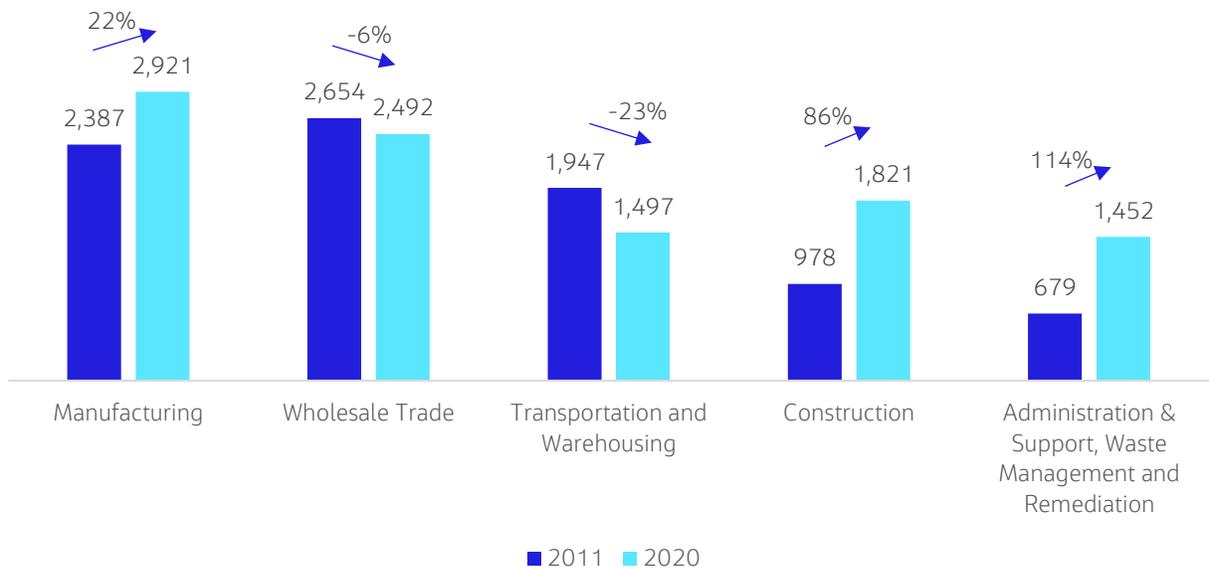
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1.1.7 Jobs

In 2021 about 14,200 workers were employed within the study area. Employment is most dense in the center of the study area in the Clackamas Industrial Area north and south of OR212, east of I-205 and west of SE 142nd Avenue (Figure 20 and Figure 21).

The top five industries in the study area are manufacturing, wholesale trade, construction, transportation and warehousing, and Administration & Support. Manufacturing and wholesale trade together make up almost 40% of all jobs in the study area. Transportation and warehousing jobs made up about 10% of jobs in the study area, having decreased from a 17% share in 2011. Manufacturing, however, maintained its share of total jobs at about one-fifth. The Construction sector grew by over 85% in the period, increasing its share of total jobs from 8.4% to 12.8%. The Administration & Support sector share today grew 114% since 2011. For more information see Figure 18 and Figure 19.

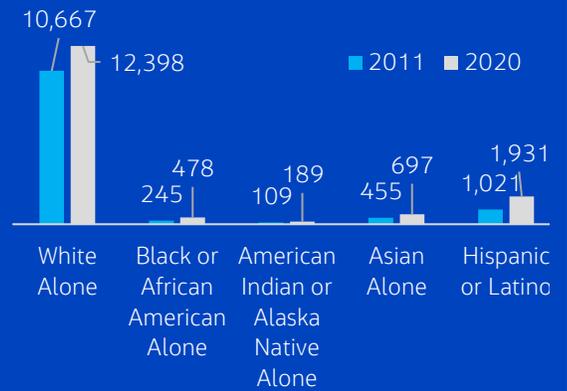
Figure 18. Number of Jobs by Industry Sector, 2011 and 2021



Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

Race and Ethnicity Among Workers in 2020

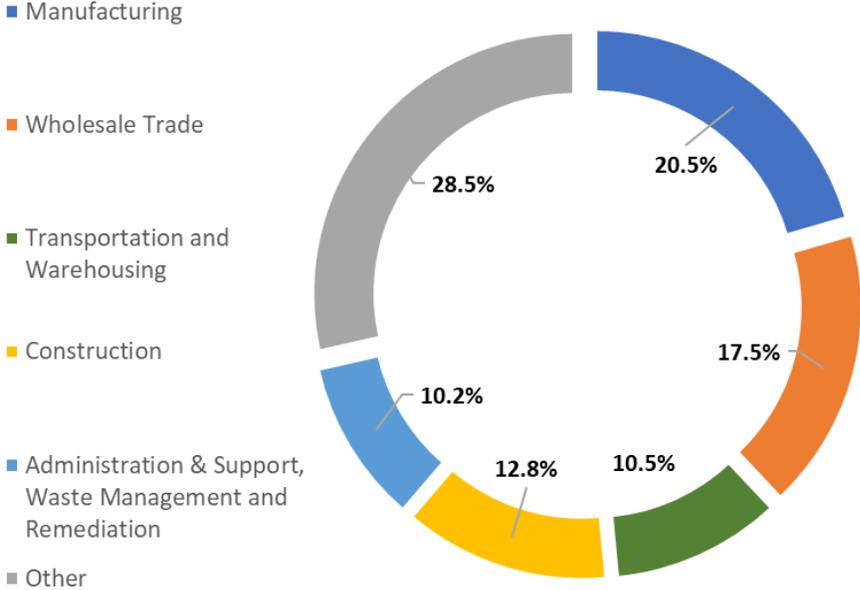
In 2020 the majority or 87% of workers in the study area identified as white, 4.9% as Asian, and Black or African American workers were 3.4% of all workers. 13.5% identified as Hispanic or Latino.



Source: 2011, 2020, U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

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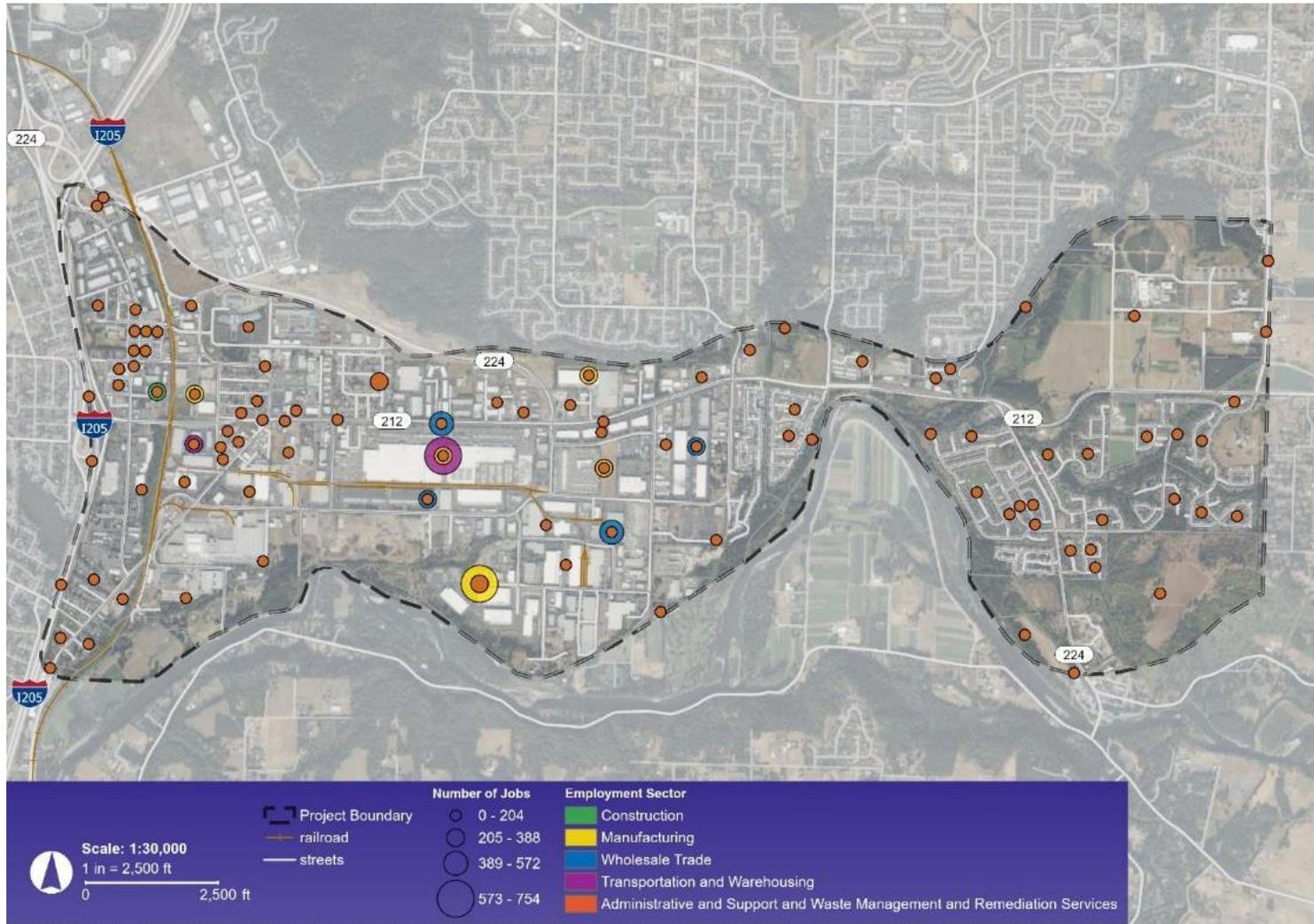
Figure 19. Top Five Industry Sector Job Shares



Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

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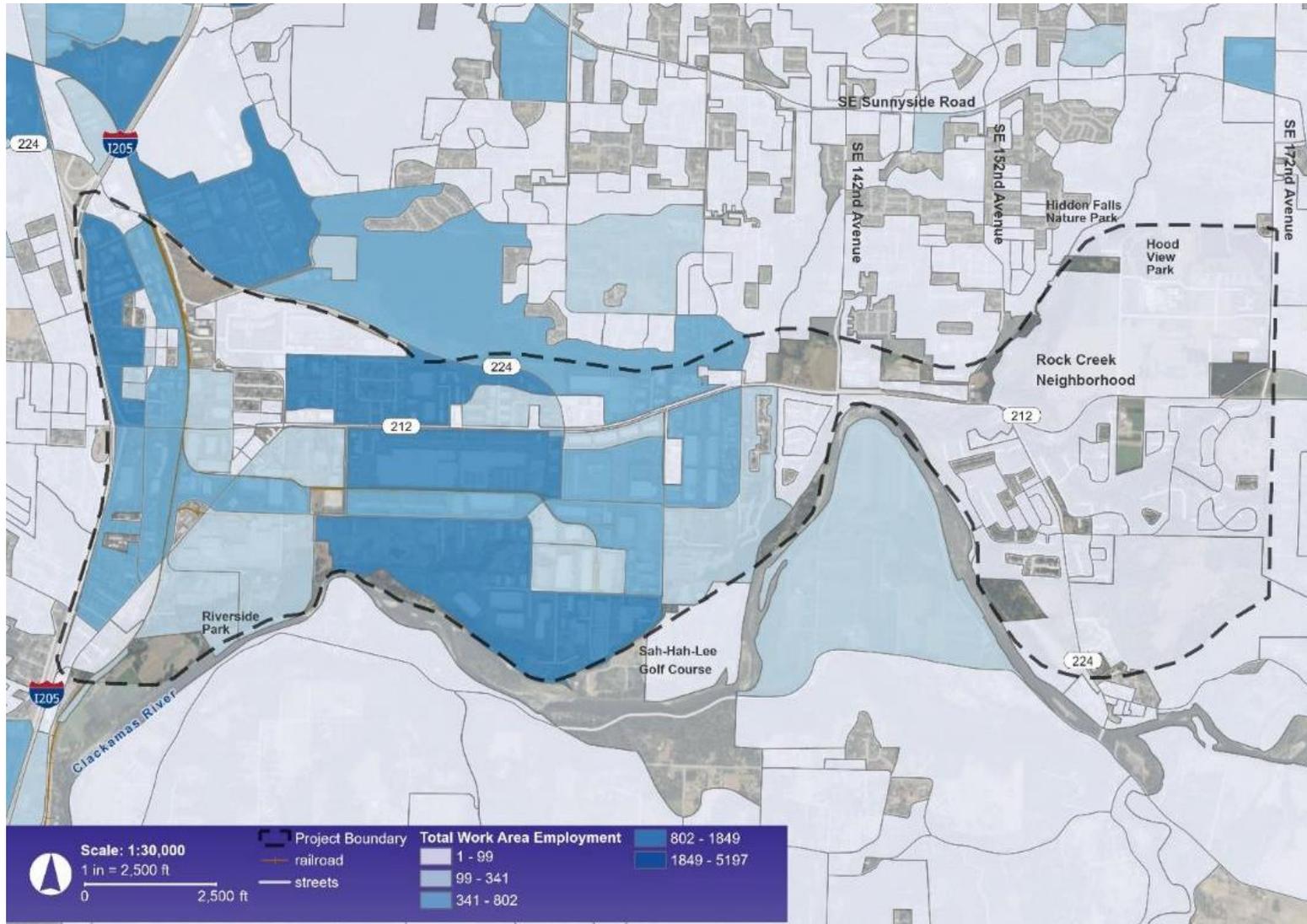
Figure 20. Top Employment Industry by Census Block Group



Source: Census LEHD Origin-Destination Employment Statistics

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Figure 21. 2021 Study Area Employment Map



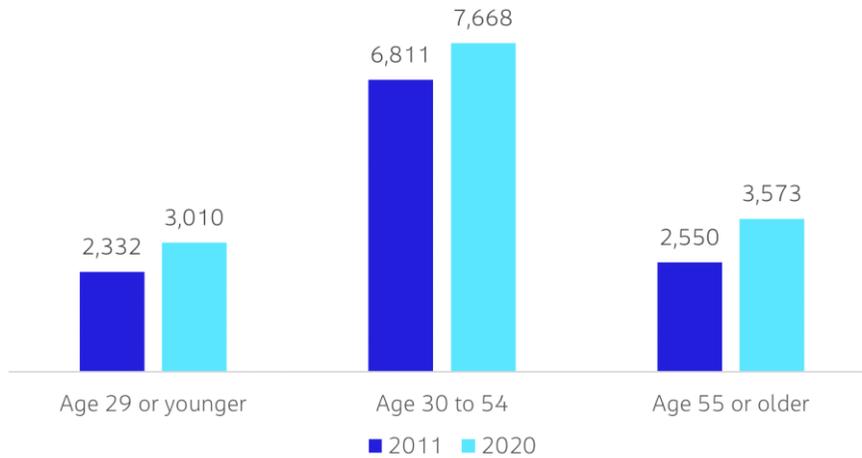
Source: Metro RLIS, U.S. Census LEHD Origin-Destination Employment

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1.1.7.1 Workers Age and Education Level

The age of all workers in the study area are grouped into three categories including 29 years or younger, 30 to 54 years old, and 55 years or older. Workers within the 30 to 54 years old range account for the most jobs, 7,668 or 54% of all jobs. The other two age group categories make up the remaining jobs almost equally, at 21% and 25% (Figure 22).

Figure 22. Jobs by Worker Age in Study Area, 2011-2020



Source: 2011, 2020, U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

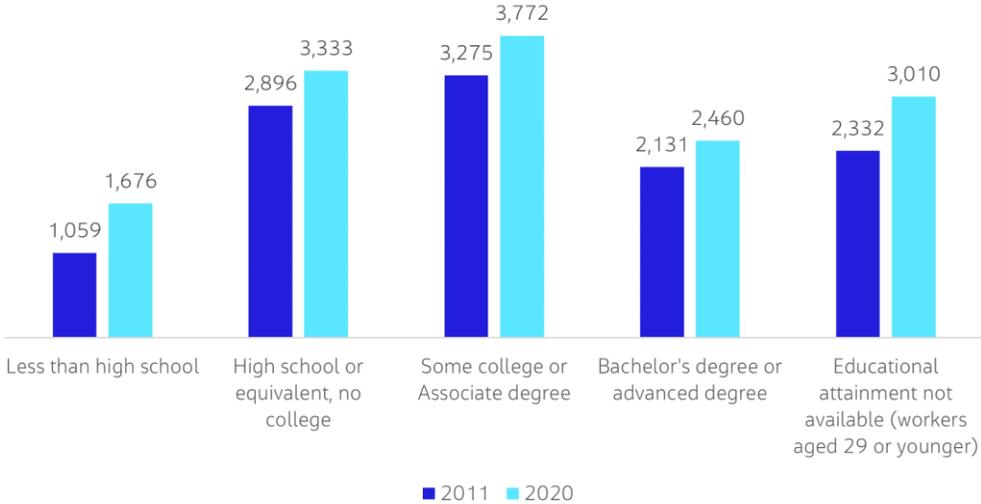
1.1.7.2 Worker Educational Attainment

The Census breaks educational attainment into four categories – less than high school, high school or equivalent, some college or associate degree, and bachelor’s degree or advanced degree. High school or equivalent and some college or associate degree are the top two categories of people within the study area, representing a combined 50% of all workers, or 7,105 workers. 17.3% have received a bachelor’s degree or higher, and 11.8% have less than a high school education (Figure 23). Study area percentages of educational attainment among workers align similarly to Clackamas County as a whole. Together, high school or equivalent and some college or associate degree represent nearly 47% of all workers in Clackamas County. Workers with educational attainment levels of a bachelor’s degree or higher were the second highest category at 23% in Clackamas County, while it was just the third highest category for the study area³.

³ U.S. Census OnTheMap, 2020, Clackamas County. Accessed October 2023. <https://onthemap.ces.census.gov/>

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Figure 23. Worker Educational Attainment in Study Area, 2011-2020



Source: 2011, 2020, U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

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1.2 Water and Stormwater

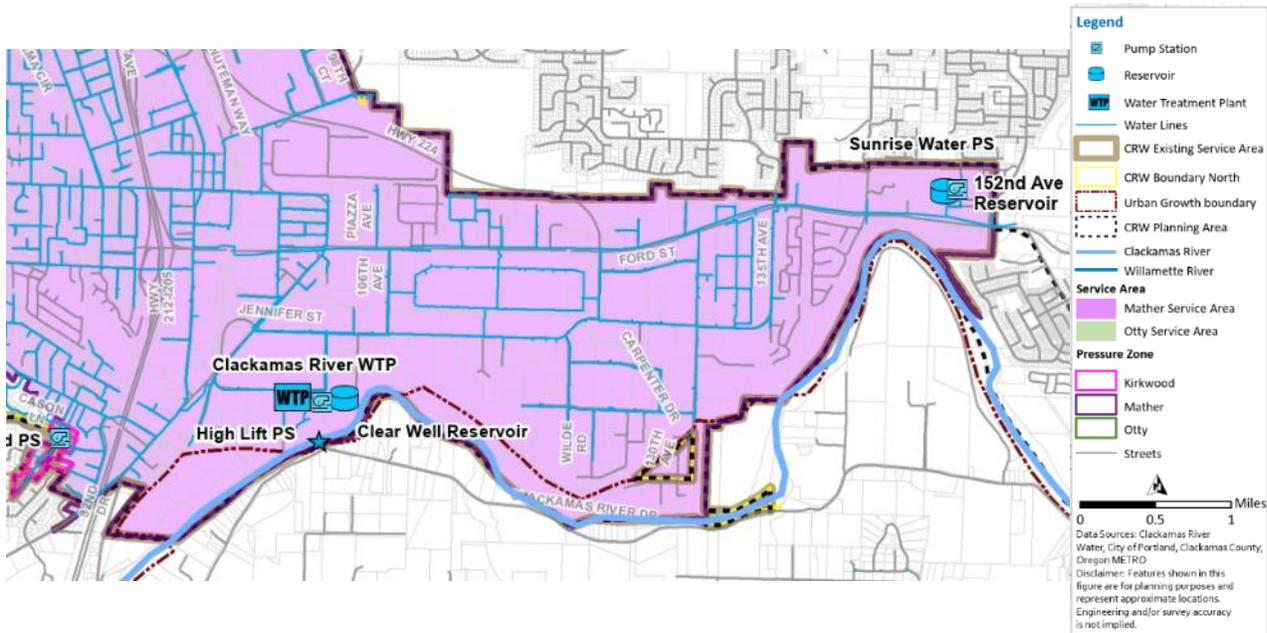
Water service for the study area is provided by Clackamas River Water and Sunrise Water Authority. Clackamas River Water provides water to most of the study area – from the western boundary to near where OR 224 and OR 212 split on the east side. The eastern portion of the study area, while small, is serviced by Sunrise Water Authority. Sunrise Water Authority purchases water from Clackamas River Water⁴.

Preserving both the water infrastructure and the Clackamas River as the area continues to develop and intensify will be a critically important effort within a heavily industrial area. Water for customers and residents within the project study comes from two sources – surface water that is drawn from the Clackamas River and ground water that is extracted from wells within the service areas of a provider. Two pump stations, two reservoirs, and one water treatment plant, all located within the study area, are used to draw and treat water from the Clackamas River (Figure 24).

More broadly, the Clackamas River is the primary source of drinking water to more than 300,000 residents in Clackamas and Washington Counties. The Clackamas River Water Providers (CRWP) was formed to work closely with various stakeholders to ensure protection of the River’s watershed and clean drinking water supply⁵.



Figure 24. Study Area Water Infrastructure



Source: Clackamas River Water, Water System Master Plan, 2019

⁴ Clackamas River Water, Water System Master Plan, 2019. Accessed November 2023.

⁵ Sunrise Water Authority, Watershed Protection. Accessed November 2023. <https://www.sunrisewater.com/your-water/water-supply/watershed-protection/>

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1.3 Health and Livability

Clackamas County has prioritized health and livability in three key categories: access to care, culture of health, and healthy behaviors⁶. These three categories include indicators that measure success or outcomes of the priorities. These categories, their top indicators, associated morbidities and root causes are summarized in the Community Health Improvement Plan Priorities in the Blueprint for a Healthy Clackamas County 2020-2023 report. The priorities are primarily focused on providing services to ensure people have healthy, productive lives.



Local rail line access to various warehouse, shipping, and manufacturing facilities in study area. Source: Jacobs

1.3.1 Access to Health Care and Human Services

Access to health care and human services improves both individual and community health, as well as support services such as transportation, food assistance and assistance enrolling in and using health insurance.

Access to Health Care and Human Services Goals:

1. Residents in Clackamas County are **connected to high quality comprehensive health care services** that are reflective of community needs within each health equity zone.
2. Clackamas County has **equitable transportation systems and community design** that supports resident health, safety, and access to essential services.

KEY FINDINGS:

- 94.4% of residents in Clackamas County have health insurance coverage – 5.6% are uninsured.
- The number of transportation crashes decreased slightly from 3,664 to 3,554 between 2017 and 2018. Fatalities increased from 29 to 34 during the same time.
- Housing, food/meals, and utility assistance were the highest needs among Clackamas County residents in 2020.

1.3.2 Culture of Health

A culture of health is broadly defined as a community in which good health and well-being flourish across geographic, demographic, and social sectors, where every person has the opportunity to make choices that

⁶ Blueprint for a Healthy Clackamas County, 2020-2023. Health, Housing, and Human Services, Clackamas County Accessed November 2023.

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lead to a healthy lifestyle and an even healthier community. A Culture of Health looks different to different people, but embraces a wide variety of beliefs, customs, and abilities.

Culture of Health Goals:

1. Clackamas County residents have affordable, stable, safe and accessible **housing**.
2. All Clackamas County residents have access to affordable culturally acceptable healthy **food**.

1.3.3 Healthy Behaviors

Healthy behavior is influenced by the social, cultural and physical environments in which we live and work. It is shaped by individual choices and external Clackamas County has equitable transportation systems and community design that supports resident health, safety, and access to essential services.

Healthy Behaviors Goals:

1. Clackamas County has a **coordinated system of care** providers and support organizations for the prevention, treatment and recovery of individuals affected by mental health challenges, substance use, and/or identified as being at risk for suicide.
2. Clackamas County creates and promotes opportunities for residents to participate in health **promoting physical activity** to lower the risk and complications of chronic disease. These opportunities exist at work, play, school, home, in neighborhoods and when in transit.

KEY FINDINGS:

- 22.1% of adults in the County engage in regular physical activity – higher than the 20% healthy people 2020 target.
- Between 2014 and 2017, 14% of females and 22% of males in Clackamas County reported binge drinking - below the healthy people 2020 target of 24%.
- Per capital opioid prescription refills in Clackamas County had decreased from 207.1 per 1,000 residents to 155 per 1,000 by June 2022.

KEY FINDINGS:

- In 2019, 68% of households on the housing waitlist reported having a person with a disability. 18% of households included children.
- In 2019 the majority of individuals awaiting housing were White, non-Hispanic/Latino, female, between 25 and 62 years old.
- Food insecurity in Clackamas County decreased by almost 4 percentage points between 2017 and 2018.

Sunrise Corridor Community Visioning

1.4 Natural Environment Connectivity

The study area contains or is proximal to numerous natural amenities, including parks, hiking trails, and the Clackamas River.

- The 1.2-mile Hidden Falls to Rose Creek Loop Hike within Hidden Falls Nature Park provides paved access to Rock Creek, and a footbridge allows visitors to view 15-foot waterfalls along the pathway.
- The 8-mile Carver Park to Clackamette Park floating route on the Clackamas River provides opportunities for paddling, passing the confluence of Rock Creek and ends at the Clackamette Park along the Clackamas River.
- The Sunrise Expressway multi-use path is a 2.5-mile off-street trail which extends along Highway 224 between SE Mather Road and SE Highway 212. This path is used for biking, walking, and running and provides access to Highway 212.
- Rock Creek Confluence Restoration Project is located at the confluence of Rock Creek and the Clackamas River and addressed degraded channel and riparian areas. Completed in 2015 and implemented by Water Environment Services, the project reconnected the Rock Creek to its floodplain, improved water quality, and restored 12 acres of vegetation to native species. Additionally, this site provides a critical habitat for the regional salmon population.

Unfortunately, the natural areas and outdoor recreation facilities are somewhat disconnected within the study area to adjoining natural areas. There are relatively few public access points to the Clackamas River, for example. Figure 25 illustrates existing river access points, hiking trails, and striped biking lanes. Riverside Park and Carver Park are the main public access points to the Clackamas River, with recreation areas and boat ramps. Other river access points are located on private property, including near a bottling facility, on the Sah Ha Lee Golf Course, and in the Windswept Waters residential development near the Rock Creek confluence.



Clackamas River Access. Source: Clackamas County

The Sunrise Expressway multi-use path links the study area to neighborhoods north of the corridor, and to the I-205 multi-use path that connects north and south parallel to the freeway. However, the path has notable gaps between the Expressway and I-205 and connects to unprotected cycling lanes and sidewalks in the Clackamas Industrial Area. The multi-use path runs near the Mount Talbert Nature Park, though an inaccessible forested area is a barrier to access.

Tree Canopy

Tree canopy cools the urban environment and reduces urban heat island effects by providing shade and through transpiration. Tree canopy captures rainwater, reducing localized flooding and preventing stormwater runoff that can lead to water pollution. Furthermore, trees are critical for supporting mental health. The tree coverage map helps show how undeveloped areas like creek beds, riverside areas, and steep slopes present opportunities to connect open space and provide recreational access. The tree coverage can also show how rapid development over the past 50 years or more has created wide swaths of areas without potential shade or other benefits wooded areas, street trees or parks can provide.

Sunrise Corridor Community Visioning

Figure 25. Access to Nature Features near Study Area



Source: Metro RLIS and Clackamas Count

Sunrise Corridor Community Visioning

Existing Conditions in the Study Area – Land Use

Date: December 20, 2023
Project name: Sunrise Corridor Community Visioning
Attention: Jamie Stasny, Karen Buehrig, Ellen Rogelin
Client: Clackamas County
Prepared by: Jacobs

The purpose of this chapter is to assess the existing land use and development patterns of the Sunrise Corridor Vision Study Area. The project study area follows the OR212/OR224 corridor in Clackamas County, stretching from the eastern edge of I-205 west to roughly SE 172nd Avenue. This chapter examines existing zoning codes that govern land use in the study area, and public community resources, such as utilities, schools, libraries, open and natural areas, parks, and trails.

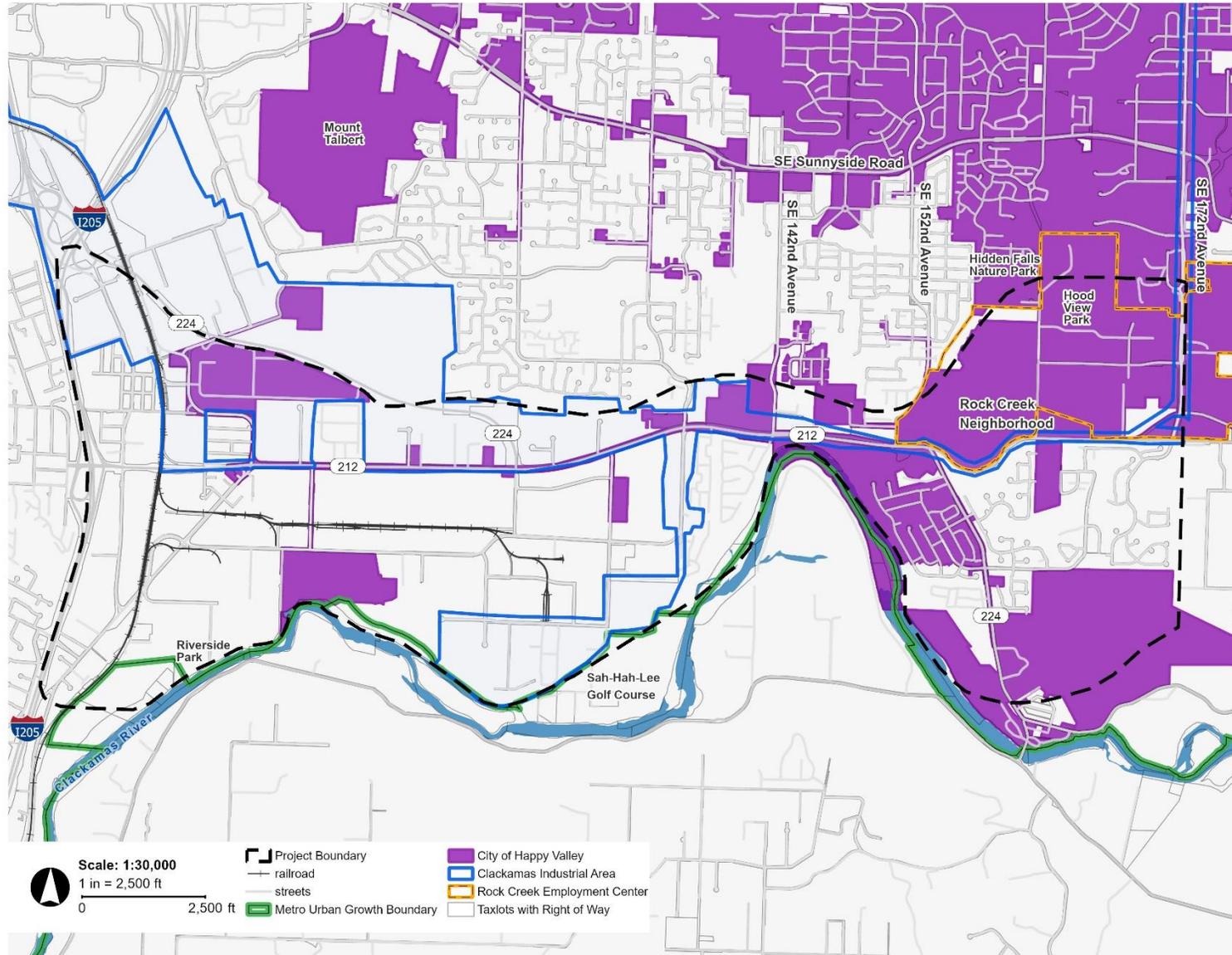
Summary

Below are some of the key findings from the existing conditions land use assessment.

- **Multiple jurisdictions.** The study area includes land governed by both Clackamas County and Happy Valley zoning code, two industrial/employment districts, and a designated Regionally Significant Industrial Area.
- **Light industrial uses.** Existing land uses in the project area are mostly light industrial, comprising of over 40% of the total land, or 2,500 acres.
- **Opportunities for growth.** Approximately 40% of the Rock Creek Employment Center's 465 acres is still undeveloped or underutilized to date. Other vacant properties within the study area or lots offer new areas for growth.
- **Housing options.** Housing, both single family (including manufactured housing) and multi-family, comprise nearly 19% of the land uses within the study area. There is no mixed-used (housing and commercial) within the study area.
- **Community resources.** Private and public schools, parks, and the Clackamas River are all within or adjacent to the project area. This area is also the gateway to Mt Hood and the Clackamas River corridor, providing critical access to the County's water facilities, and recreational opportunities.
- **Freight access.** Truck access with large docking bays and personal vehicle parking for employees are common design features across the industrial areas. Short rail access to some of the industrial buildings is available and maintained on the Clackamas Valley Railway in the Clackamas Industrial Urban Renewal Area, with connection to the Union Pacific mainline.

Sunrise Corridor Community Visioning

Figure 1. Study Area Boundary and Relevant Jurisdictions



Source: Metro Regional Land Information System (RLIS), Jacobs.

Note: Clackamas Industrial Urban Renewal Area and Rock Creek boundaries provided due to its relevance to land use and zoning.

Sunrise Corridor Community Visioning

1. Existing Land Uses and Zoning

This section describes the land uses and zoning that exist across the study area. Land use shows how land is occupied at the time of data collection, while zoning is set by the jurisdiction (County or City) in a Comprehensive Plan, and regulates land use and site design and other aspects of development.

1.1 Land Uses

The Sunrise Corridor study area includes diverse land uses under Clackamas County and City of Happy Valley zoning boundaries. Land uses are primarily in industrial, commercial, and residential land use categories, as defined by data from Clackamas County, Metro, and City of Happy Valley (Figure 2). A description of the land use assessment is provided in the sections below by jurisdiction (Clackamas County or Happy Valley).

1.1.1 Industrial

Clackamas County

Most of the industrial uses in the study are in Clackamas County's jurisdiction. These uses are in four categories – food and beverage distribution, construction supply and fabrication, heavy load transport trucking, and the automotive-related industry.

Food and beverage distribution

Several food and beverage distribution facilities within the study area are located south of OR212 and north of SE Jennifer Street, with Fred Meyer (Kroger) comprising two large distribution centers that together span over three-quarters of a mile. Charlie's Produce, Dave's Killer Bread depot, and product distributor Bunzl are located on SE Jennifer Street. Portland Bottling Company operates a large-scale distribution center south of SE Jennifer Street and west of SE Safeway Road.

Core-Mark International and Pepsi Beverages North America both operate large warehouse and distribution centers south of SE Capps Road and west of SW Wild Road. Pacific Food Distributors is located north of SE Capps Road, and a Franz Bread Warehouse is located east of SE Carpenter Drive. Fuji Produce operates a large warehouse and distribution center located west of SE 135th Avenue and south of OR212.

Access to food and beverage facilities generally include truck bays, standard vehicle parking, and in the Clackamas Industrial Urban Renewal Area, short rail access at locations such as Charlie's Produce and Dave's Killer Bread.

Construction supply and fabrication

Construction supply and fabrication related businesses are located throughout the study area and typically located south of OR212. La Salle Bristol, a supplier and distributor of plumbing, air-systems, flooring,

INDUSTRIAL & COMMERCIAL AREAS

The Sunrise Corridor is the gateway to the Clackamas Industrial Urban Renewal Area and the Rock Creek Employment Center.

Clackamas Industrial Urban Renewal Area

The Clackamas Industrial Urban Renewal Area is a 32-acre distribution, warehousing and wholesale trade area that was created in 1984 through an urban renewal process to increase development and employment. The tax increment fund district stopped collecting funds in 2006, though there are funds remaining for capital projects.

Rock Creek Employment Center

The Rock Creek Employment Center (RCEC) is a 465-acre area in the City of Happy Valley that has been designated for future light industrial development. The area was included in the Portland Metropolitan Area Urban Growth Boundary (UGB) expansion in 2002. The area also includes two schools and two parks.

Sunrise Corridor Community Visioning

lighting, and other household goods, is located north of SE Capps Road, near Disdero Lumber Co, a large building materials supplier. Greenpoint Wood Floor Supply is located on SE Jennifer Street, west of SE 120th Ave, just east of Precision Truss and Lumber, a large lumber yard and truss manufacturer. QB Fabrication and Welding creates electric utility structures out of their facility located just west of the large Fred Meyer/Kroger Facility, off SE 106th Avenue. Astronics PECO, a large heating and cooling controls manufacturer is sandwiched between OR224 and OR212.

Access for construction supply and fabrication-related facilities typically consist of truck bays and standard vehicle parking. Short rail access as available at Disdero Lumber Company, La Salle Bristol, and QB Fabrication and Welding.

Heavy load transport trucking

Trucking companies are located throughout the study area, with no clear pattern or cluster. Wymore Transfer and J&D Refrigerated Services are located near each other, both north of SE Capps Road and south of SE Carpenter Drive. XPO operates a large warehouse and truck facility east of SE 122nd Avenue and north of SE Jennifer Street. Kool Pak, a refrigerated transport company, operates two large industrial buildings in the west end of the study area, one north and one south of SE Jennifer Street.

Access for heavy load transport trucking facilities generally includes truck bays and standard vehicle parking. Short rail access is available at Wymore Transfer's Warehouse located north of SE Carpenter Dr and east of SE 120th Avenue.

Automotive

A cluster of automotive-related businesses are located in the center of the study area, roughly around the SE 102nd Avenue and SE 106th Avenue area, near OR212. These businesses include Cascade Autoglass, Northwest Running Boards, Superior Torque Converter, and Consolidated Metco, which is a large auto parts manufacturer for commercial vehicles. Ultimate Airstreams, an RV manufacturer, is located southeast of this cluster, east of SE Evelyn Street and north of SE Jennifer Street. Warn Industries, a winch manufacturer for offroad, industrial, utility, and person vehicles, is located south of SE Capps Road and west of SE 130th Avenue.

Access for automotive-related businesses include truck bays and employee / visitor vehicle parking.

City of Happy Valley

Industrial uses that operate on land in the City of Happy Valley are limited. Marks Metal Technology Inc., a metal manufacturer, is located south of SE Jennifer Street and west of SE Robert Avenue. Portland Road and Driveway Company and Northwest Sand and Gravel, Inc are located in the same location, along SE 106th Street, south of SE Jennifer Street. Additional industrial uses include recruiting and career centers that are part of the Oregon National Guard Military Base, located along the south side of OR224 and east of Minuteman Way.

Access at these locations include truck delivery lanes and personal vehicle parking.

1.1.2 Commercial

Clackamas County

Commercial land uses in Clackamas County consist of restaurants, retail stores, supermarkets, lodging facilities, landscaping suppliers, sports facilities, health and medical facilities, and miscellaneous services. Most commercial land is located on the west side of the study area, between I-205 and 82nd Avenue.

SE 82nd Drive and areas north and south of OR212 support most of the retail commercial uses in the area including a Fred Meyer grocery store and, gas station, fast-food restaurants, and hotels. Landscaping

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businesses such as Portland Rock and Landscape Supply, Landscape East and West, and Ewing Outdoor Supply are all located within this same area between I-205 and SE 82nd Drive.

Other retail commercial businesses in the study area are located among industrial land uses and connected to industrial businesses. Portland Airstream Adventures is an RV dealer that is physically connected to Ultimate Airstream manufacturing facility. Clackamas Feed and Pet Supply is located between industrial uses along SE 130th Avenue and SE Ford Street, and Clackacraft Drift Boats is located north of OR212 next to a storage facility.

Carver, a small unincorporated area on OR 224 at the southern end of the study area includes a small collection of commercial land uses. This small commercial cluster includes restaurants, retail and in-home businesses. The Carver Mobile Home Ranch is located here.

City of Happy Valley

The Happy Valley governed land in the study area does not include commercial uses, though some industrial businesses may provide direct sales to customers.

1.1.3 Residential

Clackamas County

Much of the residential land uses in the study area are located in unincorporated Clackamas County. Low density residential is the most common residential use with several locations of single-family homes. Two pockets of medium density residential exists in the study area, specifically in the form of manufactured and mobile home developments. High density residential includes a large apartment complex located between I-205 and SE 82nd Drive.

- Low density:
 - North of OR212, between SE 98th Ave and SE 102nd Avenue
 - Between I-205 and SE Jennifer St/82nd Drive
 - East of OR224 and south of OR212
- Medium density:
 - Between SE 135th Avenue and the Clackamas River (Riverbend Manufactured Home Community)
 - Southeast corner of the study area, just west of OR224 (Riverview Mobile Estates)
- High density:
 - Between I-205 and SE Jennifer St/82nd Drive, south of SE Beaver Lake Drive
- Veterans Village, a transitional residential community for veterans, is located on a 1.5-parcel of land near the corner of 115th Ave and Jennifer Street. The project was completed in October 2018 and provides 15 housing pods that provide space to sleep and store personal items for one resident. A shared kitchen, bathroom/shower facilities, meeting spaces, and social services are provided within Veterans Village¹. The Village is owned by the Clackamas County Development Agency.

City of Happy Valley

WindSwept Waters is a large low-density, single-family subdivision located in Happy Valley, east of the Clackamas River and west of OR224.

¹ <https://www.clackamas.us/transitionalhousing>

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1.1.4 Land Use Summary

Industrial land uses make up over 40% of all land use in the study area, while single family residential accounts for over 17%, with most being manufactured mobile homes. 72% of the land in the Clackamas Industrial Renewal Area is industrial, and 42% of land in the Rock Creek Employment Center boundary is recorded as vacant (Table 1).

Figure 2 provides a map of the land use categories shown in land use table below. The acreage of each land use category measures the size of the whole parcel. Figure 3 shows the same land uses based on the building's footprint, revealing access and parking across the study area.

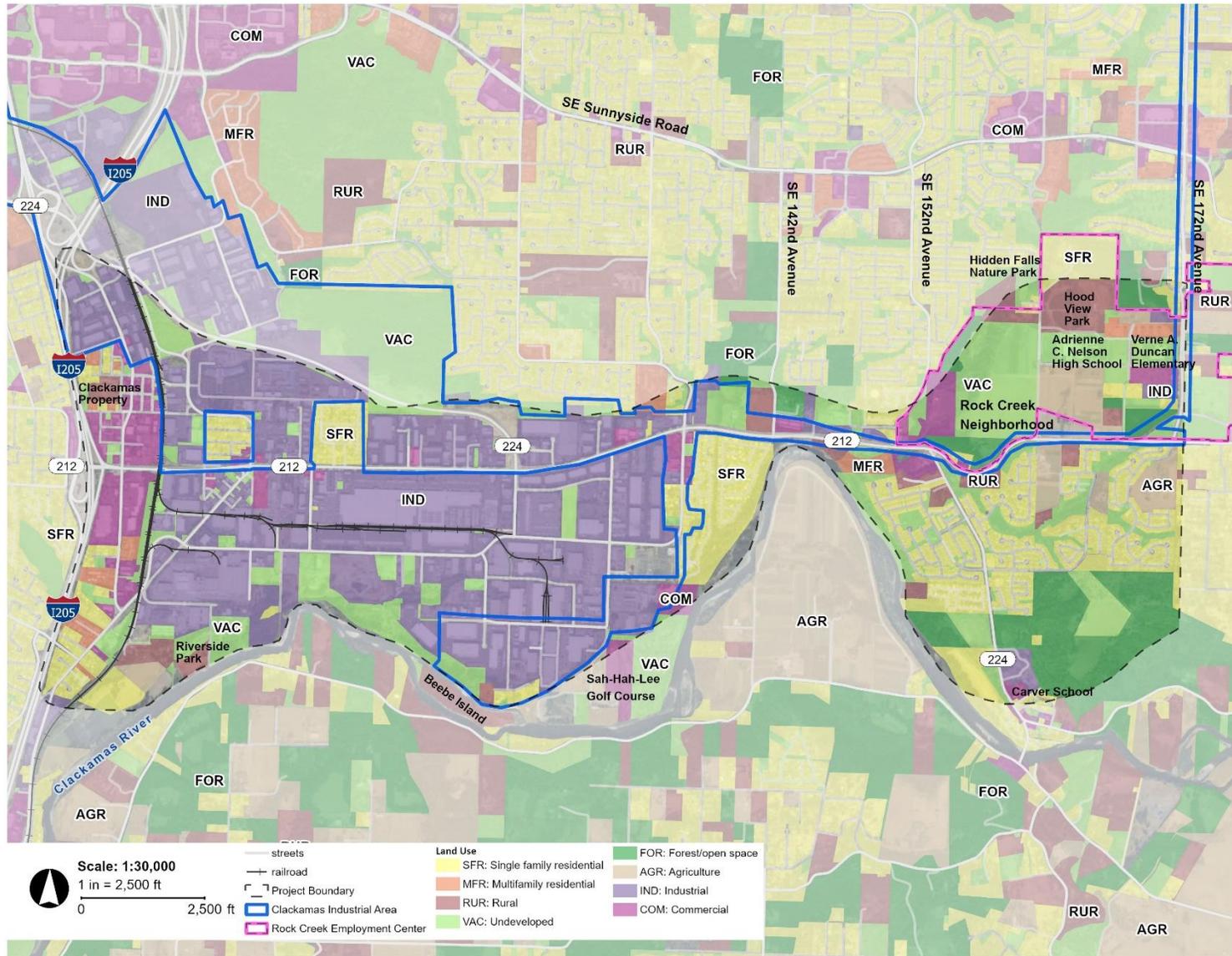
Table 1. Existing Land Use Acreage, Study Area

Land Use Category	Study Area Boundary		Clackamas Industrial Urban Renewal Area		Rock Creek Employment Center	
	Acres	Share	Acres	Share	Acres	Share
AGR: Agriculture	95	3.8%	2	0.4%	64	13.8%
COM: Commercial	152	6.0%	19	3.4%	32	6.9%
FOR: Forest	190	7.5%	9	1.6%	44	9.5%
IND: Industrial	1,012	40.2%	406	71.9%	8	1.7%
MFR: Multifamily residential	36	1.4%	1	0.2%	N/A	N/A
SFR: Single family residential	444	17.6%	27	4.8%	49	10.5%
RUR: Rural	121	4.8%	11	1.9%	71	15.3%
VAC: Undeveloped	470	3.8%	89	15.8%	197	42.4%
Total Acres	2,519	100%	565	100%	465	100%

Source: Metro Regional Land Information System (RLIS)

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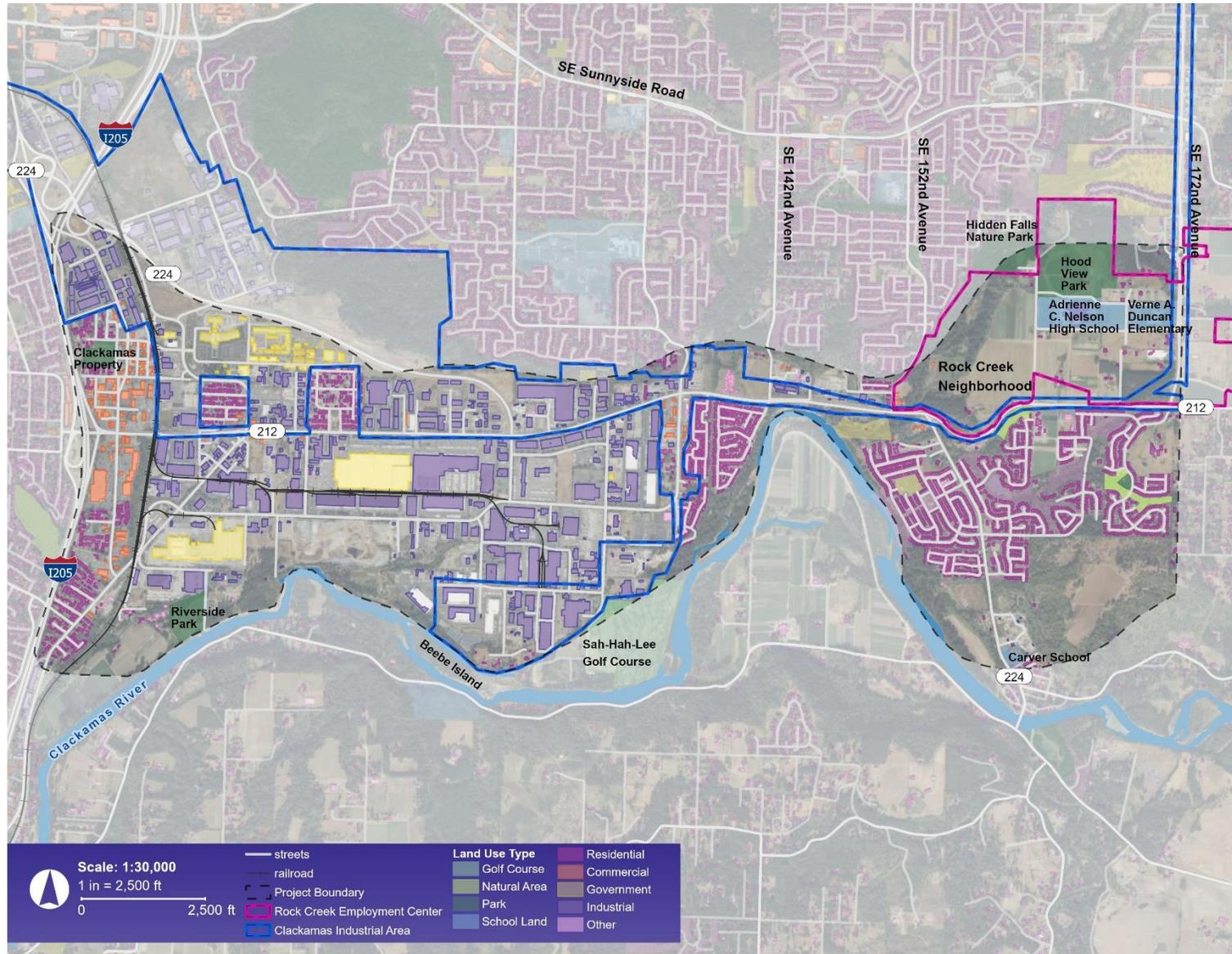
Figure 2. 2023 Study Area Land Uses by Parcel



Source: Metro Regional Land Information System (RLIS), Esri structures, Jacobs

Sunrise Corridor Community Visioning

Figure 3. 2023 Study Area Land Uses by Building Footprint



Source: Metro Regional Land Information System (RLIS), Esri structures, Jacobs

Sunrise Corridor Community Visioning

1.2 Zoning Regulations

Zoning districts for both Clackamas County and the City of Happy Valley are established by each entity's comprehensive plans. The comprehensive plans establish the community's desired land uses, while the zones are set to carry forward the land uses. Metro's Urban Growth Management Functional Plan also defines limits on certain types of development within industrial areas.

Clackamas County

Along the corridor, and throughout the study area, industrial land uses fall within the County's business park (BP), light industrial (LI), and general industry (GI) zoning categories. Residential land uses fall within the County's Urban Low Density Residential (R-7, R-8.5, R-10, R-15), Medium Density Residential (MR-1), and High Density Residential (HDR) zoning categories. Commercial land uses fall within the County's General Commercial (C-3) zone².

City of Happy Valley

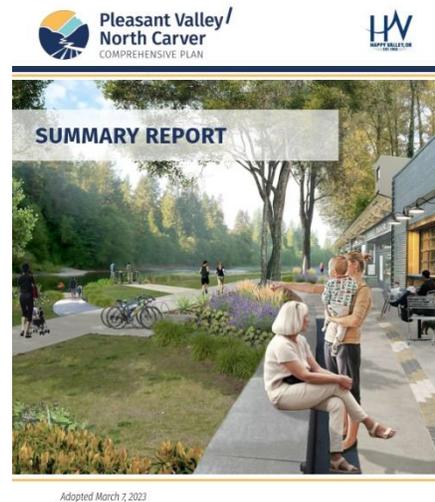
Industrial land uses fall under the City's zoning designations of Institutional and public use district (IPU) and industrial campus (IC). Residential land uses fall under residential (R5, R7) and single-family attached residential (SFA) zoning categories. Commercial land uses within the study area for the City fall within community commercial center district (CCC) and mixed-use employment district (MUE) zones³.

The zoning maps include the west study area (Figure 5) and the east study area (Figure 6) to show enough detail for readers. The corresponding designations in Table 2 provides information about the zones in the study area, categorized by the governing jurisdiction.

Pleasant Valley/North Carver

The Pleasant Valley/ North Carver (PV/NC) Comprehensive plan, adopted in March 2023, is a vision and integrated land use and transportation plan for the 2700-acre addition to happy valley. This plan has an overarching intent to create various concepts, especially in East Happy Valley. It aims to create walkable neighborhoods by recognizing that each residential development is part of a larger community. The plan's Land Use concept applies Happy Valley's hierarchy of land use districts, which includes topography, natural resources, existing development, transportation, complementary land use relationships, and other considerations.

Furthermore, it recommends the creation of a Neighborhood Center consisting of mixed-use housing, public parks, walkable blocks, and connections to the trail networks, a Carver Riverfront District, a comprehensive street network, and parks and open spaces. The Street Plan includes the recommended Highway 224 Realignment Study Area. The vision of the plan is to realign Highway 224 to the base of the Carver Bluff to reduce traffic through Carver, support the creation of the Riverfront District, and reduce congestion.



² <https://dochub.clackamas.us/documents/drupal/7f7f1fb5-e923-4cd1-94bb-e5b473082b70>

³ <https://www.happyvalleyor.gov/business/planning-division/publications-tools/zoning-designations/>

Sunrise Corridor Community Visioning

Table 2. Existing Zoning Designations

Clackamas County	
Zone	Description
R-7, R-8.5, R-10, R-15 Low Density Residential	Low Density Residential areas are those planned primarily for single-family residential and middle housing development, with a range of lot sizes from 2,500 square feet to 30,000 square feet, depending on location, environmental constraints, and other site characteristics.
MR-1 Medium Density Residential	Medium Density Residential areas are those planned for up to 12 units per gross acre (exclusive of density bonuses and conditional uses). This zoning designation is also typically used for manufactured home parks.
HDR High Density Residential	High Density Residential areas are those planned for up to 25 units per gross acre (exclusively of density bonuses and conditional uses).
Business Park (BP)	Designated to accommodate manufacturing, processing, storage, wholesale distribution, and research facilities, as well as other compatible uses. Primary uses in Business Park areas generate no outdoor processing, storage, or display.
Light Industrial (LI)	Designated to accommodate manufacturing, processing, storage, wholesale distribution, and research facilities, as well as other compatible uses. Primary uses in Light Industrial areas generate minimal outdoor storage and no outdoor processing or display.
General Industry (GI)	Designated to accommodate manufacturing, processing, storage, wholesale distribution, and research facilities, as well as other compatible uses. General Industrial areas are intended to allow outdoor processing, storage, and display, with design and operational criteria to mitigate impacts on adjacent uses.
General Commercial (C-3)	Designated for sale of a wide range of goods and services. Trade areas for establishments within this district may be extensive. This category includes uses which may be incompatible with residential areas. Outdoor storage and display are permitted. Manufacturing (excluding primary processing of raw materials, but not excluding manufacturing of edible or drinkable products retailed on the same site), professional offices, and multifamily residential uses are allowed in this land use category.
City of Happy Valley	
Zone	Description
R-7 Residential	Allows dense residential density using small lots and a variation in dwelling types. Generally the maximum density shall be one primary dwelling unit per seven thousand (7,000) square feet of lot area, though there are exceptions.
R-5 Residential	Allows single-family (attached and detached) as well as duplexes, and triplexes within the City. Average five thousand (5,000) square feet with exceptions.
SFA (Single-Family Attached Residential)	Promotes the livability, stability and improvement of Happy Valley's new neighborhoods and to provide opportunities for a variety of medium density residential housing types with a general density range of ten to fifteen (15) dwelling units per acre, as well as certain neighborhood commercial uses.

Sunrise Corridor Community Visioning

City of Happy Valley	
MUE (Mixed Use Employment District)	Provides for the development of office, employment, and low density multifamily residential uses. The MUE neighborhood commercial subdistrict provides for neighborhood scale retail needs.
CCC (Community Commercial Center)	Provides locations for a relatively wide range of small businesses, services and mixed use adjacent to residential areas as a convenience to nearby residents.
IPU (Institutional and Public Use District)	Serves the need for the designation of areas for necessary institutional uses such as schools and churches, and public and semipublic uses such as parks, a local government center and other governmental and public service uses. This district may be located at any place throughout the City, based on a determination by the City that such areas are required.
IC (Industrial Campus District)	Provide a ready supply of developable industrial land for the City. Promote economic development, job creation, sustainable businesses and green building practices, jobs-housing balance, land optimization and freight mobility by preserving large contiguous areas for industrial clusters near existing and planned residential areas and transportation corridors.

Source: Clackamas County Zoning Ordinance, City of Happy Valley Zoning Ordinance. (August 25, 2023). <https://www.clackamas.us/planning/zdo>. <https://www.happyvalleyor.gov/business/planning-division/publications-tools/zoning-designations/>.

Metro

The study area falls within both an Industrial Area and a Regionally Significant Industrial Area (RSIA) according to Title 4: Industrial and Other Employment Areas of Metro Oregon’s Urban Growth Management Functional Plan⁴ (Figure 4). These areas are described to be near the region’s most significant transportation facilities for the movement of freight and storage of goods. Title 4 is intended to provide for and protect the supply of sites for employment and industrial uses to create a strong regional economy, by limiting the size and location of new buildings for retail commercial uses (i.e., stores and restaurants), and retail and professional services that cater to daily customers (i.e., financial, insurance, real estate, legal, medical and dental offices)⁵.

Regionally Significant Industrial Areas (RSIAs):

New buildings for stores, branches, agencies or other outlets for these retail uses and services shall not:

- Occupy more than 3,000 square feet of sales or service area in a single outlet, or
- Multiple outlets that occupy more than 20,000 square feet of sales or service area in a single building or in multiple buildings that are part of the same development project.

Industrial Areas:

New buildings for stores, branches, agencies or other outlets for these retail uses and services shall not:

- Occupy more than 5,000 square feet of sales or service area in a single outlet, or
- Multiple outlets that occupy more than 20,000 square feet of sales or service area in a single building or in multiple buildings that are part of the same development project.

Figure 4: Metro Industrial and Other Employment Areas

⁴ <https://www.oregonmetro.gov/sites/default/files/2016/10/24/IndustrialEmploymentRegional.pdf>

⁵ <https://www.oregonmetro.gov/sites/default/files/2023/12/12/urban-growth-management-functional-plan-20230907.pdf>

Sunrise Corridor Community Visioning

Source: Metro, Title 4, Industrial and Other Employment Areas, Urban Growth Functional Plan (December 15, 2023).



Title 4, Industrial and Other Employment Areas

October 2014



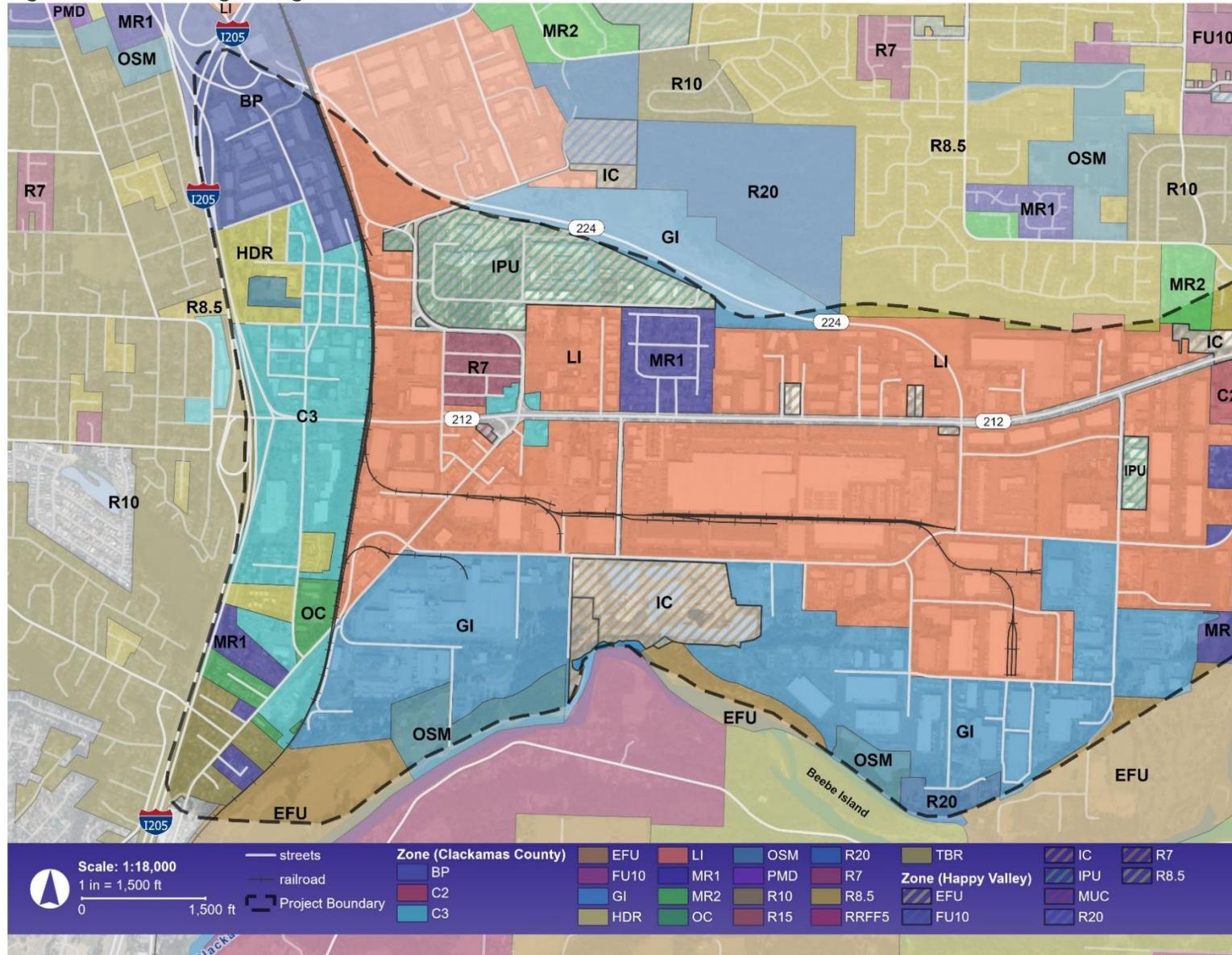
This information on this map was derived from digital databases on Metro's GIS. Care was taken in the creation of this map. Metro cannot accept any responsibility for errors, omissions, or outdated accuracy. Certain circumstances, as noted in legend, including the necessity of responsibility or those for a particular purpose, incorporating this product. However, notification of any errors are appreciated.

- | | | |
|---|------------------------------|-------------------------|
| Employment areas | Proposed main roadway routes | Rail yards |
| Industrial areas | Proposed road connectors | County boundaries |
| Regionally significant industrial areas | Mainline freight | Urban growth boundaries |
| | Branch line freight | Neighbor cities |



Sunrise Corridor Community Visioning

Figure 5. 2023 Existing Zoning West Area



Source: Metro Regional Land Information System (RLIS), Clackamas County, City of Happy Valley, Jacobs

Sunrise Corridor Community Visioning

1.3 Parking

Automobile parking space requirements apply to all land use categories for both Clackamas County and the City of Happy Valley – Section 1015 of the County’s Development Code and Title 16 of the City’s Development Code. Both jurisdictions require minimum parking standards but allow for reductions in minimum based on certain criteria. Bicycle parking is also required for all land use categories in Clackamas County and Happy Valley.

Clackamas County

- **Automobile Parking:** Minimum parking spaces are required based on 1,000 square feet of gross leasable area (refer to Table 10115-1). Minimum standards can be reduced by 40 percent for multifamily dwelling units on sites within a one-quarter mile walking distance of a light rail station. Walking distance is measured along public roads, walkways, or accessways⁶.
- **Bicycle Parking:** Minimum parking spaces are required based on specific elements of each land use (i.e., 2 spaces per classroom at a school). Refer to Minimum Required Bicycle Parking Spaces for number of spaces per land use category⁷.

City of Happy Valley

- **Automobile Parking:** Minimum parking space quantities vary depending on the proposed use of the space. For example, the minimum parking spaces for residential zoning is determined based on the number of dwelling units. Parking for commercial and industrial zones are typically determined based on 1,000 square feet of gross floor area. Transit and pedestrian accessible areas, defined as those with twenty-minute peak hour transit service available within a quarter-mile walking distance for bus transit or one-half mile walking distance for light rail transit, are permitted to have fewer minimum parking spaces. See Table 16.43.030-1 Automobile Parking Standards within the City’s Municipal Code for minimum parking by proposed use⁸.
- **Bicycle Parking:** Minimum parking spaces vary depending on the proposed use of the space or size of the space (i.e., 1.5-4 spaces per classroom at a school or 0.3-2 spaces per 1,000 sq ft. of gross floor area). Some uses also require a percentage of bicycle spaces to be used as long-term bicycle parking. See Table 16.43.030-1 for details⁹.

CLIMATE-FRIENDLY AND EQUITABLE COMMUNITIES

In 2022, Oregon passed new Climate-Friendly and Equitable Community (CFEC) rules to help reduce climate pollution in the transportation sector. The new rules require cities over 50,000 (the Portland Metro area) to adjust parking standards, to better plan for mixed use “climate-friendly” areas where residents, workers, and visitors can meet most of their daily needs through other transportation means.

Starting January 1, 2023, CFEC eliminates minimum off-street parking requirements in certain situations. Minimum parking will no longer be required for certain types of development, such as smaller housing types. Off-street parking minimums will also no longer be required within one-half mile walking distance of frequent transit corridors.

Local agencies will work with the State to identify the changes needed, if any, through local planning.

⁶ <https://dochub.clackamas.us/documents/drupal/e17fc9ae-58be-4e81-9837-738723c036ee>

⁷ Ibid.

⁸ [16.43.040 Bicycle parking standards. \(qcode.us\)](#)

⁹ [16.43.040 Bicycle parking standards. \(qcode.us\)](#)

Sunrise Corridor Community Visioning

1.4 Community Resources

Community resources for this existing conditions assessment include land uses such as schools, medical facilities, parks and open spaces, and libraries. The community assets listed in this section are shown in Figure 7.

1.4.1 Schools

10 public school districts operate within Clackamas County and serve students in grades K-12. North Clackamas School District operates four schools located within the study area or just outside the study area boundary (Table 3). There are also several preschools, charter schools, and Montessori schools in both the county and Happy Valley, but not within the project study area.

Table 3. Study Area Public Schools

North Clackamas School District	Enrollment	Distance to Nearest Intersection
Verne Duncan Elementary School	417	680 feet to SE 172 nd Ave and SE Rock Creek Blvd
Sunnyside Elementary School	428	480 feet to SE Sunnyside Rd and SE 132 nd Ave
Rock Creek Middle School	854	460 feet to SE Summers Ln and SE 132 nd Ave
Clackamas High School	1,354	900 feet to SE 122 nd Ave and SE Summers Ln
Adrienne C. Nelson High School	1,029	640 feet to SE 162 nd Ave and SE Stadium Way

Source: North Clackamas School District

1.4.2 Medical Facilities

Five medical facilities are located just north of the study area, east of I-205 and along SE Sunnyside Rd. These facilities provide services in emergency and urgent care, psychiatric services, and general medical care and social services (Table 4).

Table 4. Study Area Medical Facilities

Medical Facilities	Distance to Nearest Intersection
Clackamas County Community and Mental Health Clinic	430 feet to SE Sunnyside Rd and I-205
Kaiser Permanente Sunnyside Medical Center	880 feet to SE Sunnyside Blvd and SE 97 th Ave
Providence Medical Clinic	150 feet to SE Sunnyside Blvd and SE 93 rd Ave
Northwest Primary Care Happy Valley Clinic	400 feet to SE Sunnyside Rd and SE 162 nd Ave
Providence Medical Clinic and Immediate Care	180 feet to SE Sunnyside Rd and SE 162 nd Ave
Sunnyside Dentistry	290 feet to SE Sunnyside Rd and SE 142 nd Ave

Source: Google Maps search and distance measurements. (August 28, 2023)

Sunrise Corridor Community Visioning

1.4.3 Parks and Open Spaces

The parks and open spaces within, or near the study area, are managed by Oregon Metro, North Clackamas Parks and Recreation District, and Clackamas County. Mt Talbert Nature Park and Hidden View Park are primarily forested hiking trails, Riverside and Carver Parks provide access to the Clackamas River, and all other parks have a combination of picnic areas, shelters, playgrounds, and sports facilities (Table 5).

Table 5. Study Area Parks and Open Spaces

Agency	Park	Acreage
North Clackamas Parks and Recreation District	Trillium Creek Park	1
	Pioneer Park	2
	Garret Pointe Park	1
	Hidden Falls Nature Park	21
	Hood View Park	36
Oregon Metro	Mt Talbert Nature Park	221
Clackamas County	Riverside Park	13
	Carver Park	6

Source: North Clackamas Parks and Recreation District, Oregon Metro, Clackamas County

1.4.4 Libraries

The City of Happy Valley's Happy Valley Library is the only library located near the study area, just south of SE Sunnyside Rd. In addition to regular library programming for children and families, the Happy Valley Library provides the Cultural Pass Express for community members to gain instant online access to free and low-cost passes to local cultural amenities, such as museums and gardens.

Sunrise Corridor Community Visioning

1.5 Appendix

1.5.1 Landscaping Standards

Clackamas County and The City of Happy Valley both require all land uses to comply with their respective jurisdictional landscaping standards. **Error! Reference source not found.** summarizes the basic landscaping standards of each jurisdiction.

Clackamas County

Generally, Clackamas County landscaping standards require hardy and low-maintenance landscaping, with an emphasis on fast-growing plants. Details on the landscaping standards and requirements can be found in Landscaping Section 1009 within the County's Development Standards. Minimum landscaping standards are based on a percentage of the property area that shall be landscaped¹⁰.

City of Happy Valley

The City of Happy Valley requires that all properties are maintained to uphold a pleasant community character, unify developments, buffer or screen unsightly features, soften or buffer large scale structures and parking lots, and to aid in energy conservation by providing shade from the sun and shelter from the wind. General requirements for landscaping can be found in more detail in the City's Municipal Code 16.42.030 Landscaping standards¹¹. Section B of Code 16.42.030 outlines the required minimum area that shall be landscaped, based on use¹².

Table 6. Landscape Standards

Agency	Land Use	Percent of Landscaped Area
Clackamas County	Business parks, industrial uses, and general commercial uses	15 percent
	Low density residential land uses	25 percent for conditional uses
	Medium and high-density residential uses	25 percent except 20 percent for townhouses in the MR-1 and MR-2 Districts
City of Happy Valley	Single-family detached, single-family attached dwellings, duplexes, triplexes and fourplexes	20 percent. Minimum 50 square feet of landscaping shall be located in front of dwellings.
	Multifamily dwellings containing five or more units	20 percent
	Nonresidential uses (e.g., commercial, industrial, institutional, or civic)	15 percent

Source: Clackamas County Zoning Ordinance, City of Happy Valley Zoning Ordinance. (August 25, 2023).
<https://dochub.clackamas.us/documents/drupal/f39bcad9-91cb-43ae-ba76-502871bccafd>.
https://library.qcode.us/lib/happy_valley_or/pub/municipal_code/item/title_16-article_16_4-chapter_16_42-16_42_030.

¹⁰ <https://dochub.clackamas.us/documents/drupal/f39bcad9-91cb-43ae-ba76-502871bccafd>

¹¹ https://library.qcode.us/lib/happy_valley_or/pub/municipal_code/item/title_16-article_16_4-chapter_16_42-16_42_010

¹² Ibid.

Date: January 18, 2024

To: Sunrise Corridor Visioning Team

From: Allina Cannady, Leah Fisher, Clackamas County Public Health Department

Subject: **Existing Conditions in the Study Area – Health Indicators and Outcomes**

The purpose of this memorandum is to identify and assess a number of elements of the built and natural environment within the Sunrise Corridor Vision Study Area that affect the health of people living, working, and visiting the study area. The project study area is around the OR212/OR224 corridor in Clackamas County, stretching from the eastern edge of I-205 west to roughly SE 172nd Avenue, and from the Clackamas County line to the Clackamas River.

Health indicators and outcomes listed below do not include every possible intersection of the built environment and health and topics below were prioritized based on the unique characteristics of this study area, the project purpose, and areas of concerns. This memorandum includes data and information on: transportation, mobility, and access; health outcomes; and pollution and environmental exposures. This report compares data within census tracts in the study area and County-level data to understand local context within the larger county context.

1. Transportation, Mobility and Access

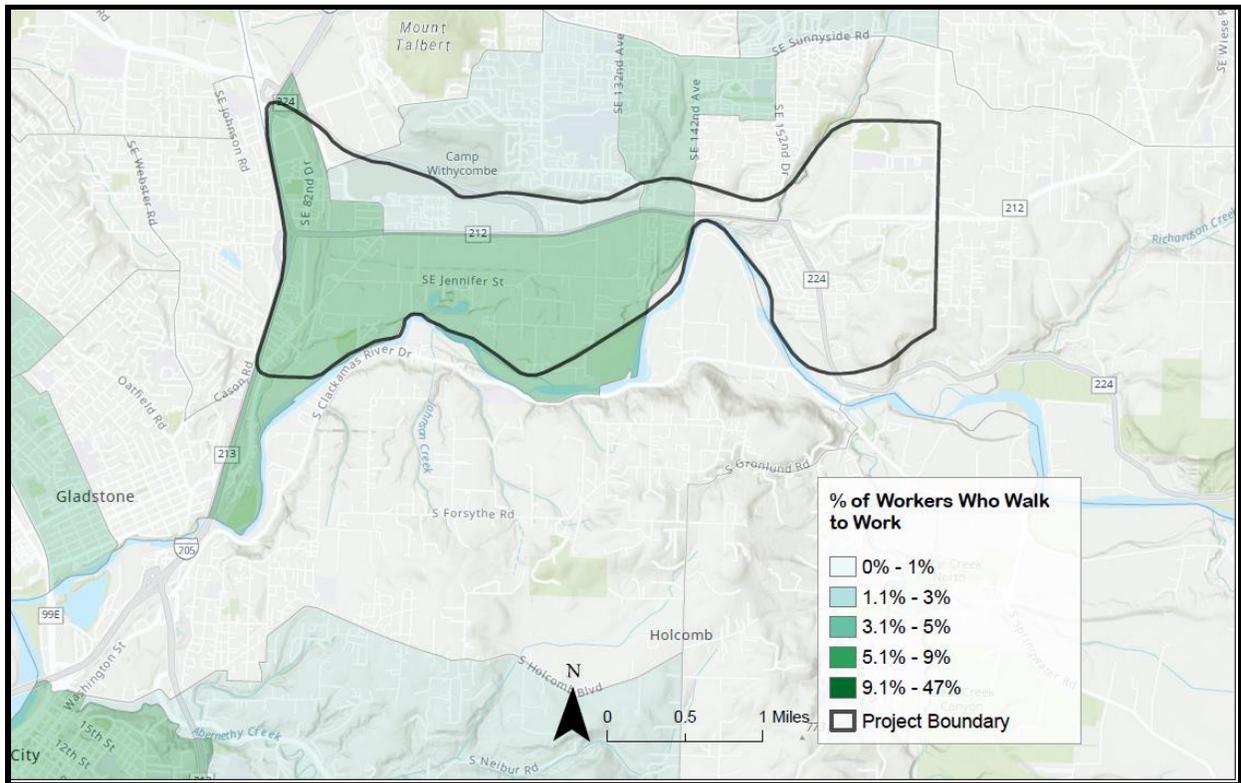
We all rely on the transportation system everyday to get from home to school, work, and other destinations. People 65 and older, younger than 18, Communities of Color, people with Hispanic/Latino ethnicity, low-income households, people with limited English proficiency and people with one or more disabilities may face greater transportation barriers. These individuals may be more likely to depend on alternative transportation modes like walking, biking or public transit, often live in areas with poor transit service, fewer destinations, and poor connectivity due to historical disinvestment and underinvestment. These burdens can increase transportation costs, increase stress, and create unequal access to economic and educational opportunities, housing, healthy foods, and opportunities for physical activity – all of which have direct impacts on health and vitality.¹ Refer to the Business and Community Memo to better understand the demographics of who lives in the study area.

1.1. Vehicle Ownership and Commute Mode

People without access to a vehicle are more likely to be dependent on other transportation modes, like public transportation or walking. Approximately 9.6% of households within the

¹ Upstream Public Health, “Transportation Health Equity Principles”, <https://www.ctdatahaven.org/sites/ctdatahaven/files/Upstream%20Transportation%20Health%20Equity%20Principles.pdf>

Figure 3. Percentage of workers aged 16 years and over who commute to work by walking.

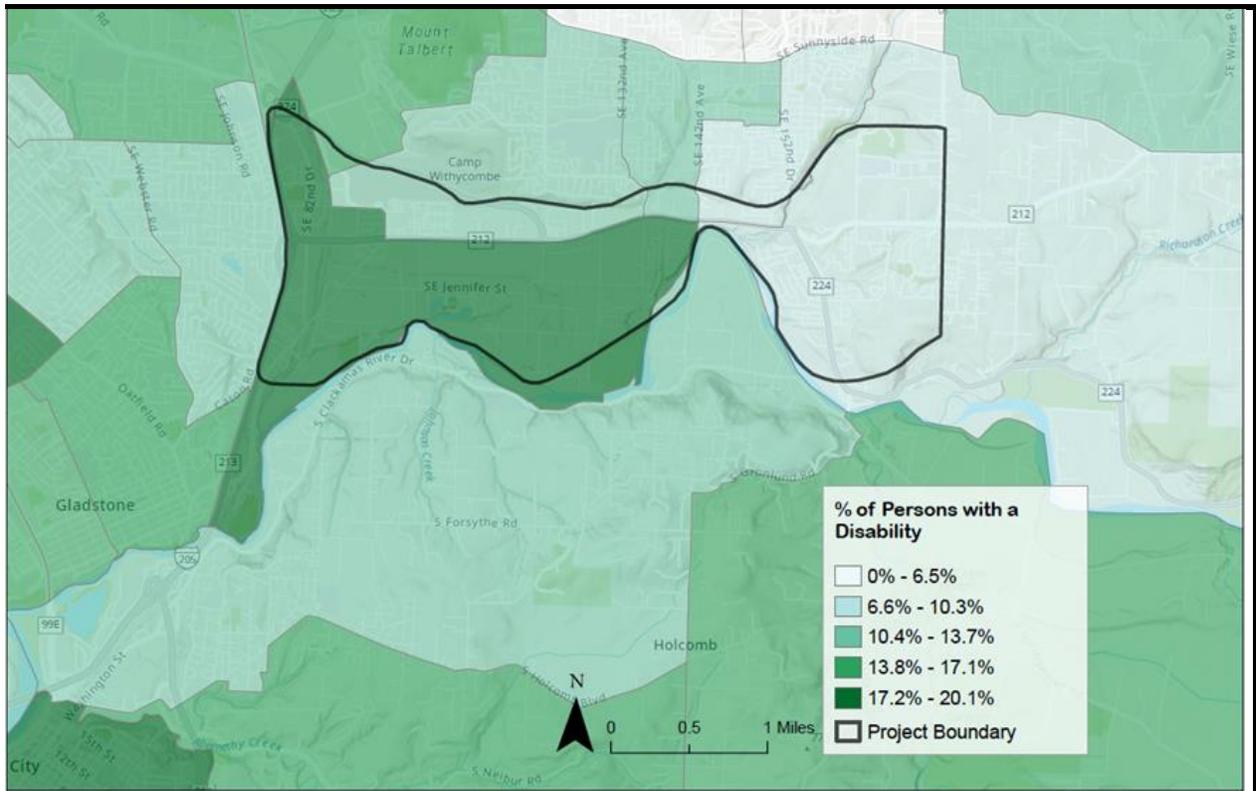


Source: 2017-2021 American Community Survey.

1.2. Disability & Accessibility

The built environment significantly affects people with physical, mental, or emotional disabilities. A higher percentage of people living in the west side of the study area have a disability compared to the County average (17.5% vs. 11.8%, respectively), seen in Figure 4.

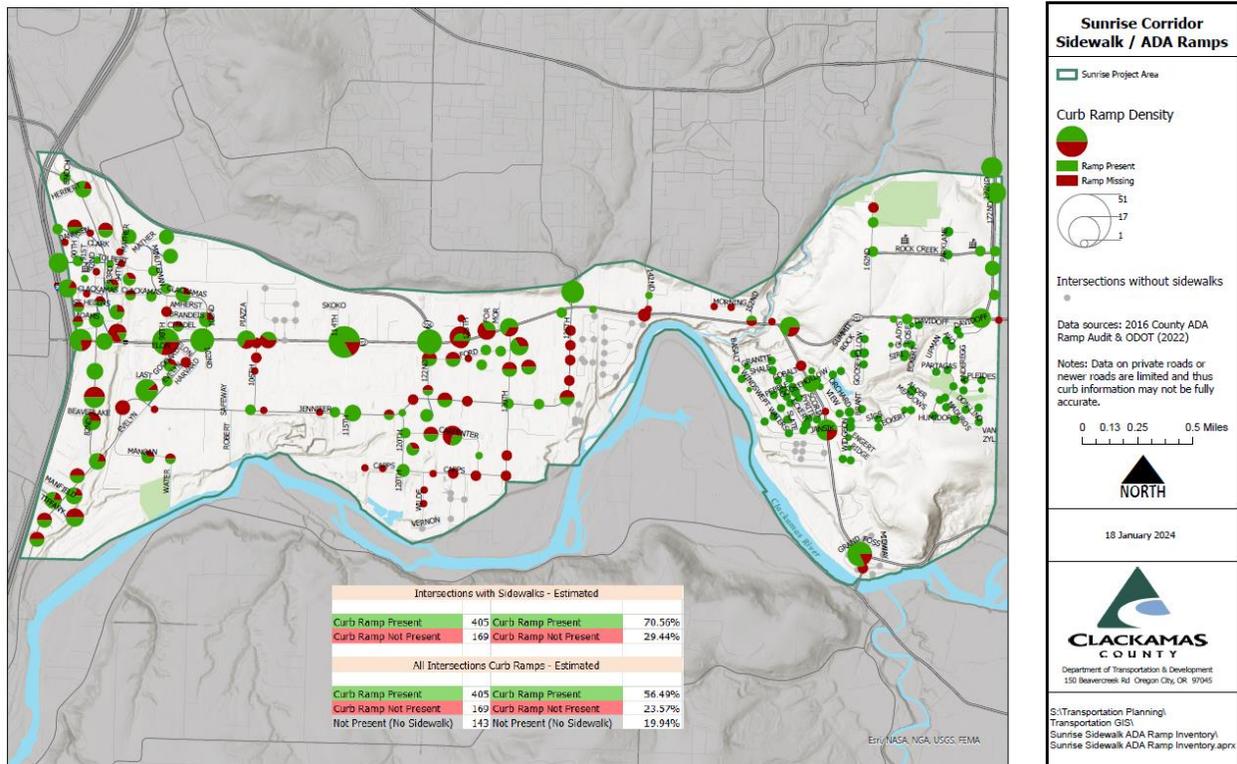
Figure 4. Percentage of people that are limited due to a physical, mental, or emotional condition.



Source: 2017-2021 American Community Survey

An inclusive built environment, such as curb ramps and accessibility to public transportation, can enhance independence, mobility, and social participation for people with disabilities. As seen in Figure 5, the study area overall has a strong presence of (Americans with Disabilities Act) ADA ramps (70.57% for intersections with sidewalks), however, the distribution of ADA curb ramps is not equal within the study area. The newer housing development in the eastern portion of the study area and sidewalks near the schools have a higher presence of ADA ramps, while sidewalks in the western portion of the study have a lower presence of ADA ramps.

Figure 5. ADA Ramps Present and not Present within the Study Area



While ADA curb ramps are one important aspect of a safe and accessible built environment for people with disabilities, additional elements of accessibility includes a complete sidewalk network (See Figure 6), sidewalks and pavement in good repair, signs with braille, verbal and visual announcements at crossings, and infrastructure at the destination such as: ADA parking spaces, step-free access into buildings, ramps, step-free points of access and elevators is also important. Data was not available on these features within the study area.

1.3 Walking and Biking Infrastructure

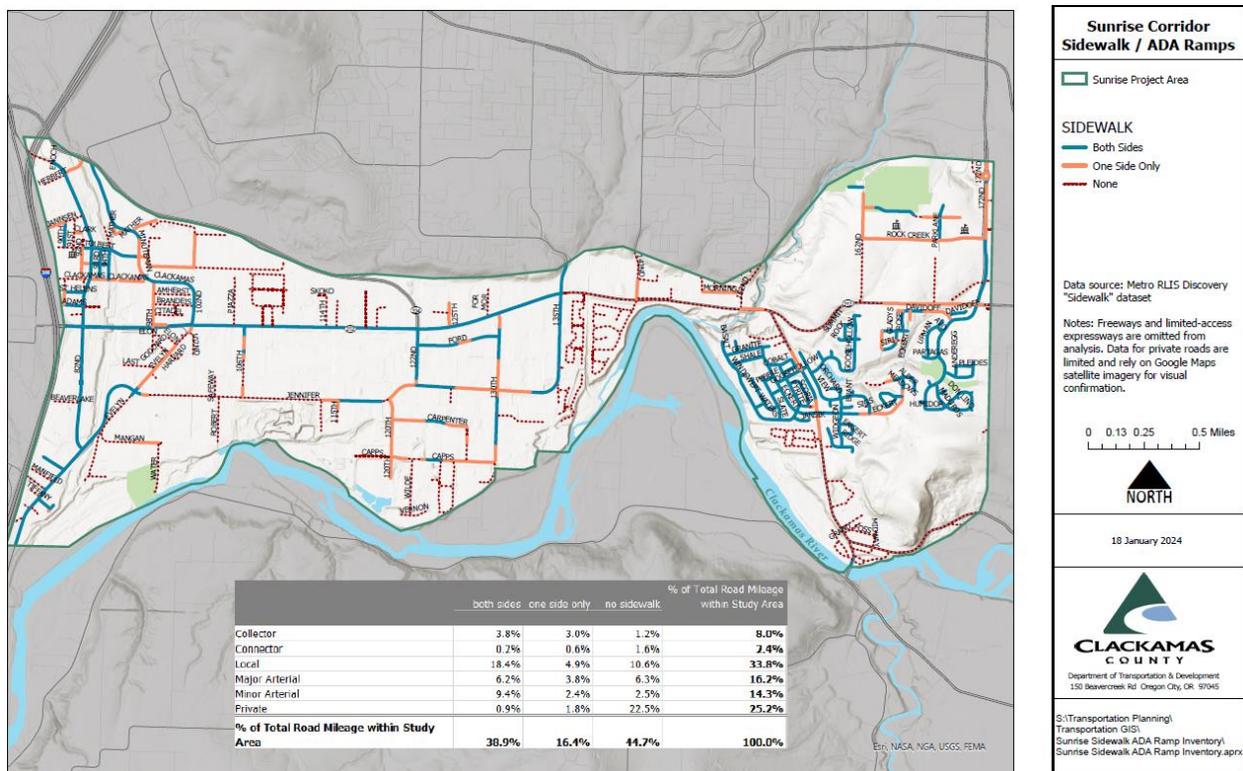
Presence of safe and complete infrastructure, like sidewalks, ramps, bike lanes, safe crossings, and traffic calming elements, help to reduce barriers to walking and biking and create access to goods, services, jobs, and transit stops for people who depend on alternative modes of transportation. Additionally, studies show that people who live near (within 1/2 mile or 15 minutes walking) safe, high-quality biking and walking infrastructure tend to get more exercise than people who don't, particularly among participants without a car.²

² American Journal of Public Health, "New Walking and Cycling Routes and Increased Physical Activity", 2014, <https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2014.302059>

Cross-referencing other existing conditions memorandum there are a number of key destinations within, and adjacent to, the study area worth walking or biking to/from if safe and complete infrastructure is available. The study area has a variety of jobs, schools, basic amenities like a grocery store and pharmacy, health care facilities, shopping, recreation amenities and trails.

According to Figure 6 below, the sidewalk network within the study area is approximately half complete with some gaps along major roadways like OR212. The newer development in the eastern portion of the study area has a higher presence of sidewalks on both sides of the road compared to the major mobile home parks in the western portion of the study area. Additionally, some gaps exist in key areas connecting residential to schools and around parks.

Figure 6. Sidewalk Network within the Study Area



According to maps and information available in Clackamas County’s Draft Walk Bike Plan, bicycle facilities in the study area exist along OR212 and a small portion of OR224, parts of 82nd Avenue, 135th Avenue and SE Jennifer Street. The majority of bicycle facilities within the study area consist of unprotected bike lanes adjacent to vehicle travel lanes with high volumes and speeds.

