

## Section 1 Executive Summary

## EXECUTIVE SUMMARY

Clackamas County is updating its Transportation System Plan (TSP) to provide policies that will guide transportation decisions and identify the transportation needs and priorities in unincorporated Clackamas County for the next 20 years. The previous update was completed approximately 10 years ago. Since that time Metro standards and planning regulations have changed, the Oregon Department of Transportation (ODOT) has modified its standards and the state has modified planning requirements for local jurisdictions.

This TSP update will:

- Identify the County’s needs consistent with current regional and statewide plans
- Be based on the County’s projected population and land use for the year 2035 (the horizon year for the Metro Regional Transportation Plan [RTP] that applies to the portions of the county within the Metro Urban Growth Boundary [UGB])
- Satisfy the state requirement that unincorporated County areas outside of Metro have a plan that looks 20 or more years into the future.

The first step in the TSP update process was to determine the overall vision and goals for what the future transportation system should look like, and the desired outcomes. The County’s Public Advisory Committee, Technical Advisory Committee and Project Management Team worked together and with the public to develop the following Vision and Goals for the County’s future transportation system. The Vision, Goals and Objectives were approved by the Board of County Commissioners in April 2012.

Table X 1 Vision and Goals

VISION - Building on the foundation of our existing assets, we envision a well-maintained and designed transportation system that provides safety, flexibility, mobility, accessibility and connectivity for people, goods and services; is tailored to our diverse geographies; and supports future needs and land use plans.
<b>Goal 1: Sustainable</b>
Provide a transportation system that optimizes benefits to the environment, the economy and the community.
<b>Goal 2: Local Businesses and Jobs</b>
Plan the transportation system to create a prosperous and adaptable economy and further the economic well-being of businesses and residents of the county.
<b>Goal 3: Livable and Local</b>
Tailor transportation solutions to suit the diversity of local communities.
<b>Goal 4: Safety and Health</b>
Promote a transportation system that maintains or improves our safety, health, and security.
<b>Goal 5: Equity</b>
Provide an equitable transportation system.
<b>Goal 6: Fiscally Responsible</b>
Promote a fiscally responsible approach to protect and improve the existing transportation system and implement a cost-effective system to meet future needs.

Specific objectives and evaluation criteria were developed for each goal. These can be found on the project website ([www.clackamascountytsp.com](http://www.clackamascountytsp.com)) with materials for the March 6, 2012 PAC meeting.

This report, *Existing and Future Base Conditions Analysis*, includes the following key components:

- Baseline Information about the transportation system (the existing inventory of facilities and how they are operating), population and land use that will be used to apply the evaluation criteria during the alternatives analysis phase of the project as well as to determine if the final TSP achieves the County’s goals.
- Gaps and Deficiencies - One of this report's key objectives is to identify and verify existing and future gaps and deficiencies in the transportation system. Gaps, which apply to all modes, are missing facilities or connections in the sidewalk system, the bicycle network and roadway connections, and densely populated areas without transit service. Deficiencies are defined as facilities that exist but do not perform up to defined standards, such as an intersection with too much delay and congestion, a sidewalk or bicycle lane that is too narrow, or a roadway with a poor safety record.

**Future Baseline Build Scenarios** - This report initiates the alternatives analysis phase of the project by comparing two possible future scenarios: 2035 Low Build and 2035 Full Build.

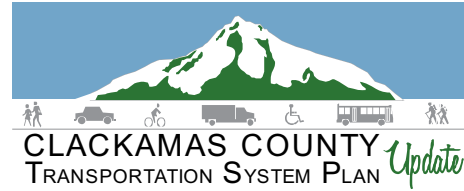
- The 2035 Low Build Scenario provides an understanding of how the future transportation system would operate if projected population and employment growth occurred, but the only transportation projects constructed were those currently funded for construction over the next several years.
- The 2035 Full Build Scenario has the same population and employment projections as the Low Build Scenario, but provides an understanding of how the future transportation system would operate if all of the projects identified in the County’s current TSP were constructed, even those without funding at this time.

The comparison of these two 2035 scenarios helps identify the planned projects that directly address existing and future gaps and deficiencies in the transportation system, and identify those that do not directly address an existing or future gap or deficiency and therefore should be considered for removal from the TSP. Potential additional improvements to the transportation system to address the existing and projected gaps and deficiencies will be evaluated during the alternatives analysis phase of the project.










## GEOGRAPHIC AREAS

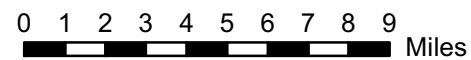
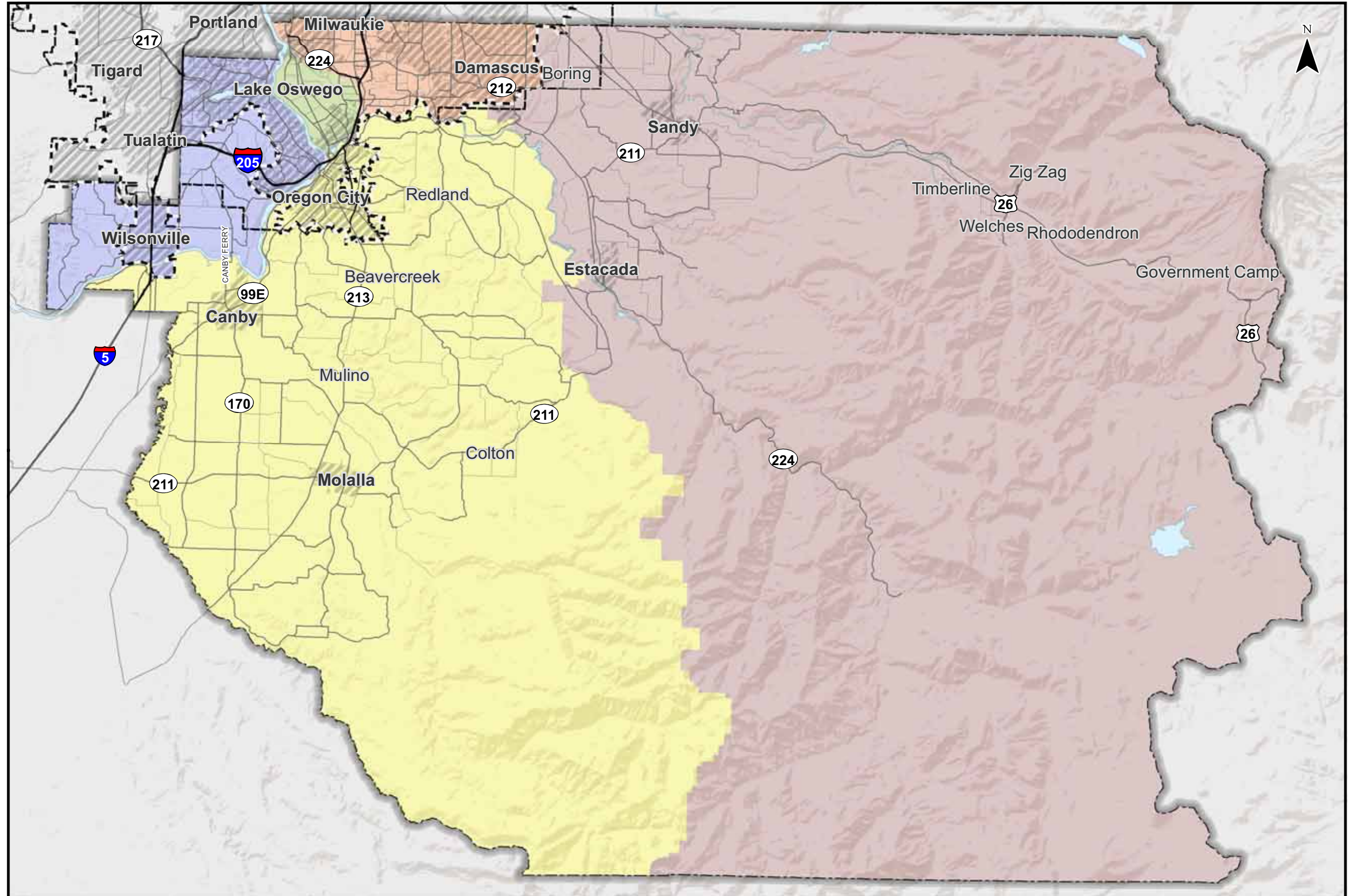
Due to the overall size and diversity of the County (1,879 square miles of urban and rural areas), this report is divided into five geographic areas. The areas are shown on Figure X1 and include:

- East County - generally outside of the Metro Urban Growth Boundary and east of the Clackamas River



**Geographic Analysis Sub Areas**

-  East County
-  Southwest County
-  Greater McLoughlin Area
-  Greater Clackamas Regional Center/ Industrial Area
-  Northwest County
-  Incorporated Areas
-  County Boundary
-  UGB
-  Metro Area



Coordinate System:  
NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl  
Data Source:  
Clackamas County, Metro Data Resouce Center

## Clackamas County Geographic Analysis Sub Areas

Figure  
**X 1**



- Southwest County - generally east of the Willamette River and south and west of the Clackamas River
- Greater McLoughlin Area - generally bounded by the Willamette River to the west, I-205 to the east, and OR 224 to the north
- Clackamas Regional Center/Industrial Area - generally bounded by OR 224 to the west, the Metro UGB to the south and east, and the county boundary to the north
- Northwest County - urban and rural areas generally north and west of the Willamette River

While this report is expansive in nature due to the size of the county’s transportation system, key findings are highlighted below for quick reference and readers may choose to read only the sections on the geographic areas that interest them. *Section 2 Introduction* provides suggestions on which sections of the report to focus on based on a reader’s interest.

## FINDINGS

The following three sections highlight key findings from the existing and projected 2035 future conditions analysis. The first section provides an overview of how delay, vehicle miles traveled and average trip time change at the County-wide level from existing to 2035 future conditions. It also provides an overview of how the projected population changes and previously planned projects impact countywide travel patterns. The second and third sections address gaps and deficiencies for the existing and future conditions.

### Countywide Comparison of Existing and Future Conditions

The Metro travel demand model was used to evaluate general changes in travel patterns between existing conditions and the 2035 Low Build Scenario and the 2035 Full Build Scenario.

Table X 2 summarizes the delay per capita, vehicle miles traveled per capita and average trip time under each of the analysis scenarios. This information provides a high-level comparison of how the projected population growth pattern will impact individual travel and overall system congestion with little investment (Low Build) and with significant investment (Full Build) in projects that would relieve peak hour congestion.

Table X 2 Countywide Per Person Delay, Vehicle Miles Traveled and Average Trip Time Comparison

Analysis Scenario	Population of Clackamas County <sup>1</sup>	Annual Hours of Delay per Person	Daily Vehicle Miles Traveled per Person <sup>2</sup>	Average Trip Time for Trips To, From and Within County <sup>3</sup>
Existing Conditions	370,885 people	10.5 hours	16 miles/person	22.3 minutes
2035 Low Build	554,849 people (+49%)	17.0 hours (+62%)	14 miles/person (-12.5%)	23.7 minutes (+6%)
2035 Full Build	554,849 people (+49%)	15.5 hours (+48%)	14 miles/person (-12.5%)	23.4 minutes (+5%)

<sup>1</sup>Entire county population including residents who are too young to drive or are not able to drive.