Figure 7. Bikeways within the Study Area

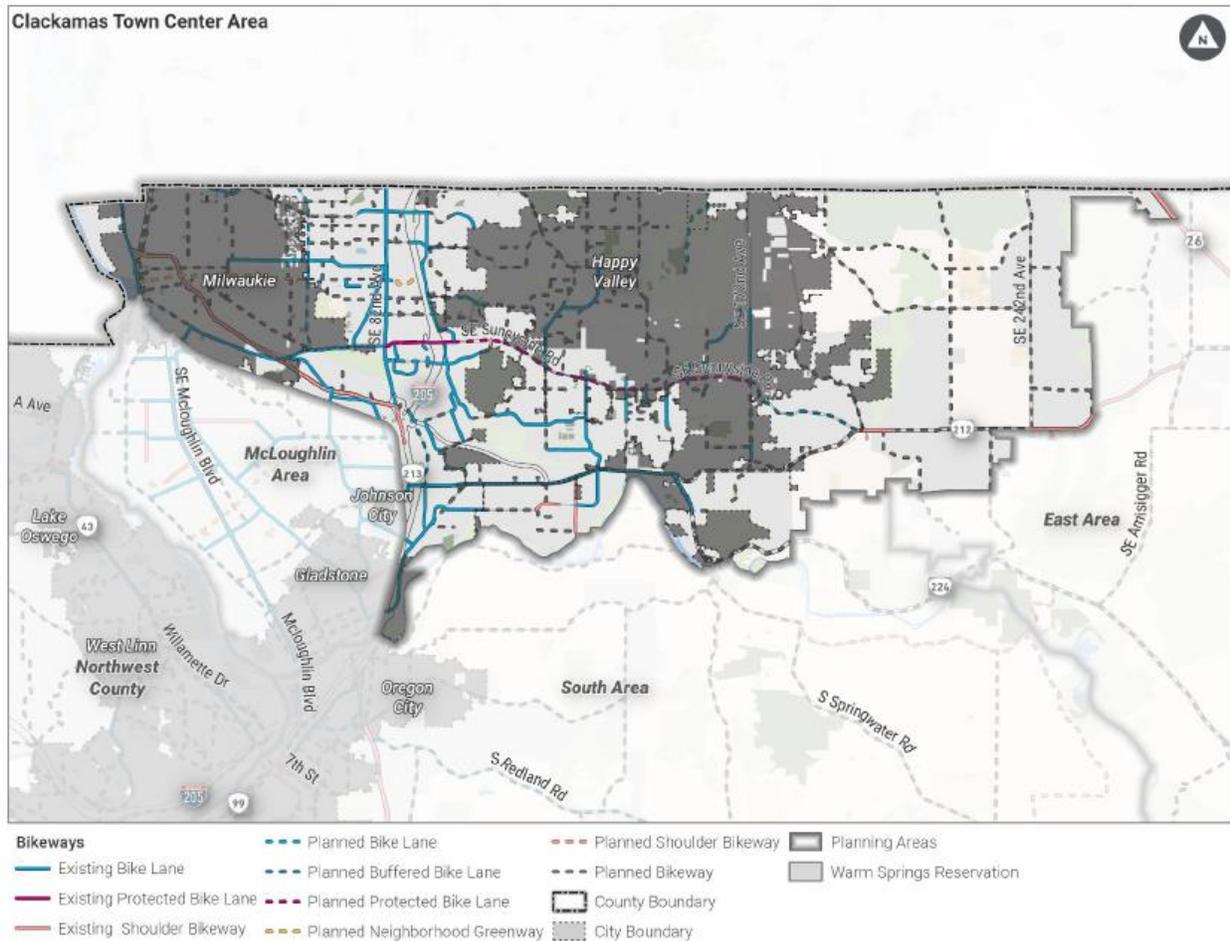


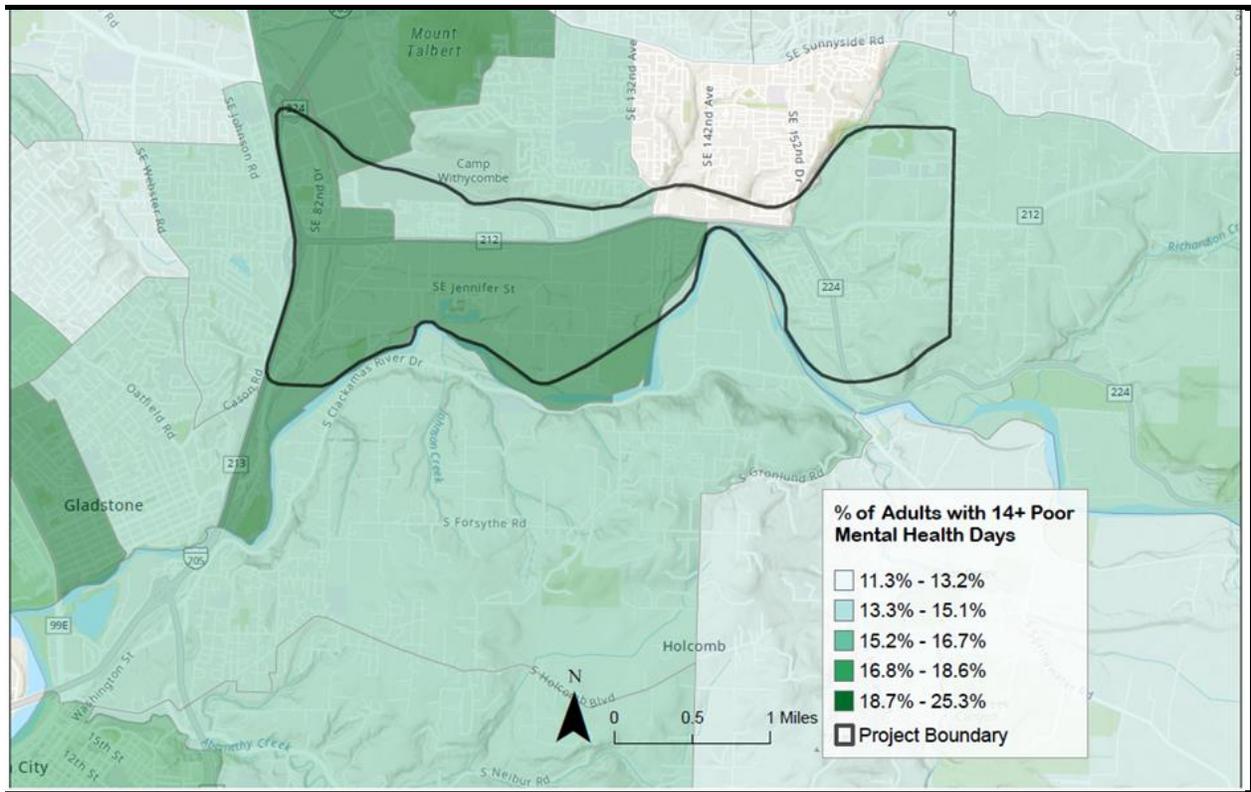
Figure 7 shows the bikeways within the Greater Clackamas Industrial Area, of which, the study area is south. There are 42.9 miles of existing bikeways (including off-street bikeways) and 60.8 miles of planned bikeways (including off-street bikeways) in the Greater Clackamas Study Area. Overall, the Walk Bike Clackamas Plan indicates that bicycle facilities in this area are sparse and have opportunities to improve connectivity. The Interstate 205 trail, running parallel to the highway, provides an off-street shared use path that provides connectivity to the Clackamas Industrial Area and Town Center, but lacks an existing connection from the study area.

2. Health Outcomes and Risk

2.1. Mental Health

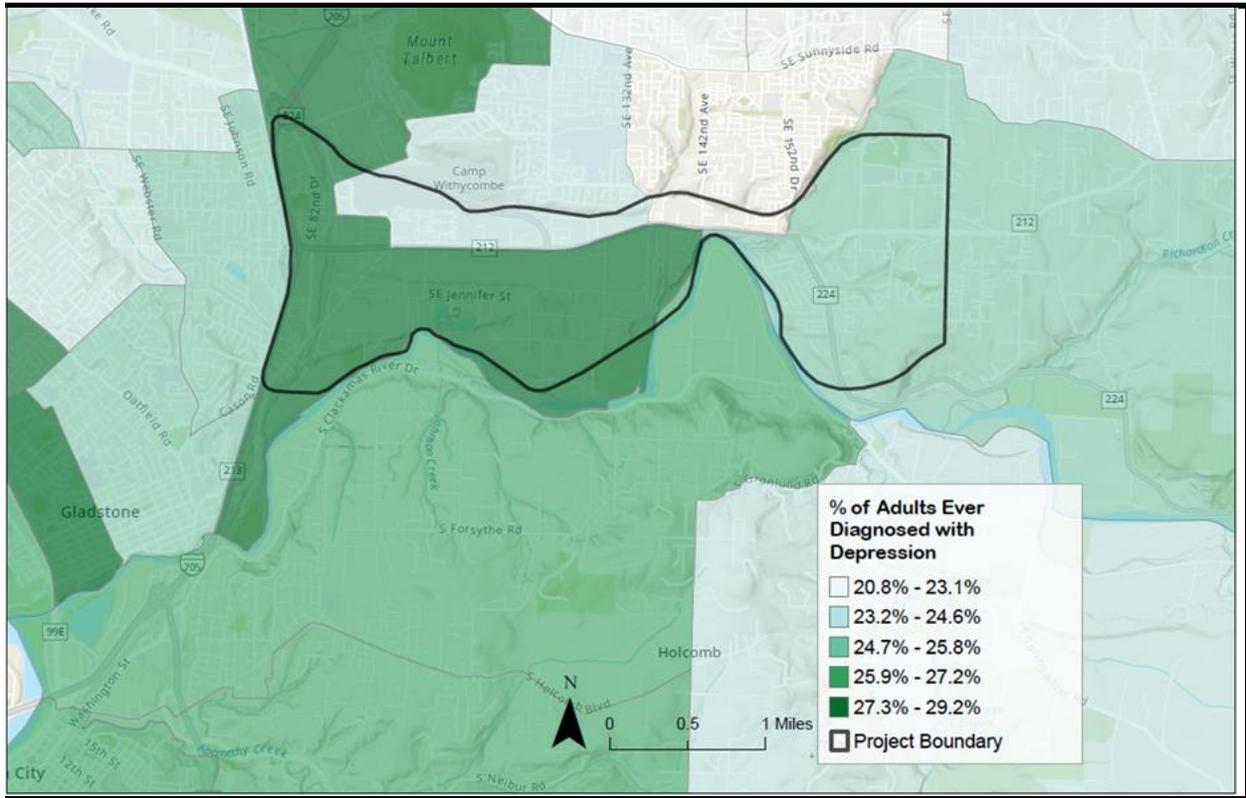
Mental health can be significantly impacted by built environment. Many of the factors that have a positive influence on a person's physical health can also positively affect a person's mental health. Well-designed urban planning can encourage social interactions and physical activity, promoting positive mental health outcomes. The west side of the study area ranks poorly in terms of mental health outcomes, with one of the highest percentages of adults with depression and poor mental health in the County (Figure 8 and 9).

Figure 8. Percentage of adults aged 18 years and over who stated that their mental health was not good 14 or more days in the past month.



Source: CDC PLACES, 2021

Figure 9. Percentage of adults aged 18 years and over with depression.



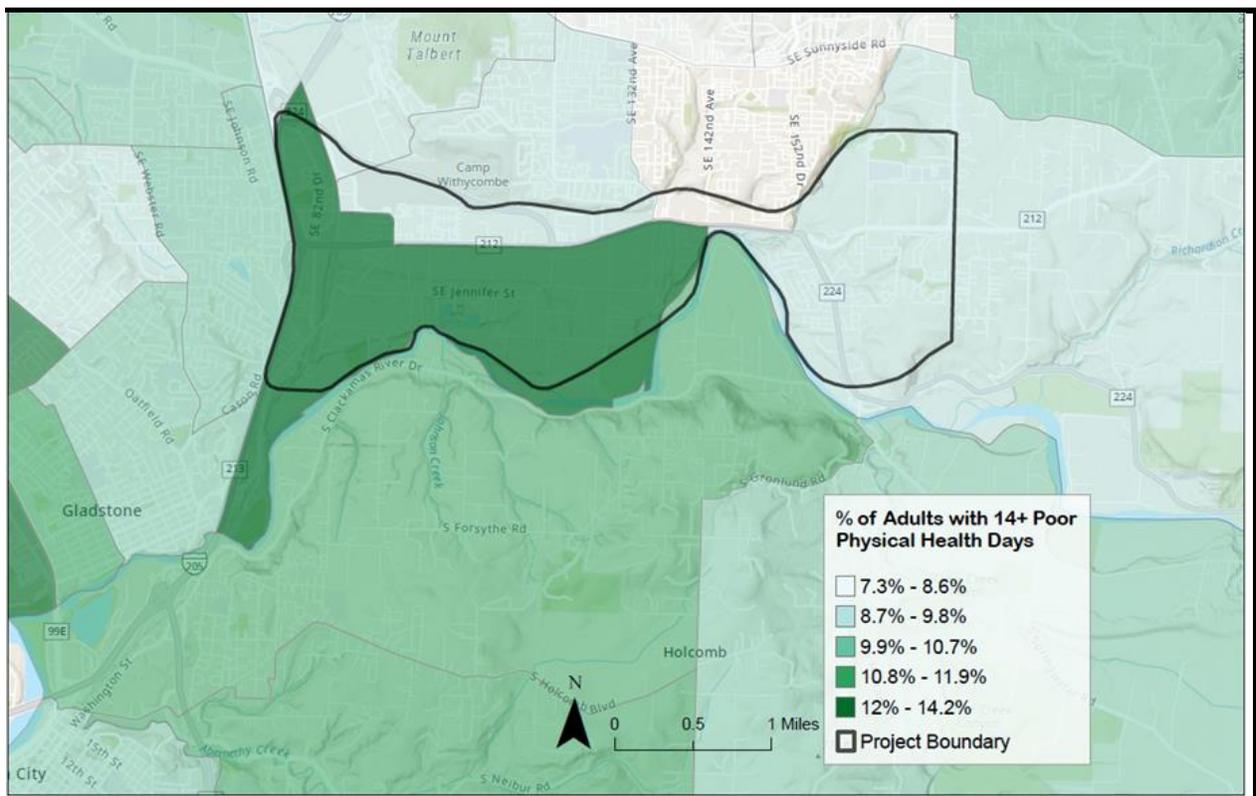
Source: CDC PLACES, 2021

2.2. Physical Health

Physical health is how well your organs and body systems function. It includes a healthy weight and body composition, ability to perform daily activities without pain, and a strong resistance to illness or fatigue. Physical health is often linked to one’s built environment. The availability and connectedness of sidewalks, parks, trails, healthy food, healthcare facilities, and other neighborhood characteristics influence physical activity levels, obesity, heart disease, diabetes, and other health conditions.³

The west side of the study area has the highest percentage of adults experiencing poor physical health and obesity in the County (Figure 10 and 11). Additionally, when people feel healthy, they are more likely to participate in their community socially and economically.

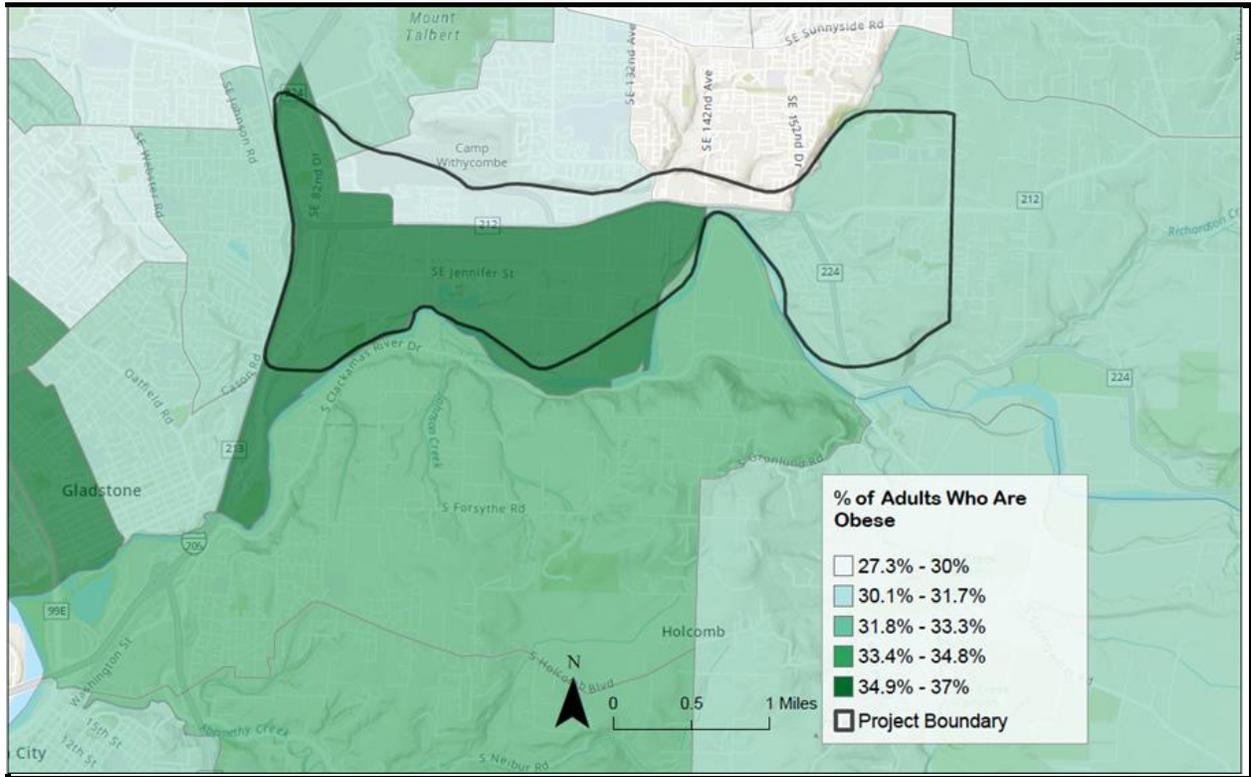
Figure 10. Percentage of adults aged 18 years and over who stated that their physical health was not good 14 or more days in the past month.



Source: CDC PLACES, 2021

³ US Department of Transportation, "Proximity to Roadways", 2015, <https://www.transportation.gov/mission/health/proximity-major-roadways>

Figure 11. Percentage of adults aged 18 years and over who are obese according to the Body Mass Index (BMI)



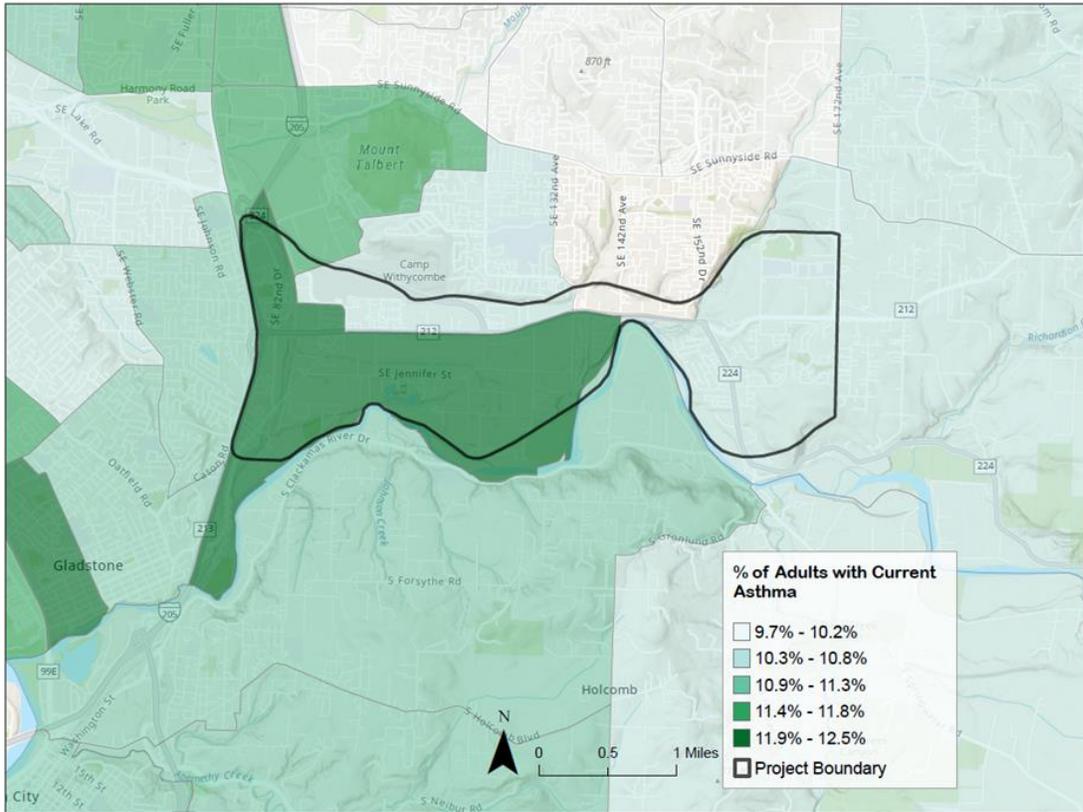
Source: CDC PLACES, 2021

2.3. Asthma

Asthma is a chronic lung disease that affects people of all ages. Symptoms can include coughing, wheezing, shortness of breath and chest tightness and can be mild or severe based on a number of biological, environmental and behavior factors. Although asthma is a manageable condition, in extreme cases it can result in hospitalization and even premature death.

Characteristics of the build environment, like proximity to tobacco retailers, outdoor air quality, and the quality of housing stock (exposure to mold, dust mites) can result in higher rates of asthma in a geography and/or heightened asthma symptoms or health outcomes due to increase exposure to toxins. Currently, the study area experiences overall a higher burden of asthma compared to the rest of the County (12.2% vs 10.6%, respectively). As seen in Figure 12, the census tract in the western portion of the study area south of OR212 is experiencing the highest rates overall.

Figure 12. Percentage of adults aged 18 years and over who have been told by a health care provider that they currently have asthma.



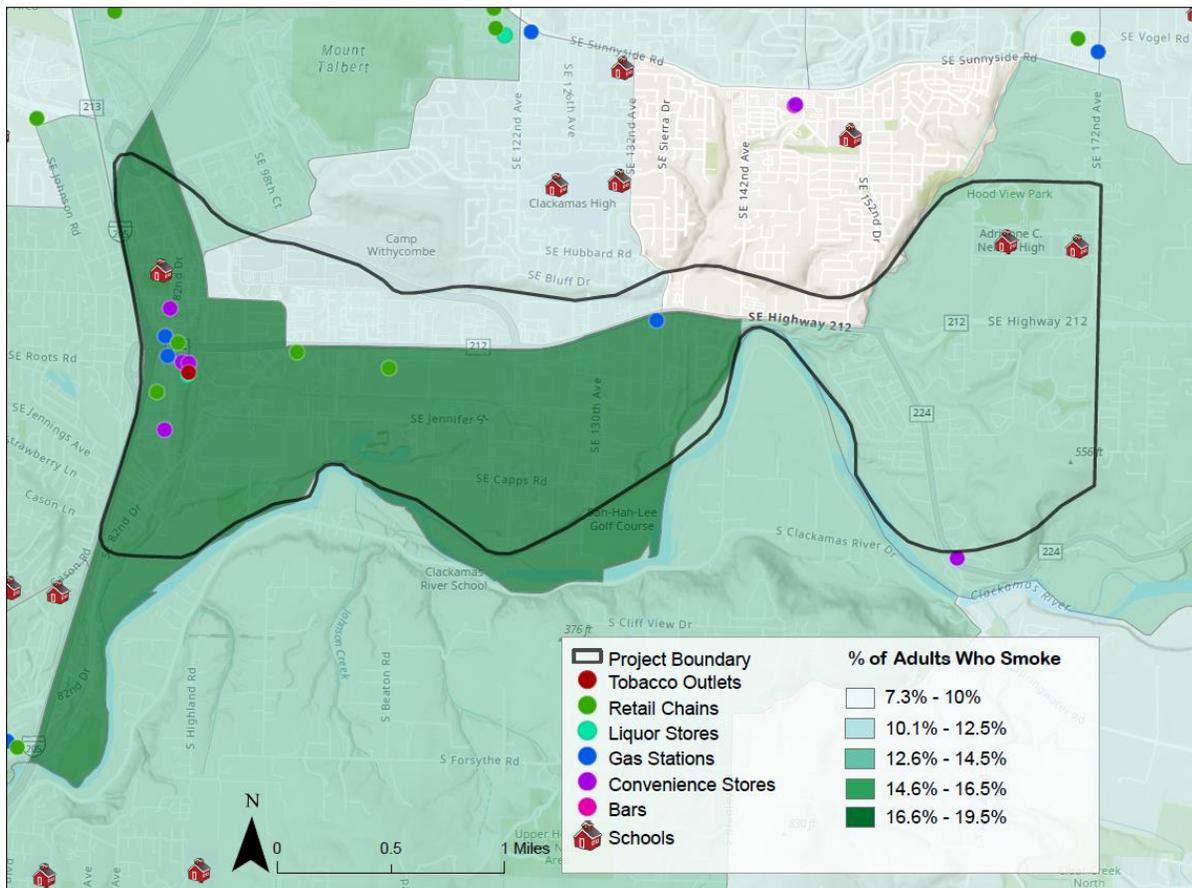
Source: CDC PLACES, 2021

2.4 Smoking and Tobacco Retailers

Tobacco use continues to be the number-one cause of preventable death and disease in Oregon.⁴ People living with lower incomes, less education, and marginalized social groups smoke at higher rates than other social groups.⁵ Tobacco retailers are often more concentrated in lower income communities and communities of color and tobacco density and proximity are associated with higher rates of tobacco use.

The study area has 13 tobacco retailers, mostly clustered around the intersection between I-205 and OR212. The west side of the study area also has the highest rate of adults who smoke in the County, with an estimated 19.5% of adults who smoke (Figure 13).

Figure 13. Tobacco Retailers and Percent of Adults Who Smoke



Source: Oregon Department of Revenue, 2023 & CDC PLACES, 2021

⁴ Oregon Health Authority (OHA), "Oregon Tobacco Facts" <https://www.oregon.gov/oha/PH/PreventionWellness/TobaccoPrevention/Pages/oregon-tobacco-facts.aspx#:~:text=Tobacco%20use%20affects%20all%20Oregonians.%20Tobacco%20use%20is,in%20medical%20expenses%20and%20lost%20productivity%20%28Table%202.4%29.>

⁵ *ibid*

Figure 14, indicates the west side of the study area, right off of I-205 and OR212, is exposed to the highest volume of traffic in the study area and the County.

Health impacts from lands uses and transportation infrastructure with high environmental noise exposure and proximity to residential uses appears relevant in this study area, however, additional measures and study would need to be conducted to understand who and what areas are most impacted.

3.2. Outdoor Air Pollution

Outdoor air can include a number of pollutants associated with a variety of negative human health impacts such as heart attacks, asthma attacks, bronchitis, hospital and emergency room visits, work and school days lost, restricted activity days, respiratory symptoms, and premature mortality.⁷ Air pollution can have the greatest impact on sensitive populations, identified by the EPA, as children, elderly, and people with asthma. It can cause babies to be born premature and raises the baby's risk of health complication in the short and long term.⁸

Heightened outdoor air pollution in the built environment is most often attributed to proximity to freeways and major roadways, construction activities/sites, and industrial land uses or freight-dependent industries.

According to available air quality data, the study area is exposed to a relatively average amount of ozone, diesel particulate matter (PM), and PM2.5 compared to the rest of the County (Figures 15, 16 and 17). These exposures fall within the EPA standards.^{9, 10} However, given the point sources (traffic, manufacturing uses, freight) within the study area, factors of heat and air quality, and a lack of tree canopy, ongoing monitoring and site-specific measurements within the study area would be helpful to inform site-specific mitigation strategies and limit pollution exposure to residents, employees, and visitors.

⁷ United States Environmental Protection Agency (EPA), "Outdoor Air Quality", 2023, [Outdoor Air Quality | US EPA](#)

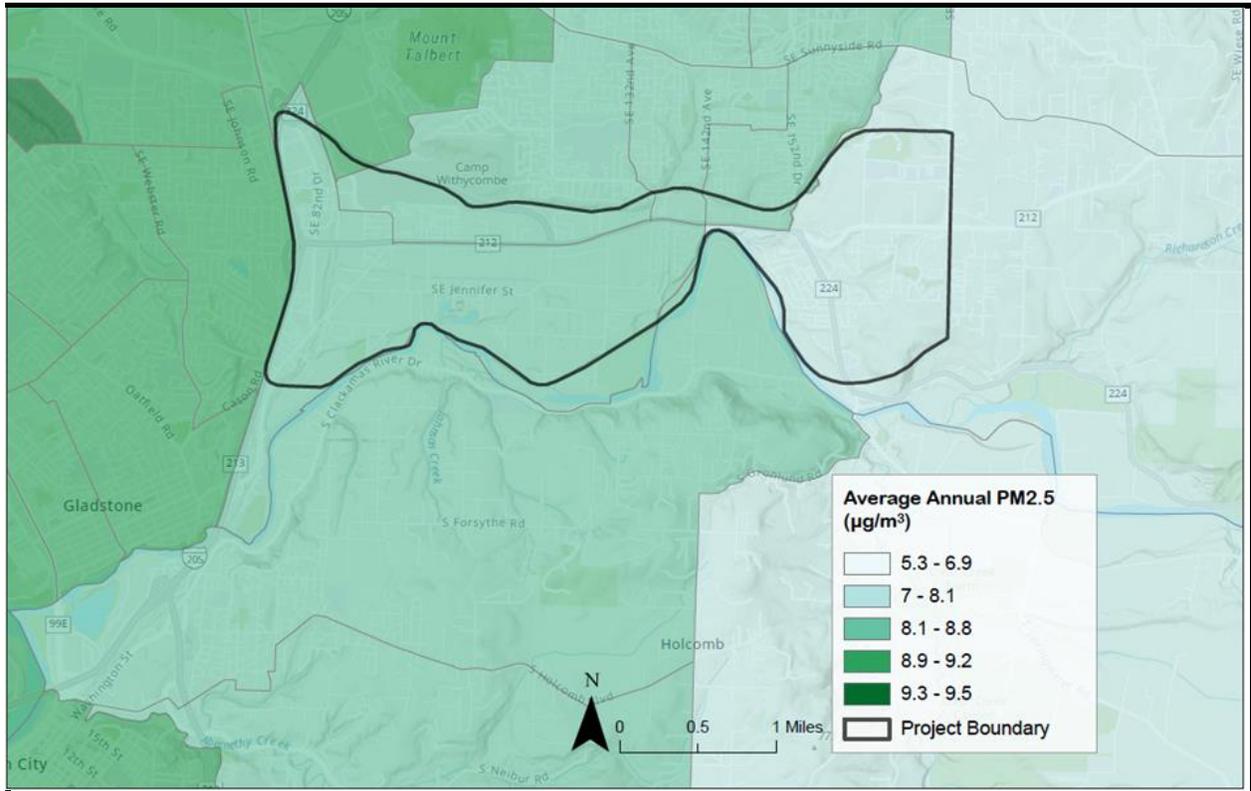
⁸ NYU Langone Health, "Air Pollution & Preterm Births in the United States", <https://med.nyu.edu/departments-institutes/pediatrics/divisions/environmental-pediatrics/research/policy-initiatives/air-pollution-preterm-births#:~:text=Exposure%20to%20air%20pollution%20in%20pregnancy%20has%20been,surrounding%20the%20fetus%20and%20lead%20to%20preterm%20birth.> ⁸ United States Environmental Protection Agency (EPA), "Outdoor Air Quality", 2023, [Outdoor Air Quality | US EPA](#)

⁸ NYU Langone Health, "Air Pollution & Preterm Births in the United States", <https://med.nyu.edu/departments-institutes/pediatrics/divisions/environmental-pediatrics/research/policy-initiatives/air-pollution-preterm-births#:~:text=Exposure%20to%20air%20pollution%20in%20pregnancy%20has%20been,surrounding%20the%20fetus%20and%20lead%20to%20preterm%20birth.>

⁹ EPA, "The National Ambient Air Quality Standards for Particle Pollution", https://www.epa.gov/sites/default/files/2016-04/documents/2012_aqi_factsheet.pdf

¹⁰ United States Environmental Protection Agency (EPA), "Ozone National Ambient Air Quality Standards (NAAQS)", <https://www.epa.gov/ground-level-ozone-pollution/ozone-national-ambient-air-quality-standards-naaqs>

Figure 17. Average annual Particulate Matter 2.5 in air ($\mu\text{g}/\text{m}^3$).



Source: United States Environmental Protection Agency. 2023. EJSCREEN. www.epa.gov/ejscreen. Values derived from the 2019 Office of Air Quality Planning and Standards (OAQPS).

3.2 Heat Exposure

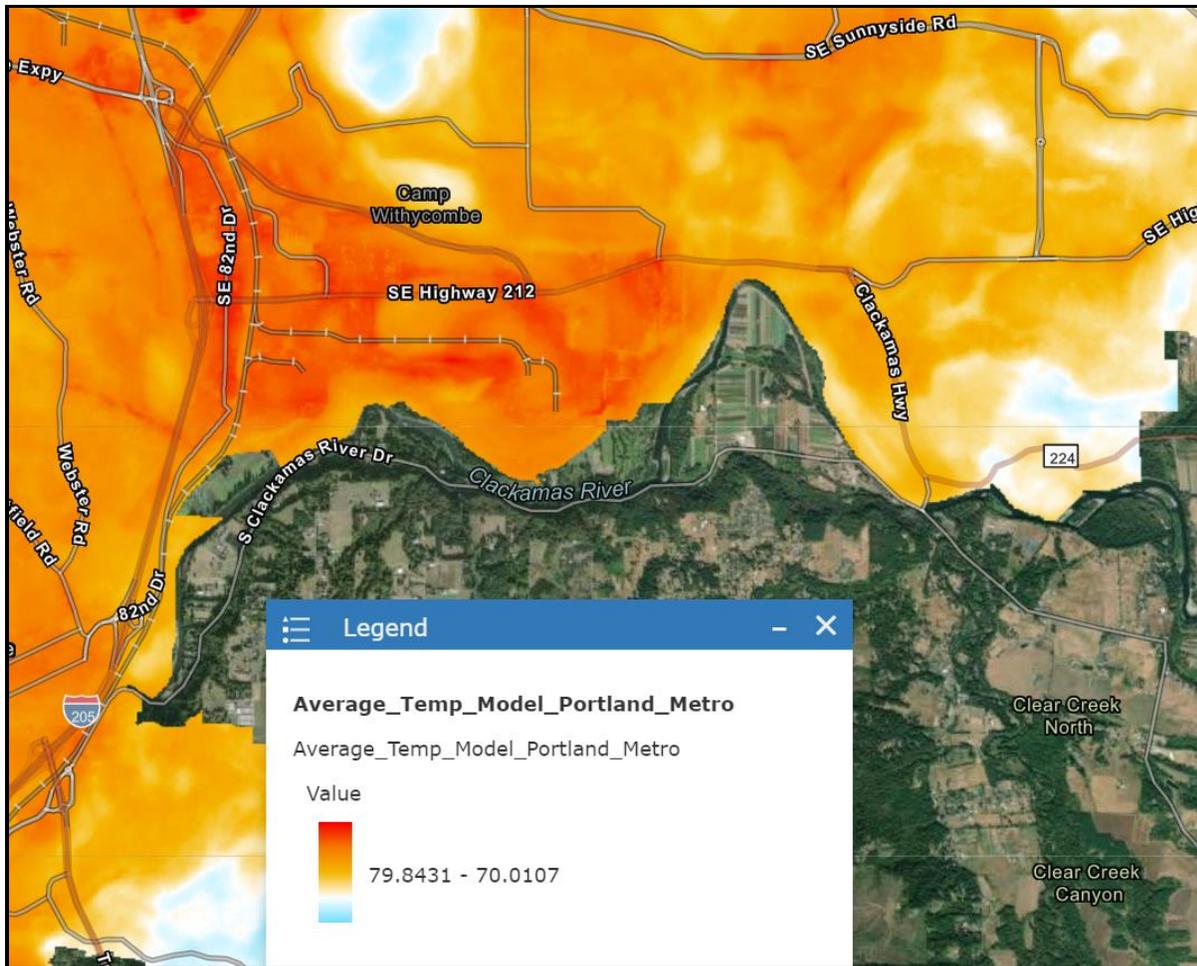
Heat affects everyone, however, certain individuals are more vulnerable to extreme heat such as: adults over the age of 65, children, pregnant people, people with chronic medical conditions like heart disease or poor blood circulation, people living or working outside, people with few social connection and limited social networks, and people with no access to cooling systems at home.¹¹

Characteristics of the built environment play a role in temperatures and heat exposure can vary widely across a geography resulting in unequal exposure to residents, employees, and visitors of the study area. A 2023 heat study across the metro area found that urban and suburban areas with low tree canopy cover and majority impervious surfaces saw the highest temperatures. Land use classification areas of Multi-Family Residential, Mixed-Use Residential,

¹¹ Multnomah County Health Department, Washington County Health Department, and Clackamas County health Department, “2012-2022 Regional Climate and Health Monitoring Report”, 2023, p.8

Commercial and industrial in particular were the hottest areas.¹² Within the study area, temperatures are higher within the Clackamas Industrial Area and along I-205 and OR212 compared to the east side of the study area (Figure 18). Residents and employees who live and work outdoors in areas considered heat islands can be more susceptible to heat-related illnesses and even death. Additionally, related negative effects include worse air quality in areas with higher heat and a higher cost burden of utility bills like air conditioning.¹³

Figure 18. Heat Map - Average Temperature Model



Source: Portland Metro health Watch Report, 2023

¹² CAPA Strategies, "Portland Metro Heat Watch Report", December 2023.

¹³ Environmental Protection Agency (EPA), "Heat Islands and Equity", 2023, <https://www.epa.gov/heatislands/heat-islands-and-equity#health-consequences>

4. Social Determinants of Health

Social determinants of health (SDOH) are the conditions in the environments where people are born, live, learn, work, play, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.¹⁴ The built environment, pollution, and transportation, discussed above, are major components of health. Additionally, safe affordable housing, poverty and living wages, and social and community connections also come up based on project scope and study area characteristics and demographics and may be worth further consideration.

4.1 Housing Displacement Risk

Stable, affordable, and safe housing is a fundamental component of health. Any time an area experiences modest or significant investment, there is a risk of involuntary displacement of existing residents. Renters, those lacking college degrees, and lower income households cannot easily cope with the rising costs of living, making them more vulnerable to involuntary displacement.

Data contained in the Business and Community memo reveals that the study area, when compared to county and region, has lower income residents, lower average housing price, above average shares of vulnerable residential populations, and below average wage jobs. Distribution of vulnerability elements are not shared equally across the study area and certain areas may be impacted more than others. Data contained in other memo, along with community perspectives and lived experience shall dive deeper into housing displacement risk and strategies to mitigate displacement into the future.

4.2. Poverty and Living Wages

Income is one of the strongest and most consistent predictors of health outcomes identified in research literature. Data contained in the Business and Community memorandum and the Economic Development memorandum can inform this conversation and future mitigation strategies.

4.3. Social and Community Connections

People's relationships and interactions with family, friends, co-workers, and community members can have a major impact on their health and well-being.¹⁵ Social connections also help to build community resiliency to help people during and recover from natural and man-made disasters. Currently no data was collected on this topic for the study area. It is possible information from community outreach efforts can inform mitigation strategies on social and community connections.

¹⁴ US Department of Health and Human Services, "Social Determinants of Health"
<https://health.gov/healthypeople/priority-areas/social-determinants-health>

¹⁵ *ibid*

Technical Memorandum

Project# 27852

To: Jamie Stasny, Regional Transportation and Land Use Policy Coordinator

From: Marc Butorac, PE, PTOE, PMP; Krista Purser, PE; Russ Doubleday; and Poppy Yang, Ph.D.

CC: Ana Jovanovic, Jamey Dempster, and Mulsri Jha – Jacobs

RE: Sunrise Corridor Community Visioning Tech Memo #4.3: Existing Transportation Conditions in the Study Area

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Introduction and Key Findings

This memorandum documents the existing transportation conditions within the Sunrise Corridor study area, including study intersections, functional classification, and roadway jurisdiction, as well as intersection and corridor operations, transit service, and a review of five years of crash data.

The following key findings were identified within this analysis:

■ Existing Facilities

- OR 224 (north of OR 212) is classified as an expressway, OR 212 is classified as a principal arterial, SE Sunnyside Road and SE 172nd Avenue are classified as major arterial roadways, and SE Jennifer Street, SE Evelyn Street, SE 82nd Drive, SE 102nd Avenue, SE 135th Street, SE 142nd Street are classified as minor arterial roadways.
- Walking and biking facilities are missing in much of the study area. There are also two shared-use paths within the study area: the I-205 Multi-Use Path and Sunrise Corridor Trail.

■ Crash Analysis

- Rear-end crashes (115 total reported crashes) and turning movement crashes (79 total reported crashes) were the most common crash type at the 10 study intersections.
- Six fatal crashes occurred along OR 212 and OR 224 within the Sunrise Corridor between 2017 and 2021.
- Fifteen roadway segments in the study area fall under Oregon Department of Transportation's (ODOT's) Safety Priority Index System (SPIS) lists of areas with high crash frequency, crash rate, and/or crash severity). There are six segments in the 95-100 percentile, six segments in the 90-95 percentile, and three segments in the 85-90 percentile.

■ Existing Transit Services

- The Sunrise Corridor has two different transit service providers: TriMet operates four routes with two planned routes. Clackamas County funds two routes including the industrial area shuttle and the Clackamas Community College campus shuttle.
- Within the Sunrise Corridor and the Clackamas Industrial Area, TriMet's *Forward Together* plan is planned to result in a net service increase by 2029.
- The Clackamas Industrial Area shuttle is in operation daily, with morning-only weekend service. It links Clackamas Town Center Transit Center to various locations, facilitating connections to major employers and Clackamas Community College.

■ Existing Intersection Operations

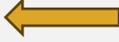
- The SE 152nd Avenue/OR 212 intersection is over capacity during both the weekday AM and PM peak hour periods.
- The OR 213 northbound access/I-205 southbound off-ramp/OR 224 intersection has a v/c ratio of 1.09 during the weekday PM peak hour. The queues at this intersection are not projected to reach the mainline.
- 95th percentile peak-hour queueing exceeds storage lengths on at least one approach to each of the major highway intersections: OR 213 southbound off-ramp/I-205 southbound on-ramp/OR 224, OR 213 northbound access/I-205 southbound off-ramp/OR 224, SE 135th Avenue/OR 212, and OR 224/OR 212 (Rock Creek Junction).
- The major intersection analysis indicates mixed changes. Compared to the ten 2019 intersection operations analyses for the Sunrise Corridor Concept, three of the intersections are operating better now, three of the intersections are operating worse now, two of the intersections are functionally the same, and one intersection is operating better during the AM peak hour and worse during the PM peak hour. Differences are due to shifts in traffic volumes along the corridor.
- There are a limited number of pedestrian crossings at intersections along Highway 212.

■ Sunrise Corridor Travel Patterns

- Over half the eastbound traffic on OR 224 and OR 212 comes from I-205 north and south, and OR 224 west of I-205 (Milwaukie Expressway). About 30% of eastbound OR 212 traffic continues past SE 172nd Ave.

Origin		Eastbound	Destination	
50%	I-205 north and south, OR 224 west of I-205 (Milwaukie Expressway)		30%	OR 212 past SE 172nd Ave

- For westbound OR 212 east of SE 172nd Ave, 20% comes from US 26. Additional westbound traffic comes from SE 242nd Ave (13%), SE 282nd Ave (9%), and SE 222nd Dr (6%). Around 25-30% are going west on OR 224 or south to I-205 and around 30% remaining on OR 212.

Destination		Westbound	Origin	
25-30%	OR 224 or south to I-205		20%	US 26
30%	OR 212		13%	SE 242nd Ave
			9%	SE 282nd Ave
			6%	SE 222nd Dr

- Weekday westbound peak traffic on OR 224 and OR 212 is in the morning around 7AM while weekday eastbound peak traffic is in the afternoon from 3PM to 5PM; weekend peak traffic in both directions occurs midday from 10AM to 3PM.
- Traveling within the study area, the most common origins of travelers in the Clackamas Industrial Area are in the industrial area and Happy Valley residential. areas Damascus is the least common destination and origin point for the Clackamas Industrial Area. The Clackamas Industrial Area zone includes destinations along SE 82nd Drive, such as shopping and medical centers, which may draw different trip patterns than the industrial uses.
- Analysis of route-specific volume data shows heavy vehicles (above 26,000 pounds) constitute over 10% of westbound traffic at SE 172nd Avenue (including SE Thiessen Road), approximately 10% on eastbound traffic 106th Avenue (including 4-6% to/from Clackamas Industrial Area), and around 10% on both eastbound and westbound directions at OR 224 (Sunrise Expressway) related to the Clackamas Industrial Area.

Existing Facilities

Study Intersection Jurisdiction

Based on their significance to the network of the Sunrise Corridor and inclusion in the Sunrise Gateway Concept Plan, the project team identified 10 intersections for weekday AM and PM peak period analysis to understand traffic patterns, assess existing conditions, and understand impacts due to future growth or network changes. ODOT manages and operates nine of the 10 study intersections while Clackamas County manages the SE 122nd Avenue and SE Jennifer Street intersection. Figure 1 shows the location of the study intersections.

1. OR 213 southbound off-ramp/I-205 southbound on-ramp/OR 224
2. OR 213 northbound access/I-205 southbound off-ramp/OR 224
3. I-205 northbound on-ramp/OR 224
4. SE 122nd Avenue/OR 224/OR 212
5. SE 135th Avenue/OR 212
6. SE 142nd Avenue/OR 212

7. SE 152nd Avenue/OR 212
8. OR 224/OR 212 (Rock Creek Junction)
9. SE 172nd Avenue/OR 212
10. SE 122nd Avenue/SE Jennifer Street

Roadway Jurisdiction

Various jurisdictions manage the roadway network within the study area, as shown in Figure 2 below. ODOT operates I-205, OR 212, OR 213, and OR 224, while Clackamas County operates most of the streets within the Clackamas Industrial Area and north of the Sunrise Corridor. SE Sunnyside Road, a parallel east-west facility, is operated by either Clackamas County or Happy Valley, depending on the specific location along the roadway. To the east of the I-205 and OR 213 intersection, most of the study intersection minor streets are operated by Clackamas County, except for SE 135th Avenue and SE 172nd Avenue, which are operated by Happy Valley on the north leg of the intersection.

Functional Classification

The western end of the Sunrise Corridor study area is bounded by I-205. OR 212, OR 224, Sunrise Expressway between I-205 and SE 122nd Avenue, and OR 212 from SE 122nd Avenue east are classified as major arterials. Other streets that connect to study intersections are arterial streets, including SE 135th Avenue, SE 142nd Avenue, SE 152nd Avenue, SE 172nd Avenue, and SE Jennifer Street. Figure 3 shows the functional classification of the streets within the study area.

For the ODOT facilities, I-205 is classified as an Interstate Highway, OR 212 and OR 224 are classified as Statewide Highways, and OR 213 is classified as a District Highway.

Figure 1. Study Intersections

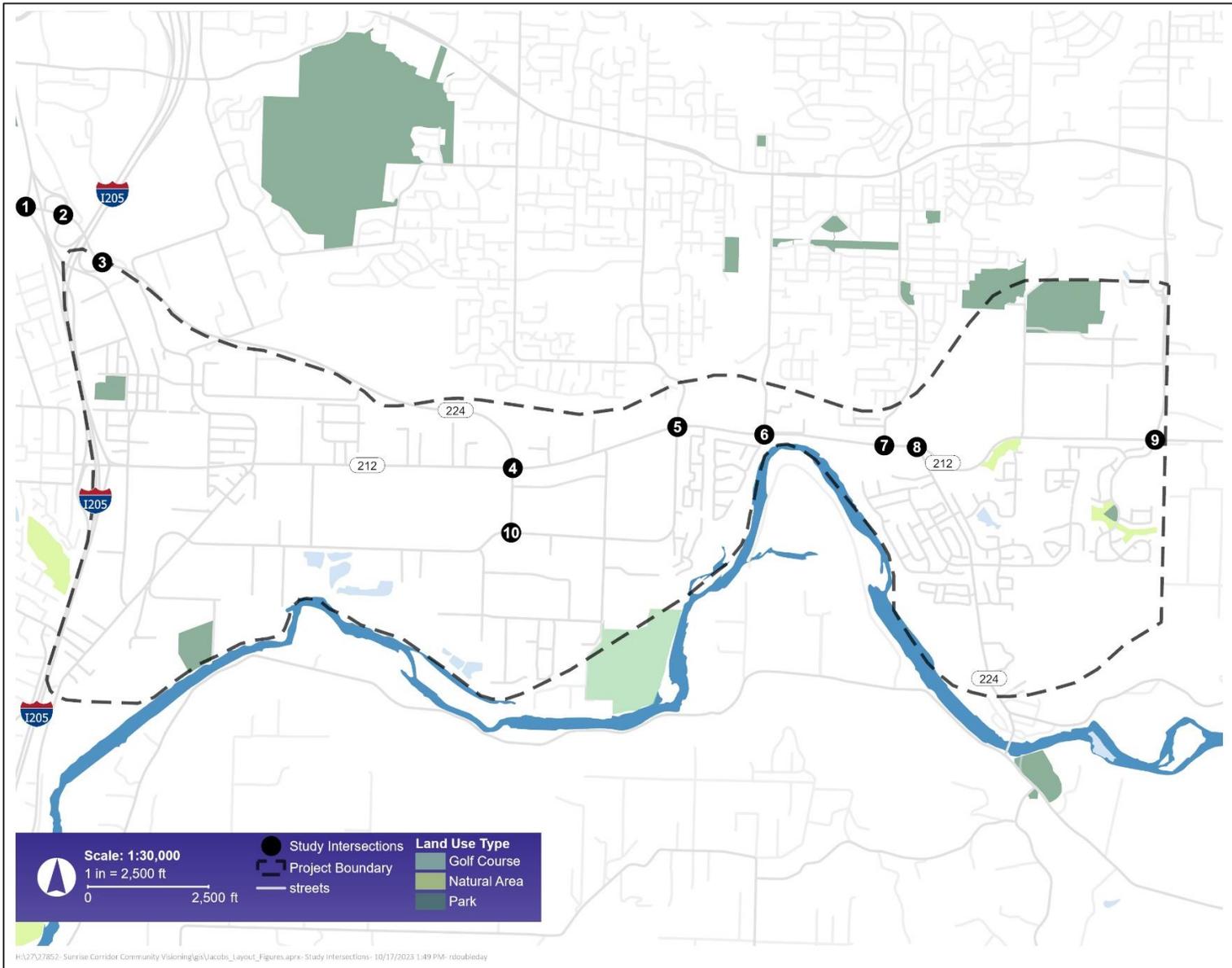


Figure 2. Roadway Jurisdiction

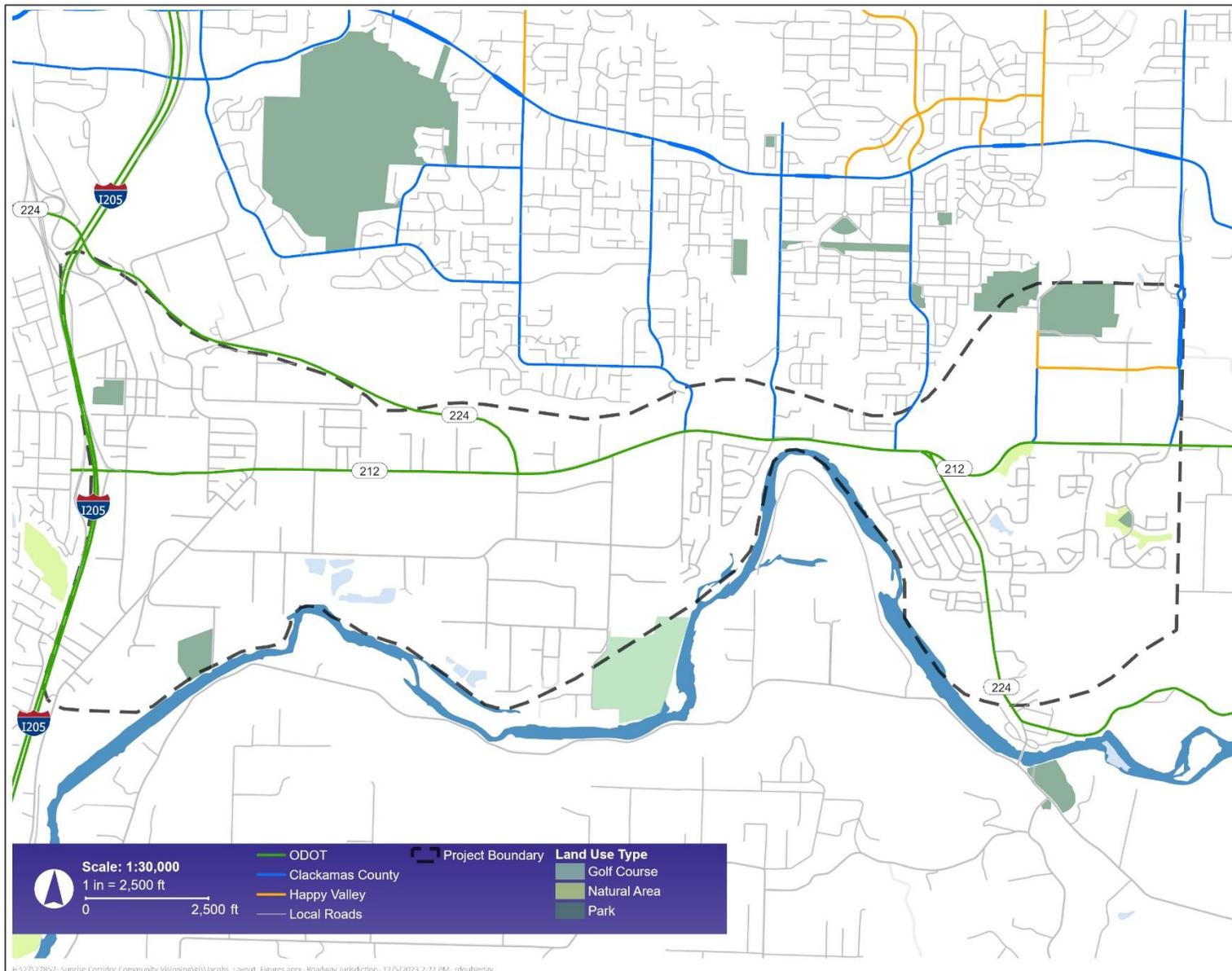


Figure 3. Functional Classification

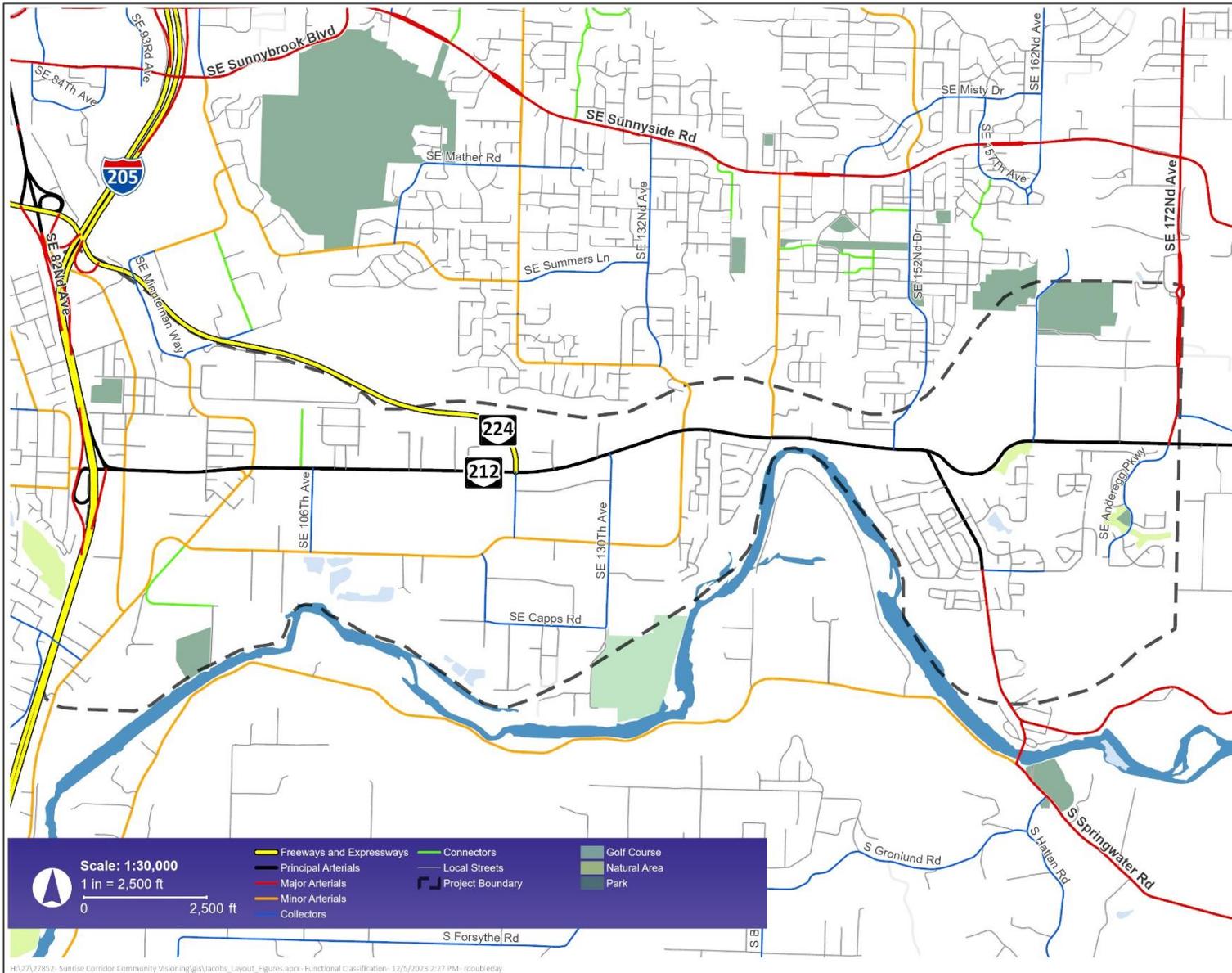
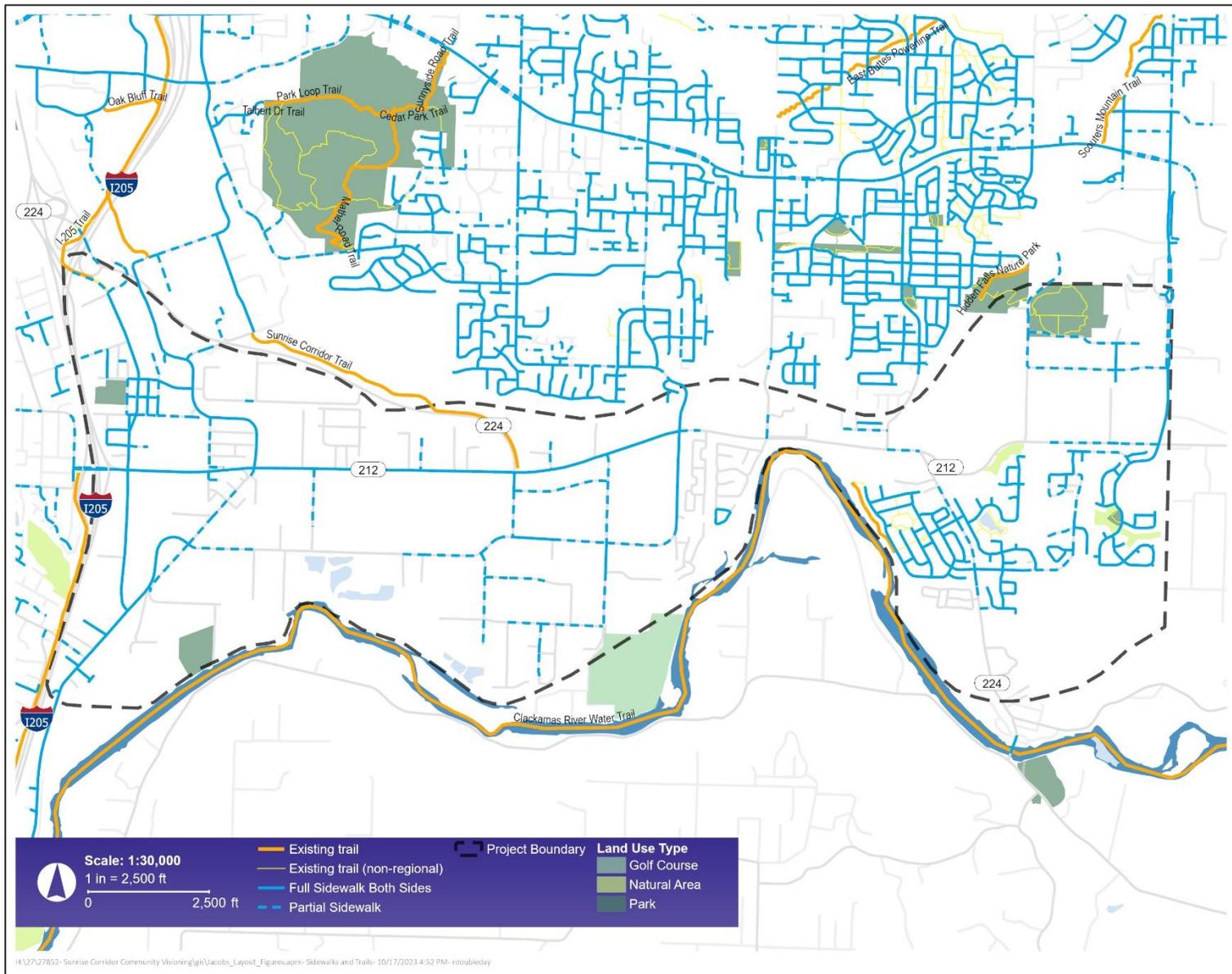


Figure 4. Active Transportation



Transportation Facilities

Table 1 summarizes the roadway transportation facilities within the study area.

Table 1. Existing Transportation Facilities and Roadways in the Study Area

Roadway	Functional Classification	No. of Lanes	Posted Speed	Sidewalks	Bike Lanes	On-Street Parking
OR 212 (Sunrise)	Statewide Highway (ODOT) Principal Expressway (Clackamas County)	4	50-55 MPH	No ¹	No ¹	No
OR 212 (122 nd east)	Statewide Highway (ODOT) Principal Arterial (Clackamas County)	5	45 MPH	Partial ²	Yes	No
OR 213	District Highway (ODOT) Principal Arterial (Clackamas County)	4	45-50 MPH	No	No	No
OR 224 (I-205 to 122 nd)	Statewide Highway (ODOT) Principal Arterial (Clackamas County)	5	35-45 MPH	Yes	Yes	No
OR 224 (Rock Creek Junction south)	District Highway (ODOT) Principal Arterial (Clackamas County)	2	45 MPH	Partial ³	Partial ³	No
I-205	Interstate Highway (ODOT)	6	55 MPH	No	No	No
SE 122 nd Avenue	Collector	2	30 MPH	Partial ⁴	Yes	No
SE 135 th Avenue	Minor Arterial	2-3	35 MPH	No	Yes	No
SE 142 nd Avenue	Minor Arterial	2	40 MPH	No	No	Partial ⁵
SE 152 nd Avenue	Collector	2	35 MPH	No	No	No
SE 172 nd Avenue	Major Arterial	4	45 MPH	Yes	Yes	No
SE Anderegg Parkway	Collector	2	None Posted	Yes	No	Yes
SE Jennifer Street	Minor Arterial	3	40 MPH	Partial ⁶	Yes	No

¹ There is a parallel shared-use path on the north side of OR 212 between Mather Road and SE 122nd Avenue.

² There is a complete sidewalk network between SE 122nd Avenue and SE 135th Avenue. There are no sidewalks east of SE 135th Avenue.

³ There are sidewalks and bike lanes around the housing developments at Goose Hollow Drive and SE Eckert Lane. Otherwise, the street has a wide shoulder for people walking and biking.

⁴ SE 122nd Avenue has a complete sidewalk network except for a 125-foot segment on the west side of the street immediately north of SE Jennifer Street.

⁵ On-street parking is only allowed on the east side of the street immediately to the north of OR 212.

⁶ There are sidewalks east of the intersection with SE 122nd Avenue and none west of the intersection.

There are a limited number of people walking and biking along Highway 212 in the traffic count data. There were nine pedestrians identified at the OR 224/OR 212 intersection during the weekday PM peak hour, eight pedestrians at the OR 224/SE 122nd Avenue/OR 212 intersection during the weekday PM peak hour, and no more than four pedestrians at any other study intersection during that time. The weekday PM peak hour traffic counts captured six bicyclists at both the OR 224/SE 122nd Avenue/OR 212 and SE 142nd

Avenue/OR 212 intersections, and no more than three bicyclists at any other intersection along OR 212. The traffic count data catches a single bicyclist and no pedestrians at any of the study intersections on the existing Sunrise Expressway.

There are two shared-use paths within the study area: the I-205 Multi-Use Path and Sunrise Corridor Trail, shown in Figure 4. The I-205 Multi-Use Path runs along the west side of I-205, with connections to SE Ambler Road, SE Lawnfield Road, and SE 82nd Drive heading north and Highway 212 and SE McKinley Avenue heading south. There is a gap in the I-205 Multi-Use Path between OR 224 and OR 212. The Sunrise Corridor Trail runs from SE Mather Road north of OR 224 to the SE 125th Court/OR 212 intersection.

Union Pacific maintains Portland to Oregon City railroad facilities within the study area, as well, with three railroad tracks running underneath OR 224 and four railroad tracks running underneath OR 212. The fourth set of tracks under OR 212 provides shortline access to industrial land off of SE Jennifer Street and SE Capps Road.

Electric vehicle charging stations in the study area include one at the Hampton Inn on SE Adams Street, two at the Verne A Duncan Elementary School/Adrienne C. Nelson High School, and about 20 in the Clackamas Town Center area.

Crash Analysis

This section evaluates study intersection crashes for the five most recent years with data, as well as all other crashes along the OR 212 and OR 224 corridors outside of the study intersections, with special attention to any fatal crashes in the corridor.

Intersection Crash Analysis

The study intersection crash history was obtained from the Oregon Department of Transportation's TDS Crash Reports Portal (Reference 1) and TransGIS (Reference 2) for the five-year period from January 1, 2017 to December 31, 2021. Table 2 summarizes the reported crash frequency, type, and severity by intersection. Generally, ODOT considers a crash rate greater than one (1.0) crash per million entering vehicles (MEV) as an indicator that a potential geometric or operational issue may exist, and that further evaluation should be considered.

There are two signalized intersections where the majority of reported crashes are rear-end crashes, including:

- SE 135th Avenue/OR 212 (52 of the 60 reported crashes were rear-end crashes)
- SE 122nd Avenue/OR 212, (24 of the 34 reported crashes were rear-end crashes)

There are two signalized intersections where the majority of reported crashes were turning movement crashes:

- 142nd Avenue/OR 212 intersection (18 of the 28 reported crashes); and
- SE 172nd Avenue/OR 212 intersection (17 of the 28 reported crashes).

There were no reported crashes involving a fatality at any study intersection during the analysis period.

Appendix A includes the crash data for each of the study intersections.

Non-Intersection Crash Analysis

Table 3 below summarizes reported crash frequency, type, and severity by segment. The segments exclude study intersection crashes. Figure 5 includes a map of all of the crashes within the study area. Appendix A includes the crash data for each of the segments.

Additional discussion on the three non-intersection crash areas is below.

Table 2. Study Intersection Crash Frequency and Severity (January 2017 through December 2021)

	Intersection	No. of Crashes	Crash Type							Crash Severity		Total	Crash Rate
			Rear-End	Fixed Object	Turning	Angle	Head-On	Side-swipe	Other	PDO	Injury		
1	OR 213 SB off-ramp/I-205 SB on-ramp/OR 224	8	3	1	4	-	-	-	-	2	6	8	0.11
2	OR 213 NB access/I-205 SB off-ramp/OR 224	16	2	-	9	2	-	1	2	8	8	16	0.26
3	I-205 NB on-ramp/OR 224	5	2	-	3	-	-	-	-	3	2	5	0.11
4	SE 122nd Avenue/OR 212	34	24	1	6	3	-	-	-	11	23	34	0.56
5	SE 135th Avenue/OR 212	60	52	-	4	2	1	-	1	27	33	60	0.79
6	SE 142nd Avenue/OR 212	28	7	1	18	1	-	1	-	8	20	28	0.41
7	SE 152nd Avenue/OR 212	16	5	-	11	-	-	-	-	7	9	16	0.25
8	OR 224/OR 212	18	10	1	5	-	-	-	2	9	9	18	0.28
9	SE 172nd Avenue/OR 212	28	10	1	17	-	-	-	-	11	17	28	0.65
10	SE 122nd Avenue/SE Jennifer Street	8	-	1	2	4	-	-	1	5	3	8	0.42

Crash rate is calculated as the number of crashes per million entering vehicles. Average daily traffic volumes were estimated using PM peak hour total entering volume at the intersection.

Table 3. Non-Study Intersection Crash Frequency and Severity (January 2017 through December 2021)

Segment	Rear-End	Fixed Object	Turning	Angle	Head-On	Side-Swipe	Ped	Other	PDO	Injury	Fatal	Total
OR 224 from OR 213 off-ramp/I-205 on-ramp to SE 122nd Ave	26	16	8	1	2	20	-	1	28	45	1	74
OR 212 from SE McKinley Ave to SE 122nd Ave	58	8	31	1	2	4	2	2	50	56	2	108
OR 212 from SE 122nd Ave to SE 172nd Ave	120	18	20	-	-	34	-	2	80	111	3	194

OR 224 from OR 213 SB off-ramp/I-205 SB on-ramp to SE 122nd Avenue

The three most prominent crash types were rear-end (26 reported crashes), sideswipe (20 reported crashes), and fixed object (16 reported crashes). There were 12 other crashes outside of these three crash types, eight of which were turning movement crashes.

There has been one reported fatality crash on this segment of OR 224. On Friday, July 10th, 2023 at 7 p.m., a 32-year-old male driver heading westbound on OR 224 was passing another vehicle when he struck the median barrier, lost control, flipped the vehicle, and was ejected from the vehicle. The 32-year-old died in the crash. Another vehicle was involved in the crash, and the 19-year-old female driver in that vehicle suffered moderate injuries. The crash occurred east of the Minuteman Way overcrossing during the day and involved a fixed object.

OR 212 from SE McKinley Avenue to SE 122nd Avenue

As shown in the table, more than half of the crashes on this segment (31 reported crashes out of 58) are associated with rear-ends. Two fatal crashes were reported, one of which involved a pedestrian. There was another crash in this corridor where a pedestrian suffered a minor injury.

The fatal pedestrian crash occurred at 7 a.m. on Thursday, October 17th, 2019 at the SE 102nd Avenue/OR 212 intersection. The 20-year-old male pedestrian was crossing SE 102nd Avenue from east to west in the crosswalk but did not have the right-of-way and was struck and killed by a truck making an eastbound right-turn.

The other fatal vehicular crash occurred at 3 p.m. on Saturday, July 17th, 2021 on the OR 212 overcrossing over the railroad tracks east of SE 82nd Drive. An 80-year-old motor vehicle driver heading westbound on OR 212 was reported as following another motor vehicle too closely and rear-ended the vehicle in front of it. The 80-year-old driver was killed in the crash, and all six people in the vehicle that was rear-ended suffered moderate injuries. The force of the crash forced the second vehicle into a third vehicle, where the driver of that vehicle also suffered moderate injuries.

There was also a minor injury pedestrian crash at the I-205 southbound ramps/OR 212 intersection, which occurred at 6 p.m. on Sunday, October 17th, 2021. An eastbound right-turning vehicle failed to yield the right-of-way to the pedestrian who was walking westbound across the ramp access in the crosswalk, striking the pedestrian.

OR 212 from SE 122nd Avenue to SE 172nd Avenue

Roughly 60 percent of the total reported crashes on OR 212 from SE 122nd Avenue to SE 172nd Avenue are associated with rear-ends (120 out of 194). Three crashes out of the 194 reported crashes were fatal and are described in more detail below.

Two of the three fatal crashes occurred at the intersection of SE For Mor Court and OR 212, one in 2018 and one in 2021. At 4 p.m. on Sunday, April 22nd, 2018, a 25-year-old male on a motorcycle heading eastbound on OR 212 was traveling above the speed limit and ran into a stalled motor vehicle, which killed the motorcyclist. At 6pm on Sunday, June 28th, 2021, a 42-year-old male driving a motor vehicle heading westbound on OR 212 ran off the road and struck a tree, which killed the driver.

The third fatal crash occurred east of the OR 224/OR 212 intersection along the curve in OR 212. At 5 p.m. on Wednesday, September 16th, 2020, a 20-year-old male on a motorcycle heading eastbound on OR 212 lost control of their motorcycle and ran off the road and hit a guardrail, which killed the motorcyclist.

SPIS Segments

ODOT has developed the Safety Priority Index System (SPIS) across all state facilities to identify locations for safety improvements. A SPIS score incorporates three years of crash data and includes three elements: crash frequency, crash rate, and crash severity. Segments are analyzed in one-tenth of a mile segments for analysis, and all statewide facilities are analyzed on the same scale.

If a location falls within the top five percent of SPIS scores, then the Region Traffic office must conduct a safety investigation to identify safety improvements that can be made. ODOT's TransGIS site also identifies SPIS sites within the top 10 and top 15 percent.

As shown in Table 4 and Figure 6 below, there are several segments within the project area that fall within these percentile ranks:

Table 4. SPIS Segment Percentiles

Top 5 Percentile Rank	Top 10 Percentile Rank	Top 15 Percentile Rank
<ul style="list-style-type: none"> ■ Highway 212 at SE 82nd Drive ■ Highway 212/224 at SE 135th Avenue ■ Highway 212/224 at SE 142nd Avenue ■ Highway 212/224 at SE 152nd Avenue ■ Highway 212/224 at Rock Creek Junction ■ Highway 212 at SE 172nd Avenue 	<ul style="list-style-type: none"> ■ Highway 212 at I-205 southbound ramps ■ Highway 212 at SE 102nd Avenue ■ Highway 212/224 east of SE 142nd Avenue ■ Highway 212/224 west of SE 152nd Avenue ■ Highway 212/224 between SE 152nd Avenue and Rock Creek Junction ■ Highway 212 at SE 162nd Avenue 	<ul style="list-style-type: none"> ■ Highway 212 at the railroad overcrossing (east of SE 82nd Drive) ■ Highway 212 at Highway 224 and SE 122nd Avenue ■ Highway 212/224 west of SE 130th Avenue

The Safe Systems Approach

The Safe Systems Approach seeks to address and mitigate the risks inherent in our enormous and complex transportation system. Its implementation will be arranged around five objectives:

- Safer People,
- Safer Roads,
- Safer Vehicles,
- Safer Speeds, and
- Post-Crash Care

This project will seek to implement Safe Systems Approach guidance as it develops goals and assesses future scenarios. More information can be found here:

<https://www.transportation.gov/NRSS/SafeSystem>

Figure 5. Crash Severity

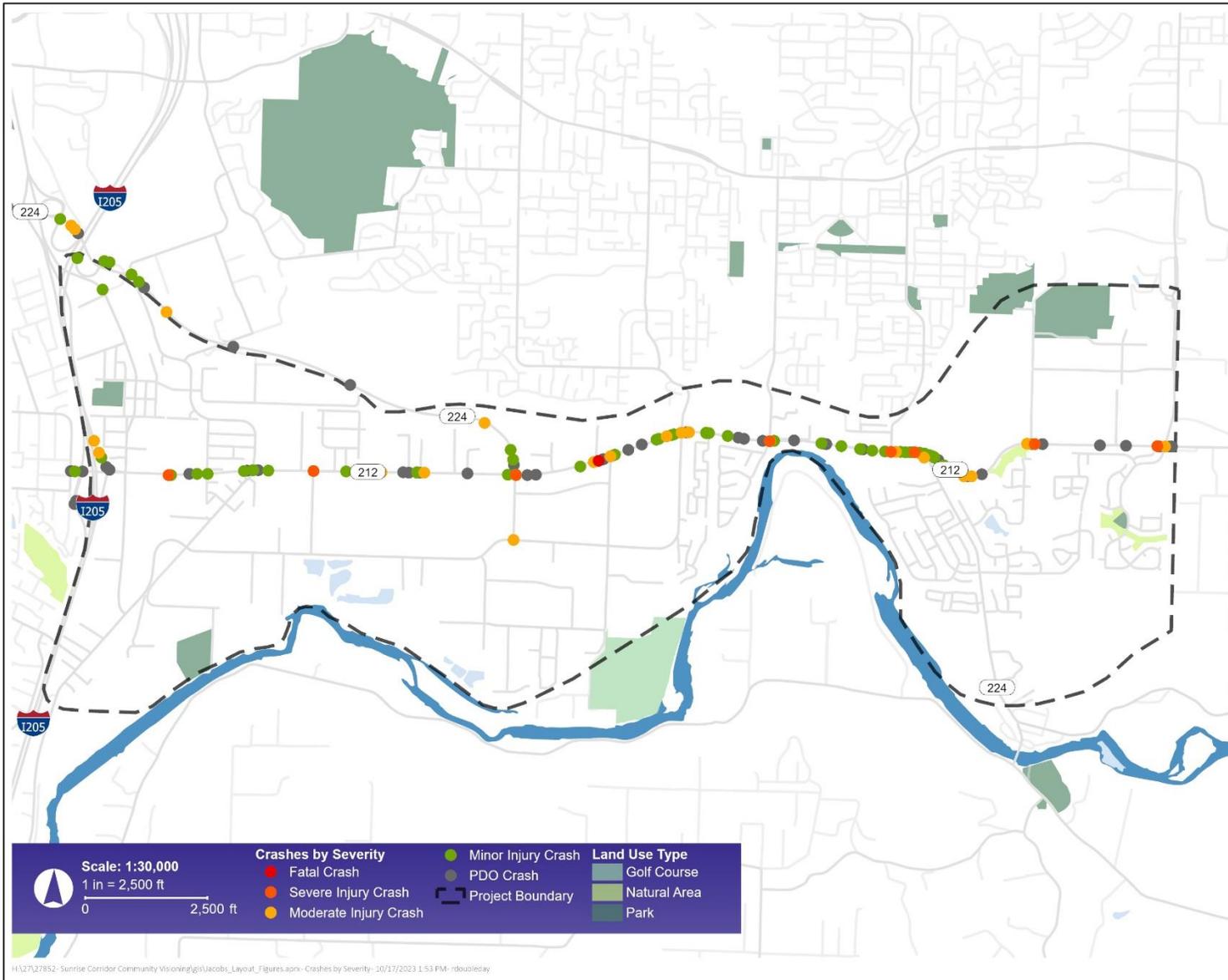
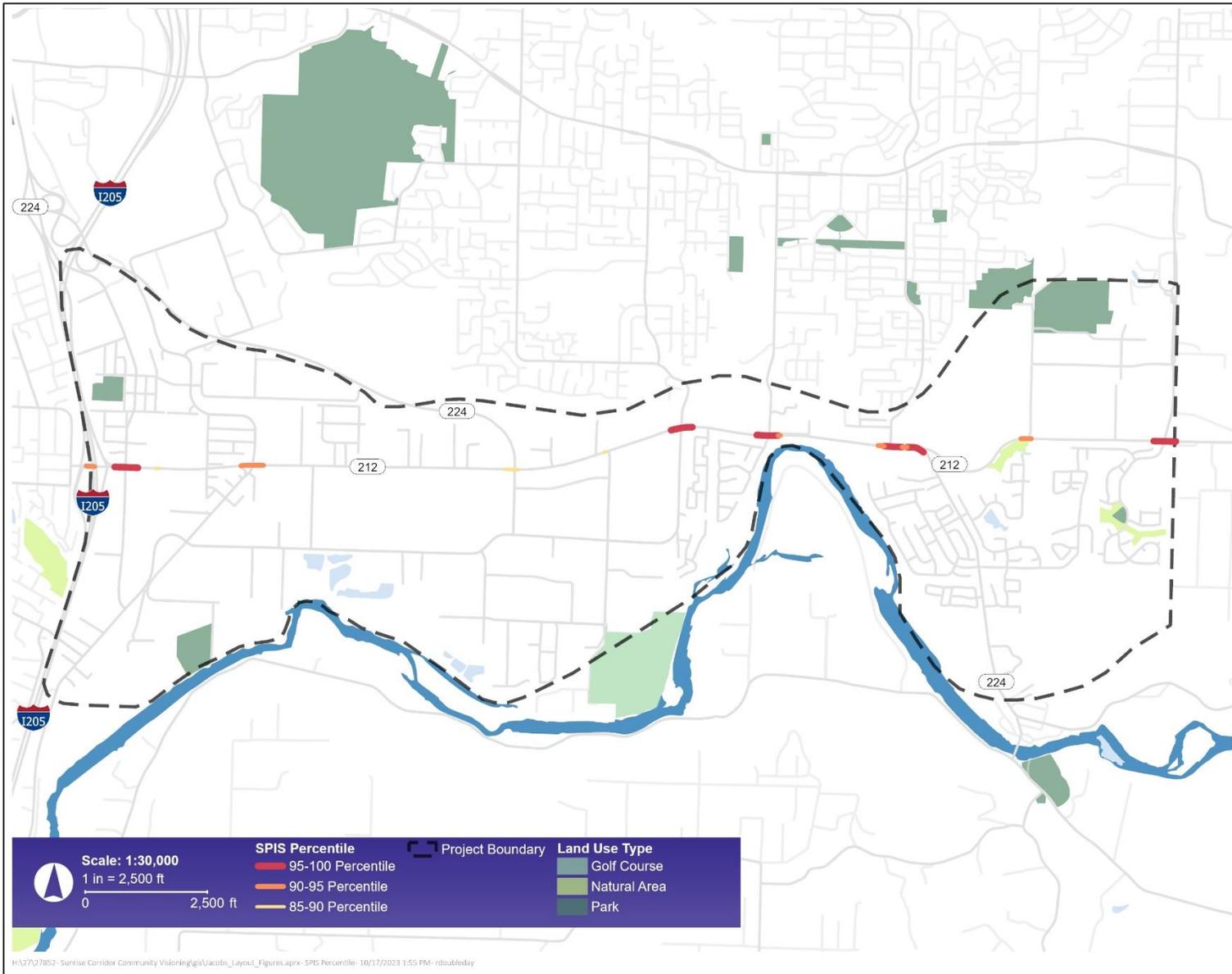


Figure 6. Safety Priority Index System



H:\27\27852 - Sunrise Corridor Community Visioning\g\Jacob\Layout_Figures.aprx - SPIS Percentile - 10/17/2023 1:55 PM - rdoubleday

Existing Transit Services

The Sunrise Corridor, located near the Clackamas Town Center Transit Center, has two different transit service providers: TriMet (with 4 existing routes and 2 planned routes), and Clackamas County (its own Clackamas Industrial Area Shuttle and operation of the Clackamas Community College [CCC] Xpress). Table 5 summarizes the service frequency and ridership of bus routes in the study area.

Table 5. Service Frequency and Ridership of Bus Routes along Sunrise Corridor¹

Route	Weekday Service Span / Headway	Weekend Service Span / Headway	Riders per Revenue Hour – Weekday Spring 2019	Riders per Revenue Hour – Weekday Spring 2023
TriMet 30	6:30 AM – 8:30 PM / 1 hour	8:30 AM – 6:30 PM / 1 hour	16.3	14.9
TriMet 79	6:15 AM – 10:35 PM / 20 – 40 mins	8:15 AM – 10:35 PM / 40 mins	25.9	22.7
TriMet 145*	1 hour	1 hour	--	--
TriMet 150*	1 hour	1 hour	--	--
TriMet 155	5:30 AM – 11:00 PM / 30 mins	6:45 AM – 11:00 PM / 30 – 60 mins	24.6	19.8
TriMet 156	5:30 AM – 7:50 PM / 1 hour 20 minutes	No service	18.1	12.2
Clackamas Industrial Area Shuttle	4:50 AM – 8:35 PM / 1 hour	4:50 AM – 11:25 AM / 1 hour	Not in Operation	4.2
CCC Xpress	6:00 AM – 6:50 PM (Southbound); 6:35 AM – 7:10 PM (Northbound) / 1 hour	No service	--	--

Source/Notes: * Proposed new service; -- Missing data for service

A map of the existing transit service routes and stops with weekday boarding and alighting data within the Sunrise Corridor is shown in Figure 7. Where stops are across the street from each other, the westbound activity is shown above the eastbound activity. The *Clackamas County Transit Development Plan* (TDP – Reference 3), which identifies 20-year transit needs for the county, provides short-term, medium-term, and long-term recommendations for new and additional transit services (Figure 8 through Figure 10). This includes the recently-launched Clackamas Industrial Area Shuttle with 15 runs per day. The TDP recommends gradually increasing service to 17 to 32 runs per day in the medium- and long-term. In addition, recommendations, relevant to the project area and its vicinity, are shown in Table 6.

¹ (Sources: TriMet's *Forward Together* plan; TriMet Bus Service; TriMet Ridership and Performance Statistics; Clackamas County Connects Shuttle Service)

Figure 7. Weekday Transit Services

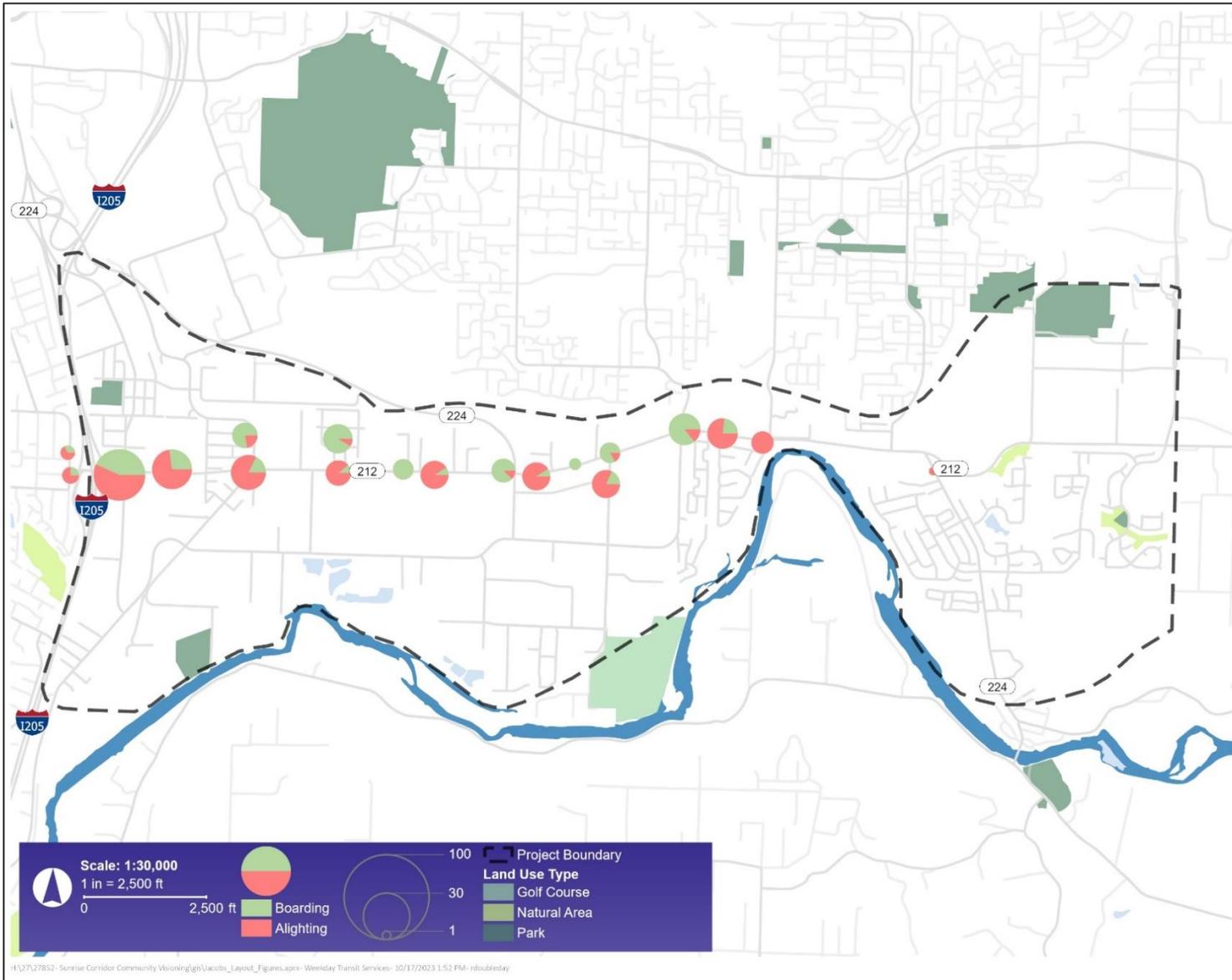


Table 6. Clackamas County TDP Recommendations (Source: Clackamas County TDP 2021)

ID	Corridor or Area	Existing Runs per Day	Additional Transit Run Demand	Recommendation	District/ Provider	Vehicle Size	Status
MT-6	Happy Valley	16	19	Establish hourly service (about 10 runs per day)	TriMet	Larger	Established Need
MT-9	Damascus	0	19	Establish hourly service (about 10 runs per day)	TBD	Smaller	Established Need
MT-11	Highway 212: I-205 to US26	0	14	Establish hourly service (about 8 runs per day); triggers Mobility Hub in Boring	SAM	Larger	In Provider Plan
LT-6	Happy Valley	26	9	Evaluate service; consider increased service span and frequency to add about 10 runs per day	TriMet	Larger	Established Need
LT-8	Damascus	10	9	Evaluate service; consider increased service span and frequency to add about 10 runs per day	TBD	Smaller	Established Need
LT-10	Highway 212: I-205 to US26	8	6	Evaluate service; consider increased service span and frequency to add about 10 runs per day	SAM	Larger	In Provider Plan
N/A	Highway 224: Highway 212 to Estacada	Monitor potential increases to transit demand			N/A	N/A	N/A

Source/Notes: MT= Medium-term; LT: Long-term; SAM: Sandy Area Metro

TriMet's *Forward Together* plan (Reference 4) focuses service in areas with high ridership that serve lower-income people and their needs more equitably. By mapping ridership changes between 2019 and 2021, job locations and access to transit, and using a composite equity index, TriMet was able to create a new regional service concept. TriMet is continuing to refine this plan through evolutions such as their FX planning for frequent service lines and other programs.