<sup>2</sup>Values rounded to the nearest mile.

<sup>3</sup>Values rounded to the nearest tenth of a minute.

### Countywide Travel Pattern Findings

- The Clackamas County population is projected to increase by approximately 49% by 2035, from 370,885 to 554,849..
- The projections of future land use and location of population and employment growth result in 12.5% less vehicle miles traveled (VMT) per day per person.
  - Since VMT frequently correlates to emissions; the assumed growth scenario may have less VMT per capita than existing conditions.
  - Reduced VMT per person generally indicates people are making fewer and/or shorter vehicle trips, which is likely attributable to urban areas with projected higher densities resulting in people living closer to jobs, schools, and commercial activities.
- Delay per person is estimated to increase significantly for both future scenarios (62% in the Low Build and 48% in the Full Build) relative to existing conditions, but is much more significant in the Low Build Scenario. That indicates that construction of the existing TSP projects that are funded would result in less delay (and congestion) per person than if no additional peak hour capacity-enhancing projects were constructed. The relative similarity in results between the Low Build and Full Build reflects the reality that building larger or more roadway infrastructure does not guarantee reductions in delay or congestion. For example, constructing more roadways or larger roadways induces more travel by vehicle.
- While trip lengths may be reduced as noted above, those trips are anticipated to take longer in the future.
  - The difference in average time for trips to, from and within Clackamas County increase by about 6% and 5%, respectively, from the existing condition to the 2035 Low Build and Full Build scenarios.
  - While the investments in the Full Build Scenario reduce the average hours of delay per person (the amount of time experiencing congestion), the difference in the average trip time countywide as compared to the Low Build is negligible.

### Existing Conditions

The existing conditions analysis provides a baseline of information for evaluating future scenarios and project alternatives. It also identifies the existing gaps and deficiencies in the system. Gaps apply to all modes and are missing facilities or connections such as gaps in the sidewalk system, missing links in the bicycle network, roadway connections that should be made, and densely populated areas without transit service. Deficiencies are locations where a facility exists but it does not perform at its' defined standard such as an intersection with too much delay and congestion, a sidewalk or bicycle lane that is too narrow, or an area experience more crashes than other areas. The following provides a summary of some of the baseline information related to Transportation Disadvantaged Populations, identifies the existing gaps and deficiencies for the auto, pedestrian, bicycle, and transit modes by geographic area, and then provides

information on additional modes including freight, rail, air, pipeline, and water transportation. Although the County's TSP will be a plan for unincorporated areas only, some baseline information includes information within incorporated cities to provide context.

### ***Transportation Disadvantaged Populations***

Figure 9 in each geographic area section of the report summarizes areas with high proportions of transportation disadvantaged populations. Transportation disadvantaged populations are defined as groups of people who have historically had significant unmet transportation needs or have experienced disproportionate negative impacts from the transportation system such as the elderly, youth, low income, and low vehicle ownership populations, and those living within 500 feet of a freeway or highway. The purpose of mapping this information is to be aware of where transportation disadvantaged populations are living, consistent with the County's equity goal, while considering their needs to access different destinations. Population density (shown in Figure 4 of each geographic area section of the report) needs to be considered in conjunction with the location of transportation disadvantaged populations when evaluating transportation projects and priorities for the TSP. The following provides the key findings, by geographic area, related to the transportation disadvantaged populations and population density.

### ***Transportation Disadvantaged Populations: Key Findings***

#### *East County*

- The most transportation disadvantaged populations live primarily along OR 224, north of US 26, and outside Estacada in areas that are low density.

#### *Southwest County*

- The areas with a high percentage of transportation disadvantaged populations are relatively spread out throughout the geographic area and in low density areas; however there are many areas of transportation disadvantaged populations in the more densely populated incorporated areas of Canby and Oregon City.

#### *Greater McLoughlin Area*

- This geographic area is all located within the urban area, and both the incorporated and unincorporated areas have relatively high densities. The transportation disadvantaged populations are located heavily along OR 99, surrounding Park Avenue on the Milwaukie /unincorporated Clackamas County border (the site of a future light-rail station), and between Webster Road and I-205.

#### *Greater Clackamas Regional Center/Industrial Area*

- This geographic area has the highest population densities in unincorporated Clackamas County with the highest density areas located along SE King Road. Nearly all of the

unincorporated areas of the geographic area are identified as Transportation “Disadvantaged” or “Most Disadvantaged” areas. In contrast, the incorporated areas of Damascus and Happy Valley have relatively low densities and are the areas with the least transportation disadvantaged populations.

### *Northwest County*

- The unincorporated areas are very low density with the exception of the small unincorporated areas within Lake Oswego in Rivergrove which have suburban densities. The Stafford Road area does not have any significant transportation disadvantaged populations, but the unincorporated area west of Wilsonville has some small areas of disadvantaged populations (although they are very low density). The eastern half of Wilsonville has significant areas of disadvantaged populations.

### ***Existing Roadway Gaps and Deficiencies***

Roadway deficiencies related to intersection operations, roadway segment (corridor) congestion, and safety corridors are described below. Figures illustrating the complete operational results are provided in each geographic area (Section 4 through Section 8) in the following locations:

- Figure 15: Existing Intersection Operations
- Figure 17: Evening Weekday Peak Hour Roadway Segment Congestion 2010 Base Year
- Figure 25: Candidate Safety Corridors

Intersection and roadway segment deficiencies are defined as intersections or roadway segments that do not meet the standard for acceptable operations (see Section 2 for additional information on intersection and roadway standards). Safety corridors are a series of intersections and segments that have experienced a higher number roadway departure crashes, crashes involving aggressive driving and/or crashes involving young drivers. These particular crash types historically have led to the majority of fatal and injury crashes within the County. Section 2 Assumptions and Methods provides additional information regarding the crash analysis and considerations.

Current standards for acceptable operations allow for higher levels of congestion than the standards that were in place for the previous TSP update. The Metro Regional Transportation Plan sets the standards within the Metro UGB, ODOT standards apply to state facilities outside of the Metro UGB and County standards apply to County facilities outside of the Metro UGB. County standards will be reviewed and potentially modified as part of the TSP update process.

Roadway deficiencies also include roadways with volumes that are inconsistent with their functional classification.

Gaps are defined as areas where new roadways should be built to provide connectivity and the minimum spacing of collectors and arterials per the Metro Regional Functional Plan. *An assessment of roadway gaps*



and appropriate functional roadway classifications will be completed during the alternatives analysis phase of the project.

### **Existing Roadway Deficiencies: Key Findings**

#### *East County*

- Two of the six study intersections are operating at volume-to-capacity ratios that do not meet performance standards:
  - OR 212/SE 282nd Avenue
  - OR 224/OR 211
- Roadway segments are generally uncongested during the weekday evening peak period.
- The following candidate safety corridors (listed below in no particular order) were identified based on the crash data review and analysis:
  - SE 282nd Avenue from US 26 to SE Richey Road
  - OR 211 from OR 224 to eastbound Mt. Hood Highway
  - US 26 from SE Kelso Road to Duncan Road
  - US 26 from Duncan Road to SE Langensand Road
  - US 26 from SE Firwood Road to E Sleepy Hollow Drive
  - US 26 from Rhododendron to Highway 35
  - SE Eagle Creek Road from SE Firwood Road to NE 6th Avenue
  - OR 211 from OR 224 to S Hillcockburn Road
  - OR 224 from SE 232nd to OR 211
  - OR 224 from Fish Creek Road to National Forest Road 46

#### *Southwest County*

- Three of the 24 study intersections do not meet performance standards. All other study intersections are operating within the volume-to-capacity ratio or level of service standards.
  - Clackamas River Drive/Springwater Road
  - S. Leland Drive/OR 213
  - OR 99E/ S. Barlow Road
- Roadway segments outside of the Urban Growth Boundary (UGB) are primarily uncongested during the weekday evening peak hour.

- The following candidate safety corridors (listed below in no particular order) were identified based on the crash data review and analysis:
  - S Redland Road from OR 213 to S Hattan Road
  - OR 213 from Molalla Avenue to S Spangler Road
  - OR 213 from S Graves Road to OR 211
  - S Maple Lane Road from Beavercreek Road to Ferguson Road
  - S Beavercreek Road from S Lower Highland Road to S Butte Road
  - S Upper Highland Road from S Beavercreek Road to S Lower Highland Road
  - OR 211 from S Beavercreek Road to S Upper Highland Road
  - Highway 99E from S Sequoia Parkway to S Lone Elder Road
  - Highway 99E from NE Territorial Road to the Urban Growth Boundary
  - Highway 170 from Highway 99E to S Macksburg Road
  - OR 213/S Beavercreek Road intersection
  - Redland Road/S Springwater Road intersection

#### *Greater McLoughlin Area*

- All 25 study intersections are operating at volume-to-capacity ratios that meet performance standards.
- Roadway segments are primarily uncongested during the weekday evening peak hour. Motorists may experience congestion on some roadways due to delay at intersections; however, the roadway segments have sufficient capacity to serve the existing vehicle traffic. Relatively short segments of SE River Road and SE Thiessen Road are estimated to experience congestion during the weekday evening peak hour.
- The following candidate safety corridors (listed below in no particular order) were identified based on the crash data review and analysis:
  - Highway 99E from SE Park Avenue to bridge across the Clackamas River
  - SE Jennings Avenue from Webster Road to Highway 99E
  - Oatfield Road from SE Jennings Avenue to SE Lake Road

#### *Greater Clackamas Regional Center/Industrial Area*

- Two of the 65 study intersections are operating at volume-to-capacity ratios that do meet performance standards. Both intersections are on ODOT facilities:

- OR 212/I-205 SB ramps
- OR 224/SE Hubbard Road/135th Avenue
- Roadway segments (excluding I-205) are primarily uncongested during the weekday evening peak hour. Motorists may experience congestion on some roadways due to delay at intersections; however, the roadway segments have sufficient capacity to serve the existing vehicle traffic. Relatively short segments of OR 212 and SE Sunnyside Road are estimated to approach congestion during the weekend evening peak hour.
- The following candidate safety corridors (listed below in no particular order) were identified based on the crash data review and analysis:
  - SE 82nd Avenue from SE Luther Road to SE Sunnybrook Boulevard
  - SE Johnson Creek Boulevard from SE 55th Avenue to I-205
  - SE Sunnyside Road from SE 93rd Avenue to SE 126th Avenue
  - SE 122nd Avenue from SE 172nd Avenue to SE Hubbard Road
  - OR 212 from I-205 to OR 224

#### *Northwest County*

- Two of the five study intersections are operating at volume-to-capacity ratios that do meet performance standards:
  - SW Childs Road/SW Stafford Road
  - SW 65th Avenue/SW Stafford Road
- Roadway segments (excluding I-205 and I-5) are primarily uncongested during the weekday evening peak hour. Relatively short segments of Stafford Road south of Rosemont Road are estimated to experience some level of congestion.
- One candidate safety corridor was identified based on crash data review -- Stafford Road from S Rosemont Road to SW Mountain Road.