Within the project area and the Clackamas Industrial Area, the *Forward Together* plan results in a net service increase. Figure 11 below shows the revised transit concept for the project area and the Clackamas Industrial Area. The existing Route 79, running along 82nd Drive across OR 224, would be elevated to a frequent service route (15-minute headways or better) in the long-term, an improvement over its 40-minute headways currently. Two new routes would serve different areas within the project area Corridor:

- **Route 145** would run between Clackamas Town Center and Oregon City, with service on SE 102nd Avenue and SE Evelyn Street at OR 224
- **Route 150** would run between Milwaukie and Powell Boulevard in Gresham, with services along SE Jennifer Street and on OR 212 before turning north onto SE 172nd Avenue and the C2C corridor.
- The *Forward Together* plan proposes removing **Route 156**, which runs between Clackamas Town Center and Sunnyside Road, with service on OR 212 between SE 135th Avenue and SE 152nd Avenue.

Figure 8. Clackamas County TDP Short-Term Recommendations (Map Source: Clackamas County TDP 2021)

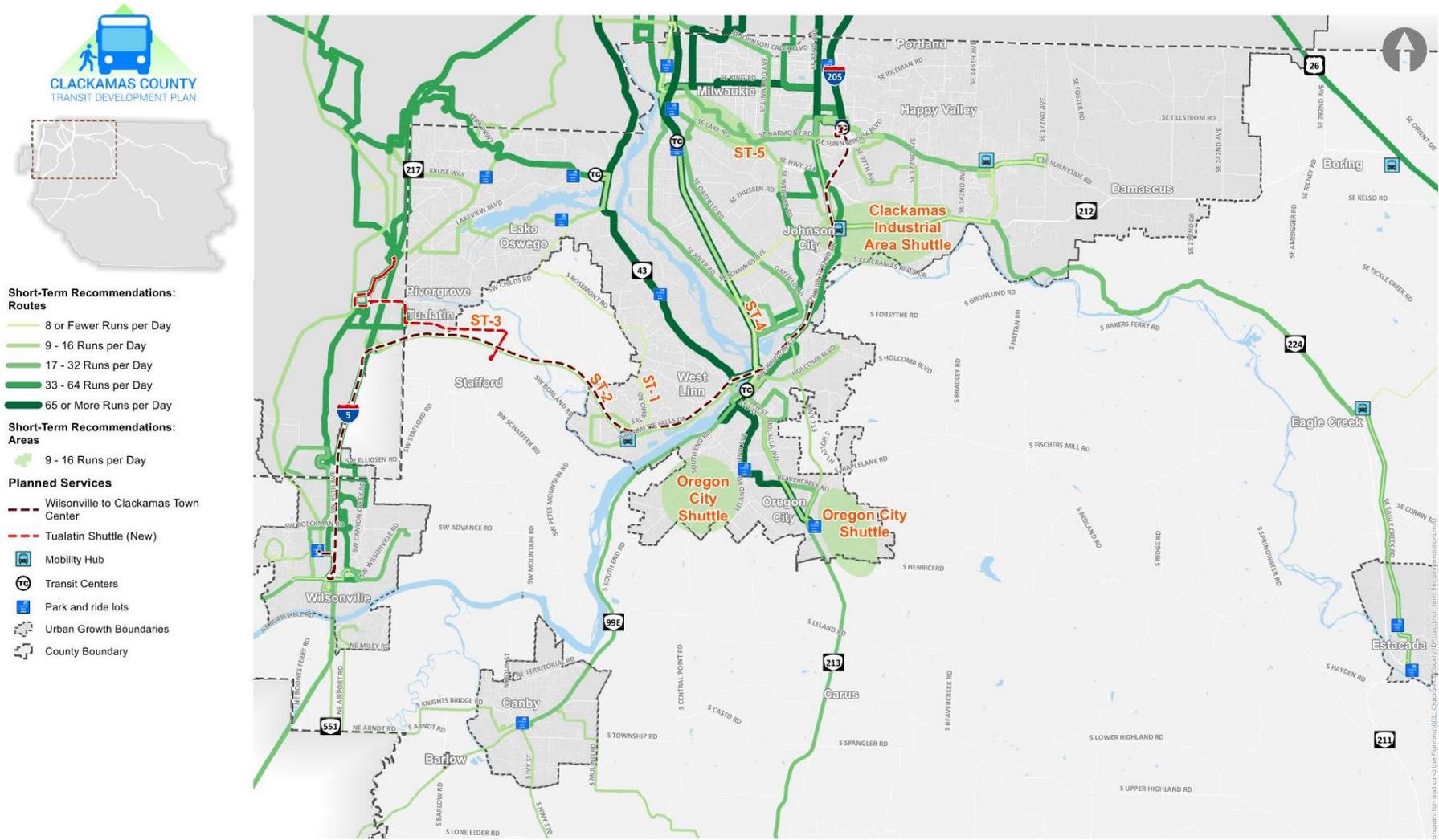


Figure 9. Clackamas County TDP Medium-Term Recommendations (Map Source: Clackamas County TDP 2021)

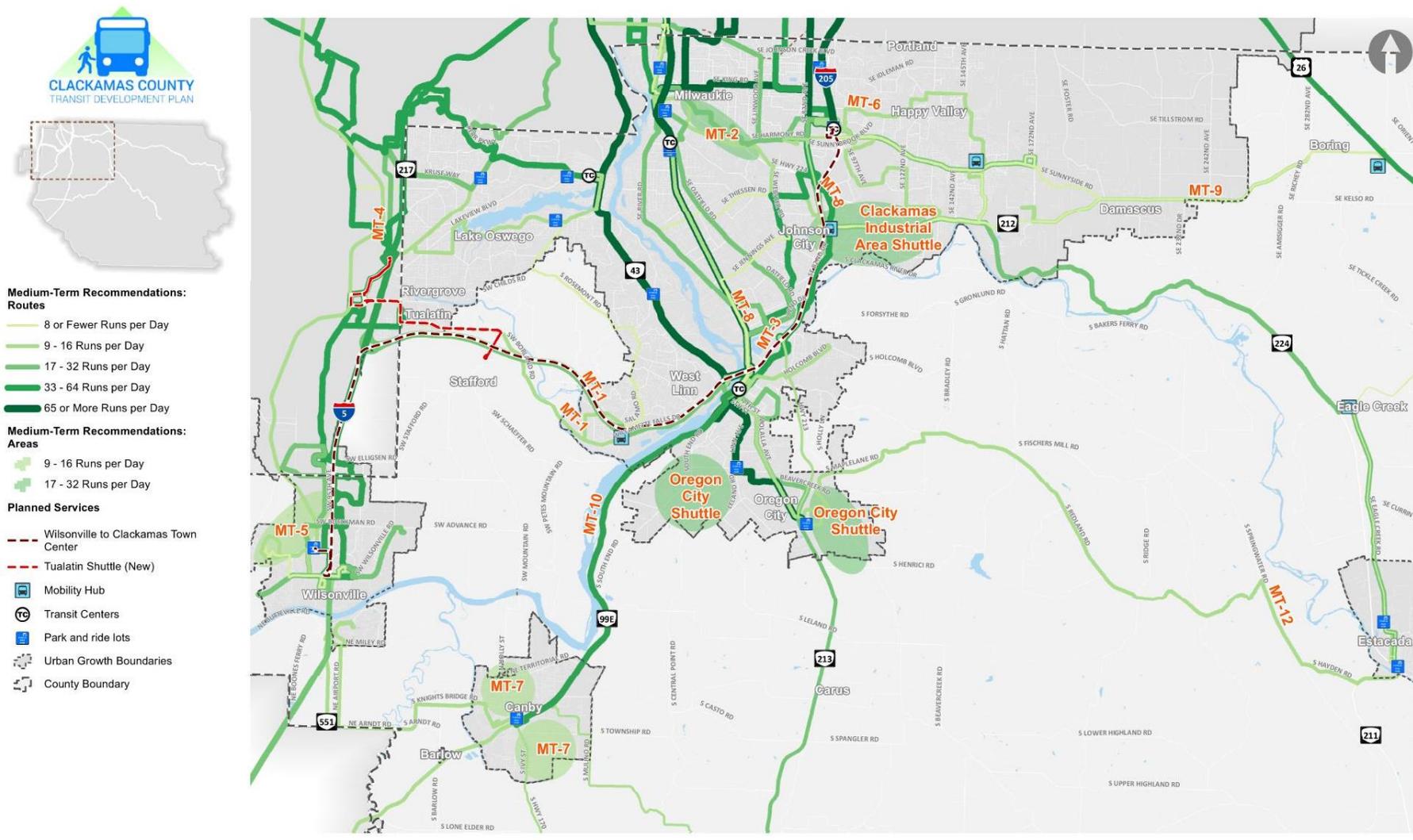


Figure 10. Clackamas County TDP Long-Term Recommendations (Map Source: Clackamas County TDP 2021)

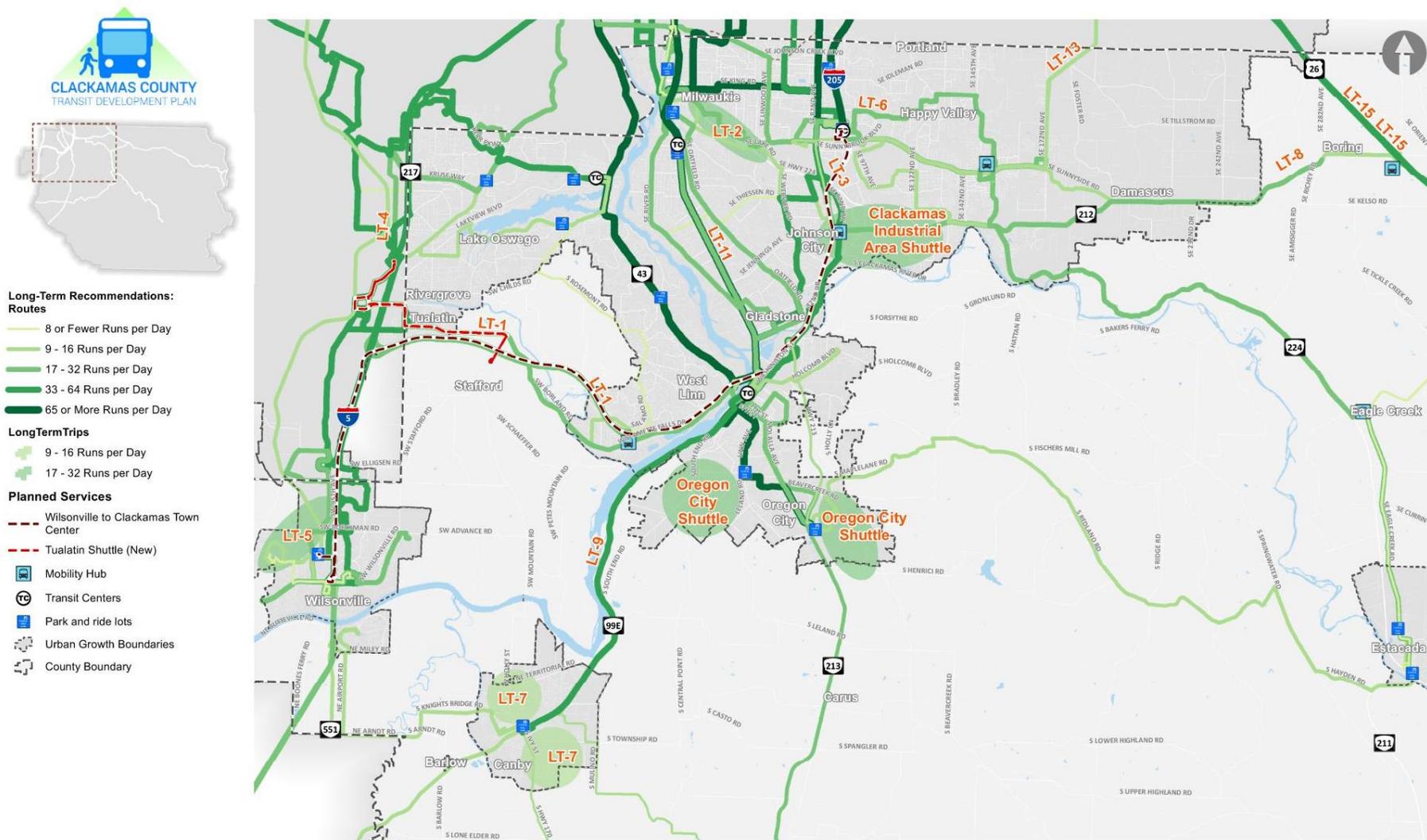
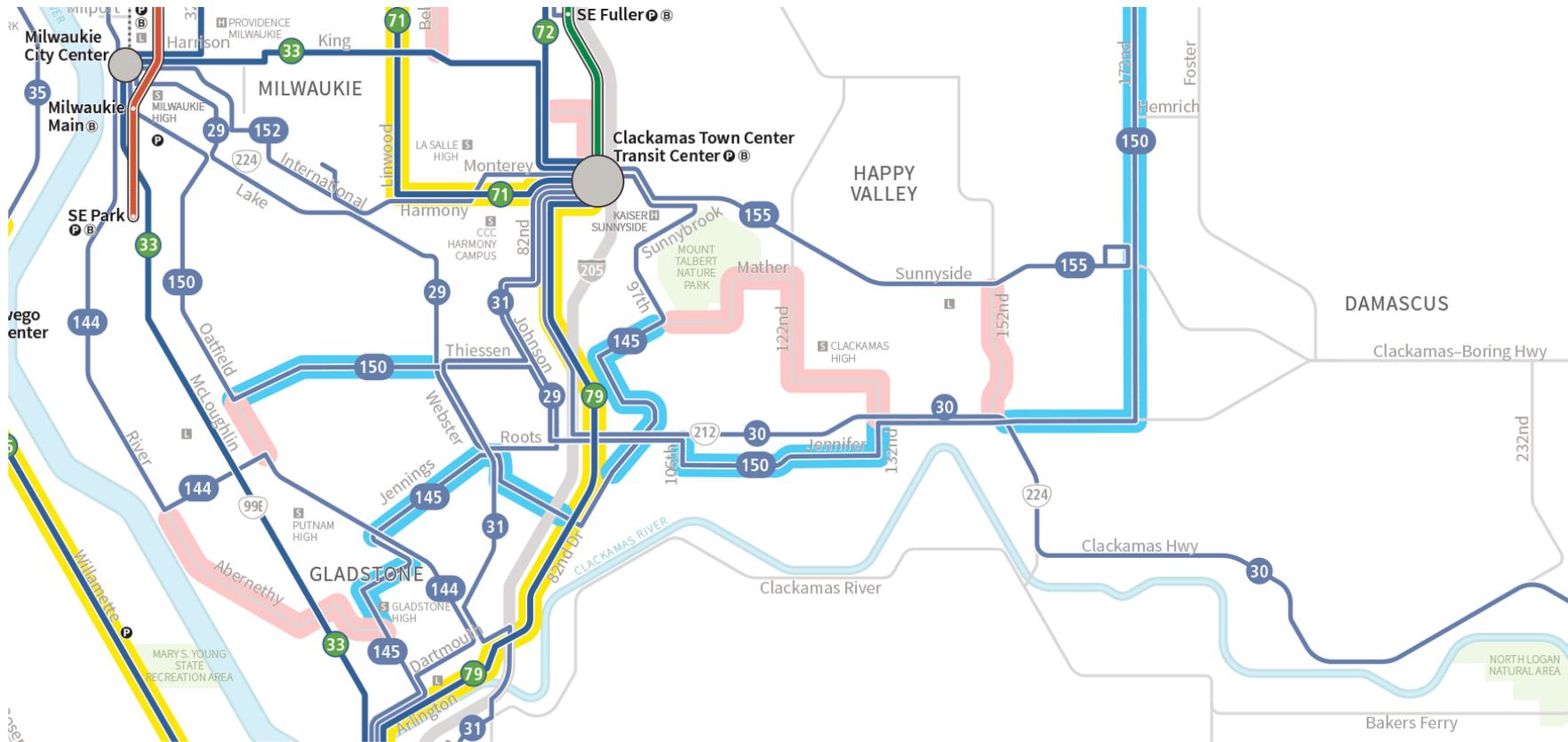


Figure 11. Forward Together Plan for the Sunrise Corridor Area (Map Source: TriMet's Forward Together Plan 2023)



Bus Service Changes

- Service loss
- New Service
- New Frequent Service

Bus Service

- 2 Frequent Express Service
- 4 Frequent Service
- 17 Standard Service
- 18 Rush-Hour Service
- 291 Night Service

Existing Intersection Operations

Turning movement data were collected in May 2023. The traffic counts were seasonally adjusted following Chapter 5 in ODOT's *Analysis Procedures Manual* (APM – Reference 5), and vehicle volumes were balanced for the through movements between the OR 213 southbound off-ramp/I-205 southbound on-ramp/OR 224 and SE 122nd Avenue/OR 224/OR 212 intersections, as well as between the SE 152nd Avenue/OR 212 and OR 224/OR 212 intersections, where access points between intersections are limited.

Appendix B includes the intersection turning movement counts.

Performance Thresholds

The *Oregon Highway Plan* (OHP – Reference 6) identifies operating standards for I-205, OR 212, OR 224 for the weekday AM and PM peak hours. At unsignalized intersections, the v/c ratio threshold of 0.99 applies to state highway approaches. At signalized intersections other than interchange ramp terminals, the 0.99 v/c threshold applies to the overall intersection. At signalized interchange ramp terminals, a v/c threshold of 0.85 applies to the overall intersection or up to 0.90 if ramp vehicle queues would not extend onto the mainline per OHP guidelines.

Clackamas County uses level of service (LOS) for its operating standards and sets a threshold of LOS E for unsignalized intersections (i.e., SE 122nd Avenue/SE Jennifer Street).

Traffic Operations Results

Figure 12 shows the existing lane configurations and weekday AM and PM peak hour operations for the study intersections and includes the following operations results:

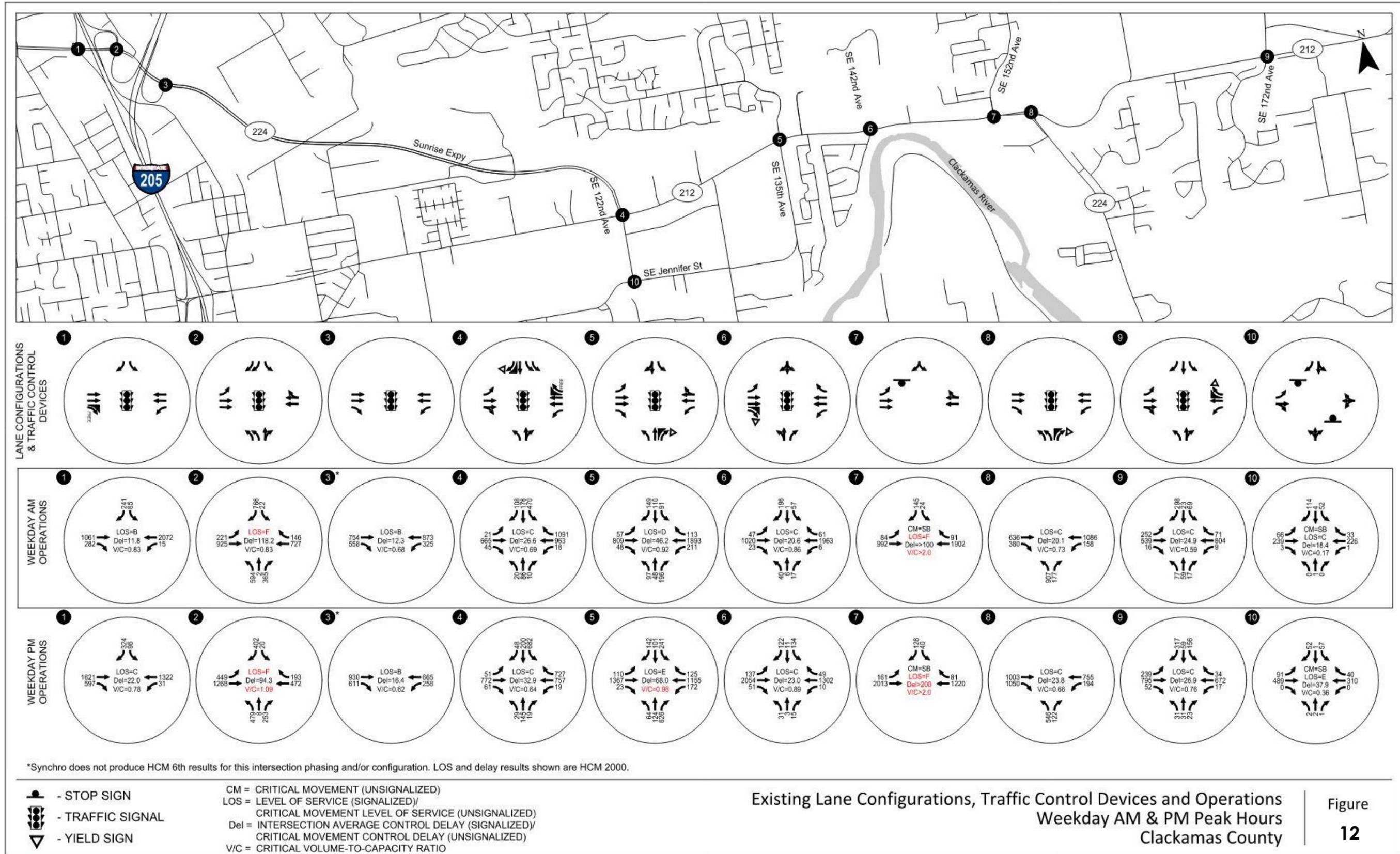
- The SE 152nd Avenue/OR 212 intersection is over capacity during both the weekday AM and PM peak hour periods.
- The OR 213 northbound access/I-205 southbound off-ramp/OR 224 intersection has a v/c ratio of 1.09 during the weekday PM peak hour. The queues at this intersection are not projected to reach the mainline.
- The critical southbound left-turn movement for the SE 122nd Avenue/SE Jennifer Street intersection is LOS E in the weekday PM peak hour, which is right at the Clackamas County standard.

Appendix C includes the intersection operations worksheets. The v/c ratios and delay numbers are being reported from Vistro 2024, while the 95th percentile queues are being reported from Synchro 12.

What is volume-to-capacity (v/c) ratio?

Volume-to-capacity (v/c) ratio measures congestion on a roadway by dividing the amount of traffic by the roadway's available space.

- A v/c ratio of 0.90 suggests the roadway is fairly congested but not yet over capacity.
- A v/c ratio of 1.0 is at capacity.
- Over 1.0 is over capacity.



Intersection Queuing

Intersection queues were analyzed to determine if there is adequate queue storage for each lane group across all 10 study intersections. The 95th percentile queue represents a common figure for measuring peak queue lengths. Table 7 below identifies the 95th percentile queues during peak hours, available storage or distance to next intersection, and whether storage adequately handles queues.

As shown, there are 95th percentile queues that exceed the available storage capacity at four of the 10 study intersections. These include queues on ramp terminals connecting to I-205 and OR 213.

- At the OR 213 southbound off-ramp/I-205 southbound on-ramp/OR 224 intersection, the southbound right-turning movement exceeds the available storage capacity during both the weekday AM and PM peak hours. The queue does not spill back onto OR 213 but does impact the southbound left-turn movement.
- At the OR 213 northbound access/I-205 southbound off-ramp/OR 224 intersection, the westbound through movement blocks the intersection with SE Ambler Road during both peak hours, and the eastbound left-turn queue exceeds the available storage during the weekday PM peak hour. Most critically, the northbound right-turn queue blocks the northbound left-turn lane and nearly reaches southbound I-205.
- At the SE 135th Avenue/OR 212 intersection, the southbound right-turn queues exceed the turn lane capacity during both peak hours and blocks the southbound left-turn lane. During the weekday PM peak hour, the westbound queue will block the two driveways on the north and south sides of OR 212.
- At the OR 224/OR 212 intersection, the northbound left-turn lane exceed the storage capacity during both peak hours, blocking access to the northbound right-turn lane. The eastbound right-turn lane exceeds capacity as well, but it reaches SE 152nd Avenue during the weekday PM peak hour.

Table 7. 95th Percentile Queue Lengths – Weekday AM and PM Peak Hours

ID	Intersection	Movement	Storage Length (feet)	95 th Percentile Queue (feet)	Adequate?
Weekday AM Peak Hour					
1	OR 213 southbound off-ramp/I-205 southbound on-ramp/OR 224	EBT	1,075	275	Yes
		WBL	75	25	Yes
		WBT	700	50	Yes
		SBL	250	125	Yes
		SBR	250	400	No
2	OR 213 northbound access/I-205 southbound off-ramp/OR 224	EBL	375	250	Yes
		EBT	600	25	Yes
		WBT	300	375	No
		NBL	800	425	Yes
		NBR	800	1,125	No
		SBL	175	50	Yes

ID	Intersection	Movement	Storage Length (feet)	95 th Percentile Queue (feet)	Adequate?
5	SE 135th Avenue/OR 212	EBL	425	100	Yes
		EBT	725	25	Yes
		EBR	75	25	Yes
		WBL	225	275	Yes
		WBT	350	175	Yes
		NBL	250	175	Yes
		NBT	N/A	100	Yes
		SBL	325	150	Yes
		SBTR	325	700	No
8	OR 224/OR 212 (Rock Creek Junction)	EBT	650	250	Yes
		EBR	150	300	No
		WBL	225	200	Yes
		WBT	5,000	300	Yes
		NBL	200	350	No
Weekday PM Peak Hour					
1	OR 213 southbound off-ramp/I-205 southbound on-ramp/OR 224	EBT	1,075	600	Yes
		WBL	75	50	Yes
		WBT	700	25	Yes
		SBL	250	125	Yes
		SBR	250	450	No
2	OR 213 northbound access/I-205 southbound off-ramp/OR 224	EBL	375	450	No
		EBT	600	25	Yes
		WBT	300	450	No
		NBL	800	350	Yes
		NBR	800	750	Yes
		SBL	175	50	Yes

ID	Intersection	Movement	Storage Length (feet)	95 th Percentile Queue (feet)	Adequate?
5	SE 135th Avenue/OR 212	EBL	425	100	Yes
		EBT	725	50	Yes
		EBR	75	0	Yes
		WBL	225	275	No
		WBT	350	750	No
		NBL	250	125	Yes
		NBT	N/A	200	Yes
		SBL	325	525	No
		SBTR	325	350	No
8	OR 224/OR 212 (Rock Creek Junction)	EBT	650	575	Yes
		EBR	150	2,100	No
		WBL	225	225	Yes
		WBT	5,000	175	Yes
		NBL	200	375	No

Travel Patterns

The corridor travel pattern analysis is based on Streetlight mobile device data to analyze travel patterns and volume profiles. The data queried encompassed all days and all hours between May 13th and 19th, 2023, to represent a typical travel week consistent with analysis informer studies. There are some limitations inherent in travel demand data. In this case, Streetlight data is derived from smartphone applications and other mobile sources, resulting in potential to disproportionately represent smartphone users rather than the total population. Second, data availability constraints can lead to incomplete information across time and locations. More information is available upon request.

Origin-destination analyses were conducted for the 14 zones located in and surrounding the project area, as depicted in Figure 13, then grouped zones into five major areas, including the Clackamas Industrial Area (7, 9, 10, 11), Happy Valley residential (2, 3, 4, 6), Damascus/low-density residential (8, 12), and Clackamas Town Center (1) and four manufactured home developments grouped together (5, 13, 14). Figure 14 below shows the origin-destination data trip volumes from the Clackamas Industrial Area to other areas near the study area. The most common destinations from the Clackamas Industrial Area are other locations within the industrial area and Happy Valley (yellow bar). The most common origins into the Clackamas Industrial area are also from the industrial area and Happy Valley. Damascus is the least comment destination and origin point for the Clackamas Industrial Area. Among the OD trips, around 28 to 29% of trips pass through the study area, while the 71% of trips either start or end within the study area (Figure 15). Notably, a greater number of pass-through trips occur overnight, specifically between 10 pm and 6 am, with a peak at around 4 to 5 am (Figure 16).

A detailed description of the origin-destination data between these zones is found in Appendix D.

Figure 13. Origin-Destination Zone Map

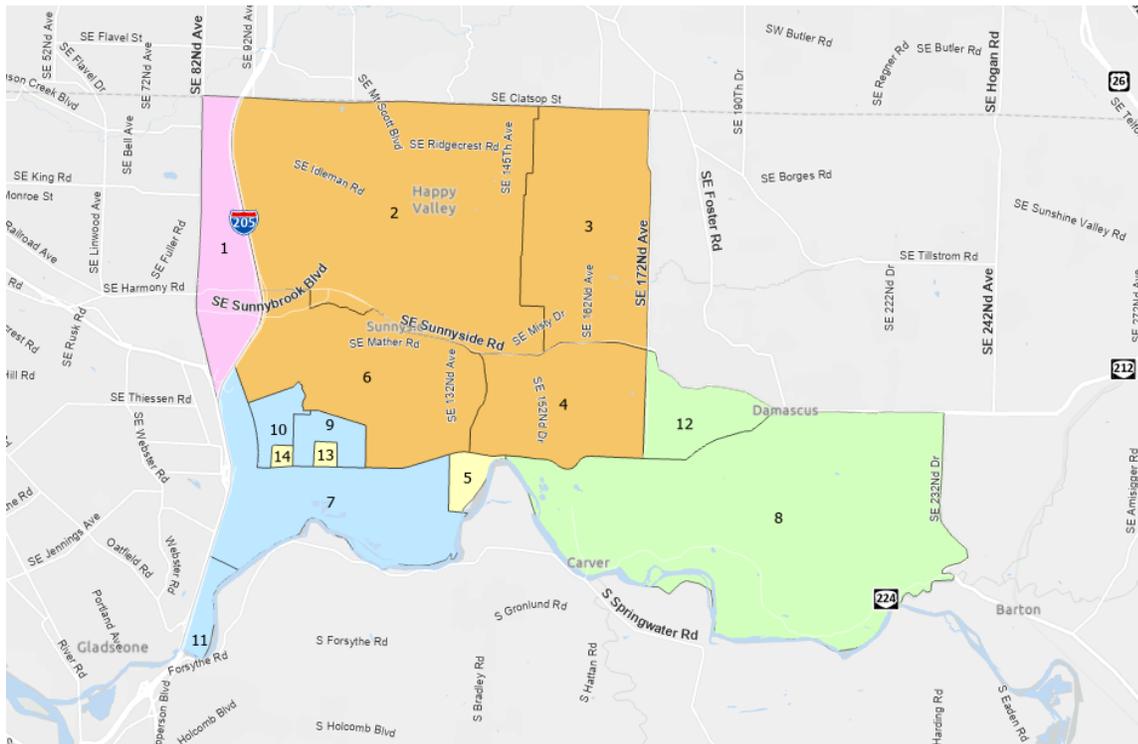
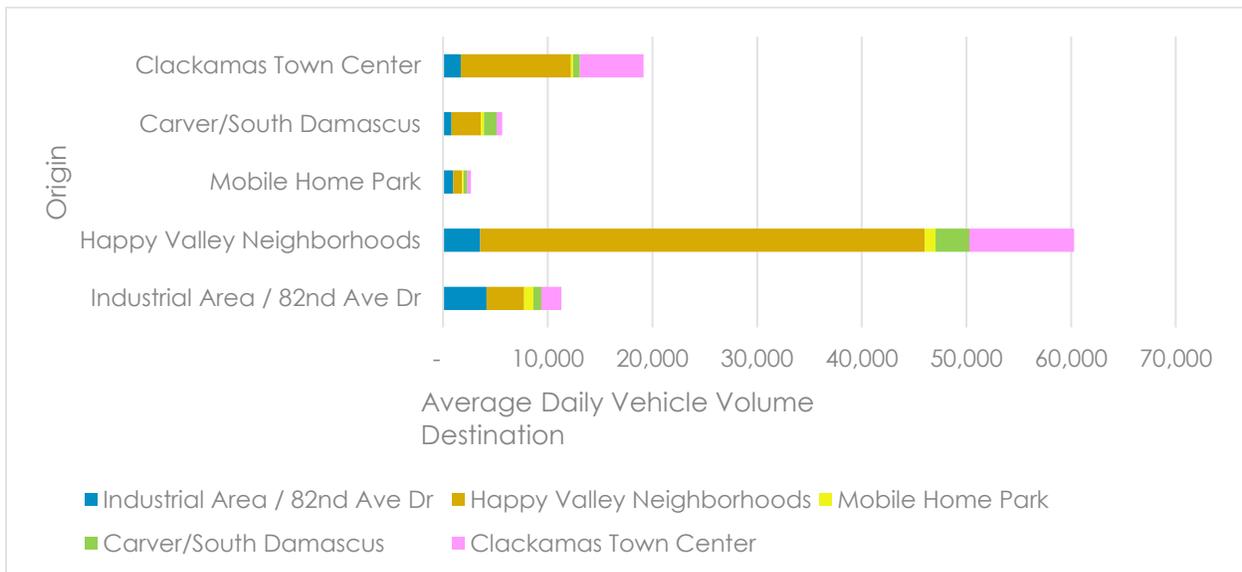


Figure 14. Origin-Destination by Analysis Zones –Sunrise Corridor Study Area



Note/Sources: The four mobile home parks are Riverbend, Shadowbrook, and Oak Acres located at 10701 OR 212, and the housing complex bounded by OR 212 to the south, SE 102nd Avenue to the east, SE Clackamas Road to the north, and SE 98th Avenue to the west.

Figure 15. Proportion of Pass-Through Trips

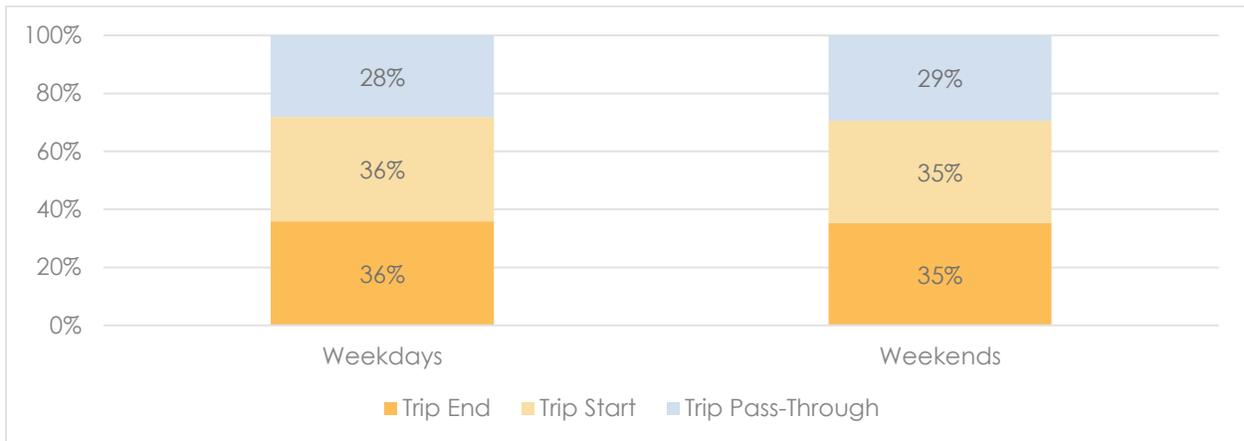
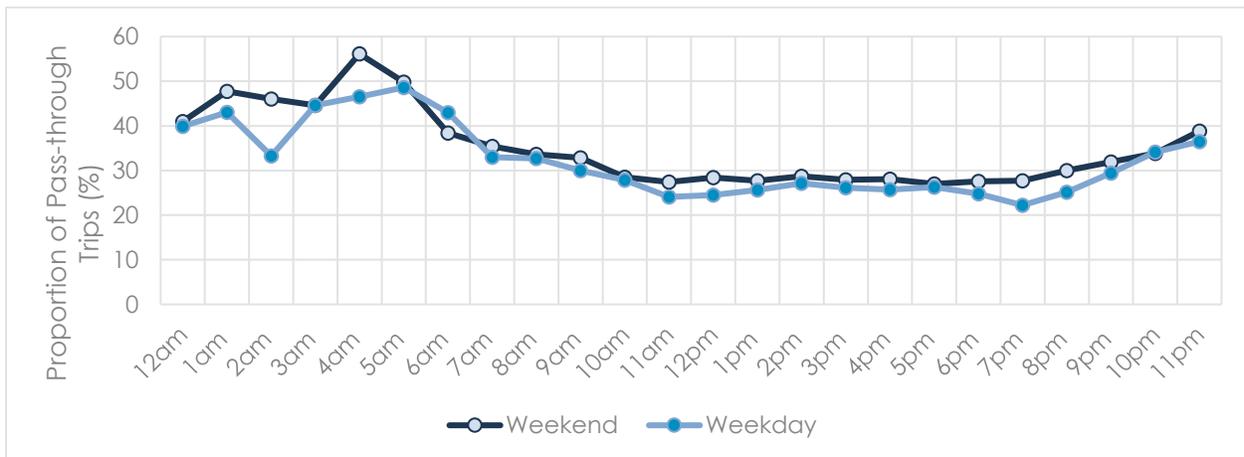


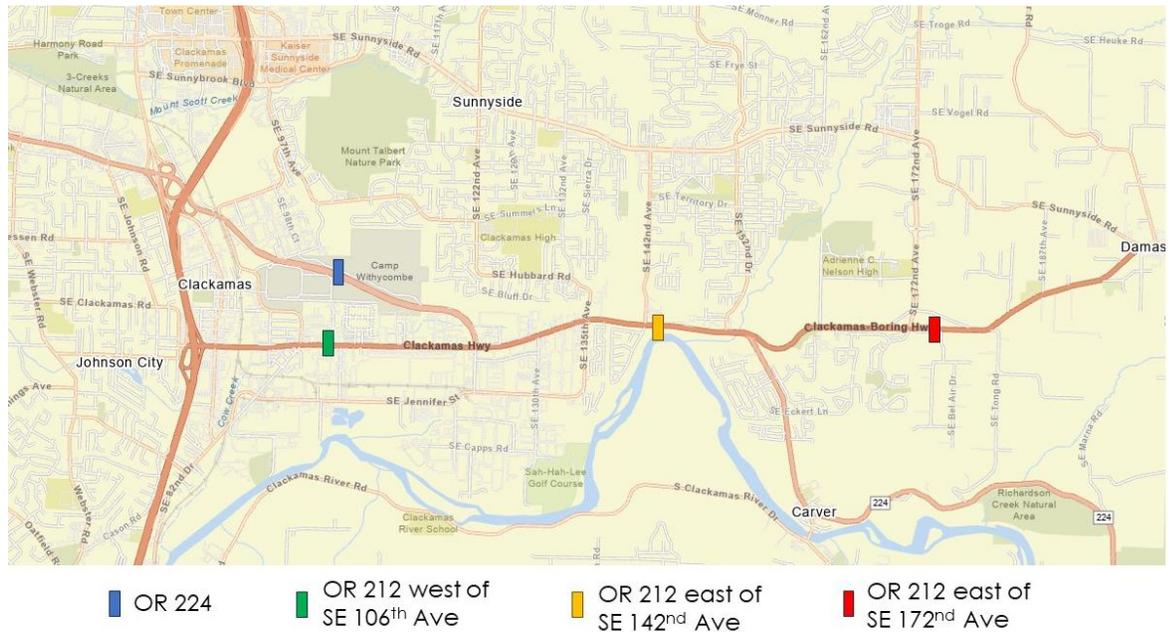
Figure 16. Average Portion of Pass-Through Trips Per Hour (Data source: Streetlight Data, Inc.)



Motorized Vehicle Origin-Destination by Location

Select route analyses of origin-destination data were performed at four key locations for eastbound and westbound travel, shown in Figure 17. The results of the origin-destination analyses for the OR 224 location are shown in Figure 18 through Figure 33 below. Only links with complete five-day weekday data are included in these figures.

Figure 17. Key Origin-Destination Locations



May Weekday Snapshot

Eastbound Weekday Traffic on OR 224 (Sunrise Expressway)

- Origins
 - 59% from OR 224 west of I-205, 40% from I-205 north of OR 224.
- Destinations
 - 11% travels south via SE 122nd Ave to Clackamas Industrial Area.
 - 6% goes towards Happy Valley through SE 142nd Ave and SE 152nd Dr.
 - 35% travels south on OR 224, 3% north on SE 172nd Ave toward Damascus.
 - 20% remains on OR 212 heading east.

Eastbound Weekday Traffic on OR 212 near 106th Ave:

- Origins
 - 48% originates from I-205 south of OR 212.
- Destinations
 - 2% travels south through SE 122nd Ave to Clackamas Industrial Area.
 - 9% goes towards Happy Valley via SE 142nd Ave and SE 152nd Dr.
 - 15% moves south on OR 224, 5% north on SE 172nd Ave.
 - 32% continues east on OR 212.

Westbound OR 212 Traffic East of SE 172nd Ave:

- Origins
 - 20% originates from OR 26.
 - 13% from SE 242nd Ave.
 - 9% from SE 282nd Ave.

- 6% from SE 222nd Dr.
- Destinations
 - 10% travels south (5% on OR 224), 5% north (on SE 172nd Ave).
 - 26% proceeds west on OR 224 past I-205.
 - 33% remains on OR 212, with 26% diverting south onto I-205.

Figure 20. OR 224 Eastbound Origin-Destination Select Link Analysis (Local Area; Data source: Streetlight Data, Inc.)

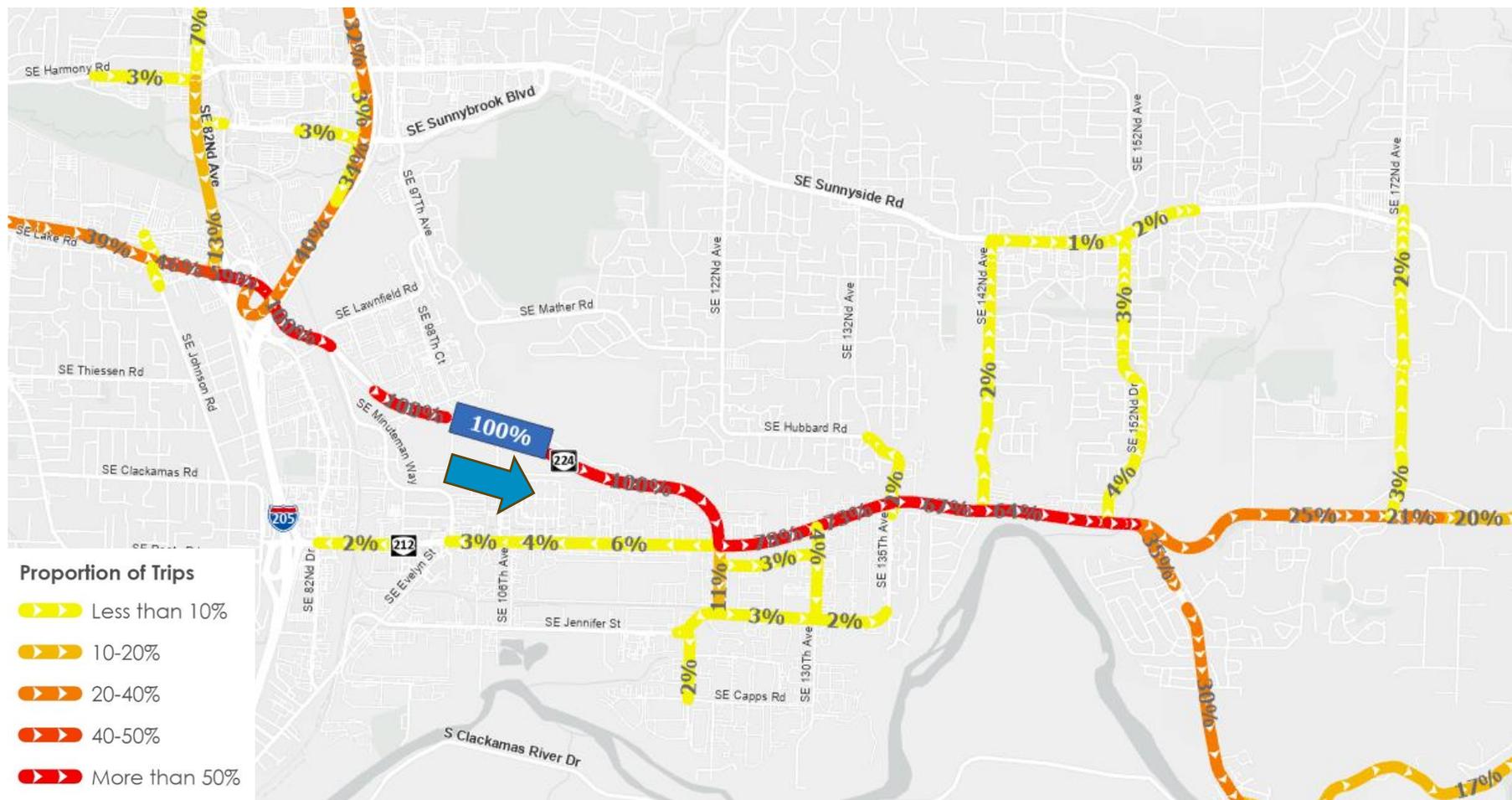


Figure 21. OR 224 Eastbound Origin-Destination Select Link Analysis (Regional Area; Data source: Streetlight Data, Inc.)

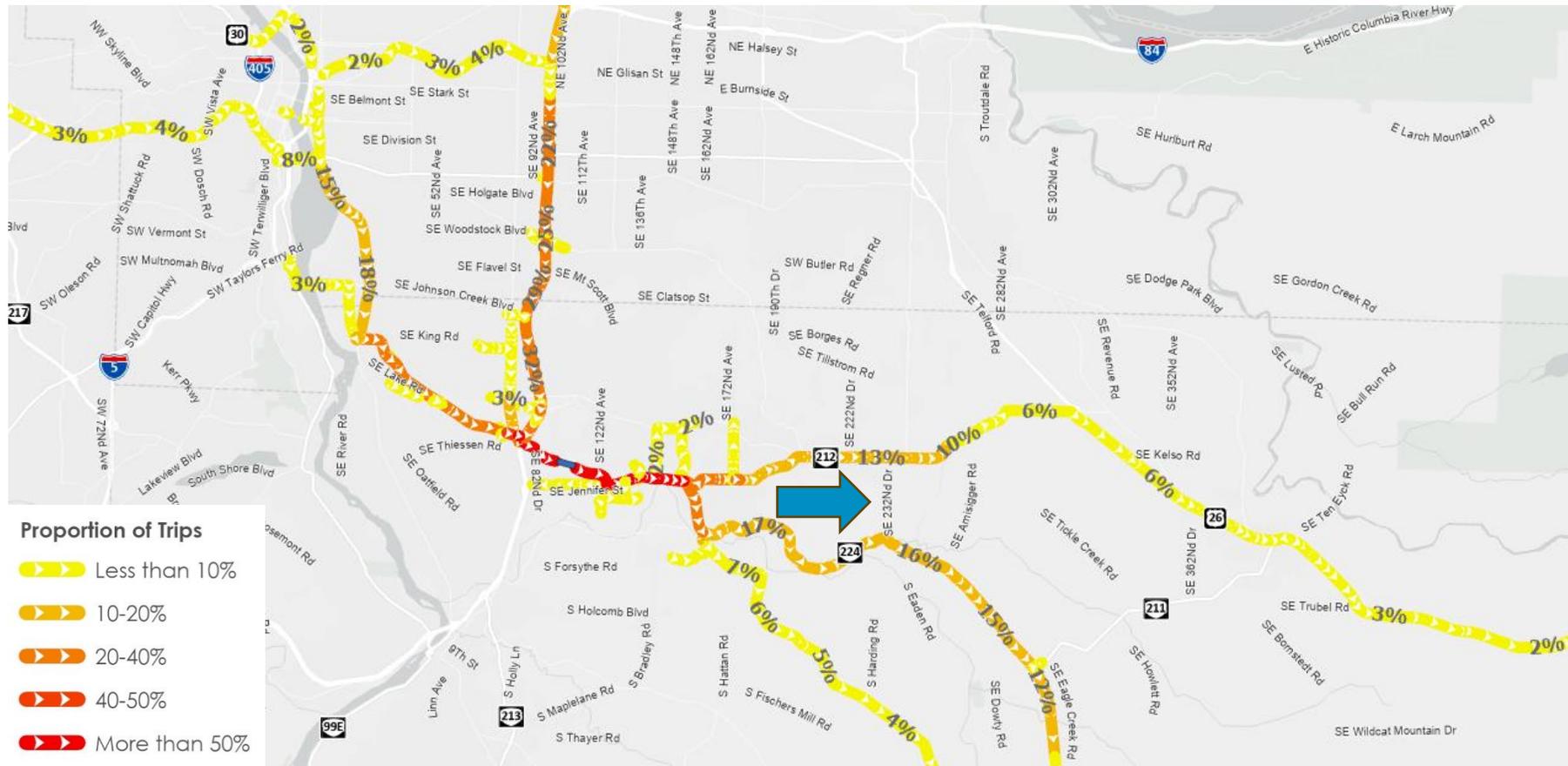


Figure 30. OR 212 at 172nd Street Westbound Origin-Destination Select Link Analysis (Local Area; Data source: Streetlight Data, Inc.)

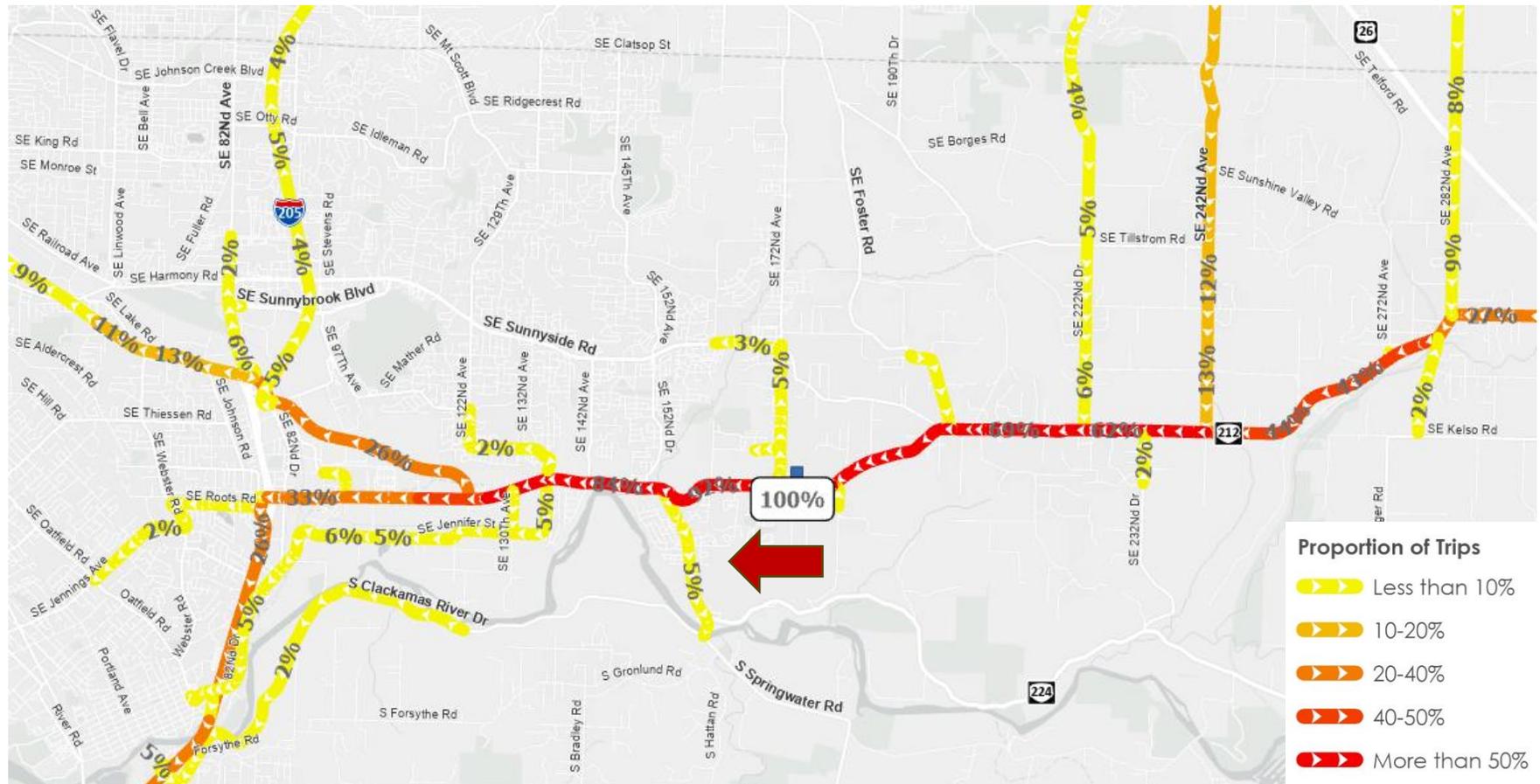
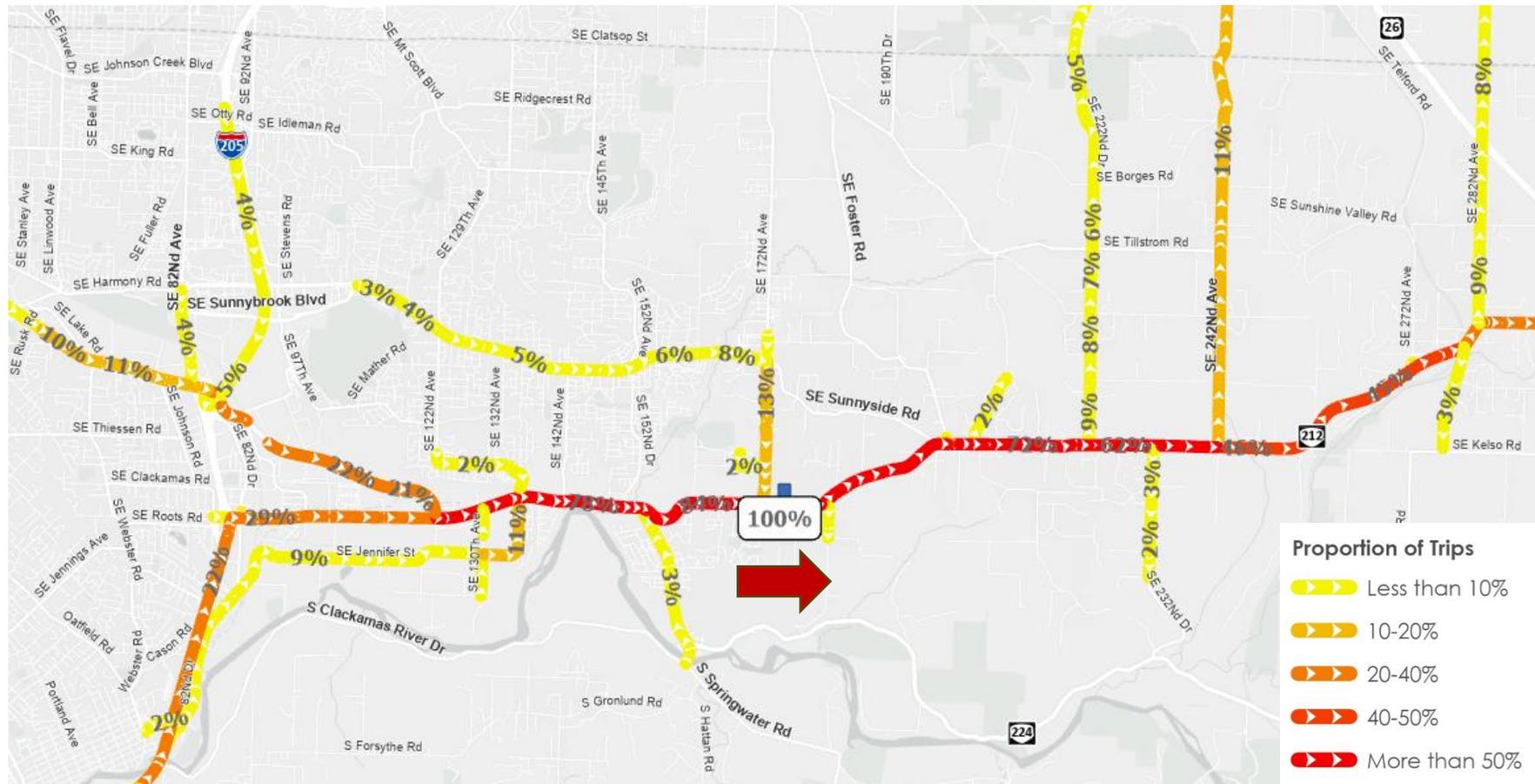


Figure 32. OR 212 at 172nd Street Eastbound Origin-Destination Select Link Analysis (Local Area; Data source: Streetlight Data, Inc.)



Daily Volume Profile

The study team developed a daily vehicle volume profile at four key locations along the Sunrise Corridor (shown in Figure 17) using the same Streetlight data described in the previous section. The volume profiles for traffic for weekday and weekends are shown in Figure 34 through Figure 37.

Westbound traffic on both OR 224 and OR 212 exhibits morning peak hours between 7 AM and 9 AM during weekdays. In contrast, weekday eastbound peak volumes occur between approximately 3 PM and 5 PM. On weekends, the distinction in peak direction is less pronounced, with peak hours appearing midday from 10 AM to 3 PM.

Figure 34. Average Portion of Weekday Daily Volume Per Hour (OR 212; Data source: Streetlight Data, Inc.)

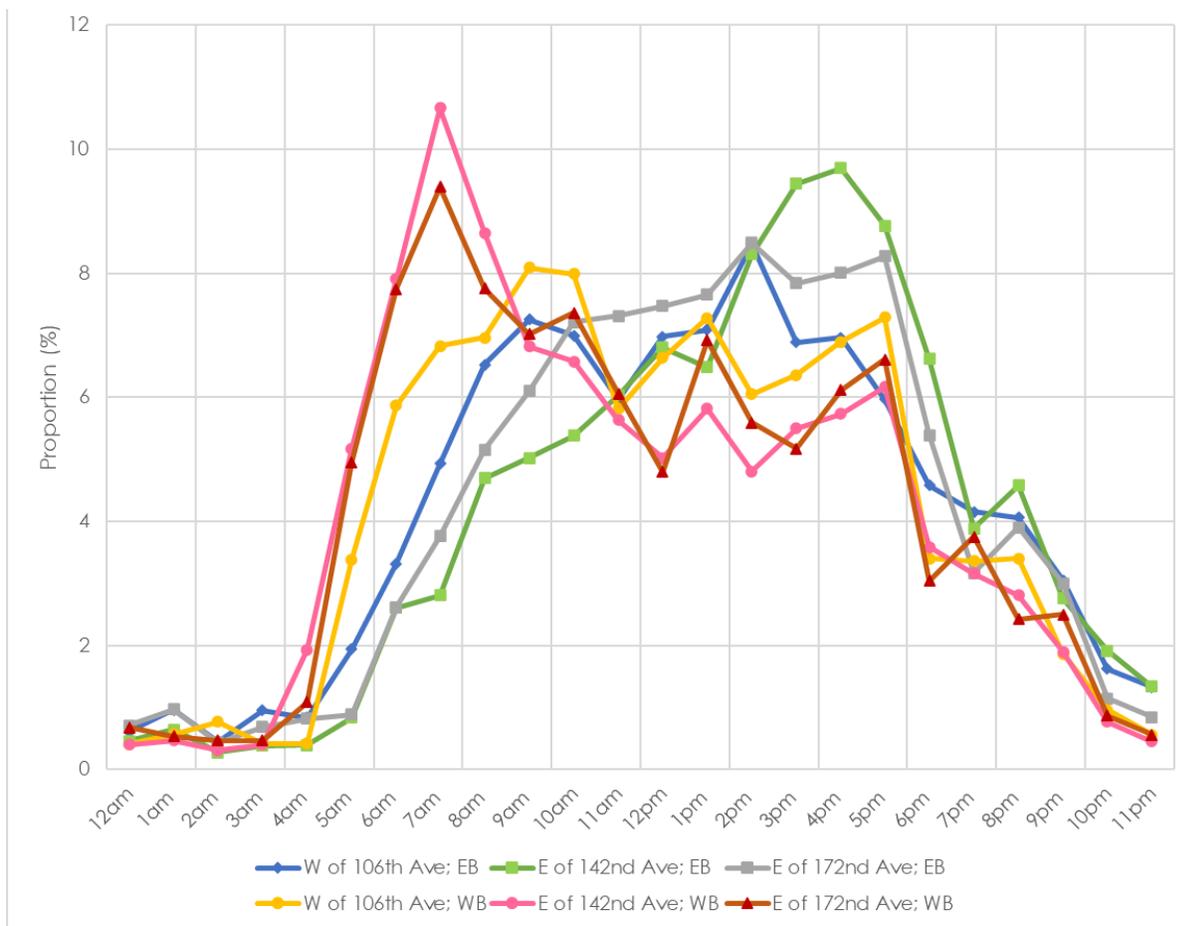


Figure 35. Average Portion of Weekday Daily Volume Per Hour (OR 224 at Sunrise Expressway; Data source: Streetlight Data, Inc.)

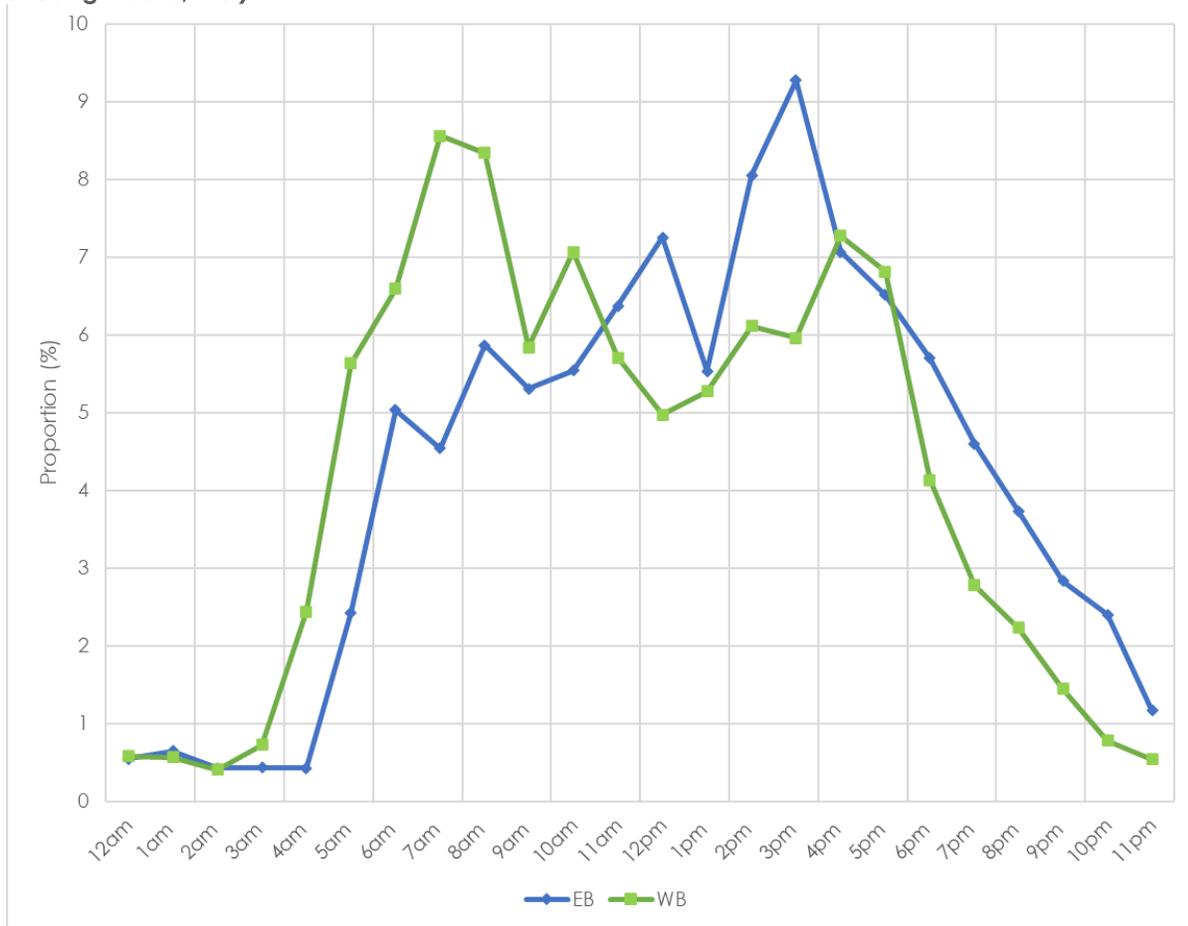


Figure 36. Average Portion of Weekend Daily Volume Per Hour (OR 212; Data source: Streetlight Data, Inc.)

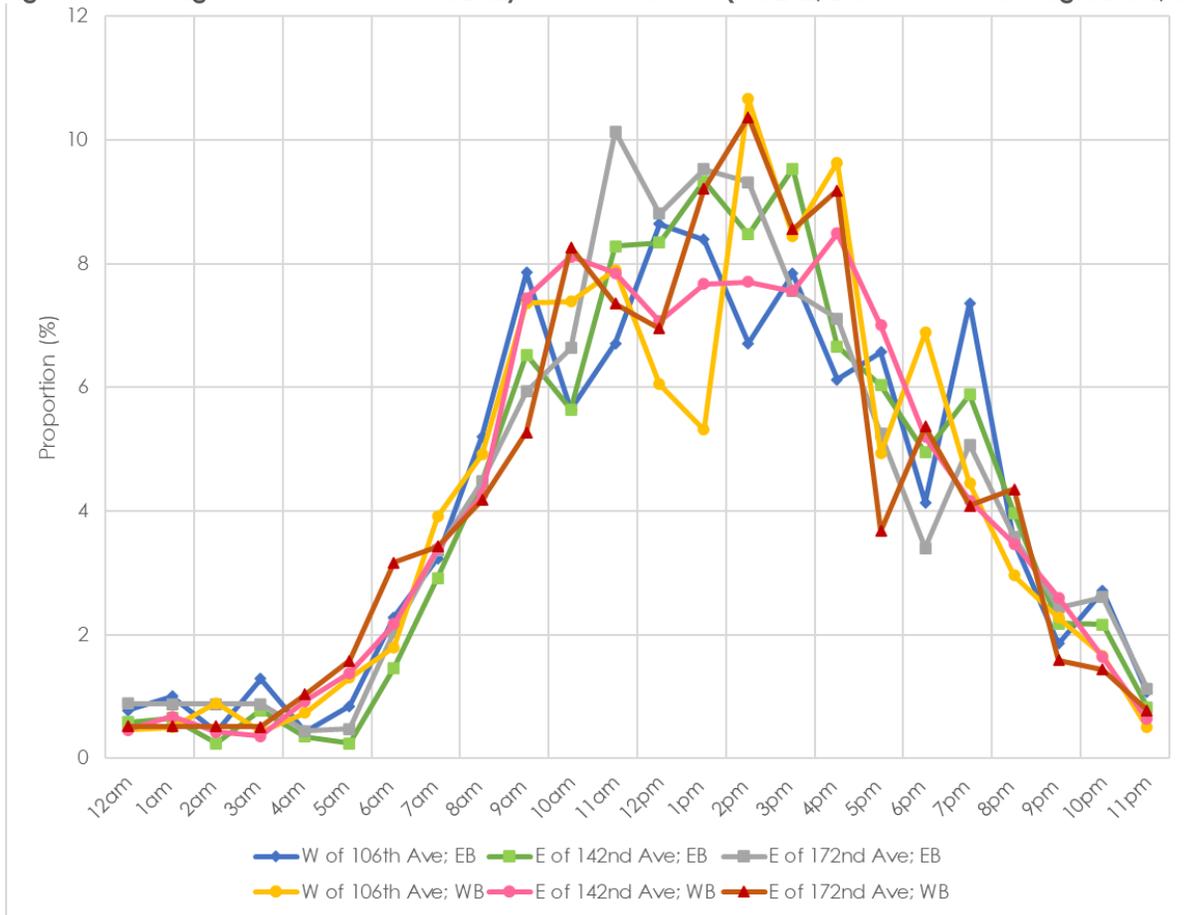
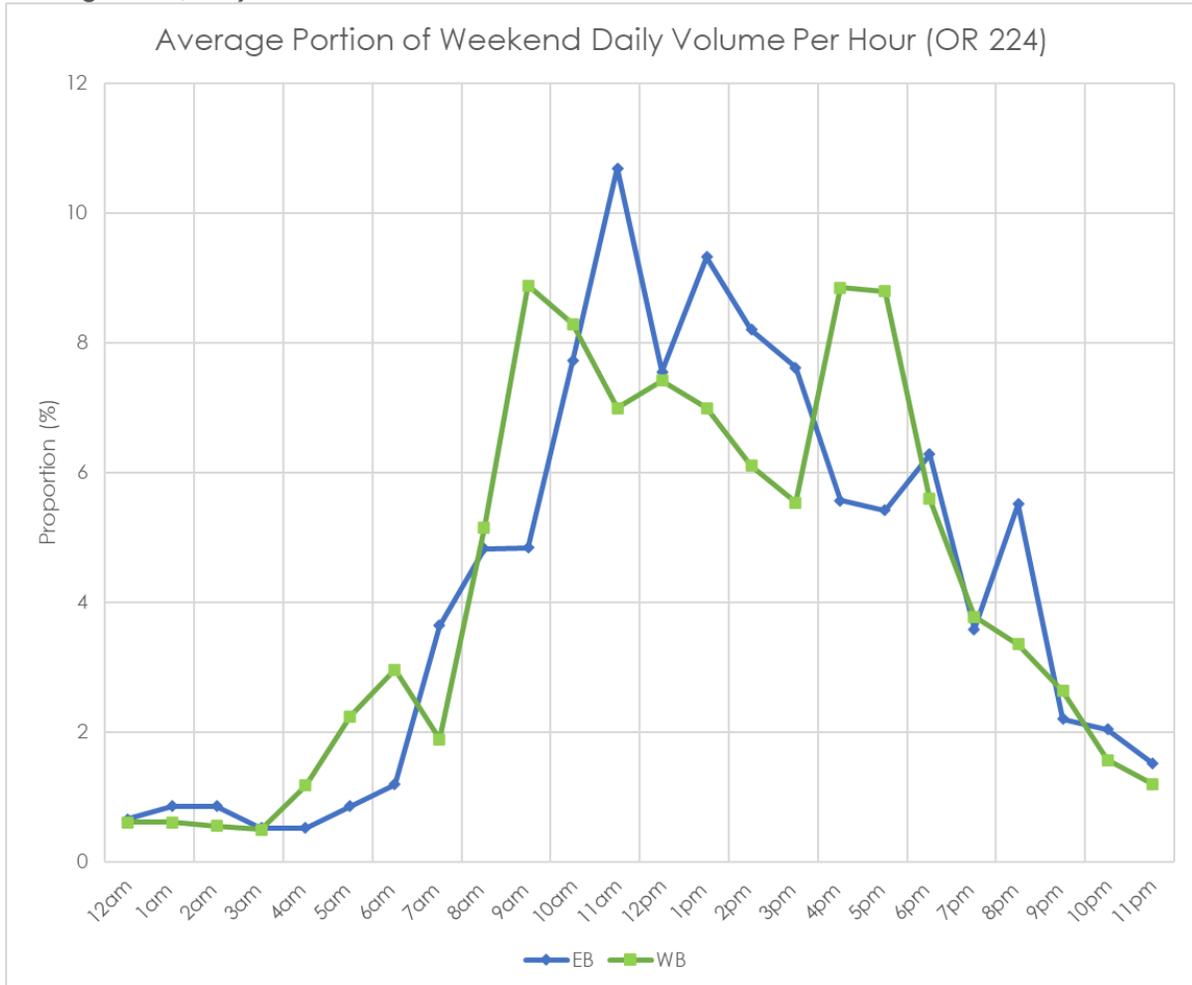


Figure 37. Average Portion of Weekend Daily Volume Per Hour (OR 224 at Sunrise Expressway; Data source: Streetlight Data, Inc.)



Freight Traffic

Figure 38 shows the average annual daily traffic of trucks near the study area. As shown, the existing OR 212 serves as a key corridor for freight activity locally and regionally.

Figure 38. Truck Flow (AADT, Source: ODOT TransGIS)



Applying the volume data from select route analyses, the project team analyzed proportions of heavy vehicles. The results for each location are shown in Figure 39 through Figure 46 below. Heavy vehicles include vehicles above 26,000 pounds (GVWR Class 7+).

May Weekday Snapshot

For eastbound traffic passing through OR 212 at 172nd Avenue, heavy vehicles make up approximately 1% of the total. On the westbound route to SE 172nd Avenue and SE Thiessen Road consists of heavy vehicles. Additionally, more than 5% of the traffic bound for SE Clackamas Road comprises freight vehicles.

As for eastbound traffic on OR 212 at 106th Avenue, about 10% of vehicles on I-205 are heavy vehicles. Roughly 4 to 6% of traffic to and from the Clackamas Industrial Area falls into the heavy vehicle category. For westbound traffic on OR 212 at 106th Avenue, 6.2% of traffic from SE Kelso Road consists of heavy vehicles.

Similarly, both eastbound and westbound traffic passing through OR 224 at Sunrise Expressway shows that around 10% of the vehicles are either from or accessing the Clackamas Industrial Area.

Figure 39. OR 212 at 172nd Street Eastbound Heavy Vehicle Proportion (Local Area; Data source: Streetlight Data, Inc.)

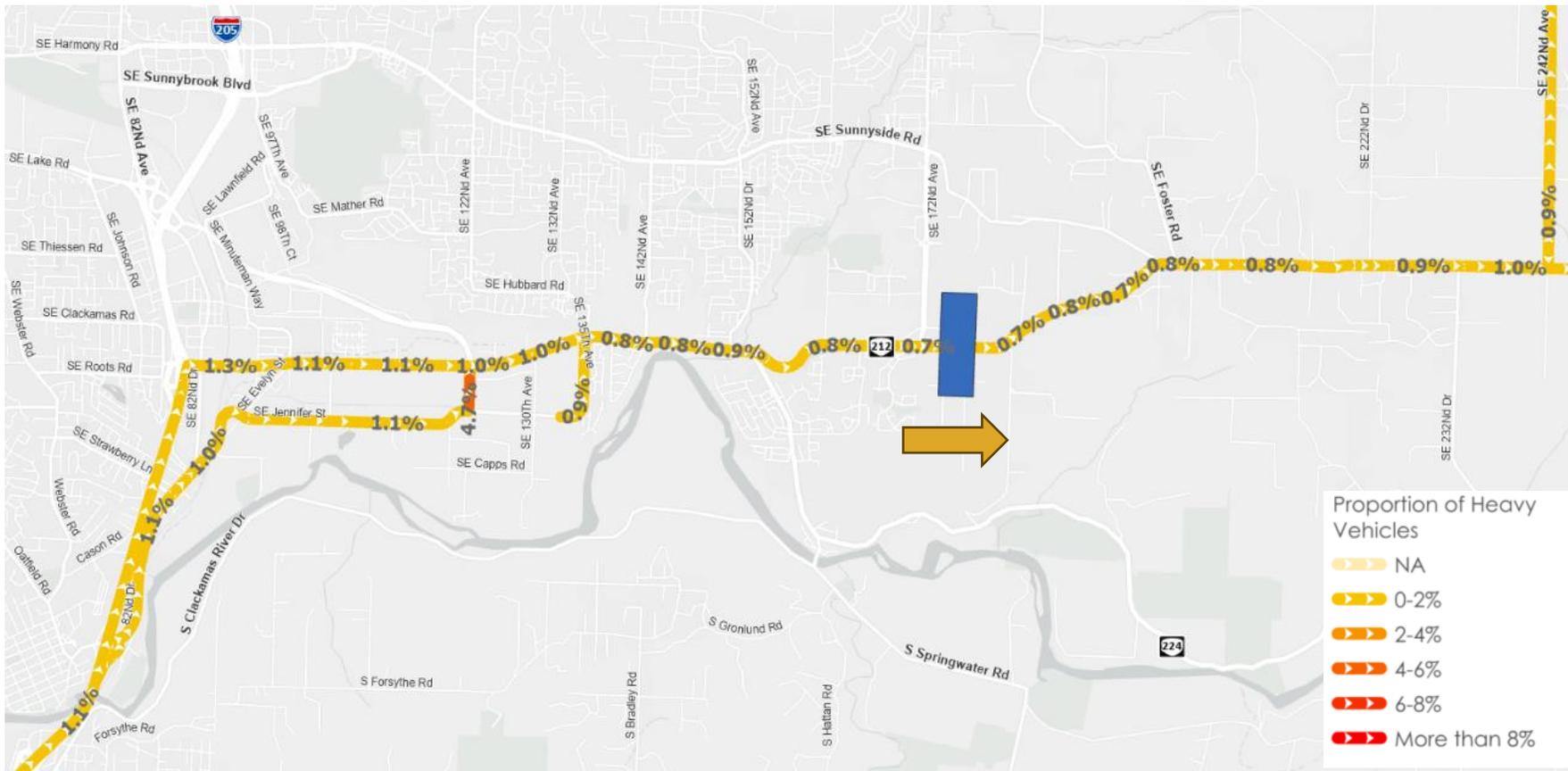


Figure 43. OR 212 at 106th Street Eastbound Heavy Vehicle Proportion (Local Area; Data source: Streetlight Data, Inc.)

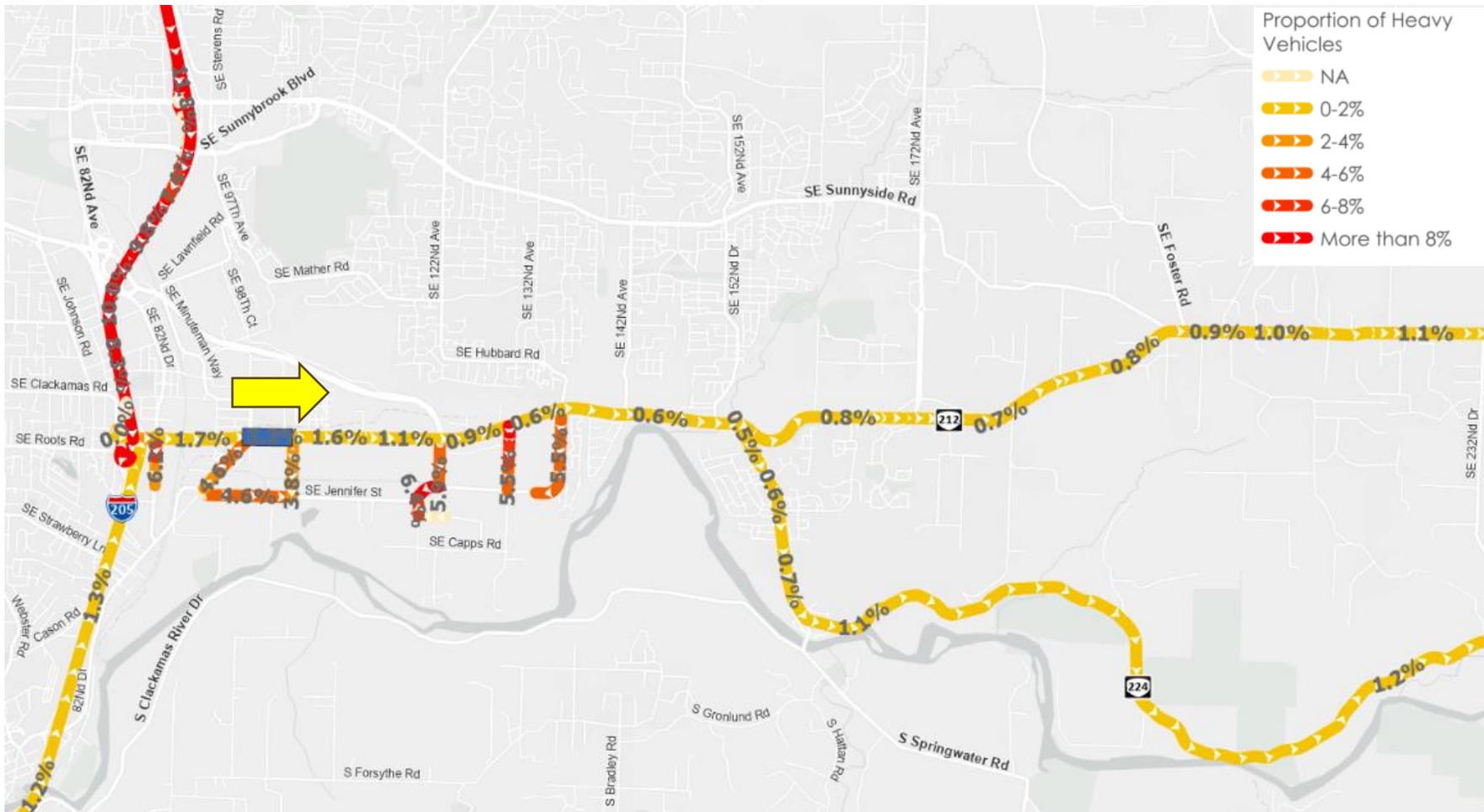
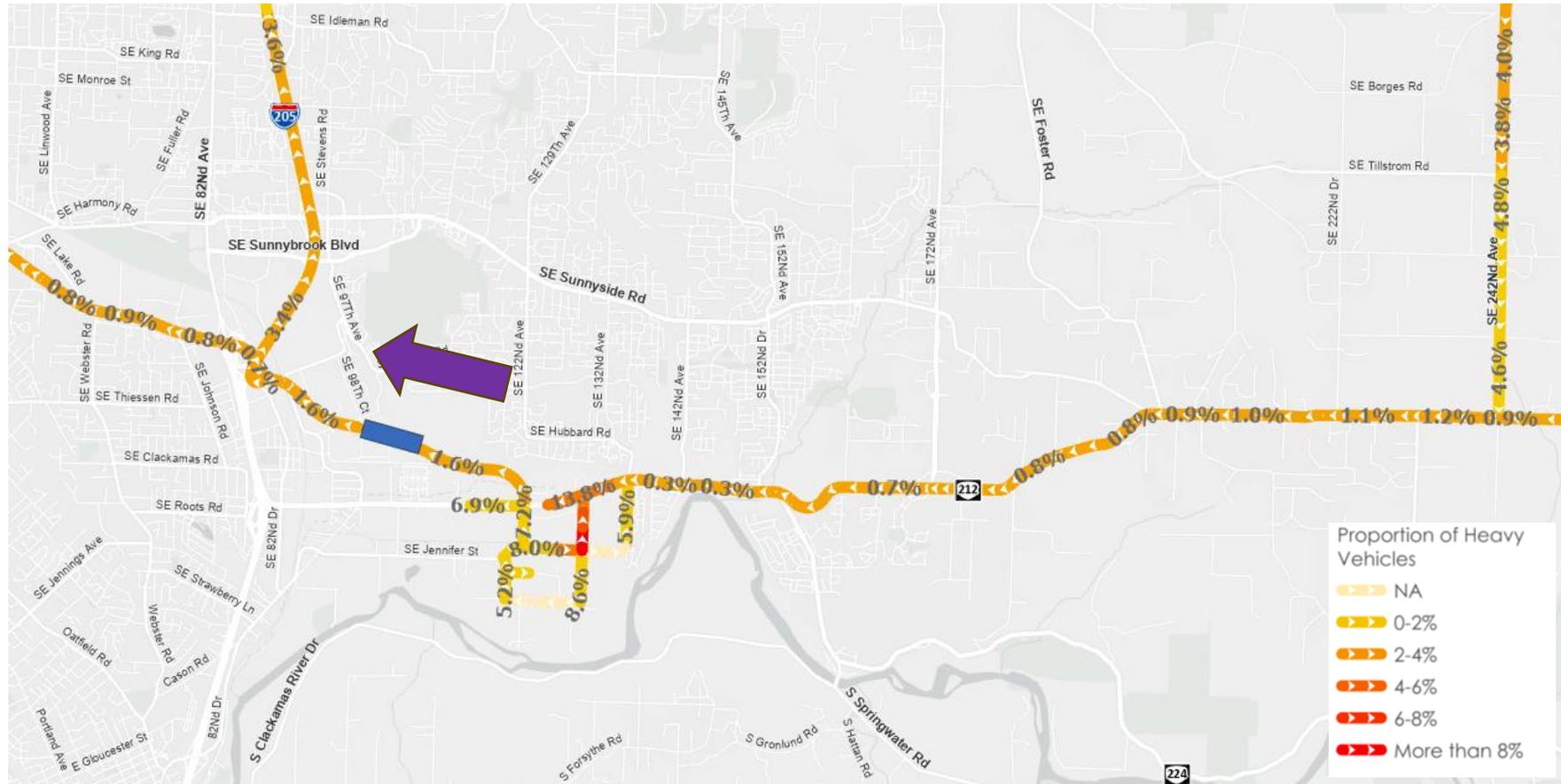


Figure 46. OR 224 Westbound Heavy Vehicle Proportion (Local Area; Data source: Streetlight Data, Inc.)



References

1. Oregon Department of Transportation. *TDS Crash Reports*. 2023.
2. Oregon Department of Transportation. *TransGIS*. 2023.
3. Clackamas County. *Transit Development Plan*. March 2021.
4. TriMet. *Forward Together – Revised Service Concept*. December 2022.
5. Oregon Department of Transportation. *Analysis Procedures Manual*. September 2023.
6. Oregon Department of Transportation. *Oregon Highway Plan*. November 1999.