## ***Pedestrian System Gaps and Deficiencies***

**Urban areas** - Current County roadway standards require sidewalks on all Major Arterials, Minor Arterials, Collectors, and Local Streets. The County’s Comprehensive Plan also identifies the Essential Pedestrian Network in the urban area. (The Essential Pedestrian Network includes nearly all arterials and collectors, and identifies the local roadways that are critical links in the pedestrian network.) Gaps in the urban area pedestrian network are defined as anything on the Essential Pedestrian Network that is not completed.

**Rural areas** - Sidewalks are only required in “unincorporated communities,” which are identified as Rural Centers in the pedestrian maps. They include Rural Communities, Rural Service Centers, Resort Communities and Urban Unincorporated Communities as defined by the County’s Comprehensive Plan. Within “unincorporated communities”, sidewalks or walkways are to be provided adjacent to or within areas of development, such as schools, businesses, or employment centers near or along highways. Gaps in the rural area pedestrian network include all facilities within Rural Centers that do not have a sidewalk or walkway adjacent to or within such areas of development.

Figure 18 in each of the geographic area report sections documents the existing pedestrian network as well as the Comprehensive Plan’s Essential Pedestrian Network.

The County’s Pedestrian Master Plan has identified priority projects for filling in the pedestrian network gaps. This report seeks to verify the existing networks to gain an updated view of the gaps in the current pedestrian network. Subsequent phases of the TSP Update process will include evaluating and updating priorities for completing the Essential Pedestrian Networks based on the TSP Vision and Goals.

## ***Pedestrian System Gaps and Deficiencies: Key Findings***

### *Countywide*

- In rural areas, current County standards only require sidewalks in Rural Centers. There are gaps in the pedestrian system in Rural Centers such as Boring, Welches, Zigzag, Wildwood/Timberline, Colton, Redland, and Beavercreek.
- In urban areas, sidewalks are required on all roadways. The Essential Pedestrian Network in the County’s Comprehensive Plan provides guidance on which local roadways are critical parts of the pedestrian network.
- In the unincorporated urban areas of Clackamas County, there are more miles of roadways in need of sidewalks than miles of roadway with sidewalks.

### *East County*

- Based on rural roadway standards, there are no deficiencies in the pedestrian system except in the Rural Centers of Boring, Welches, Zigzag, and Wildwood/Timberline.

*Southwest County*

- Based on rural roadway standards, there are no deficiencies in the pedestrian system except in the Rural Centers of Colton, Redland, and Beavercreek.

*Greater McLoughlin Area*

- Nearly all roadways have significant gaps in pedestrian facilities, including OR 99E which is categorized as only 76-99% complete with respect to sidewalks.
- The County’s Pedestrian Master Plan identifies priorities for filling in the pedestrian network gaps. The priority of these projects will be reviewed based on the TSP Vision and Goals evaluation criteria. They are shown in the table below.

Table X 3 Pedestrian Master Plan Sidewalk Projects in the Greater McLoughlin Area

Pedestrian Master Plan Project Number	Street Name	Section Description
7	ARISTA - TROLLEY TRAIL	On-street portions: Courtney Ave to Creighton - Jennings to Boardman
9	CONCORD	Harold to Oatfield Rd
11	COURTNEY	River Rd to McLoughlin
14	GREENVIEW	Thiessen Rd to Clackamas Rd
15	HAROLD	Concord Road to Roethe Road
16	HILL	View Acres to Oatfield Rd
17	HILL	Thiessen Rd to View Acres Rd.
22	JENNINGS	99E to Webster
23	JOHNSON	Roots Rd to Lake Rd
25	LAKE	Johnson Rd / Webster
29	NAEF	Oatfield Rd to River Rd
30	OATFIELD	Milwaukie to Gladstone
31	PARK	River Rd to Oatfield Rd
32	RISLEY	Arista to Concord Road
33	RIVER	99E Gladstone to 99E Milwaukie
34	ROETHE	River Road to 99E
35	ROOTS	Webster to McKinley Rd.
36	RUSK	Hwy 224 to Aldercrest
39	THIESSEN	Webster Rd to Aldercrest Rd
40	THIESSEN	Oatfield to Hill
42	WEBSTER	Hwy 224 South to Gladstone
52	CONCORD	Oatfield to La Bonita
54	JENNINGS	River to 99E
55	MAPLE	Laurie Ave to Rupert Dr.
102	MCCLOUGHLIN	Milwaukie to Gladstone



*Greater Clackamas Regional Center/Industrial Area*

- There are sidewalks along many key facilities; however, there are also still significant gaps, particularly farther away from the Clackamas Regional Center.
- The County’s Pedestrian Master Plan identifies priorities for filling in the pedestrian network gaps. The priority of these projects will be reviewed based on the TSP Vision and Goals evaluation criteria. They are shown in the table below.
- **Six priority pedestrian routes have been identified for the core of the Clackamas Regional Center by the recently completed Clackamas Regional Center Pedestrian and Bikeway project.**

Table X 4 Pedestrian Master Plan Projects in the Greater Clackamas Regional Center/Industrial Area

Pedestrian Master Plan Project Number	Street Name	Section Description
1	106TH	Hwy 212 to Jennifer
2	122ND / 129TH	HAPPY VALLEY - Sunnyside to King
3	132ND	Sunnyside Rd south to Hubbard
4	142ND	Sunnyside south to Charjan
5	152ND	Bend in Road to Hwy 212
6	92ND	Stevens to Idleman
8	BELL	King Rd to Alberta
10	CORNWELL	82nd to Garden Lane
12	EVELYN	82nd Dr to Jennifer Ave
13	FULLER	82nd Ave north to County Line
18	HILLCREST	92nd to Stevens
19	HUBBARD	132nd Ave to Hwy 212
20	IDLEMAN	Stevens to Mt. Scott Blvd.
21	JENNIFER	82nd Dr to 135th
24	JOHNSON CREEK	Bell Ave to 92nd
26	LAWNFIELD	82nd Dr to 97th
27	LINWOOD	Harmony north to County Line
28	MATHER	Cranberry Loop to 97th
37	STANLEY	Willow to Johnson Creek Blvd.
38	STEVENS	Otty to Sunnyside Rd
41	THOMPSON / 72nd / MONROE	Linwood to Thompson
101	82ND	I-205 north to Sunnyside Road
904	INDUSTRIAL AREA	Pedestrian Connector
903	N CLACKAMAS PARK TRAIL	Trail in North Clackamas Park
902	PHILLIPS CREEK GREENWAY	Regional Center Path
905	CLACKAMAS REGIONAL CENTER PED LINKAGE	Various Ped Linkage in Clackamas Regional Center

### Northwest County

- There are no deficiencies in the pedestrian system.
- While sidewalks are required in the County’s urban areas, none of the streets in the County’s urban areas in Lake Oswego are designated as part of the Essential Pedestrian Network.

### ***Bicycle System Gaps and Deficiencies***

The County’s current roadway standards state that all Major Arterials, Minor Arterials, Connectors, and Collectors are intended to serve as bikeways (bike lanes in urban areas and six-foot shoulder bikeways in rural areas). The County’s Comprehensive Plan identifies the Essential Pedestrian Network in the urban area and the Planned Bikeway Network in the urban and rural areas (included in *Appendix 5: Essential Pedestrian and Bicycle Networks*). The Planned Bikeway Network for the urban and rural areas includes nearly all arterials and collectors plus planned multi-use trails. Gaps in the bicycle networks are defined as anything on the Planned Network that is not completed. Deficiencies in the system include areas where the facility is sub-standard (too narrow or poor pavement condition) or where the roadway crossings are inadequate. Figure 19 in each of the geographic area report sections documents the existing bicycle network as well as the existing Comprehensive Plan’s Planned Bikeway Network.

The County’s Bike Master Plans have identified priority projects for filling in the bicycle network gaps. This report seeks to verify the existing networks to gain an updated view of the gaps in the current bicycle network. Subsequent phases of the TSP Update process will include evaluating potential changes to the planned networks and updating priorities for completing the bikeway system.

### ***Bicycle System Gaps and Deficiencies: Key Findings***

#### *Countywide*

- Gaps are shown in Figure 19 of each geographic area report section.
- Shoulder lanes are present on the majority of state highways.
- The majority of rural collectors and arterials do not have shoulders six feet or greater in width. The County’s Bike Master Plan identifies the priorities for filling gaps in the bicycle system.
- In unincorporated urban areas, current County standards are for bicycle facilities to be provided on all roadways designated as Collectors or higher. A significant portion of the unincorporated urban areas within the County have bicycle lanes.

#### *East County*

- There are shoulder lanes on portions of the state highway system, but not on the county roadway system.

- The County’s Bike Master Plan identifies priorities for filling in the bicycle network gaps. The priority of these projects will be reviewed based on the TSP Vision and Goals evaluation criteria. They are shown in the table below.

Table X 5 Bike Master Plan Projects in East County

Bike Master Plan Project Number	Street Name	Section Description	Project Elements
RB 403	282ND	Hwy 212 to County Line	Widen / Shoulder Bikeways
RB 411	COMPTON	Hwy 26 to 352nd Ave	Widen / Shoulder Bikeways
RB 412	EAGLE CREEK	Hwy 211 to River Mill Rd	Widen / Shoulder Bikeways
RB 414	GRAYS HILL	Green Mountain Road to Hwy 211	Widen / Shoulder Bikeways
RB 420	KELSO	Amisigger Rd to Sandy City Limits	Widen / Shoulder Bikeways
RB 427	RICHEY	Kelso Rd to 282nd Rd	Widen / Shoulder Bikeways
RB 429	SALMON RIVER	Hwy 26 to Welches Rd	Widen / Shoulder Bikeways
RB 436	TEN EYCK	Lusted Rd to Sandy City Limits	Widen / Shoulder Bikeways
RB 439	WELCHES	Hwy 26 to Salmon River Rd	Widen / Shoulder Bikeways
906	CAZADERO MULTI USE TRAIL	County Line through Boring to Estacada	Multi-Use Trail from County Line through Boring to Estacada

RB = Rural Bikeway, SRB = State Rural Bikeway

*Southwest County*

- There are shoulder lanes on portions of the state highway system including parts of OR 213 and OR 99E. The county roadway system has shoulder bikeways on Redland Road to Hattan Road only.
- The County’s Bike Master Plan identifies priorities for filling in the bicycle network gaps. The priority of these projects will be reviewed based on the TSP Vision and Goals evaluation criteria. They are shown in the table below.

Table X 6 Bike Master Plan Projects in Southwest County

Bike Master Plan Project Number	Street Name	Section Description	Project Elements
B3	13TH	Ivy St. to Molalla Forest Road	Widen, Bike lanes
B8	1ST	Sequoia Parkway to Mulino Rd Canby	Bike lanes
B26	HOLCOMB	Washington Street to Bradley	Bike lanes
RB 401	13TH	Redwood to Molalla Forest Road	Widen / Shoulder Bikeways
RB 405	BARLOW	Knight Bridge to 99E	Widen / Shoulder Bikeways

Bike Master Plan Project Number	Street Name	Section Description	Project Elements
RB 406	BEAVERCREEK	Oregon City to Hwy 211	Widen / Shoulder Bikeways
RB 409	BRADLEY	Gronlund to Redland	Widen / Shoulder Bikeways
RB 410	CLACKAMAS RIVER	Hwy 213 to Springwater	Widen / Shoulder Bikeways
RB 413	FISCHERS MILL	-	Widen / Shoulder Bikeways
RB 415	HATTAN	Springwater to Fischers Mill	Widen / Shoulder Bikeways
RB 416	HENRICI	Hwy 213 to Redland Rd	Widen / Shoulder Bikeways
RB 417	HOLLY	Maplelane Rd to Redland Rd	Widen / Shoulder Bikeways
RB 418	HOLLY/37th	Territorial to 37th Canby	Widen / Shoulder Bikeways
RB 421	MAPLELANE	Beavercreek Rd to Ferguson Rd	Widen / Shoulder Bikeways
RB 422	MILEY	Airport Rd to Eilers Rd	Widen / Shoulder Bikeways
RB 423	MOLALLA	Hwy 213 thru Molalla	Widen / Shoulder Bikeways
RB 425	MULINO	SE 1st St to Hwy 213	Widen / Shoulder Bikeways
RB 430	SOUTH END	Oregon City limits to 99E	Widen / Shoulder Bikeways
RB 431	SPRINGWATER	Hattan to Hwy 211	Widen / Shoulder Bikeways
RB 437	TOLIVER	Dryland to Hwy 213	Widen / Shoulder Bikeways
RB 438	TOWNSHIP	Canby to Central Point Rd	Widen / Shoulder Bikeways
SRB 501	HWY 211	Mollala to Estacada	Widen/Shoulder Bikeways
SRB 503	HWY 213	Mulino to Marion County	Widen/Shoulder Bikeways
51	IVY	South of Canby to Hwy 170	Has Bike lanes
907	OREGON CITY TO MULINO TRAIL	Not Available	OC to Mulino on Old RR ROW
908	MOLLALA RIVER BIKE PATH	Not Available	13th Street to Macksburg
909	CANBY - MOLLALA RR TRAIL	Not Available	Canby to Mollala Rails with Trails / Union Pacific
	13th Ave	Redwood to Molalla River Path	Bike lanes to connect existing bike lanes to multi use path

RB = Rural Bikeway, SRB = State Rural Bikeway

### Greater McLoughlin Area

- A significant portion has bicycle lanes. In addition to the Trolley Trail multi-use path that runs from Milwaukie to Gladstone, there are bike lanes on most of the north-south corridors (providing good alternative routes to OR 99E) and many east-west corridors.
- The County’s Bike Master Plan identifies priorities for filling in the bicycle network gaps. The priority of these projects will be reviewed based on the TSP Vision and Goals evaluation criteria. They are shown in the table below.

Table X 7 Bike Master Plan Projects in the Greater McLoughlin Area

Bike Master Plan Project Number	Street Name	Section Description	Project Elements
B15	ALDERCREST	Thiessen to Oatfield	Bike lanes, Reconstruction and Widening
B16	ARISTA TROLLEY TRAIL (On Street)	On Street Portions	Bike lanes / Sidewalks
B24	GLEN ECHO	Portland Ave to 99E	Bike lanes
B25	HILL	View Acres to Oatfield Rd	Bike lanes
B29	JENNINGS	Oatfield to Webster	Bike lanes, Reconstruction and Widening
B30	JENNINGS	River to Oatfield	Bike lanes
B42	RUSK	Hwy 224 South to Aldercrest	Bike lanes
B45	THIESEN	Aldercrest Rd to Oatfield Rd	Bike lanes

B= Urban Bike Facility, SB = State Bike Facility

*Greater Clackamas Regional Center/Industrial Area*

- A significant portion of the unincorporated area has bicycle lanes.
- The County’s Bike Master Plan identifies priorities for filling in the bicycle network gaps. The priority of these projects will be reviewed based on the TSP Vision and Goals evaluation criteria. They are shown in the table below.

Table X 8 Bike Master Plan Projects in the Greater Clackamas Regional Center/Industrial Area

Bike Master Plan Project Number	Street Name	Section Description	Project Elements
B13	98TH / Ext of 98TH	Lawnfield to Mather Rd	Sunrise Corridor / Employment. Bike lanes, Reconstruction and Widening.
B14	ALBERTA	Linwood to 72nd Ave	Bike lanes
B17	BELL	King Rd to Johnson Creek	Bike lanes
B2	132ND	Happy Valley - King to County Line	Bike lanes, Reconstruction and Widening
B21	CAUSEY	Fuller Rd to I-205	Restripe for Bike lanes
B23	EVELYN	82nd to Managan	Bike lanes
B27	IDLEMAN	Stevens to Mt. Scott Blvd.	Bike lanes, Reconstruction and Widening
B28	JENNIFER	106th to Capps	Bike lanes
B31	JOHNSON CREEK	Bell Ave to 82nd	Bike lanes, Reconstruction and Widening
B32	JOHNSON CREEK	Extension to Idelman	New Road with Bike lanes and Sidewalks
B33	LINWOOD	King to Johnson Creek Blvd.	Bike lanes
B34	LUTHER	72nd Ave to 82nd Ave	Bike lanes
B35	MATHER	Cranberry Loop to 97th	Bike lanes, Reconstruction and Widening



Bike Master Plan Project Number	Street Name	Section Description	Project Elements
B37	MATHER	97th to Industrial Area	Bike lanes, Reconstruction and Widening
B38	MONROE	Linwood to Thompson	Bike lanes
B39	MT SCOTT	Happy Valley King to County Line	Bike lanes, Reconstruction and Widening
B4	142ND	Sieben Creek Dr. to Hwy 212	Bike lanes, Reconstruction and Widening
B43	SUMMER EXT	132nd to 142nd Ave	New Road with Bike lanes and Sidewalk Need for connection.
B44	SUNNYSIDE	82nd Ave to 97th	Restripe for Bike lanes
B46	OTTY EXT	Extension of Otty Rd	New Road with Bike lanes and Sidewalk. Need for connection.
B6	152ND	Curve in road to Hwy 212	Bike lanes
B7	162ND	Sunnyside to Monner Rd	Urban Fringe. Bike lanes, Reconstruction and Widening.
B9	90TH	Monterey Ave to Causey Ave.	Bike lanes
SB 101	82 <sup>ND</sup>	Sunnyside north to County Line	Restripe for Bike lanes
SB 102	82 <sup>ND</sup>	I-205 North to Sunnyside Road	Restripe for Bike lanes
SRB 502	HWY 212	Hwy 224 to Hwy 26	Widen/Shoulder Bikeways
RB 402	242ND	County Line to Hwy 212	Widen / Shoulder Bikeways
RB 435	SUNNYSIDE	172nd to Hwy 212	Widen / Shoulder Bikeways
SRB 504	HWY 224	Hwy 212 to 232nd	Bike lanes in urban area, Widen / Shoulder Bikeways in rural area
NA	145TH / 147TH	Happy Valley - 147th to County Line	Bike lanes
NA	Monroe Ave	School to Linwood	Widen, bike lanes. Connect to Linwood

B= Urban Bike Facility, RB= Rural Bikeway, SRB = State Rural Bikeway

### Northwest County

- With the exception of Borland Road south of I-205, the rural portions have no shoulders wide enough to be designated as shoulder bikeways.
- The County’s urban portions do not have any bicycle lanes.
- The County’s Bike Master Plan identifies priorities for filling in the bicycle network gaps. The priority of these projects will be reviewed based on the TSP Vision and Goals evaluation criteria. They are shown in the table below.

Table X 9 Bike Master Plan Projects in Northwest County

Bike Master Plan Project Number	Street Name	Section Description	Project Elements
B18	BONITA	Carman Drive to I-5	Bike lanes
B19	BOONES FERRY	Portions maintained by County	Bike lanes. Striping possibly in Tualatin / Lake Oswego Jurisdiction.
B20	CARMAN	Kruse Way to I-5	Bike lanes, Reconstruction and Widening
B22	CHILDS	65th to Stafford Road	Bike lanes
B41	PILKINGTON	Boones Ferry to Childs Road	Bike lanes
RB 404	65TH	Stafford Rd to Tualatin	Widen / Shoulder Bikeways
RB 407	BORLAND	Tualatin to Stafford	Widen / Shoulder Bikeways
RB 408	BORLAND	Stafford to West Linn	Widen / Shoulder Bikeways
RB 419	JOHNSON	Stafford Rd to West Linn	Widen / Shoulder Bikeways
RB 428	ROSEMONT	Stafford Road to Summit	Widen / Shoulder Bikeways
RB 432	STAFFORD	Lake Oswego to Borland	Widen / Shoulder Bikeways
RB 433	STAFFORD	Borland to Mountain	Widen / Shoulder Bikeways
RB 434	STAFFORD	Mountain to Boeckman	Widen / Shoulder Bikeways

B= Urban Bike Facility, RB = Rural Bikeway

### *Transit System Gaps and Deficiencies*

Figure 22 in each geographic area section identifies the future areas that are projected to have densities that are supportive of transit. It identifies those areas that are served by existing transit service and those that are not. Gaps in the transit system are defined as the areas that have future densities supportive of transit that are not currently served by transit. The County does not currently have transit level-of-service standards; however, a target standard could be set for frequency (how long between buses) and hours of service (how many hours per day the bus operates). Descriptions for transit level-of-service for frequency and hours of service are provided in the tables below and identified for each geographic area as a baseline.

Table X 10 Service Frequency – Level of Service Thresholds

Level of Service	Description of Service Frequency
LOS A	Passengers are assured that a transit vehicle will arrive soon after they arrive at a stop. The delay experienced if a vehicle is missed is low.
LOS B	Service is still relatively frequent, but passengers will consult schedules to minimize their wait time at the transit stop.
LOS C	Service frequencies still provide a reasonable choice of travel times, but the wait involved if a bus is missed becomes long.
LOS D	Service is only available about twice per hour and requires passengers to adjust their routines to fit the transit service provided.
LOS E	Service is provided approximately once per hour and puts passengers in the position of potentially spending long periods of time waiting for service and/or rearranging schedules to be able to take transit.
LOS F	Service is provided frequencies greater than 1 hour, which entails creative planning or considerable wasted time on the part of passengers.