Appendix A Crash Data

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNT ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUIT OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED)
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED ROAD
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHING
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED
4	EXP	EXPIRED
8	N-VAL	OTHER NON-VALID LICENSE
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	PARTICIPANT UNINJURED, OVER THE AGE OF 4

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYANCE
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OBJECT
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN OBJECT
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

075: SUNRISE EXPRESSWAY

Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

10 - 14 of 85 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE	
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE								
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED		
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	
04856	N	N	N	N	N	N	CLACKAMAS	1	12		INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE	9							04
STATE								MN	0		CN															000
N							PORTLAND UA	4.11			04	1		DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000
N							-122 34 28.44			007500100S00																000
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																										000
																										000
82870	N	N	N	N	N	N	CLACKAMAS	1	11		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	9							04
NO RPT								MN	0		CN															000
N							PORTLAND UA	4.11			04	0		DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000
N							-122 34 28.42			007500100S00																000
																										000
																										000
																										000
02046	N	N	N	N	N	N	CLACKAMAS	1	12		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0							04
STATE								MN	0		CN															000
N							PORTLAND UA	4.11			04	1		DAY	INJ		PSNGR	CAR		01	DRVR	INJC	56	F	OR-Y	020
N							-122 34 28.42			007500100S00																026
																										000
																										000
																										000
																										000
03759	N	N	N	N	N	N	CLACKAMAS	1	12		CURVE		N	Y	CLD	FIX OBJ	01	NONE	0							054
COUNTY								MN	0		UN	(NONE)	NONE	N	DRY	FIX		PRVTE								000
Y							PORTLAND UA	4.15			08			DAY	INJ		PSNGR	CAR		01	DRVR	NONE	75	F	OR-Y	001
N							-122 34 25.81			007500100S00		(03)														038
																										000
																										000
																										000
																										000
00894	N	N	N	N	N	N	CLACKAMAS	1	12		STRGHT		N	N	CLR	BIKE										110
STATE								MN	0		UN	(NONE)	UNKNOWN	N	DRY	ANGL										000
N							PORTLAND UA	4.16			03			DAY	INJ											037
N							-122 34 25.25			007500100S00		(04)														028
																										000
																										000
																										000
																										000
02104	N	N	N	N	N	N	CLACKAMAS	1	12		STRGHT		N	N	CLR	S-1STOP	01	NONE	0							004
STATE								MN	0		UN	(NONE)	NONE	N	DRY	REAR		PRVTE								000
N							PORTLAND UA	4.16			03			DAY	INJ		PSNGR	CAR		01	DRVR	INJC	54	M	OR-Y	026
N							-122 34 25.24			007500100S00		(03)														038
																										000
																										000
																										000
																										000
																										000

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

075: SUNRISE EXPRESSWAY

Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

075: SUNRISE EXPRESSWAY

Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

62 - 66 of 85 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	ERROR	ACT	EVENT	CAUSE										
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY													
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ										
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC					
																02	NONE	STOP												
																	PRVTE	S -N										011	013	00
																	PSNGR	CAR	01	DRVR	INJC	46	F	OR-Y		000	000	00	00	
																03	NONE	STOP										022	00	
																	PRVTE	S -N										022	00	
																	PSNGR	CAR	01	DRVR	NONE	17	M	OR-Y		000	022	00	00	
04622	N	N	N	N		12/14/2018	CLACKAMAS	1	12		STRGHT	N			RAIN	S-STRGHT	01	NONE	9	STRGHT									13	
NONE						FR					UN	(RSDMD)	NONE		N	WET	SS-O	N/A										000	00	
N						7P	PORTLAND UA	6.22			04				N	DLIT	PDO	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000	00	
N						45 24 30.4	-122 32 16.49			007500100S00		(03)																		
																	02	NONE	9	STRGHT									000	00
																	N/A											000	00	
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000	00	00	
03407	N	N	N	N		12/15/2020	CLACKAMAS	1	12		STRGHT	N			RAIN	S-STRGHT	01	NONE	9	STRGHT									13	
NONE						TU					UN	(RSDMD)	TRF SIGNAL		N	WET	SS-O	N/A										000	00	
N						4P	PORTLAND UA	6.22			04				N	DAY	PDO	SEMI	TOW	01	DRVR	NONE	00	Unk	UNK		000	000	00	
N						45 24 30.4	-122 32 16.51			007500100S00		(05)																		
																	02	NONE	9	STRGHT									000	00
																	N/A											000	00	
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000	00	00	
02210	N	N	N	N		06/06/2017	CLACKAMAS	1	12		INTER	CROSS	N		CLR	S-1STOP	01	NONE	9	STRGHT									29	
NONE						TU	HAPPY VALLEY				N				DRY	REAR	N/A											000	00	
N						3P	PORTLAND UA	6.26		SUNRISE EXWY HWY	03	2			N	DAY	PDO	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000	00	
N						45 24 28.35	-122 32 15.91			007500100S00																				
																	02	NONE	9	STOP									011	00
																	N/A											000	00	
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000	00	00	
01274	N	N	N	N		04/05/2017	CLACKAMAS	1	12		INTER	CROSS	N		CLR	S-1STOP	01	NONE	0	STRGHT									29	
NONE						WE	HAPPY VALLEY				N				DRY	REAR	PRVTE											000	00	
N						7A	PORTLAND UA	6.26		SUNRISE EXWY HWY	06	0			N	DAY	INJ	PSNGR	CAR	01	DRVR	NONE	26	M	OR-Y		026	000	29	
N						45 24 28.35	-122 32 15.91			007500100S00																				
																	02	NONE	0	STOP									011	00
																	PRVTE											000	00	
																	PSNGR	CAR	01	DRVR	INJC	29	F	OR-Y		000	000	00	00	
02352	N	N	N	N	N	08/28/2020	CLACKAMAS	1	12		INTER	3-LEG	N		CLR	S-1STOP	01	NONE	0	STRGHT									29	
STATE						FR	HAPPY VALLEY				N				DRY	REAR	UNKN											000	00	
N						9P	PORTLAND UA	6.26		SUNRISE EXWY HWY	06	2			N	DLIT	INJ	PSNGR	CAR	01	DRVR	NONE	00	F	UNK		026	000	29	
N						45 24 28.36	-122 32 15.91			007500100S00																				

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075: SUNRISE EXPRESSWAY

Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

075: SUNRISE EXPRESSWAY

Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

075: SUNRISE EXPRESSWAY

Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

075: SUNRISE EXPRESSWAY

Highway 075 ALL ROAD TYPES, MP 4.11 to 6.26 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

63 - 68 of 74 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE								
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE					
RD DPT	E	L	G	N	H	R	TIME	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE				
UNLOC?	D	C	S	V	L	K	LAT	LONG	MILEPNT	LRS	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
													02	NONE	0		STOP																
																	PRVTE																
																	PSNGR	CAR		01	DRVR	NONE	50	F	OR-Y		000	000	00	00			
00887	N	N	N	N		03/15/2019	CLACKAMAS	2	12		STRGHT	N		N	CLR	S-1STOP	01	NONE	9											29			
NO RPT						FR				MN	0	UN	(NONE)	NONE	N	DRY	REAR	N/A												000	00		
N						UNK	PORTLAND UA			3.84	06			N	DAY	PDO	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00	00			
N						45 25 19	-122 34 37.28					017100200S00	(04)																				
																	02	NONE	9														
																	N/A														011	00	
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00	00	00		
04112	N	N	N	N	N	09/08/2017	CLACKAMAS	2	12		STRGHT	N		N	SMOK	S-1TURN	01	NONE	9												27,08		
STATE						FR				MN	0	UN	(NONE)	UNKNOWN	N	DRY	TURN	N/A													000	00	
N						12A	PORTLAND UA			3.85	04			N	DARK	PDO	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00	00			
N						45 25 18.94	-122 34 36.83					017100200S00	(04)																				
																	02	NONE	9														
																	N/A															000	00
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00	00	00		
00055	N	N	N	N		01/05/2017	CLACKAMAS	2	12		STRGHT	N		N	CLR	S-1STOP	01	NONE	0												29		
NONE						TH				MN	0	UN	(NONE)	UNKNOWN	N	UNK	REAR	PRVTE													000	00	
N						7A	PORTLAND UA			3.85	05			N	DAWN	INJ	PSNGR	CAR		01	DRVR	NONE	37	M	OTH-Y		026	000	00	29			
N						45 25 18.94	-122 34 36.83					017100200S00	(04)																				
																	02	NONE	0														
																	PRVTE															011	00
																	PSNGR	CAR		01	DRVR	INJC	63	M	OR-Y		000	000	00	00	00		
01704	N	N	N	N		06/23/2021	CLACKAMAS	2	12		BRIDGE	N		N	CLR	S-STRGHT	01	NONE	0												29		
NONE						WE				MN	0	UN	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE													000	00	
N						1P	PORTLAND UA			3.86	03			N	DAY	INJ	PSNGR	CAR		01	DRVR	NONE	21	M	OR-Y		026	000	00	29			
N						45 25 18.89	-122 34 36.38					017100200S00	(04)																				
																	02	NONE	0														
																	PRVTE															011	00
																	PSNGR	CAR		01	DRVR	NONE	66	M	OR-Y		000	000	00	00	00		
																	02	NONE	0														
																	PRVTE															011	00
																	PSNGR	CAR		02	PSNG	INJC	65	F			000	000	00	00	00		
03309	N	N	N	N		11/02/2021	CLACKAMAS	2	12		STRGHT	N		N	CLR	S-STRGHT	01	NONE	9												07,27		
NONE						TU				MN	0	UN	(NONE)	UNKNOWN	N	DRY	REAR	N/A													000	00	
N						8A	PORTLAND UA			3.86	05			N	DAY	PDO	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00	00			
N						45 25 18.91	-122 34 36.39					017100200S00	(04)																				
																	02	NONE	9														
																	N/A															006	00
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00	00	00		

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

73 - 74 of 74 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	TRLR	QTY	MOVE	A	S	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	RNDBT	SURF	COLL	OWNER	FROM	TO	PRTC	INJ	G	E	LICNS	PED										
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-																					
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO																
																	02	NONE	9	STOP															
																	N/A																011	00	
																	PSNGR	CAR						01	DRVR	NONE	00	Unk	UNK		000	000	00		
03803	N	N	N	N		12/09/2021	CLACKAMAS	2	12		BRIDGE		Y	N	CLR	S-1STOP	01	NONE	9	STRGHT													128,129	22,29	
NONE						TH					UN	(NONE)	ACCEL LANE	N	WET	REAR																006	00		
N						UNK	PORTLAND UA		3.96		04			N	DAY	PDO							01	DRVR	NONE	00	Unk	UNK		000	000	00			
N						45 25 18.39	-122 34 30.89			017100200S00		(01)																							
																	02	NONE	9	STOP															
																	N/A																011	00	
																	TRUCK						01	DRVR	NONE	00	Unk	UNK		000	000	00			

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 3.70 to 3.96 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

6 - 7 of 109 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	ACT	EVENT	CAUSE																					
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY																							
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED																
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR														
																02	NONE	0	STRGHT																					
																	PRVTE	E -W													006	00								
																	PSNGR	CAR	01	DRVR	INJC	67	F	OR-Y		000			000	000	00									
02014	N	N	N	N		07/17/2021	CLACKAMAS	1	14		STRGHT					01	NONE	1	STRGHT												013	07								
STATE						SA				MN	0	UN	(RSDMD)		Y		PRVTE	E -W												001	00									
N						3P	PORTLAND UA			5.19	08	0		N	CLR	S-1STOP	PSNGR	CAR	01	DRVR	KILL	80	M	OR-Y		043,026			000	000	07									
N						45 24 26.53	-122 33 57.72						(04)																											
																	02	NONE	0	STOP																				
																	PRVTE	E -W															011	013	00					
																	PSNGR	CAR	01	DRVR	INJB	33	M	OTH-Y		043			000	000	07									
																	02	NONE	0	STOP																				
																	PRVTE	E -W																011	013	00				
																	PSNGR	CAR	02	PSNG	INJB	29	F			000			000	000	00									
																	02	NONE	0	STOP																				
																	PRVTE	E -W																	011	013	00			
																	PSNGR	CAR	03	PSNG	INJB	08	M			000			000	000	00									
																	02	NONE	0	STOP																				
																	PRVTE	E -W																		011	013	00		
																	PSNGR	CAR	05	PSNG	INJB	04	F			000			000	000	00									
																	02	NONE	0	STOP																				
																	PRVTE	E -W																			011	013	00	
																	PSNGR	CAR	06	PSNG	INJB	06	F			000			000	000	00									
																	03	NONE	0	STOP																				
																	PRVTE	E -W																				022	00	
																	PSNGR	CAR	01	DRVR	INJB	54	F	OR-Y		000			000	000	00									
02989	Y	N	N	N	N	08/29/2019	CLACKAMAS	1	14		STRGHT					01	NONE	1	STRGHT														013	01,29,32						
STATE						TH				MN	0	UN	(RSDMD)		N		PRVTE	E -W																		000	00			
N						12P	PORTLAND UA			5.20	06			N	CLR	S-1STOP	SEMI	TOW	01	DRVR	NONE	30	M	OR-Y		047,026,052			038	038	01,29,32									
N						45 24 26.53	-122 33 56.98						(05)																											
																	02	NONE	0	STOP																				
																	PRVTE	E -W																				011	013	00
																	PSNGR	CAR	01	DRVR	INJB	36	M	OR-Y		000			000	000	00									
																	03	NONE	0	STRGHT																				
																	PRVTE	W -E																				022	00	
																	PSNGR	CAR	01	DRVR	INJC	35	M	OR-Y		000			000	000	00									

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

61 - 65 of 109 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE					
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE			
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
														02	NONE	9	STOP															
														N/A			W -E												011	00		
														PSNGR	CAR					01	DRVR	NONE	00	Unk	UNK		000	000	00	00		
04320	N	N	N	N		11/26/2018	CLACKAMAS	1	14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE	9	STRGHT										29		
NO RPT						MO	HAPPY VALLEY	MN	0	CARVER RD	E		TRF SIGNAL	N	WET	REAR		N/A										000	00			
N						5P	PORTLAND UA	6.14		SE 114TH AVE	06	0		N	DLIT	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	00		
N						45 24 28.3	-122 32 46.65			017100100S00																						
														02	NONE	9	STOP															
														N/A			E -W												011	00		
														PSNGR	CAR					01	DRVR	NONE	00	Unk	UNK		000	000	00	00		
02901	N	N	N	N		09/29/2021	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT									089	29,07		
NONE						WE	HAPPY VALLEY	MN	0	CARVER RD	W		STOP SIGN	N	DRY	REAR		PRVTE									000	00				
N						8A	PORTLAND UA	6.14		SE 114TH AVE	06	0		N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	38	M	OR-Y	026	000	29,07			
N						45 24 28.29	-122 32 46.66			017100100S00																						
														02	NONE	0	STOP															
														PRVTE			W -E												011	00		
														PSNGR	CAR					01	DRVR	INJC	47	F	OR-Y		000	000	00	00		
														02	NONE	0	STOP															
														PRVTE			W -E												011	00		
														PSNGR	CAR					02	PSNG	INJC	52	M			000	000	00	00		
02905	N	N	N	N	N	09/29/2021	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT										02,03,40		
COUNTY						WE	HAPPY VALLEY	MN	0	CARVER RD	CN		STOP SIGN	N	DRY	TURN		PRVTE									000	00				
N						7A	PORTLAND UA	6.14		SE 114TH AVE	01	0		N	DAY	INJ		PSNGR	CAR		01	DRVR	INJB	45	F	OR-Y	000	000	00			
N						45 24 28.29	-122 32 46.66			017100100S00																						
														02	NONE	0	TURN-L															
														PRVTE			N -E												000	00		
														PSNGR	CAR					01	DRVR	INJC	36	M	OTH-Y		028,021	026	02,03,40			
04667	N	N	N	N		11/07/2017	CLACKAMAS	1	14		STRGHT		N	N	CLD	S-1STOP	01	NONE	9	STRGHT										29		
NONE						TU	HAPPY VALLEY	MN	0	CARVER RD	E		(NONE)	UNKNOWN	N	WET	REAR		N/A								000	00				
N						4P	PORTLAND UA	6.15		SE 114TH AVE	03			N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00			
N						45 24 28.34	-122 32 44.23			017100100S00			(04)																			
														02	NONE	9	STOP															
														N/A			W -E												011	00		
														PSNGR	CAR					01	DRVR	NONE	00	Unk	UNK		000	000	00	00		

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

79 - 83 of 109 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	UNLOC?	D	C	S	V	L	K	LAT	LONG	MILEPNT	LRS	ACT	EVENT	CAUSE		
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE					
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE			
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE			
02642	N	N	N	N	N	10/01/2020	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	0											29		
NONE						TH	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	W -E											000	00		
N						3P	PORTLAND UA	6.52		122ND AVE	03			N	DAY	INJ	PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		026	000		29			
N						45 24 28.35	-122 32 18.97			017100100S00		(04)																				
																	02	NONE	0													
																	PRVTE	STOP												011	00	
																	PSNGR CAR	W -E												000	000	00
																			01	DRVR	INJC	55	M	OR-Y		000			000	000	00	
02564	N	N	N	N	N	09/23/2020	CLACKAMAS	1	14		STRGHT	N		N	RAIN	S-STRGHT	01	NONE	0											29		
NONE						WE	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	NONE	N	WET	REAR	PRVTE	W -E											000	00		
N						2P	PORTLAND UA	6.52		122ND AVE	04			N	DAY	INJ	PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		042	000		29			
N						45 24 28.36	-122 32 19.01			017100100S00		(04)																				
																	02	NONE	0													
																	PRVTE	STRGHT												000	00	
																	PSNGR CAR	W -E												000	000	00
																			01	DRVR	INJC	24	M	OR-Y		000			000	000	00	
02632	N	N	N	N	N	07/27/2018	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	0											29		
COUNTY						FR	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	TRF SIGNAL	N	DRY	REAR	PRVTE	W -E											000	00		
N						3P	PORTLAND UA	6.53		122ND AVE	03			N	DAY	INJ	PSNGR CAR		01	DRVR	INJC	75	M	OR-Y		026	000		29			
N						45 24 28.35	-122 32 18.18			017100100S00		(04)																				
																	02	NONE	0													
																	PRVTE	STOP												011	00	
																	PSNGR CAR	W -E												000	000	00
																			01	DRVR	INJC	52	F	OR-Y		000			000	000	00	
01853	N	N	N	N	N	07/16/2020	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	0											29		
COUNTY						TH	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	NONE	N	DRY	REAR	UNKN	W -E											000	00		
N						6A	PORTLAND UA	6.53		122ND AVE	03			N	DAY	INJ	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		026	000		29			
N						45 24 28.35	-122 32 18.24			017100100S00		(04)																				
																	02	NONE	0													
																	PRVTE	STOP												011	00	
																	PSNGR CAR	W -E												000	000	00
																			01	DRVR	INJC	49	F	OR-Y		000			000	000	00	
02444	N	N	N	N	N	08/22/2021	CLACKAMAS	1	14		STRGHT	Y		N	CLR	S-1STOP	01	NONE	9										29			
NONE						SU	HAPPY VALLEY	MN	0	CARVER RD	W	(RSDMD)	UNKNOWN	N	WET	REAR	N/A	W -E										000	00			
N						10A	PORTLAND UA	6.53		SUNRISE EXWY HWY	03			N	DAY	PDO	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00			
N						45 24 28.35	-122 32 18.22			017100100S00		(04)																				
																	02	NONE	9													
																	N/A	STOP												011	00	
																	PSNGR CAR	W -E												000	000	00
																			01	DRVR	NONE	00	Unk	UNK		000			000	000	00	

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 4.88 to 6.55 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 6.56 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 6.56 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 6.56 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

Highway 171 ALL ROAD TYPES, MP 6.56 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

29 - 32 of 169 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	UNLOC?	D	C	S	V	L	K	LAT	LONG	MILEPNT	LRS	ACT	EVENT	CAUSE	
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE				
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE			
00459	N	N	N	N	N	02/07/2018	CLACKAMAS	1	14		STRGHT	N	N	CLR	S-1STOP	01	NONE	0												29	
NONE						WE	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	W	-E									000	00		
N						8A	PORTLAND UA	6.81		FOR MOR CT	04			N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	23	M	OR-Y		026	000	29		
N						45 24 30.4	-122 31 57.43			017100100S00		(04)																			
																02	NONE	0													
																PRVTE	STOP	W	-E										011	00	
																PSNGR CAR				01	DRVR	INJC	49	F	OR-Y		000	000	00	00	
02864	N	N	N	N	N	10/23/2020	CLACKAMAS	1	14		STRGHT	N	N	CLR	S-STRGHT	01	NONE	9											29		
NONE						FR	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	NONE	N	DRY	REAR	N/A	W	-E									000	00		
N						8A	PORTLAND UA	6.84		FOR MOR CT	04			N	DAY	PDO	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000	00		
N						45 24 30.86	-122 31 55.53			017100100S00		(04)																			
																02	NONE	9													
																N/A	STRGHT	W	-E										000	00	
																PSNGR CAR				01	DRVR	NONE	00	Unk	UNK		000	000	00	00	
04601	N	N	N	N	N	12/15/2018	CLACKAMAS	1	14		STRGHT	N	N	CLR	S-STRGHT	01	NONE	0											013	29	
COUNTY						SA	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	E	-W									000	00		
N						10A	PORTLAND UA	6.87		FOR MOR CT	06	0		N	DAY	INJ	PSNGR CAR			01	DRVR	INJB	40	F	OR-Y		026	000	29		
N						45 24 31.31	-122 31 53.63			017100100S00		(04)																			
																01	NONE	0													
																PRVTE	STRGHT	E	-W										000	00	
																PSNGR CAR				01	PSNG	INJB	17	F			000	000	00	00	
																02	NONE	0													
																PRVTE	STRGHT	E	-W										006	013	00
																PSNGR CAR				01	DRVR	INJB	23	F	OR-Y		000	000	00	00	
																03	NONE	0											022	00	
																PRVTE	STRGHT	E	-W										000	000	00
																PSNGR CAR				01	DRVR	INJC	37	F	OR-Y		000	000	00	00	
																03	NONE	0													
																PRVTE	STRGHT	E	-W										022	00	
																PSNGR CAR				02	PSNG	INJB	07	F			000	000	00	00	
02209	N	N	N	N	N	06/28/2021	CLACKAMAS	1	14		INTER	3-LEG	N	Y	CLR	FIX OBJ	01	NONE	0									062	10		
STATE						MO	HAPPY VALLEY	MN	0	CARVER RD	W		STOP SIGN	N	DRY	FIX	PRVTE	E	-W									000	062	00	
N						6P	PORTLAND UA	6.88		FOR MOR CT	05	0		N	DAY	FAT	PSNGR CAR			01	DRVR	KILL	42	M	SUSP		080,083,081	000	10		
N						45 24 31.46	-122 31 52.99			017100100S00																					

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 6.56 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 6.56 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

42 - 45 of 169 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLCR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE		
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LR			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO												
83029	N	N	N	N		04/10/2019	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0										29		
NO RPT						WE	HAPPY VALLEY	MN	0	CARVER RD	E		TRF SIGNAL	N	WET	REAR		PRVTE									000	00			
N						4P	PORTLAND UA	6.94		130TH AVE	06	0		N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	64	F	OR-Y	026	000	29		
N						45 24 32.6	-122 31 48.95			017100100S00																					
																		02	NONE	0											
																		PRVTE										011	00		
																		PSNGR CAR			01	DRVR	INJC	41	F	OR-Y	000	000	00		
																		02	NONE	0											
																		PRVTE													
																		PSNGR CAR			02	PSNG	INJC	18	F		000	000	00		
01886	N	N	N	N		05/15/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE	9									29			
NONE						MO	HAPPY VALLEY	MN	0	CARVER RD	W		TRF SIGNAL	N	DRY	REAR		N/A									000	00			
N						4P	PORTLAND UA	6.94		130TH AVE	06	0		N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00		
N						45 24 32.6	-122 31 48.95			017100100S00																					
																		02	NONE	9											
																		N/A										011	00		
																		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	00	
02484	N	N	N	N		06/23/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	9									29			
NONE						FR	HAPPY VALLEY	MN	0	CARVER RD	W		TRF SIGNAL	N	DRY	REAR		N/A									000	00			
N						4P	PORTLAND UA	6.94		130TH AVE	06	0		N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00		
N						45 24 32.6	-122 31 48.95			017100100S00																					
																		02	NONE	9											
																		N/A										011	00		
																		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	00	
03390	N	N	N	N	N	09/24/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0									013	27,29		
STATE						MO	HAPPY VALLEY	MN	0	CARVER RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE									000	00			
N						5P	PORTLAND UA	6.94		130TH AVE	06	0		N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	28	M	OR-Y	026	000	000	27,29	
N						45 24 32.6	-122 31 48.96			017100100S00																					
																		02	NONE	0											
																		PRVTE													
																		PSNGR CAR			01	DRVR	INJC	35	F	OR-Y	000	000	013	00	
																		03	POLCE	0											
																		PUBLIC										022	00		
																		PSNGR CAR			01	DRVR	NONE	33	M	OR-Y	000	000	00	00	

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 6.56 to 7.39 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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98 - 102 of 169 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE											
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE										
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE									
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE								
														02	NONE	9	STOP																					
														N/A			NE-SW											011	00									
														PSNGR	CAR				01	DRVR	NONE	00	Unk	UNK		000	000	000	00	00								
02930	N	N	N	N		07/20/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT												29						
NONE						TH	HAPPY VALLEY	MN	0	CARVER RD	SE		TRF SIGNAL	N	DRY	REAR	N/A											000	00									
N						4P	PORTLAND UA	7.23		SE 135TH AVE	09	1		N	DAY	PDO		PSNGR	CAR							000	000	000	00	00								
N						45 24 37.69	-122 31 28.7																															
														02	NONE	9	STOP																					
														N/A			NE-SW												011	00								
														PSNGR	CAR				01	DRVR	NONE	00	Unk	UNK		000	000	000	00	00								
04883	N	N	N	N		11/19/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE	9	STRGHT													29					
NO RPT						SU	HAPPY VALLEY	MN	0	CARVER RD	SE		YIELD	N	WET	REAR	N/A												000	00								
N						6P	PORTLAND UA	7.23		SE 135TH AVE	09	1		N	DUSK	PDO		PSNGR	CAR							000	000	000	00	00								
N						45 24 37.69	-122 31 28.7																															
														02	NONE	9	STOP																					
														N/A			SW-NE													011	00							
														PSNGR	CAR				01	DRVR	NONE	00	Unk	UNK		000	000	000	00	00								
05130	N	N	N	N		12/04/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT														29				
NONE						MO	HAPPY VALLEY	MN	0	CARVER RD	SE		YIELD	N	DRY	REAR	N/A												000	00								
N						7A	PORTLAND UA	7.23		SE 135TH AVE	09	1		N	DAY	PDO		PSNGR	CAR							000	000	000	00	00								
N						45 24 37.69	-122 31 28.7																															
														02	NONE	9	STOP																					
														N/A			SW-NE														011	00						
														PSNGR	CAR				01	DRVR	NONE	00	Unk	UNK		000	000	000	00	00								
02349	N	N	N	N		07/06/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT															29			
NONE						FR	HAPPY VALLEY	MN	0	CARVER RD	SE		YIELD	N	DRY	REAR	PRVTE												000	00								
N						10A	PORTLAND UA	7.23		SE 135TH AVE	09	1		N	DAY	INJ		PSNGR	CAR							026	000	000	00	00								
N						45 24 37.7	-122 31 28.72																															
														02	NONE	0	STOP																					
														PRVTE			SW-NE														011	00						
														PSNGR	CAR				01	DRVR	INJC	39	M	OR-Y		000	000	000	00	00								
														02	NONE	0	STOP																					
														PRVTE			SW-NE														011	00						
														PSNGR	CAR				02	PSNG	INJC	37	F			000	000	000	00	00								

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

67 - 71 of 139 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	ACT	EVENT	CAUSE										
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED							
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO												
																	04	NONE	0	STOP											
																		PRVTE	W -E									022	00		
																		PSNGR	CAR	02	PSNG	INJC	00	F			000	000	00		
																		04	NONE	0	STOP										
																		PRVTE	W -E									022	00		
																		PSNGR	CAR	03	PSNG	INJC	00	F			000	000	00		
02293	N	N	N	N	N	08/22/2020	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	0	STRGHT									29		
STATE						SA	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	NONE	N	DRY	REAR		PRVTE	W -E									000	00		
N						4P	PORTLAND UA	8.03		152ND AVE	03			N	DAY	INJ		PSNGR	CAR		01	DRVR	INJC	68	F	OR-Y	026	000	29		
N						45 24 34.95	-122 30 30.28			017100100S00		(04)																			
																		02	NONE	0	STOP										
																		PRVTE	W -E									011	00		
																		PSNGR	CAR	01	DRVR	INJC	30	F	OR-Y	000	000	00	00		
03494	N	N	N	N	N	11/16/2021	CLACKAMAS	1	14		STRGHT	N		N	RAIN	S-1STOP	01	NONE	9	STRGHT									27		
NONE						TU	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	UNKNOWN	N	WET	REAR		N/A	W -E									000	00		
N						5P	PORTLAND UA	8.03		152ND AVE	04			N	DARK	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00		
N						45 24 34.94	-122 30 30.29			017100100S00		(04)																			
																		02	NONE	9	STOP										
																		N/A	W -E									011	00		
																		PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK	000	000	00	00		
00829	N	N	N	N	N	03/06/2018	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	0	STRGHT									29		
NONE						TU	HAPPY VALLEY	MN	0	CARVER RD	W	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	E -W									000	00		
N						7A	PORTLAND UA	8.03		152ND AVE	05			N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	16	M	OR-Y	026	000	29		
N						45 24 34.94	-122 30 30.27			017100100S00		(04)																			
																		02	NONE	0	STOP										
																		PRVTE	E -W									011	00		
																		PSNGR	CAR	01	DRVR	INJC	48	F	OR-Y	000	000	00	00		
01476	N	N	N	N	N	04/19/2017	CLACKAMAS	1	14		INTER	3-LEG	N		N	RAIN	S-1STOP	01	NONE	9	STRGHT								29		
NONE						WE	HAPPY VALLEY	MN	0	CARVER RD	CN		UNKNOWN	N	WET	REAR		N/A	W -E									000	00		
N						3P	PORTLAND UA	8.03		152ND AVE	04	0		N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00		
N						45 24 34.94	-122 30 30.26			017100100S00																					
																		02	NONE	9	STOP										
																		N/A	W -E									011	00		
																		PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK	000	000	00	00		

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

84 - 88 of 139 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE										
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE									
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE								
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE							
														02	NONE	9	TURN-L																				
														N/A			W -N																				
														PSNGR	CAR				01	DRVR	NONE	00	Unk	UNK			000	000									
02451	N	N	N	N	N	08/23/2021	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	0	STRGHT									093	27,02							
COUNTY						MO	HAPPY VALLEY	MN	0	CARVER RD	CN		NONE	N	DRY	TURN		PRVTE										000									
N						9P	PORTLAND UA	8.05		152ND AVE	02	0		N	DARK	INJ		PSNGR	CAR								000	000									
N						45 24 34.91	-122 30 28.47			017100100S00																											
														02	NONE	0	TURN-L																				
														PRVTE			W -N																				
														PSNGR	CAR				01	DRVR	NONE	23	M	OR-Y			016,028	038	093								
														02	NONE	0	TURN-L																				
														PRVTE			W -N																				
														PSNGR	CAR				02	PSNG	INJC	23	M				000	000									
03997	N	N	N	N	N	09/27/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	TURN-L																	
STATE						WE	HAPPY VALLEY	MN	0	CARVER RD	CN		STOP SIGN	N	DRY	TURN		PRVTE										015									
N						12P	PORTLAND UA	8.05		152ND AVE	03	0		N	DAY	INJ		PSNGR	CAR								028	028									
N						45 24 34.91	-122 30 28.47			017100100S00																											
														02	NONE	1	STRGHT																				
														PRVTE			W -E																				
														PSNGR	CAR				01	DRVR	NONE	21	M	OR-Y			000	000									
01697	N	N	N	N	N	06/22/2021	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	TURN-L																	
COUNTY						TU	HAPPY VALLEY	MN	0	CARVER RD	CN		STOP SIGN	N	DRY	TURN		PRVTE										015									
N						4P	PORTLAND UA	8.05		152ND AVE	03	0		N	DAY	INJ		PSNGR	CAR								028	000									
N						45 24 34.91	-122 30 28.48			017100100S00																											
														02	NONE	0	TURN-L																				
														PRVTE			W -N																				
														PSNGR	CAR				01	DRVR	INJA	43	M	OR-Y			000	000									
00837	N	N	N	N		03/04/2020	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	TURN-L																	
NO RPT						WE	HAPPY VALLEY	MN	0	CARVER RD	CN		STOP SIGN	N	DRY	TURN		PRVTE										015									
N						3P	PORTLAND UA	8.05		152ND AVE	04	0		N	DAY	INJ		PSNGR	CAR								028	000									
N						45 24 34.91	-122 30 28.48			017100100S00																											
														02	NONE	0	TURN-L																				
														PRVTE			W -N																				
														PSNGR	CAR				01	DRVR	INJC	50	F	OR-Y			000	000									

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

96 - 100 of 139 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE			
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
														02	NONE	0	STRGHT														
																	PRVTE	W -E										006	013	00	
																	PSNGR	CAR	01	DRVR	INJC	20	F	OR-Y		000	000			00	
														03	NONE	0	STRGHT														
																	PRVTE	W -E										022		00	
																	PSNGR	CAR	01	DRVR	NONE	25	F	OR-Y		000	000			00	
05329	N	N	N	N		12/14/2017	CLACKAMAS	1	14		STRGHT		N	N	CLR	S-STRGHT	01	NONE	9	STRGHT										29	
COUNTY						TH	HAPPY VALLEY	MN	0	CLACKAMAS HWY	W	(RSDMD)	UNKNOWN	N	DRY	REAR	N/A											000		00	
N						8A	PORTLAND UA	8.11		CARVER RD CONN 1 EB	06			N	DAY	PDO		PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000		00	
N						45 24 34.91	-122 30 24.39			017100100S00		(04)																			
																	02	NONE	9	STRGHT											
																	N/A											000		00	
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000			00	
02188	N	N	N	N		08/06/2020	CLACKAMAS	1	14		STRGHT		N	N	CLR	S-1STOP	01	NONE	9	STRGHT										29	
NONE						TH	HAPPY VALLEY	MN	0	CARVER RD	E	(NONE)	NONE	N	DRY	REAR	N/A											000		00	
N						5P	PORTLAND UA	8.12		152ND AVE	03			N	DAY	PDO		PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000		00	
N						45 24 34.91	-122 30 23.73			017100100S00		(04)																			
																	02	NONE	9	STOP											
																	N/A												011		00
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000	000			00	
03304	N	N	N	N	N	11/01/2021	CLACKAMAS	1	14		BRIDGE		Y	N	RAIN	S-1STOP	01	NONE	0	STRGHT										07,29,27	
COUNTY						MO	HAPPY VALLEY	MN	0	CLACKAMAS HWY	W	(RSDMD)	UNKNOWN	N	WET	REAR	PRVTE											000		00	
N						2P	PORTLAND UA	8.12		CARVER RD CONN 1 EB	08			N	DAY	INJ		PSNGR	CAR	01	DRVR	NONE	19	M	NONE		043,026,016	000		07,29,27	
N						45 24 34.91	-122 30 23.71			017100100S00		(04)																			
																	02	NONE	0	STOP											
																	PRVTE												011		00
																	PSNGR	CAR	01	DRVR	INJC	39	M	OR-Y		000	000			00	
02639	N	N	N	N		07/29/2018	CLACKAMAS	1	14		STRGHT		N	N	CLR	S-1STOP	01	NONE	0	STRGHT										29	
NONE						SU	HAPPY VALLEY	MN	0	CLACKAMAS HWY	W	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE											000		00	
N						10A	PORTLAND UA	8.13		CARVER RD CONN 1 EB	03			N	DAY	INJ		PSNGR	CAR	01	DRVR	NONE	62	M	OR-Y		026	000		29	
N						45 24 34.91	-122 30 23.03			017100100S00		(04)																			
																	02	NONE	0	STOP											
																	PRVTE												011		00
																	PSNGR	CAR	01	DRVR	INJC	47	F	OR-Y		000	000			00	

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

114 - 118 of 139 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	ACT	EVENT	CAUSE												
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY														
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED							
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LR		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR					
01592	N	N	N	N		06/12/2021	CLACKAMAS	1	16		CURVE	N		Y	CLR	FIX OBJ	01	NONE	0		TURN-L								043,001	08	
CITY						SA	HAPPY VALLEY	MN	0	CLACKAMAS HWY	SE	(NONE)	TRF SIGNAL	N	DRY	FIX	PRVTE				E -S							000	043	00	
Y						10A	PORTLAND UA	8.20		CARVER RD CONN 1 EB	01			N	DAY	INJ	MTRCYCLE			01	DRVR	INJA	25	M	OR-Y		001	000		08	
N						45 24 33.62	-122 30 18.37			017100100S00		(01)																			OR<25
01308	N	N	N	N		04/24/2019	CLACKAMAS	1	14	1	STRGHT	N		N	CLR	S-1STOP	01	NONE	0		STRGHT										29
NONE						WE	HAPPY VALLEY	CN	0	CARVER RD CONN 1 EB	E	(NONE)	NONE	N	DRY	REAR	PRVTE				W -E							000		00	
N						12P	PORTLAND UA	8.17		CLACKAMAS HWY	03			N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	74	F	OR-Y		026	000		29	
N						45 24 34.76	-122 30 20.16			0171AU100S00		(04)																			OR<25
																	02	NONE	0		STOP							011		00	
																	PRVTE				W -E							000	000		00
																	PSNGR CAR			01	DRVR	INJC	67	F	OR-Y		000	000		00	
																															OR<25
03324	N	N	N	N		11/03/2021	CLACKAMAS	1	14	1	STRGHT	Y		N	CLR	S-1STOP	01	NONE	0		STRGHT										29
NONE						WE	HAPPY VALLEY	CN	0	CARVER RD CONN 1 EB	E	(RSDMD)	UNKNOWN	N	DRY	REAR	PRVTE				W -E							000		00	
N						8A	PORTLAND UA	8.17		CLACKAMAS HWY	05			N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	31	F	OTH-Y		026	000		29	
N						45 24 34.76	-122 30 20.15			0171AU100S00		(02)																			OR<25
																	02	NONE	0		STOP							011		00	
																	PRVTE				W -E							000	000		00
																	PSNGR CAR			01	DRVR	INJB	31	F	OR-Y		000	000		00	
																															OR<25
01553	N	N	N	N		05/04/2018	CLACKAMAS	1	14	1	STRGHT	Y		N	CLR	S-STRGHT	01	NONE	1		STRGHT										29
CITY						FR	HAPPY VALLEY	CN	0	CARVER RD CONN 1 EB	W	(NONE)	TRF SIGNAL	N	DRY	REAR	PRVTE				W -E							000		00	
N						6A	PORTLAND UA	8.17		CLACKAMAS HWY	03			N	DAWN	INJ	PSNGR CAR			01	DRVR	NONE	30	M	SUSP		073,026	000		29	
N						45 24 34.76	-122 30 20.15			0171AU100S00		(02)																			OR>25
																	02	NONE	0		STOP							011		00	
																	PRVTE				W -E							000	000		00
																	PSNGR CAR			01	DRVR	INJC	26	F	OR-Y		000	000		00	
																															OR<25
01604	N	N	N	N	N	06/22/2020	CLACKAMAS	1	14	1	STRGHT	Y		N	CLR	S-1STOP	01	NONE	0		STRGHT								013	27,29	
CITY						MO	HAPPY VALLEY	CN	0	CARVER RD CONN 1 EB	W	(NONE)	TRF SIGNAL	N	DRY	REAR	PRVTE				W -E							000		00	
N						7P	PORTLAND UA	8.18		CLACKAMAS HWY	03			N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	45	M	OR-Y		026	038		27,29	
N						45 24 34.77	-122 30 19.52			0171AU100S00		(04)																			OR<25
																	02	NONE	0		STOP							011	013	00	
																	PRVTE				W -E							000	000		00
																	PSNGR CAR			01	DRVR	INJC	23	M	OR-Y		000	000		00	
																															OR<25
																	03	NONE	0		STOP							022		00	
																	PRVTE				W -E							000	000		00
																	PSNGR CAR			01	DRVR	INJC	20	F	OR-Y		000	000		00	
																															OR<25

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

137 - 139 of 139 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE					
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE				
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE			
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
														02	NONE	9	TURN-L															
														N/A			S -W													000	00	
														OTH	BUS				01	DRVR	NONE	00	Unk	UNK			000	000		00		
01138	N	N	N	N		04/04/2018	CLACKAMAS	2	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	0	STRGHT										04		
NO RPT						WE	HAPPY VALLEY	MN	0	CLACKAMAS HWY	CN		TRF SIGNAL	N	DRY	TURN	PRVTE			W -E									000	00		
N						10P	PORTLAND UA	8.19		CARVER RD CONN 1 EB	03	1		N	DLIT	INJ	PSNGR CAR			01	DRVR	NONE	48	F	OR-Y		020	000		04		
N						45 24 34.77	-122 30 18.88			017100200S00																						
														02	NONE	0	TURN-L															
														PRVTE			E -S			01	DRVR	INJC	37	F	OR-Y		000	000		00		
														PSNGR	CAR																	
00838	N	N	N	N		03/30/2021	CLACKAMAS	2	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	0	STRGHT										02,08		
NO RPT						TU	HAPPY VALLEY	MN	0	CLACKAMAS HWY	CN		TRF SIGNAL	N	DRY	TURN	PRVTE			W -E									000	00		
N						7A	PORTLAND UA	8.19		CARVER RD CONN 1 EB	03	0		N	DAWN	INJ	MTRCYCLE			01	DRVR	INJA	35	M	OR-Y		000	000		00		
N						45 24 34.77	-122 30 18.87			017100200S00																						
														02	NONE	0	TURN-L															
														PRVTE			E -S			01	DRVR	NONE	00	Unk	UNK				000	00		
														PSNGR	CAR														028,004	000		02,08

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171: CLACKAMAS

Highway 171 ALL ROAD TYPES, MP 7.40 to 8.22 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

12 - 18 of 97 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE													
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE																				
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED														
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC												
03700	N	N	N	N		10/12/2018	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	9												27,29							
NONE						FR		MN	0		UN	(NONE)	NONE	N	DRY	REAR	N/A													000	00							
N						2P	PORTLAND UA		0.07		06			N	DAY	PDO		PSNGR	CAR											000	000	00						
N						45 24 34.04	-122 30 16.13			017400100S00		(04)																										
																	02	NONE	9																			
																	N/A															011	00					
																	PSNGR	CAR														000	000	00				
04679	N	N	N	N		11/07/2017	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-STRGHT	01	NONE	9														13					
NO RPT						TU		MN	0		UN	(NONE)	UNKNOWN	N	DRY	SS-0	N/A															052	00					
N						6P	PORTLAND UA		0.09		03			N	DUSK	PDO		PSNGR	CAR												000	000	00					
N						45 24 33.46	-122 30 14.88			017400100S00		(02)																										
																	02	NONE	9																			
																	N/A																	000	00			
																	PSNGR	CAR															000	000	00			
01734	N	N	N	N		05/28/2019	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-STRGHT	01	NONE	9															13				
NONE						TU		MN	0		UN	(NONE)	NONE	N	DRY	SS-0	N/A																000	00				
N						9A	PORTLAND UA		0.09		04			N	DAY	PDO		PSNGR	CAR													000	000	00				
N						45 24 33.46	-122 30 14.89			017400100S00		(02)																										
																	02	NONE	9																			
																	N/A																		000	00		
																	PSNGR	CAR																000	000	00		
02735	N	N	N	N	N	10/10/2020	CLACKAMAS	1	14		TRANS	N		N	RAIN	S-STRGHT	01	NONE	0																02			
STATE						SA		MN	0		UN	(NONE)	NONE	N	WET	SS-0	PRVTE																	052	00			
N						5P	PORTLAND UA		0.10		03			N	DAY	INJ		PSNGR	CAR														028	000	00			
N						45 24 33.15	-122 30 14.3			017400100S00		(02)																										
																	02	NONE	0																			
																	PRVTE																		052	00		
																	PSNGR	CAR																	000	000	00	
02623	N	N	N	N		07/27/2018	CLACKAMAS	1	14		STRGHT	N		N	CLR	S-1STOP	01	NONE	0																	29		
NONE						FR		MN	0		UN	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE																		000	00		
N						12P	PORTLAND UA		0.12		04			N	DAY	INJ		PSNGR	CAR															026	000	29		
N						45 24 32.45	-122 30 13.19			017400100S00		(02)																										
																	02	NONE	0																			
																	PRVTE																			011	00	
																	PSNGR	CAR																	000	000	00	
03111	N	N	N	N	N	10/17/2021	CLACKAMAS	1	14		CURVE	N		Y	CLR	FIX OBJ	01	NONE	9																043	27		
COUNTY						SU		MN	0		UN	(NONE)	UNKNOWN	N	DRY	FIX	N/A																		000	00		
Y						7A	PORTLAND UA		0.15		02			N	DAY	PDO		PSNGR	CAR																000	00		
N						45 24 31.47	-122 30 11.45			017400100S00		(02)																										
																	01	DRVR	NONE	00	Unk	UNK																
03172	Y	Y	N	N	N	09/08/2018	CLACKAMAS	1	14		CURVE	N		Y	CLR	FIX OBJ	01	NONE	0																	126,042	30	
COUNTY						SA		MN	0		UN	(NONE)	UNKNOWN	N	DRY	FIX	PRVTE																		000	126,042	00	
Y						2A	PORTLAND UA		0.21		01			N	DARK	INJ		PSNGR	CAR																	050,079	000	30
N						45 24 30.37	-122 30 7.37			017400100S00		(02)																										
																	01	DRVR	INJB	38	M	OR-Y																

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174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

86 - 90 of 97 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	ACT	EVENT	CAUSE															
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY																	
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED										
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR								
																01	NONE	0	STRGHT															
																	PRVTE		W -E												000	00		
																	PSNGR	CAR		05	PSNG	INJB	15	F						000	000	00		
																	02	NONE	0	STOP														
																	PRVTE		W -E												011	00		
																	PSNGR	CAR		01	DRVR	NONE	37	M	OR-Y				000	000	00	00		
02105	N	N	N	N		06/24/2019	CLACKAMAS	1	14		STRGHT	N				01	NONE	0	STRGHT														29	
NONE						MO					UN	(NONE)	TRF	SIGNAL	N		PRVTE		E -W												000	00		
N						2P	PORTLAND UA	1.05			05						PSNGR	CAR		01	DRVR	NONE	39	F	OR-Y				026	000	00	29		
N						45 24 37.36	-122 29 8.61			017400100S00		(03)																						
																	02	NONE	0	STOP														
																	PRVTE		E -W													011	00	
																	PSNGR	CAR		01	DRVR	INJB	40	F	OR-Y				000	000	00	00		
01111	N	N	N	N		03/10/2020	CLACKAMAS	1	14		STRGHT	N				01	NONE	0	STRGHT														116	27,29
NONE						TU					UN	(NONE)	TRF	SIGNAL	N		PRVTE		E -W												000	00		
N						5P	PORTLAND UA	1.05			05						PSNGR	CAR		01	DRVR	INJC	22	F	OR-Y				026	038	116	27,29		
N						45 24 37.37	-122 29 8.61			017400100S00		(03)																						
																	02	NONE	0	STOP														
																	PRVTE		E -W													011	00	
																	PSNGR	CAR		01	DRVR	NONE	60	M	OR-Y				000	000	00	00		
00383	N	N	N	N		01/29/2020	CLACKAMAS	1	14		STRGHT	N				01	NONE	9	STRGHT															29
NONE						WE					UN	(NONE)	NONE	N			N/A		W -E													000	00	
N						4P	PORTLAND UA	1.06			03						PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK				000	000	00	00		
N						45 24 37.36	-122 29 7.89			017400100S00		(03)																						
																	02	NONE	9	STRGHT														
																	N/A		W -E														000	00
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK				000	000	00	00		
01077	N	N	N	N		03/21/2017	CLACKAMAS	1	14		STRGHT	N				01	NONE	9	STRGHT															07
COUNTY						TU					UN	(NONE)	NONE	N			N/A		E -W													000	00	
N						6P	PORTLAND UA	1.06			05						PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK				000	000	00	00		
N						45 24 37.36	-122 29 7.93			017400100S00		(03)																						
																	02	NONE	9	STOP														
																	N/A		E -W													011	00	
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK				000	000	00	00		
00362	N	N	N	N		02/10/2021	CLACKAMAS	1	14		GRADE	Y				01	NONE	0	STRGHT														013	29
NO RPT						WE					UN	(NONE)	UNKNOWN	N			PRVTE		E -W													000	00	
N						6P	PORTLAND UA	1.06			05						PSNGR	CAR		01	DRVR	INJB	71	M	OR-Y				026	000	00	29		
N						45 24 37.36	-122 29 7.93			017400100S00		(03)																						
																	01	NONE	0	STRGHT														
																	PRVTE		E -W														000	00
																	PSNGR	CAR		02	PSNG	INJB	71	F							000	000	00	00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

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174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

96 - 97 of 97 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	TRLR	QTY	MOVE	A	S	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE					
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLCR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE			
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND	STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS			(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
														02	NONE	9	STOP															
														N/A			E -W												011	00		
														PSNGR	CAR					01	DRVR	NONE	00	Unk	UNK		000	000	00	00		
01551	N	N	N	N		06/16/2020	CLACKAMAS	1	14		STRGHT	N		N	RAIN	S-STRGHT	01	NONE	0											29		
NO RPT						TU					UN	(NONE)	NONE	N	WET	REAR		PRVTE											000	00		
N						1P	PORTLAND UA		1.09		05			N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	19	M	OR-Y		042	000	29		
N						45 24 37.38	-122 29 5.92			017400100S00		(02)																				
														02	NONE	0	STRGHT															
														PRVTE			E -W												006	00		
														PSNGR	CAR					01	DRVR	NONE	59	M	OR-Y		000	000	00	00		
														02	NONE	0	STRGHT															
														PRVTE			E -W												006	00		
														PSNGR	CAR					02	PSNG	INJC	55	F		000	000	00	00			

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

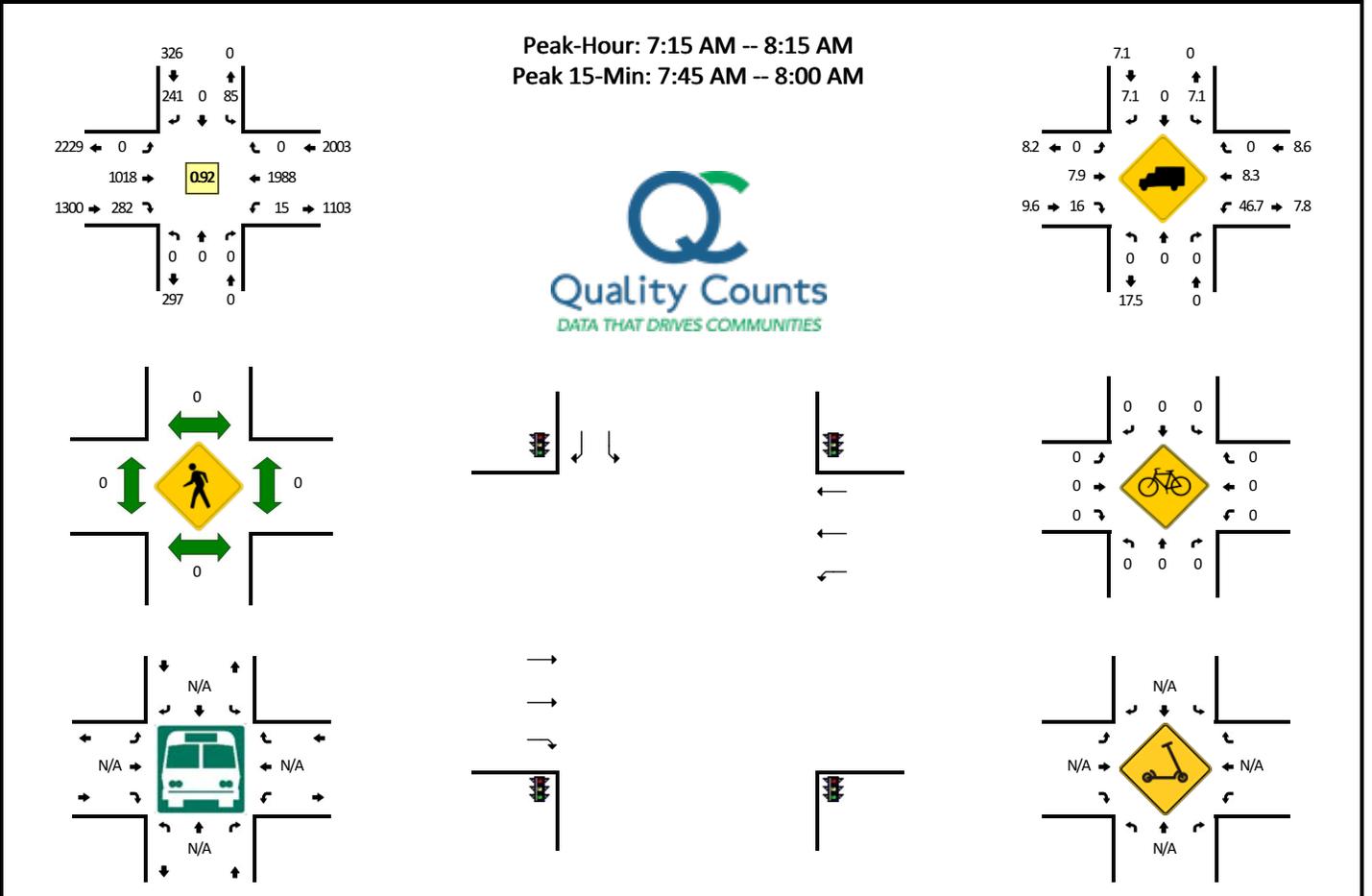
174: CLACKAMAS-BORING

Highway 174 ALL ROAD TYPES, MP 0.03 to 1.10 01/02/2017 to 12/31/2021, Both Add and Non-Add mileage

Appendix B Intersection Turning Movement Counts

LOCATION: OR-213 SB Ramps -- OR-224
CITY/STATE: Oatfield, OR

QC JOB #: 16101919
DATE: Tue, May 16 2023

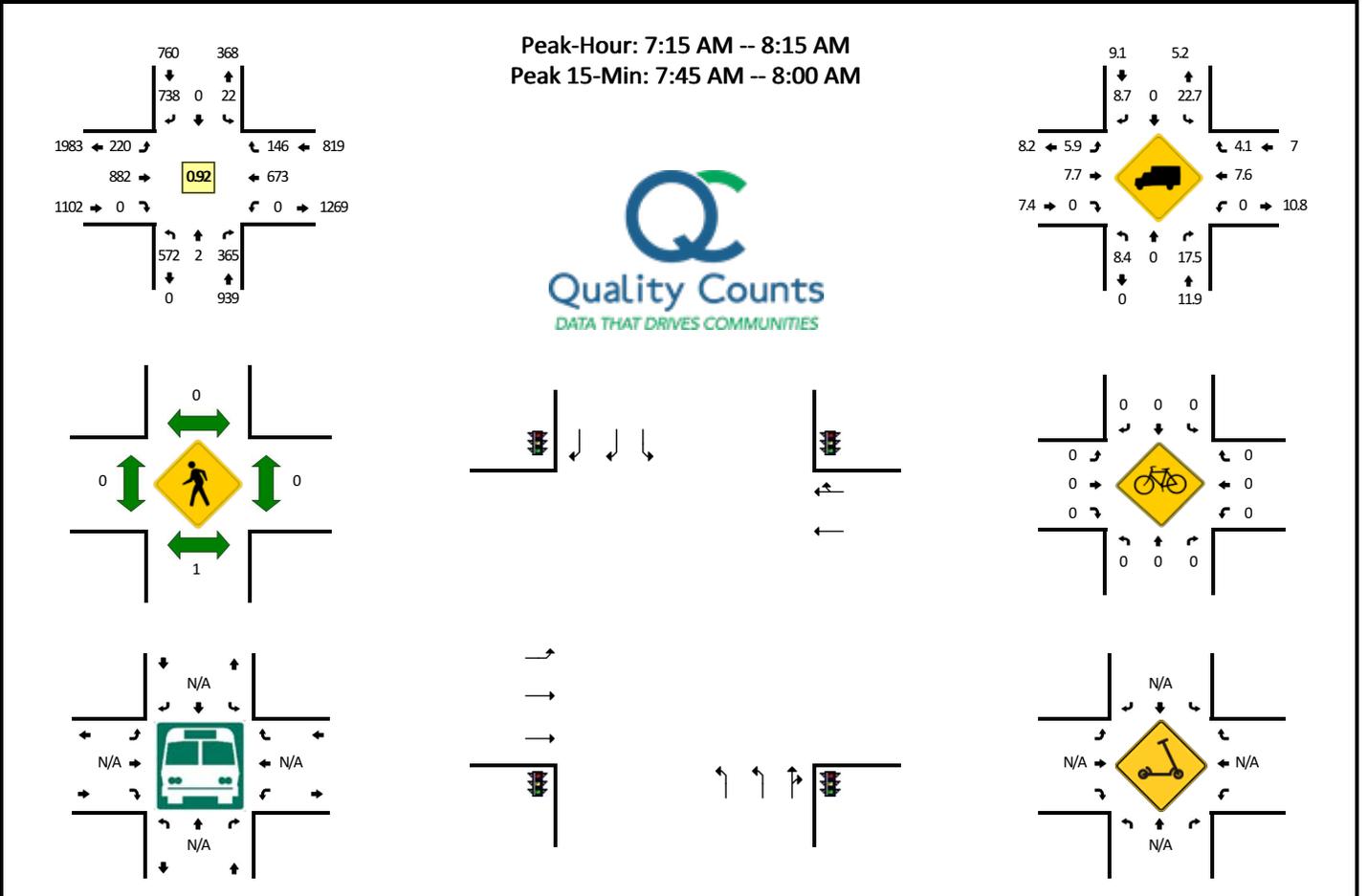


5-Min Count Period Beginning At	OR-213 SB Ramps (Northbound)				OR-213 SB Ramps (Southbound)				OR-224 (Eastbound)				OR-224 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	6	0	16	0	0	55	10	0	0	120	0	0	207	
7:05 AM	0	0	0	0	6	0	12	0	0	64	18	0	0	185	0	0	285	
7:10 AM	0	0	0	0	10	0	19	0	0	48	15	0	0	142	0	0	234	
7:15 AM	0	0	0	0	3	0	17	0	0	109	15	0	2	163	0	0	309	
7:20 AM	0	0	0	0	7	0	19	0	0	63	24	0	1	160	0	0	274	
7:25 AM	0	0	0	0	7	0	23	0	0	97	30	0	1	172	0	0	330	
7:30 AM	0	0	0	0	7	0	21	0	0	60	20	0	2	153	0	0	263	
7:35 AM	0	0	0	0	5	0	13	0	0	85	24	0	1	179	0	0	307	
7:40 AM	0	0	0	0	10	0	26	0	0	77	26	0	0	166	0	0	305	
7:45 AM	0	0	0	0	3	0	19	0	0	102	34	0	2	171	0	0	331	
7:50 AM	0	0	0	0	12	0	29	0	0	94	25	0	0	171	0	0	331	
7:55 AM	0	0	0	0	5	0	19	0	0	108	17	0	2	171	0	0	322	3498
8:00 AM	0	0	0	0	6	0	11	0	0	65	19	0	2	147	0	0	250	3541
8:05 AM	0	0	0	0	10	0	17	0	0	90	29	0	2	167	0	0	315	3571
8:10 AM	0	0	0	0	10	0	27	0	0	68	19	0	0	168	0	0	292	3629
8:15 AM	0	0	0	0	5	0	21	0	0	81	24	0	1	140	0	0	272	3592
8:20 AM	0	0	0	0	9	0	24	0	0	75	23	0	0	142	0	0	273	3591
8:25 AM	0	0	0	0	4	0	12	0	0	78	33	0	1	115	0	0	243	3504
8:30 AM	0	0	0	0	5	0	22	0	0	62	15	0	5	113	0	0	222	3463
8:35 AM	0	0	0	0	2	0	15	0	0	88	34	0	0	150	0	0	289	3445
8:40 AM	0	0	0	0	7	0	21	0	0	79	18	0	0	143	0	0	268	3408
8:45 AM	0	0	0	0	7	0	26	0	0	102	27	0	0	122	0	0	284	3361
8:50 AM	0	0	0	0	6	0	26	0	0	53	21	0	0	117	0	0	223	3253
8:55 AM	0	0	0	0	3	0	16	0	0	89	27	0	0	130	0	0	265	3196
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	80	0	268	0	0	1216	304	0	16	2052	0	0	3936	
Heavy Trucks	0	0	0	0	12	0	16	0	0	96	44	0	8	164	0	0	340	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: OR-213 NB Ramps/I-205 SB Off Ramp -- OR-224
CITY/STATE: Clackamas, OR

QC JOB #: 16101913
DATE: Tue, May 16 2023



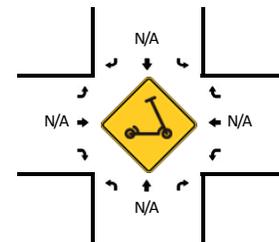
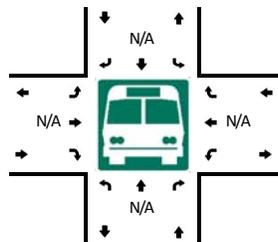
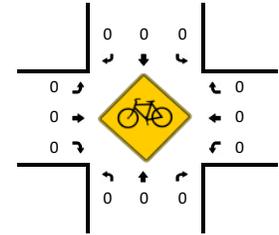
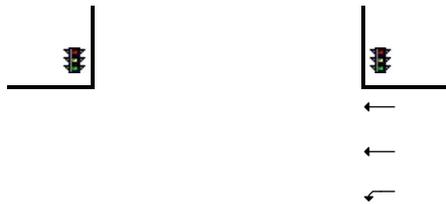
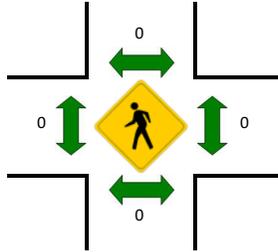
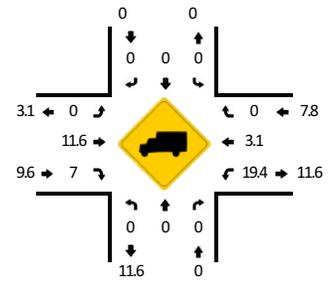
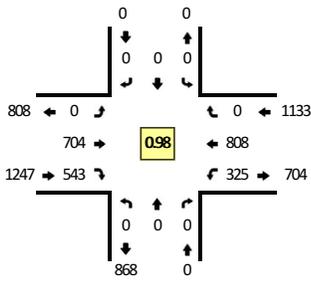
5-Min Count Period Beginning At	OR-213 NB Ramps/I-205 SB Off Ramp (Northbound)				OR-213 NB Ramps/I-205 SB Off Ramp (Southbound)				OR-224 (Eastbound)				OR-224 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	32	0	26	0	2	0	40	0	6	53	0	0	0	59	8	0	226	
7:05 AM	32	0	21	0	1	0	65	0	12	60	0	0	0	70	6	0	267	
7:10 AM	40	0	26	0	0	0	39	0	7	47	0	0	0	75	6	0	240	
7:15 AM	36	0	10	0	2	0	65	0	17	99	0	0	0	54	7	0	290	
7:20 AM	38	0	37	0	2	0	59	0	10	55	0	0	0	73	11	0	285	
7:25 AM	41	0	32	0	1	0	80	0	23	86	0	0	0	51	12	0	326	
7:30 AM	51	0	36	0	1	0	44	0	10	54	0	0	0	54	11	0	261	
7:35 AM	36	0	29	0	0	0	64	0	10	80	0	0	0	70	11	0	300	
7:40 AM	56	0	32	0	2	0	45	0	18	70	0	0	0	69	13	0	305	
7:45 AM	47	0	35	0	3	0	72	0	25	78	0	0	0	42	12	0	314	
7:50 AM	70	0	36	0	5	0	60	0	21	88	0	0	0	51	9	0	340	
7:55 AM	35	1	38	0	2	0	74	0	33	82	0	0	0	54	9	0	328	3482
8:00 AM	58	1	28	0	1	0	42	0	11	53	0	0	0	58	18	0	270	3526
8:05 AM	43	0	27	0	2	0	77	0	24	78	0	0	0	41	14	0	306	3565
8:10 AM	61	0	25	0	1	0	56	0	18	59	0	0	0	56	19	0	295	3620
8:15 AM	40	0	28	0	2	0	54	0	28	64	0	0	0	33	6	0	255	3585
8:20 AM	48	0	32	0	1	0	36	0	21	57	0	0	0	61	12	0	268	3568
8:25 AM	25	0	16	0	0	0	49	0	24	68	0	0	0	36	9	0	227	3469
8:30 AM	47	0	36	0	3	0	26	0	8	56	0	0	0	45	10	0	231	3439
8:35 AM	31	0	34	0	2	0	63	0	26	68	0	0	0	47	13	0	284	3423
8:40 AM	57	0	35	0	2	0	41	0	22	62	0	0	0	47	13	0	279	3397
8:45 AM	36	0	31	0	1	0	47	0	20	84	0	0	0	33	14	0	266	3349
8:50 AM	54	0	29	0	3	0	34	0	14	48	0	0	0	32	16	0	230	3239
8:55 AM	21	1	28	0	0	0	59	0	28	68	0	0	0	43	25	0	273	3184
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	608	4	436	0	40	0	824	0	316	992	0	0	0	588	120	0	3928	
Heavy Trucks	44	0	80		8	0	80		8	100	0		0	36	0		356	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: I-205 NB Ramp -- OR-224
CITY/STATE: Clackamas, OR

QC JOB #: 16101911
DATE: Tue, May 16 2023

Peak-Hour: 7:15 AM -- 8:15 AM
 Peak 15-Min: 7:15 AM -- 7:30 AM

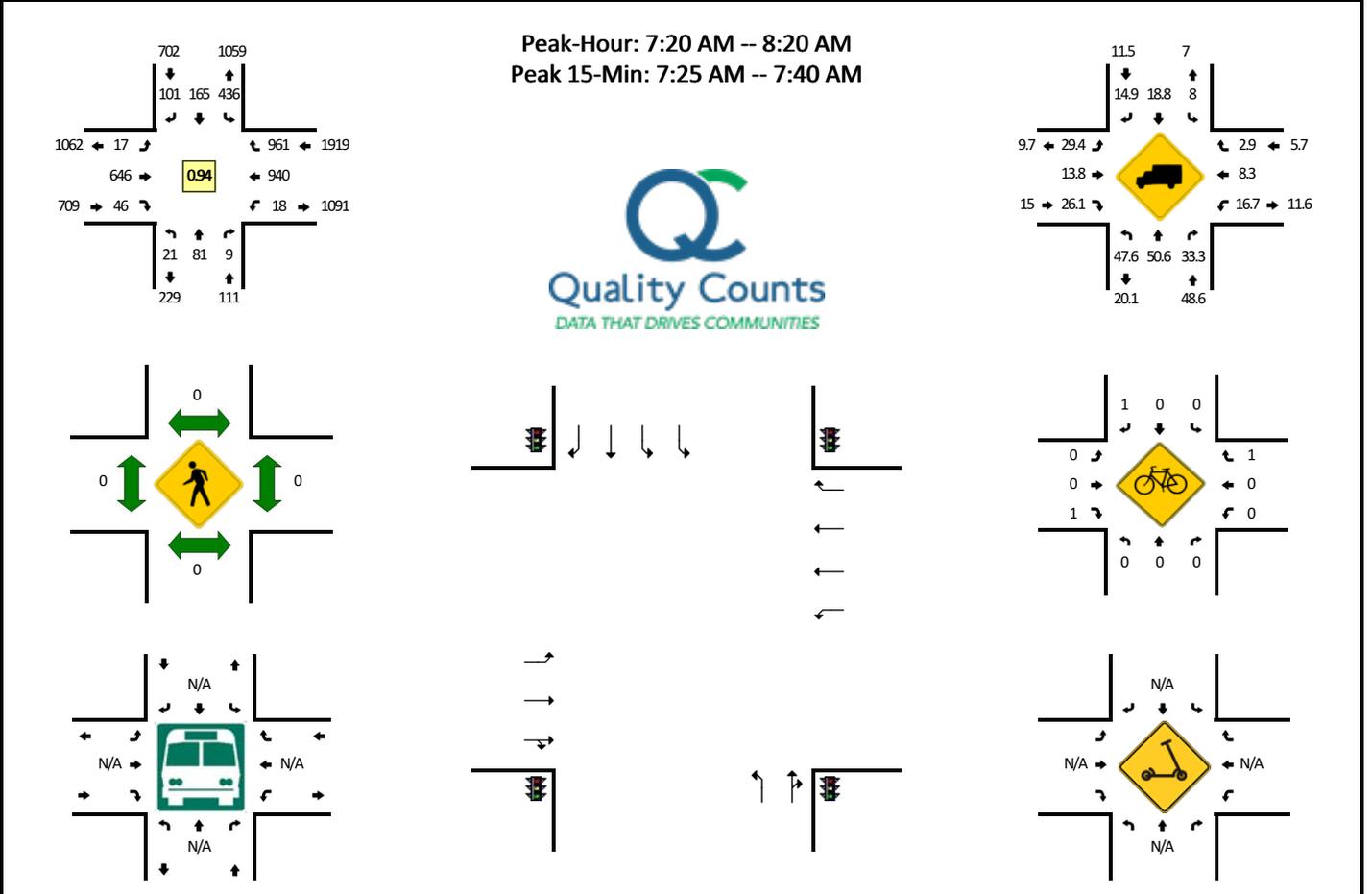


5-Min Count Period Beginning At	I-205 NB Ramp (Northbound)				I-205 NB Ramp (Southbound)				OR-224 (Eastbound)				OR-224 (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
7:00 AM	0	0	0	0	0	0	0	0	0	0	44	33	0	27	69	0	0	173	
7:05 AM	0	0	0	0	0	0	0	0	0	0	41	36	0	26	76	0	0	179	
7:10 AM	0	0	0	0	0	0	0	0	0	0	44	38	0	29	67	0	0	178	
7:15 AM	0	0	0	0	0	0	0	0	0	0	46	52	0	43	71	0	0	212	
7:20 AM	0	0	0	0	0	0	0	0	0	0	52	42	0	36	77	0	0	207	
7:25 AM	0	0	0	0	0	0	0	0	0	0	64	44	0	20	63	0	0	191	
7:30 AM	0	0	0	0	0	0	0	0	0	0	53	47	0	36	70	0	0	206	
7:35 AM	0	0	0	0	0	0	0	0	0	0	61	34	0	19	84	0	0	198	
7:40 AM	0	0	0	0	0	0	0	0	0	0	60	47	0	23	64	0	0	194	
7:45 AM	0	0	0	0	0	0	0	0	0	0	60	47	0	15	62	0	0	184	
7:50 AM	0	0	0	0	0	0	0	0	0	0	76	48	0	37	56	0	0	217	
7:55 AM	0	0	0	0	0	0	0	0	0	0	73	48	0	16	62	0	0	199	2338
8:00 AM	0	0	0	0	0	0	0	0	0	0	54	43	0	23	64	0	0	184	2349
8:05 AM	0	0	0	0	0	0	0	0	0	0	55	44	0	29	71	0	0	199	2369
8:10 AM	0	0	0	0	0	0	0	0	0	0	50	47	0	28	64	0	0	189	2380
8:15 AM	0	0	0	0	0	0	0	0	0	0	50	44	0	29	50	0	0	173	2341
8:20 AM	0	0	0	0	0	0	0	0	0	0	52	34	0	24	60	0	0	170	2304
8:25 AM	0	0	0	0	0	0	0	0	0	0	53	37	0	31	59	0	0	180	2293
8:30 AM	0	0	0	0	0	0	0	0	0	0	53	36	0	24	43	0	0	156	2243
8:35 AM	0	0	0	0	0	0	0	0	0	0	62	37	0	24	55	0	0	178	2223
8:40 AM	0	0	0	0	0	0	0	0	0	0	60	38	0	24	61	0	0	183	2212
8:45 AM	0	0	0	0	0	0	0	0	0	0	67	43	0	28	49	0	0	187	2215
8:50 AM	0	0	0	0	0	0	0	0	0	0	49	36	0	23	53	0	0	161	2159
8:55 AM	0	0	0	0	0	0	0	0	0	0	52	34	0	29	61	0	0	176	2136
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total		
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
All Vehicles	0	0	0	0	0	0	0	0	0	648	552	0	396	844	0	0	2440		
Heavy Trucks	0	0	0	0	0	0	0	0	0	68	28	0	60	28	0	0	184		
Buses																	0		
Pedestrians		0				0				0				0			0		
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0		
Scoters																	0		

Comments:

LOCATION: OR-224/SE 122nd Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101901
DATE: Tue, May 16 2023

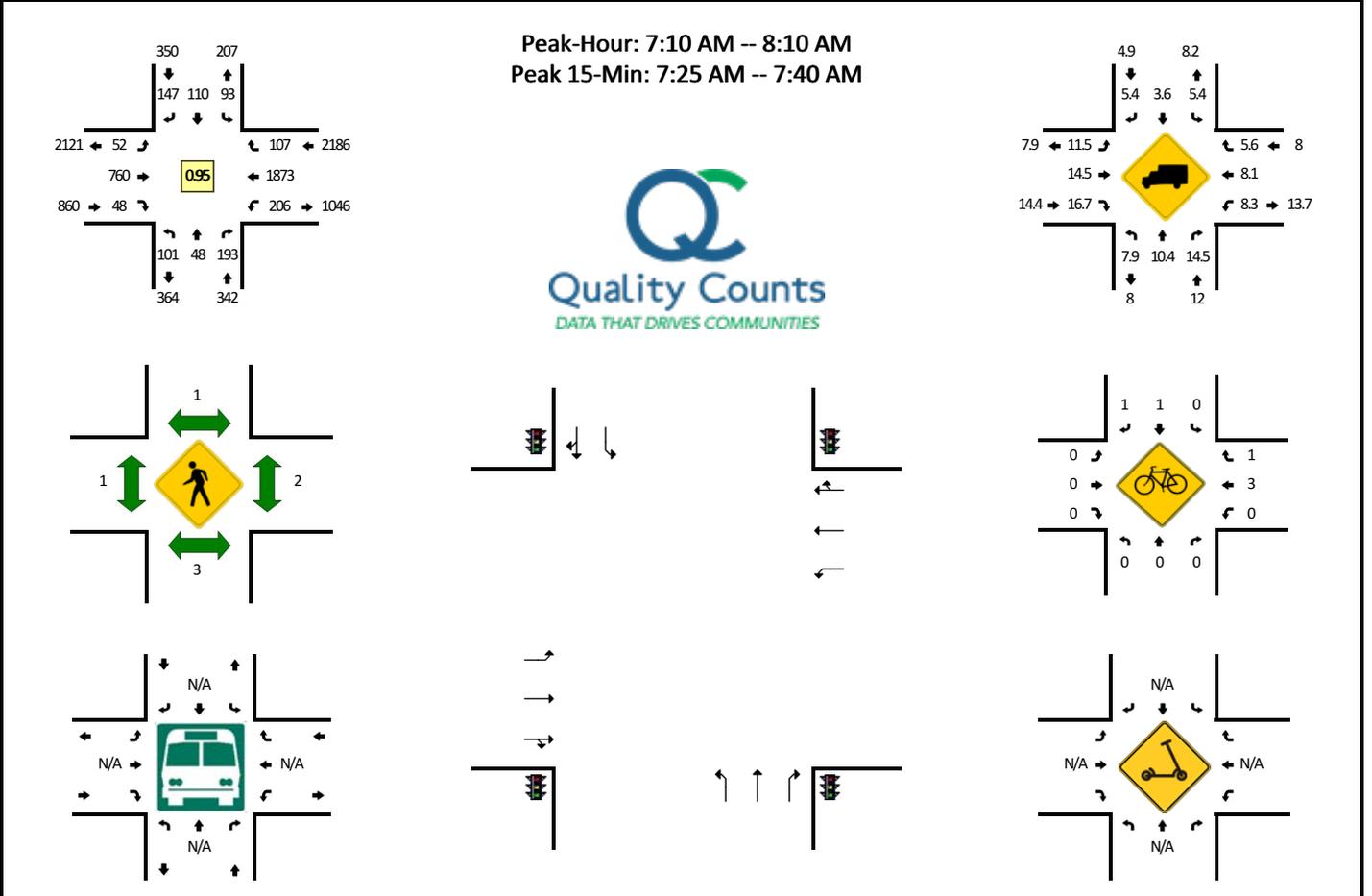


5-Min Count Period Beginning At	OR-224/SE 122nd Ave (Northbound)				OR-224/SE 122nd Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	4	0	0	35	22	3	0	2	52	4	0	1	70	97	0	291	
7:05 AM	2	6	4	0	24	9	6	0	1	34	2	0	1	62	98	0	249	
7:10 AM	3	2	0	0	26	5	5	0	2	46	6	0	0	90	97	0	282	
7:15 AM	1	7	2	0	25	15	7	0	4	45	3	0	1	67	102	0	279	
7:20 AM	4	5	0	0	32	7	4	0	0	47	2	0	0	53	84	0	238	
7:25 AM	1	6	1	0	29	17	11	0	2	67	7	0	3	94	77	0	315	
7:30 AM	1	5	0	0	39	12	8	0	3	59	6	0	0	74	101	0	308	
7:35 AM	2	4	0	0	36	13	9	0	0	65	4	0	1	67	94	0	295	
7:40 AM	3	7	2	0	41	9	6	0	1	46	3	0	3	92	76	0	289	
7:45 AM	2	3	1	0	31	13	10	0	1	55	4	0	3	87	75	0	285	
7:50 AM	2	6	0	0	37	14	8	0	2	58	1	0	0	72	74	0	274	
7:55 AM	0	7	1	0	46	28	12	0	0	32	3	0	1	74	62	0	266	3371
8:00 AM	1	8	1	0	31	21	9	0	3	44	4	0	3	87	88	0	300	3380
8:05 AM	1	12	1	0	40	8	11	0	2	62	4	0	0	84	71	0	296	3427
8:10 AM	2	10	1	0	45	12	9	0	2	58	4	0	3	73	74	0	293	3438
8:15 AM	2	8	1	0	29	11	4	0	1	53	4	0	1	83	85	0	282	3441
8:20 AM	1	6	1	0	27	14	10	0	1	50	5	0	0	52	48	0	215	3418
8:25 AM	3	4	1	0	39	11	5	0	2	52	3	0	0	58	80	0	258	3361
8:30 AM	1	6	1	0	27	11	2	0	0	42	3	0	0	79	72	0	244	3297
8:35 AM	2	2	1	0	35	8	9	0	1	64	2	0	1	59	75	0	259	3261
8:40 AM	3	8	1	0	29	10	8	0	1	46	2	0	0	73	66	0	247	3219
8:45 AM	4	7	1	0	45	14	8	0	2	58	5	0	5	51	67	0	267	3201
8:50 AM	1	10	1	0	34	9	14	0	1	62	0	0	2	71	78	0	283	3210
8:55 AM	2	10	2	0	27	9	7	0	4	49	4	0	0	62	63	0	239	3183
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	16	60	4	0	416	168	112	0	20	764	68	0	16	940	1088	0	3672	
Heavy Trucks	8	36	0		40	36	12		8	88	16		8	84	16		352	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	4		0	0	0		0	0	4		8	
Scoters																		

Comments:

LOCATION: SE 135th Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101903
DATE: Tue, May 16 2023

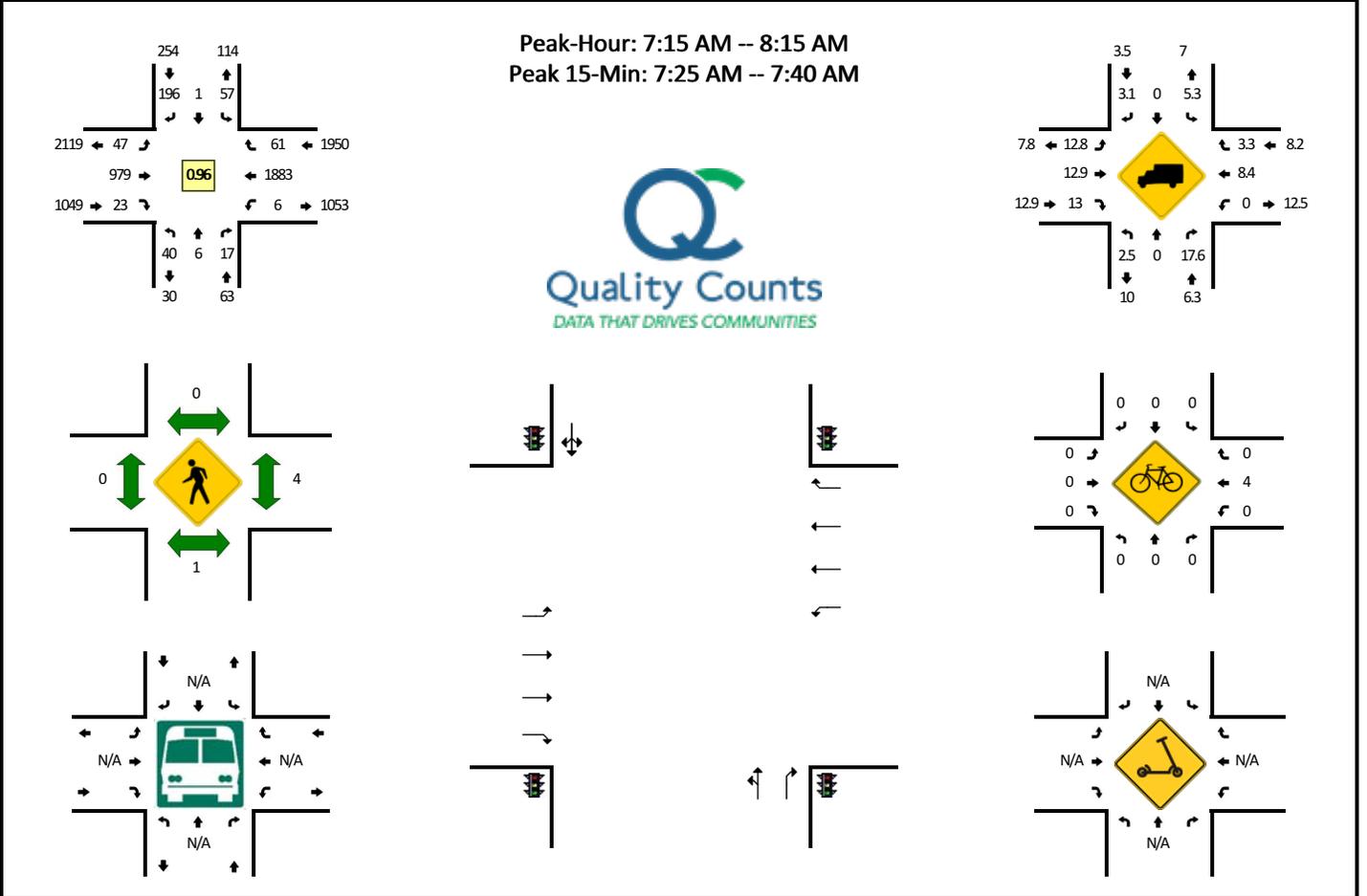


5-Min Count Period Beginning At	SE 135th Ave (Northbound)				SE 135th Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	8	7	11	0	3	12	16	0	3	61	2	0	17	156	3	0	299	
7:05 AM	9	6	13	0	4	5	10	0	4	39	1	0	27	155	11	0	284	
7:10 AM	14	3	9	0	7	5	8	0	2	60	4	0	17	172	10	0	311	
7:15 AM	7	2	18	0	8	8	9	0	4	53	0	0	17	179	9	0	314	
7:20 AM	6	6	12	0	6	8	20	0	6	45	1	0	21	129	9	0	269	
7:25 AM	8	6	13	0	2	7	12	0	3	72	3	0	18	175	6	0	325	
7:30 AM	6	4	25	0	10	9	14	0	5	76	3	0	18	173	10	0	353	
7:35 AM	10	6	17	0	8	10	16	0	5	63	6	0	17	141	2	0	301	
7:40 AM	6	0	12	0	8	8	7	0	10	69	7	0	22	148	9	0	306	
7:45 AM	4	4	19	0	6	8	12	0	2	70	6	0	15	170	10	0	326	
7:50 AM	9	4	17	0	13	15	14	0	6	52	8	0	16	137	11	0	302	
7:55 AM	15	3	17	0	8	11	8	0	4	62	4	0	21	147	7	0	307	3697
8:00 AM	14	5	17	0	8	3	13	0	5	70	3	0	13	146	11	0	308	3706
8:05 AM	2	5	17	0	9	18	14	0	0	68	3	0	11	156	13	0	316	3738
8:10 AM	10	3	12	0	5	5	10	0	7	76	4	0	22	115	16	0	285	3712
8:15 AM	7	5	23	0	6	9	9	0	4	96	3	0	16	136	15	0	329	3727
8:20 AM	8	4	16	0	5	4	10	0	7	44	4	0	16	118	19	0	255	3713
8:25 AM	18	8	18	0	9	5	11	0	5	60	5	0	19	94	17	0	269	3657
8:30 AM	6	1	23	0	9	9	14	0	5	56	3	0	21	128	12	0	287	3591
8:35 AM	11	7	20	0	6	6	7	0	3	69	10	0	12	142	9	0	302	3592
8:40 AM	8	7	20	0	9	8	11	0	10	67	5	0	10	114	11	0	280	3566
8:45 AM	7	4	15	0	5	5	14	0	7	63	4	0	21	122	8	0	275	3515
8:50 AM	8	4	14	0	7	7	11	0	4	105	1	0	13	143	7	0	324	3537
8:55 AM	7	6	18	0	7	8	16	0	5	64	2	0	15	99	11	0	258	3488
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	96	64	220	0	80	104	168	0	52	844	48	0	212	1956	72	0	3916	
Heavy Trucks	8	4	28		4	0	4		8	104	0		0	172	4		336	
Buses																		
Pedestrians		0				4				4				4			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4	
Scoters																		

Comments:

LOCATION: SE 142nd Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101905
DATE: Tue, May 16 2023

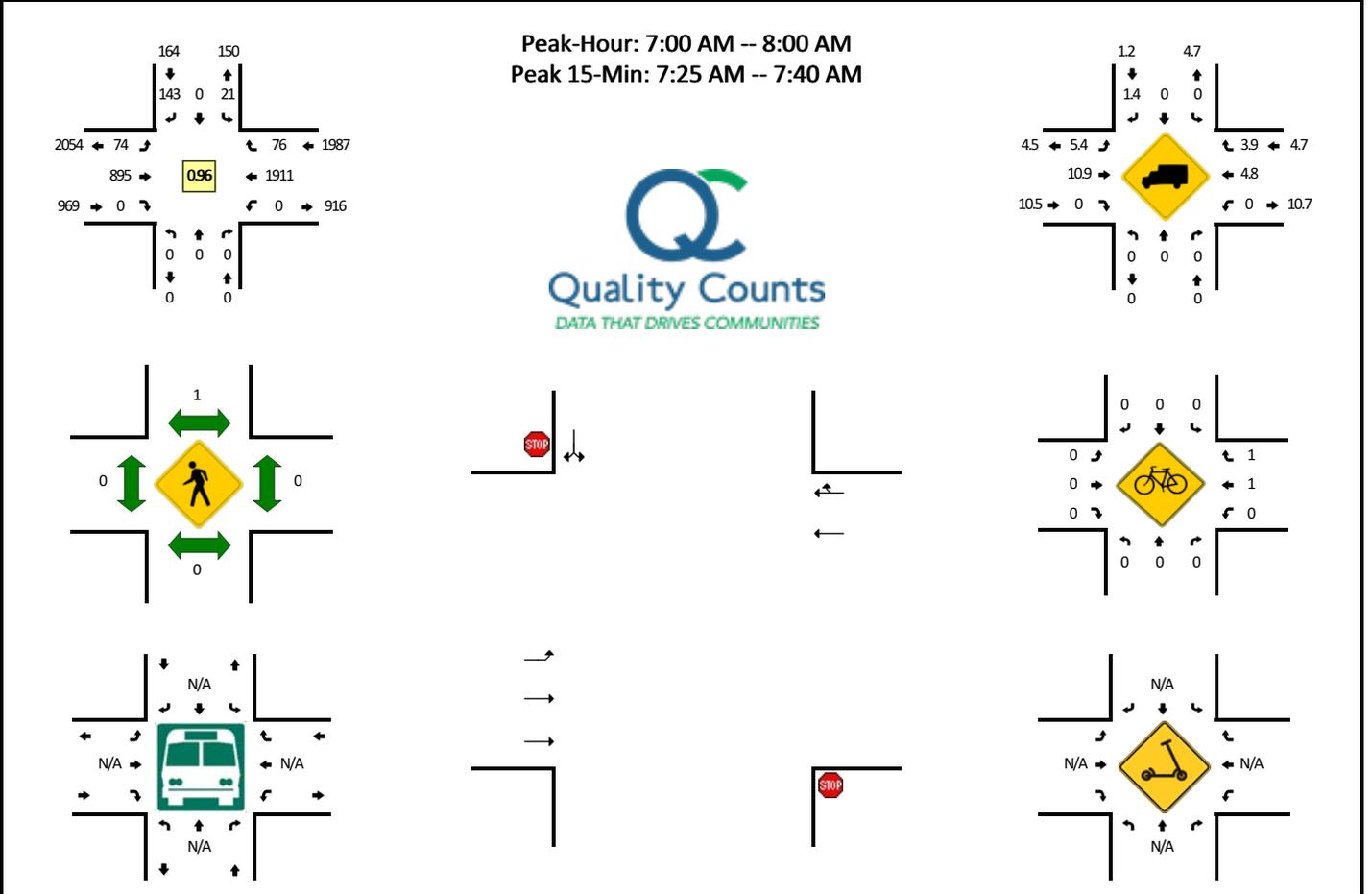


5-Min Count Period Beginning At	SE 142nd Ave (Northbound)				SE 142nd Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	0	2	0	1	0	16	0	3	85	1	0	0	177	4	0	292	
7:05 AM	4	2	0	0	0	0	11	0	2	56	0	0	0	172	4	0	251	
7:10 AM	1	0	1	1	2	0	15	0	3	50	2	0	0	172	7	0	254	
7:15 AM	8	0	2	0	3	0	11	0	4	84	2	0	0	166	4	0	284	
7:20 AM	3	0	3	0	5	0	12	0	2	58	2	0	0	178	4	0	267	
7:25 AM	3	1	1	0	2	0	15	0	3	63	1	0	0	168	5	0	262	
7:30 AM	2	0	0	0	5	0	19	0	4	94	2	0	0	168	7	0	301	
7:35 AM	1	0	1	0	3	1	9	0	2	105	2	0	1	166	7	0	298	
7:40 AM	1	0	3	0	3	0	16	0	4	71	0	0	1	157	1	0	257	
7:45 AM	6	3	1	0	6	0	26	0	4	81	4	0	0	144	2	0	277	
7:50 AM	6	0	0	0	10	0	16	0	5	75	3	0	1	154	6	0	276	
7:55 AM	4	0	0	0	5	0	13	0	2	91	0	0	2	164	6	0	287	3306
8:00 AM	1	2	1	0	5	0	20	0	6	63	2	0	1	141	10	0	252	3266
8:05 AM	3	0	2	0	5	0	21	0	7	112	3	0	0	129	5	0	287	3302
8:10 AM	2	0	3	0	5	0	18	0	4	82	2	0	0	148	4	0	268	3316
8:15 AM	8	1	3	0	7	0	21	0	8	90	1	0	1	106	9	0	255	3287
8:20 AM	3	1	0	0	5	0	17	0	3	81	2	0	0	144	1	0	257	3277
8:25 AM	3	0	1	0	3	0	16	0	6	84	3	0	1	142	8	0	267	3282
8:30 AM	2	1	1	0	3	0	14	0	4	76	0	0	0	129	1	0	231	3212
8:35 AM	3	0	1	0	3	0	16	0	5	92	2	0	0	122	3	0	247	3161
8:40 AM	4	0	4	0	5	0	13	0	6	86	0	0	1	130	6	0	255	3159
8:45 AM	3	0	0	0	3	0	10	0	3	77	5	0	0	153	5	0	259	3141
8:50 AM	8	0	1	0	4	0	13	0	3	96	2	0	0	116	11	0	254	3119
8:55 AM	3	1	4	0	3	0	10	0	7	97	5	0	1	117	3	0	251	3083
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	4	8	0	40	4	172	0	36	1048	20	0	4	2008	76	0	3444	
Heavy Trucks	0	0	0		4	0	8		4	120	0		0	172	4		312	
Buses																		
Pedestrians		0				0				0				4			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4	
Scoters																		

Comments:

LOCATION: SE 152nd Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101909
DATE: Tue, May 16 2023



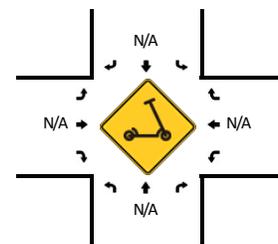
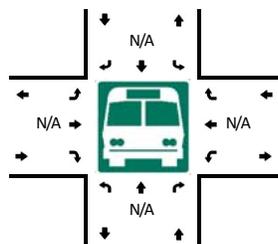
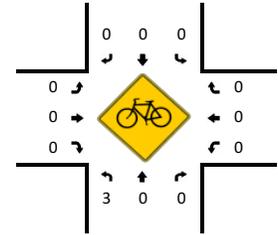
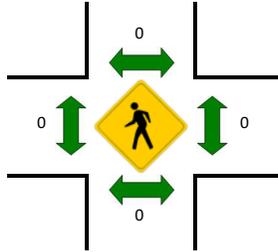
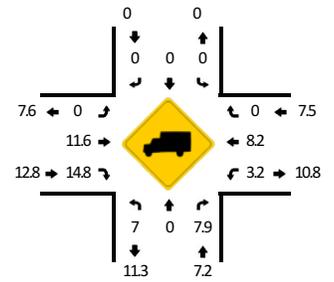
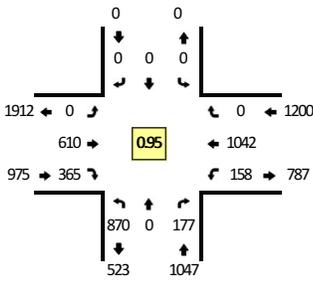
5-Min Count Period Beginning At	SE 152nd Ave (Northbound)				SE 152nd Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	11	0	4	70	0	0	0	170	5	0	261	
7:05 AM	0	0	0	0	1	0	11	0	7	68	0	0	0	151	4	0	242	
7:10 AM	0	0	0	0	1	0	13	0	4	52	0	0	0	157	0	0	227	
7:15 AM	0	0	0	0	2	0	17	0	4	74	0	0	0	165	10	0	272	
7:20 AM	0	0	0	0	3	0	15	0	5	74	0	0	0	169	5	0	271	
7:25 AM	0	0	0	0	2	0	13	0	3	62	0	0	0	171	7	0	258	
7:30 AM	0	0	0	0	1	0	16	0	8	78	0	0	0	160	15	0	278	
7:35 AM	0	0	0	0	4	0	7	0	8	104	0	0	0	146	5	0	274	
7:40 AM	0	0	0	0	1	0	10	0	8	76	0	0	0	149	3	0	247	
7:45 AM	0	0	0	0	4	0	10	0	5	74	0	0	0	168	2	0	263	
7:50 AM	0	0	0	0	1	0	14	0	7	62	0	0	0	155	7	0	246	
7:55 AM	0	0	0	0	0	0	6	0	11	101	0	0	0	150	13	0	281	3120
8:00 AM	0	0	0	0	2	0	10	0	9	62	0	0	0	131	7	0	221	3080
8:05 AM	0	0	0	0	1	0	5	0	9	98	0	0	0	113	10	0	236	3074
8:10 AM	0	0	0	0	3	0	22	0	7	90	0	0	0	115	5	0	242	3089
8:15 AM	0	0	0	0	2	0	8	0	8	86	0	0	0	124	6	0	234	3051
8:20 AM	0	0	0	0	5	0	15	0	7	68	0	0	0	126	12	0	233	3013
8:25 AM	0	0	0	0	3	0	18	0	6	93	0	0	0	127	5	0	252	3007
8:30 AM	0	0	0	0	5	0	20	0	9	74	0	0	0	110	1	0	219	2948
8:35 AM	0	0	0	0	4	0	8	0	10	71	0	0	0	132	3	0	228	2902
8:40 AM	0	0	0	0	3	0	8	0	9	99	0	0	0	126	7	0	252	2907
8:45 AM	0	0	0	0	6	0	11	0	7	75	0	0	0	134	6	0	239	2883
8:50 AM	0	0	0	0	3	0	9	0	9	83	0	0	0	135	8	0	247	2884
8:55 AM	0	0	0	0	3	0	9	0	9	98	0	0	0	100	2	0	221	2824
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	28	0	144	0	76	976	0	0	0	1908	108	0	3240	
Heavy Trucks	0	0	0	0	0	0	4	0	4	96	0	0	0	92	4	0	200	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4	
Scoters																		

Comments:

LOCATION: OR-224 -- OR-212
CITY/STATE: Damascus, OR

QC JOB #: 16101907
DATE: Tue, May 16 2023

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

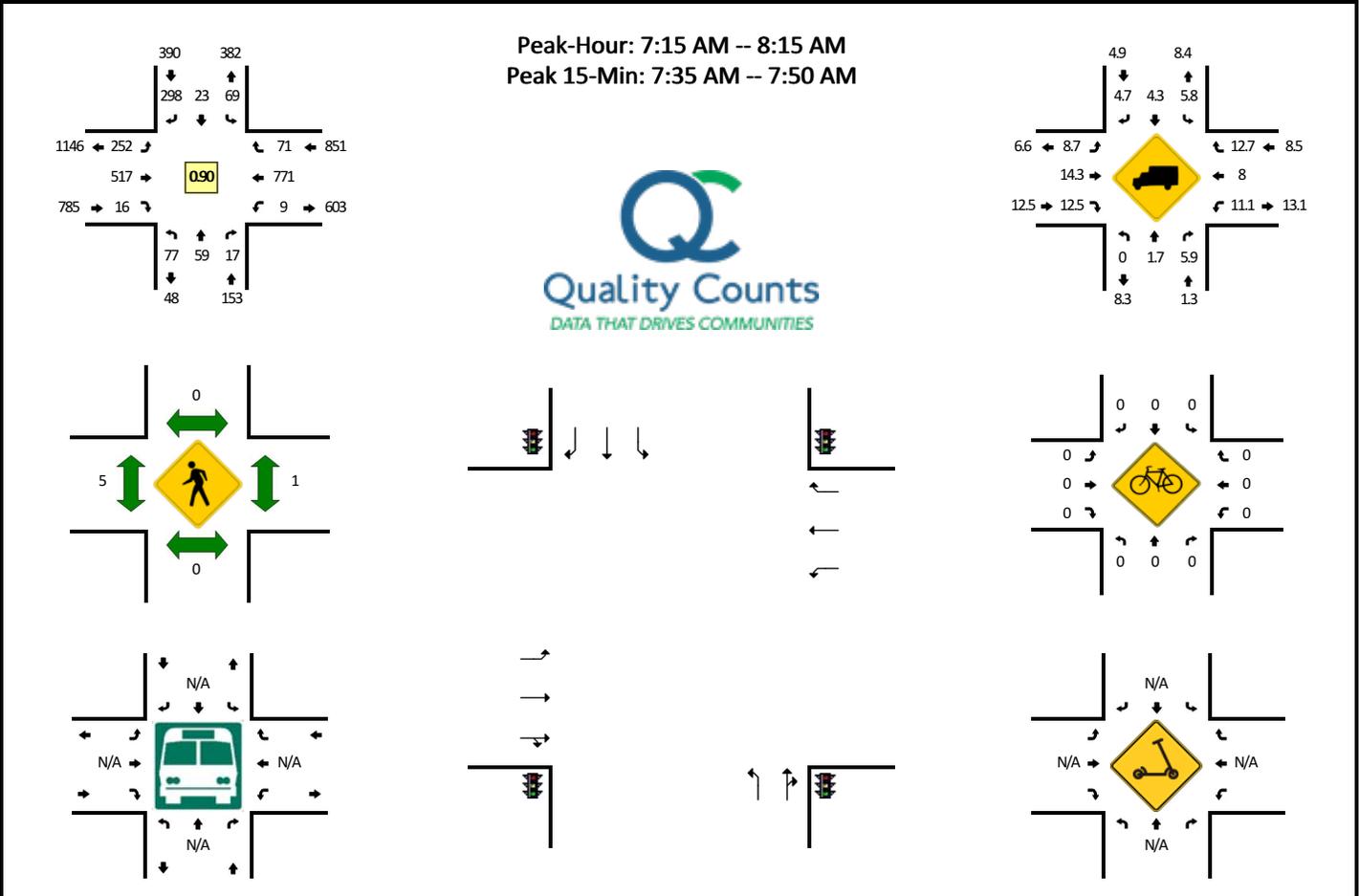


5-Min Count Period Beginning At	OR-224 (Northbound)				OR-224 (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	93	0	4	0	0	0	0	0	0	44	27	0	5	76	0	0	249	
7:05 AM	77	0	12	0	0	0	0	0	0	33	20	0	8	95	0	0	245	
7:10 AM	70	0	10	0	0	0	0	0	0	52	24	0	1	78	0	0	235	
7:15 AM	72	0	16	0	0	0	0	0	0	49	28	0	4	97	0	0	266	
7:20 AM	82	0	19	0	0	0	0	0	0	47	28	0	17	94	0	0	287	
7:25 AM	100	0	15	0	0	0	0	0	0	39	20	0	8	89	0	0	271	
7:30 AM	81	0	25	0	0	0	0	0	0	43	36	0	12	95	0	0	292	
7:35 AM	75	0	12	0	0	0	0	0	0	57	37	0	23	76	0	0	280	
7:40 AM	61	0	16	0	0	0	0	0	0	68	29	0	14	82	0	0	270	
7:45 AM	75	0	7	0	0	0	0	0	0	47	34	0	16	97	0	0	276	
7:50 AM	66	0	17	0	0	0	0	0	0	34	28	0	21	95	0	0	261	
7:55 AM	69	0	6	0	0	0	0	0	0	62	42	0	14	87	0	0	280	3212
8:00 AM	61	0	20	0	0	0	0	0	0	42	25	0	10	78	0	0	236	3199
8:05 AM	58	0	13	0	0	0	0	0	0	65	26	0	12	67	0	0	241	3195
8:10 AM	70	0	11	0	0	0	0	0	0	57	32	0	7	85	0	0	262	3222
8:15 AM	49	0	12	0	0	0	0	0	0	71	33	0	14	74	0	0	253	3209
8:20 AM	76	0	19	0	0	0	0	0	0	39	37	0	16	62	0	0	249	3171
8:25 AM	63	0	12	0	0	0	0	0	0	42	33	0	17	72	0	0	239	3139
8:30 AM	32	0	10	0	0	0	0	0	0	64	32	0	13	75	0	0	226	3073
8:35 AM	83	0	19	0	0	0	0	0	0	48	22	0	9	60	0	0	241	3034
8:40 AM	61	0	8	0	0	0	0	0	0	51	35	0	6	67	0	0	228	2992
8:45 AM	55	0	7	0	0	0	0	0	0	57	40	0	6	86	0	0	251	2967
8:50 AM	73	0	8	0	0	0	0	0	0	57	39	0	10	67	0	0	254	2960
8:55 AM	50	0	12	0	0	0	0	0	0	57	34	0	4	56	0	0	213	2893
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	1052	0	236	0	0	0	0	0	0	516	336	0	148	1112	0	0	3400	
Heavy Trucks	48	0	28		0	0	0		0	64	72		0	88	0		300	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	4	0	0		0	0	0		0	0	0		0	0	0		4	
Scoters																		

Comments:

LOCATION: SE 172nd Ave/SE Anderregg Pkwy -- OR-212
CITY/STATE: Damascus, OR

QC JOB #: 16101917
DATE: Tue, May 23 2023



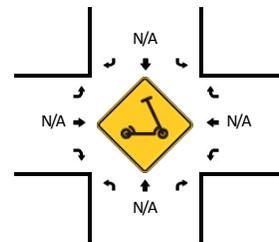
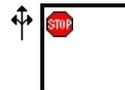
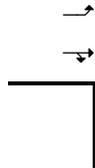
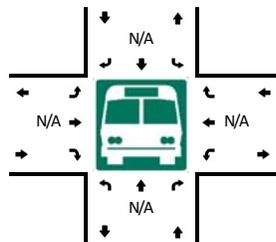
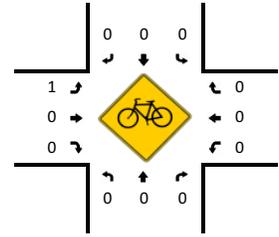
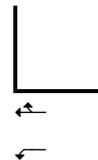
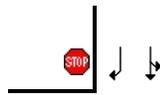
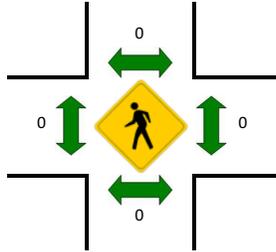
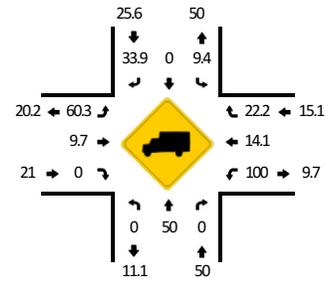
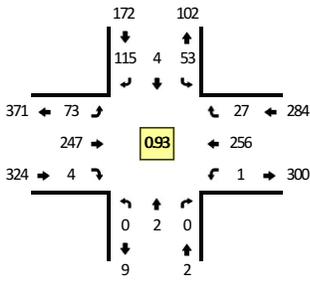
5-Min Count Period Beginning At	SE 172nd Ave/SE Anderregg Pkwy (Northbound)				SE 172nd Ave/SE Anderregg Pkwy (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	10	3	0	0	2	1	11	0	13	32	3	0	1	86	2	0	164	
7:05 AM	4	1	0	0	3	0	19	0	20	32	2	0	0	74	1	0	156	
7:10 AM	4	1	0	0	3	0	17	0	25	43	1	0	0	69	0	0	163	
7:15 AM	16	4	4	0	9	1	20	0	18	31	1	0	0	64	4	0	172	
7:20 AM	6	4	2	0	0	0	15	0	26	44	0	0	1	77	4	0	179	
7:25 AM	10	7	1	0	3	3	11	0	21	45	1	0	2	63	6	0	173	
7:30 AM	4	9	0	0	4	0	35	0	25	43	3	0	0	60	6	0	189	
7:35 AM	7	12	2	0	6	2	27	0	22	39	1	0	1	68	9	0	196	
7:40 AM	8	5	1	0	3	3	43	0	30	67	2	0	0	53	4	0	219	
7:45 AM	6	6	1	0	12	7	37	0	16	37	0	0	2	65	3	0	192	
7:50 AM	4	3	1	0	9	3	32	0	9	27	2	0	0	70	6	0	166	
7:55 AM	4	0	2	0	10	2	16	0	17	55	1	0	0	55	5	0	167	2136
8:00 AM	5	4	2	0	5	0	19	0	22	44	1	0	1	65	5	0	173	2145
8:05 AM	3	2	0	0	2	0	20	0	24	41	4	0	1	81	11	0	189	2178
8:10 AM	4	3	1	0	6	2	23	0	22	44	0	0	1	50	8	0	164	2179
8:15 AM	2	5	1	0	6	0	24	0	26	52	3	0	1	46	6	0	172	2179
8:20 AM	6	3	2	0	6	1	21	0	21	27	0	0	0	55	3	0	145	2145
8:25 AM	3	1	0	0	3	1	22	0	16	49	2	0	0	59	9	0	165	2137
8:30 AM	1	7	0	0	4	3	27	0	17	43	1	0	0	57	6	0	166	2114
8:35 AM	6	3	0	0	5	0	33	0	13	37	1	0	0	52	4	0	154	2072
8:40 AM	5	3	2	0	5	4	31	0	14	39	3	0	0	48	3	0	157	2010
8:45 AM	3	4	1	0	12	2	22	0	12	50	0	0	0	48	5	0	159	1977
8:50 AM	2	1	1	0	6	0	17	0	16	34	0	0	3	47	2	0	129	1940
8:55 AM	3	3	0	0	1	0	9	0	15	44	2	0	1	58	4	0	140	1913
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	84	92	16	0	84	48	428	0	272	572	12	0	12	744	64	0	2428	
Heavy Trucks	0	0	0		8	0	4		24	84	0		0	60	4		184	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: SE 122nd Ave -- SE Jennifer St
CITY/STATE: Clackamas, OR

QC JOB #: 16101915
DATE: Tue, May 23 2023

Peak-Hour: 7:05 AM -- 8:05 AM
 Peak 15-Min: 7:05 AM -- 7:20 AM

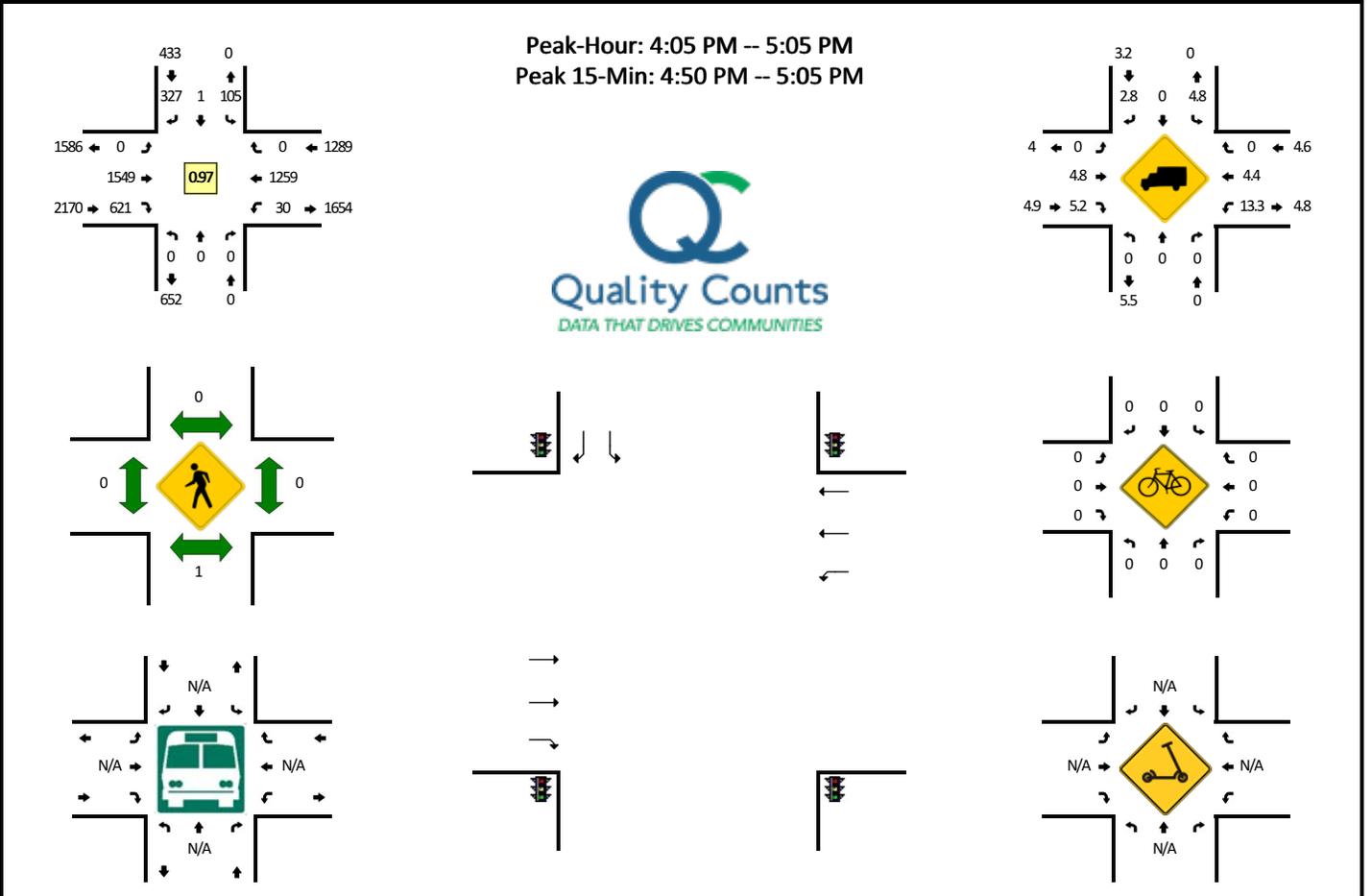


5-Min Count Period Beginning At	SE 122nd Ave (Northbound)				SE 122nd Ave (Southbound)				SE Jennifer St (Eastbound)				SE Jennifer St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	3	1	12	0	8	21	0	0	0	15	1	0	61	
7:05 AM	0	1	0	0	0	1	14	0	11	23	0	0	0	28	1	0	79	
7:10 AM	0	0	0	0	6	0	7	0	6	20	1	0	0	28	4	0	72	
7:15 AM	0	1	0	0	2	0	8	0	5	17	1	0	0	25	1	0	60	
7:20 AM	0	0	0	0	8	0	13	0	4	24	0	0	0	21	3	0	73	
7:25 AM	0	0	0	0	3	0	7	0	8	22	1	0	0	20	2	0	63	
7:30 AM	0	0	0	0	2	1	10	0	5	20	0	0	0	20	3	0	61	
7:35 AM	0	0	0	0	2	0	4	0	6	16	1	0	0	19	2	0	50	
7:40 AM	0	0	0	0	4	0	12	0	4	21	0	0	1	15	1	0	58	
7:45 AM	0	0	0	0	7	0	16	0	3	23	0	0	0	14	2	0	65	
7:50 AM	0	0	0	0	4	2	7	0	6	21	0	0	0	20	2	0	62	
7:55 AM	0	0	0	0	7	0	6	0	9	26	0	0	0	24	1	0	73	777
8:00 AM	0	0	0	0	8	0	11	0	6	14	0	0	0	22	5	0	66	782
8:05 AM	0	0	0	0	5	0	12	0	4	16	0	0	0	10	1	0	48	751
8:10 AM	0	0	0	0	0	1	8	0	6	19	0	0	0	16	10	0	60	739
8:15 AM	0	0	0	0	6	0	5	0	6	21	1	0	0	16	1	0	56	735
8:20 AM	0	0	0	0	6	0	9	0	2	21	0	0	1	12	2	0	53	715
8:25 AM	0	0	0	0	6	0	6	0	6	26	0	0	0	18	1	0	63	715
8:30 AM	0	0	0	0	2	1	6	0	6	18	0	0	0	15	1	0	49	703
8:35 AM	0	0	0	0	0	0	9	0	6	20	0	0	0	17	3	0	55	708
8:40 AM	0	0	0	0	2	0	11	0	7	14	0	0	0	22	3	0	59	709
8:45 AM	0	1	0	0	6	1	7	0	14	21	0	0	0	18	3	0	71	715
8:50 AM	1	0	0	0	1	0	11	0	8	19	0	0	0	17	3	0	60	713
8:55 AM	0	0	0	0	2	0	4	0	4	16	0	0	0	11	0	0	37	677
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	0	8	0	0	32	4	116	0	88	240	8	0	0	324	24	0	844	
Heavy Trucks	0	4	0	0	0	0	40	0	56	8	0	0	0	40	8	0	156	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

LOCATION: OR-213 SB Ramps -- OR-224
CITY/STATE: Oatfield, OR

QC JOB #: 16101920
DATE: Tue, May 16 2023

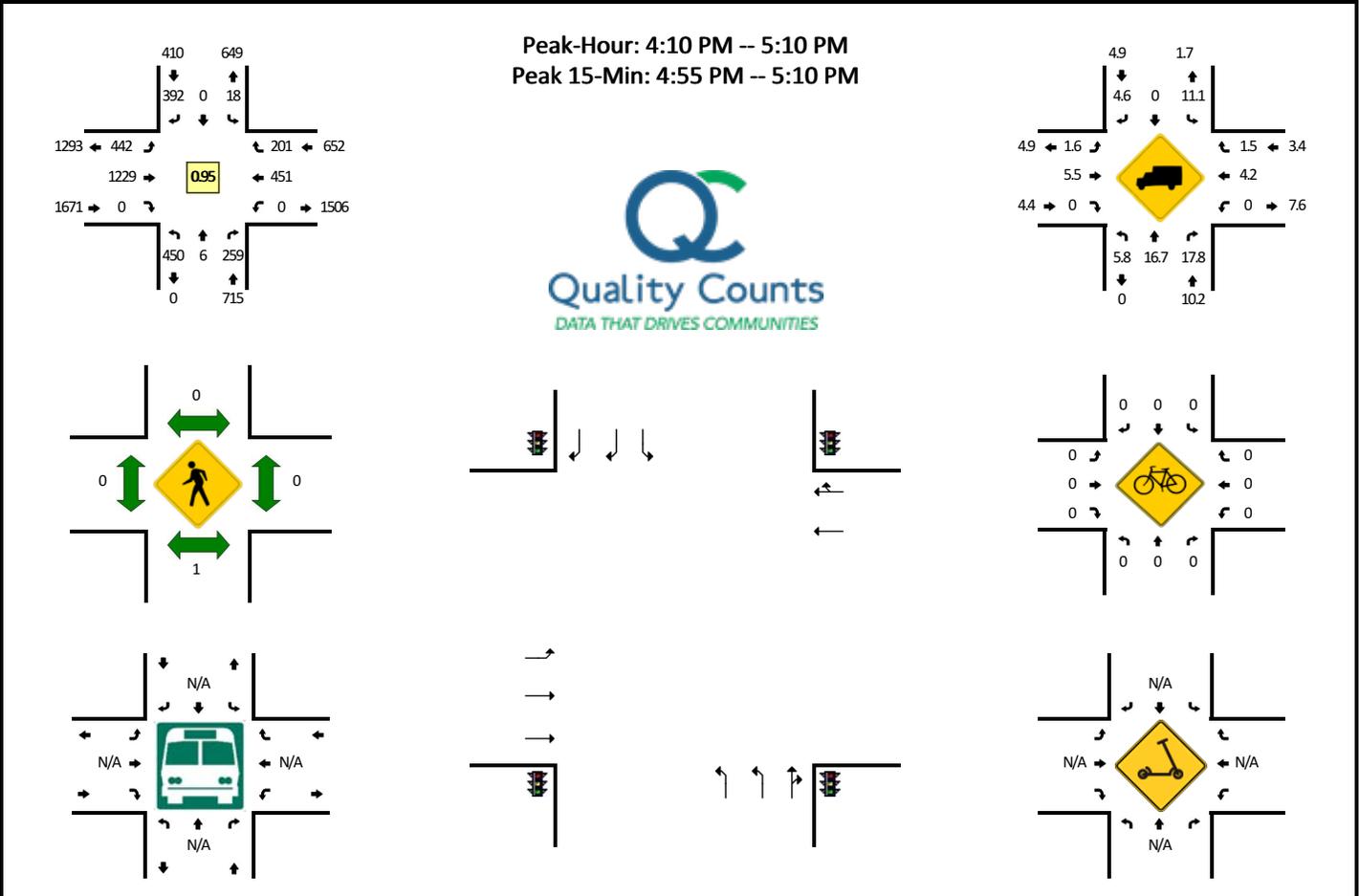


5-Min Count Period Beginning At	OR-213 SB Ramps (Northbound)				OR-213 SB Ramps (Southbound)				OR-224 (Eastbound)				OR-224 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	8	0	33	0	0	118	52	0	3	114	0	0	328	
4:05 PM	0	0	0	0	7	0	31	0	0	124	59	0	1	95	0	0	317	
4:10 PM	0	0	0	0	17	0	30	0	0	132	51	0	2	115	0	0	347	
4:15 PM	0	0	0	0	8	0	28	0	0	125	43	0	0	107	0	0	311	
4:20 PM	0	0	0	0	4	0	25	0	0	152	56	0	2	100	0	0	339	
4:25 PM	0	0	0	0	8	0	14	0	0	133	44	0	4	106	0	0	309	
4:30 PM	0	0	0	0	6	0	27	0	0	107	45	0	2	98	0	0	285	
4:35 PM	0	0	0	0	6	0	26	0	0	123	55	0	6	107	0	0	323	
4:40 PM	0	0	0	0	10	0	25	0	0	123	63	0	2	107	0	0	330	
4:45 PM	0	0	0	0	10	1	37	0	0	130	61	0	4	89	0	0	332	
4:50 PM	0	0	0	0	9	0	26	0	0	122	46	0	2	110	0	0	315	
4:55 PM	0	0	0	0	7	0	23	0	0	145	52	0	1	102	0	0	330	3866
5:00 PM	0	0	0	0	13	0	35	0	0	133	46	0	4	123	0	0	354	3892
5:05 PM	0	0	0	0	6	0	29	0	0	119	40	0	4	111	0	0	309	3884
5:10 PM	0	0	0	0	9	0	29	0	0	143	46	0	0	108	0	0	335	3872
5:15 PM	0	0	0	0	7	0	31	0	0	116	47	0	0	96	0	0	297	3858
5:20 PM	0	0	0	0	7	0	28	0	0	125	52	0	0	95	0	0	307	3826
5:25 PM	0	0	0	0	7	0	34	0	0	132	52	0	1	85	0	0	311	3828
5:30 PM	0	0	0	0	4	0	26	0	0	117	50	0	0	88	0	0	285	3828
5:35 PM	0	0	0	0	6	0	26	0	0	124	51	0	0	91	0	0	298	3803
5:40 PM	0	0	0	0	5	0	26	0	0	117	41	0	0	91	0	0	280	3753
5:45 PM	0	0	0	0	5	0	25	0	0	123	38	0	0	88	0	0	279	3700
5:50 PM	0	0	0	0	9	0	29	0	0	109	43	0	0	70	0	0	260	3645
5:55 PM	0	0	0	0	7	0	22	0	0	111	41	0	0	82	0	0	263	3578
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	116	0	336	0	0	1600	576	0	28	1340	0	0	3996	
Heavy Trucks	0	0	0	0	0	0	12	0	0	56	44	0	4	40	0	0	156	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																	0	

Comments:

LOCATION: OR-213 NB Ramps/I-205 SB Off Ramp -- OR-224
CITY/STATE: Clackamas, OR

QC JOB #: 16101914
DATE: Tue, May 16 2023

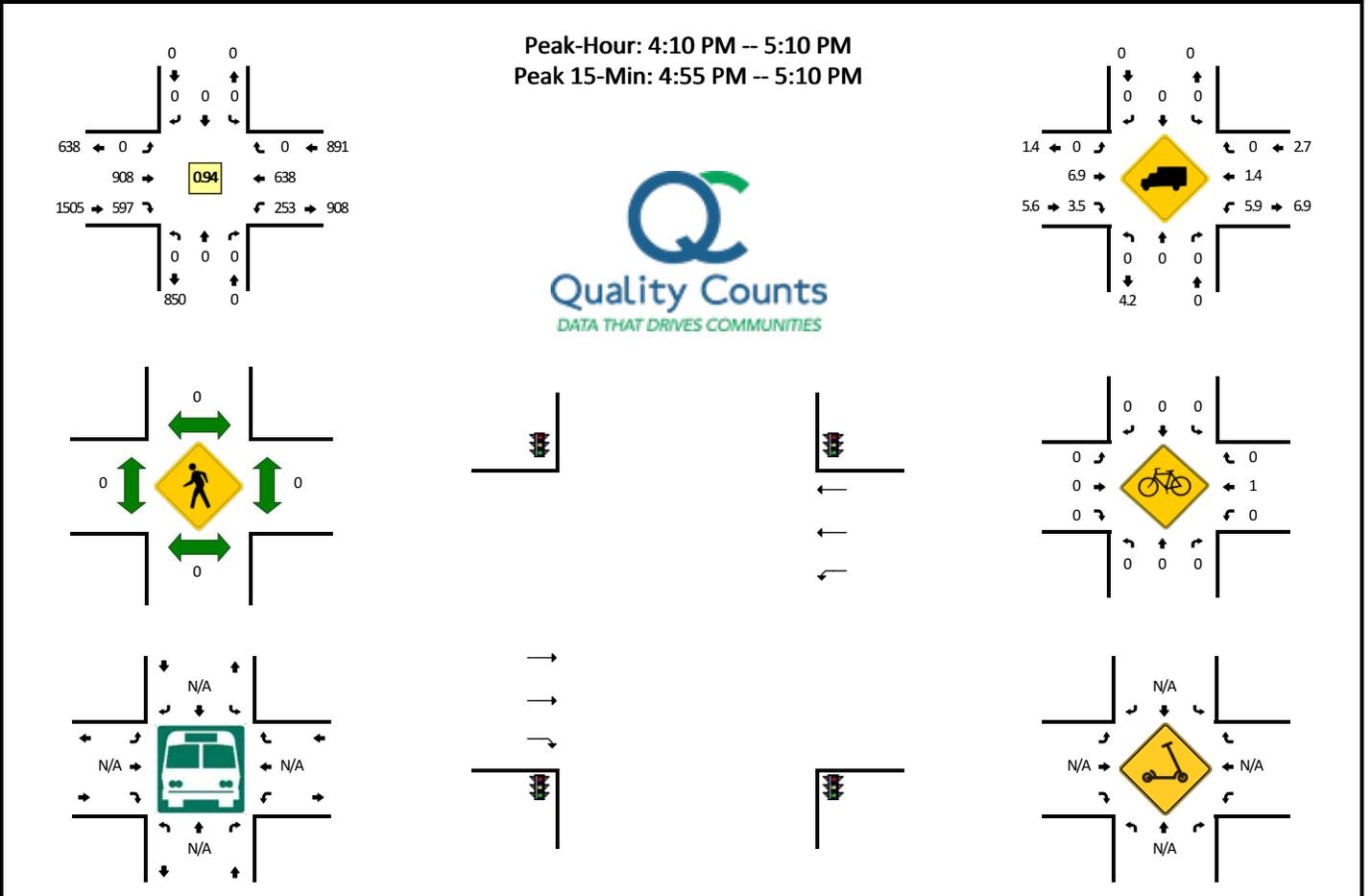


5-Min Count Period Beginning At	OR-213 NB Ramps/I-205 SB Off Ramp (Northbound)				OR-213 NB Ramps/I-205 SB Off Ramp (Southbound)				OR-224 (Eastbound)				OR-224 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	33	0	25	0	2	0	40	0	41	98	0	0	0	30	24	0	293	
4:05 PM	43	0	19	0	3	0	32	0	24	82	0	0	0	29	22	0	254	
4:10 PM	35	0	22	0	1	0	30	0	28	129	0	0	0	53	19	0	317	
4:15 PM	29	1	26	0	1	0	38	0	48	103	0	0	0	31	13	0	290	
4:20 PM	43	0	23	0	0	0	32	0	37	94	0	0	0	35	13	0	277	
4:25 PM	52	1	13	0	2	0	15	0	28	108	0	0	0	44	13	0	276	
4:30 PM	28	0	20	0	0	0	37	0	48	103	0	0	0	36	13	0	285	
4:35 PM	26	0	15	0	2	0	43	0	48	76	0	0	0	35	17	0	262	
4:40 PM	42	1	29	0	0	0	28	0	34	76	0	0	0	44	21	0	275	
4:45 PM	33	0	16	0	5	0	41	0	38	117	0	0	0	25	20	0	295	
4:50 PM	27	0	21	0	1	0	33	0	41	97	0	0	0	34	8	0	262	
4:55 PM	56	0	24	0	1	0	25	0	20	104	0	0	0	30	12	0	272	3358
5:00 PM	47	2	18	0	3	0	34	0	21	132	0	0	0	54	30	0	341	3406
5:05 PM	32	1	32	0	2	0	36	0	51	90	0	0	0	30	22	0	296	3448
5:10 PM	48	2	16	0	3	0	27	0	31	106	0	0	0	40	11	0	284	3415
5:15 PM	30	0	13	0	1	0	30	0	27	93	0	0	0	36	25	0	255	3380
5:20 PM	37	0	22	0	0	0	33	0	42	115	0	0	0	18	13	0	280	3383
5:25 PM	48	0	26	0	0	0	22	0	41	88	0	0	0	29	12	0	266	3373
5:30 PM	31	1	22	0	2	0	24	0	19	102	0	0	0	31	8	0	240	3328
5:35 PM	28	1	18	0	3	0	37	0	30	119	0	0	0	28	23	0	287	3353
5:40 PM	41	0	20	0	1	0	25	0	28	92	0	0	0	18	19	0	244	3322
5:45 PM	44	0	17	0	0	0	26	0	24	68	0	0	0	22	11	0	212	3239
5:50 PM	31	0	24	0	0	0	21	0	36	123	0	0	0	15	9	0	259	3236
5:55 PM	35	1	19	0	0	0	15	0	37	69	0	0	0	27	8	0	211	3175
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	540	12	296	0	24	0	380	0	368	1304	0	0	0	456	256	0	3636	
Heavy Trucks	20	0	52		0	0	16		4	40	0		0	16	4		152	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: I-205 NB Ramp -- OR-224
CITY/STATE: Clackamas, OR

QC JOB #: 16101912
DATE: Tue, May 16 2023

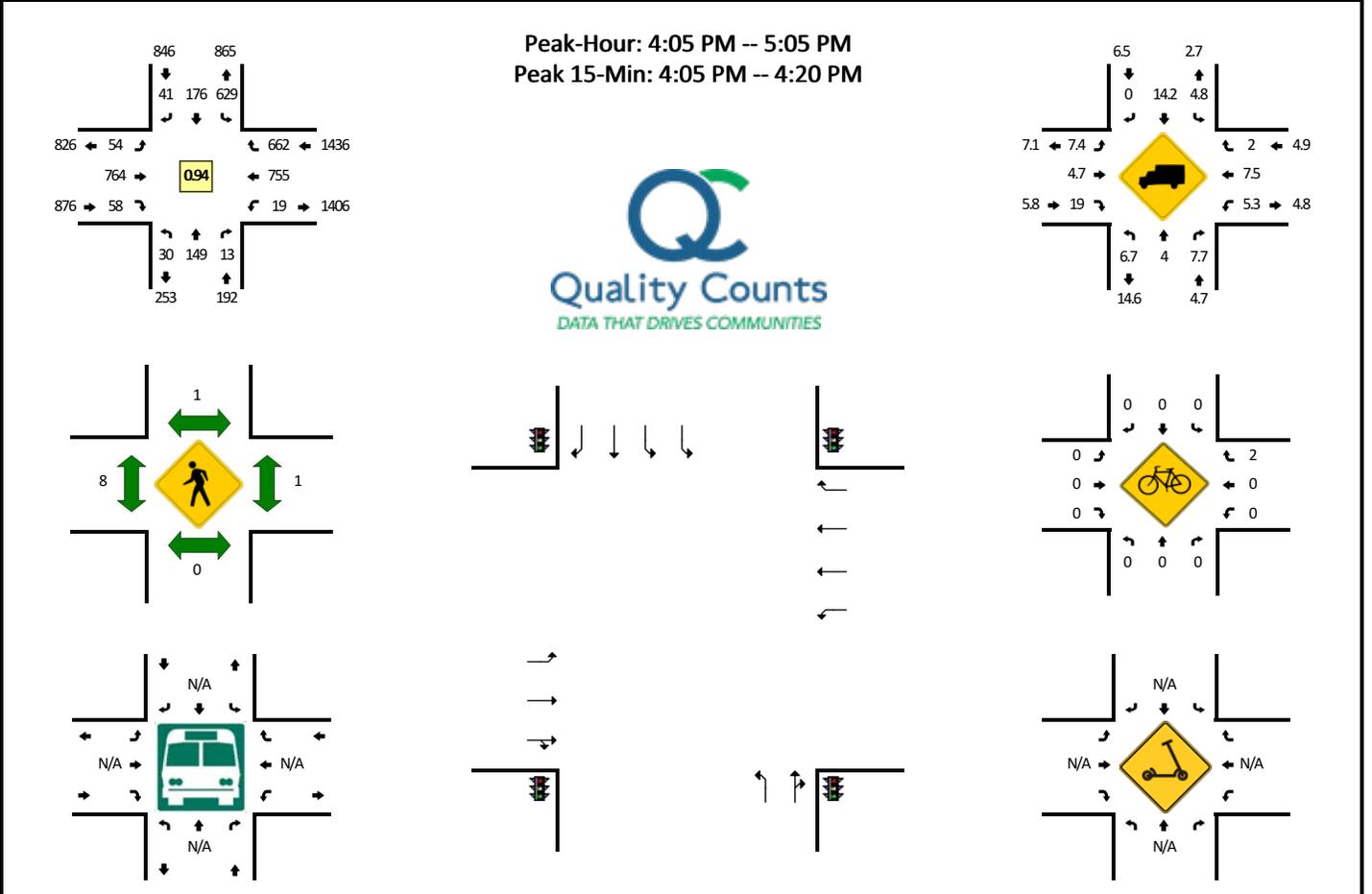


5-Min Count Period Beginning At	I-205 NB Ramp (Northbound)				I-205 NB Ramp (Southbound)				OR-224 (Eastbound)				OR-224 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	90	47	0	19	54	0	0	210	
4:05 PM	0	0	0	0	0	0	0	0	0	59	43	0	31	60	0	0	193	
4:10 PM	0	0	0	0	0	0	0	0	0	83	43	0	30	58	0	0	214	
4:15 PM	0	0	0	0	0	0	0	0	0	87	67	0	21	47	0	0	222	
4:20 PM	0	0	0	0	0	0	0	0	0	59	52	0	29	50	0	0	190	
4:25 PM	0	0	0	0	0	0	0	0	0	71	45	0	21	43	0	0	180	
4:30 PM	0	0	0	0	0	0	0	0	0	87	50	0	7	53	0	0	197	
4:35 PM	0	0	0	0	0	0	0	0	0	60	34	0	24	51	0	0	169	
4:40 PM	0	0	0	0	0	0	0	0	0	70	29	0	30	57	0	0	186	
4:45 PM	0	0	0	0	0	0	0	0	0	71	67	0	20	49	0	0	207	
4:50 PM	0	0	0	0	0	0	0	0	0	84	42	0	13	58	0	0	197	
4:55 PM	0	0	0	0	0	0	0	0	0	73	56	0	17	58	0	0	204	2369
5:00 PM	0	0	0	0	0	0	0	0	0	93	49	0	15	61	0	0	218	2377
5:05 PM	0	0	0	0	0	0	0	0	0	70	63	0	26	53	0	0	212	2396
5:10 PM	0	0	0	0	0	0	0	0	0	66	56	0	35	57	0	0	214	2396
5:15 PM	0	0	0	0	0	0	0	0	0	49	48	0	28	43	0	0	168	2342
5:20 PM	0	0	0	0	0	0	0	0	0	84	59	0	16	35	0	0	194	2346
5:25 PM	0	0	0	0	0	0	0	0	0	72	44	0	29	47	0	0	192	2358
5:30 PM	0	0	0	0	0	0	0	0	0	71	48	0	14	30	0	0	163	2324
5:35 PM	0	0	0	0	0	0	0	0	0	84	60	0	13	50	0	0	207	2362
5:40 PM	0	0	0	0	0	0	0	0	0	61	52	0	16	42	0	0	171	2347
5:45 PM	0	0	0	0	0	0	0	0	0	45	34	0	18	24	0	0	121	2261
5:50 PM	0	0	0	0	0	0	0	0	0	93	56	0	18	27	0	0	194	2258
5:55 PM	0	0	0	0	0	0	0	0	0	63	26	0	17	37	0	0	143	2197
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	0	0	0	0	0	944	672	0	232	688	0	0	2536	
Heavy Trucks	0	0	0	0	0	0	0	0	0	44	4	0	4	8	0	0	60	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: OR-224/SE 122nd Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101902
DATE: Tue, May 16 2023

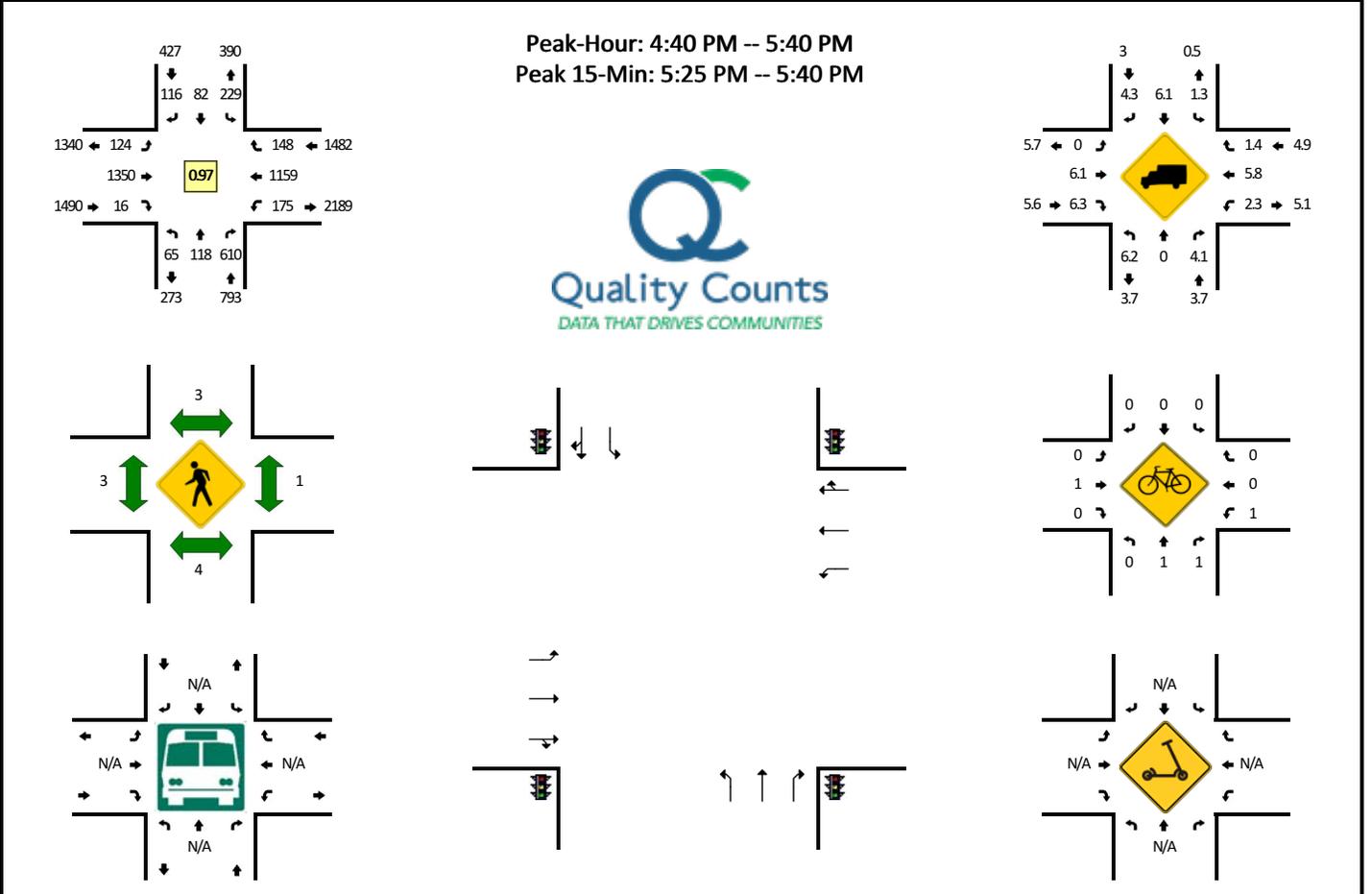


5-Min Count Period Beginning At	OR-224/SE 122nd Ave (Northbound)				OR-224/SE 122nd Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	6	0	0	60	12	4	0	5	68	1	0	0	51	58	0	268	
4:05 PM	4	19	1	0	69	17	4	0	8	58	4	0	2	57	68	0	311	
4:10 PM	3	16	0	0	48	12	3	0	5	66	3	0	1	77	55	0	289	
4:15 PM	3	12	2	0	60	10	4	0	6	68	3	0	2	66	55	0	291	
4:20 PM	3	16	3	0	68	15	7	0	6	56	4	0	2	55	61	0	296	
4:25 PM	2	6	0	0	50	10	5	0	3	65	4	0	3	67	45	0	260	
4:30 PM	0	8	0	0	47	9	2	0	3	74	7	0	1	46	39	0	236	
4:35 PM	1	18	1	0	66	15	2	0	3	65	7	0	2	69	60	0	309	
4:40 PM	4	13	1	0	35	15	1	0	6	77	1	0	2	65	55	0	275	
4:45 PM	4	9	2	0	36	12	2	0	1	76	4	0	0	64	51	0	261	
4:50 PM	2	6	2	0	52	24	4	0	5	57	11	0	1	57	46	0	267	
4:55 PM	2	11	0	0	53	20	3	0	6	47	3	0	1	58	58	0	262	3325
5:00 PM	2	15	1	0	45	17	4	0	2	55	7	0	2	74	69	0	293	3350
5:05 PM	4	12	1	0	49	25	7	0	5	60	3	0	2	51	61	0	280	3319
5:10 PM	2	14	6	0	58	17	4	0	3	41	7	0	1	54	71	0	278	3308
5:15 PM	2	7	2	0	53	18	4	0	2	57	3	0	2	75	47	0	272	3289
5:20 PM	1	1	1	0	55	6	3	0	3	43	3	0	3	53	49	0	221	3214
5:25 PM	3	6	1	0	77	11	4	0	1	52	1	0	2	58	55	0	271	3225
5:30 PM	1	0	0	0	53	8	3	0	3	60	2	0	0	78	48	0	256	3245
5:35 PM	0	4	1	0	61	7	6	0	2	51	1	0	2	61	54	0	250	3186
5:40 PM	0	6	3	0	77	7	3	0	3	50	0	0	4	44	44	0	241	3152
5:45 PM	2	6	2	0	48	7	2	0	1	68	0	0	2	53	36	0	227	3118
5:50 PM	1	4	2	0	44	9	0	0	5	87	1	0	0	54	41	0	248	3099
5:55 PM	0	5	1	0	58	13	2	0	1	46	1	0	2	48	57	0	234	3071
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	188	12	0	708	156	44	0	76	768	40	0	20	800	712	0	3564	
Heavy Trucks	8	12	0	0	36	20	0	0	8	8	16	0	0	56	12	0	176	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	8		8	
Scoters																		

Comments:

LOCATION: SE 135th Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101904
DATE: Tue, May 16 2023

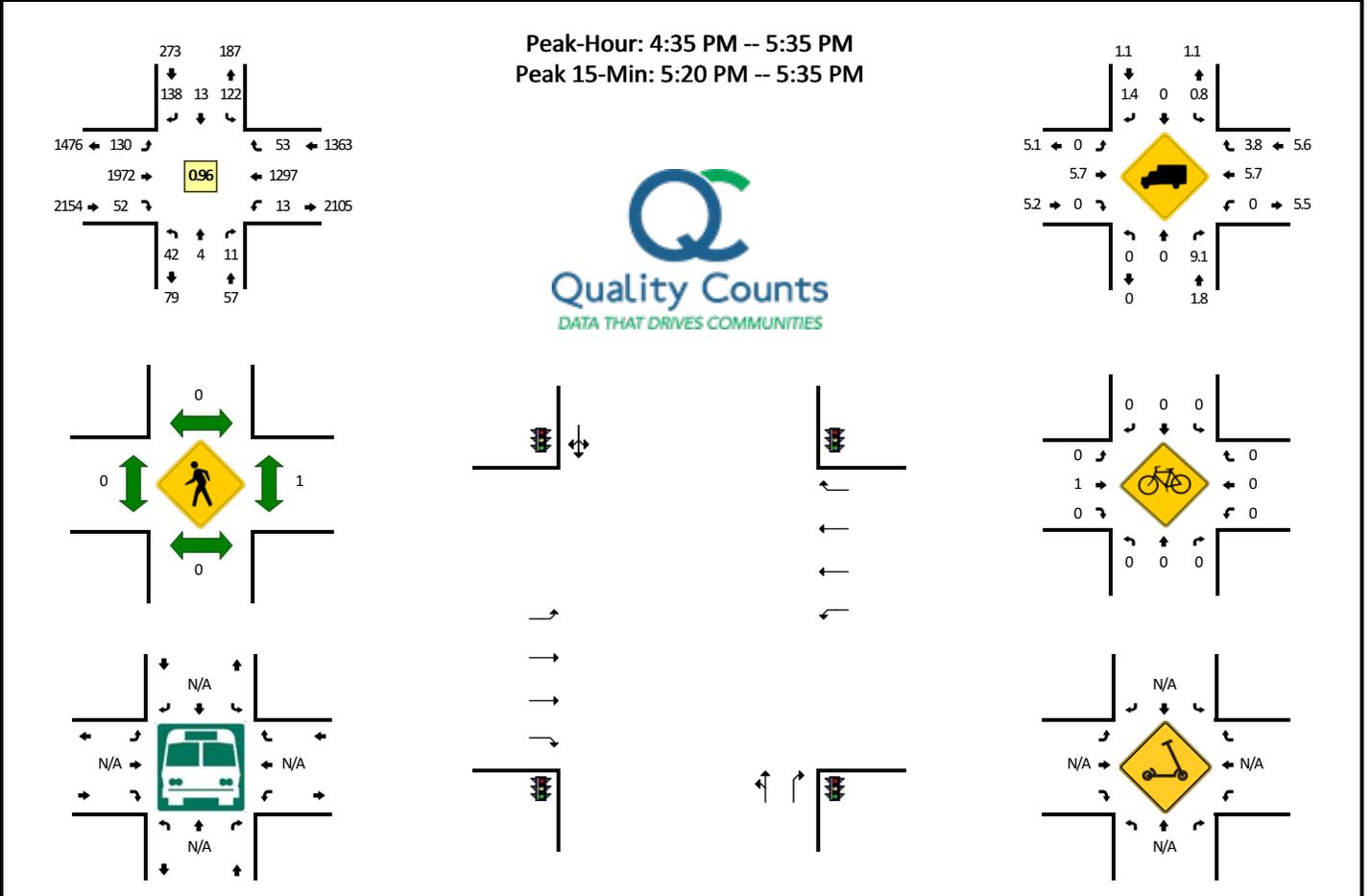


5-Min Count Period Beginning At	SE 135th Ave (Northbound)				SE 135th Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	13	51	0	14	9	11	0	9	100	2	0	14	84	14	0	325	
4:05 PM	8	8	44	0	20	11	17	0	7	90	4	0	14	89	5	0	317	
4:10 PM	8	8	52	0	19	4	13	0	8	108	4	0	18	97	7	0	346	
4:15 PM	6	13	55	0	17	8	23	0	12	122	3	0	11	93	5	0	368	
4:20 PM	2	8	56	0	27	14	22	0	10	100	3	0	10	66	12	0	330	
4:25 PM	4	10	53	0	21	6	14	0	10	110	2	0	17	108	15	0	370	
4:30 PM	0	11	37	0	18	3	8	0	5	136	3	0	13	85	7	0	326	
4:35 PM	8	13	51	0	21	14	7	0	7	96	3	0	14	91	12	0	337	
4:40 PM	6	12	47	0	28	8	10	0	10	98	0	0	19	87	13	0	338	
4:45 PM	3	7	48	0	17	11	7	0	11	129	2	0	15	102	16	0	368	
4:50 PM	9	13	64	0	15	6	8	0	10	101	2	0	14	78	11	0	331	
4:55 PM	7	3	56	0	23	12	18	0	10	88	0	0	18	105	9	0	349	4105
5:00 PM	5	12	47	0	12	5	5	0	6	117	2	0	18	120	10	0	359	4139
5:05 PM	7	11	54	0	15	8	9	0	10	126	1	0	8	77	7	0	333	4155
5:10 PM	7	11	58	0	27	6	11	0	9	89	2	0	15	96	8	0	339	4148
5:15 PM	8	2	49	0	15	6	11	0	9	129	3	0	13	102	10	0	357	4137
5:20 PM	3	8	50	0	13	6	10	0	11	120	1	0	14	89	18	0	343	4150
5:25 PM	5	23	55	0	28	8	11	0	12	100	1	0	8	79	18	0	348	4128
5:30 PM	2	11	57	0	17	3	6	0	13	120	0	0	20	120	14	0	383	4185
5:35 PM	3	5	25	0	19	3	10	0	13	133	2	0	13	104	14	0	344	4192
5:40 PM	5	9	45	0	27	4	7	0	7	94	1	0	14	45	11	0	269	4123
5:45 PM	9	6	36	0	20	9	7	0	9	122	2	0	10	88	17	0	335	4090
5:50 PM	4	3	24	0	10	10	8	0	13	131	1	0	13	78	15	0	310	4069
5:55 PM	6	12	47	0	7	4	3	0	14	111	3	0	4	89	7	0	307	4027
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	156	548	0	256	56	108	0	152	1412	12	0	164	1212	184	0	4300	
Heavy Trucks	0	0	20	0	0	8	0	0	0	68	0	0	0	40	0	0	136	
Buses																		
Pedestrians		0				4				0				0			4	
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4	
Scoters																		

Comments:

LOCATION: SE 142nd Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101906
DATE: Tue, May 16 2023

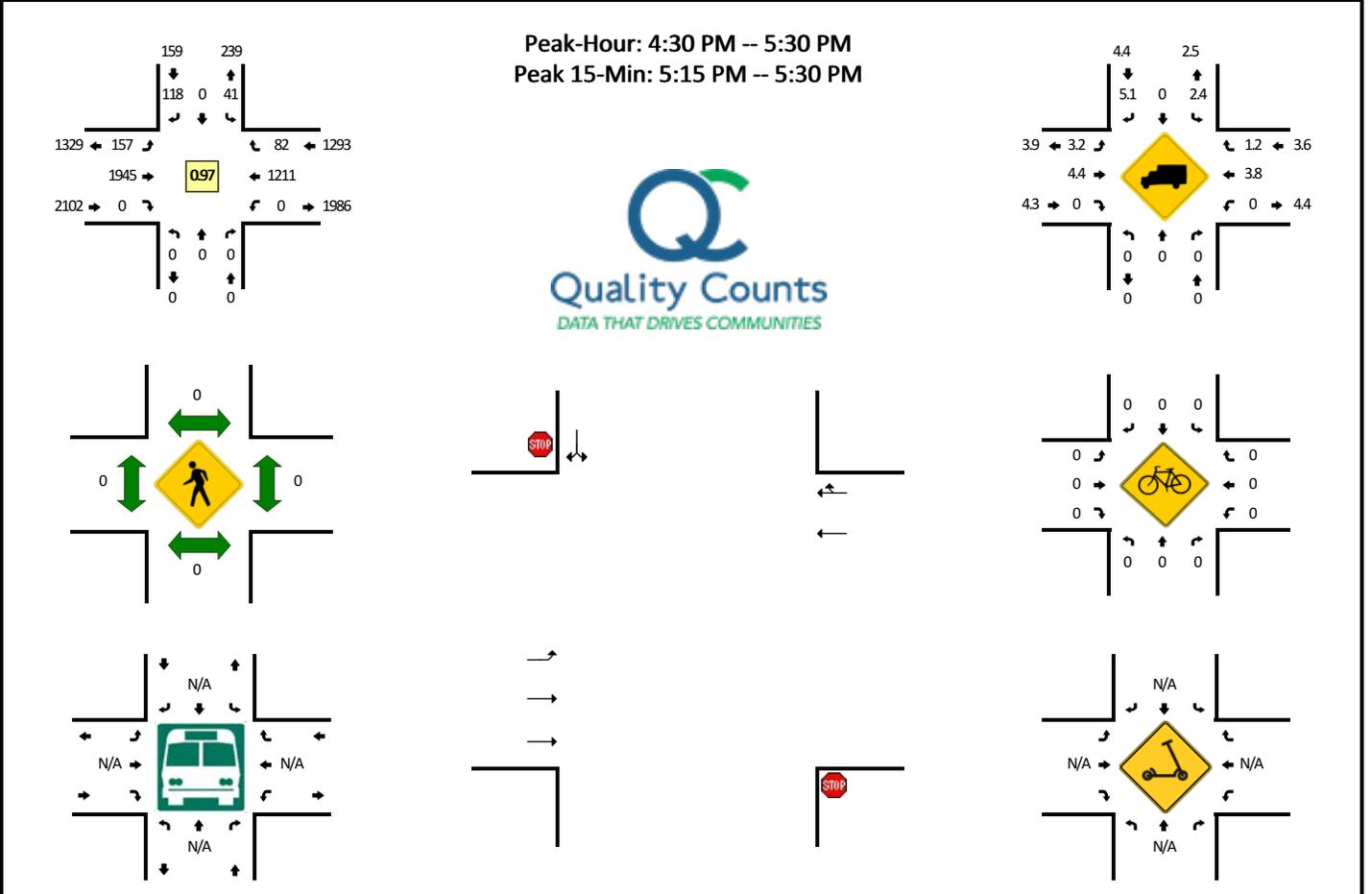


5-Min Count Period Beginning At	SE 142nd Ave (Northbound)				SE 142nd Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	3	0	10	1	12	0	5	151	5	0	0	89	2	0	279	
4:05 PM	2	4	0	0	7	1	8	0	10	164	3	0	0	106	3	0	308	
4:10 PM	0	0	3	0	1	2	11	0	12	151	5	0	2	88	4	1	280	
4:15 PM	2	0	2	0	10	1	7	0	11	167	0	0	0	101	2	0	303	
4:20 PM	1	0	1	0	15	1	5	0	9	185	4	0	0	90	6	0	317	
4:25 PM	1	0	1	0	11	0	9	0	12	168	6	0	2	108	3	0	321	
4:30 PM	0	0	4	0	21	1	11	0	14	147	3	0	2	86	1	0	290	
4:35 PM	3	1	1	0	11	1	9	0	11	165	5	0	1	131	7	0	346	
4:40 PM	2	0	1	0	10	1	14	0	9	160	6	0	0	96	4	0	303	
4:45 PM	3	1	0	0	10	0	13	0	17	138	8	0	1	93	2	0	286	
4:50 PM	4	1	1	0	7	1	11	0	10	178	3	0	1	113	5	0	335	
4:55 PM	3	0	1	0	12	1	15	0	12	165	3	0	2	136	5	0	355	
5:00 PM	4	0	2	0	7	0	10	0	11	151	6	0	0	76	3	0	270	
5:05 PM	5	0	0	0	12	3	6	0	9	157	5	0	1	99	3	0	300	
5:10 PM	3	0	1	0	8	1	12	0	12	190	2	0	0	120	8	0	357	
5:15 PM	2	0	1	0	11	0	12	0	11	168	2	0	0	88	2	0	297	
5:20 PM	4	1	0	0	12	2	14	0	11	150	5	0	3	105	1	0	308	
5:25 PM	3	0	1	0	11	1	11	0	5	175	4	0	2	120	7	0	340	
5:30 PM	5	0	2	1	11	2	11	0	12	175	3	0	2	120	6	0	350	
5:35 PM	6	2	1	0	7	0	10	0	8	140	4	0	1	89	6	0	274	
5:40 PM	2	1	1	0	9	0	3	0	12	177	1	0	2	73	7	0	288	
5:45 PM	3	0	2	1	4	2	8	0	9	178	10	0	2	100	7	0	326	
5:50 PM	7	1	2	0	12	1	8	0	12	121	4	0	0	81	5	0	254	
5:55 PM	4	0	1	0	5	0	10	0	13	172	5	0	1	107	2	0	320	
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	48	4	12	4	136	20	144	0	112	2000	48	0	28	1380	56	0	3992	
Heavy Trucks	0	0	0		0	0	0		0	100	0		0	40	4		144	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: SE 152nd Ave -- OR-212
CITY/STATE: Happy Valley, OR

QC JOB #: 16101910
DATE: Tue, May 16 2023

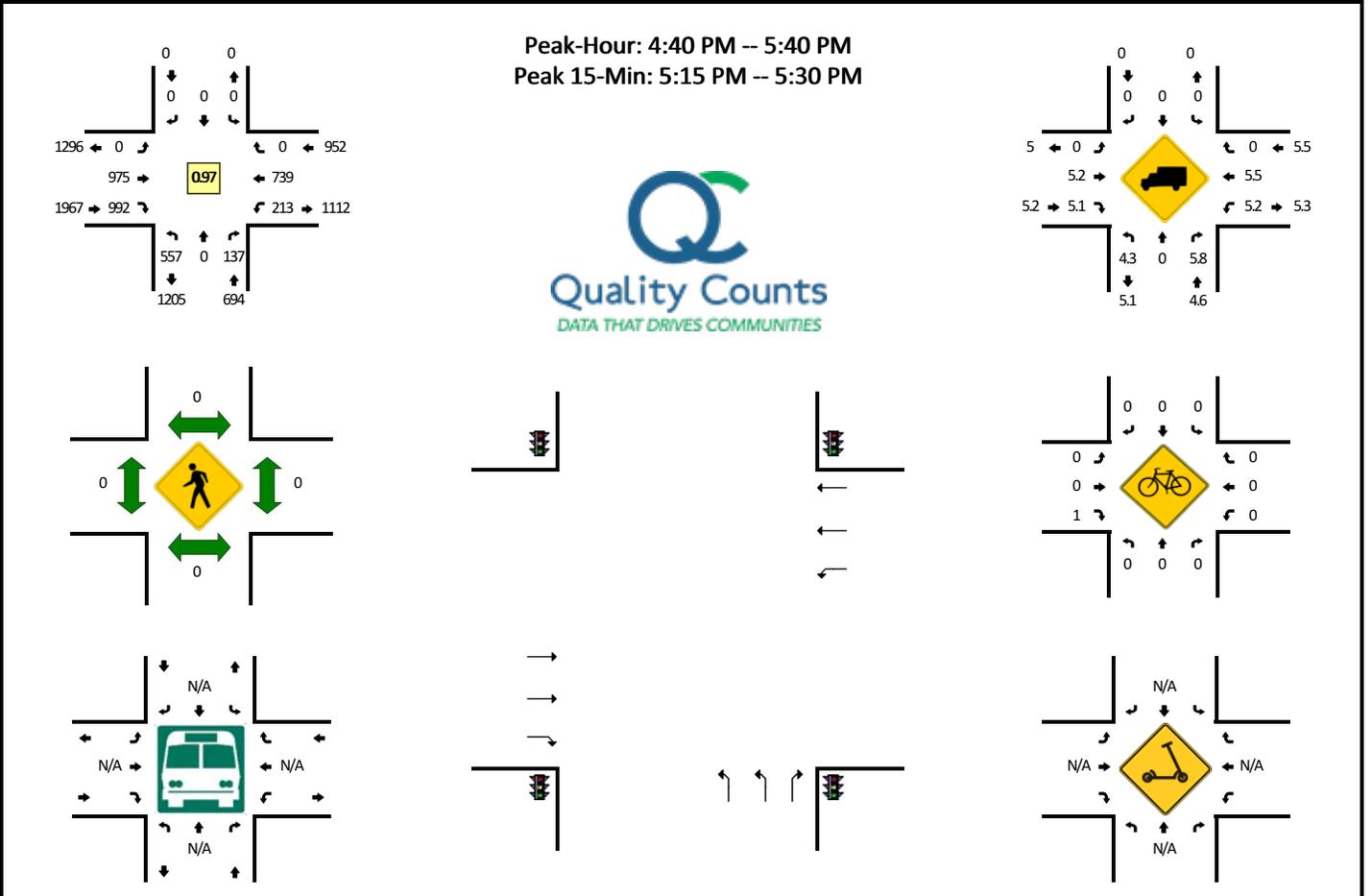


5-Min Count Period Beginning At	SE 152nd Ave (Northbound)				SE 152nd Ave (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	3	0	7	0	8	148	0	0	0	85	3	0	254	
4:05 PM	0	0	0	0	2	0	12	0	13	163	0	0	0	88	5	0	283	
4:10 PM	0	0	0	0	0	0	8	0	16	153	0	0	0	110	7	0	294	
4:15 PM	0	0	0	0	4	0	7	0	5	158	0	0	0	90	6	0	270	
4:20 PM	0	0	0	0	2	0	13	0	25	163	0	0	0	77	4	0	284	
4:25 PM	0	0	0	0	4	0	13	0	18	146	0	0	0	115	7	0	303	
4:30 PM	0	0	0	0	3	0	11	0	15	164	0	0	0	90	11	0	294	
4:35 PM	0	0	0	0	4	0	17	0	13	165	0	0	0	95	6	0	300	
4:40 PM	0	0	0	0	3	0	12	0	12	159	0	0	0	87	9	0	282	
4:45 PM	0	0	0	0	2	0	4	0	12	161	0	0	0	139	11	0	329	
4:50 PM	0	0	0	0	1	0	12	0	12	159	0	0	0	88	4	0	276	
4:55 PM	0	0	0	0	3	0	12	0	13	165	0	0	0	71	4	0	268	3437
5:00 PM	0	0	0	0	4	0	12	0	6	154	0	0	0	123	8	0	307	3490
5:05 PM	0	0	0	0	7	0	9	0	16	172	0	0	0	71	3	0	278	3485
5:10 PM	0	0	0	0	3	0	6	0	14	159	0	0	0	116	7	0	305	3496
5:15 PM	0	0	0	0	3	0	9	0	13	155	0	0	0	102	7	0	289	3515
5:20 PM	0	0	0	0	3	0	5	0	13	157	0	0	0	122	9	0	309	3540
5:25 PM	0	0	0	0	5	0	9	0	18	175	0	0	0	107	3	0	317	3554
5:30 PM	0	0	0	0	0	0	7	0	17	162	0	0	0	86	5	0	277	3537
5:35 PM	0	0	0	0	4	0	8	0	12	154	0	0	0	88	10	0	276	3513
5:40 PM	0	0	0	0	6	0	10	0	25	149	0	0	0	88	7	0	285	3516
5:45 PM	0	0	0	0	4	0	11	0	14	144	0	0	0	89	6	0	268	3455
5:50 PM	0	0	0	0	5	0	6	0	8	138	0	0	0	85	3	0	245	3424
5:55 PM	0	0	0	0	7	0	10	0	13	141	0	0	0	90	3	0	264	3420
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	44	0	92	0	176	1948	0	0	0	1324	76	0	3660	
Heavy Trucks	0	0	0	0	4	0	0	0	8	68	0	0	0	32	0	0	112	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

LOCATION: OR-224 -- OR-212
CITY/STATE: Damascus, OR

QC JOB #: 16101908
DATE: Tue, May 16 2023

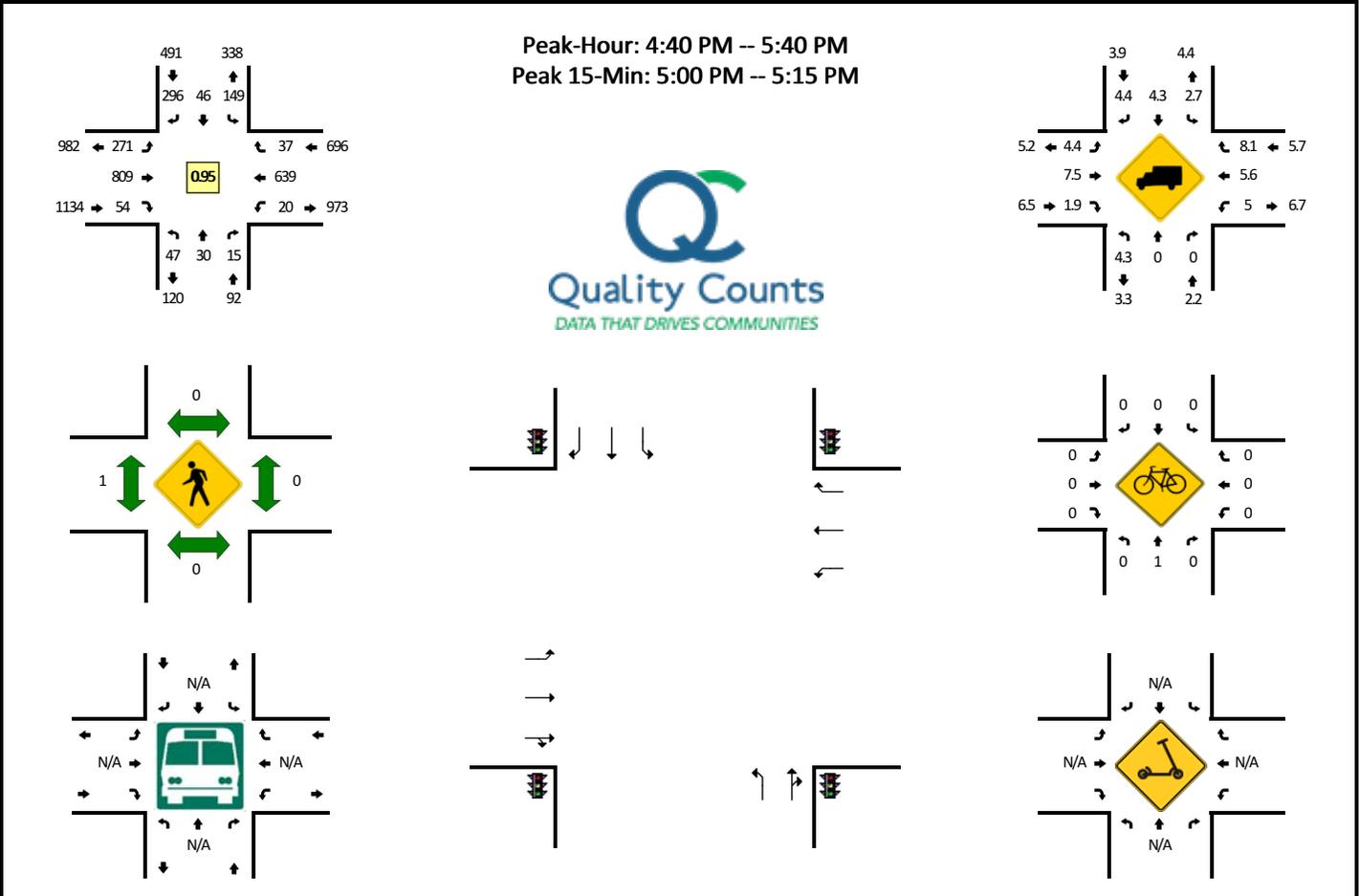


5-Min Count Period Beginning At	OR-224 (Northbound)				OR-224 (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	23	0	9	0	0	0	0	0	0	92	80	0	22	56	0	0	282	
4:05 PM	48	0	7	0	0	0	0	0	0	79	81	0	21	57	0	0	293	
4:10 PM	34	0	13	0	0	0	0	0	0	65	79	0	26	58	0	0	275	
4:15 PM	42	0	13	0	0	0	0	0	0	65	89	0	15	74	0	0	298	
4:20 PM	35	0	6	0	0	0	0	0	0	104	84	0	5	56	0	0	290	
4:25 PM	35	0	9	0	0	0	0	0	0	71	85	0	22	57	0	0	279	
4:30 PM	63	0	14	0	0	0	0	0	0	67	91	0	12	47	0	0	294	
4:35 PM	32	0	7	0	0	0	0	0	0	92	80	0	16	78	0	0	305	
4:40 PM	43	0	8	0	0	0	0	0	0	73	86	0	25	53	0	0	288	
4:45 PM	50	0	18	0	0	0	0	0	0	68	89	0	22	62	0	0	309	
4:50 PM	55	0	8	0	0	0	0	0	0	85	85	0	13	69	0	0	315	
4:55 PM	35	0	12	0	0	0	0	0	0	84	81	0	19	72	0	0	303	3531
5:00 PM	45	0	10	0	0	0	0	0	0	71	80	0	26	41	0	0	273	3522
5:05 PM	49	0	10	0	0	0	0	0	0	80	72	0	10	69	0	0	290	3519
5:10 PM	40	0	7	0	0	0	0	0	0	102	85	0	9	46	0	0	289	3533
5:15 PM	34	0	13	0	0	0	0	0	0	87	77	0	26	63	0	0	300	3535
5:20 PM	65	0	11	0	0	0	0	0	0	81	92	0	16	57	0	0	322	3567
5:25 PM	44	0	14	0	0	0	0	0	0	91	70	0	15	76	0	0	310	3598
5:30 PM	49	0	7	0	0	0	0	0	0	75	72	0	22	74	0	0	299	3603
5:35 PM	48	0	19	0	0	0	0	0	0	78	103	0	10	57	0	0	315	3613
5:40 PM	20	0	9	0	0	0	0	0	0	87	105	0	12	50	0	0	283	3608
5:45 PM	50	0	6	0	0	0	0	0	0	63	69	0	27	52	0	0	267	3566
5:50 PM	56	0	20	0	0	0	0	0	0	68	92	0	13	46	0	0	295	3546
5:55 PM	36	0	13	0	0	0	0	0	0	97	69	0	20	54	0	0	289	3532
Peak 15-Min Flows	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	572	0	152	0	0	0	0	0	0	1036	956	0	228	784	0	0	3728	
Heavy Trucks	16	0	4	0	0	0	0	0	0	48	44	0	4	24	0	0	140	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0			0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: SE 172nd Ave/SE Anderegg Pkwy -- OR-212
CITY/STATE: Damascus, OR

QC JOB #: 16101918
DATE: Tue, May 23 2023

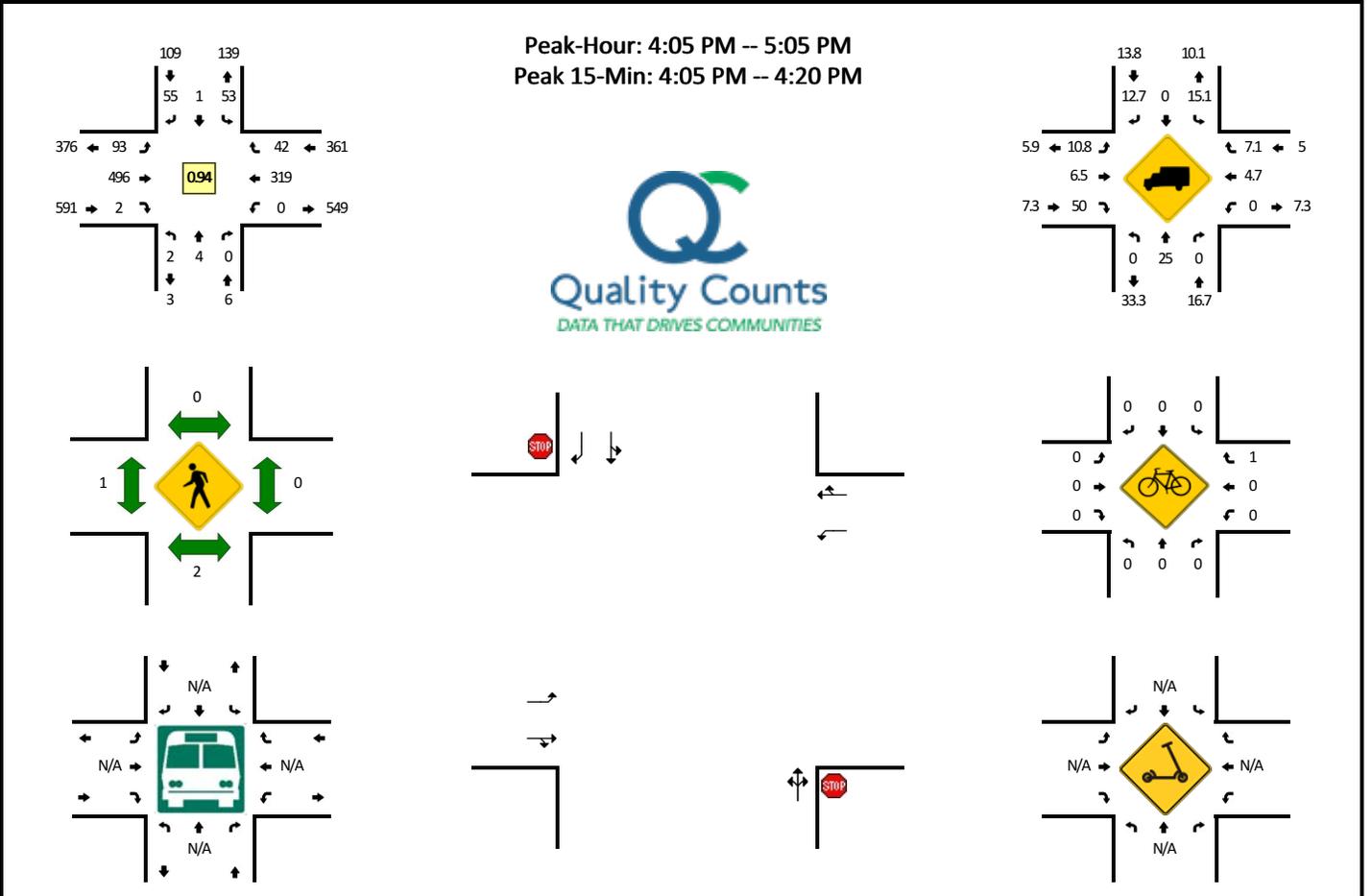


5-Min Count Period Beginning At	SE 172nd Ave/SE Anderegg Pkwy (Northbound)				SE 172nd Ave/SE Anderegg Pkwy (Southbound)				OR-212 (Eastbound)				OR-212 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	5	0	0	16	5	26	0	16	76	8	0	0	55	3	0	214	
4:05 PM	1	2	3	0	12	5	25	0	27	57	5	0	1	52	4	0	194	
4:10 PM	3	1	0	0	5	3	31	0	24	69	5	0	1	54	4	0	200	
4:15 PM	1	2	3	0	18	5	29	0	13	62	7	0	0	68	4	0	212	
4:20 PM	2	5	1	0	9	6	29	0	15	61	6	0	1	48	1	0	184	
4:25 PM	2	0	2	0	9	7	22	0	15	58	6	0	1	52	3	0	177	
4:30 PM	2	1	5	0	9	5	27	0	20	56	2	0	1	59	1	0	188	
4:35 PM	3	2	2	0	23	6	22	0	14	61	6	0	1	48	0	0	188	
4:40 PM	2	2	2	0	18	5	31	0	33	59	4	0	2	45	2	0	205	
4:45 PM	1	0	2	0	11	4	26	0	26	62	2	0	0	57	5	0	196	
4:50 PM	4	4	1	0	12	6	26	0	11	65	4	0	2	42	2	0	179	
4:55 PM	2	6	0	0	9	4	21	0	27	75	6	0	2	51	3	0	206	2343
5:00 PM	3	7	2	0	15	4	21	0	14	77	1	0	2	62	1	0	209	2338
5:05 PM	1	1	0	0	7	2	31	0	30	71	4	0	3	54	5	0	209	2353
5:10 PM	8	1	3	0	16	5	32	0	21	56	4	0	2	59	7	0	214	2367
5:15 PM	4	1	1	0	11	3	23	0	20	72	2	0	1	58	0	0	196	2351
5:20 PM	5	1	1	0	13	2	17	0	29	57	12	0	2	47	3	0	189	2356
5:25 PM	6	3	2	0	14	4	24	0	13	68	5	0	1	55	1	0	196	2375
5:30 PM	4	3	1	0	10	5	25	0	23	73	7	0	1	52	5	0	209	2396
5:35 PM	7	1	0	0	13	2	19	0	24	74	3	0	2	57	3	0	205	2413
5:40 PM	4	4	2	0	14	3	16	0	10	64	2	0	1	57	5	0	182	2390
5:45 PM	5	2	1	0	6	2	22	0	25	73	5	0	2	39	5	0	187	2381
5:50 PM	5	1	1	0	12	7	27	0	26	50	5	0	3	37	3	0	177	2379
5:55 PM	3	4	2	0	18	6	13	0	25	71	5	0	0	56	7	0	210	2383
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	48	36	20	0	152	44	336	0	260	816	36	0	28	700	52	0	2528	
Heavy Trucks	4	0	0		4	4	4		16	72	0		0	52	4		160	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4	
Scooters																		

Comments:

LOCATION: SE 122nd Ave -- SE Jennifer St
CITY/STATE: Clackamas, OR

QC JOB #: 16101916
DATE: Tue, May 23 2023



5-Min Count Period Beginning At	SE 122nd Ave (Northbound)				SE 122nd Ave (Southbound)				SE Jennifer St (Eastbound)				SE Jennifer St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	2	0	9	0	12	33	0	0	0	31	1	0	88	
4:05 PM	0	0	0	0	2	0	5	0	6	42	2	0	0	34	2	0	93	
4:10 PM	0	3	0	0	4	0	4	0	6	44	0	0	0	24	5	0	90	
4:15 PM	1	1	0	0	7	0	6	0	10	41	0	0	0	29	6	0	101	
4:20 PM	0	0	0	0	4	0	4	0	8	32	0	0	0	20	3	0	71	
4:25 PM	0	0	0	0	3	0	6	0	7	39	0	0	0	30	6	0	91	
4:30 PM	0	0	0	0	0	0	3	0	11	37	0	0	0	20	2	0	73	
4:35 PM	0	0	0	0	4	0	2	0	11	46	0	0	0	29	1	0	93	
4:40 PM	1	0	0	0	12	0	6	0	9	45	0	0	0	31	2	0	106	
4:45 PM	0	0	0	0	6	0	5	0	2	35	0	0	0	27	3	0	78	
4:50 PM	0	0	0	0	4	0	5	0	8	56	0	0	0	23	2	0	98	
4:55 PM	0	0	0	0	4	0	4	0	6	42	0	0	0	21	3	0	80	1062
5:00 PM	0	0	0	0	3	1	5	0	9	37	0	0	0	31	7	0	93	1067
5:05 PM	0	0	0	0	4	0	5	0	8	46	0	0	0	27	2	0	92	1066
5:10 PM	0	1	1	0	6	0	1	0	2	33	0	0	0	22	3	0	69	1045
5:15 PM	0	0	0	0	4	0	1	0	2	43	1	0	0	19	3	0	73	1017
5:20 PM	0	0	0	0	9	0	5	0	6	53	0	0	0	16	0	0	89	1035
5:25 PM	0	1	2	0	5	0	4	0	5	40	1	0	0	18	3	0	79	1023
5:30 PM	0	0	0	0	2	0	6	0	3	50	0	0	0	26	4	0	91	1041
5:35 PM	0	0	0	0	2	0	6	0	3	41	0	0	0	14	3	0	69	1017
5:40 PM	0	0	0	0	6	0	3	0	11	29	0	0	0	11	3	0	63	974
5:45 PM	0	0	0	0	3	0	7	0	6	41	0	0	0	10	0	0	67	963
5:50 PM	0	0	0	0	1	0	4	0	2	41	0	0	0	19	3	0	70	935
5:55 PM	0	0	0	0	0	0	3	0	3	30	0	0	0	21	1	0	58	913
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	16	0	0	52	0	60	0	88	508	8	0	0	348	52	0	1136	
Heavy Trucks	0	4	0	0	16	0	12	0	4	44	4	0	0	16	8	0	108	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

Appendix C

Intersection Operations Worksheets

Existing Traffic Conditions
1: I-205 SB On-Ramp & Sunrise Pkwy

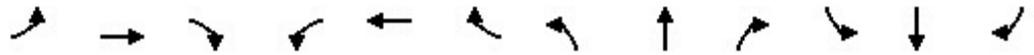
Weekday AM Peak Hour

10/10/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑					↖		↗
Traffic Volume (vph)	0	1061	282	15	2072	0	0	0	0	85	0	241
Future Volume (vph)	0	1061	282	15	2072	0	0	0	0	85	0	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	3.0	4.5					4.5		4.5
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3343	1392	1228	3343					1687		1509
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3343	1392	1228	3343					1687		1509
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1153	307	16	2252	0	0	0	0	92	0	262
RTOR Reduction (vph)	0	0	93	0	0	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	1153	214	16	2252	0	0	0	0	92	0	209
Heavy Vehicles (%)	0%	8%	16%	47%	8%	0%	0%	0%	0%	7%	0%	7%
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			2							4		4
Actuated Green, G (s)		82.2	82.2	3.3	89.5					19.0		19.0
Effective Green, g (s)		83.7	83.7	4.3	91.0					20.0		20.0
Actuated g/C Ratio		0.70	0.70	0.04	0.76					0.17		0.17
Clearance Time (s)		6.0	6.0	4.0	6.0					5.5		5.5
Vehicle Extension (s)		0.5	0.5	2.3	0.5					2.3		2.3
Lane Grp Cap (vph)		2331	970	44	2535					281		251
v/s Ratio Prot		0.34		0.01	c0.67					0.05		
v/s Ratio Perm			0.15									c0.14
v/c Ratio		0.49	0.22	0.36	0.89					0.33		0.83
Uniform Delay, d1		8.4	6.5	56.5	10.7					44.1		48.4
Progression Factor		1.00	1.00	1.04	1.43					1.00		1.00
Incremental Delay, d2		0.8	0.5	1.4	2.5					0.4		19.8
Delay (s)		9.1	7.0	60.2	17.9					44.5		68.2
Level of Service		A	A	E	B					D		E
Approach Delay (s)		8.7			18.2			0.0			62.0	
Approach LOS		A			B			A			E	
Intersection Summary												
HCM 2000 Control Delay			18.6		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				12.0			
Intersection Capacity Utilization			79.7%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

Existing Traffic Conditions
1: I-205 SB On-Ramp & Sunrise Pkwy

Weekday AM Peak Hour
10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑					↘		↗
Traffic Volume (veh/h)	0	1061	282	15	2072	0	0	0	0	85	0	241
Future Volume (veh/h)	0	1061	282	15	2072	0	0	0	0	85	0	241
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1781	1663	1203	1781	0				1796	0	1796
Adj Flow Rate, veh/h	0	1153	0	16	2252	0				92	0	262
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	8	16	47	8	0				7	0	7
Cap, veh/h	0	2337		25	2496	0				321	0	285
Arrive On Green	0.00	0.69	0.00	0.04	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3474	1409	1146	3474	0				1711	0	1522
Grp Volume(v), veh/h	0	1153	0	16	2252	0				92	0	262
Grp Sat Flow(s),veh/h/ln	0	1692	1409	1146	1692	0				1711	0	1522
Q Serve(g_s), s	0.0	19.2	0.0	1.6	0.0	0.0				5.5	0.0	20.3
Cycle Q Clear(g_c), s	0.0	19.2	0.0	1.6	0.0	0.0				5.5	0.0	20.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2337		25	2496	0				321	0	285
V/C Ratio(X)	0.00	0.49		0.63	0.90	0.00				0.29	0.00	0.92
Avail Cap(c_a), veh/h	0	2337		210	2496	0				321	0	285
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.33	0.33	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.7	0.0	56.9	0.0	0.0				41.9	0.0	47.8
Incr Delay (d2), s/veh	0.0	0.7	0.0	5.1	2.1	0.0				0.3	0.0	32.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	11.0	0.0	0.9	1.3	0.0				4.3	0.0	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.5	0.0	62.0	2.1	0.0				42.2	0.0	80.1
LnGrp LOS	A	A		E	A	A				D	A	F
Approach Vol, veh/h		1153			2268						354	
Approach Delay, s/veh		9.5			2.5						70.3	
Approach LOS		A			A						E	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	5.7	87.3		27.0		93.0						
Change Period (Y+Rc), s	4.0	6.0		5.5		6.0						
Max Green Setting (Gmax), s	21.0	62.0		21.5		87.0						
Max Q Clear Time (g_c+I1), s	3.6	21.2		22.3		2.0						
Green Ext Time (p_c), s	0.0	2.6		0.0		7.9						

Intersection Summary

HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Existing Traffic Conditions
2: I-205 SB Off-Ramp/OR 213 NB & Sunrise Pkwy