Table X 11 Hours of Service – Level of Service Thresholds

Level of Service	Description of Hours of Service
LOS A	Service is available for most or all of the day. Workers who do not work traditional 8-to-5 jobs receive service and all riders are assured that they will not be stranded until the next morning if a late-evening bus is missed.
LOS B	Service is available late into the evening, which allows a range of trip purposes other than commute trips to be served.
LOS C	Bus service runs only into the early evening, but still provides some flexibility in one’s choice of time for the trip home.
LOS D	Service meets the needs of commuters who do not have to stay late and still provides service during the middle of the day for others.
LOS E	Midday service is limited or non-existent and/or commuters have a limited choice of travel times.
LOS F	Transit service is offered only a few hours per day or not at all.

**Transit System Deficiencies Key Findings**

*Countywide*

- The transit service frequencies provided in Clackamas are typical to rural and suburban areas; however, if headways are decreased (and the bus comes more frequently), service will become more appealing to a broader range of users, and ridership could increase.
- The limited hours of transit service provided in much of the County, with the exception of the Clackamas Regional Center and some routes in the McLoughlin area, result in the service generally being used only by those who have no other transportation alternative. Increasing the hours of service will make bus service usable for a broader range of trip purposes.

### *East Clackamas County*

- Transit Service within the East Clackamas County consists of fixed-route bus service and dial-a-ride service.
- Service Frequency: A majority of the services provided in East Clackamas County currently operate at LOS F throughout the day with respect to frequency. TriMet’s Line 30 and SAM’s Sandy Local/Gresham Express, however, operate at LOS C during peak time periods.
- Hours of Service: A majority of the services provided in East Clackamas County currently operate at LOS C or below throughout the day with respect to hours of service.

### *Southwest Clackamas County*

- Transit Service within the Southwest Clackamas County consists of fixed-route bus service and dial-a-ride service.
- Service Frequency: A majority of the services provided in Southwest Clackamas County currently operate at LOS D or below throughout the day with respect to frequency. Tri-Met Lines 33 and 99, however, operate at LOS C during peak time periods.
- Hours of Service: A majority of the services provided in Southwest Clackamas County currently operate at LOS D or below throughout the day with respect to hours of service.

### *Greater McLoughlin Area*

- Transit Service within the Greater McLoughlin Area consists of fixed-route bus service and dial-a-ride service. Light-rail will be available at the northern end of the study area in the future.
- Service Frequency: A majority of the services provided in the Greater McLoughlin Area currently operates at LOS D or below throughout the day with respect to frequency. Tri-Met Lines 33 and 99, however, operate at LOS C during peak time periods.
- Hours of Service: The services provided in the Greater McLoughlin Area currently operate between LOS A and LOS E throughout the day with respect to hours of service.
  - Service at these levels is generally used by a variety of people, including those who have no other transportation alternative.

### *Greater Clackamas Regional Center/Industrial Area*

- Transit Service within the Greater Clackamas Regional Center/Industrial Area consists of fixed-route bus and Light-Rail services and dial-a-ride service.
- Service Frequency: A majority of the services provided in the Greater Clackamas Regional Center/Industrial Area currently operates at LOS D or below throughout the day with respect to frequency. Several TriMet routes, however, operate at LOS C during peak time periods.

- Hours of Service: A majority of the services provided in the Greater Clackamas Regional Center/Industrial Area currently operate between LOS A and LOS E throughout the day depending on the bus route.
  - Service at these levels is generally used by a variety of people, including those who have no other transportation alternative.

#### *Northwest County*

- Transit Service within the Northwest Clackamas County consists of fixed-route bus service and dial-a-ride service.
- Service Frequency: A majority of the services provided in Northwest County currently operate at LOS D or below throughout the Day. TriMet Line 96, however, operates at LOS C during peak time periods.
- Hours of Service: A majority of the services provided in Northwest Clackamas County currently operate at LOS D or below throughout the day.

### ***Transit System Gaps Key Findings***

#### *East County*

- None of East County is projected to have transit supportive densities in the future. Despite low densities, transit service is currently provided to many areas of the geographic area and serve Transportation Disadvantaged Populations.

#### *Southwest County*

- None of the unincorporated areas in Southwest County are projected to have transit supportive densities in the future. Despite low densities, transit service is currently provided throughout much of the geographic area and including service to Transportation Disadvantaged Populations.

#### *Greater McLoughlin Area*

- Much of the geographic area is projected to have densities supportive of transit and the majority of the corridors through these areas currently have transit service with the exception of River Road.
- River Road is projected to be a gap in the transit system based on the projected transit supportive densities along the corridor.



### *Greater Clackamas Regional Center/Industrial Area*

- The majority of the geographic area is projected to have densities supportive of transit. Currently, all of the major corridors currently provide transit service. However, there are several large areas with transit on corridors on all four sides but that have a walking distance greater than ¼ mile to access a bus stop.
- The TSP will review the pedestrian needs in the areas with transit supportive densities but that are greater than ¼ mile from a bus stop. Collector roadway spacing and the potential to increase the number of transit routes in this area will be considered.

### *Northwest County*

- With the exception of Rivergrove, the unincorporated areas of the Northwest County geographic area are not projected to have densities supportive of transit and there is no service provided to these areas currently. Wilsonville has very good coverage of its transit supportive areas. Lake Oswego and West Linn have some areas where transit coverage should be expanded in the future.

### ***Other Modes Overview***

The following is a brief overview of the other modes of transportation that will be included in the Clackamas County TSP. Maps for these modes are in Section 9 of the report. With the exception of designating truck freight routes and operating the Canby Ferry, these modes are not within the jurisdiction of the County and the TSP will not do any planning for modes such as rail (freight and passenger), air, and pipeline; however, connections to these modes should be considered.

### *Truck Freight Routes*

- A majority of freight traffic within Clackamas County occurs by truck along designated freight truck routes. These routes consist of both ODOT and County facilities and include interstate highways, statewide highways, and regional highways, as well as other arterial and collector roadways that support and augment the highway system.
- Within Clackamas County, the County, Metro, and Oregon Department of Transportation each have designated freight routes. Metro's designation accounts for a majority of both ODOT's and the County's routes, with a few notable differences: the County includes OR 43 and OR 224 as designated freight truck routes, while Metro does not; also Metro includes SE 242<sup>nd</sup> Avenue, while the County does not.
- The Clackamas County TSP update should address the differences between the Metro and County these plans. This activity will be undertaken as part of the alternatives analysis and policy discussions in the TSP update process.

### *Rail System*

- Railroad owners and operators in Clackamas County are Burlington Northern Sante Fe, Union Pacific, Oregon Pacific, Willamette Shore Trolley, Portland/Western Railroad, and Peninsula Terminal Company.

### *Airports*

- There are over 30 airports, airparks, and airfields located throughout Clackamas County that provide a variety of air transportation services to local residents as well as travelers from outside the County.
- There are five airports open to the general public: Valley View Airport, Lenhardt Airpark, Portland-Mulino Airport, County Squire Airpark and Sandy River Airport. The remaining airports are private airports requiring special permission or membership.
- Both public and private airports within Clackamas County generally serve smaller flights and personal aircraft; private airports require special permission or private memberships.

### *Pipeline System*

- The Northwest Pipeline passes through the northwest corner of Clackamas County. The Northwest Pipeline is owned, operated and maintained by Williams. Williams operates over 15,000 miles of interstate pipelines across the United States.

### *Water Transportation System*

- The Willamette River and the Clackamas River are the navigable waterways within Clackamas County. The Willamette Falls Locks and the Canby Ferry are the two notable water transportation infrastructure/services within the County.
- The Willamette Falls Locks is a seven-gate, four-chamber, lock system that lifts or lowers boats up to 50-feet to provide access to areas north and south of the Willamette Falls.
  - The U.S. Army Corps of Engineers closed the locks in December 2011 due to excessive corrosion of the gate system and the locks are expected to remain permanently closed as the lack of traffic makes funding for any repairs a low priority.
  - Closure of the locks is a barrier to the Willamette River being used for freight transportation to and from destinations south of Oregon City.
- The Canby Ferry transports people and vehicles across the Willamette River between Canby and Wilsonville seven days a week from 6:45 a.m. to 9:15 p.m. whenever there is a vehicle to transport. The ferry has space for six cars and also accommodates pedestrians, bicycles, and motorcycles. The Canby Ferry operates year-round except when the river is above 70

feet. Starting July 1, 2012 fares will be \$2 for pedestrians, bicycles, and motorcycles, \$4 for vehicles, and \$8 for extra-long vehicles or trailers.

## 2035 Future Conditions

As described on page 2, two future 2035 baseline scenarios -- Low Build and Full Build -- were evaluated to initiate the alternatives analysis phase of the project. The comparison of these scenarios will help identify the planned projects that directly address existing and future gaps or deficiencies in the transportation system and those that do not directly address an existing or future gap or deficiency and should be considered for removal from the TSP.

The key findings for roadway deficiencies, and the notable differences between the Low Build and Full Build scenarios, are provided by geographic area below and include a listing of each of the projects in each scenario. Additional information is provided in the report (Section 4 through Section 8) including the following figures:

- Figure 33: 2035 Low Build Projects
- Figure 35: Low Build Intersection Operations
- Figure 37: Evening Weekday Peak Hour Roadway Segment Congestion 2035 Low Build Scenario
- Figure 38: 2035 Full Build Projects
- Figure 40: Full Build Intersection Operations
- Figure 42: Evening Weekday Peak Hour Roadway Segment Congestion 2035 Low Build Scenario

### ***County-Wide Roadway Deficiencies: Key Findings***

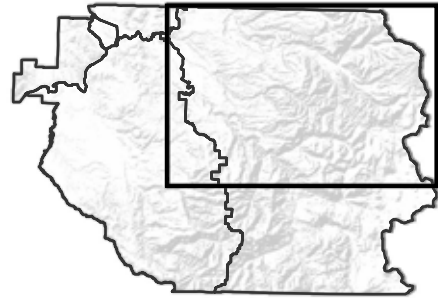
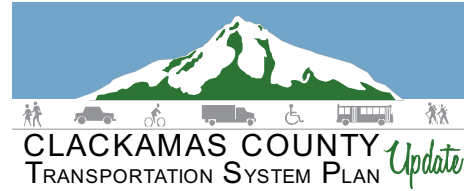
Figure X 2 provides a summary of the key roadway deficiencies for the 2035 Low Build Scenario related to intersection operations, roadway segment (corridor) congestion, and safety corridors. Intersection and roadway segment deficiencies are defined as intersections or roadway segments that do not meet their standard for acceptable operations (see Section 2 for additional information on intersection and roadway standards). The intersections that do not meet performance standards are noted on the figure by identification numbers that correspond to the identification numbers following each intersection in parenthesis in the Key Findings below.