Weekday AM Peak Hour

10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	221	925	0	0	727	146	594	2	365	22	0	766	
Future Volume (vph)	221	925	0	0	727	146	594	2	365	22	0	766	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	4.5			4.5		4.0	4.0		4.5		4.0	
Lane Util. Factor	1.00	0.95			0.95		0.97	1.00		1.00		0.88	
Frbp, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00		1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00		1.00	
Frt	1.00	1.00			0.97		1.00	0.85		1.00		0.85	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95		1.00	
Satd. Flow (prot)	1703	3343			3279		3242	1371		1467		2608	
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95		1.00	
Satd. Flow (perm)	1703	3343			3279		3242	1371		1467		2608	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	240	1005	0	0	790	159	646	2	397	24	0	833	
RTOR Reduction (vph)	0	0	0	0	14	0	0	214	0	0	0	83	
Lane Group Flow (vph)	240	1005	0	0	935	0	646	185	0	24	0	750	
Confl. Peds. (#/hr)			1	1									
Heavy Vehicles (%)	6%	8%	0%	0%	8%	4%	8%	0%	18%	23%	0%	9%	
Turn Type	Prot	NA			NA		Prot	NA		Prot		pt+ov	
Protected Phases	5	2			6		3	8		7		4 5	
Permitted Phases													
Actuated Green, G (s)	31.5	68.2			32.7		27.9	24.9		9.9		42.4	
Effective Green, g (s)	32.5	69.7			34.2		29.4	26.4		10.9		41.4	
Actuated g/C Ratio	0.27	0.58			0.29		0.24	0.22		0.09		0.34	
Clearance Time (s)	4.0	6.0			6.0		5.5	5.5		5.5			
Vehicle Extension (s)	2.3	4.6			4.6		2.3	2.3		2.3			
Lane Grp Cap (vph)	461	1941			934		794	301		133		899	
v/s Ratio Prot	0.14	0.30			c0.29		c0.20	0.14		0.02		c0.29	
v/s Ratio Perm													
v/c Ratio	0.52	0.52			1.00		0.81	0.62		0.18		0.83	
Uniform Delay, d1	37.1	15.1			42.9		42.7	42.2		50.4		36.1	
Progression Factor	0.93	1.04			1.00		1.00	1.00		1.00		1.00	
Incremental Delay, d2	3.7	0.9			29.8		6.2	3.0		0.4		6.5	
Delay (s)	38.3	16.6			72.7		48.9	45.2		50.8		42.7	
Level of Service	D	B			E		D	D		D		D	
Approach Delay (s)		20.8			72.7			47.5				42.9	
Approach LOS		C			E			D				D	
Intersection Summary													
HCM 2000 Control Delay			44.3		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.89										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						16.0		
Intersection Capacity Utilization			78.9%		ICU Level of Service						D		
Analysis Period (min)			15										

c Critical Lane Group

Existing Traffic Conditions
2: I-205 SB Off-Ramp/OR 213 NB & Sunrise Pkwy

Weekday AM Peak Hour

10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑			↑↑		↖↖	↑		↖		↖↖
Traffic Volume (veh/h)	221	925	0	0	727	146	594	2	365	22	0	766
Future Volume (veh/h)	221	925	0	0	727	146	594	2	365	22	0	766
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1781	0	0	1781	1841	1781	1900	1633	1559	0	1767
Adj Flow Rate, veh/h	240	1005	0	0	790	159	646	2	397	24	0	833
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	8	0	0	8	4	8	0	18	23	0	9
Cap, veh/h	275	2412	0	0	1435	289	713	1	240	43	0	0
Arrive On Green	0.32	1.00	0.00	0.00	0.51	0.50	0.22	0.15	0.14	0.03	0.00	0.01
Sat Flow, veh/h	1725	3474	0	0	2896	565	3291	8	1603	1485	24	
Grp Volume(v), veh/h	240	1005	0	0	476	473	646	0	399	24	64.1	
Grp Sat Flow(s),veh/h/ln	1725	1692	0	0	1692	1680	1646	0	1611	1485	E	
Q Serve(g_s), s	15.7	0.0	0.0	0.0	23.0	23.1	23.0	0.0	18.0	1.9		
Cycle Q Clear(g_c), s	15.7	0.0	0.0	0.0	23.0	23.1	23.0	0.0	18.0	1.9		
Prop In Lane	1.00		0.00	0.00		0.34	1.00		0.99	1.00		
Lane Grp Cap(c), veh/h	275	2412	0	0	865	859	713	0	242	43		
V/C Ratio(X)	0.87	0.42	0.00	0.00	0.55	0.55	0.91	0.00	1.65	0.55		
Avail Cap(c_a), veh/h	546	2412	0	0	865	859	713	0	242	217		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.88	0.88	0.00	0.00	0.98	0.98	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	39.7	0.0	0.0	0.0	20.0	20.2	45.8	0.0	51.7	57.5		
Incr Delay (d2), s/veh	4.8	0.5	0.0	0.0	1.1	1.1	15.0	0.0	310.6	6.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	9.8	0.3	0.0	0.0	14.1	14.1	16.2	0.0	44.1	1.4		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.4	0.5	0.0	0.0	21.1	21.3	60.8	0.0	362.4	64.1		
LnGrp LOS	D	A	A	A	C	C	E	A	F	E		
Approach Vol, veh/h		1245			949			1045				
Approach Delay, s/veh		8.9			21.2			176.0				
Approach LOS		A			C			F				
Timer - Assigned Phs		2	3		5	6	7	8				
Phs Duration (G+Y+Rc), s		90.0	30.0		24.2	65.8	8.0	22.0				
Change Period (Y+Rc), s		6.0	5.5		6.0	* 6	5.5	5.5				
Max Green Setting (Gmax), s		70.0	24.5		37.0	* 29	16.5	16.5				
Max Q Clear Time (g_c+I1), s		2.0	25.0		17.7	25.1	3.9	20.0				
Green Ext Time (p_c), s		18.4	0.0		0.4	2.7	0.0	0.0				

Intersection Summary

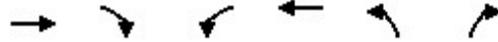
HCM 6th Ctrl Delay	66.4
HCM 6th LOS	E

Notes

- User approved pedestrian interval to be less than phase max green.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Existing Traffic Conditions
3: I-205 NB On-Ramp & Sunrise Pkwy

Weekday AM Peak Hour
10/10/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		
Traffic Volume (vph)	754	558	325	873	0	0
Future Volume (vph)	754	558	325	873	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.0	4.0		
Lane Util. Factor	0.95	1.00	1.00	0.95		
Frt	1.00	0.85	1.00	1.00		
Flt Protected	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	3223	1509	1517	3505		
Flt Permitted	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	3223	1509	1517	3505		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	769	569	332	891	0	0
RTOR Reduction (vph)	0	189	0	0	0	0
Lane Group Flow (vph)	769	380	332	891	0	0
Heavy Vehicles (%)	12%	7%	19%	3%	0%	0%
Turn Type	NA	Perm	Prot	NA		
Protected Phases	2		1	6		
Permitted Phases		2				
Actuated Green, G (s)	28.5	28.5	18.1	57.6		
Effective Green, g (s)	31.5	31.5	21.1	57.6		
Actuated g/C Ratio	0.55	0.55	0.37	1.00		
Clearance Time (s)	7.0	7.0	4.0	7.0		
Vehicle Extension (s)	4.7	4.7	2.3	4.7		
Lane Grp Cap (vph)	1762	825	555	3505		
v/s Ratio Prot	0.24		c0.22	0.25		
v/s Ratio Perm		c0.25				
v/c Ratio	0.44	0.46	0.60	0.25		
Uniform Delay, d1	7.8	7.9	14.8	0.0		
Progression Factor	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.3	0.8	1.3	0.1		
Delay (s)	8.1	8.7	16.1	0.1		
Level of Service	A	A	B	A		
Approach Delay (s)	8.3			4.4	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Existing Traffic Conditions
4: SE 122nd Avenue/Sunrise Pkwy & OR 212

Weekday AM Peak Hour
10/10/2023

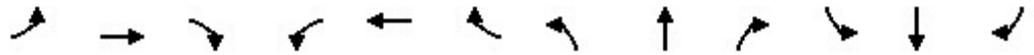


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	665	45	18	963	1091	20	86	10	470	176	108
Future Volume (vph)	21	665	45	18	963	1091	20	86	10	470	176	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2		4.0	4.2	5.4	4.0	4.8		3.0	3.8	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1388	3114		1543	3343	1568	1203	1289		3242	1597	1417
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1388	3114		1543	3343	1568	1203	1289		3242	1597	1417
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	707	48	19	1024	1161	21	91	11	500	187	115
RTOR Reduction (vph)	0	3	0	0	0	397	0	4	0	0	0	0
Lane Group Flow (vph)	22	752	0	19	1024	764	21	98	0	500	187	115
Heavy Vehicles (%)	30%	14%	27%	17%	8%	3%	50%	48%	20%	8%	19%	14%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						Free
Actuated Green, G (s)	5.6	69.8		3.1	67.3	67.3	5.1	14.2		24.7	33.8	130.0
Effective Green, g (s)	5.6	71.0		3.1	68.5	67.3	5.1	14.2		25.7	34.8	130.0
Actuated g/C Ratio	0.04	0.55		0.02	0.53	0.52	0.04	0.11		0.20	0.27	1.00
Clearance Time (s)	4.0	5.4		4.0	5.4	5.4	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	4.6		2.0	4.6	4.6	2.3	2.3		2.3	2.3	
Lane Grp Cap (vph)	59	1700		36	1761	811	47	140		640	427	1417
v/s Ratio Prot	0.02	c0.24		0.01	0.31		0.02	c0.08		c0.15	0.12	
v/s Ratio Perm						c0.49						0.08
v/c Ratio	0.37	0.44		0.53	0.58	0.94	0.45	0.70		0.78	0.44	0.08
Uniform Delay, d1	60.5	17.7		62.7	21.0	29.5	61.1	55.9		49.5	39.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.8		6.3	1.4	20.2	3.9	13.2		5.8	0.4	0.1
Delay (s)	61.9	18.5		69.0	22.4	49.7	65.0	69.1		55.3	39.9	0.1
Level of Service	E	B		E	C	D	E	E		E	D	A
Approach Delay (s)		19.7			37.2			68.4			43.8	
Approach LOS		B			D			E			D	

Intersection Summary		
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio	0.85	
Actuated Cycle Length (s)	130.0	Sum of lost time (s) 16.0
Intersection Capacity Utilization	87.9%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

Existing Traffic Conditions
4: SE 122nd Avenue/Sunrise Pkwy & OR 212

Weekday AM Peak Hour
10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕	↖	↖	↖		↖	↕	↖
Traffic Volume (veh/h)	21	665	45	18	963	1091	20	86	10	470	176	108
Future Volume (veh/h)	21	665	45	18	963	1091	20	86	10	470	176	108
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1455	1693	1500	1648	1781	1856	1159	1189	1604	1781	1618	1693
Adj Flow Rate, veh/h	22	707	48	19	1024	0	21	91	11	500	187	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	30	14	27	17	8	3	50	48	20	8	19	14
Cap, veh/h	252	1784	121	24	1376		19	107	13	557	421	
Arrive On Green	0.18	0.58	0.57	0.01	0.13	0.00	0.02	0.10	0.10	0.17	0.26	0.00
Sat Flow, veh/h	1386	3056	207	1570	3385	1572	1104	1040	126	3291	1618	1434
Grp Volume(v), veh/h	22	372	383	19	1024	0	21	0	102	500	187	0
Grp Sat Flow(s),veh/h/ln	1386	1608	1655	1570	1692	1572	1104	0	1166	1646	1618	1434
Q Serve(g_s), s	1.7	16.3	16.3	1.6	37.8	0.0	2.3	0.0	11.2	19.3	12.6	0.0
Cycle Q Clear(g_c), s	1.7	16.3	16.3	1.6	37.8	0.0	2.3	0.0	11.2	19.3	12.6	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	252	939	966	24	1376		19	0	119	557	421	
V/C Ratio(X)	0.09	0.40	0.40	0.79	0.74		1.08	0.00	0.85	0.90	0.44	
Avail Cap(c_a), veh/h	252	939	966	133	1635		119	0	163	557	421	
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.2	14.6	14.7	64.5	49.8	0.0	63.9	0.0	57.4	52.9	40.2	0.0
Incr Delay (d2), s/veh	0.1	1.3	1.2	19.1	3.7	0.0	98.8	0.0	22.8	17.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	10.3	10.6	1.4	24.9	0.0	2.1	0.0	7.3	14.3	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.3	15.9	15.9	83.6	53.5	0.0	162.7	0.0	80.2	69.9	40.7	0.0
LnGrp LOS	D	B	B	F	D		F	A	F	E	D	
Approach Vol, veh/h		777			1043			123			687	
Approach Delay, s/veh		16.7			54.0			94.3			62.0	
Approach LOS		B			D			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	80.1	6.3	37.6	29.0	57.0	25.8	18.1				
Change Period (Y+Rc), s	4.0	* 5.4	4.0	4.8	* 5.4	* 5.4	4.8	* 4.8				
Max Green Setting (Gmax), s	11.0	* 62	14.0	25.2	* 11	* 62	21.0	* 18				
Max Q Clear Time (g_c+I1), s	3.6	18.3	4.3	14.6	3.7	39.8	21.3	13.2				
Green Ext Time (p_c), s	0.0	10.3	0.0	0.5	0.0	11.8	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	47.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Existing Traffic Conditions
5: 135th Ave & OR 212

Weekday AM Peak Hour
10/10/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	809	48	211	1893	113	97	48	196	91	110	149
Future Volume (vph)	57	809	48	211	1893	113	97	48	196	91	110	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.1	4.4	5.4	3.1	4.4		4.0	4.5	4.5	4.0	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1626	3167	1346	1671	3313		1671	1727	1396	1736	1646	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1626	3167	1346	1671	3313		1671	1727	1396	1736	1646	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	852	51	222	1993	119	102	51	206	96	116	157
RTOR Reduction (vph)	0	0	25	0	3	0	0	0	190	0	38	0
Lane Group Flow (vph)	60	852	26	222	2109	0	102	51	16	96	235	0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
Confl. Bikes (#/hr)						3						1
Heavy Vehicles (%)	11%	14%	17%	8%	8%	6%	8%	10%	14%	4%	4%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	7.1	65.7	65.7	18.9	77.5		12.0	9.8	9.8	17.7	15.5	
Effective Green, g (s)	8.0	66.7	65.7	19.8	78.5		12.0	9.8	9.8	17.7	15.5	
Actuated g/C Ratio	0.06	0.51	0.51	0.15	0.60		0.09	0.08	0.08	0.14	0.12	
Clearance Time (s)	4.0	5.4	5.4	4.0	5.4		4.0	4.5	4.5	4.0	4.5	
Vehicle Extension (s)	2.3	4.5	4.5	2.3	4.5		2.3	3.0	3.0	2.3	3.0	
Lane Grp Cap (vph)	100	1624	680	254	2000		154	130	105	236	196	
v/s Ratio Prot	0.04	0.27		c0.13	c0.64		c0.06	0.03		0.06	c0.14	
v/s Ratio Perm			0.02						0.01			
v/c Ratio	0.60	0.52	0.04	0.87	1.05		0.66	0.39	0.15	0.41	1.20	
Uniform Delay, d1	59.4	21.1	16.2	53.9	25.8		57.0	57.3	56.2	51.3	57.2	
Progression Factor	1.00	1.00	1.00	0.98	0.94		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.2	1.2	0.1	15.5	31.5		8.8	2.0	0.7	0.7	128.4	
Delay (s)	66.7	22.3	16.3	68.1	55.7		65.8	59.2	56.8	52.0	185.7	
Level of Service	E	C	B	E	E		E	E	E	D	F	
Approach Delay (s)		24.8			56.9			59.7			150.9	
Approach LOS		C			E			E			F	
Intersection Summary												
HCM 2000 Control Delay			58.1		HCM 2000 Level of Service				E			
HCM 2000 Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			130.0		Sum of lost time (s)				16.0			
Intersection Capacity Utilization			94.2%		ICU Level of Service				F			
Analysis Period (min)			15									
c Critical Lane Group												

Existing Traffic Conditions
5: 135th Ave & OR 212

Weekday AM Peak Hour
10/10/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	809	48	211	1893	113	97	48	196	91	110	149
Future Volume (veh/h)	57	809	48	211	1893	113	97	48	196	91	110	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1693	1648	1781	1781	1811	1781	1752	1693	1841	1841	1826
Adj Flow Rate, veh/h	60	852	51	222	1993	119	102	51	0	96	116	157
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	14	17	8	8	6	8	10	14	4	4	5
Cap, veh/h	85	1758	751	234	2052	121	124	90		247	84	113
Arrive On Green	0.10	1.00	1.00	0.28	1.00	1.00	0.07	0.05	0.00	0.14	0.12	0.12
Sat Flow, veh/h	1654	3216	1394	1697	3243	191	1697	1752	1434	1753	701	948
Grp Volume(v), veh/h	60	852	51	222	1029	1083	102	51	0	96	0	273
Grp Sat Flow(s),veh/h/ln	1654	1608	1394	1697	1692	1742	1697	1752	1434	1753	0	1649
Q Serve(g_s), s	4.6	0.0	0.0	16.7	0.0	0.0	7.7	3.7	0.0	6.5	0.0	15.5
Cycle Q Clear(g_c), s	4.6	0.0	0.0	16.7	0.0	0.0	7.7	3.7	0.0	6.5	0.0	15.5
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	85	1758	751	234	1071	1102	124	90		247	0	197
V/C Ratio(X)	0.70	0.48	0.07	0.95	0.96	0.98	0.82	0.57		0.39	0.00	1.39
Avail Cap(c_a), veh/h	126	1758	751	234	1071	1102	196	209		247	0	197
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.39	0.39	0.39	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.3	0.0	0.0	46.7	0.0	0.0	59.4	60.3	0.0	50.7	0.0	57.3
Incr Delay (d2), s/veh	6.2	1.0	0.2	24.9	10.2	13.4	9.9	5.5	0.0	0.6	0.0	203.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.6	0.4	0.1	10.6	4.8	6.2	6.6	3.2	0.0	5.2	0.0	27.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.6	1.0	0.2	71.5	10.2	13.4	69.3	65.8	0.0	51.3	0.0	260.4
LnGrp LOS	E	A	A	E	B	B	E	E		D	A	F
Approach Vol, veh/h		963			2334			153				369
Approach Delay, s/veh		4.8			17.5			68.2				206.0
Approach LOS		A			B			E				F
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	75.5	13.5	20.0	9.8	86.7	22.3	11.2				
Change Period (Y+Rc), s	4.0	* 5.4	4.0	4.5	4.0	* 5.4	4.0	4.5				
Max Green Setting (Gmax), s	17.0	* 65	15.0	15.5	9.0	* 73	15.0	15.5				
Max Q Clear Time (g_c+I1), s	18.7	2.0	9.7	17.5	6.6	2.0	8.5	5.7				
Green Ext Time (p_c), s	0.0	14.3	0.1	0.0	0.0	58.9	0.1	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			34.5									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.												

Existing Traffic Conditions
6: 142nd Ave & OR 212

Weekday AM Peak Hour
10/10/2023

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	47	1020	23	6	1963	61	40	6	17	57	1	196	
Future Volume (vph)	47	1020	23	6	1963	61	40	6	17	57	1	196	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	5.4	4.8	4.0	5.4	5.4		4.0	4.0		4.8		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00		
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00	0.98		1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.90		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.99		
Satd. Flow (prot)	1597	3195	1396	1805	3343	1533		1789	1346		1625		
Flt Permitted	0.04	1.00	1.00	0.23	1.00	1.00		0.38	1.00		0.91		
Satd. Flow (perm)	72	3195	1396	446	3343	1533		710	1346		1494		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	49	1062	24	6	2045	64	42	6	18	59	1	204	
RTOR Reduction (vph)	0	0	21	0	0	15	0	0	15	0	93	0	
Lane Group Flow (vph)	49	1063	3	6	2045	49	0	48	3	0	171	0	
Confl. Peds. (#/hr)			1	1					4	4			
Confl. Bikes (#/hr)						4							
Heavy Vehicles (%)	13%	13%	13%	0%	8%	3%	2%	0%	18%	5%	0%	3%	
Turn Type	pm+pt	NA	custom	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		
Protected Phases	5	2		1	6			8			4		
Permitted Phases	2		4	6		6	8		8	4			
Actuated Green, G (s)	101.4	92.8	18.2	93.8	89.0	89.0		19.0	19.0		18.2		
Effective Green, g (s)	101.4	92.8	18.2	93.8	89.0	89.0		19.0	19.0		18.2		
Actuated g/C Ratio	0.78	0.71	0.14	0.72	0.68	0.68		0.15	0.15		0.14		
Clearance Time (s)	4.0	5.4	4.8	4.0	5.4	5.4		4.0	4.0		4.8		
Vehicle Extension (s)	2.3	4.5	2.5	2.3	4.5	4.5		2.5	2.5		2.5		
Lane Grp Cap (vph)	157	2280	195	371	2288	1049		103	196		209		
v/s Ratio Prot	c0.02	0.33		0.00	c0.61								
v/s Ratio Perm	0.22		0.00	0.01		0.03		0.07	0.00		c0.11		
v/c Ratio	0.31	0.47	0.02	0.02	0.89	0.05		0.47	0.01		0.82		
Uniform Delay, d1	37.4	8.0	48.2	8.8	16.7	6.7		50.9	47.5		54.3		
Progression Factor	0.69	1.17	7.99	1.00	1.00	1.00		1.00	1.00		1.00		
Incremental Delay, d2	0.6	0.6	0.0	0.0	5.9	0.1		2.4	0.0		21.0		
Delay (s)	26.3	9.9	385.2	8.8	22.6	6.8		53.3	47.5		75.3		
Level of Service	C	A	F	A	C	A		D	D		E		
Approach Delay (s)		18.5			22.0			51.7			75.3		
Approach LOS		B			C			D			E		
Intersection Summary													
HCM 2000 Control Delay			25.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.84										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	14.2
Intersection Capacity Utilization			84.7%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Existing Traffic Conditions
6: 142nd Ave & OR 212

Weekday AM Peak Hour
10/10/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	1020	23	6	1963	61	40	6	17	57	1	196
Future Volume (veh/h)	47	1020	23	6	1963	61	40	6	17	57	1	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1707	1707	1707	1900	1781	1856	1870	1900	1633	1826	1900	1856
Adj Flow Rate, veh/h	49	1062	0	6	2045	64	42	6	18	59	1	204
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	13	13	13	0	8	3	2	0	18	5	0	3
Cap, veh/h	213	1242		827	2264	1028	126	15	171	56	6	96
Arrive On Green	0.19	0.77	0.00	0.38	0.67	0.67	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1626	3244	1447	1810	3385	1536	592	118	1371	175	51	769
Grp Volume(v), veh/h	49	1062	0	6	2045	64	48	0	18	264	0	0
Grp Sat Flow(s),veh/h/ln	1626	1622	1447	1810	1692	1536	710	0	1371	995	0	0
Q Serve(g_s), s	0.0	28.9	0.0	0.0	65.7	1.9	0.0	0.0	1.5	8.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	28.9	0.0	0.0	65.7	1.9	8.0	0.0	1.5	16.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.87		1.00	0.22		0.77
Lane Grp Cap(c), veh/h	213	1242		827	2264	1028	140	0	171	158	0	0
V/C Ratio(X)	0.23	0.86		0.01	0.90	0.06	0.34	0.00	0.11	1.67	0.00	0.00
Avail Cap(c_a), veh/h	213	2211		827	2307	1047	148	0	179	158	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.82	0.82	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	47.3	12.8	0.0	14.6	18.0	7.4	53.1	0.0	50.5	59.9	0.0	0.0
Incr Delay (d2), s/veh	0.3	6.4	0.0	0.0	6.5	0.1	1.1	0.0	0.2	328.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.4	9.1	0.0	0.2	33.8	1.2	2.7	0.0	1.0	31.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.6	19.2	0.0	14.6	24.4	7.5	54.2	0.0	50.7	388.8	0.0	0.0
LnGrp LOS	D	B		B	C	A	D	A	D	F	A	A
Approach Vol, veh/h		1111			2115			66			264	
Approach Delay, s/veh		20.4			23.9			53.2			388.8	
Approach LOS		C			C			D			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	53.8	55.2		21.0	16.6	92.4		21.0				
Change Period (Y+Rc), s	* 4	5.4		4.8	* 4	5.4		* 4.8				
Max Green Setting (Gmax), s	* 11	88.6		16.2	* 11	88.6		* 17				
Max Q Clear Time (g_c+I1), s	2.0	30.9		18.2	2.0	67.7		10.0				
Green Ext Time (p_c), s	0.0	18.9		0.0	0.0	19.3		0.1				

Intersection Summary

HCM 6th Ctrl Delay	50.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
 Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

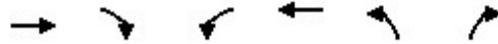
Intersection						
Int Delay, s/veh	11.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	84	992	1902	91	24	145
Future Vol, veh/h	84	992	1902	91	24	145
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	220	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	7	11	5	4	0	3
Mvmt Flow	88	1044	2002	96	25	153

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	2099	0	-	0	2749 1050
Stage 1	-	-	-	-	2051 -
Stage 2	-	-	-	-	698 -
Critical Hdwy	4.24	-	-	-	6.8 6.96
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.27	-	-	-	3.5 3.33
Pot Cap-1 Maneuver	241	-	-	-	~ 16 222
Stage 1	-	-	-	-	87 -
Stage 2	-	-	-	-	460 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	241	-	-	-	~ 10 222
Mov Cap-2 Maneuver	-	-	-	-	46 -
Stage 1	-	-	-	-	55 -
Stage 2	-	-	-	-	460 -

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	212.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	241	-	-	-	144
HCM Lane V/C Ratio	0.367	-	-	-	1.235
HCM Control Delay (s)	28.3	-	-	-	212.2
HCM Lane LOS	D	-	-	-	F
HCM 95th %tile Q(veh)	1.6	-	-	-	10.6

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓↓	↓
Traffic Volume (vph)	636	380	158	1086	907	177
Future Volume (vph)	636	380	158	1086	907	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	5.4	4.0	6.0	5.4	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3223	1404	1752	3343	3273	1495
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3223	1404	1752	3343	3273	1495
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	669	400	166	1143	955	186
RTOR Reduction (vph)	0	127	0	0	0	0
Lane Group Flow (vph)	669	273	166	1143	955	186
Heavy Vehicles (%)	12%	15%	3%	8%	7%	8%
Turn Type	NA	pm+ov	Prot	NA	Prot	Free
Protected Phases	2	8	1	6	8	
Permitted Phases		2				Free
Actuated Green, G (s)	28.7	61.7	13.2	45.9	33.0	90.3
Effective Green, g (s)	28.7	61.7	13.2	45.9	33.0	90.3
Actuated g/C Ratio	0.32	0.68	0.15	0.51	0.37	1.00
Clearance Time (s)	6.0	5.4	4.0	6.0	5.4	
Vehicle Extension (s)	4.8	2.5	3.5	4.8	2.5	
Lane Grp Cap (vph)	1024	1043	256	1699	1196	1495
v/s Ratio Prot	0.21	0.10	0.09	c0.34	c0.29	
v/s Ratio Perm		0.10				0.12
v/c Ratio	0.65	0.26	0.65	0.67	0.80	0.12
Uniform Delay, d1	26.5	5.5	36.4	16.6	25.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.1	5.8	1.3	3.7	0.2
Delay (s)	28.5	5.6	42.2	17.9	29.4	0.2
Level of Service	C	A	D	B	C	A
Approach Delay (s)	19.9			21.0	24.6	
Approach LOS	B			C	C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	15.4
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Existing Traffic Conditions
8: OR 224 & OR 212

Weekday AM Peak Hour
10/10/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↓
Traffic Volume (veh/h)	636	380	158	1086	907	177
Future Volume (veh/h)	636	380	158	1086	907	177
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1722	1678	1856	1781	1796	1781
Adj Flow Rate, veh/h	669	400	166	1143	955	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	15	3	8	7	8
Cap, veh/h	1126	958	218	1819	1093	
Arrive On Green	0.34	0.34	0.12	0.54	0.33	0.00
Sat Flow, veh/h	3358	1422	1767	3474	3319	1510
Grp Volume(v), veh/h	669	400	166	1143	955	0
Grp Sat Flow(s),veh/h/ln	1636	1422	1767	1692	1659	1510
Q Serve(g_s), s	14.4	10.9	7.8	20.2	23.2	0.0
Cycle Q Clear(g_c), s	14.4	10.9	7.8	20.2	23.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1126	958	218	1819	1093	
V/C Ratio(X)	0.59	0.42	0.76	0.63	0.87	
Avail Cap(c_a), veh/h	1758	1232	227	3399	1961	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.1	6.4	36.3	13.8	27.0	0.0
Incr Delay (d2), s/veh	1.0	0.6	14.1	0.7	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.3	11.6	7.5	11.6	14.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.1	6.9	50.4	14.5	28.8	0.0
LnGrp LOS	C	A	D	B	C	
Approach Vol, veh/h	1069			1309	955	
Approach Delay, s/veh	17.7			19.1	28.8	
Approach LOS	B			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	16.6	35.5			52.0	33.6
Change Period (Y+Rc), s	6.0	* 6			6.0	5.4
Max Green Setting (Gmax), s	11.0	* 46			86.0	50.6
Max Q Clear Time (g_c+I1), s	9.8	16.4			22.2	25.2
Green Ext Time (p_c), s	0.1	13.0			23.8	3.0

Intersection Summary

HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Existing Traffic Conditions
9: 172nd Ave & OR 212

Weekday AM Peak Hour
10/10/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	539	16	9	804	71	77	59	17	69	23	298
Future Volume (vph)	252	539	16	9	804	71	77	59	17	69	23	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.5		4.5	6.5	6.5	5.0	5.0		6.2	6.2	4.5
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1656	3154		1626	1759	1429	1788	1776		1700	1827	1520
Flt Permitted	0.10	1.00		0.42	1.00	1.00	0.74	1.00		0.70	1.00	1.00
Satd. Flow (perm)	176	3154		716	1759	1429	1394	1776		1256	1827	1520
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	280	599	18	10	893	79	86	66	19	77	26	331
RTOR Reduction (vph)	0	1	0	0	0	35	0	10	0	0	0	57
Lane Group Flow (vph)	280	616	0	10	893	44	86	75	0	77	26	274
Confl. Peds. (#/hr)							5		1	1		5
Heavy Vehicles (%)	9%	14%	12%	11%	8%	13%	0%	2%	6%	6%	4%	5%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6		6	8			4		4
Actuated Green, G (s)	89.1	83.6		65.6	64.6	64.6	14.9	14.9		13.7	13.7	33.7
Effective Green, g (s)	89.1	83.6		65.6	64.6	64.6	14.9	14.9		13.7	13.7	33.7
Actuated g/C Ratio	0.77	0.72		0.57	0.56	0.56	0.13	0.13		0.12	0.12	0.29
Clearance Time (s)	4.5	6.5		4.5	6.5	6.5	5.0	5.0		6.2	6.2	4.5
Vehicle Extension (s)	2.3	5.4		2.3	5.4	5.4	2.5	2.5		2.5	2.5	2.3
Lane Grp Cap (vph)	392	2282		414	983	799	179	229		148	216	443
v/s Ratio Prot	c0.12	0.20		0.00	c0.51			0.04			0.01	c0.11
v/s Ratio Perm	0.43			0.01		0.03	0.06			0.06		0.07
v/c Ratio	0.71	0.27		0.02	0.91	0.06	0.48	0.33		0.52	0.12	0.62
Uniform Delay, d1	28.0	5.5		10.8	22.8	11.6	46.7	45.8		47.8	45.5	35.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.4	0.2		0.0	12.7	0.1	1.5	0.6		2.5	0.2	2.1
Delay (s)	33.4	5.6		10.9	35.5	11.6	48.2	46.4		50.3	45.7	37.4
Level of Service	C	A		B	D	B	D	D		D	D	D
Approach Delay (s)		14.3			33.3			47.3			40.2	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			28.6									C
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			115.5							17.2		
Intersection Capacity Utilization			83.3%									E
Analysis Period (min)			15									

c Critical Lane Group

Existing Traffic Conditions
9: 172nd Ave & OR 212

Weekday AM Peak Hour
10/10/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	539	16	9	804	71	77	59	17	69	23	298
Future Volume (veh/h)	252	539	16	9	804	71	77	59	17	69	23	298
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1693	1722	1737	1781	1707	1900	1870	1811	1811	1841	1826
Adj Flow Rate, veh/h	280	599	18	10	893	0	86	66	19	77	26	331
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	9	14	12	11	8	13	0	2	6	6	4	5
Cap, veh/h	305	2034	61	451	894		265	292	84	274	386	546
Arrive On Green	0.15	0.64	0.64	0.01	0.50	0.00	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1682	3187	96	1654	1781	1447	1033	1392	401	1259	1841	1529
Grp Volume(v), veh/h	280	302	315	10	893	0	86	0	85	77	26	331
Grp Sat Flow(s),veh/h/ln	1682	1608	1675	1654	1781	1447	1033	0	1793	1259	1841	1529
Q Serve(g_s), s	15.4	10.1	10.1	0.4	60.4	0.0	8.8	0.0	4.7	6.5	1.4	21.5
Cycle Q Clear(g_c), s	15.4	10.1	10.1	0.4	60.4	0.0	10.1	0.0	4.7	11.3	1.4	21.5
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	305	1026	1069	451	894		265	0	376	274	386	546
V/C Ratio(X)	0.92	0.29	0.29	0.02	1.00		0.32	0.00	0.23	0.28	0.07	0.61
Avail Cap(c_a), veh/h	346	1026	1069	648	894		348	0	520	374	531	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.2	9.7	9.7	14.5	30.0	0.0	42.2	0.0	39.5	44.2	38.2	32.0
Incr Delay (d2), s/veh	25.7	0.4	0.4	0.0	29.9	0.0	0.5	0.0	0.2	0.4	0.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.2	6.4	6.7	0.2	41.4	0.0	4.1	0.0	3.8	3.7	1.1	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.9	10.1	10.1	14.5	59.9	0.0	42.8	0.0	39.7	44.6	38.2	32.8
LnGrp LOS	E	B	B	B	E		D	A	D	D	D	C
Approach Vol, veh/h		897			903			171			434	
Approach Delay, s/veh		27.6			59.4			41.3			35.2	
Approach LOS		C			E			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	83.4		31.5	22.1	67.0		31.5				
Change Period (Y+Rc), s	4.5	6.5		6.2	4.5	6.5		* 6.2				
Max Green Setting (Gmax), s	15.5	60.5		34.8	20.5	60.5		* 35				
Max Q Clear Time (g_c+I1), s	2.4	12.1		23.5	17.4	62.4		12.1				
Green Ext Time (p_c), s	0.0	10.2		1.0	0.2	0.0		0.6				
Intersection Summary												
HCM 6th Ctrl Delay				41.9								
HCM 6th LOS				D								
Notes												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	239	3	1	226	33	0	1	0	52	4	114
Future Vol, veh/h	66	239	3	1	226	33	0	1	0	52	4	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	75	-	-	-	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	61	12	0	100	14	12	0	0	0	12	0	32
Mvmt Flow	72	260	3	1	246	36	0	1	0	57	4	124

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	282	0	0	263	0	0	736	690	262	672	673	264
Stage 1	-	-	-	-	-	-	406	406	-	266	266	-
Stage 2	-	-	-	-	-	-	330	284	-	406	407	-
Critical Hdwy	4.71	-	-	5.1	-	-	7.1	6.5	6.2	7.22	6.5	6.52
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.22	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.22	5.5	-
Follow-up Hdwy	2.749	-	-	3.1	-	-	3.5	4	3.3	3.608	4	3.588
Pot Cap-1 Maneuver	1007	-	-	894	-	-	337	371	782	356	379	707
Stage 1	-	-	-	-	-	-	626	601	-	718	692	-
Stage 2	-	-	-	-	-	-	687	680	-	602	601	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1007	-	-	894	-	-	260	344	782	335	352	707
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	344	-	335	352	-
Stage 1	-	-	-	-	-	-	582	558	-	667	691	-
Stage 2	-	-	-	-	-	-	562	679	-	558	558	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.9			0			15.5			13.5		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	344	1007	-	-	894	-	-	336	707	
HCM Lane V/C Ratio	0.003	0.071	-	-	0.001	-	-	0.181	0.175	
HCM Control Delay (s)	15.5	8.8	-	-	9	0	-	18.1	11.2	
HCM Lane LOS		C	A	-	-	A	A	-	C	B
HCM 95th %tile Q(veh)		0	0.2	-	-	0	-	-	0.7	0.6

Existing Traffic Conditions
1: I-205 SB On-Ramp & Sunrise Pkwy

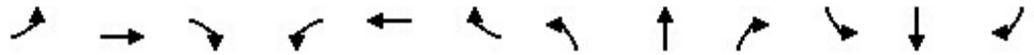
Weekday PM Peak Hour

10/10/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑					↖		↗
Traffic Volume (vph)	0	1621	597	31	1322	0	0	0	0	96	0	324
Future Volume (vph)	0	1621	597	31	1322	0	0	0	0	96	0	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	2.5	4.0					3.5		3.5
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3438	1538	1597	3471					1736		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3438	1538	1597	3471					1736		1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1671	615	32	1363	0	0	0	0	99	0	334
RTOR Reduction (vph)	0	0	215	0	0	0	0	0	0	0	0	55
Lane Group Flow (vph)	0	1671	400	32	1363	0	0	0	0	99	0	279
Heavy Vehicles (%)	0%	5%	5%	13%	4%	0%	0%	0%	0%	4%	0%	2%
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			2									4
Actuated Green, G (s)		82.5	82.5	5.3	91.8					26.7		26.7
Effective Green, g (s)		84.5	84.5	6.8	93.8					28.7		28.7
Actuated g/C Ratio		0.65	0.65	0.05	0.72					0.22		0.22
Clearance Time (s)		6.0	6.0	4.0	6.0					5.5		5.5
Vehicle Extension (s)		0.5	0.5	2.3	0.5					2.3		2.3
Lane Grp Cap (vph)		2234	999	83	2504					383		349
v/s Ratio Prot		c0.49		0.02	c0.39					0.06		
v/s Ratio Perm			0.26									c0.18
v/c Ratio		0.75	0.40	0.39	0.54					0.26		0.80
Uniform Delay, d1		15.5	10.8	59.6	8.3					41.9		47.9
Progression Factor		1.00	1.00	1.21	0.64					1.00		1.00
Incremental Delay, d2		2.3	1.2	1.4	0.7					0.2		11.9
Delay (s)		17.8	12.0	73.4	6.0					42.1		59.9
Level of Service		B	B	E	A					D		E
Approach Delay (s)		16.3			7.5			0.0			55.8	
Approach LOS		B			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			17.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			63.3%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Existing Traffic Conditions
1: I-205 SB On-Ramp & Sunrise Pkwy

Weekday PM Peak Hour
10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑					↘		↗
Traffic Volume (veh/h)	0	1621	597	31	1322	0	0	0	0	96	0	324
Future Volume (veh/h)	0	1621	597	31	1322	0	0	0	0	96	0	324
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1826	1826	1707	1841	0				1841	0	1870
Adj Flow Rate, veh/h	0	1671	0	32	1363	0				99	0	334
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	0	5	5	13	4	0				4	0	2
Cap, veh/h	0	2253		57	2462	0				418	0	378
Arrive On Green	0.00	0.65	0.00	0.07	1.00	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3561	1547	1626	3589	0				1753	0	1585
Grp Volume(v), veh/h	0	1671	0	32	1363	0				99	0	334
Grp Sat Flow(s),veh/h/ln	0	1735	1547	1626	1749	0				1753	0	1585
Q Serve(g_s), s	0.0	42.4	0.0	2.5	0.0	0.0				5.9	0.0	26.4
Cycle Q Clear(g_c), s	0.0	42.4	0.0	2.5	0.0	0.0				5.9	0.0	26.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2253		57	2462	0				418	0	378
V/C Ratio(X)	0.00	0.74		0.56	0.55	0.00				0.24	0.00	0.88
Avail Cap(c_a), veh/h	0	2253		219	2462	0				492	0	445
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.69	0.69	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.4	0.0	59.4	0.0	0.0				40.0	0.0	47.8
Incr Delay (d2), s/veh	0.0	2.3	0.0	3.6	0.6	0.0				0.2	0.0	15.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	23.1	0.0	1.9	0.4	0.0				4.7	0.0	17.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	17.7	0.0	63.0	0.6	0.0				40.1	0.0	63.5
LnGrp LOS	A	B		E	A	A				D	A	E
Approach Vol, veh/h		1671			1395						433	
Approach Delay, s/veh		17.7			2.1						58.2	
Approach LOS		B			A						E	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	7.1	88.4		34.5		95.5						
Change Period (Y+Rc), s	4.0	6.0		5.5		6.0						
Max Green Setting (Gmax), s	16.0	64.0		34.5		84.0						
Max Q Clear Time (g_c+I1), s	4.5	44.4		28.4		2.0						
Green Ext Time (p_c), s	0.0	4.1		0.6		3.2						

Intersection Summary

HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Existing Traffic Conditions
2: I-205 SB Off-Ramp/OR 213 NB & Sunrise Pkwy

Weekday PM Peak Hour

10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑		↘↘	↑		↘		↘↘
Traffic Volume (vph)	449	1268	0	0	472	193	479	8	253	20	0	402
Future Volume (vph)	449	1268	0	0	472	193	479	8	253	20	0	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0			4.0		4.5	4.5		4.5		4.5
Lane Util. Factor	1.00	0.95			0.95		0.97	1.00		1.00		0.88
Frt	1.00	1.00			0.96		1.00	0.85		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1770	3406			3339		3335	1390		1641		2707
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (perm)	1770	3406			3339		3335	1390		1641		2707
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	483	1363	0	0	508	208	515	9	272	22	0	432
RTOR Reduction (vph)	0	0	0	0	35	0	0	166	0	0	0	90
Lane Group Flow (vph)	483	1363	0	0	681	0	515	115	0	22	0	342
Heavy Vehicles (%)	2%	6%	0%	0%	4%	2%	5%	12%	17%	10%	0%	5%
Turn Type	Prot	NA			NA		Prot	NA		Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases												
Actuated Green, G (s)	45.0	81.9			32.9		26.2	21.9		9.2		53.9
Effective Green, g (s)	46.0	83.9			34.9		27.2	22.9		10.2		51.9
Actuated g/C Ratio	0.35	0.65			0.27		0.21	0.18		0.08		0.40
Clearance Time (s)	4.0	6.0			6.0		5.5	5.5		5.5		
Vehicle Extension (s)	2.3	4.6			4.6		2.3	2.3		2.3		
Lane Grp Cap (vph)	626	2198			896		697	244		128		1080
v/s Ratio Prot	c0.27	0.40			c0.20		c0.15	c0.08		0.01		0.13
v/s Ratio Perm												
v/c Ratio	0.77	0.62			0.76		0.74	0.47		0.17		0.32
Uniform Delay, d1	37.3	13.6			43.7		48.1	48.1		56.0		26.9
Progression Factor	0.85	0.52			0.90		1.00	1.00		1.00		1.00
Incremental Delay, d2	6.7	1.0			4.2		3.7	0.8		0.4		0.1
Delay (s)	38.5	8.1			43.6		51.8	48.9		56.3		27.0
Level of Service	D	A			D		D	D		E		C
Approach Delay (s)		16.0			43.6			50.8			28.4	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Existing Traffic Conditions
2: I-205 SB Off-Ramp/OR 213 NB & Sunrise Pkwy

Weekday PM Peak Hour

10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑		↘↘	↑		↘		↗↗
Traffic Volume (veh/h)	449	1268	0	0	472	193	479	8	253	20	0	402
Future Volume (veh/h)	449	1268	0	0	472	193	479	8	253	20	0	402
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1811	0	0	1841	1870	1826	1722	1648	1752	0	1826
Adj Flow Rate, veh/h	483	1363	0	0	508	208	515	9	272	22	0	432
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	0	0	4	2	5	12	17	10	0	5
Cap, veh/h	505	2549	0	0	1015	413	654	6	191	41	0	0
Arrive On Green	0.57	1.00	0.00	0.00	0.14	0.13	0.19	0.13	0.13	0.02	0.00	0.01
Sat Flow, veh/h	1781	3532	0	0	2516	988	3374	47	1420	1668	22	
Grp Volume(v), veh/h	483	1363	0	0	366	350	515	0	281	22	69.2	
Grp Sat Flow(s),veh/h/ln	1781	1721	0	0	1749	1663	1687	0	1467	1668	E	
Q Serve(g_s), s	33.3	0.0	0.0	0.0	25.2	25.4	18.9	0.0	17.5	1.7		
Cycle Q Clear(g_c), s	33.3	0.0	0.0	0.0	25.2	25.4	18.9	0.0	17.5	1.7		
Prop In Lane	1.00		0.00	0.00		0.59	1.00		0.97	1.00		
Lane Grp Cap(c), veh/h	505	2549	0	0	732	696	654	0	197	41		
V/C Ratio(X)	0.96	0.53	0.00	0.00	0.50	0.50	0.79	0.00	1.42	0.54		
Avail Cap(c_a), veh/h	575	2549	0	0	732	696	740	0	197	212		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.64	0.64	0.00	0.00	0.99	0.99	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	27.3	0.0	0.0	0.0	43.4	43.7	49.9	0.0	56.7	62.7		
Incr Delay (d2), s/veh	18.4	0.5	0.0	0.0	0.9	1.0	4.6	0.0	217.3	6.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	17.7	0.3	0.0	0.0	17.7	17.1	13.1	0.0	29.1	1.4		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	0.5	0.0	0.0	44.4	44.7	54.5	0.0	274.1	69.2		
LnGrp LOS	D	A	A	A	D	D	D	A	F	E		
Approach Vol, veh/h		1846			716			796				
Approach Delay, s/veh		12.3			44.5			132.0				
Approach LOS		B			D			F				
Timer - Assigned Phs		2	3		5	6	7	8				
Phs Duration (G+Y+Rc), s		100.3	29.7		41.9	58.4	7.7	22.0				
Change Period (Y+Rc), s		6.0	5.5		6.0	* 6	5.5	5.5				
Max Green Setting (Gmax), s		81.0	27.5		41.0	* 36	15.5	16.5				
Max Q Clear Time (g_c+I1), s		2.0	20.9		35.3	27.4	3.7	19.5				
Green Ext Time (p_c), s		32.3	0.8		0.6	4.2	0.0	0.0				

Intersection Summary

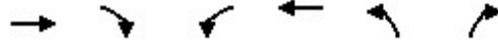
HCM 6th Ctrl Delay	47.7
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Existing Traffic Conditions
3: I-205 NB On-Ramp & Sunrise Pkwy

Weekday PM Peak Hour
10/10/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		
Traffic Volume (vph)	930	611	258	665	0	0
Future Volume (vph)	930	611	258	665	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.0	4.0		
Lane Util. Factor	0.95	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	0.98	1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00		
Frt	1.00	0.85	1.00	1.00		
Flt Protected	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	3374	1521	1703	3574		
Flt Permitted	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	3374	1521	1703	3574		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1000	657	277	715	0	0
RTOR Reduction (vph)	0	150	0	0	0	0
Lane Group Flow (vph)	1000	507	277	715	0	0
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	4%	6%	1%	0%	0%
Turn Type	NA	Perm	Prot	NA		
Protected Phases	2		1	6		
Permitted Phases		2				
Actuated Green, G (s)	92.7	92.7	26.3	130.0		
Effective Green, g (s)	95.7	95.7	29.3	130.0		
Actuated g/C Ratio	0.74	0.74	0.23	1.00		
Clearance Time (s)	7.0	7.0	4.0	7.0		
Vehicle Extension (s)	4.7	4.7	2.3	4.7		
Lane Grp Cap (vph)	2483	1119	383	3574		
v/s Ratio Prot	0.30		c0.16	0.20		
v/s Ratio Perm		c0.33				
v/c Ratio	0.40	0.45	0.72	0.20		
Uniform Delay, d1	6.4	6.8	46.6	0.0		
Progression Factor	1.00	1.41	1.15	1.00		
Incremental Delay, d2	0.4	1.1	4.7	0.1		
Delay (s)	6.8	10.6	58.4	0.1		
Level of Service	A	B	E	A		
Approach Delay (s)	8.3			16.4	0.0	
Approach LOS	A			B	A	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Existing Traffic Conditions
4: 122nd Ave/Sunrise Pkwy & OR 212

Weekday PM Peak Hour
10/10/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	772	61	19	757	727	29	145	19	682	200	48
Future Volume (vph)	51	772	61	19	757	727	29	145	19	682	200	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.4		4.0	4.4	5.4	3.8	3.8		3.8	3.8	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1703	3374		1719	3343	1548	1687	1774		3367	1681	1561
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1703	3374		1719	3343	1548	1687	1774		3367	1681	1561
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	53	796	63	20	780	749	30	149	20	703	206	49
RTOR Reduction (vph)	0	4	0	0	0	428	0	3	0	0	0	0
Lane Group Flow (vph)	53	855	0	20	780	321	30	166	0	703	206	49
Confl. Peds. (#/hr)	1					1	8		2	2		8
Heavy Vehicles (%)	6%	5%	16%	5%	8%	2%	7%	5%	5%	4%	13%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7		4
Permitted Phases						6						Free
Actuated Green, G (s)	8.2	59.4		4.2	55.4	55.4	16.0	16.9		31.3	32.2	130.0
Effective Green, g (s)	8.2	60.4		4.2	56.4	55.4	16.2	17.9		31.5	33.2	130.0
Actuated g/C Ratio	0.06	0.46		0.03	0.43	0.43	0.12	0.14		0.24	0.26	1.00
Clearance Time (s)	4.0	5.4		4.0	5.4	5.4	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	4.6		2.0	4.6	4.6	2.3	2.3		2.3	2.3	
Lane Grp Cap (vph)	107	1567		55	1450	659	210	244		815	429	1561
v/s Ratio Prot	0.03	c0.25		0.01	c0.23		0.02	c0.09		c0.21	0.12	
v/s Ratio Perm						0.21						c0.03
v/c Ratio	0.50	0.55		0.36	0.54	0.49	0.14	0.68		0.86	0.48	0.03
Uniform Delay, d1	58.9	25.0		61.6	27.2	27.0	50.7	53.3		47.2	41.1	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.20	1.14	1.00
Incremental Delay, d2	1.3	1.4		1.5	1.4	2.6	0.2	6.3		8.6	0.5	0.0
Delay (s)	60.2	26.3		63.1	28.6	29.6	50.9	59.6		65.2	47.4	0.0
Level of Service	E	C		E	C	C	D	E		E	D	A
Approach Delay (s)		28.3			29.5			58.3			58.0	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			38.3				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			69.9%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

Existing Traffic Conditions
4: 122nd Ave/Sunrise Pkwy & OR 212

Weekday PM Peak Hour
10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	772	61	19	757	727	29	145	19	682	200	48
Future Volume (veh/h)	51	772	61	19	757	727	29	145	19	682	200	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1826	1663	1826	1781	1870	1796	1826	1826	1841	1707	1870
Adj Flow Rate, veh/h	53	796	63	20	780	0	30	149	20	703	206	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	5	16	5	8	2	7	5	5	4	13	2
Cap, veh/h	379	1690	134	28	1029		296	186	25	762	279	
Arrive On Green	0.22	0.52	0.51	0.01	0.20	0.00	0.17	0.12	0.11	0.22	0.16	0.00
Sat Flow, veh/h	1725	3256	258	1739	3385	1585	1711	1571	211	3401	1707	1585
Grp Volume(v), veh/h	53	424	435	20	780	0	30	0	169	703	206	0
Grp Sat Flow(s),veh/h/ln	1725	1735	1779	1739	1692	1585	1711	0	1782	1700	1707	1585
Q Serve(g_s), s	3.2	20.2	20.3	1.5	28.2	0.0	1.9	0.0	12.0	26.3	14.9	0.0
Cycle Q Clear(g_c), s	3.2	20.2	20.3	1.5	28.2	0.0	1.9	0.0	12.0	26.3	14.9	0.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	379	900	923	28	1029		296	0	211	762	279	
V/C Ratio(X)	0.14	0.47	0.47	0.73	0.76		0.10	0.00	0.80	0.92	0.74	
Avail Cap(c_a), veh/h	379	900	923	147	1317		296	0	222	816	383	
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.8	19.9	20.0	64.0	47.3	0.0	45.3	0.0	55.9	49.3	51.8	0.0
Incr Delay (d2), s/veh	0.1	1.8	1.7	12.7	5.2	0.0	0.1	0.0	17.0	15.0	3.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	13.4	13.7	1.4	19.1	0.0	1.5	0.0	10.6	18.6	10.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.9	21.7	21.7	76.7	52.5	0.0	45.3	0.0	72.9	64.3	55.3	0.0
LnGrp LOS	D	C	C	E	D		D	A	E	E	E	
Approach Vol, veh/h		912			800			199			909	
Approach Delay, s/veh		22.8			53.1			68.7			62.3	
Approach LOS		C			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	71.9	27.1	25.0	34.0	43.9	32.9	19.2				
Change Period (Y+Rc), s	4.0	* 5.4	4.8	* 4.8	* 5.4	* 5.4	4.0	4.8				
Max Green Setting (Gmax), s	11.0	* 55	18.0	* 28	* 16	* 50	31.0	15.2				
Max Q Clear Time (g_c+I1), s	3.5	22.3	3.9	16.9	5.2	30.2	28.3	14.0				
Green Ext Time (p_c), s	0.0	11.1	0.0	0.6	0.0	8.3	0.6	0.1				

Intersection Summary

HCM 6th Ctrl Delay	47.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

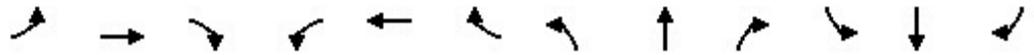
Existing Traffic Conditions
5: 135th Ave & OR 212

Weekday PM Peak Hour
10/10/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1367	23	172	1155	125	64	124	626	241	101	142
Future Volume (vph)	110	1367	23	172	1155	125	64	124	626	241	101	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.4	5.4	4.0	4.4		4.0	3.6	3.6	4.0	3.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3406	1507	1752	3326		1671	1881	1510	1752	1659	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	3406	1507	1752	3326		1671	1881	1510	1752	1659	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	113	1409	24	177	1191	129	66	128	645	248	104	146
RTOR Reduction (vph)	0	0	14	0	6	0	0	0	189	0	36	0
Lane Group Flow (vph)	113	1409	10	177	1314	0	66	128	456	248	214	0
Confl. Peds. (#/hr)	4		4	4		4	3		3	3		3
Confl. Bikes (#/hr)						2			2			
Heavy Vehicles (%)	1%	6%	4%	3%	7%	3%	8%	1%	5%	3%	3%	4%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	16.4	54.5	54.5	15.3	53.4		8.7	25.5	25.5	16.8	33.6	
Effective Green, g (s)	16.4	55.5	54.5	15.3	54.4		8.7	26.4	26.4	16.8	34.5	
Actuated g/C Ratio	0.13	0.43	0.42	0.12	0.42		0.07	0.20	0.20	0.13	0.27	
Clearance Time (s)	4.0	5.4	5.4	4.0	5.4		4.0	4.5	4.5	4.0	4.5	
Vehicle Extension (s)	2.3	4.5	4.5	2.3	4.5		2.3	3.0	3.0	2.3	3.0	
Lane Grp Cap (vph)	225	1454	631	206	1391		111	381	306	226	440	
v/s Ratio Prot	0.06	c0.41		0.10	c0.40		0.04	0.07		c0.14	0.13	
v/s Ratio Perm			0.01						c0.30			
v/c Ratio	0.50	0.97	0.02	0.86	0.94		0.59	0.34	1.49	1.10	0.49	
Uniform Delay, d1	53.0	36.4	22.1	56.3	36.3		58.9	44.3	51.8	56.6	40.3	
Progression Factor	1.00	1.00	1.00	1.04	1.53		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	17.3	0.0	23.6	12.1		6.4	0.5	237.4	88.3	0.8	
Delay (s)	54.0	53.7	22.1	82.2	67.7		65.4	44.8	289.2	144.9	41.1	
Level of Service	D	D	C	F	E		E	D	F	F	D	
Approach Delay (s)		53.2			69.4			234.3			92.8	
Approach LOS		D			E			F			F	
Intersection Summary												
HCM 2000 Control Delay			97.9			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			100.6%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

Existing Traffic Conditions
5: 135th Ave & OR 212

Weekday PM Peak Hour
10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1367	23	172	1155	125	64	124	626	241	101	142
Future Volume (veh/h)	110	1367	23	172	1155	125	64	124	626	241	101	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1811	1841	1856	1796	1856	1781	1885	1826	1856	1856	1841
Adj Flow Rate, veh/h	113	1409	24	177	1191	129	66	128	0	248	104	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	6	4	3	7	3	8	1	5	3	3	4
Cap, veh/h	383	1831	815	202	1309	141	84	194		217	126	177
Arrive On Green	0.43	1.00	1.00	0.08	0.28	0.28	0.05	0.10	0.00	0.12	0.18	0.17
Sat Flow, veh/h	1795	3441	1554	1767	3097	335	1697	1885	1547	1767	696	977
Grp Volume(v), veh/h	113	1409	24	177	655	665	66	128	0	248	0	250
Grp Sat Flow(s),veh/h/ln	1795	1721	1554	1767	1706	1725	1697	1885	1547	1767	0	1674
Q Serve(g_s), s	5.4	0.0	0.0	12.9	48.1	48.5	5.0	8.5	0.0	16.0	0.0	18.7
Cycle Q Clear(g_c), s	5.4	0.0	0.0	12.9	48.1	48.5	5.0	8.5	0.0	16.0	0.0	18.7
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	383	1831	815	202	721	729	84	194		217	0	303
V/C Ratio(X)	0.29	0.77	0.03	0.87	0.91	0.91	0.79	0.66		1.14	0.00	0.83
Avail Cap(c_a), veh/h	383	1831	815	217	730	738	209	383		217	0	340
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.65	0.65	0.65	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.8	0.0	0.0	59.1	44.2	44.3	61.1	56.1	0.0	57.0	0.0	51.5
Incr Delay (d2), s/veh	0.3	3.2	0.1	20.0	12.3	12.7	9.7	3.8	0.0	104.0	0.0	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	1.5	0.0	10.6	30.0	30.5	4.3	7.6	0.0	20.5	0.0	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	3.2	0.1	79.1	56.5	57.0	70.8	59.8	0.0	161.0	0.0	65.5
LnGrp LOS	C	A	A	E	E	E	E	E		F	A	E
Approach Vol, veh/h		1546			1497			194				498
Approach Delay, s/veh		5.2			59.4			63.6				113.1
Approach LOS		A			E			E				F
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.9	73.6	10.4	27.1	33.1	59.3	20.5	17.0				
Change Period (Y+Rc), s	4.0	* 5.4	4.0	4.5	* 5.4	* 5.4	4.5	* 4.5				
Max Green Setting (Gmax), s	16.0	* 55	16.0	25.5	* 16	* 55	16.0	* 26				
Max Q Clear Time (g_c+I1), s	14.9	2.0	7.0	20.7	7.4	50.5	18.0	10.5				
Green Ext Time (p_c), s	0.0	28.2	0.0	0.6	0.1	3.5	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	44.3
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
- Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Existing Traffic Conditions
6: 142nd Ave & OR 212

Weekday PM Peak Hour
10/10/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	2054	51	10	1302	49	31	3	15	134	11	122
Future Volume (vph)	137	2054	51	10	1302	49	31	3	15	134	11	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2	5.4	4.0	4.2	5.4		3.0	3.0		3.8	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.98	
Satd. Flow (prot)	1787	3406	1551	1805	3374	1549		1768	1327		1690	
Flt Permitted	0.11	1.00	1.00	0.06	1.00	1.00		0.68	1.00		0.82	
Satd. Flow (perm)	209	3406	1551	109	3374	1549		1263	1327		1426	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	2118	53	10	1342	51	32	3	15	138	11	126
RTOR Reduction (vph)	0	0	17	0	0	23	0	0	11	0	21	0
Lane Group Flow (vph)	141	2118	36	10	1342	28	0	35	4	0	254	0
Confl. Peds. (#/hr)									2	2		
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	1%	6%	2%	0%	7%	2%	3%	0%	20%	3%	9%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Actuated Green, G (s)	91.9	85.4	85.4	70.7	69.6	69.6		30.1	30.1		29.3	
Effective Green, g (s)	91.9	86.6	85.4	70.7	70.8	69.6		31.1	31.1		30.3	
Actuated g/C Ratio	0.71	0.67	0.66	0.54	0.54	0.54		0.24	0.24		0.23	
Clearance Time (s)	4.0	5.4	5.4	4.0	5.4	5.4		4.0	4.0		4.8	
Vehicle Extension (s)	2.3	4.5	4.5	2.3	4.5	4.5		2.5	2.5		2.5	
Lane Grp Cap (vph)	352	2268	1018	73	1837	829		302	317		332	
v/s Ratio Prot	c0.05	c0.62		0.00	0.40							
v/s Ratio Perm	0.23		0.02	0.07		0.02		0.03	0.00		c0.18	
v/c Ratio	0.40	0.93	0.04	0.14	0.73	0.03		0.12	0.01		0.77	
Uniform Delay, d1	31.5	19.2	7.8	60.3	22.4	14.3		38.7	37.7		46.5	
Progression Factor	0.77	0.90	1.72	0.69	0.89	0.77		1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.0	0.0	0.5	2.5	0.1		0.1	0.0		9.7	
Delay (s)	24.4	18.3	13.5	42.3	22.3	11.0		38.8	37.7		56.2	
Level of Service	C	B	B	D	C	B		D	D		E	
Approach Delay (s)		18.6			22.0			38.5			56.2	
Approach LOS		B			C			D			E	
Intersection Summary												
HCM 2000 Control Delay			22.6		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			130.0		Sum of lost time (s)				12.0			
Intersection Capacity Utilization			92.4%		ICU Level of Service				F			
Analysis Period (min)			15									
c	Critical Lane Group											

Existing Traffic Conditions
6: 142nd Ave & OR 212

Weekday PM Peak Hour
10/10/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↖	↗		↕	↘
Traffic Volume (veh/h)	137	2054	51	10	1302	49	31	3	15	134	11	122
Future Volume (veh/h)	137	2054	51	10	1302	49	31	3	15	134	11	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1811	1870	1900	1796	1870	1856	1900	1604	1856	1767	1870
Adj Flow Rate, veh/h	141	2118	0	10	1342	51	32	3	15	138	11	126
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	6	2	0	7	2	3	0	20	3	9	2
Cap, veh/h	566	2012		458	1792	800	184	15	189	118	6	70
Arrive On Green	0.49	1.00	0.00	0.18	0.53	0.52	0.13	0.14	0.14	0.13	0.14	0.13
Sat Flow, veh/h	1795	3441	1585	1810	3413	1551	934	108	1353	549	44	501
Grp Volume(v), veh/h	141	2118	0	10	1342	51	35	0	15	275	0	0
Grp Sat Flow(s),veh/h/ln	1795	1721	1585	1810	1706	1551	1042	0	1353	1094	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	40.0	2.1	0.0	0.0	1.3	13.4	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	40.0	2.1	3.8	0.0	1.3	17.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.91		1.00	0.50		0.46
Lane Grp Cap(c), veh/h	566	2012		458	1792	800	191	0	189	186	0	0
V/C Ratio(X)	0.25	1.05		0.02	0.75	0.06	0.18	0.00	0.08	1.48	0.00	0.00
Avail Cap(c_a), veh/h	566	2377		458	2358	1057	199	0	198	186	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.7	0.0	0.0	13.9	24.2	15.8	50.0	0.0	48.6	59.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	25.2	0.0	0.0	2.9	0.2	0.3	0.0	0.1	240.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.0	8.7	0.0	0.3	23.2	1.4	1.9	0.0	0.8	29.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	25.2	0.0	13.9	27.1	15.9	50.4	0.0	48.7	300.1	0.0	0.0
LnGrp LOS	B	F		B	C	B	D	A	D	F	A	A
Approach Vol, veh/h		2259			1403			50				275
Approach Delay, s/veh		24.8			26.6			49.9				300.1
Approach LOS		C			C			D				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.5	77.5		22.0	35.5	72.5		22.0				
Change Period (Y+Rc), s	* 4	5.4		4.8	* 4	5.4		* 4.8				
Max Green Setting (Gmax), s	* 10	88.6		17.2	* 10	88.6		* 18				
Max Q Clear Time (g_c+I1), s	2.0	2.0		19.2	2.0	42.0		5.8				
Green Ext Time (p_c), s	0.0	67.5		0.0	0.1	25.1		0.1				

Intersection Summary

HCM 6th Ctrl Delay	44.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
 Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

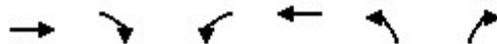
Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	161	2013	1220	81	40	128
Future Vol, veh/h	161	2013	1220	81	40	128
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	220	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	5	4	4	0	5
Mvmt Flow	168	2097	1271	84	42	133

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1355	0	-	0	2698 678
Stage 1	-	-	-	-	1313 -
Stage 2	-	-	-	-	1385 -
Critical Hdwy	4.14	-	-	-	6.8 7
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.22	-	-	-	3.5 3.35
Pot Cap-1 Maneuver	504	-	-	-	~ 18 388
Stage 1	-	-	-	-	220 -
Stage 2	-	-	-	-	201 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	504	-	-	-	~ 12 388
Mov Cap-2 Maneuver	-	-	-	-	83 -
Stage 1	-	-	-	-	147 -
Stage 2	-	-	-	-	201 -

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	76.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	504	-	-	-	207
HCM Lane V/C Ratio	0.333	-	-	-	0.845
HCM Control Delay (s)	15.7	-	-	-	76.1
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	1.4	-	-	-	6.3

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	1003	1050	194	755	546	122
Future Volume (vph)	1003	1050	194	755	546	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.4	2.6	4.6	4.4	3.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3406	1507	1719	3374	3335	1538
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3406	1507	1719	3374	3335	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1056	1105	204	795	575	128
RTOR Reduction (vph)	0	81	0	0	0	0
Lane Group Flow (vph)	1056	1024	204	795	575	128
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	6%	6%	5%	7%	5%	5%
Turn Type	NA	pm+ov	Prot	NA	Prot	Free
Protected Phases	2	8	1	6	8	
Permitted Phases		2				Free
Actuated Green, G (s)	48.2	93.9	20.7	72.9	45.7	130.0
Effective Green, g (s)	49.2	95.9	22.1	74.3	46.7	130.0
Actuated g/C Ratio	0.38	0.74	0.17	0.57	0.36	1.00
Clearance Time (s)	6.0	5.4	4.0	6.0	5.4	
Vehicle Extension (s)	4.8	2.5	3.5	4.8	2.5	
Lane Grp Cap (vph)	1289	1162	292	1928	1198	1538
v/s Ratio Prot	0.31	c0.32	c0.12	0.24	0.17	
v/s Ratio Perm		0.36				0.08
v/c Ratio	0.82	0.88	0.70	0.41	0.48	0.08
Uniform Delay, d1	36.4	12.8	50.8	15.6	32.2	0.0
Progression Factor	0.77	0.47	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	4.1	7.4	0.7	0.2	0.1
Delay (s)	30.8	10.2	58.2	16.3	32.5	0.1
Level of Service	C	B	E	B	C	A
Approach Delay (s)	20.3			24.8	26.6	
Approach LOS	C			C	C	

Intersection Summary

HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Existing Traffic Conditions
8: OR 224 & OR 212

Weekday PM Peak Hour
10/10/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑	↵↵	↵
Traffic Volume (veh/h)	1003	1050	194	755	546	122
Future Volume (veh/h)	1003	1050	194	755	546	122
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1811	1826	1796	1826	1826
Adj Flow Rate, veh/h	1056	1105	204	795	575	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	7	5	5
Cap, veh/h	1323	883	536	2497	672	
Arrive On Green	0.38	0.38	0.31	0.73	0.20	0.00
Sat Flow, veh/h	3532	1500	1739	3503	3374	1547
Grp Volume(v), veh/h	1056	1105	204	795	575	0
Grp Sat Flow(s),veh/h/ln	1721	1500	1739	1706	1687	1547
Q Serve(g_s), s	35.4	50.0	11.9	10.6	21.4	0.0
Cycle Q Clear(g_c), s	35.4	50.0	11.9	10.6	21.4	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1323	883	536	2497	672	
V/C Ratio(X)	0.80	1.25	0.38	0.32	0.86	
Avail Cap(c_a), veh/h	1323	883	536	2497	1054	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.5	21.7	35.2	6.1	50.2	0.0
Incr Delay (d2), s/veh	5.1	122.8	0.5	0.3	3.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	22.1	83.7	8.9	6.6	14.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.6	144.4	35.8	6.4	53.8	0.0
LnGrp LOS	D	F	D	A	D	
Approach Vol, veh/h	2161			999	575	
Approach Delay, s/veh	93.7			12.4	53.8	
Approach LOS	F			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	44.7	55.0			99.7	30.3
Change Period (Y+Rc), s	6.0	* 6			6.0	5.4
Max Green Setting (Gmax), s	26.0	* 49			79.0	39.6
Max Q Clear Time (g_c+I1), s	13.9	52.0			12.6	23.4
Green Ext Time (p_c), s	0.6	0.0			13.7	1.5

Intersection Summary

HCM 6th Ctrl Delay	65.8
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Existing Traffic Conditions
9: 172nd Ave & OR 212

Weekday PM Peak Hour
10/10/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	239	795	52	17	672	34	31	31	23	156	59	317	
Future Volume (vph)	239	795	52	17	672	34	31	31	23	156	59	317	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.5	4.3		3.5	4.3	5.5	4.0	3.0		5.2	4.2	3.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1719	3295		1805	1792	1482	1626	1705		1787	1810	1514	
Flt Permitted	0.16	1.00		0.32	1.00	1.00	0.72	1.00		0.72	1.00	1.00	
Satd. Flow (perm)	285	3295		601	1792	1482	1225	1705		1354	1810	1514	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	254	846	55	18	715	36	33	33	24	166	63	337	
RTOR Reduction (vph)	0	2	0	0	0	18	0	19	0	0	0	94	
Lane Group Flow (vph)	254	899	0	18	715	18	33	38	0	166	63	243	
Confl. Peds. (#/hr)							6					6	
Confl. Bikes (#/hr)									1				
Heavy Vehicles (%)	5%	9%	2%	0%	6%	9%	10%	3%	4%	1%	5%	5%	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	pm+ov	
Protected Phases	5	2		1	6			8			4	5	
Permitted Phases	2			6		6	8			4		4	
Actuated Green, G (s)	71.1	64.8		51.3	49.5	49.5	19.4	19.4		18.2	18.2	35.3	
Effective Green, g (s)	72.1	67.0		53.3	51.7	50.5	20.4	21.4		19.2	20.2	37.3	
Actuated g/C Ratio	0.71	0.66		0.52	0.51	0.50	0.20	0.21		0.19	0.20	0.37	
Clearance Time (s)	4.5	6.5		4.5	6.5	6.5	5.0	5.0		6.2	6.2	4.5	
Vehicle Extension (s)	2.3	5.4		2.3	5.4	5.4	2.5	2.5		2.5	2.5	2.3	
Lane Grp Cap (vph)	455	2164		347	908	733	245	357		254	358	553	
v/s Ratio Prot	c0.10	0.27		0.00	c0.40			0.02			0.03	0.08	
v/s Ratio Perm	0.29			0.03		0.01	0.03			c0.12		0.08	
v/c Ratio	0.56	0.42		0.05	0.79	0.02	0.13	0.11		0.65	0.18	0.44	
Uniform Delay, d1	13.1	8.3		11.7	20.6	13.2	33.5	32.6		38.3	34.0	24.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3		0.0	5.4	0.0	0.2	0.1		5.3	0.2	0.3	
Delay (s)	14.2	8.6		11.8	26.1	13.2	33.7	32.7		43.6	34.2	24.8	
Level of Service	B	A		B	C	B	C	C		D	C	C	
Approach Delay (s)		9.8			25.1			33.1			31.3		
Approach LOS		A			C			C			C		
Intersection Summary													
HCM 2000 Control Delay			19.9									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.70										
Actuated Cycle Length (s)			102.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			76.1%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Existing Traffic Conditions
9: 172nd Ave & OR 212

Weekday PM Peak Hour
10/10/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	239	795	52	17	672	34	31	31	23	156	59	317
Future Volume (veh/h)	239	795	52	17	672	34	31	31	23	156	59	317
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.97	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1767	1870	1900	1811	1767	1752	1856	1841	1885	1826	1826
Adj Flow Rate, veh/h	254	846	55	18	715	0	33	33	24	166	63	337
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	5	9	2	0	6	9	10	3	4	1	5	5
Cap, veh/h	379	1855	121	390	912		284	255	186	379	474	540
Arrive On Green	0.10	0.58	0.56	0.03	0.50	0.00	0.25	0.26	0.24	0.25	0.26	0.25
Sat Flow, veh/h	1739	3199	208	1810	1811	1497	916	983	715	1343	1826	1529
Grp Volume(v), veh/h	254	444	457	18	715	0	33	0	57	166	63	337
Grp Sat Flow(s),veh/h/ln	1739	1678	1729	1810	1811	1497	916	0	1697	1343	1826	1529
Q Serve(g_s), s	5.9	13.6	13.7	0.4	29.1	0.0	2.6	0.0	2.3	9.9	2.4	16.5
Cycle Q Clear(g_c), s	5.9	13.6	13.7	0.4	29.1	0.0	5.0	0.0	2.3	12.2	2.4	16.5
Prop In Lane	1.00		0.12	1.00		1.00	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	379	973	1002	390	912		284	0	441	379	474	540
V/C Ratio(X)	0.67	0.46	0.46	0.05	0.78		0.12	0.00	0.13	0.44	0.13	0.62
Avail Cap(c_a), veh/h	615	1169	1204	672	1261		422	0	698	579	746	767
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	10.8	10.9	10.8	18.3	0.0	28.2	0.0	25.9	31.0	25.5	24.3
Incr Delay (d2), s/veh	1.3	0.9	0.8	0.0	4.3	0.0	0.1	0.0	0.1	0.6	0.1	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	8.4	8.7	0.3	18.1	0.0	1.0	0.0	1.7	5.8	1.9	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	11.7	11.8	10.9	22.6	0.0	28.4	0.0	25.9	31.6	25.6	25.1
LnGrp LOS	B	B	B	B	C		C	A	C	C	C	C
Approach Vol, veh/h		1155			733			90			566	
Approach Delay, s/veh		13.0			22.3			26.8			27.1	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	56.5		27.6	12.8	49.7		27.6				
Change Period (Y+Rc), s	4.5	6.5		6.2	4.5	6.5		* 6.2				
Max Green Setting (Gmax), s	15.5	60.5		34.8	20.5	60.5		* 35				
Max Q Clear Time (g_c+I1), s	2.4	15.7		18.5	7.9	31.1		7.0				
Green Ext Time (p_c), s	0.0	16.6		1.5	0.4	12.0		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				19.3								
HCM 6th LOS				B								
Notes												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	91	489	0	0	310	40	2	2	1	57	1	52
Future Vol, veh/h	91	489	0	0	310	40	2	2	1	57	1	52
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	75	-	-	-	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	12	5	0	0	4	5	0	50	0	12	0	13
Mvmt Flow	98	526	0	0	333	43	2	2	1	61	1	56

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	376	0	0	527	0	0	1107	1099	527	1079	1078	356
Stage 1	-	-	-	-	-	-	723	723	-	355	355	-
Stage 2	-	-	-	-	-	-	384	376	-	724	723	-
Critical Hdwy	4.22	-	-	4.1	-	-	7.1	7	6.2	7.22	6.5	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6	-	6.22	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6	-	6.22	5.5	-
Follow-up Hdwy	2.308	-	-	2.2	-	-	3.5	4.45	3.3	3.608	4	3.417
Pot Cap-1 Maneuver	1130	-	-	1050	-	-	189	175	555	188	220	664
Stage 1	-	-	-	-	-	-	421	367	-	642	633	-
Stage 2	-	-	-	-	-	-	643	541	-	402	434	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1130	-	-	1049	-	-	161	160	554	173	201	663
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	160	-	173	201	-
Stage 1	-	-	-	-	-	-	384	335	-	586	633	-
Stage 2	-	-	-	-	-	-	587	541	-	364	396	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0	24.8	24.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	187	1130	-	-	1049	-	-	173	663
HCM Lane V/C Ratio	0.029	0.087	-	-	-	-	-	0.36	0.084
HCM Control Delay (s)	24.8	8.5	-	-	0	-	-	37.1	10.9
HCM Lane LOS	C	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0	-	-	1.5	0.3

Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_AM_2023.vistro

Scenario 1 1 2023 AM No-Build

Report File: H:\...\2023_ExistingAM.pdf

3/17/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.833	11.8	B
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Right	0.825	118.2	F
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.677	12.3	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	NB Left	0.692	26.6	C
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	EB Left	0.921	46.2	D
6	142nd Avenue/OR 212	Signalized	HCM 7th Edition	EB Left	0.858	20.6	C
7	152nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Left	2.469	1,417.1	F
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.732	20.1	C
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	SB Left	0.586	24.9	C
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.173	18.4	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: OR 213 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	85	0	241	0	1061	282	15	2072	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	7.00	0.00	7.00	0.00	8.00	16.00	47.00	8.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	121	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	85	0	120	0	1061	282	15	2072	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	23	0	33	0	288	77	4	563	0
Total Analysis Volume [veh/h]	0	0	0	92	0	130	0	1153	307	16	2252	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	14.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	29	0	29	0	72	72	4	80	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	34	0	34	0	78	78	8	86	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		12	12	90	90	2	96
g / C, Green / Cycle		0.10	0.10	0.75	0.75	0.01	0.80
(v / s)_i Volume / Saturation Flow Rate		0.05	0.09	0.34	0.22	0.01	0.66
s, saturation flow rate [veh/h]		1709	1526	3389	1411	1138	3389
c, Capacity [veh/h]		179	160	2549	1061	16	2710
d1, Uniform Delay [s]		50.85	52.59	5.58	4.71	59.16	7.18
k, delay calibration		0.07	0.07	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.40	6.11	0.58	0.69	81.24	3.14
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.51	0.81	0.45	0.29	1.00	0.83
d, Delay for Lane Group [s/veh]		52.25	58.70	6.17	5.40	140.40	10.32
Lane Group LOS		D	E	A	A	F	B
Critical Lane Group		No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		2.69	4.11	4.88	2.30	0.85	13.85
50th-Percentile Queue Length [ft/ln]		67.34	102.64	122.00	57.55	21.21	346.15
95th-Percentile Queue Length [veh/ln]		4.85	7.39	8.50	4.14	1.53	19.95
95th-Percentile Queue Length [ft/ln]		121.21	184.76	212.57	103.59	38.17	498.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	52.25	0.00	58.70	0.00	6.17	5.40	140.40	10.32	0.00
Movement LOS				D		E		A	A	F	B	
d_A, Approach Delay [s/veh]	0.00			56.03			6.01			11.24		
Approach LOS	A			E			A			B		
d_I, Intersection Delay [s/veh]	11.82											
Intersection LOS	B											
Intersection V/C	0.833											

Emissions

Vehicle Miles Traveled [mph]		17.80	25.16	365.25	97.25	2.52	355.08
Stops [stops/h]		80.80	123.17	292.78	69.06	25.45	830.72
Fuel consumption [US gal/h]		2.16	3.27	18.10	4.72	0.70	23.94
CO [g/h]		150.80	228.49	1265.23	330.09	49.04	1673.19
NOx [g/h]		29.34	44.46	246.17	64.22	9.54	325.54
VOC [g/h]		34.95	52.95	293.23	76.50	11.36	387.78

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	475	1200	1333
d_b, Bicycle Delay [s]	60.00	34.89	9.60	6.67
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.764	3.431
Bicycle LOS	D	A	C	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	118.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	594	2	365	22	0	766	221	925	0	0	727	146
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	2.00	18.00	23.00	0.00	9.00	6.00	8.00	0.00	0.00	8.00	4.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	594	2	365	22	0	766	221	925	0	0	727	146
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	161	1	99	6	0	208	60	251	0	0	198	40
Total Analysis Volume [veh/h]	646	2	397	24	0	833	240	1005	0	0	790	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	81.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	22	31	31	18	0	27	30	54	0	0	20	20
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	27	37	37	24	0	33	34	60	0	0	26	26
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	No	No		No		No	No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	22	31	18	61	30	54	20	20
g / C, Green / Cycle	0.18	0.26	0.15	0.51	0.25	0.45	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.20	0.25	0.02	0.31	0.14	0.30	0.27	0.28
s, saturation flow rate [veh/h]	3292	1591	1481	2655	1724	3389	1780	1681
c, Capacity [veh/h]	597	417	219	1355	428	1520	297	280
d1, Uniform Delay [s]	49.13	43.62	44.28	20.96	39.37	25.95	50.00	50.00
k, delay calibration	0.07	0.38	0.07	0.16	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	41.83	29.16	0.13	0.67	5.22	2.28	285.10	327.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.96	0.11	0.61	0.56	0.66	1.60	1.69
d, Delay for Lane Group [s/veh]	90.96	72.79	44.41	21.63	44.59	28.23	335.10	377.31
Lane Group LOS	F	E	D	C	D	C	F	F
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.37	14.94	0.63	8.26	6.80	11.54	32.35	33.83
50th-Percentile Queue Length [ft/ln]	309.25	373.44	15.78	206.60	169.93	288.54	808.87	845.82
95th-Percentile Queue Length [veh/ln]	18.86	21.28	1.14	12.98	11.07	17.11	50.14	52.87
95th-Percentile Queue Length [ft/ln]	471.55	531.90	28.41	324.47	276.82	427.83	1253.42	1321.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.96	72.79	72.79	44.41	0.00	21.63	44.59	28.23	0.00	0.00	351.96	377.31
Movement LOS	F	E	E	D		C	D	C			F	F
d_A, Approach Delay [s/veh]	84.02			22.26			31.38			356.20		
Approach LOS	F			C			C			F		
d_I, Intersection Delay [s/veh]	118.16											
Intersection LOS	F											
Intersection V/C	0.825											

Emissions

Vehicle Miles Traveled [mph]	135.32	83.58	3.42	118.87	37.84	158.46	125.57	125.57
Stops [stops/h]	742.20	448.12	18.94	495.85	203.91	692.50	970.65	1014.98
Fuel consumption [US gal/h]	21.63	11.83	0.46	11.30	4.86	16.12	42.88	47.20
CO [g/h]	1511.74	826.63	32.33	789.79	339.87	1126.93	2997.45	3299.41
NOx [g/h]	294.13	160.83	6.29	153.66	66.13	219.26	583.20	641.95
VOC [g/h]	350.36	191.58	7.49	183.04	78.77	261.18	694.69	764.67

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.294	2.452	0.000	2.726
Crosswalk LOS	B	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	525	308	900	333
d_b, Bicycle Delay [s]	32.63	42.93	18.15	41.67
I_b,int, Bicycle LOS Score for Intersection	3.284	1.560	2.587	2.343
Bicycle LOS	C	A	B	B

Sequence

Ring 1	-	2	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.677

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	325	873	754	558
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	19.00	3.00	12.00	7.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	325	873	754	558
Peak Hour Factor	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	83	223	192	142
Total Analysis Volume [veh/h]	0	0	332	891	769	569
Presence of On-Street Parking			No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	101
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	32.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	24	60	32	32
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No	No	
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	30	30	30	30
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			No	No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R
C, Cycle Length [s]	61	61	61	61
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	15	47	28	28
g / C, Green / Cycle	0.25	0.77	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.22	0.25	0.23	0.37
s, saturation flow rate [veh/h]	1538	3532	3275	1526
c, Capacity [veh/h]	379	2725	1505	701
d1, Uniform Delay [s]	22.19	2.14	11.70	14.28
k, delay calibration	0.07	0.20	0.20	0.27
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.54	0.13	0.50	5.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.33	0.51	0.81
d, Delay for Lane Group [s/veh]	26.73	2.27	12.20	19.91
Lane Group LOS	C	A	B	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.68	0.65	3.27	6.82
50th-Percentile Queue Length [ft/ln]	117.07	16.20	81.82	170.45
95th-Percentile Queue Length [veh/ln]	8.23	1.17	5.89	11.10
95th-Percentile Queue Length [ft/ln]	205.80	29.16	147.28	277.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	26.73	2.27	12.20	19.91
Movement LOS			C	A	B	B
d_A, Approach Delay [s/veh]	0.00		8.91		15.48	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	12.34					
Intersection LOS	B					
Intersection V/C	0.677					

Emissions

Vehicle Miles Traveled [mph]		469.07	1258.87	203.50	150.58
Stops [stops/h]		275.45	76.24	385.02	401.03
Fuel consumption [US gal/h]		22.64	52.66	12.41	10.72
CO [g/h]		1582.38	3680.64	867.76	749.32
NOx [g/h]		307.87	716.12	168.83	145.79
VOC [g/h]		366.73	853.02	201.11	173.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1961	1046
d_b, Bicycle Delay [s]	30.60	0.01	6.97
I_b,int, Bicycle LOS Score for Intersection	4.132	2.569	2.663
Bicycle LOS	D	B	B

Sequence

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	20	86	10	470	176	108	21	665	45	18	963	1091
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	48.00	20.00	8.00	19.00	14.00	30.00	14.00	27.00	17.00	8.00	3.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	546
Total Hourly Volume [veh/h]	20	86	10	470	176	108	21	665	45	18	963	545
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	23	3	125	47	29	6	177	12	5	256	145
Total Analysis Volume [veh/h]	21	91	11	500	187	115	22	707	48	19	1024	580
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	8	35	35	4	31	31	4	67	67	6	69	69
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	12	40	40	8	36	36	8	72	72	10	74	74
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.40	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	0.00	2.80	2.80	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	2	13	28	28	28	2	80	80	2	80	80
g / C, Green / Cycle	0.02	0.10	0.22	0.21	0.21	0.02	0.61	0.61	0.02	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.16	0.12	0.08	0.02	0.23	0.23	0.01	0.30	0.37
s, saturation flow rate [veh/h]	1095	1157	3141	1615	1436	1381	1690	1652	1567	3389	1577
c, Capacity [veh/h]	20	117	603	342	304	24	1039	1015	24	2076	966
d1, Uniform Delay [s]	63.82	57.63	47.68	45.66	43.88	63.80	12.47	12.48	63.80	13.97	15.42
k, delay calibration	0.07	0.07	0.07	0.07	0.07	0.04	0.50	0.50	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	88.66	11.67	1.87	0.83	0.47	36.65	1.00	1.03	18.93	0.84	2.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.87	0.83	0.55	0.38	0.93	0.37	0.37	0.79	0.49	0.60
d, Delay for Lane Group [s/veh]	152.48	69.30	49.55	46.49	44.36	100.45	13.48	13.50	82.72	14.81	18.18
Lane Group LOS	F	E	D	D	D	F	B	B	F	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.15	3.69	7.62	5.48	3.23	0.97	5.73	5.62	0.75	8.40	10.94
50th-Percentile Queue Length [ft/ln]	28.77	92.20	190.60	137.09	80.86	24.26	143.35	140.49	18.87	209.92	273.43
95th-Percentile Queue Length [veh/ln]	2.07	6.64	12.15	9.32	5.82	1.75	9.66	9.51	1.36	13.15	16.36
95th-Percentile Queue Length [ft/ln]	51.78	165.96	303.80	233.11	145.55	43.67	241.52	237.69	33.96	328.73	409.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	152.48	69.30	69.30	49.55	46.49	44.36	100.45	13.49	13.50	82.72	14.81	18.18
Movement LOS	F	E	E	D	D	D	F	B	B	F	B	B
d_A, Approach Delay [s/veh]	83.50			48.09			15.95			16.81		
Approach LOS	F			D			B			B		
d_I, Intersection Delay [s/veh]	26.62											
Intersection LOS	C											
Intersection V/C	0.692											

Emissions

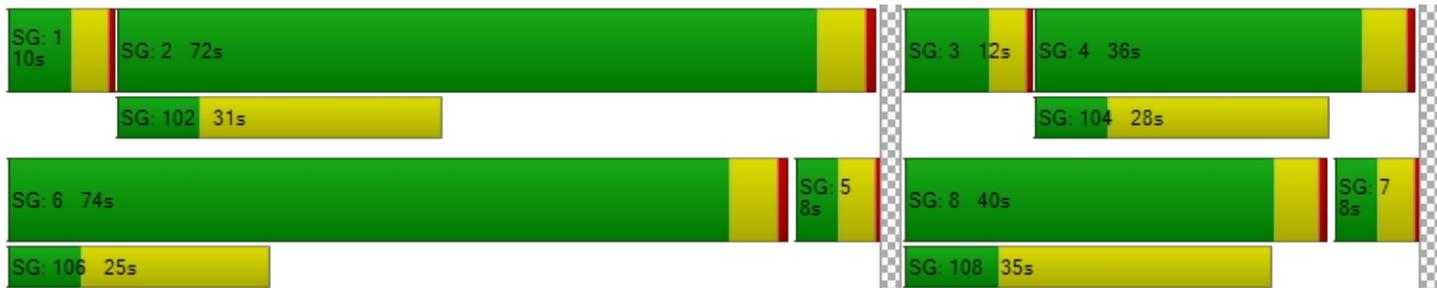
Vehicle Miles Traveled [mph]	4.73	22.99	115.45	43.18	26.55	19.77	342.96	335.65	12.53	675.14	382.40
Stops [stops/h]	31.86	102.13	422.24	151.86	89.57	26.87	158.78	155.62	20.90	465.06	302.88
Fuel consumption [US gal/h]	1.02	2.95	12.13	4.39	2.63	1.41	16.04	15.70	0.95	33.45	19.56
CO [g/h]	71.46	206.11	847.63	306.54	183.55	98.71	1121.34	1097.69	66.47	2338.07	1367.33
NOx [g/h]	13.90	40.10	164.92	59.64	35.71	19.21	218.17	213.57	12.93	454.90	266.03
VOC [g/h]	16.56	47.77	196.45	71.04	42.54	22.88	259.88	254.40	15.41	541.87	316.89

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.080	2.802	2.695	3.876
Crosswalk LOS	B	C	B	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	542	480	1025	1055
d_b, Bicycle Delay [s]	34.57	37.54	15.46	14.50
I_b,int, Bicycle LOS Score for Intersection	1.763	2.883	2.201	3.349
Bicycle LOS	A	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	46.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.921