Standards for acceptable operations have changed since the last TSP update reflecting higher levels of congestion being acceptable for planning than previously planned for. The Metro Regional Transportation Plan sets the standards within the Metro UGB. ODOT standards apply to their facilities outside of the Metro UGB. County standards apply to County' facilities outside of the Metro UGB. County standards will be reviewed and potentially modified as part of the TSP update process. The 2035 Full Build analysis evaluates the effectiveness of projects to mitigate existing and future roadway deficiencies; however, alternative

solutions and solutions for the remaining deficiencies will be evaluated during the alternatives analysis phase of the project.

- With respect to intersection operations, 43 study intersections do not meet performance standards under the 2035 Low Build Scenario. Fourteen of those intersections are sufficiently improved in the 2035 Full Build Scenario so 27 study intersections still do not meet performance standards in 2035 even with Full Build. Those intersections are listed by geographic area below.
- With respect to roadway operations, roadway segments identified as being congested or very congested under the 2035 Low Build Scenario tended to be reduced to congested or somewhat congested under the 2035 Full Build Scenario. They are described by geographic area below.





**Study Intersection**

- Does Not Meet Standards
- Candidate Safety Corridors

**Very Congested >1.10**

- 1,000
- 5,000
- 10,000

**Congested 1.0 - 1.1**

- 1,000
- 5,000
- 10,000

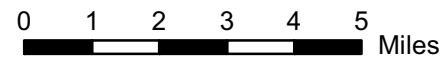
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- 1,000
- 5,000
- 10,000

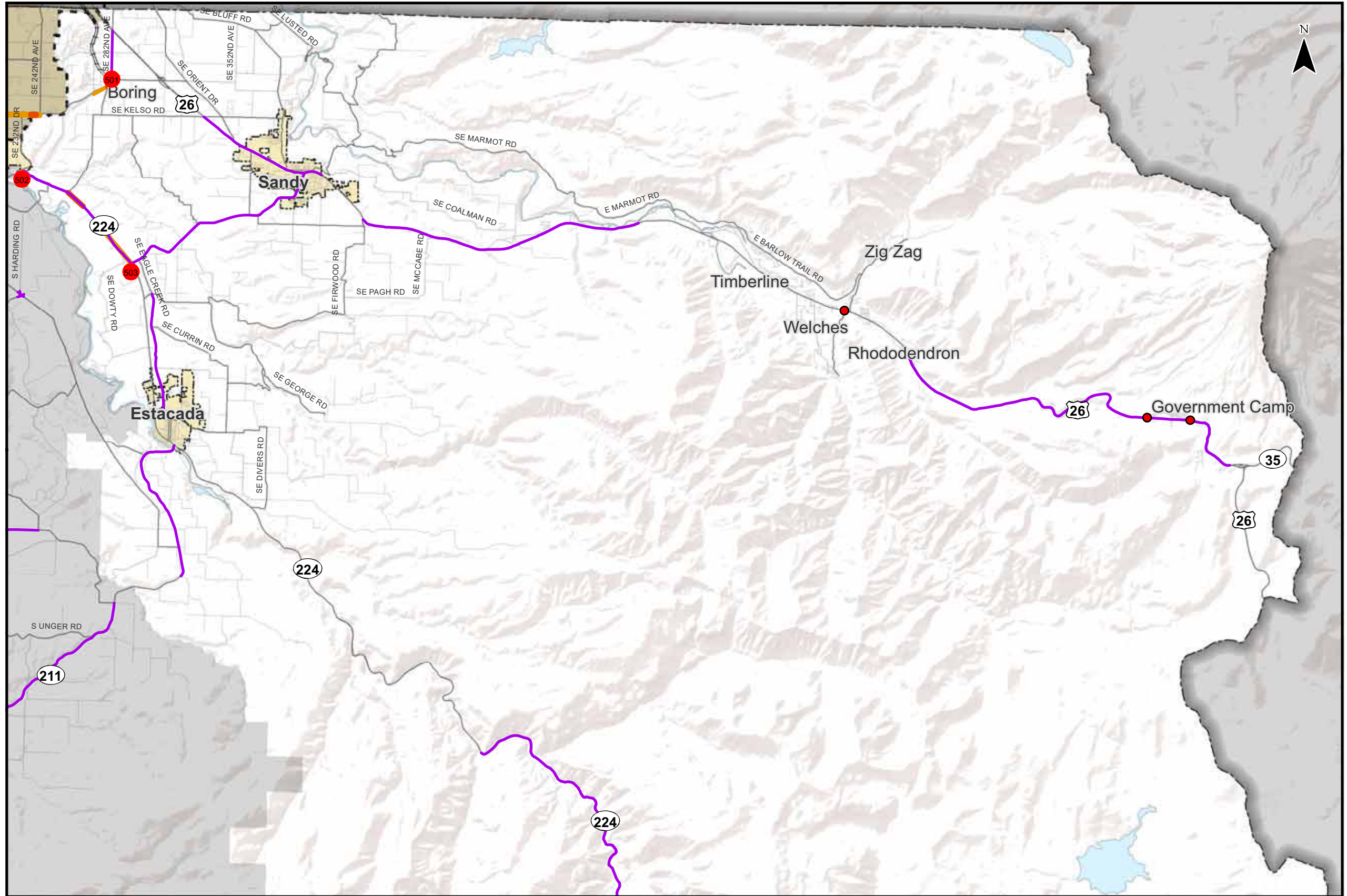
Incorporated Areas

County Boundary

UGB



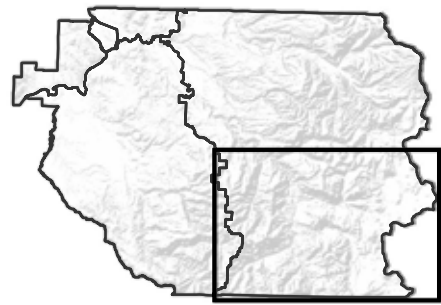
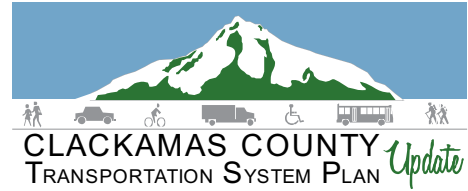
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Data Source:  
Clackamas County, Metro Data Resouce Center



**Summary of Low Build Roadway and Intersection Performance  
East County - Northern Portion**

Figure  
**X 2**





**Study Intersection**

● Does Not Meet Standards

— Candidate Safety Corridors

**Very Congested >1.10**

— 1,000

— 5,000

— 10,000

**Congested 1.0 - 1.1**

— 1,000

— 5,000

— 10,000

**Some Congestion 0.9 - 1.0**

— 1,000

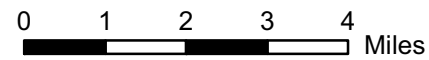
— 5,000

— 10,000

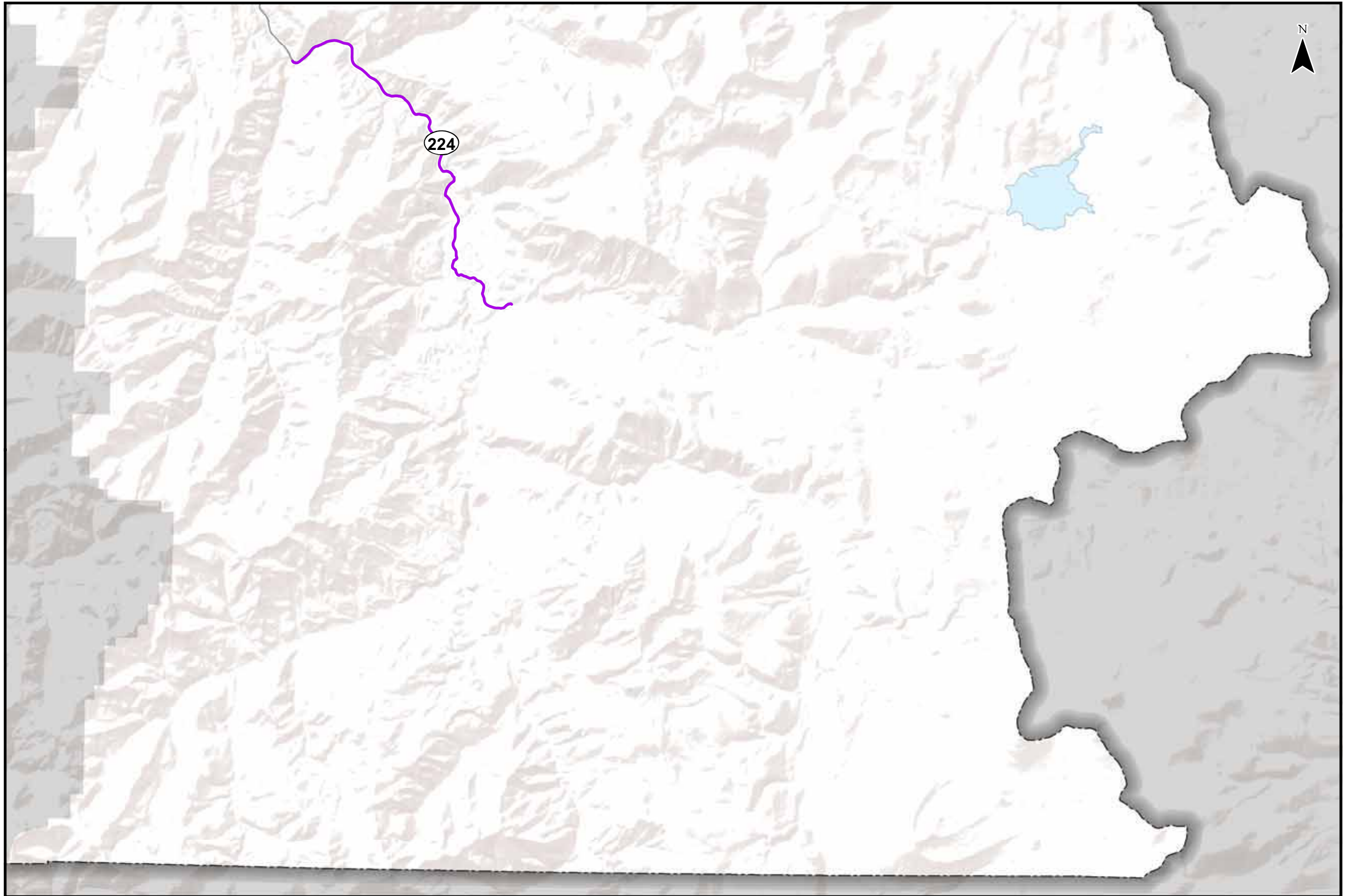
▨ Incorporated Areas

▭ County Boundary

▭ UGB



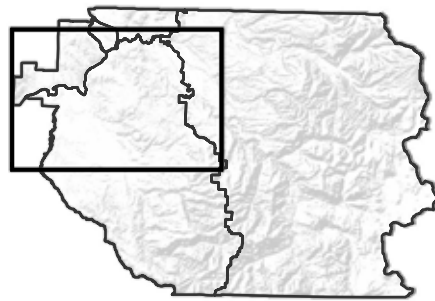
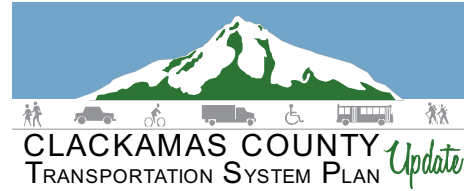
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Data Source:  
Clackamas County, Metro Data Resouce Center



**Summary of Low Build Roadway and Intersection Performance  
East County - Southern Portion**

Figure  
**X 2**





**Study Intersection**

- Does Not Meet Standards
- Candidate Safety Corridors

**Very Congested >1.10**

- 1,000
- 5,000
- 10,000

**Congested 1.0 - 1.1**

- 1,000
- 5,000
- 10,000

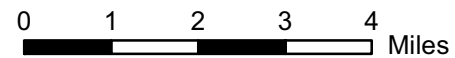
**Some Congestion 0.9 - 1.0**

- 1,000
- 5,000
- 10,000

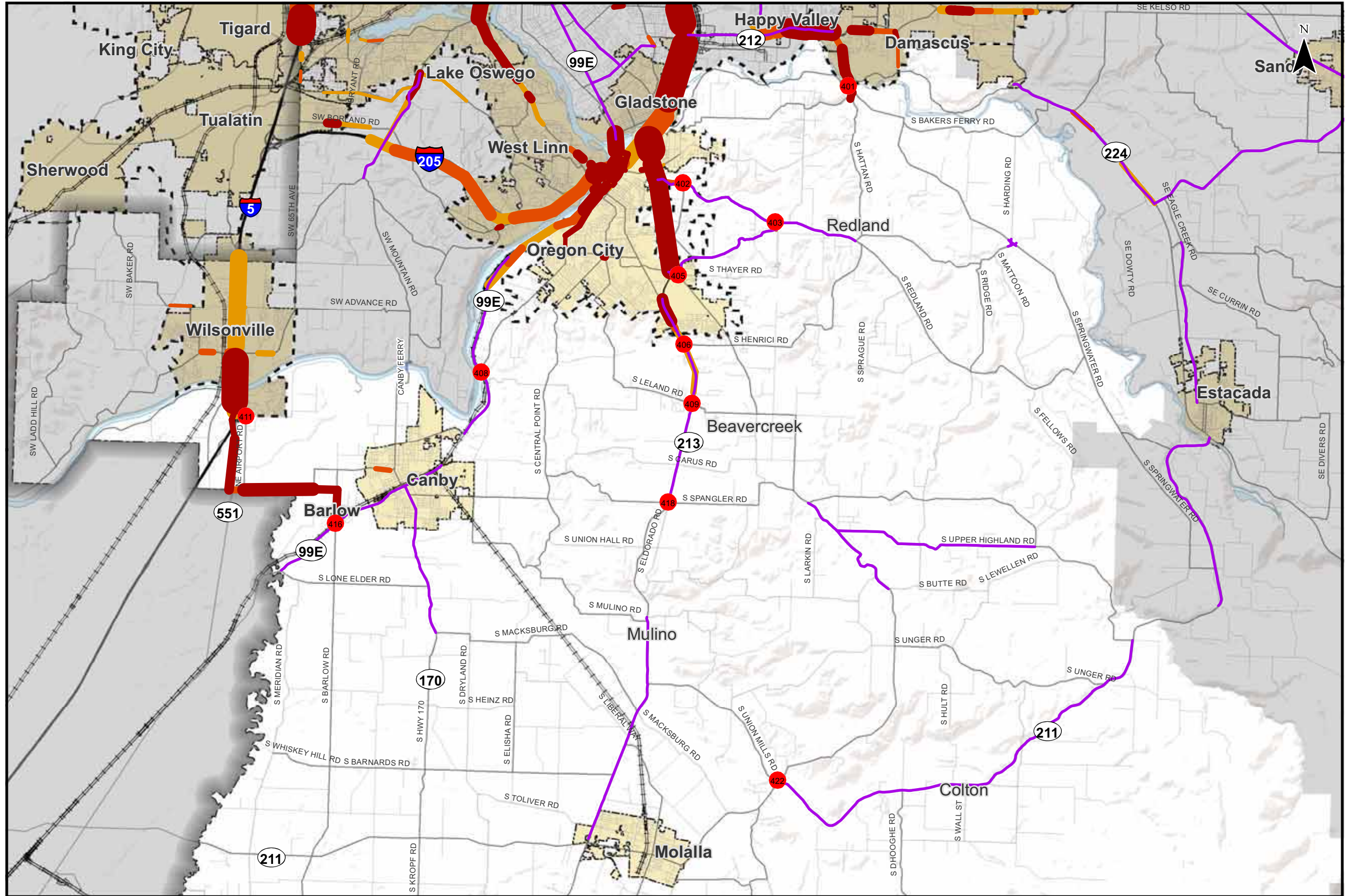
Incorporated Areas

County Boundary

UGB



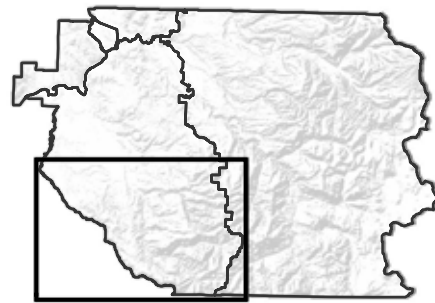
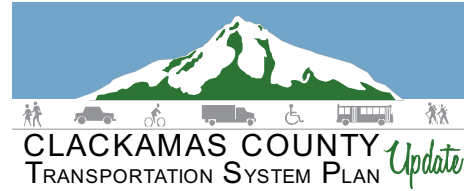
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Data Source:  
Clackamas County, Metro Data Resouce Center



**Summary of Low Build Roadway and Intersection Performance  
Southwest County - Northern Portion**

Figure  
**X 2**





**Study Intersection**

- Does Not Meet Standards
- Candidate Safety Corridors

**Very Congested >1.10**

- 1,000
- 5,000
- 10,000

**Congested 1.0 - 1.1**

- 1,000
- 5,000
- 10,000

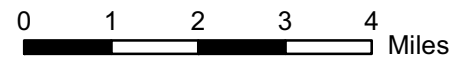
**Some Congestion 0.9 - 1.0**

- 1,000
- 5,000
- 10,000

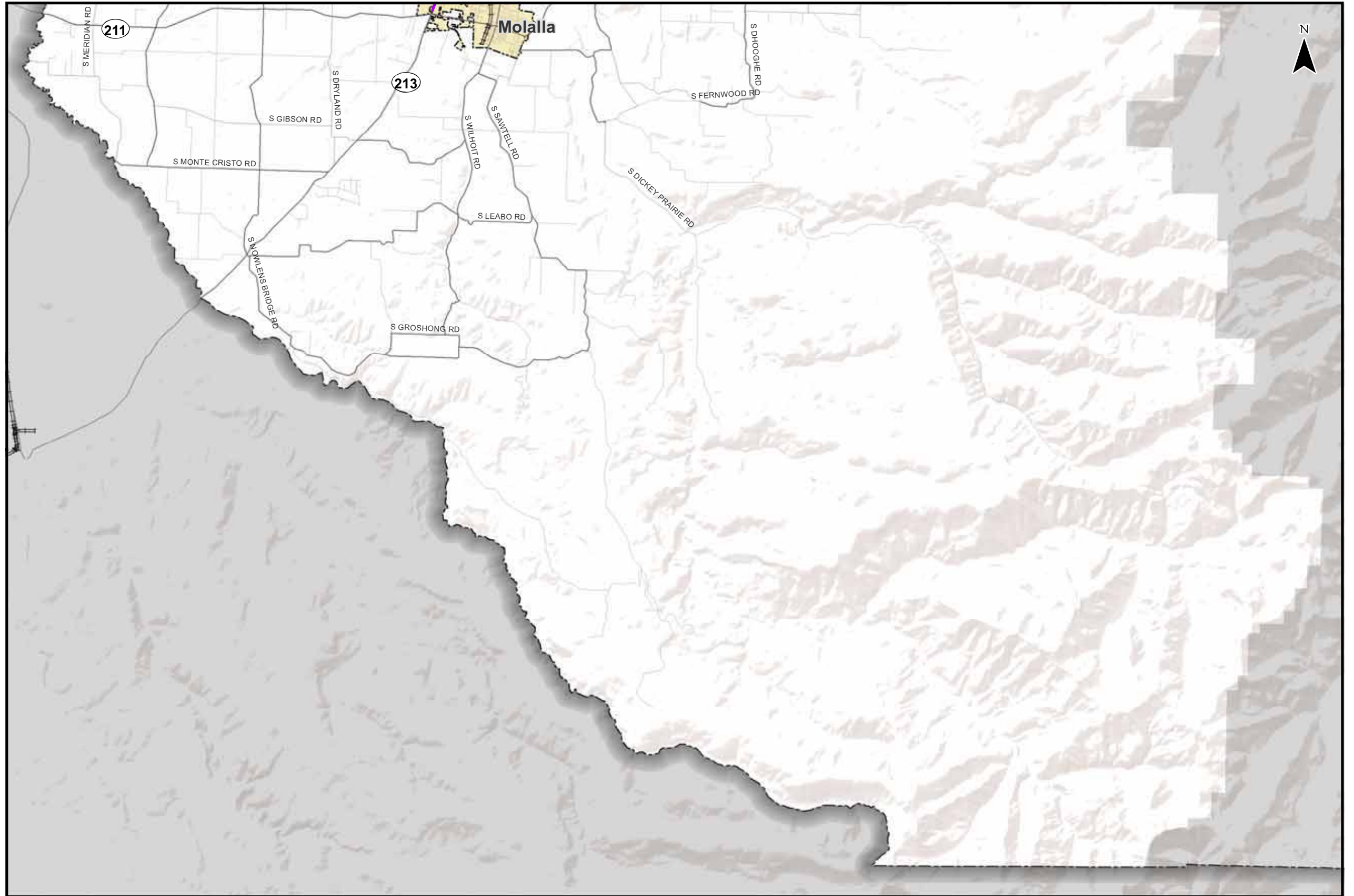
Incorporated Areas

County Boundary

UGB



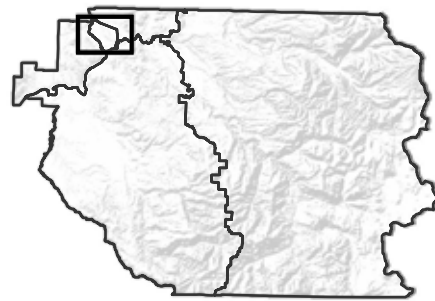
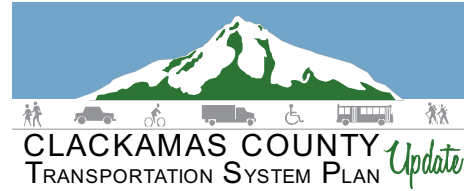
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Data Source:  
Clackamas County, Metro Data Resouce Center