Intersection Setup

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	300.00	100.00	60.00	320.00	100.00	100.00	415.00	100.00	60.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	97	48	196	91	110	149	57	809	48	211	1893	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	10.00	14.00	4.00	4.00	5.00	11.00	14.00	17.00	8.00	8.00	6.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	98	0	0	18	0	0	24	0	0	113
Total Hourly Volume [veh/h]	97	48	98	91	110	131	57	809	24	211	1893	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	13	26	24	29	34	15	213	6	56	498	0
Total Analysis Volume [veh/h]	102	51	103	96	116	138	60	852	25	222	1993	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss									
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	5	32	32	8	35	35	4	42	42	30	68	68
Amber [s]	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	8	8	0	10	10	0	8	8	0	7	7
Pedestrian Clearance [s]	0	22	22	0	25	25	0	18	18	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.5	2.5	2.0	2.5	2.5	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	9	37	37	12	40	40	8	48	48	34	74	74
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	3.0	3.0	2.3	3.0	3.0	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.50	4.50	4.00	4.50	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.50	2.50	2.00	2.50	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	10	12	12	19	22	4	61	61	19	77	77
g / C, Green / Cycle	0.07	0.09	0.09	0.15	0.17	0.03	0.47	0.47	0.15	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.06	0.03	0.07	0.05	0.15	0.04	0.26	0.02	0.13	0.56	0.56
s, saturation flow rate [veh/h]	1695	1750	1436	1752	1677	1652	3217	1395	1695	1780	1780
c, Capacity [veh/h]	124	163	134	262	285	51	1522	660	248	1048	1048
d1, Uniform Delay [s]	59.44	55.03	57.56	49.76	52.79	63.00	24.54	18.37	54.49	24.97	24.97
k, delay calibration	0.07	0.11	0.11	0.07	0.12	0.31	0.50	0.50	0.09	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.20	1.08	8.85	0.52	10.48	156.68	1.49	0.11	9.58	18.22	18.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.31	0.77	0.37	0.89	1.18	0.56	0.04	0.89	0.95	0.95
d, Delay for Lane Group [s/veh]	67.64	56.11	66.40	50.28	63.27	219.67	26.03	18.48	64.08	43.19	43.19
Lane Group LOS	E	E	E	D	E	F	C	B	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.60	1.62	3.64	2.86	8.94	3.90	9.67	0.43	7.80	32.41	32.41
50th-Percentile Queue Length [ft/ln]	90.02	40.44	91.07	71.59	223.50	97.43	241.81	10.77	194.96	810.31	810.31
95th-Percentile Queue Length [veh/ln]	6.48	2.91	6.56	5.15	13.84	7.01	14.77	0.78	12.38	41.75	41.75
95th-Percentile Queue Length [ft/ln]	162.04	72.79	163.93	128.85	346.09	175.37	369.32	19.38	309.45	1043.73	1043.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.64	56.11	66.40	50.28	63.27	63.27	219.67	26.03	18.48	64.08	43.19	43.19
Movement LOS	E	E	E	D	E	E	F	C	B	E	D	D
d_A, Approach Delay [s/veh]	64.85			59.71			38.23			45.28		
Approach LOS	E			E			D			D		
d_I, Intersection Delay [s/veh]	46.20											
Intersection LOS	D											
Intersection V/C	0.921											

Emissions

Vehicle Miles Traveled [mph]	19.96	9.98	20.15	4.80	12.71	39.56	561.74	16.48	66.12	296.80	296.80
Stops [stops/h]	99.72	44.79	100.88	79.30	247.57	107.92	535.70	11.93	215.95	897.58	897.58
Fuel consumption [US gal/h]	2.78	1.24	2.78	1.62	5.16	4.91	30.60	0.84	6.81	25.93	25.93
CO [g/h]	194.07	86.71	194.23	113.10	360.77	342.96	2138.79	58.61	475.98	1812.84	1812.84
NOx [g/h]	37.76	16.87	37.79	22.01	70.19	66.73	416.13	11.40	92.61	352.71	352.71
VOC [g/h]	44.98	20.10	45.02	26.21	83.61	79.48	495.69	13.58	110.31	420.14	420.14

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			11.0			14.0			12.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	53.55			54.47			51.75			53.55		
l_p,int, Pedestrian LOS Score for Intersectio	2.468			2.176			3.025			3.156		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			546			655			1055		
d_b, Bicycle Delay [s]	36.56			34.35			29.38			14.50		
l_b,int, Bicycle LOS Score for Intersection	2.144			2.167			2.352			3.480		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 6: 142nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

Intersection Setup

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	20.00	100.00	100.00	100.00	225.00	100.00	165.00	220.00	100.00	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	40	6	17	57	1	196	47	1020	23	6	1963	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	18.00	5.00	0.00	3.00	13.00	13.00	13.00	2.00	8.00	3.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	0	0	0	12	0	0	31
Total Hourly Volume [veh/h]	40	6	8	57	1	196	47	1020	11	6	1963	30
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	2	2	15	0	51	12	266	3	2	511	8
Total Analysis Volume [veh/h]	42	6	8	59	1	204	49	1063	11	6	2045	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			0			0			2		
v_di, Inbound Pedestrian Volume crossing m	2			0			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Protecte	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	4	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	33	33	33	33	33	33	7	60	33	5	58	58
Amber [s]	4.3	4.3	4.3	4.3	4.3	4.3	3.5	4.7	4.3	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.7	0.7
Walk [s]	7	7	7	0	0	0	0	8	0	0	7	7
Pedestrian Clearance [s]	26	26	26	0	0	0	0	26	0	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	2.8	2.8	2.8	2.8	2.8	2.0	3.4	2.8	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	38	38	38	38	38	38	11	66	38	9	64	64
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	6	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	2.3	2.0	4.6	4.6
Minimum Recall		No			No		No	Yes	No	No	Yes	
Maximum Recall		No			No		No	No	No	No	No	
Pedestrian Recall		No			No		No	No	No	No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	112	112	112	112	112	112	112	112	112
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.70	5.40	4.80	5.40	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.80	0.00	3.40	2.80	0.00	3.40	3.40
g_i, Effective Green Time [s]	20	20	20	79	77	20	75	75	75
g / C, Green / Cycle	0.18	0.18	0.18	0.70	0.69	0.18	0.67	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.07	0.01	0.16	0.13	0.33	0.01	0.01	0.60	0.02
s, saturation flow rate [veh/h]	670	1376	1651	376	3246	1449	576	3389	1577
c, Capacity [veh/h]	179	244	333	201	2237	257	395	2262	1052
d1, Uniform Delay [s]	40.54	38.09	44.82	44.91	8.04	38.16	7.68	15.63	6.32
k, delay calibration	0.07	0.07	0.07	0.50	0.50	0.07	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	0.03	2.67	2.86	0.73	0.04	0.01	6.53	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.03	0.79	0.24	0.48	0.04	0.02	0.90	0.03
d, Delay for Lane Group [s/veh]	41.03	38.12	47.49	47.77	8.77	38.20	7.69	22.15	6.37
Lane Group LOS	D	D	D	D	A	D	A	C	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.20	0.19	7.37	0.48	5.57	0.25	0.05	21.24	0.25
50th-Percentile Queue Length [ft/ln]	29.93	4.63	184.17	12.04	139.25	6.37	1.14	530.94	6.26
95th-Percentile Queue Length [veh/ln]	2.15	0.33	11.82	0.87	9.44	0.46	0.08	28.80	0.45
95th-Percentile Queue Length [ft/ln]	53.87	8.33	295.45	21.68	236.01	11.46	2.04	719.89	11.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.03	41.03	38.12	47.49	47.49	47.49	47.77	8.77	38.20	7.69	22.15	6.37
Movement LOS	D	D	D	D	D	D	D	A	D	A	C	A
d_A, Approach Delay [s/veh]	40.61			47.49			10.76			21.88		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	20.55											
Intersection LOS	C											
Intersection V/C	0.858											

Emissions

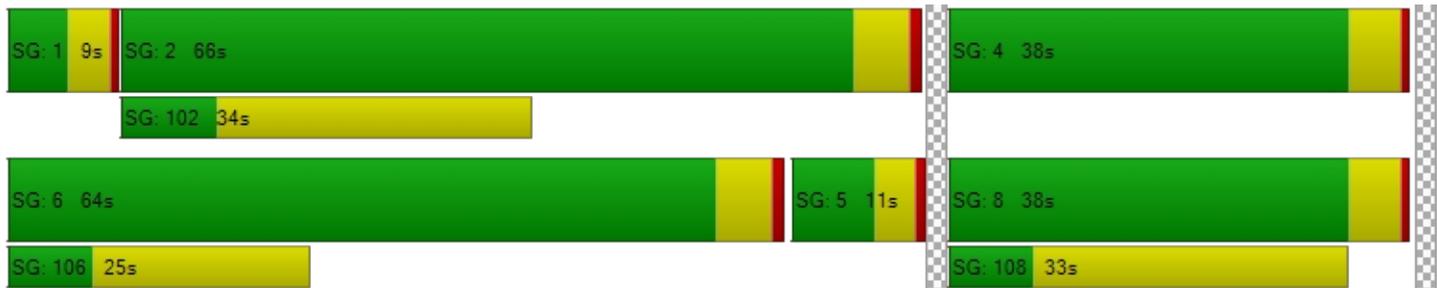
Vehicle Miles Traveled [mph]	4.99	0.83	25.76	7.72	167.48	1.73	0.90	305.87	4.64
Stops [stops/h]	38.48	5.95	236.79	15.48	358.07	8.19	1.46	1365.27	8.05
Fuel consumption [US gal/h]	0.82	0.13	4.92	0.88	10.77	0.20	0.05	29.35	0.28
CO [g/h]	57.24	9.03	343.91	61.48	752.85	14.13	3.80	2051.79	19.26
NOx [g/h]	11.14	1.76	66.91	11.96	146.48	2.75	0.74	399.20	3.75
VOC [g/h]	13.27	2.09	79.70	14.25	174.48	3.27	0.88	475.52	4.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.64	45.54	0.00	45.54
I_p,int, Pedestrian LOS Score for Intersectio	1.999	1.974	0.000	3.120
Crosswalk LOS	A	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	593	593	1082	1046
d_b, Bicycle Delay [s]	27.72	27.72	11.79	12.73
I_b,int, Bicycle LOS Score for Intersection	1.667	1.995	2.496	3.303
Bicycle LOS	A	A	B	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 7: 152nd Avenue/OR 212**

Control Type:	Two-way stop	Delay (sec / veh):	1,417.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.469

Intersection Setup

Name	152nd Ave		Highway 212		Highway 212	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	220.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	152nd Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	24	145	84	992	1902	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	7.00	11.00	5.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	145	84	992	1902	91
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	38	22	261	501	24
Total Analysis Volume [veh/h]	25	153	88	1044	2002	96
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.47	0.69	0.36	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	1417.09	1077.78	28.19	0.00	0.00	0.00
Movement LOS	F	F	D	A	A	A
95th-Percentile Queue Length [veh/ln]	18.76	18.76	1.59	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	469.01	469.01	39.68	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1125.44		2.19		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	59.51					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	907	177	636	380	158	1086
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	8.00	12.00	15.00	3.00	8.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	907	177	636	380	158	1086
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	239	47	167	100	42	286
Total Analysis Volume [veh/h]	955	186	669	400	166	1143
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	148
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	54	0	41	41	38	83
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	30	30	30	30
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	5.40	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	30	30	26	63	10	40
g / C, Green / Cycle	0.37	0.37	0.32	0.76	0.12	0.49
(v / s)_i Volume / Saturation Flow Rate	0.29	0.12	0.20	0.28	0.09	0.34
s, saturation flow rate [veh/h]	3320	1513	3275	1424	1767	3389
c, Capacity [veh/h]	1227	559	1055	1089	214	1667
d1, Uniform Delay [s]	22.94	18.63	23.74	3.17	35.08	16.03
k, delay calibration	0.08	0.08	0.21	0.22	0.13	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	0.26	1.24	0.42	7.14	0.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.33	0.63	0.37	0.78	0.69
d, Delay for Lane Group [s/veh]	23.76	18.89	24.98	3.58	42.22	17.01
Lane Group LOS	C	B	C	A	D	B
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.84	2.48	5.47	1.51	3.57	7.74
50th-Percentile Queue Length [ft/ln]	196.11	61.94	136.63	37.67	89.21	193.38
95th-Percentile Queue Length [veh/ln]	12.44	4.46	9.30	2.71	6.42	12.30
95th-Percentile Queue Length [ft/ln]	310.95	111.49	232.48	67.80	160.58	307.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.76	18.89	24.98	3.58	42.22	17.01
Movement LOS	C	B	C	A	D	B
d_A, Approach Delay [s/veh]	22.97		16.97		20.21	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.12					
Intersection LOS	C					
Intersection V/C	0.732					

Emissions

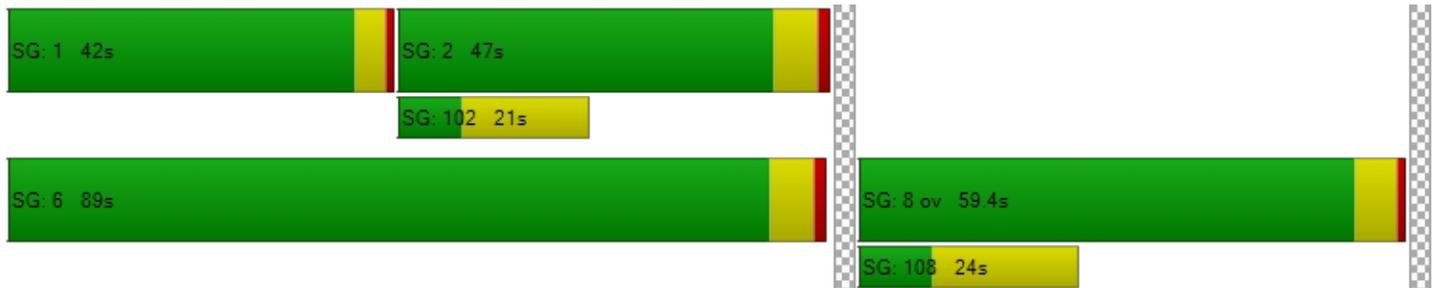
Vehicle Miles Traveled [mph]	312.36	60.84	97.43	58.25	10.45	71.98
Stops [stops/h]	688.09	108.66	479.39	66.08	156.50	678.49
Fuel consumption [US gal/h]	21.28	3.82	10.06	3.05	2.72	10.67
CO [g/h]	1487.38	267.01	703.22	213.54	190.20	745.80
NOx [g/h]	289.39	51.95	136.82	41.55	37.01	145.11
VOC [g/h]	344.71	61.88	162.98	49.49	44.08	172.85

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.78	0.00	29.92
I_p,int, Pedestrian LOS Score for Intersectio	2.542	0.000	2.715
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1316	999	2022
d_b, Bicycle Delay [s]	4.80	10.28	0.01
I_b,int, Bicycle LOS Score for Intersection	1.560	2.442	2.640
Bicycle LOS	A	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	77	59	17	69	23	298	252	539	16	9	804	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	6.00	6.00	4.00	5.00	9.00	14.00	12.00	11.00	8.00	13.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	149	0	0	0	0	0	36
Total Hourly Volume [veh/h]	77	59	17	69	23	149	252	539	16	9	804	35
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	16	5	19	6	41	70	150	4	3	223	10
Total Analysis Volume [veh/h]	86	66	19	77	26	166	280	599	18	10	893	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	132
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	8.5
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	35	35	35	34	34	34	22	77	77	4	60	60
Amber [s]	3.5	3.5	3.5	4.7	4.7	4.7	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	9	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	21	0	11	11	0	20	20
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	4.2	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No	No		No		No	No	
Maximum Recall		No			No	No		No		No	No	
Pedestrian Recall		No			No	No		No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	99	99	99	99	99	99	99	99	99	99	99
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	4.50	6.50	6.50	6.50	6.50	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.20	4.20	0.00	0.00	4.50	4.50	0.00	4.50	4.50
g_i, Effective Green Time [s]	16	16	15	15	31	65	65	65	71	56	56
g / C, Green / Cycle	0.17	0.17	0.15	0.15	0.32	0.66	0.66	0.66	0.72	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.06	0.01	0.11	0.40	0.18	0.18	0.02	0.50	0.03
s, saturation flow rate [veh/h]	1374	1799	1270	1840	1547	707	1690	1673	623	1780	1449
c, Capacity [veh/h]	261	302	195	287	496	312	1113	1101	563	1008	821
d1, Uniform Delay [s]	38.88	35.48	42.57	35.30	25.21	23.10	6.97	6.97	4.66	18.43	9.44
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.28	0.28	0.28	0.07	0.40	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.37	0.97	0.10	0.29	19.91	0.35	0.36	0.01	9.29	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.28	0.40	0.09	0.33	0.90	0.28	0.28	0.02	0.89	0.05
d, Delay for Lane Group [s/veh]	39.43	35.85	43.53	35.40	25.50	43.01	7.33	7.33	4.66	27.72	9.50
Lane Group LOS	D	D	D	D	C	D	A	A	A	C	A
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.95	1.81	1.85	0.54	2.98	3.87	2.54	2.51	0.05	18.58	0.37
50th-Percentile Queue Length [ft/ln]	48.78	45.32	46.28	13.59	74.40	96.83	63.41	62.79	1.26	464.49	9.29
95th-Percentile Queue Length [veh/ln]	3.51	3.26	3.33	0.98	5.36	6.97	4.57	4.52	0.09	25.65	0.67
95th-Percentile Queue Length [ft/ln]	87.80	81.58	83.31	24.45	133.92	174.30	114.13	113.02	2.26	641.21	16.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.43	35.85	35.85	43.53	35.40	25.50	43.01	7.33	7.33	4.66	27.72	9.50
Movement LOS	D	D	D	D	D	C	D	A	A	A	C	A
d_A, Approach Delay [s/veh]	37.65			31.62			18.47			26.72		
Approach LOS	D			C			B			C		
d_I, Intersection Delay [s/veh]	24.87											
Intersection LOS	C											
Intersection V/C	0.586											

Emissions

Vehicle Miles Traveled [mph]	10.12	10.00	10.02	3.38	21.59	32.98	36.53	36.15	4.68	418.17	18.26
Stops [stops/h]	71.15	66.11	67.51	19.82	108.53	141.25	92.49	91.59	1.83	677.57	13.55
Fuel consumption [US gal/h]	1.50	1.40	1.47	0.44	2.35	4.59	2.48	2.45	0.21	26.00	0.90
CO [g/h]	104.82	97.64	102.57	30.48	164.25	320.75	173.14	171.41	14.85	1817.13	63.05
NOx [g/h]	20.39	19.00	19.96	5.93	31.96	62.41	33.69	33.35	2.89	353.55	12.27
VOC [g/h]	24.29	22.63	23.77	7.06	38.07	74.34	40.13	39.73	3.44	421.14	14.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		12.0		13.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	38.97		38.09		37.21		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	2.027		2.914		2.852		0.000	
Crosswalk LOS	B		C		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	709		689		1560		1216	
d_b, Bicycle Delay [s]	20.56		21.21		2.39		7.59	
I_b,int, Bicycle LOS Score for Intersection	1.842		2.249		2.300		3.173	
Bicycle LOS	A		B		B		C	

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street

Control Type:	Two-way stop	Delay (sec / veh):	18.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.173

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	1	0	52	4	114	66	239	3	1	226	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	12.00	0.00	32.00	61.00	12.00	0.00	0.00	14.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	0	52	4	114	66	239	3	1	226	33
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	14	1	31	18	65	1	0	61	9
Total Analysis Volume [veh/h]	0	1	0	57	4	124	72	260	3	1	246	36
Pedestrian Volume [ped/h]	0			0			0			0		

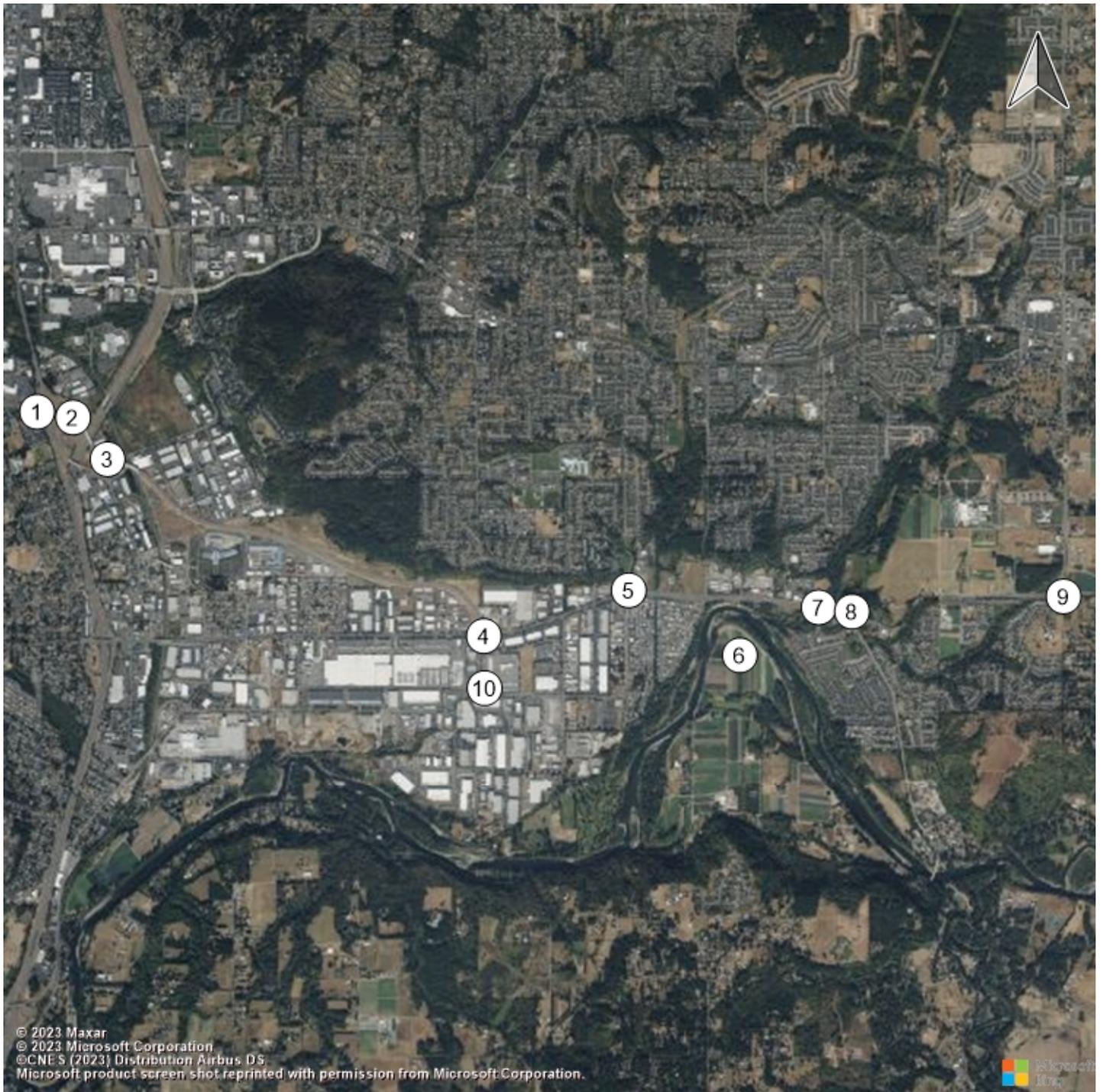
Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

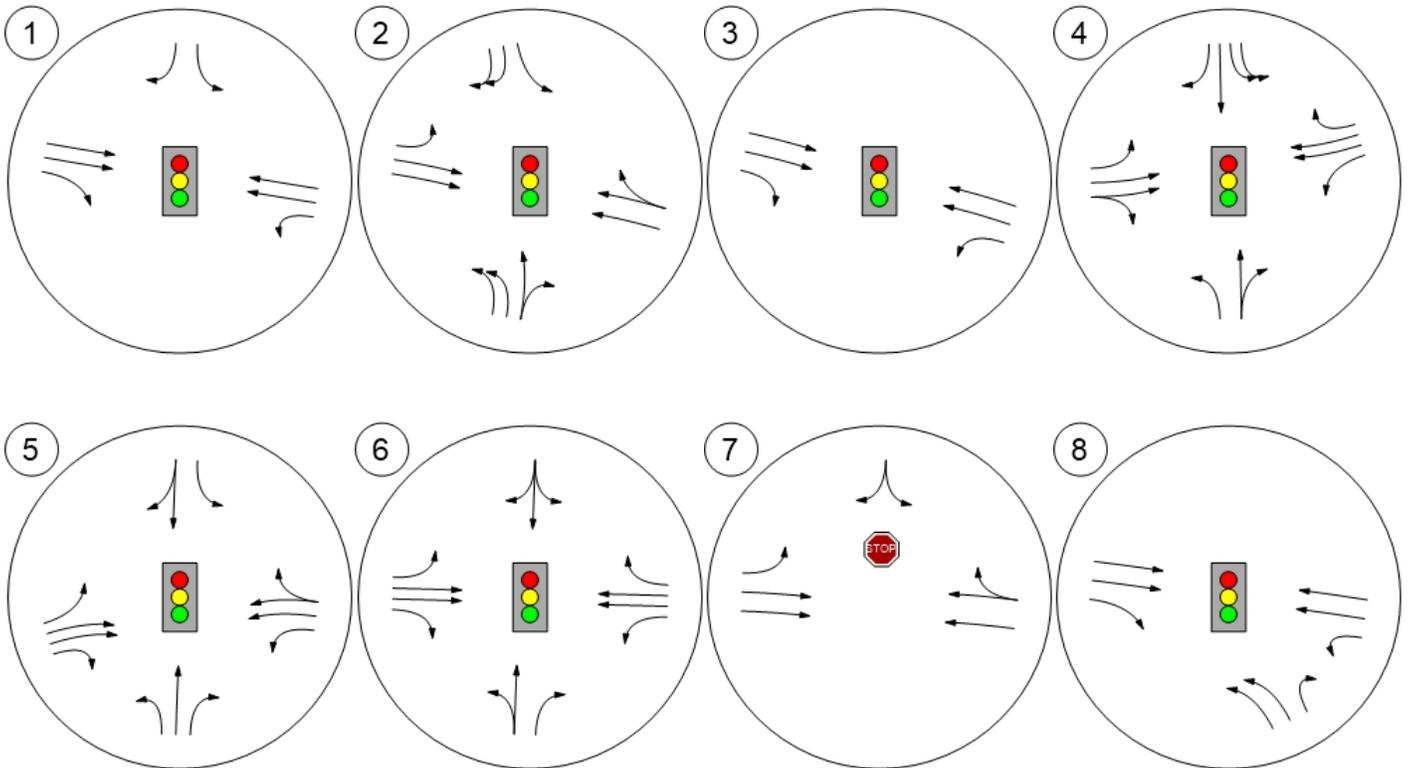
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.01	0.18	0.07	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.12	15.49	9.63	18.36	17.68	11.17	8.85	0.00	0.00	7.74	0.00	0.00
Movement LOS	C	C	A	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.66	0.66	0.63	0.23	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.22	0.22	0.22	16.62	16.62	15.80	5.77	0.00	0.00	0.04	0.04	0.04
d_A, Approach Delay [s/veh]	15.49			13.53			1.90			0.03		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	3.93											
Intersection LOS	C											

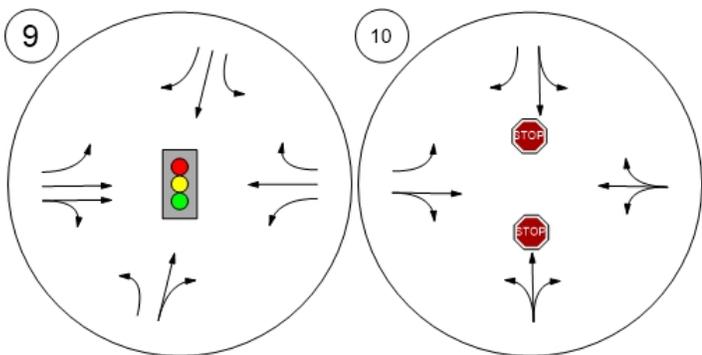
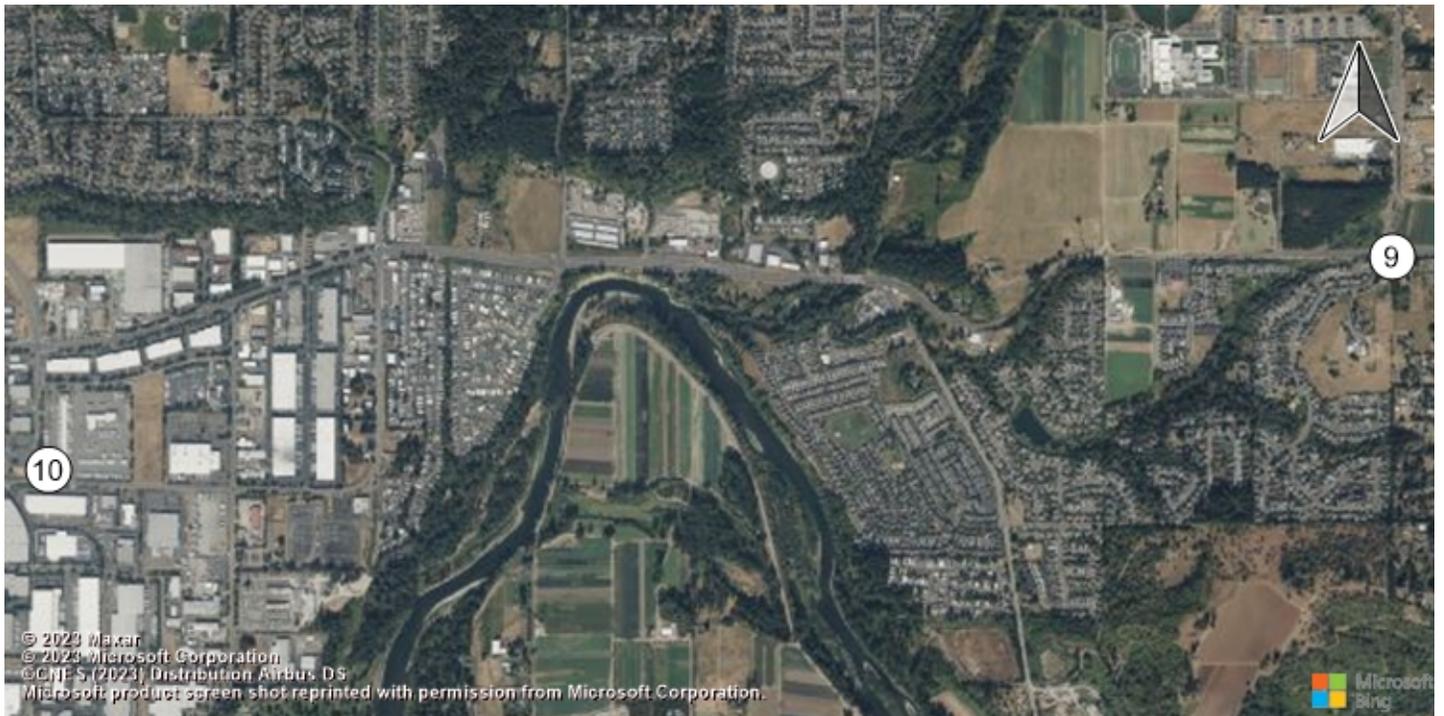
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_PM_2023.vistro

Scenario 1 VistroScenario

Report File: H:\...\2023_ExistingPM.pdf

3/17/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.783	22.0	C
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	EB Thru	1.091	94.3	F
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.619	16.4	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	EB Left	0.643	32.9	C
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	EB Left	0.978	68.0	E
6	142nd Avenue/OR 212	Signalized	HCM 7th Edition	SB Left	0.885	23.0	C
7	152nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Left	3.649	1,766.0	F
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.655	23.8	C
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.760	26.9	C
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.360	37.9	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: OR 213 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	96	1	324	0	1621	597	31	1322	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	4.00	2.00	2.00	0.00	5.00	5.00	13.00	4.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	96	1	324	0	1621	597	31	1322	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9700	1.0000	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	25	0	84	0	418	154	8	341	0
Total Analysis Volume [veh/h]	0	0	0	99	1	334	0	1671	615	32	1363	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	128.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	32	0	32	0	74	74	9	87	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	37	0	37	0	80	80	13	93	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		130	130	130	130	130	130
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		29	29	82	82	3	89
g / C, Green / Cycle		0.22	0.22	0.63	0.63	0.02	0.69
(v / s)_i Volume / Saturation Flow Rate		0.06	0.21	0.48	0.40	0.02	0.39
s, saturation flow rate [veh/h]		1752	1589	3475	1551	1624	3503
c, Capacity [veh/h]		393	357	2193	979	41	2407
d1, Uniform Delay [s]		41.44	49.50	17.05	14.67	62.99	10.42
k, delay calibration		0.07	0.30	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.20	24.14	2.57	3.05	17.19	0.97
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.25	0.94	0.76	0.63	0.78	0.57
d, Delay for Lane Group [s/veh]		41.65	73.65	19.62	17.72	80.19	11.39
Lane Group LOS		D	E	B	B	F	B
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		2.66	13.02	17.54	11.44	1.25	9.71
50th-Percentile Queue Length [ft/ln]		66.47	325.46	438.56	286.02	31.31	242.67
95th-Percentile Queue Length [veh/ln]		4.79	18.94	24.41	16.99	2.25	14.82
95th-Percentile Queue Length [ft/ln]		119.65	473.39	610.28	424.70	56.35	370.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	41.65	0.00	73.65	0.00	19.62	17.72	80.19	11.39	0.00
Movement LOS				D		E		B	B	F	B	
d_A, Approach Delay [s/veh]	0.00			66.33			19.11			12.97		
Approach LOS	A			E			B			B		
d_I, Intersection Delay [s/veh]	22.00											
Intersection LOS	C											
Intersection V/C	0.783											

Emissions

Vehicle Miles Traveled [mph]		19.16	64.63	529.34	194.82	5.05	214.91
Stops [stops/h]		73.63	360.49	971.51	316.81	34.67	537.57
Fuel consumption [US gal/h]		2.03	9.66	33.83	11.99	0.92	14.98
CO [g/h]		142.20	675.06	2364.76	837.96	64.40	1046.83
NOx [g/h]		27.67	131.34	460.10	163.04	12.53	203.67
VOC [g/h]		32.96	156.45	548.06	194.21	14.93	242.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	485	1138	1338
d_b, Bicycle Delay [s]	65.00	37.32	12.06	7.11
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	3.446	2.710
Bicycle LOS	D	A	C	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	94.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.091

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	479	8	253	20	0	402	449	1268	0	0	472	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	12.00	17.00	10.00	0.00	5.00	2.00	6.00	0.00	0.00	4.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	1	0	0	0	0	0	0	0	0	19
Total Hourly Volume [veh/h]	479	8	252	20	0	402	449	1268	0	0	472	174
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	2	68	5	0	108	121	341	0	0	127	47
Total Analysis Volume [veh/h]	515	9	271	22	0	432	483	1363	0	0	508	187
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Split	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	21	31	31	8	0	18	44	75	0	0	27	27
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	0.0	0.0	20.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	37	37	13	0	23	48	81	0	0	33	33
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	No	No		No		No	No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	R	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	22	27	10	64	46	77	27	27
g / C, Green / Cycle	0.17	0.21	0.08	0.49	0.35	0.59	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.15	0.19	0.01	0.16	0.27	0.75	0.19	0.21
s, saturation flow rate [veh/h]	3375	1469	1667	2746	1781	1810	1840	1680
c, Capacity [veh/h]	562	302	124	1360	625	1067	382	349
d1, Uniform Delay [s]	53.32	50.70	56.46	19.66	37.59	26.71	50.34	51.48
k, delay calibration	0.07	0.25	0.07	0.07	0.50	0.50	0.37	0.42
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.19	22.27	0.41	0.08	9.00	132.40	22.71	43.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.93	0.18	0.32	0.77	1.28	0.91	1.00
d, Delay for Lane Group [s/veh]	57.52	72.97	56.87	19.74	46.60	159.11	73.05	94.64
Lane Group LOS	E	E	E	B	D	F	E	F
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.59	10.80	0.69	3.96	15.19	70.28	13.43	15.46
50th-Percentile Queue Length [ft/ln]	214.81	270.08	17.37	98.90	379.87	1756.95	335.87	386.43
95th-Percentile Queue Length [veh/ln]	13.40	16.19	1.25	7.12	21.59	101.03	19.45	21.90
95th-Percentile Queue Length [ft/ln]	334.99	404.83	31.26	178.02	539.69	2525.75	486.15	547.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.52	72.97	72.97	56.87	0.00	19.74	46.60	159.11	0.00	0.00	79.87	94.64
Movement LOS	E	E	E	E		B	D	F			E	F
d_A, Approach Delay [s/veh]	62.96			21.54			129.67			83.85		
Approach LOS	E			C			F			F		
d_I, Intersection Delay [s/veh]	94.32											
Intersection LOS	F											
Intersection V/C	1.091											

Emissions

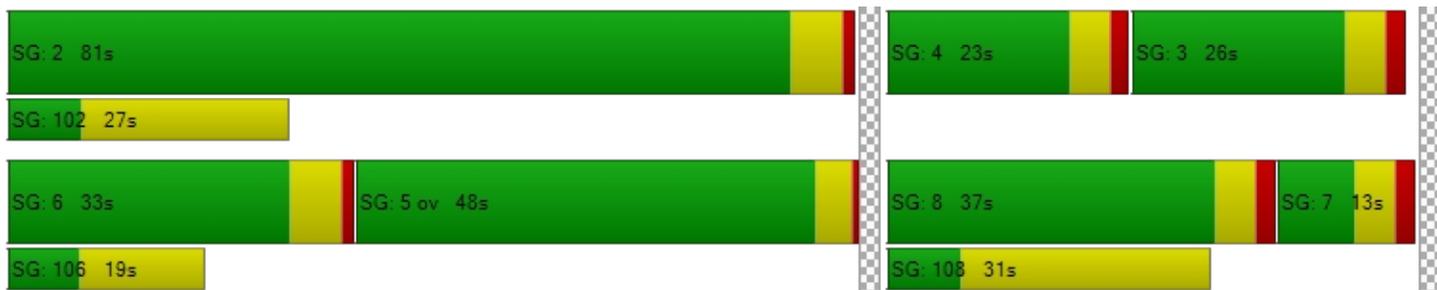
Vehicle Miles Traveled [mph]	107.88	58.65	4.07	79.88	76.16	214.91	87.06	87.06
Stops [stops/h]	475.77	299.09	19.23	219.05	420.68	1945.69	371.95	427.94
Fuel consumption [US gal/h]	13.10	8.22	0.53	6.23	10.04	63.72	10.80	12.64
CO [g/h]	915.49	574.87	36.93	435.75	701.71	4454.09	755.20	883.53
NOx [g/h]	178.12	111.85	7.19	84.78	136.53	866.60	146.93	171.90
VOC [g/h]	212.17	133.23	8.56	100.99	162.63	1032.28	175.03	204.77

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		0.0		11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00
d_p, Pedestrian Delay [s]	54.48		54.48		0.00		54.48
I_p,int, Pedestrian LOS Score for Intersectio	2.218		2.430		0.000		2.755
Crosswalk LOS	B		B		F		C
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]	484		115		1154		415
d_b, Bicycle Delay [s]	37.33		57.73		11.65		40.82
I_b,int, Bicycle LOS Score for Intersection	2.873		1.560		4.606		2.149
Bicycle LOS	C		A		E		B

Sequence

Ring 1	-	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224**

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	258	665	930	611
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	6.00	1.00	7.00	4.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	258	665	930	611
Peak Hour Factor	1.0000	1.0000	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	69	179	250	164
Total Analysis Volume [veh/h]	0	0	277	715	1000	657
Presence of On-Street Parking			No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	22	89	63	63
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No	No	
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	26	96	70	70
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			No	No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R
C, Cycle Length [s]	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	22	116	90	90
g / C, Green / Cycle	0.17	0.89	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.16	0.20	0.29	0.42
s, saturation flow rate [veh/h]	1724	3589	3418	1564
c, Capacity [veh/h]	292	3200	2363	1081
d1, Uniform Delay [s]	53.45	0.96	8.75	10.67
k, delay calibration	0.39	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.26	0.16	0.56	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.22	0.42	0.61
d, Delay for Lane Group [s/veh]	88.71	1.12	9.30	13.21
Lane Group LOS	F	A	A	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.81	0.53	6.01	10.10
50th-Percentile Queue Length [ft/ln]	295.16	13.17	150.21	252.50
95th-Percentile Queue Length [veh/ln]	17.44	0.95	10.03	15.31
95th-Percentile Queue Length [ft/ln]	436.04	23.71	250.71	382.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	88.71	1.12	9.30	13.21
Movement LOS			F	A	A	B
d_A, Approach Delay [s/veh]	0.00		25.58		10.85	
Approach LOS	A		C		B	
d_I, Intersection Delay [s/veh]	16.37					
Intersection LOS	B					
Intersection V/C	0.619					

Emissions

Vehicle Miles Traveled [mph]		383.88	990.89	250.53	164.60
Stops [stops/h]		326.95	29.19	332.77	279.69
Fuel consumption [US gal/h]		22.61	41.12	14.05	10.09
CO [g/h]		1580.39	2873.95	981.76	705.09
NOx [g/h]		307.49	559.17	191.01	137.18
VOC [g/h]		366.27	666.07	227.53	163.41

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1369	969
d_b, Bicycle Delay [s]	65.00	6.47	17.27
I_b,int, Bicycle LOS Score for Intersection	4.132	2.378	2.927
Bicycle LOS	D	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	29	145	19	682	200	48	51	772	61	19	757	727
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	5.00	5.00	4.00	13.00	2.00	6.00	5.00	16.00	5.00	8.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	364
Total Hourly Volume [veh/h]	29	145	19	682	200	48	51	772	61	19	757	363
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	37	5	176	52	12	13	199	16	5	195	94
Total Analysis Volume [veh/h]	30	149	20	703	206	49	53	796	63	20	780	374
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			4			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			4			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	34.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	6	35	35	26	55	55	5	46	46	5	46	46
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	10	40	40	30	60	60	9	51	51	9	51	51
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	0.00	2.80	2.80	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	11	15	30	30	30	5	69	69	2	66	66
g / C, Green / Cycle	0.08	0.12	0.23	0.23	0.23	0.04	0.53	0.53	0.02	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.21	0.12	0.03	0.03	0.24	0.24	0.01	0.23	0.24
s, saturation flow rate [veh/h]	1709	1786	3320	1705	1589	1724	1825	1778	1738	3389	1589
c, Capacity [veh/h]	142	208	845	397	370	66	964	939	28	1714	804
d1, Uniform Delay [s]	55.62	56.06	48.26	43.53	39.49	62.00	19.01	19.01	63.65	20.63	20.77
k, delay calibration	0.07	0.07	0.07	0.07	0.07	0.11	0.50	0.50	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.45	4.72	1.37	0.64	0.10	18.88	1.53	1.57	11.61	0.87	1.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.81	0.83	0.52	0.13	0.80	0.45	0.45	0.71	0.46	0.47
d, Delay for Lane Group [s/veh]	56.07	60.78	49.62	44.18	39.59	80.88	20.54	20.58	75.26	21.50	22.70
Lane Group LOS	E	E	D	D	D	F	C	C	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.94	5.70	11.16	5.89	1.27	2.09	8.48	8.28	0.75	7.78	7.74
50th-Percentile Queue Length [ft/ln]	23.52	142.38	279.09	147.27	31.65	52.21	212.10	206.97	18.78	194.52	193.56
95th-Percentile Queue Length [veh/ln]	1.69	9.61	16.64	9.87	2.28	3.76	13.26	13.00	1.35	12.36	12.31
95th-Percentile Queue Length [ft/ln]	42.33	240.22	416.08	246.78	56.96	93.99	331.52	324.94	33.81	308.88	307.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.07	60.78	60.78	49.62	44.18	39.59	80.88	20.56	20.58	75.26	21.50	22.70
Movement LOS	E	E	E	D	D	D	F	C	C	E	C	C
d_A, Approach Delay [s/veh]	60.07			47.94			24.07			22.80		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	32.87											
Intersection LOS	C											
Intersection V/C	0.643											

Emissions

Vehicle Miles Traveled [mph]	6.76	38.08	162.32	47.56	11.31	47.64	391.02	381.07	13.19	514.26	246.58
Stops [stops/h]	26.05	157.71	618.29	163.13	35.05	57.84	234.94	229.26	20.80	430.93	214.40
Fuel consumption [US gal/h]	0.76	4.53	17.20	4.71	1.05	3.15	19.21	18.73	0.96	26.96	13.06
CO [g/h]	53.44	316.59	1202.04	329.30	73.68	220.38	1343.01	1309.19	67.39	1884.78	913.10
NOx [g/h]	10.40	61.60	233.87	64.07	14.34	42.88	261.30	254.72	13.11	366.71	177.66
VOC [g/h]	12.38	73.37	278.58	76.32	17.08	51.08	311.26	303.42	15.62	436.82	211.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
l_p,int, Pedestrian LOS Score for Intersectio	2.116	2.779	2.663	3.501
Crosswalk LOS	B	C	B	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	542	849	702	702
d_b, Bicycle Delay [s]	34.57	21.52	27.40	27.40
l_b,int, Bicycle LOS Score for Intersection	1.888	3.140	2.312	2.828
Bicycle LOS	A	C	B	C

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	7	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	68.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.978

Intersection Setup

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	300.00	100.00	60.00	320.00	100.00	100.00	415.00	100.00	60.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	64	124	626	241	101	142	110	1367	23	172	1155	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	1.00	5.00	3.00	3.00	4.00	1.00	6.00	4.00	3.00	7.00	3.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	313	0	0	7	0	0	12	0	0	88
Total Hourly Volume [veh/h]	64	124	313	241	101	135	110	1367	11	172	1155	37
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	32	81	62	26	35	28	352	3	44	298	10
Total Analysis Volume [veh/h]	66	128	323	248	104	139	113	1409	11	177	1191	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			2		
v_co, Outbound Pedestrian Volume crossing	1			1			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss									
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	8	45	45	14	51	51	6	45	45	9	48	48
Amber [s]	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	8	8	0	10	10	0	8	8	0	7	7
Pedestrian Clearance [s]	0	22	22	0	25	25	0	18	18	0	14	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.5	2.5	2.0	2.5	2.5	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	10	35	35	24	49	49	11	54	54	17	60	60
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	3.0	3.0	2.3	3.0	3.0	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.50	4.50	4.00	4.50	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.50	2.50	2.00	2.50	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	6	29	29	20	43	7	50	50	13	56	56
g / C, Green / Cycle	0.05	0.22	0.22	0.15	0.33	0.05	0.39	0.39	0.10	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.21	0.14	0.14	0.06	0.41	0.01	0.10	0.34	0.34
s, saturation flow rate [veh/h]	1695	1885	1551	1767	1682	1795	3446	1556	1767	1795	1775
c, Capacity [veh/h]	78	420	345	271	555	97	1331	601	177	776	767
d1, Uniform Delay [s]	61.53	42.14	49.61	54.18	34.11	61.50	39.90	24.67	58.50	31.92	31.97
k, delay calibration	0.07	0.11	0.16	0.30	0.11	0.42	0.50	0.50	0.39	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.64	0.41	15.87	25.85	0.54	136.51	41.85	0.06	59.98	8.27	8.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.30	0.94	0.91	0.44	1.17	1.06	0.02	1.00	0.80	0.80
d, Delay for Lane Group [s/veh]	76.17	42.55	65.47	80.04	34.65	198.01	81.75	24.72	118.48	40.20	40.41
Lane Group LOS	E	D	E	F	C	F	F	C	F	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.49	3.51	11.80	9.93	6.13	6.86	28.65	0.22	8.76	18.37	18.26
50th-Percentile Queue Length [ft/ln]	62.14	87.65	294.93	248.26	153.33	171.53	716.28	5.58	218.90	459.13	456.49
95th-Percentile Queue Length [veh/ln]	4.47	6.31	17.43	15.10	10.19	11.66	39.00	0.40	13.62	25.39	25.27
95th-Percentile Queue Length [ft/ln]	111.85	157.78	435.75	377.47	254.86	291.60	974.94	10.04	340.50	634.84	631.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.17	42.55	65.47	80.04	34.65	34.65	198.01	81.75	24.72	118.48	40.30	40.41
Movement LOS	E	D	E	F	C	C	F	F	C	F	D	D
d_A, Approach Delay [s/veh]	61.16			57.57			89.91			50.15		
Approach LOS	E			E			F			D		
d_I, Intersection Delay [s/veh]	67.96											
Intersection LOS	E											
Intersection V/C	0.978											

Emissions

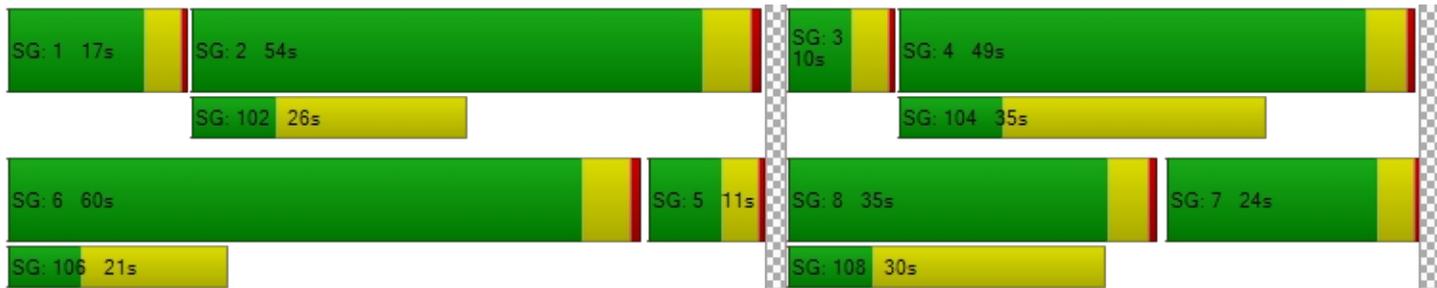
Vehicle Miles Traveled [mph]	12.91	25.05	63.20	30.72	30.10	74.50	928.97	7.25	62.49	217.91	216.01
Stops [stops/h]	68.83	97.09	326.69	275.00	169.84	190.00	1586.83	6.18	242.48	508.58	505.65
Fuel consumption [US gal/h]	1.93	2.68	8.71	6.82	3.89	8.67	70.45	0.39	8.18	16.83	16.72
CO [g/h]	135.25	187.03	608.82	476.91	271.97	605.97	4924.21	27.12	571.72	1176.34	1168.56
NOx [g/h]	26.31	36.39	118.45	92.79	52.92	117.90	958.07	5.28	111.24	228.87	227.36
VOC [g/h]	31.35	43.34	141.10	110.53	63.03	140.44	1141.23	6.29	132.50	272.63	270.82

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			11.0			14.0			12.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	53.55			54.47			51.75			53.55		
I_p,int, Pedestrian LOS Score for Intersectio	2.870			2.249			2.965			3.180		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	469			685			748			840		
d_b, Bicycle Delay [s]	38.08			28.12			25.48			21.87		
I_b,int, Bicycle LOS Score for Intersection	2.929			2.381			2.834			2.792		
Bicycle LOS	C			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: 142nd Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.885

Intersection Setup

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	20.00	100.00	100.00	100.00	225.00	100.00	165.00	220.00	100.00	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	31	3	15	134	11	122	137	2054	51	10	1302	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	2.00	20.00	3.00	9.00	2.00	1.00	6.00	2.00	2.00	7.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	0	0	0	26	0	0	25
Total Hourly Volume [veh/h]	31	3	7	134	11	122	137	2054	25	10	1302	24
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	2	35	3	31	35	529	6	3	336	6
Total Analysis Volume [veh/h]	32	3	7	138	11	126	141	2118	26	10	1342	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	121.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	33	33	33	32	32	32	11	78	78	6	72	72
Amber [s]	3.5	3.5	3.5	4.3	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	7	7	7	0	0	0	0	8	8	0	7	7
Pedestrian Clearance [s]	26	26	26	0	0	0	0	26	26	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.8	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	37	37	37	37	37	37	15	84	84	10	78	78
Lead / Lag	Lag	-	-									
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall		No			No		No	Yes		No	No	
Maximum Recall		No			No		No	No		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.80	4.70	5.40	5.40	4.70	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.80	0.00	3.40	3.40	0.00	3.40	3.40
g_i, Effective Green Time [s]	27	27	26	95	88	88	95	85	85
g / C, Green / Cycle	0.21	0.21	0.20	0.73	0.68	0.68	0.73	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.19	0.25	0.61	0.02	0.03	0.39	0.02
s, saturation flow rate [veh/h]	1079	1356	1461	569	3446	1589	332	3418	1589
c, Capacity [veh/h]	251	284	338	345	2337	1078	170	2244	1044
d1, Uniform Delay [s]	41.45	40.86	50.51	26.53	17.48	6.85	44.75	12.62	7.79
k, delay calibration	0.08	0.08	0.14	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.03	6.02	3.56	6.46	0.04	0.66	1.19	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.02	0.81	0.41	0.91	0.02	0.06	0.60	0.02
d, Delay for Lane Group [s/veh]	41.64	40.88	56.52	30.08	23.94	6.89	45.41	13.80	7.83
Lane Group LOS	D	D	E	C	C	A	D	B	A
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.93	0.18	9.33	1.39	26.08	0.24	0.10	10.86	0.25
50th-Percentile Queue Length [ft/ln]	23.24	4.57	233.17	34.86	651.89	6.08	2.51	271.56	6.34
95th-Percentile Queue Length [veh/ln]	1.67	0.33	14.34	2.51	34.45	0.44	0.18	16.27	0.46
95th-Percentile Queue Length [ft/ln]	41.84	8.22	358.39	62.74	861.26	10.94	4.52	406.69	11.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.64	41.64	40.88	56.52	56.52	56.52	30.08	23.94	6.89	45.41	13.80	7.83
Movement LOS	D	D	D	E	E	E	C	C	A	D	B	A
d_A, Approach Delay [s/veh]	41.51			56.52			24.13			13.92		
Approach LOS	D			E			C			B		
d_I, Intersection Delay [s/veh]	23.02											
Intersection LOS	C											
Intersection V/C	0.885											

Emissions

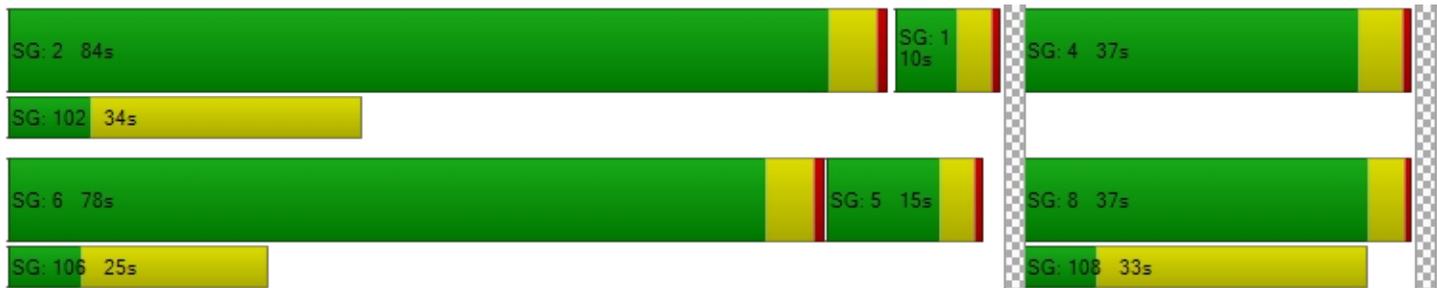
Vehicle Miles Traveled [mph]	4.30	0.86	37.32	47.14	708.15	8.69	4.80	644.21	12.00
Stops [stops/h]	25.75	5.06	258.28	38.61	1444.18	6.73	2.78	601.60	7.02
Fuel consumption [US gal/h]	0.62	0.12	6.13	3.02	47.45	0.43	0.31	33.61	0.57
CO [g/h]	43.05	8.50	428.22	210.89	3316.78	30.16	21.35	2349.56	40.03
NOx [g/h]	8.38	1.65	83.32	41.03	645.32	5.87	4.15	457.14	7.79
VOC [g/h]	9.98	1.97	99.24	48.88	768.70	6.99	4.95	544.53	9.28

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersectio	2.022	2.144	0.000	3.299
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	508	495	1209	1117
d_b, Bicycle Delay [s]	36.19	36.79	10.16	12.67
I_b,int, Bicycle LOS Score for Intersection	1.642	2.013	3.466	2.716
Bicycle LOS	A	B	C	B

Sequence

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: 152nd Avenue/OR 212

Control Type:	Two-way stop	Delay (sec / veh):	1,766.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.649

Intersection Setup

Name	152nd Ave		Highway 212		Highway 212	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	220.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	152nd Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	40	128	161	2013	1220	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.00	2.00	5.00	4.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	128	161	2013	1220	81
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	33	42	524	318	21
Total Analysis Volume [veh/h]	42	133	168	2097	1271	84
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	3.65	0.34	0.33	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	1765.95	1462.45	15.69	0.00	0.00	0.00
Movement LOS	F	F	C	A	A	A
95th-Percentile Queue Length [veh/ln]	19.72	19.72	1.45	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	493.06	493.06	36.29	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1535.29		1.16		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	71.49					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	546	122	1003	1050	194	755
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	6.00	5.00	7.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	61	0	525	0	0
Total Hourly Volume [veh/h]	546	61	1003	525	194	755
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	144	16	264	138	51	199
Total Analysis Volume [veh/h]	575	64	1056	553	204	795
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	78.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	48	0	42	42	25	71
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	34	0	56	56	40	96
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		Yes	Yes	No	Yes
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	26	26	71	102	18	92
g / C, Green / Cycle	0.20	0.20	0.55	0.79	0.14	0.71
(v / s)_i Volume / Saturation Flow Rate	0.17	0.04	0.31	0.36	0.12	0.23
s, saturation flow rate [veh/h]	3375	1551	3446	1538	1738	3418
c, Capacity [veh/h]	679	312	1877	1211	236	2430
d1, Uniform Delay [s]	49.99	43.26	19.44	4.59	55.01	7.07
k, delay calibration	0.08	0.08	0.50	0.50	0.13	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.27	0.24	1.23	1.24	10.82	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.21	0.56	0.46	0.86	0.33
d, Delay for Lane Group [s/veh]	52.26	43.50	20.66	5.83	65.83	7.43
Lane Group LOS	D	D	C	A	E	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.21	1.75	10.63	4.55	7.26	4.03
50th-Percentile Queue Length [ft/ln]	230.37	43.86	265.78	113.86	181.42	100.63
95th-Percentile Queue Length [veh/ln]	14.19	3.16	15.98	8.05	11.67	7.25
95th-Percentile Queue Length [ft/ln]	354.83	78.95	399.46	201.35	291.86	181.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.26	43.50	20.66	5.83	65.83	7.43
Movement LOS	D	D	C	A	E	A
d_A, Approach Delay [s/veh]	51.38		15.57		19.36	
Approach LOS	D		B		B	
d_I, Intersection Delay [s/veh]	23.78					
Intersection LOS	C					
Intersection V/C	0.655					

Emissions

Vehicle Miles Traveled [mph]	188.07	20.93	153.32	80.29	12.99	50.61
Stops [stops/h]	510.35	48.59	588.80	126.12	200.95	222.93
Fuel consumption [US gal/h]	16.68	1.70	14.01	4.66	4.38	4.52
CO [g/h]	1165.64	118.59	978.95	325.60	305.98	315.76
NOx [g/h]	226.79	23.07	190.47	63.35	59.53	61.44
VOC [g/h]	270.15	27.48	226.88	75.46	70.91	73.18

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	0.00	53.55
I_p,int, Pedestrian LOS Score for Intersectio	2.719	0.000	2.742
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	440	769	1385
d_b, Bicycle Delay [s]	39.55	24.62	6.15
I_b,int, Bicycle LOS Score for Intersection	1.560	3.320	2.384
Bicycle LOS	A	C	B

Sequence

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	31	31	23	156	59	317	239	795	52	17	672	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	3.00	4.00	1.00	5.00	5.00	5.00	9.00	2.00	2.00	6.00	9.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	159	0	0	0	0	0	17
Total Hourly Volume [veh/h]	31	31	23	156	59	158	239	795	52	17	672	17
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	8	6	41	16	42	64	211	14	5	179	5
Total Analysis Volume [veh/h]	33	33	24	166	63	168	254	846	55	18	715	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	133
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	10.7
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	37	37	37	36	36	36	30	74	74	6	51	51
Amber [s]	3.5	3.5	3.5	4.7	4.7	4.7	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	9	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	21	0	11	11	0	20	20
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	4.2	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	94	94	94	94	94	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	6.20	4.50	6.50	6.50	4.50	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	4.20	4.20	4.20	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	21	21	19	19	19	16	56	56	2	42	42
g / C, Green / Cycle	0.22	0.22	0.21	0.21	0.21	0.17	0.60	0.60	0.02	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.12	0.03	0.11	0.15	0.26	0.26	0.01	0.40	0.01
s, saturation flow rate [veh/h]	1317	1727	1357	1825	1529	1738	1765	1727	1781	1810	1500
c, Capacity [veh/h]	265	378	289	376	315	293	1052	1029	29	803	665
d1, Uniform Delay [s]	33.61	29.82	38.27	30.84	33.39	38.25	10.39	10.40	46.18	24.17	14.80
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.07	0.28	0.28	0.07	0.36	0.28
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.14	1.34	0.15	1.04	4.92	0.74	0.75	12.98	10.73	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.15	0.57	0.17	0.53	0.87	0.43	0.43	0.63	0.89	0.03
d, Delay for Lane Group [s/veh]	33.76	29.95	39.61	31.00	34.44	43.16	11.13	11.15	59.17	34.90	14.84
Lane Group LOS	C	C	D	C	C	D	B	B	E	C	B
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.60	1.05	3.74	1.19	3.47	6.03	4.95	4.86	0.52	16.23	0.22
50th-Percentile Queue Length [ft/ln]	15.09	26.28	93.56	29.64	86.71	150.74	123.82	121.42	13.00	405.82	5.53
95th-Percentile Queue Length [veh/ln]	1.09	1.89	6.74	2.13	6.24	10.06	8.60	8.47	0.94	22.84	0.40
95th-Percentile Queue Length [ft/ln]	27.16	47.30	168.41	53.36	156.07	251.42	215.06	211.77	23.40	571.01	9.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.76	29.95	29.95	39.61	31.00	34.44	43.16	11.14	11.15	59.17	34.90	14.84
Movement LOS	C	C	C	D	C	C	D	B	B	E	C	B
d_A, Approach Delay [s/veh]	31.35			36.06			18.18			35.00		
Approach LOS	C			D			B			D		
d_I, Intersection Delay [s/veh]	26.92											
Intersection LOS	C											
Intersection V/C	0.760											

Emissions

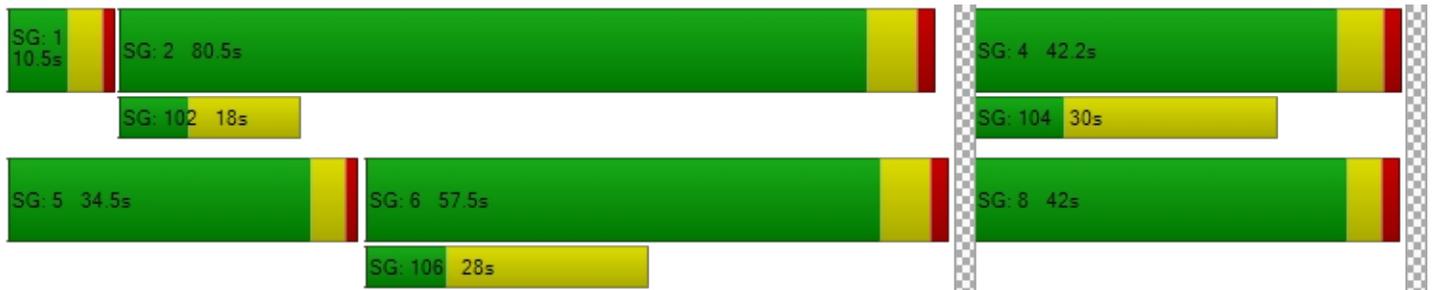
Vehicle Miles Traveled [mph]	3.88	6.71	21.59	8.19	21.85	29.92	53.62	52.52	8.43	334.82	8.43
Stops [stops/h]	23.02	40.09	142.74	45.23	132.29	229.99	188.91	185.24	19.83	619.15	8.44
Fuel consumption [US gal/h]	0.51	0.84	3.02	0.98	2.81	4.73	4.28	4.20	0.67	22.28	0.45
CO [g/h]	35.91	59.06	210.79	68.82	196.26	330.85	299.32	293.37	47.06	1557.50	31.31
NOx [g/h]	6.99	11.49	41.01	13.39	38.19	64.37	58.24	57.08	9.16	303.03	6.09
VOC [g/h]	8.32	13.69	48.85	15.95	45.49	76.68	69.37	67.99	10.91	360.96	7.26

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			13.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	36.83			35.95			35.09			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	2.016			2.572			2.720			0.000		
Crosswalk LOS	B			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	784			763			1568			1081		
d_b, Bicycle Delay [s]	17.44			18.06			2.20			9.97		
I_b,int, Bicycle LOS Score for Intersection	1.708			2.477			2.512			2.827		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street**

Control Type:	Two-way stop	Delay (sec / veh):	37.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.360

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+r			r+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	2	2	1	57	1	52	91	489	0	0	310	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	12.00	0.00	13.00	12.00	5.00	0.00	0.00	4.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	1	57	1	52	91	489	0	0	310	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	0	15	0	14	24	131	0	0	83	11
Total Analysis Volume [veh/h]	2	2	1	61	1	56	98	526	0	0	333	43
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

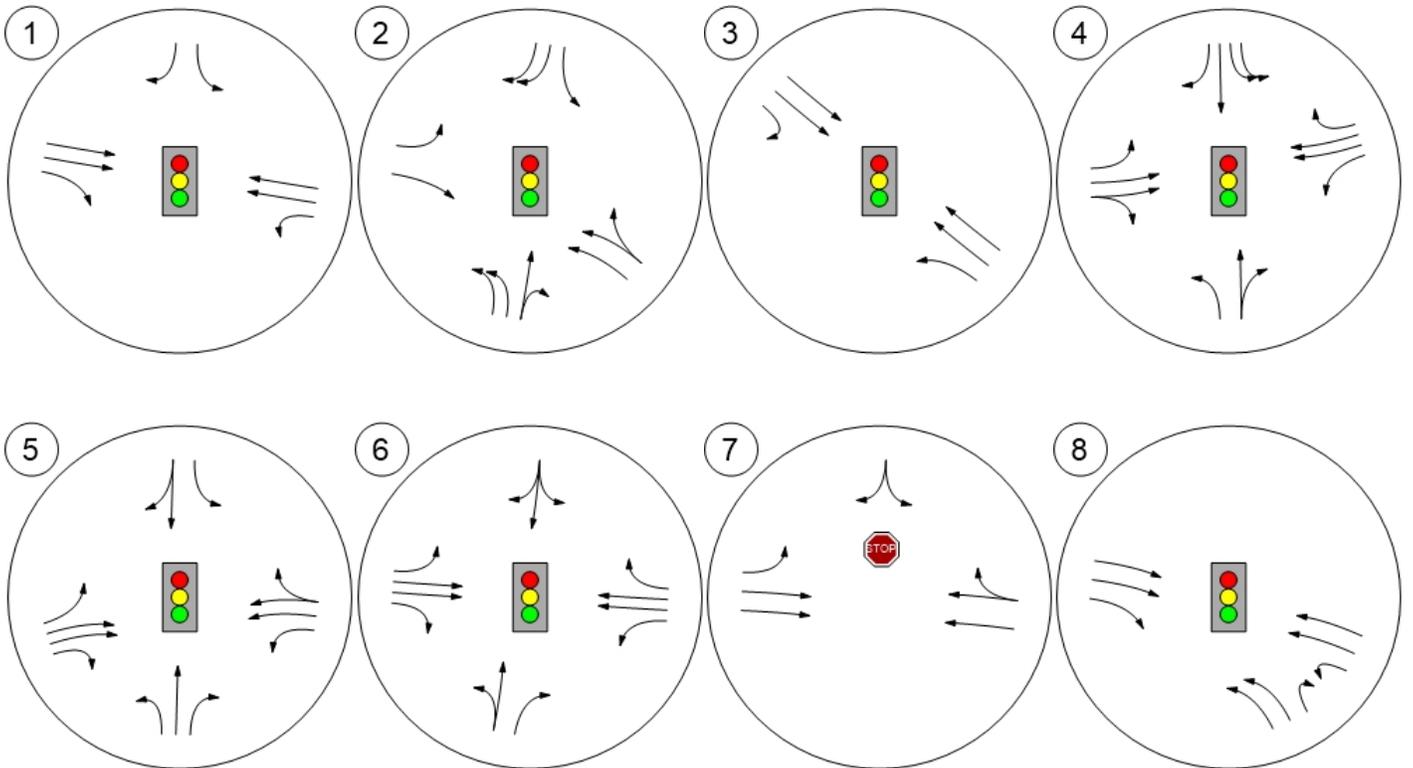
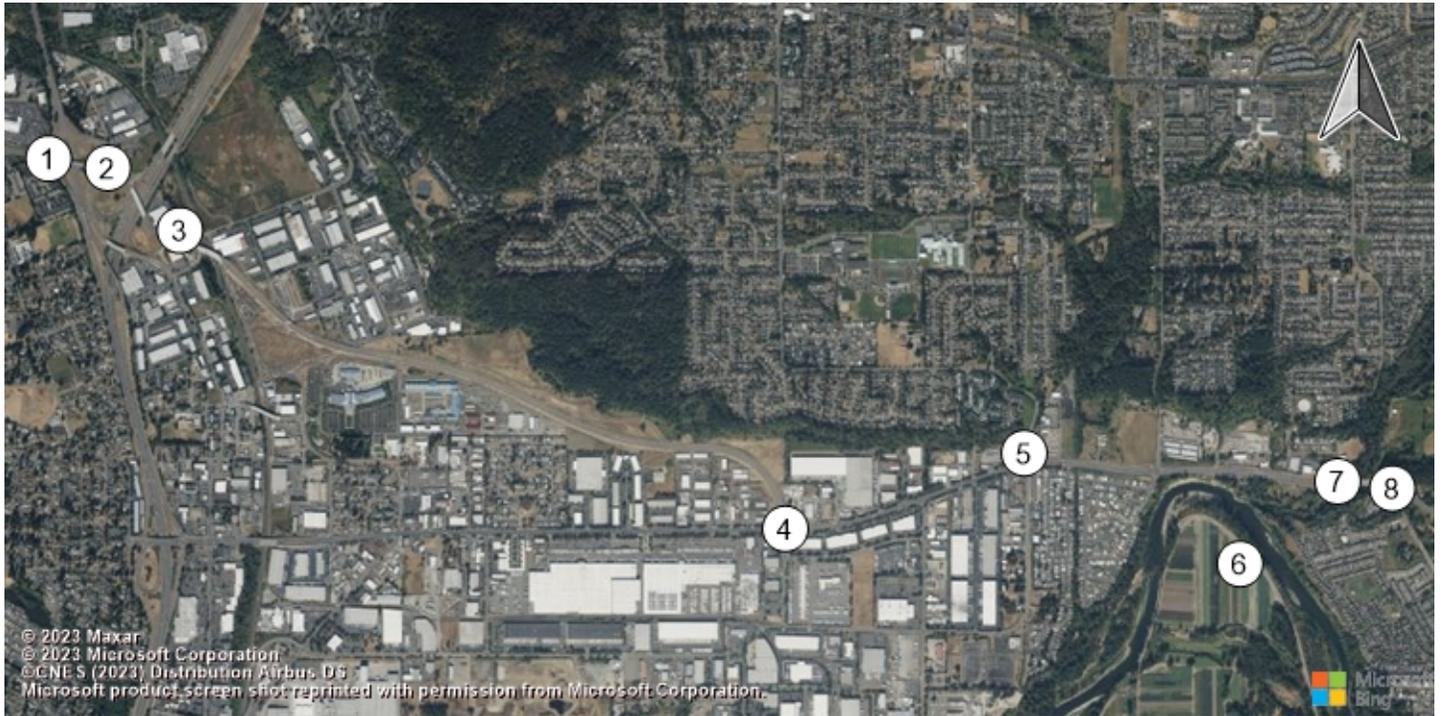
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.36	0.00	0.08	0.09	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	28.23	23.82	11.93	37.90	34.52	10.91	8.49	0.00	0.00	8.42	0.00	0.00
Movement LOS	D	C	B	E	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.08	1.54	1.54	0.27	0.28	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.89	1.89	1.89	38.62	38.62	6.87	7.11	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	23.21			25.06			1.33			0.00		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	3.48											
Intersection LOS	E											

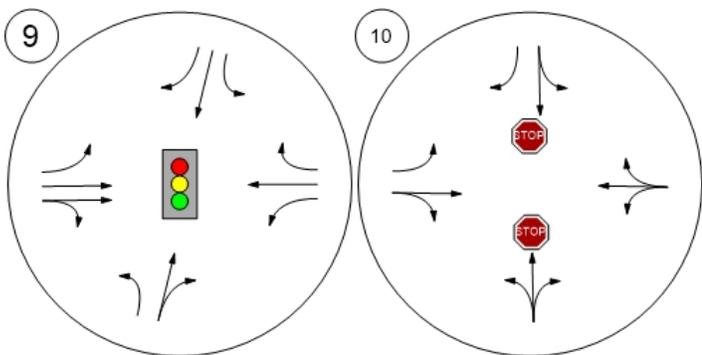
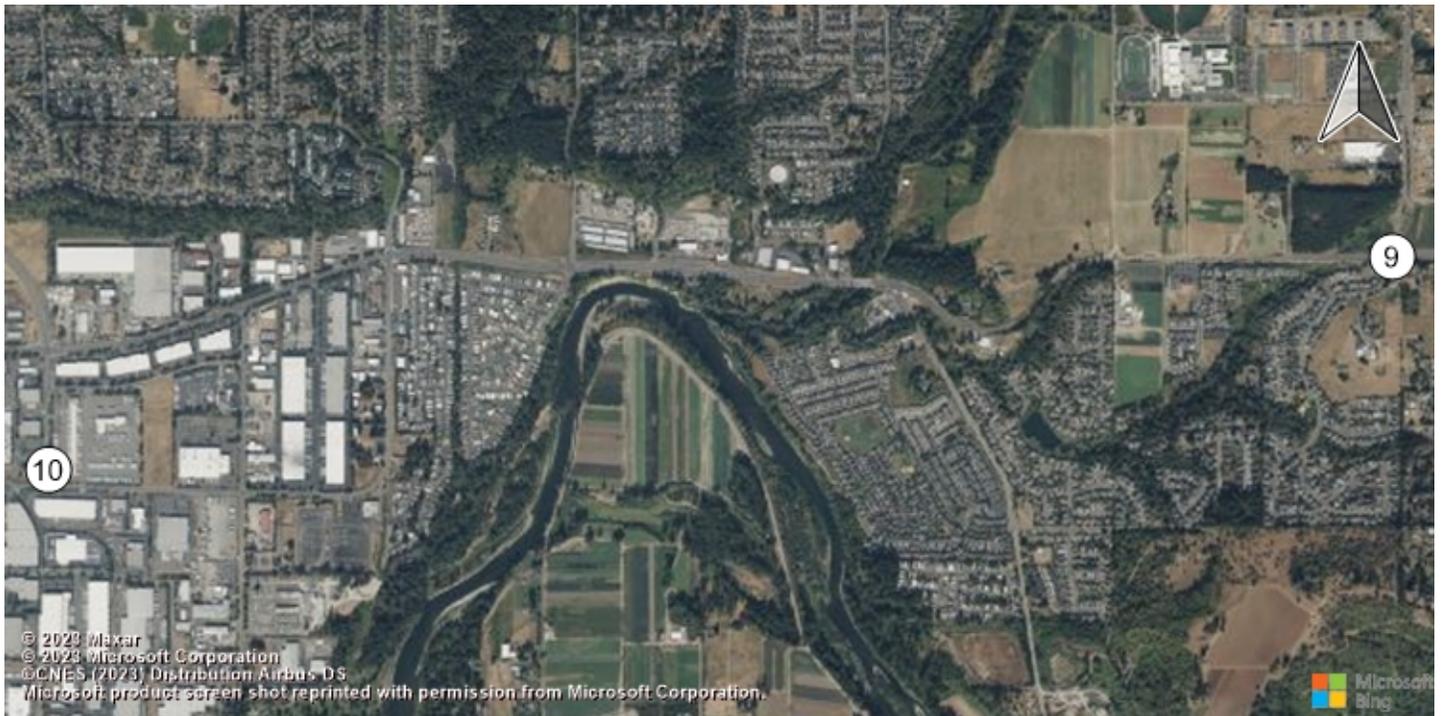
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



Appendix D

Streetlight Travel Pattern Analysis

Table 8. Weekday Vehicle Origin-Destination Matrix by Zone (Data source: Streetlight Data, Inc.)

Origin	Destination														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Grand Total
Zone 1	6,072	5,791	1,284	967	158	2,490	1,402	506	67	160	52	121	--	74	19,144
Zone 2	5,664	8,010	3,261	2,291	240	3,940	969	589	139	90	65	73	50	150	25,531
Zone 3	1,143	3,441	3,069	1,516	74	1,285	210	1,073	79	47	--	187	--	--	12,123
Zone 4	853	2,204	1,652	737	106	1,085	314	682	64	58	--	131	--	--	7,886
Zone 5	200	230	117	125	99	251	597	240	50	50	--	90	--	--	2,048
Zone 6	2,361	4,387	1,485	1,182	352	2,913	1,284	442	122	71	49	46	--	50	14,744
Zone 7	1,564	939	296	353	576	1,150	2,655	654	236	243	83	46	--	101	8,896
Zone 8	476	598	837	538	213	358	530	888	47	94	45	137	--	46	4,807
Zone 9	117	121	63	64	50	143	369	47	--	67	--	--	--	50	1,092
Zone 10	187	101		97	50	101	235	--	84	118	--	--	--	--	973
Zone 11	52	74	46	--	--	62	50	--	--	--	--	--	--	49	332
Zone 12	48	102	127	153	--	92	92	118	--	--	--	68	--	45	845
Zone 13	53	--	--	--	--	--	50	--	--	--	--	--	--	--	103
Zone 14	80	50	47	48	49	--	152	46	--	50	--	--	--	--	522
Grand Total*	18,871	26,048	12,283	8,072	1,966	13,869	8,910	5,285	888	1,048	294	898	50	565	99,047

*Origin-destination data was calculated with decimals, but the table above has rounded the vehicle origin-destination values to the nearest integer. As a result, the Grand Total volumes may vary slightly from the sum totals in each row and column.

Table 11. Origin-Destination by Analysis Zones – Sunrise Corridor Study Area (Data source: Streetlight Data, Inc.)

Origin	Destination					
	Clackamas Industrial Area	Mobile Home Parks ¹	Happy Valley	Damascus	Clackamas Town Center	Grand Total
Clackamas Industrial Area	4,140	876	3,610	747	1,920	11,293
Mobile Home Parks ¹	949	148	868	376	333	2,674
Happy Valley	3,561	1,022	42,458	3,223	10,021	60,285
Damascus	808	304	2,805	1,211	524	5,652
Clackamas Town Center	1,681	232	10,532	627	6,072	19,144
Grand Total	11,138	2,582	60,273	6,184	18,870	99,047



Sunrise Corridor Community Visioning

Existing Conditions Analysis

February 2024



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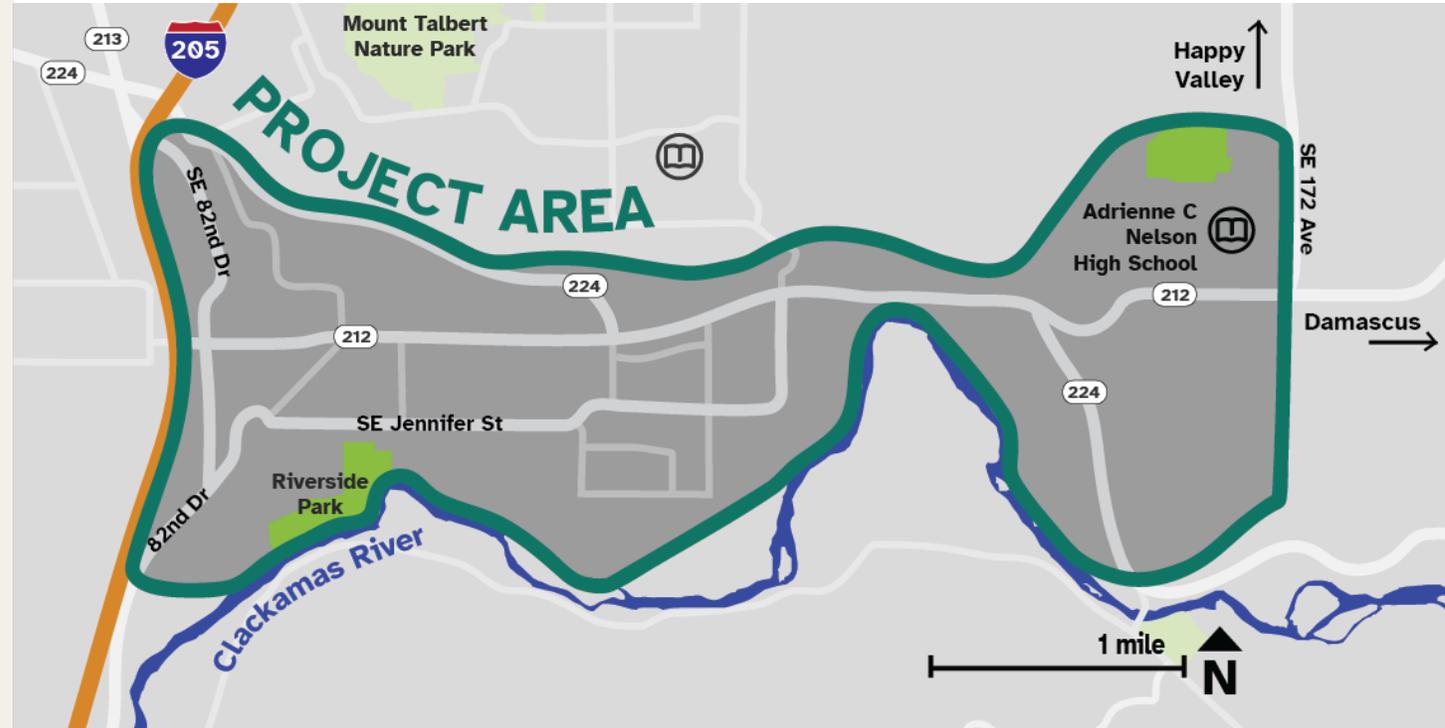
Sunrise Corridor Community Economic Analysis

Sunrise Corridor Community – Study Area

Study Area

- ◆ The study area for this market analysis is referred to as the Sunrise Corridor Community. It is bisected by the OR212/OR224 corridor in Clackamas County, stretching from I-205 to SE 172nd Avenue.

Exhibit I. Sunrise Corridor Community



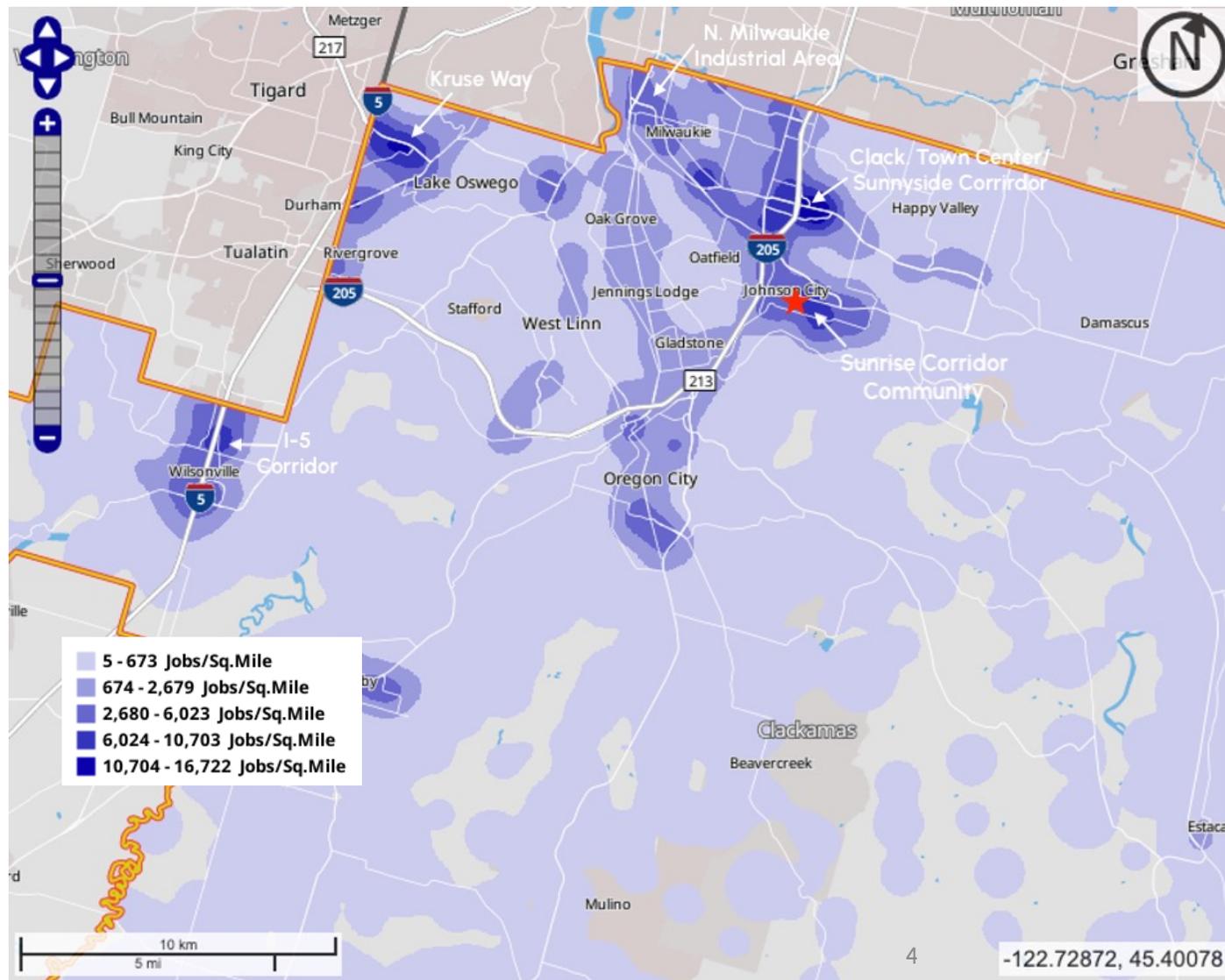
Sunrise Corridor Community

Study Area

- ◆ This area functions as a primary employment center in Clackamas County, marking one of the highest employment densities in the County.
- ◆ Other employment centers in Clackamas County include Kruse Way, the I-5 Corridor through Wilsonville, the Milwaukie Industrial Area, and Clackamas Town Center/Sunnyside Corridor.

Exhibit 2. Regional Employment Centers

Source: On the Map



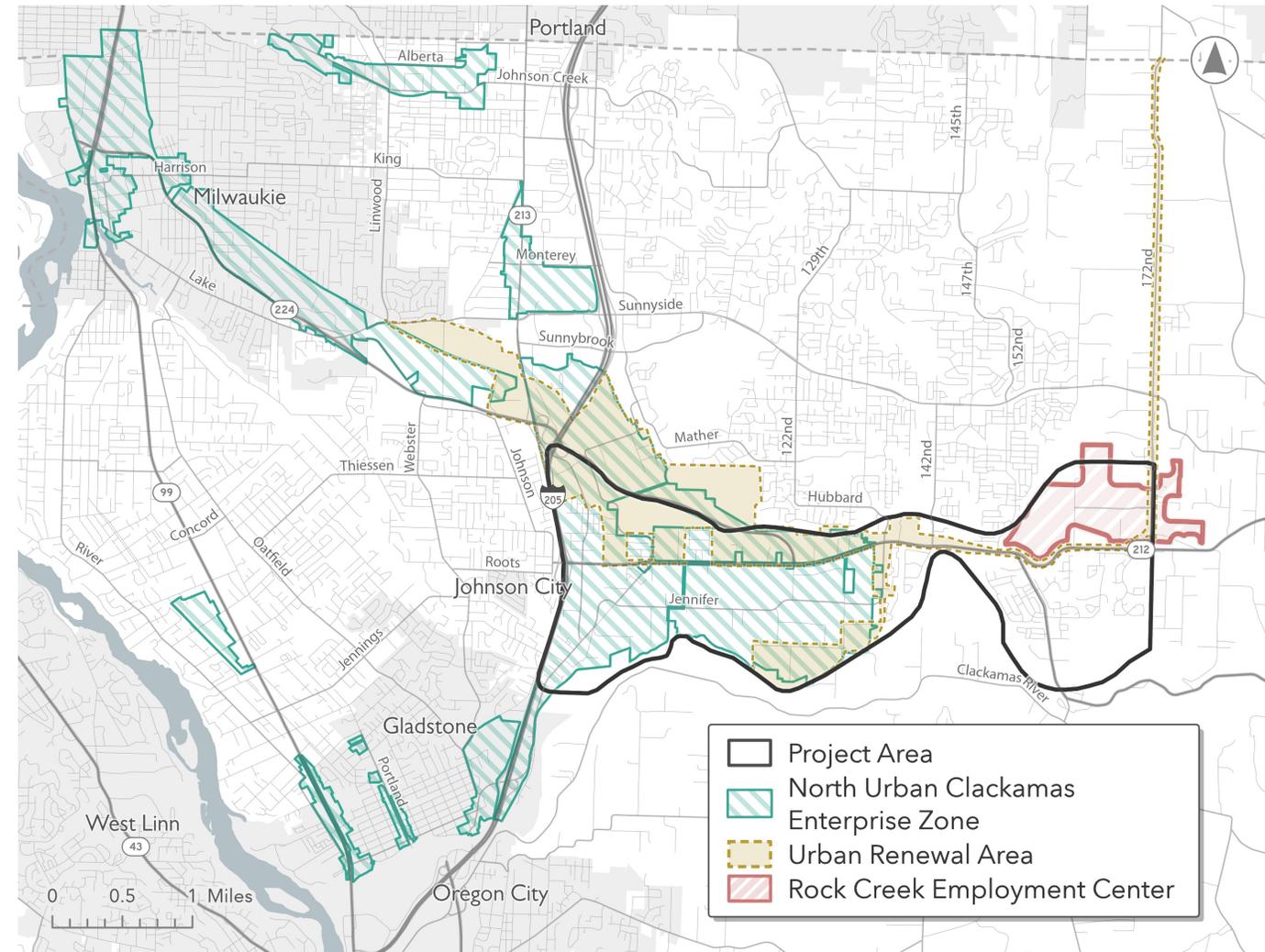
Sunrise Corridor Community

Study Area

- ◆ This area was selected in consultation with the broader consulting team to align with other current and recent planning efforts.
- ◆ As a district it is limited by the Clackamas River to the south and Interstate-205 to the west.
- ◆ Key attributes of the study area include:
 - ◆ The [North Clackamas Urban Enterprise Zone](#),
 - ◆ The [Clackamas Industrial District Urban Renewal Area](#),
 - ◆ The [Rock Creek Employment Area](#).

Exhibit 3. Sunrise Corridor Community

Source: EConorthwest



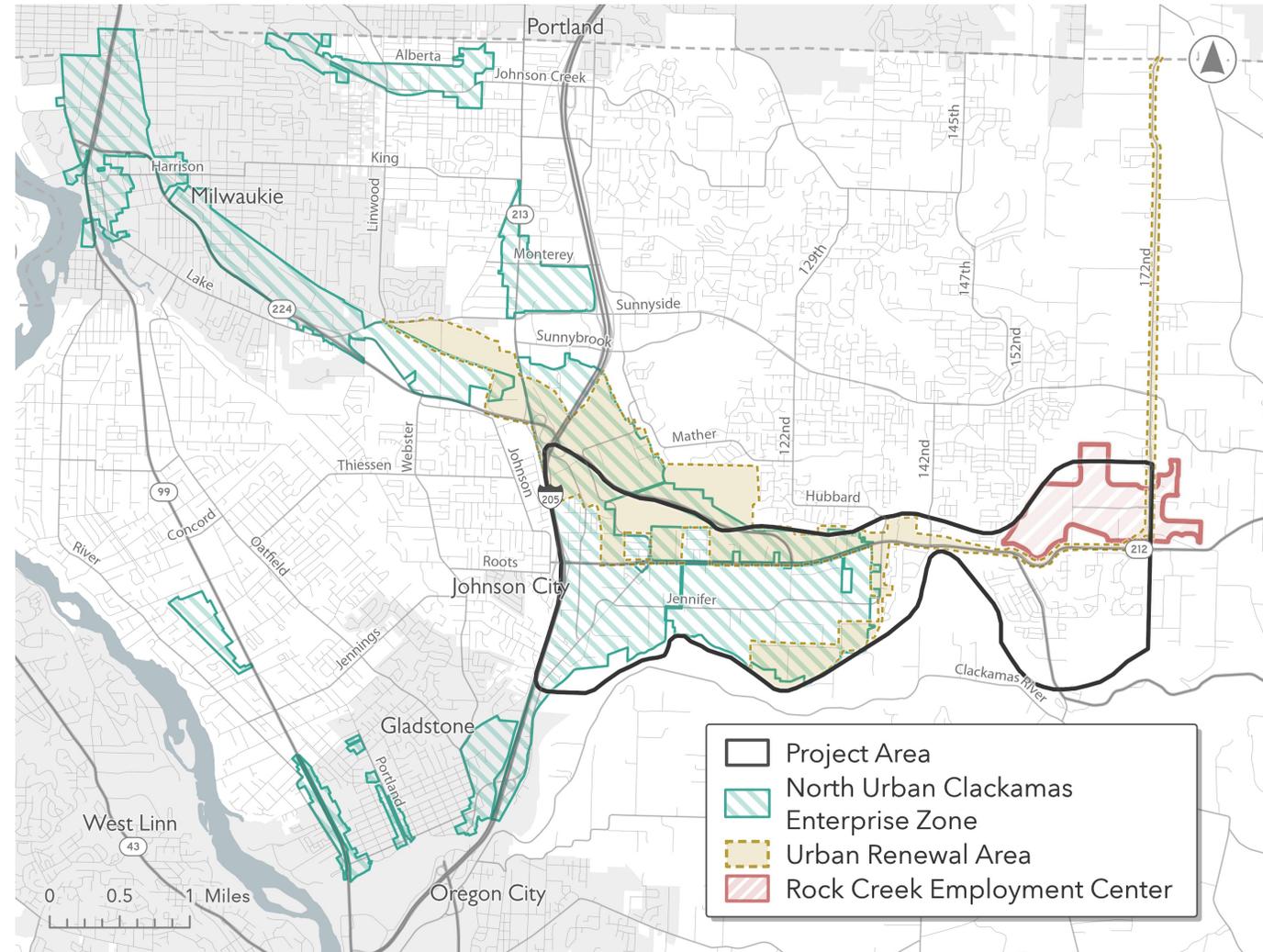
Sphere of Influence

This analysis used a variety of data sources to understand demographic and real estate trends and that factors that drive real estate demand in the Sunrise Corridor Community. Different geographic boundaries are used to assess these trends with the best available data sources. In addition to the Sunrise Corridor Community (shown as the Project Area in Exhibit 3), this report refers to the following geographic areas:

- ◆ Clackamas County – Regional Economic Conditions
- ◆ Clackamas County/Milwaukie subarea – Real Estate Market Conditions

Exhibit 3. Sunrise Corridor Community

Source: EConorthwest



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Regional Economic Conditions

This section provides an assessment of regional economic conditions establishes the broader context from which the local economy functions. It establishes the general strengths and challenges of the economy and provides insight into the broader social and economic factors that will influence demand for different uses.

Employment Growth in Clackamas County

Exhibit 4. Total Employment Growth, Clackamas County, 2005-2022

Source: Bureau of Labor Statistics, Current Employment Statistics

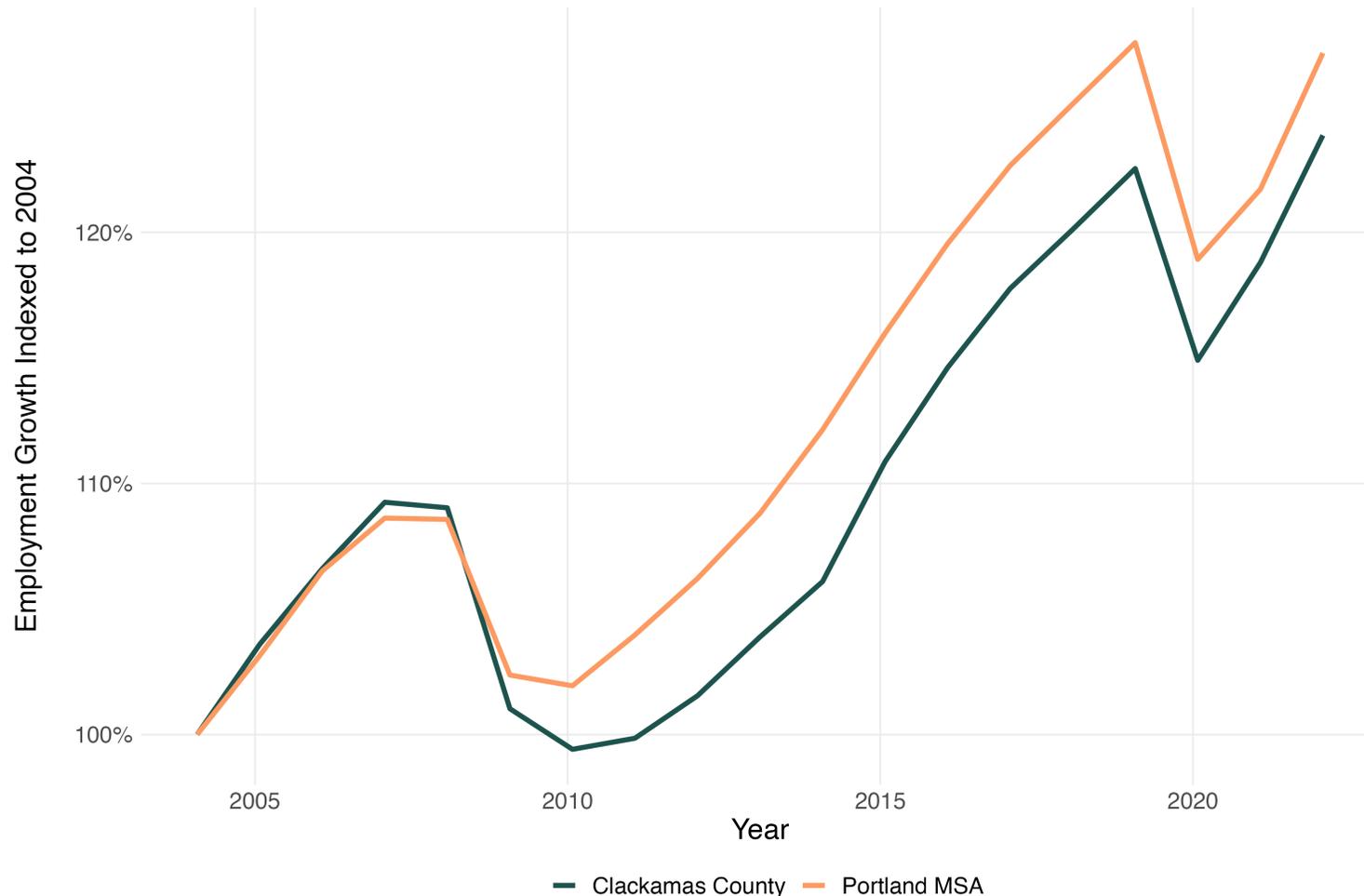


Exhibit 4 measures total employment growth, which is a measure of the total number of workers that are employed by businesses in Clackamas County.

Employment in Clackamas County steadily increased from 2010, following the recession, to 2020, and then dropped sharply following the onset of the COVID-19 pandemic. Over the past two years, **employment levels in Clackamas County have bounced back and are currently above pre-pandemic levels.**

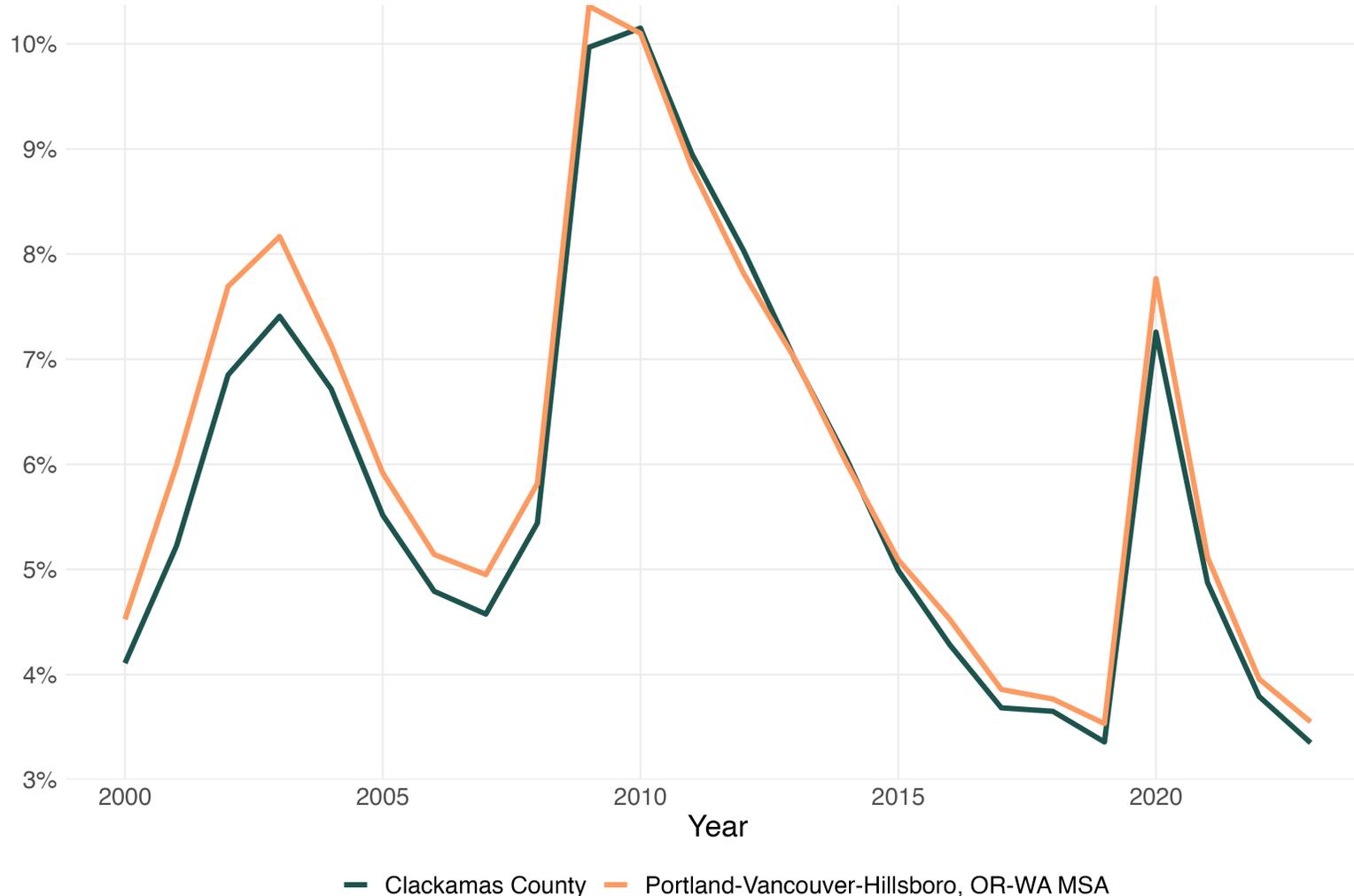
Total Employment in Clackamas County increased from 136,200 in 2004 to 168,700 in 2022, an almost 24% increase since 2004.

Since the recession, employment growth in Clackamas County has lagged behind the average employment for the Portland Metropolitan Statistical Area (MSA) as a whole, though this has narrowed in recent years since the pandemic.

Unemployment Rate – Clackamas County

Exhibit 5. Unemployment Rate, Clackamas County, 2000-2023

Source: Bureau of Labor Statistics, Local Area Unemployment Statistics



The unemployment rate is a measure of the share of persons in the labor force that do not currently have a job. It is influenced by changes in total employment as well as labor force participation, which is the share of working age persons that are employed or seeking employment.

Like most places in the region and across the nation, Clackamas County experienced a sharp increase in unemployment in early 2020, to nearly 13%, following the onset of the COVID-19 pandemic.

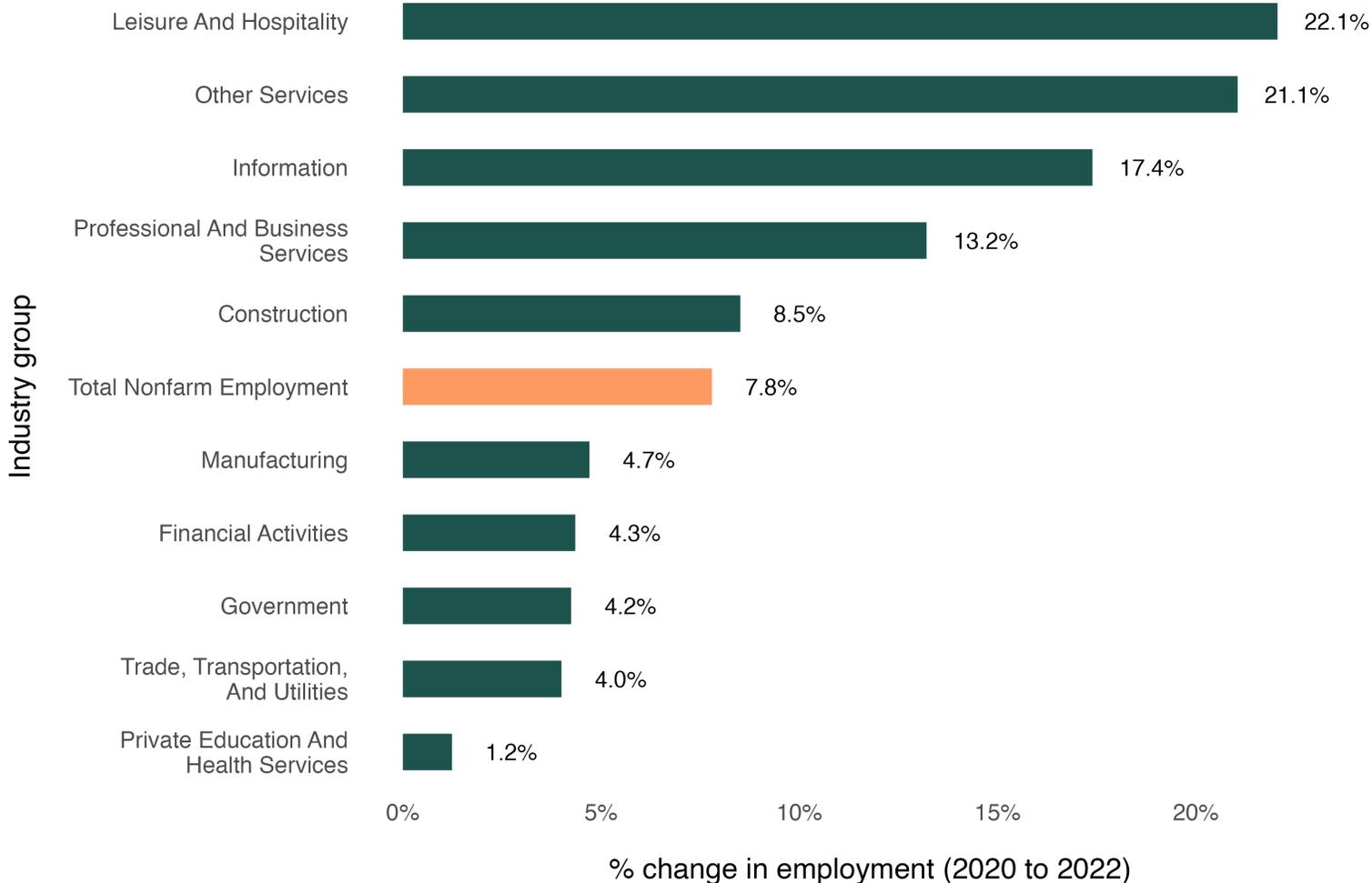
Clackamas County unemployment rates have since recovered to pre-pandemic levels, with an unemployment rate of 3.1% as of October 2023.

Unemployment rate trends in Clackamas County have been on par with the rest of the Portland Metro region over the last 15 years, indicating that regional trends are generally good local indicators.

Employment Growth By Industry Sector – Clackamas County

Exhibit 6. Employment Growth by Industry Sector, Clackamas County, 2020-2022

Source: Bureau of Labor Statistics, Current Employment Statistics



Clackamas County has seen employment growth in all categories between 2020 and 2022. Total Nonfarm Employment increased by 8% over the past two years, indicating a resilient recovery from the Pandemic.*

Leisure and Hospitality has seen the greatest growth (22%) over the past three years, which is expected given pandemic-era lows. The Other Services category saw a 21% increase; this category includes:

- Repair and Maintenance: 1,899 employees
- Personal and Laundry Service: 1,751 employees
- Religious, Grantmaking, Civic, Professional and Similar Organizations: 2,673 employees
- Private Households: 390 employees

*Total nonfarm employment is a specific category of industry employment data tracked by the Bureau of Labor Statistics. It includes the number of workers in the U.S. except those in farming, private households, proprietors, non-profit employees, and active military.

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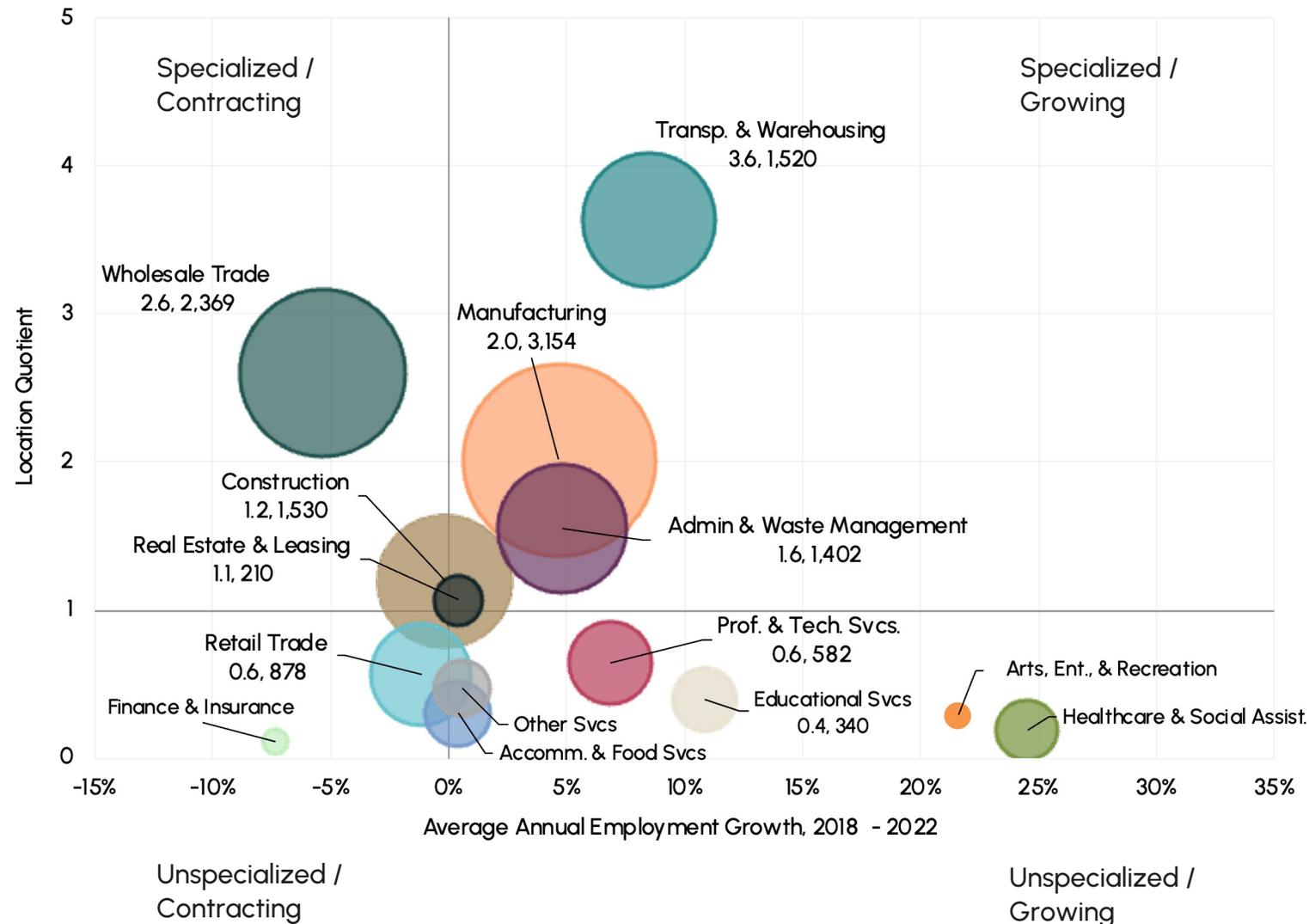
Existing Conditions in the Sunrise Corridor Community

This section provides an evaluation of existing economic trends and conditions frames the performance of economic sectors in the study area to inform which sectors may drive economic growth in the future and influence demand for varying land uses.

Industry Concentrations in the Sunrise Corridor Community

Exhibit 7. Sunrise Corridor Community Location Quotients and Average Annual Employment Growth, 2018-2022

Source: ECONorthwest Analysis of QCEW



A location quotient and growth analysis reveals industries that are driving economic growth and have above average concentrations of employment.

Location Quotient (y-axis). A measure of local employment sector concentration compared to Clackamas County. A value of 1.0 for a sector means the study area has the same share of jobs as the County. Values above 1.0 (above x-axis) indicate sector concentration in the Corridor. Sectors with larger quotients signal a competitive advantage or potential cluster anchor.

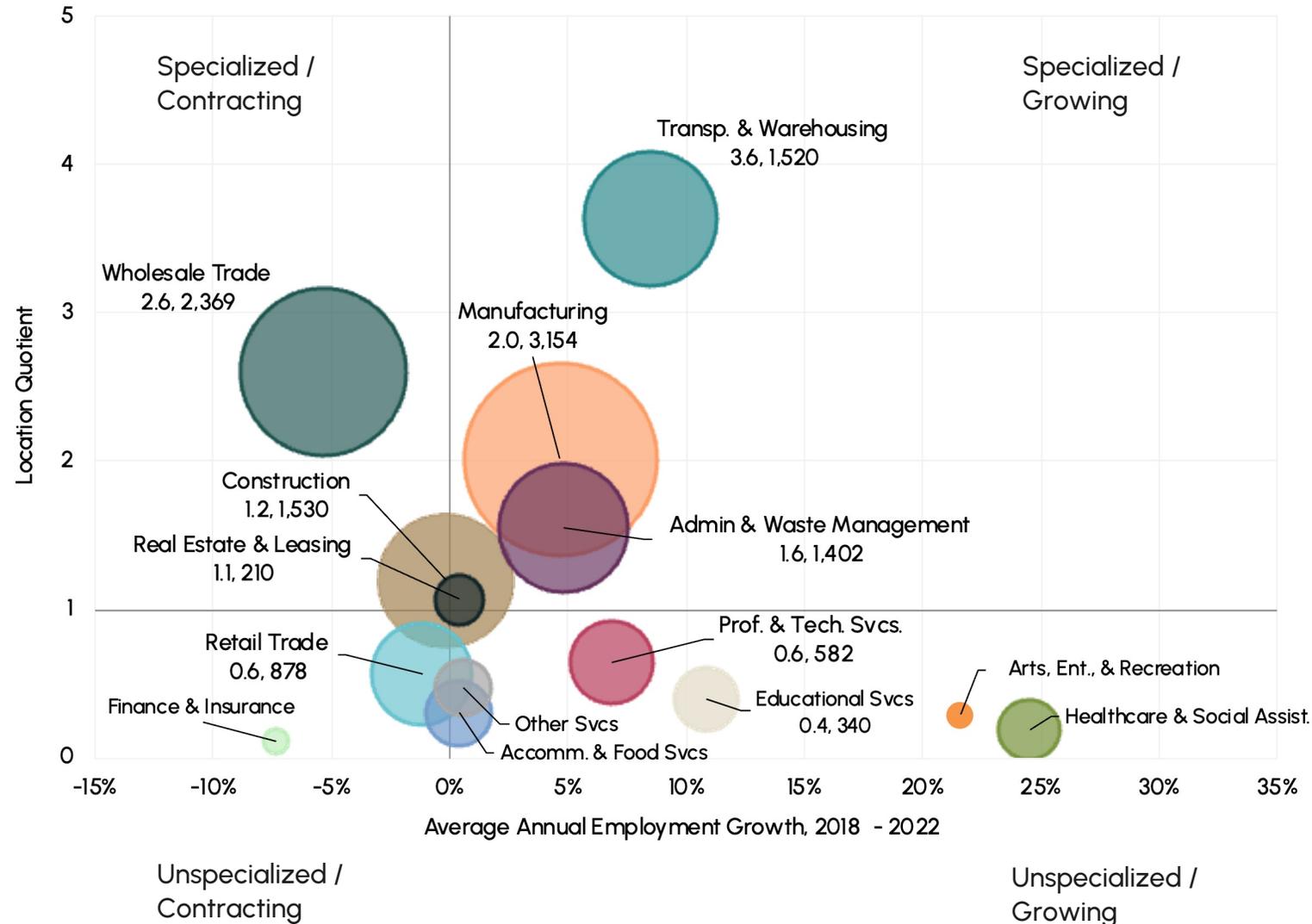
Growth Performance (x-axis). A display of annual percent change in employment (2018-2022). Positive values indicate sectors that are growing, negative values represent sectors that are contracting.

Each sector is represented by a circle, sized by its 2022 job count. Top right quadrant industries (especially with higher employment) signify strong, growing clusters in the Sunrise Corridor.

Industry Concentrations in the Sunrise Corridor Community

Exhibit 7. Sunrise Corridor Location Quotients and Average Annual Employment Growth, 2018-2022

Source: ECONorthwest Analysis of QCEW



- ◆ The Sunrise Corridor Community has a concentration of industrial uses, with high concentrations of employment in:
 - ◆ Transportation and Warehousing,
 - ◆ Wholesale Trade,
 - ◆ Manufacturing,
 - ◆ Administration and Waste Management,
 - ◆ Construction
- ◆ Professional employment sectors, while less concentrated in the corridor, have seen robust employment growth over the last four years:
 - ◆ Healthcare and Social Assistance,
 - ◆ Educational Services,
 - ◆ Professional Technical Services.

Business Growth in the Sunrise Corridor Community

Exhibit 9. Covered Employment Establishments by Major NAICS Sector, Sunrise Corridor Community, 2013-2022

Source: QCEW



The **Wholesale Trade, Transportation, and Utilities** sector makes up nearly a third of the businesses in the study area, but there has been a 5% decrease in the number of businesses in this sector over the past decade.

The **Manufacturing and Construction and Resources** sectors both make up around 14-15% of the businesses in the study area, and both sectors have seen a small increase in number of businesses (2% and 5% respectively).

The sectors seeing the greatest growth in number of businesses are **Professional and Business Services** (16% increase from 2013-2022), and **Education, Healthcare, and Other Services** (12% increase).

Business Growth in the Sunrise Corridor Community (cont.)

Exhibit 10 Covered Employment Establishments by Major NAICS Sector, Sunrise Corridor Community, 2021-2022

Source: QCEW

Industry	Change 2021 to 2022 (%)	Change 2021 to 2022 (nominal)
Wholesale Trade, Transportation, and Utilities	-6%	-10
Manufacturing	-5%	-5
Education, Healthcare, and Other Services	-9%	-8
Government	0%	0
Retail Trade	-13%	-9
Leisure and Hospitality	-13%	-5
Professional & Business Services	-8%	-9
Construction and Resources	-14%	-16
Finance, Information, and Real Estate	-14%	-7
Total	-10%	-69

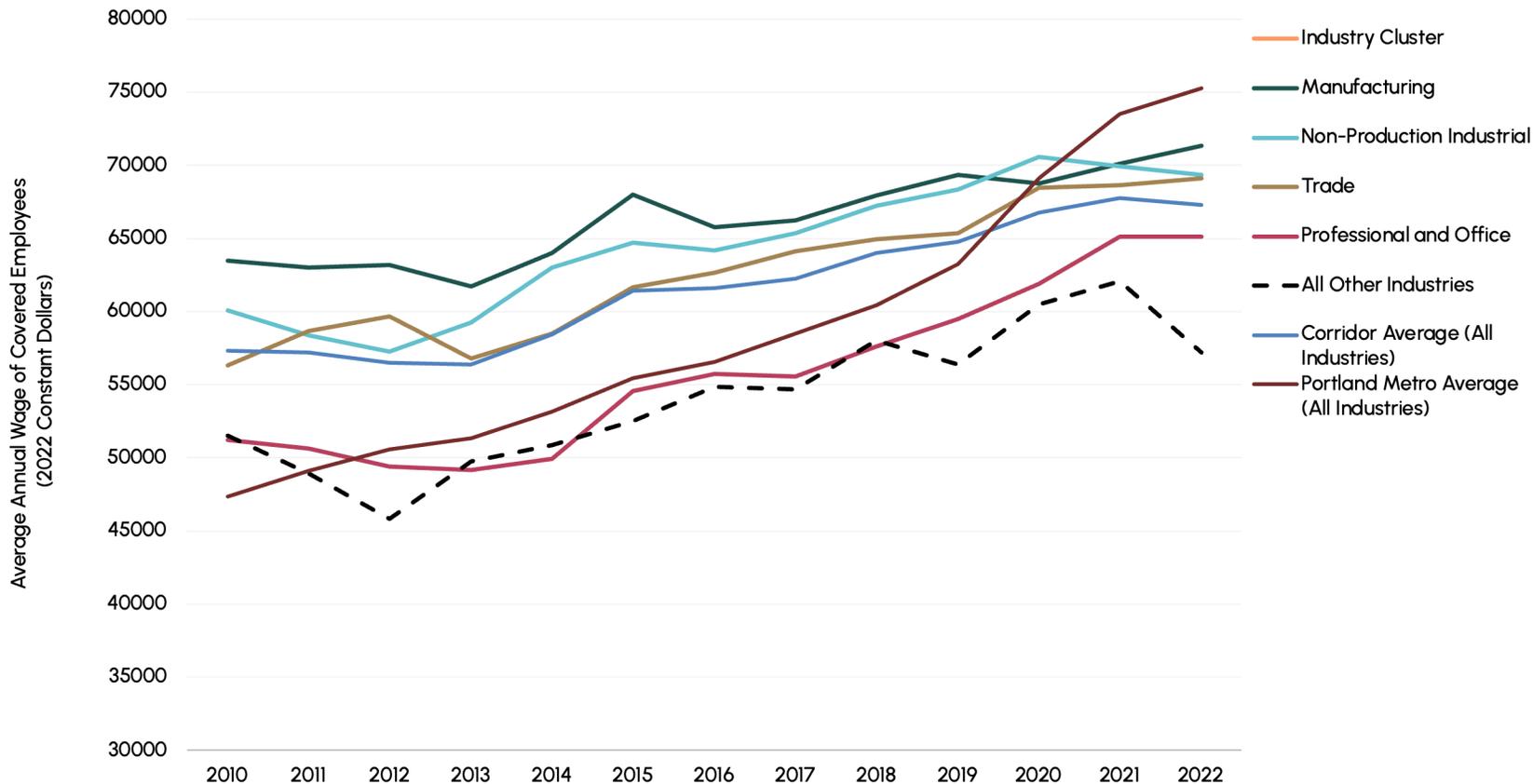
The study area saw an approximately 10 percent decrease in establishments from 2021 to 2022. The loss was predominantly seen in the **Construction, Retail Trade, Professional and Business Services, and Wholesale Trade, Transportation, and Utilities** sectors, which together make up 64% of the loss of businesses that year.

Together, these four industry sectors make up 62% of the businesses within the study area. Whether this decrease was a short-term impact from the pandemic, or part of a longer-term contraction in these industries, is to be seen. Given the importance of these industries to the area's economy, this trend should be monitored.

Wages in the Sunrise Corridor Community

Exhibit 11. Average Annual Wage (Inflation-adjusted) by Industry Cluster, Sunrise Corridor Community, 2010- 2022

Source: QCEW



Wages in the study area have steadily increased since 2010.

Manufacturing jobs have the highest average annual wages, at \$71,000.

Professional and Office sector jobs have seen the greatest increase in wages, increasing 27% from 2010 to 2022.

Generally, wages across Clackamas County lag behind regional averages, which is most likely related to relative industrial distribution.

Summary of Employment by Industry in the Sunrise Corridor Community

Exhibit 12. Covered Employment Change, Sunrise Corridor Community, 2013- 2022

Source: QCEW

Employment Sector	Covered Employment, 2013	Covered Employment, 2022	Share of Total Jobs (2022)	Annual Average Wage (2022)	Covered Employment Change, 2013 - 2022		
					Nominal	Percent	AAGR
Health Care and Social Assistance	90	311	2.2%	\$54,222	221	246%	14.8%
Professional, Scientific, and Technical Services	334	582	4.2%	\$80,583	248	74%	6.4%
Administrative and Support and Waste Management and Remediation Services	814	1,402	10.0%	\$49,122	588	72%	6.2%
Educational Services	214	340	2.4%	\$57,155	126	59%	5.3%
Real Estate and Rental and Leasing	141	210	1.5%	\$51,000	69	49%	4.5%
Arts, Entertainment, and Recreation	45	64	0.5%	\$38,885	19	42%	4.0%
Manufacturing	2,430	3,154	22.5%	\$71,363	724	30%	2.9%
Construction	1,198	1,530	10.9%	\$76,370	332	28%	2.8%
Retail Trade	741	878	6.3%	\$50,098	137	18%	1.9%
Public Administration	377	402	2.9%	\$93,047	25	7%	0.7%
Other Services (except Public Administration)	272	263	1.9%	\$54,845	-9	-3%	-0.4%
Transportation and Warehousing	1,638	1,520	10.8%	\$61,957	-118	-7%	-0.8%
Accommodation and Food Services	399	361	2.6%	\$24,958	-38	-10%	-1.1%
Wholesale Trade	3,067	2,369	16.9%	\$76,153	-698	-23%	-2.8%
Information	45	32	0.2%	\$106,808	-13	-29%	-3.7%
Finance and Insurance	93	55	0.4%	\$77,813	-38	-41%	-5.7%
Management of Companies and Enterprises	suppressed*	541	3.9%	\$91,646	n/a	n/a	n/a
Not Elsewhere Classified	suppressed*	10	0.1%	\$50,759	n/a	n/a	n/a
Total	11,898	14,024	100%	\$67,304	2,126	18%	1.8%

Since 2013 the Sunrise Corridor Community has expanded by **2,126 jobs (18 percent)** and seen a **distributional shift away from industrial uses (-8.9 percent share)** and toward other service and retail uses.

*suppressed indicates that there were a limited number of observations in this category. Due to QCEW confidentially restrictions, data is withheld in these instances.

The average annual wage across all industries in the study area was \$67,304 in 2022.

The industries with the highest average annual wage in the study area are:

- ◆ Information - \$106,808,
- ◆ Public Administration - \$93,047
- ◆ Management of Companies and Enterprises - \$91,646

Three of the study area's largest five industries (by share of jobs) have higher average annual wages than the average for the study area as a whole:

- ◆ Construction - \$76,370
- ◆ Wholesale Trade - \$76,153
- ◆ Manufacturing - \$71,363

Of the two fastest growing industries in the study area:

- ◆ Professional and Business Services has a higher than average annual wage (\$80,583), and
- ◆ Education, Healthcare, and Other Services has a lower than average annual wage (\$54,222).



Workforce Assessment

This section includes an evaluation of the geographic distribution of Sunrise Corridor Community workers, commute trends, and demographic characteristics of the area the Sunrise Corridor Community draws its workforce from. Workforce and commuting trends provide insight into the needs of the area's residents and workers, as well as how the study area is positioned to retrain and attract employers.

Typical Commuting Patterns – Sunrise Corridor Community

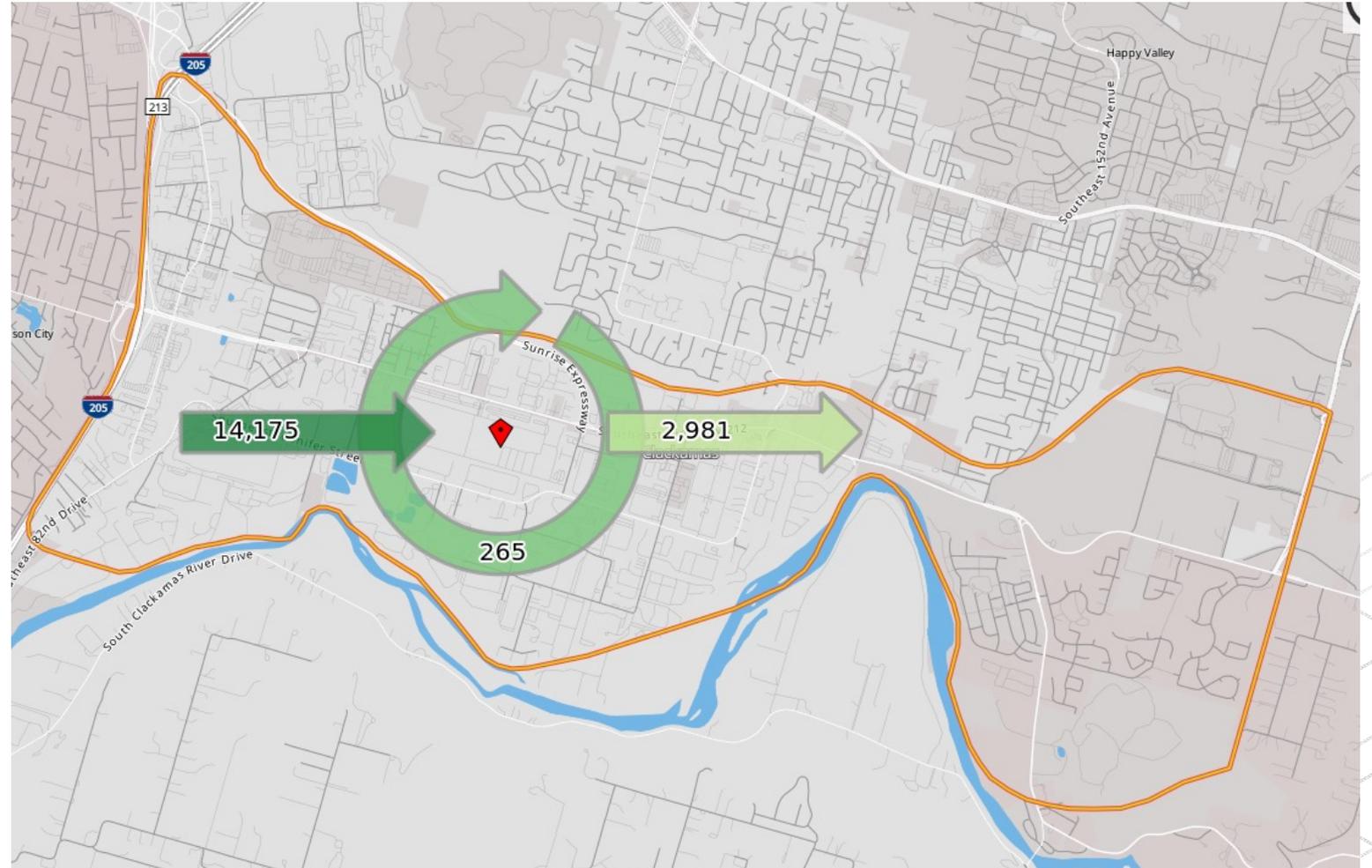
Exhibit 13. Commute Patterns, Sunrise Corridor Community, 2021

Source: U.S. Census Bureau, OnTheMap Application

- ◆ Of the 2,981 employed residents that live inside the study area, only **265 or 8.9 percent** also work in the district.
- ◆ In contrast, **14,175 people** that are employed in the study area commute from other parts of the region.

As a largely employment-based district, this is in-part a function of lack of housing options in the district, which may be appropriate in the current context given the industrial nature of the area. However, greater commute distances generally come with negative socioeconomic and climate impacts.

Employment numbers in this section vary slightly from previous charts due to using different Census datasets and sampling year (2021 vs. 2022).



Where Sunrise Corridor Community Workers Live

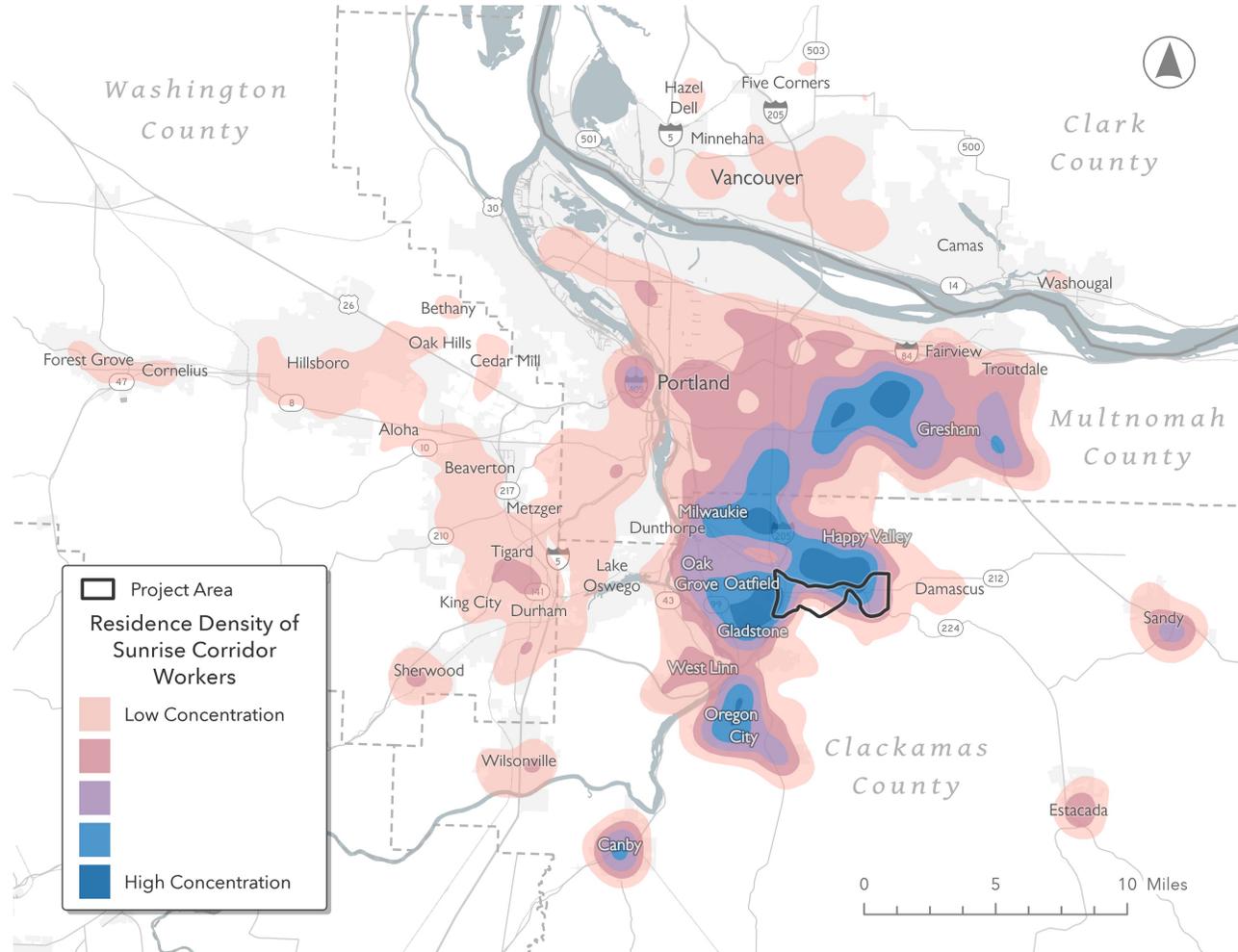
Exhibit 14. Residence Location of Sunrise Corridor Community Workers, 2021

Source: U.S. Census Bureau, 5-year LODES

Sunrise Corridor Community workers commute in from all over the Portland Metropolitan Region.

It is generally a positive that employers in the study area are drawing workers from residential areas on the east side.

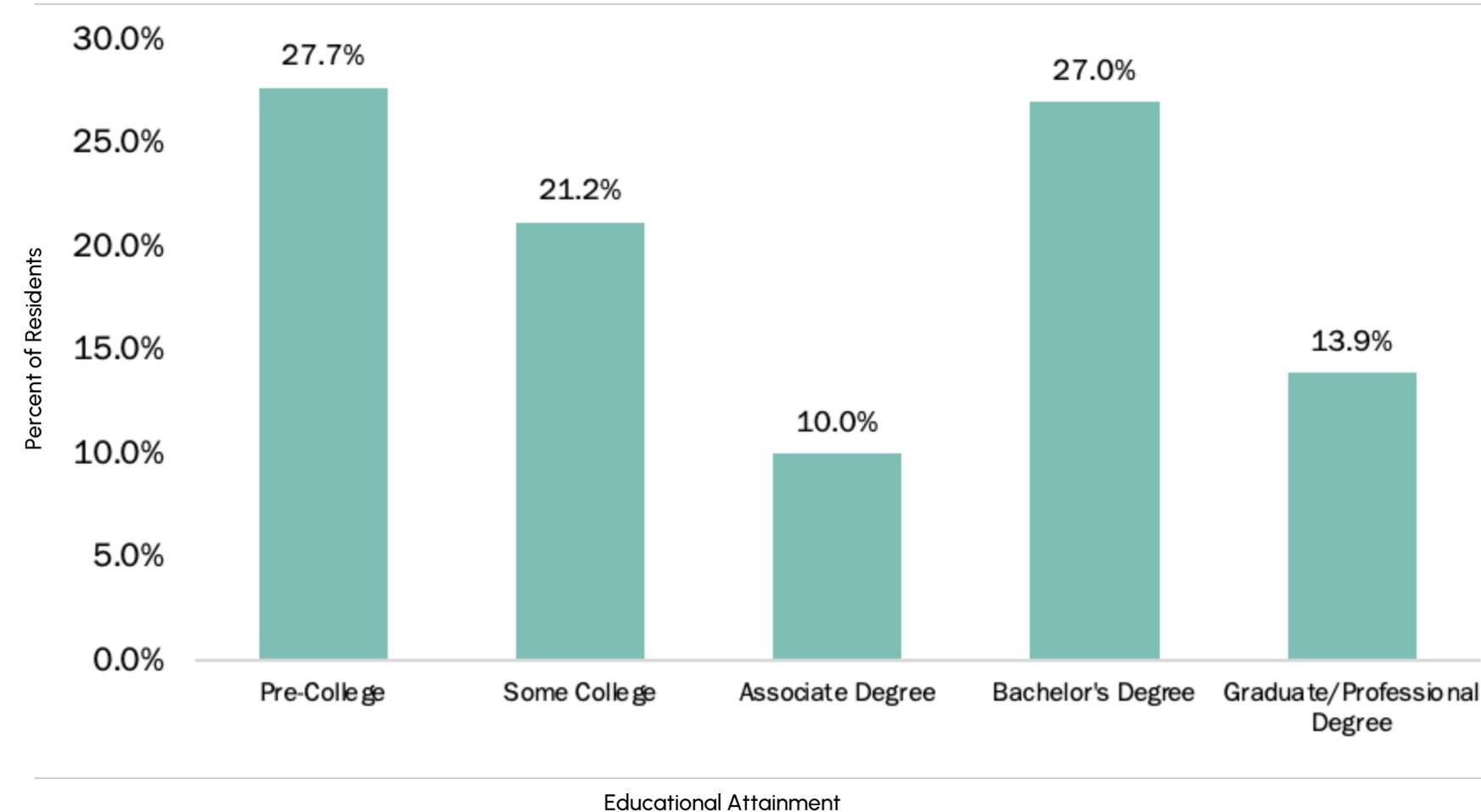
Almost half of all workers (48.2%) in the Sunrise Corridor Community commute from less than 10 miles away.



Educational Attainment

Exhibit 15. Educational Attainment of Residents within a 15-minute Drive Time from the Sunrise Corridor Community, 2023

Source: ESRI Business Analyst

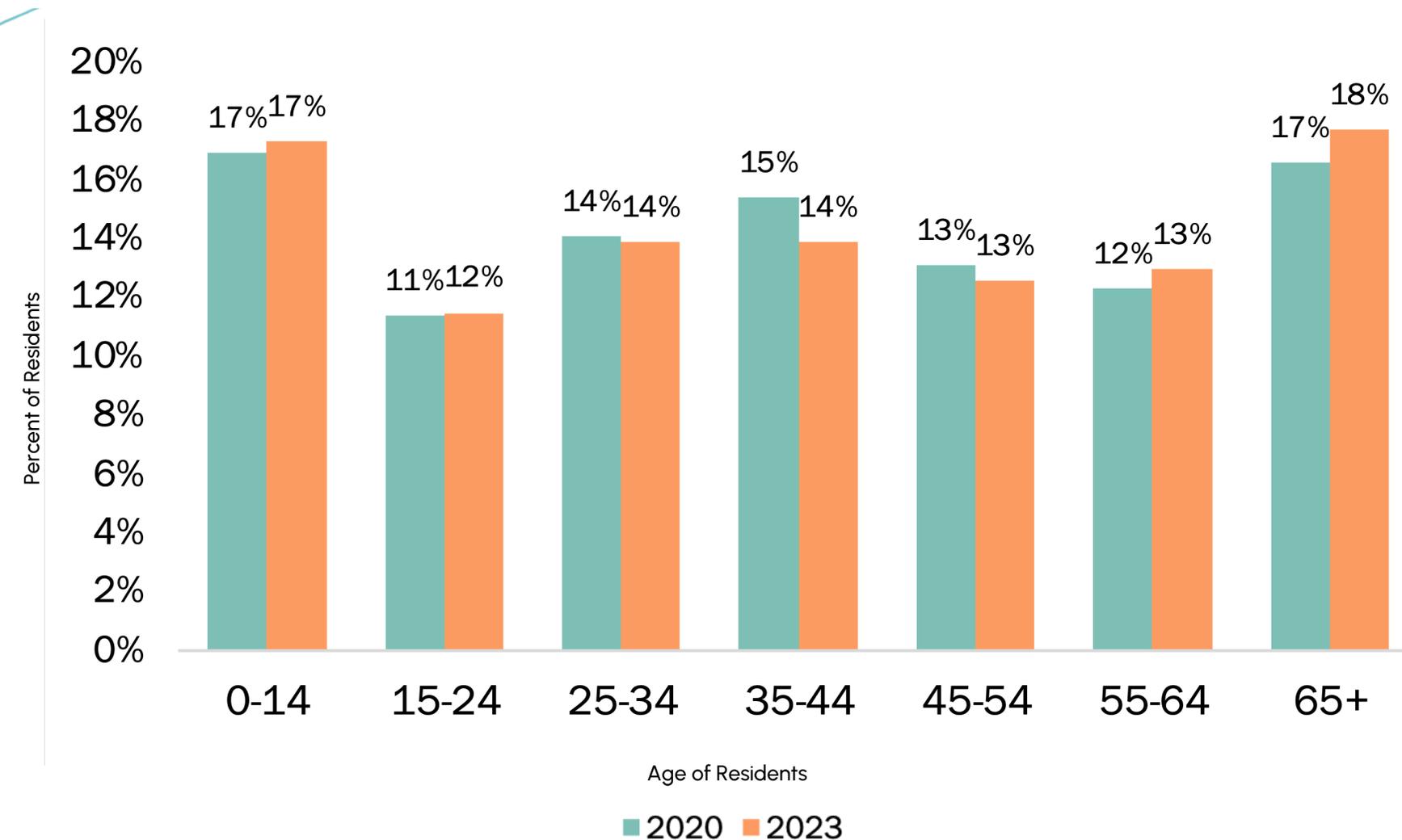


Roughly 40 percent of the working age residents that live within 15-minutes from the study area have a Bachelor's Degree or further education. This is indicative of a relatively well-trained workforce shed.

Age Distribution of Residents near the Sunrise Corridor Community

Exhibit 16. Age Distribution of Residents within a 15-minute Drive Time from the Sunrise Corridor Community, 2023

Source: ESRI Business Analyst



Of residents in and around the study area (within a 15-minute drive time):

- ◆ Over half are of working age 25-64,
- ◆ Approximately 20% are 65 or older,
- ◆ Approximately 30% are youth or young adults.

The age distribution of residents has not changed much overall in the last 3 years. The working age population has shown a decline, with the share of people 25-54 years of age decreasing by almost 3 percentage points.

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Real Estate Market Conditions

This section includes an evaluation of commercial real estate conditions for office, industrial, and retail building types in the Sunrise Corridor Community, and identifies market drivers and trends that will influence the market appeal and viability of commercial uses in the area.

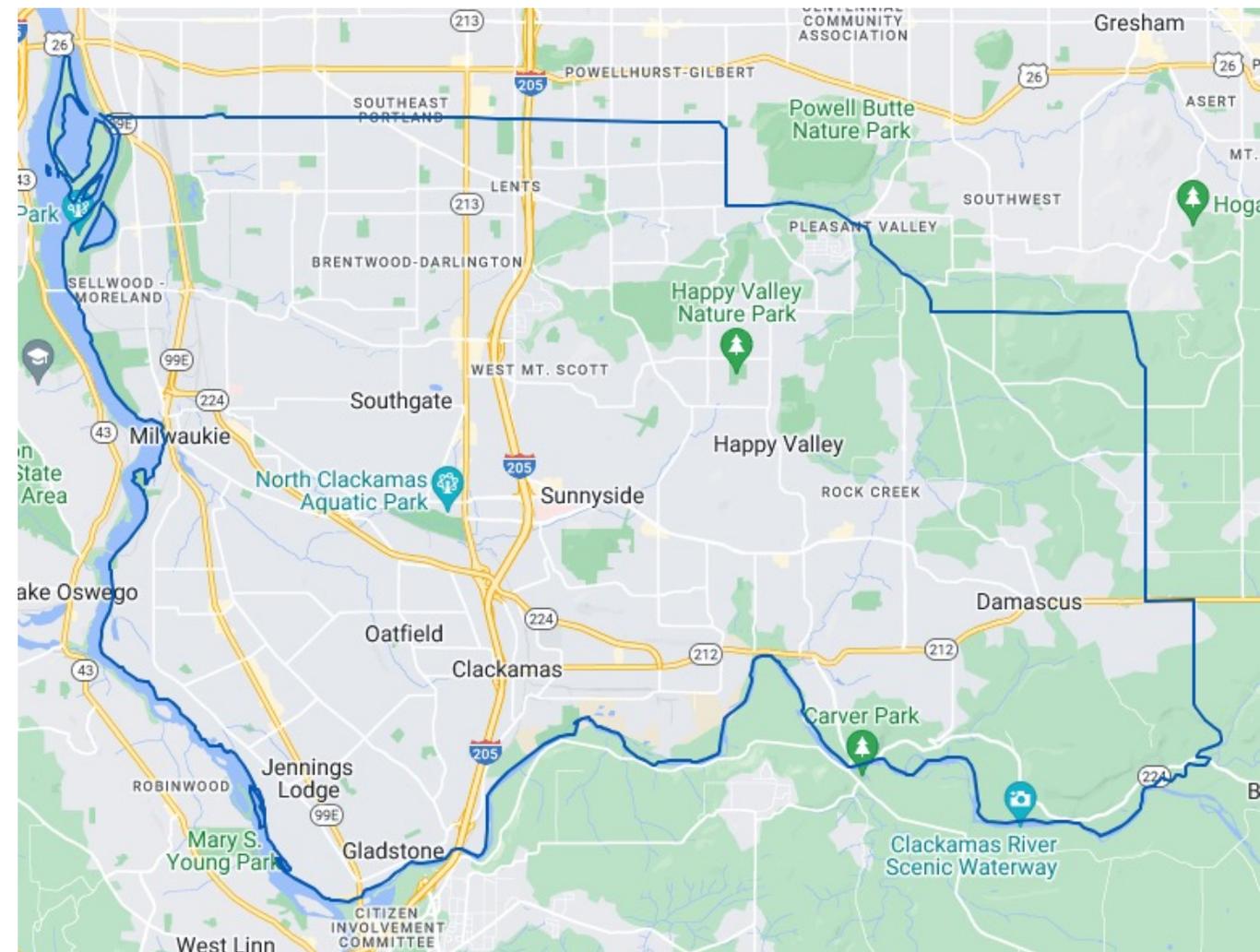
Geographic Boundary for Real Estate Analysis

This section presents current commercial real estate data and trends for the Sunrise Corridor Community and surrounding area. The real estate data in this section is collected for the Clackamas County/ Milwaukie Subarea, shown in Exhibit 17.

The "Clackamas County/ Milwaukie Subarea" is the broker-defined market in which the study area is located in. This area was used to evaluate real estate trends that impact the Sunrise Corridor Community. Real estate analysis typically begins with an evaluation of the broader trends from which the market functions, because performance of a local area will be influenced by competitiveness in the broader market. Additionally, the study area is too small to develop meaningful insights into real estate trends, and the area draws residents from a wide area, primarily from the northwest of the study area. Using the greater market area allows us to observe a greater number of real estate transactions within our observation years, providing greater insight into the real estate trends that will influence the Sunrise Corridor Community.

Exhibit 17. Clackamas County / Milwaukie Subarea

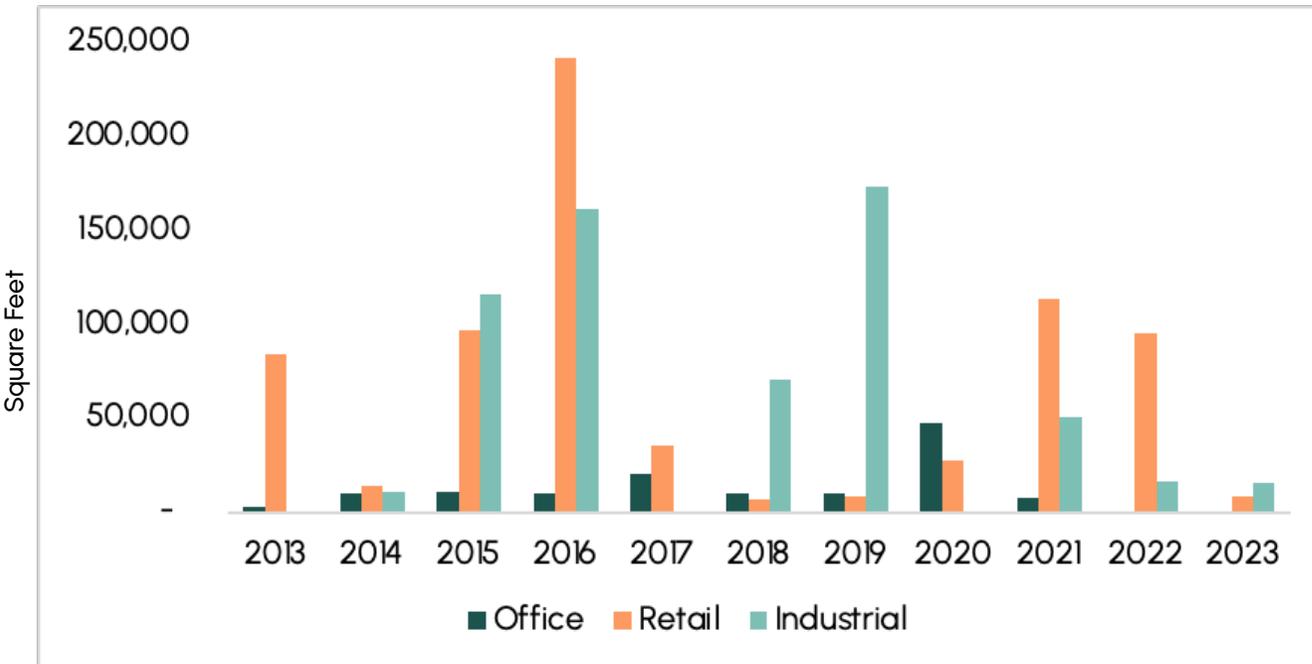
Source: Costar



Construction Activity – Clackamas County

Exhibit 18. New Construction and Development (SF Under Construction, Clackamas County/ Milwaukie Subarea, 2013-2023)

Source: Costar



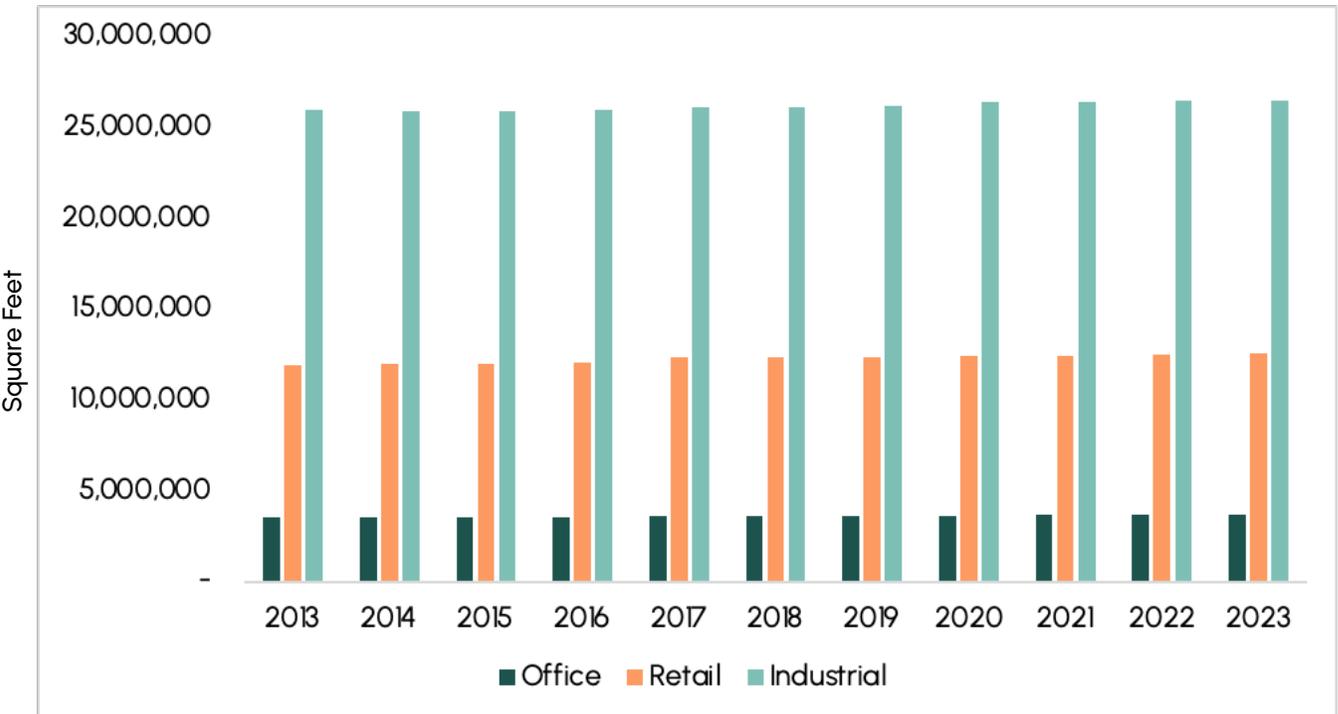
In the Clackamas County submarket, retail has shown the most construction activity in the last 10 years, closely followed by industrial properties (733,828 and 615,813 square feet of new construction, respectively).

Year	Office	Retail	Industrial
2013	3,188	84,170	-
2014	10,255	14,285	10,904
2015	11,210	96,981	115,704
2016	10,187	241,491	161,470
2017	20,657	35,609	-
2018	10,160	6,752	70,800
2019	9,976	9,046	173,400
2020	47,355	27,412	-
2021	7,801	113,774	50,930
2022	-	95,378	16,629
2023	-	8,930	15,976
Total	130,788	733,829	615,813

Total Commercial Inventory

Exhibit 19. Total Commercial Square Footage, Clackamas County/
Milwaukie Subarea, 2013-2023

Source: Costar



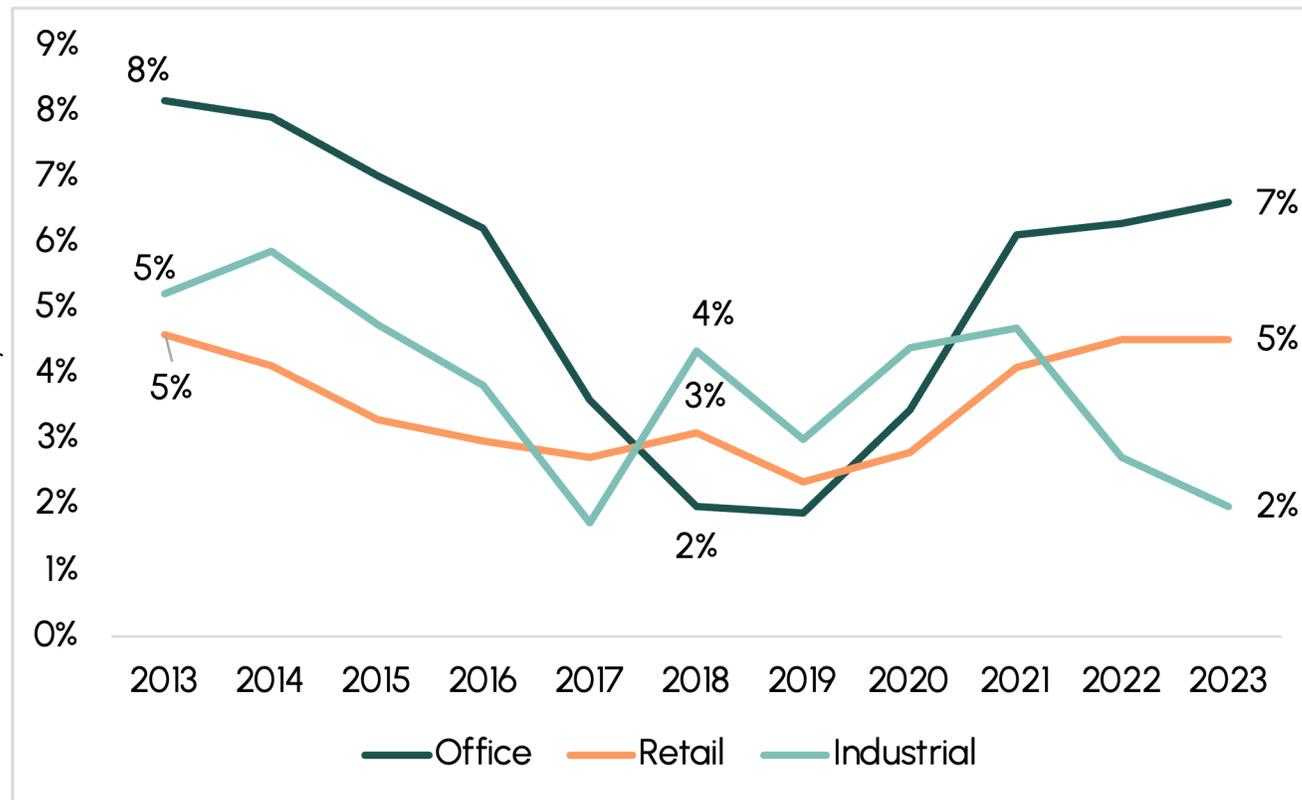
The total inventory of commercial square footage in the Clackamas County submarket has remained almost unchanged in the last 10 years. There are approximately twice as much square footage of industrial properties than retail properties, which in turn have more than twice the square footage of office properties.

As of 2023, Clackamas County has:

- ◆ 26.5 million square feet of industrial uses.
- ◆ 12.6 million square feet of commercial uses.
- ◆ 3.7 million square feet of retail uses.

Exhibit 20. Vacancy Rates by Commercial Use Type, Clackamas County/
Milwaukie Subarea, 2013-2023

Source: Costar



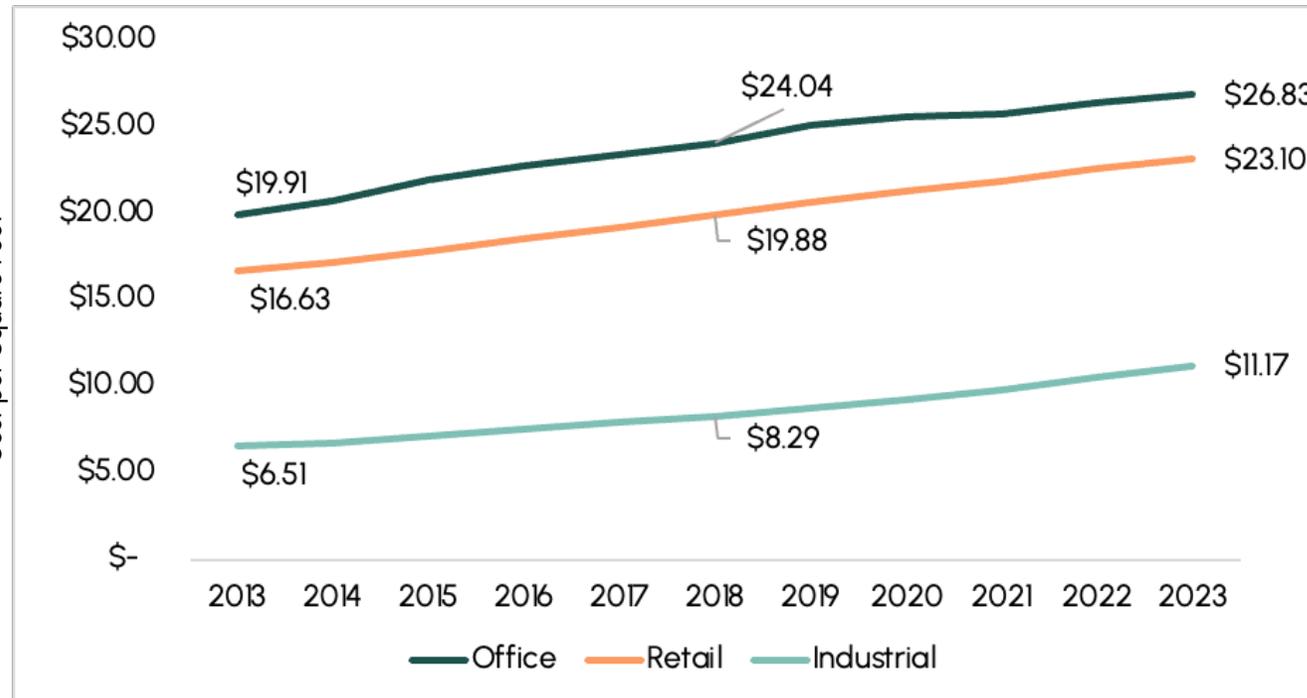
Industrial vacancy rates are at currently at a low of 2%, having dropped from 5% in 2021. This quick recovery indicates a market that was not significantly affected by the shifts brought on by the pandemic.

Retail vacancy has hovered a reasonably healthy level, between 3 to 5% over the last 10 years and is currently at 5%.

Office vacancy rates have increased since 2019 and are currently at 7%. High vacancy combined with low inventory and little new construction indicate a weak market for office use in Clackamas County.

Exhibit 21. Rental rates (per square foot), Clackamas County/ Milwaukie Subarea, 2013-2023

Source: Costar



Commercial rents have steadily increased over the last 10 years, with all three use types showing an increase in rents of \$5-\$7 per square foot (psf).

Office rents are the highest, at approximately \$27psf in 2023. Retail rent in 2023 was around \$23psf while industrial rent was around \$11 during that year.

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Assessment of the Built Environment

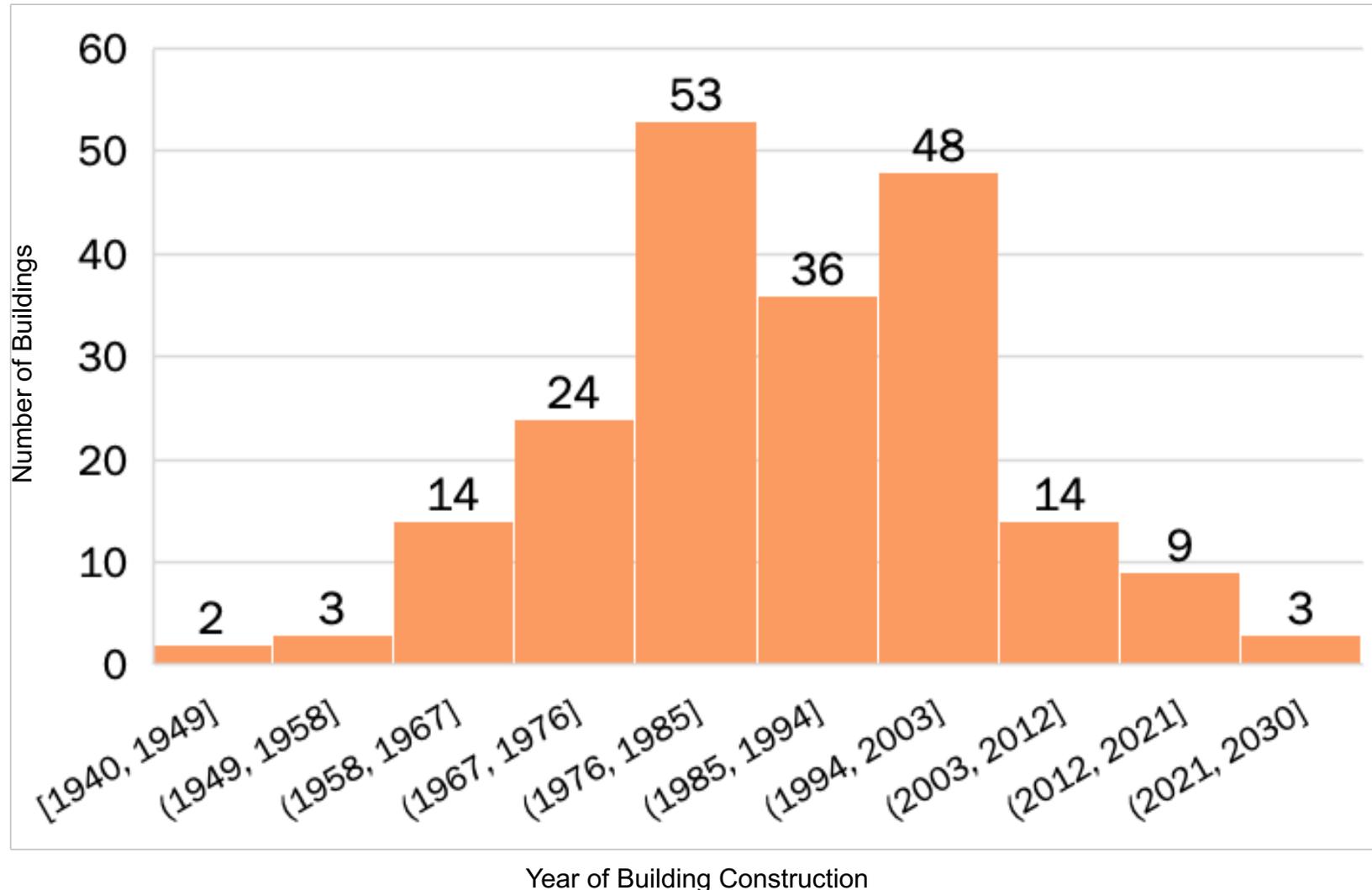
This section provides an evaluation of the physical characteristics of buildings within the Sunrise Corridor Community, including the scale of development and the age, quality, and class of historic and recent development.

Building Age - Industrial

Exhibit 22. Number of Buildings Constructed by Year in the Sunrise Corridor Community, 1940

to Present

Source: CoStar



While there has not recently been substantial new industrial construction activity, the newly constructed buildings are larger than older ones, as there is additional demand for industrial space.

Industrial development in the study area is showing signs of age. Over half of industrial structures were built more than 40 years ago.

Example Industrial Properties



Fred Meyer Distribution Center

Safeway Distribution Center



Properties Constructed or Proposed in the Last Five Years

Exhibit 23. Industrial Properties Constructed or Proposed in the Sunrise Corridor Community in the Last Five Years

Address	SF RBA	Vacancy Rate	Year Built	Class	Tenants	Construction Status
15730 SE 130th Ave	12,702	100%	2023	B	none	Existing
16935 SE 120th Ave	26,390	none	2021	B	none	Existing
16935 SE 120th Ave	22,710	0%	2021	B	Johnstone Supply	Existing
17225 SE 120TH Ave	162,507	0%	2019	B	Core-Mark	Existing
17325 SE 120TH Ave	116,493	0%	2019	B	Core-Mark (80,501 sf, remained unknown)	Existing
15730 SE 130th Ave	6,792	100%	2023	B	none	Existing
15730 SE 130th Ave	17,050	100%	2023	B	none	Existing
10500 SE Jennifer St	910,577	none	2025	A	none	Proposed

Exhibit 24. Retail Properties Constructed or Proposed in the Sunrise Corridor Community in the Last Five Years

Address	SF GLA	Vacancy Rate	Year Built	Class	Tenants	Construction Status
15530 SE 135th Ave	4,000	70%	2020	C	Starbucks (1200 sf, remainder vacant)	Existing
15576 SE 135th Ave	4,000	0%	2020	C	Medical (1500 sf), Retail (2500 SF), neither tenant is listed	Existing

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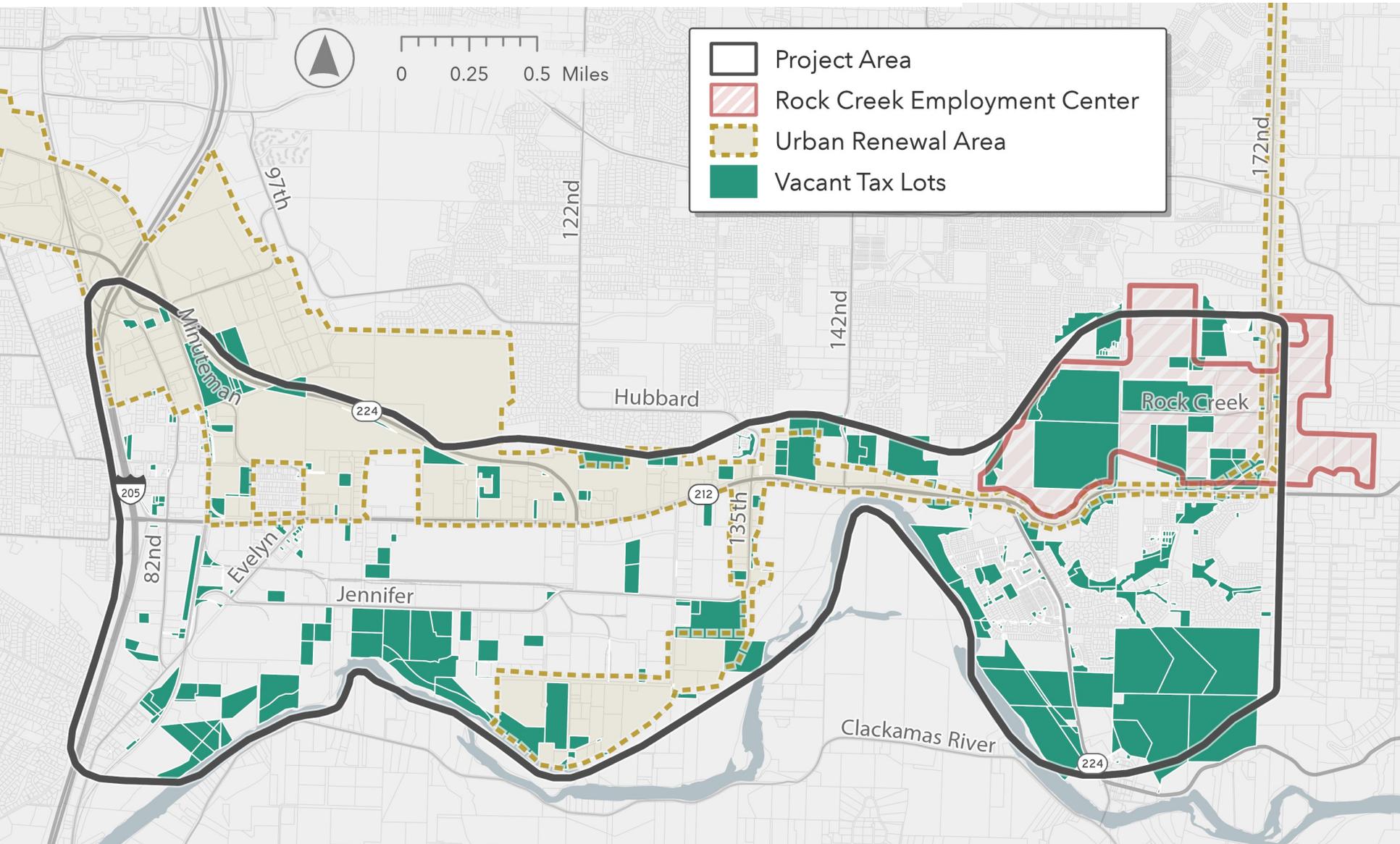
Identification of Vacant and Underutilized Properties

This section provides an evaluation of the geographic distribution of vacant and underutilized parcels, providing insight into where development or redevelopment potential is within the Sunrise Corridor.

Vacant Parcels in the Sunrise Corridor Community

Exhibit 25. Vacant Parcels within the Sunrise Corridor Community

Source: RLIS



There are 877 acres of vacant land in the Sunrise Corridor Community.*

These sites include much of the Rock Creek Employment Area.

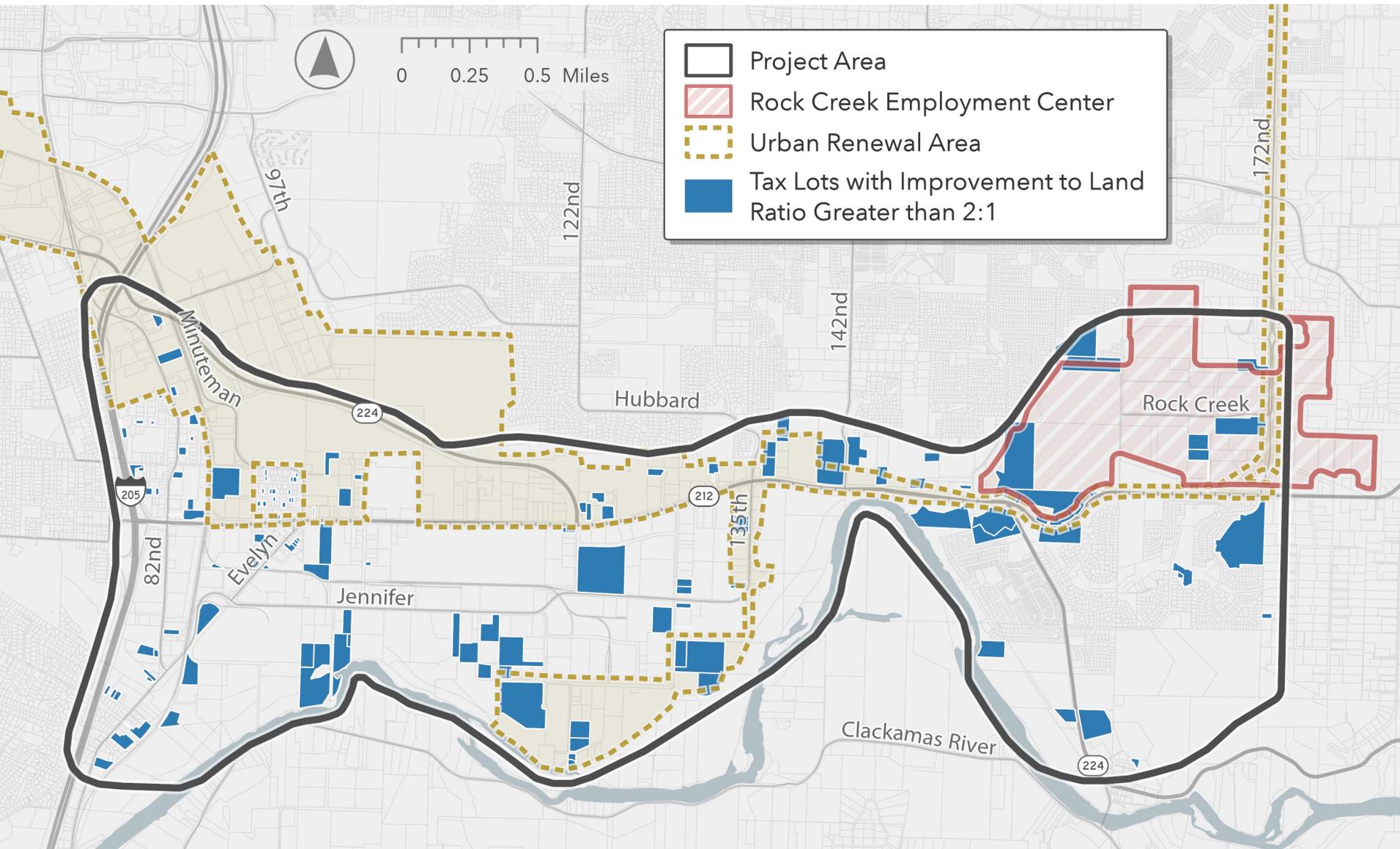
The presence of large adjacent vacant sites with potential for assemblage is a clear advantage for the district.

**Vacant parcels of less than 3,000 square feet are excluded from this total, as redevelopment on parcels of this size is unlikely.*

Underutilized Parcels in the Sunrise Corridor Community

Exhibit 26. Underutilized Parcels within the Sunrise Corridor Community

Source: RLIS



There are 330 acres of underutilized land in the Sunrise Corridor Community.*

Parcels are defined as underutilized if the assessed land value is at least twice the assessed value of the building on the parcel. This metric helps identify parcels with redevelopment potential.

***Underutilized parcels of less than 3,000 square feet are excluded from this total, as redevelopment on parcels of this size is unlikely.**

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Key Market Findings

Based on the findings from this existing conditions analysis, this section provides a summary of some of the key opportunities and challenges the Sunrise Corridor Community.

Economic Assets and Constraints

Assets and Opportunities

Regional Transportation Access. Proximity to I-205 affords strong access to regional transportation networks. The area is also rail-served.

Industry Concentrations and Diversifying Economic Base. The area has diverse industrial concentration of manufacturing, wholesaling, warehousing, and transportation uses. The economy is diversifying with services uses growing the fastest over the last five years.

Vacant Opportunity Areas. The area has large vacant and underrealized sites, including the Rock Creek Industrial Area.

Public Finance Tools and Incentives. Much of the study area is within the Clackamas Industrial Urban Renewal Area and the North Urban Clackamas Enterprise Zone.

Healthy Real Estate Markets. Commercial and industrial real estate markets show low vacancies and increasing rents.

Workforce. Access to a well-trained regional workforce.

Major Employers. The Sunrise Corridor Community is anchored by 20 larger employers (150 employees or more) that employ over 5,100 workers (36 percent of all workers).

Constraints and Challenges

Wetlands. Many sites encumbered with wetlands, reducing net developable area and increasing permitting timelines.

Conflicting Land Uses and Isolation. On one hand residential uses including mobile home parks are integrated within the industrial area and not buffered. On the other, retail and commercial services are isolated to the west and not integrated within the Sunrise Corridor Community as amenities.

Jobs/Housing Balance. Much of the workforce commutes from longer distances in the region.

Limited Development Activity. Despite strong market conditions, the area has seen limited new commercial or industrial development in recent years.

Aging Properties. Over 45 percent of commercial and industrial properties are over 25 years old. Roughly 25 percent are over 40 years old.

Infrastructure and Land Readiness. While the area has vacant and underutilized assets, land characteristics and readiness may be misaligned with the needs of performing industry sectors. These may include infrastructure upgrades or extensions, land assemblage, market availability, or other factors.