**Summary of Low Build Roadway and Intersection Performance  
Southwest County - Southern Portion**

Figure  
**X 2**





**Study Intersection**

● Does Not Meet Standards

— Candidate Safety Corridors

**Very Congested >1.10**

1,000  
5,000  
10,000

**Congested 1.0 - 1.1**

1,000  
5,000  
10,000

**Some Congestion 0.9 - 1.0**

1,000  
5,000  
10,000

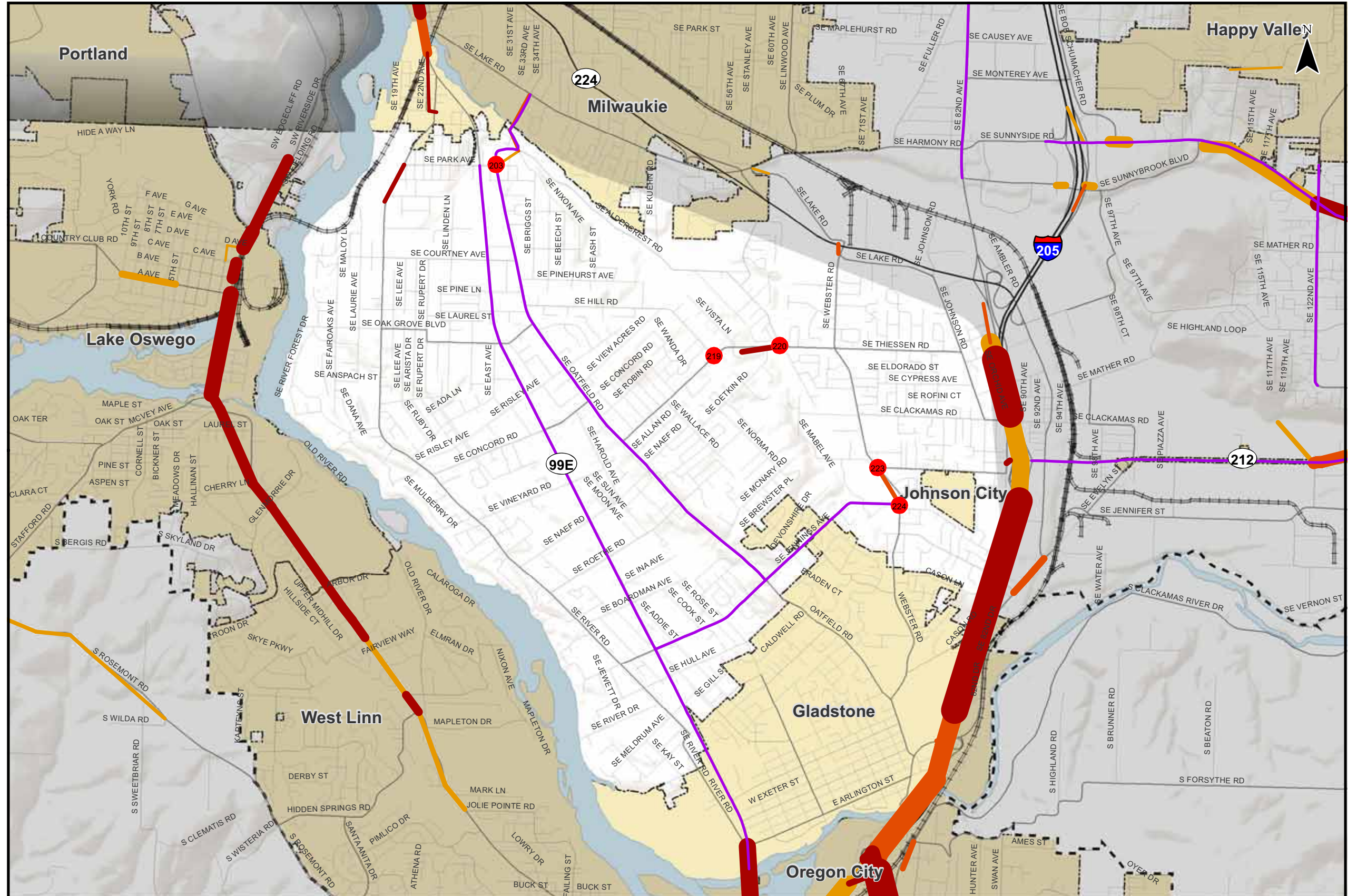
— Incorporated Areas

— County Boundary

— UGB

0 1 Miles

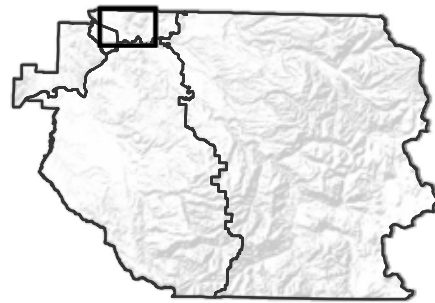
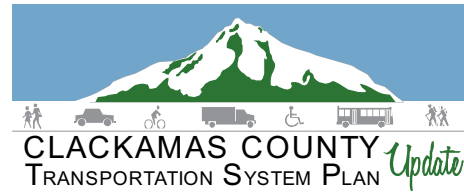
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Data Source:  
Clackamas County, Metro Data Resouce Center



**Summary of Low Build Roadway and Intersection Performance  
Greater McLoughlin Area**

Figure  
**X 2**





**Study Intersection**

- Does Not Meet Standards
- Candidate Safety Corridors

**Very Congested >1.10**

- 1,000
- 5,000
- 10,000

**Congested 1.0 - 1.1**

- 1,000
- 5,000
- 10,000

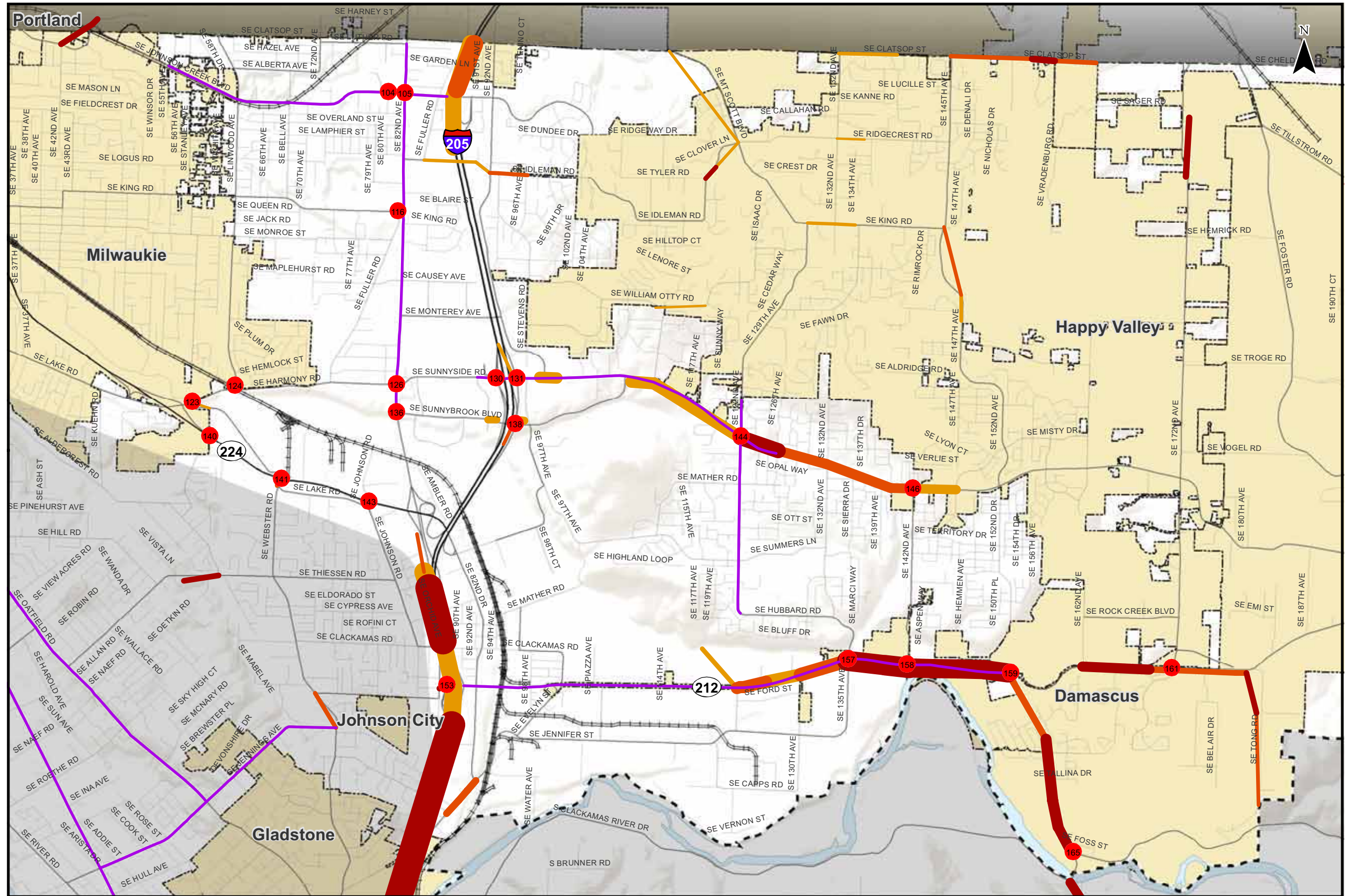
**Some Congestion 0.9 - 1.0**

- 1,000
- 5,000
- 10,000

- Incorporated Areas
- County Boundary
- UGB

0 1 Miles

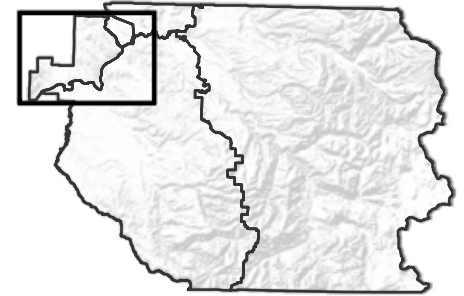
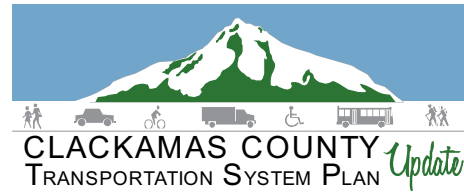
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Data Source:  
Clackamas County, Metro Data Resouce Center



**Summary of Low Build Roadway and Intersection Performance  
Greater Clackamas Regional Center / Industrial Area**

Figure  
**X 2**





**Study Intersection**

- Does Not Meet Standards
- Candidate Safety Corridors

**Very Congested >1.10**

- 1,000
- 5,000
- 10,000

**Congested 1.0 - 1.1**

- 1,000
- 5,000
- 10,000

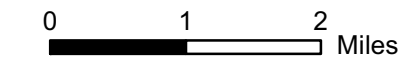
**Some Congestion 0.9 - 1.0**

- 1,000
- 5,000
- 10,000

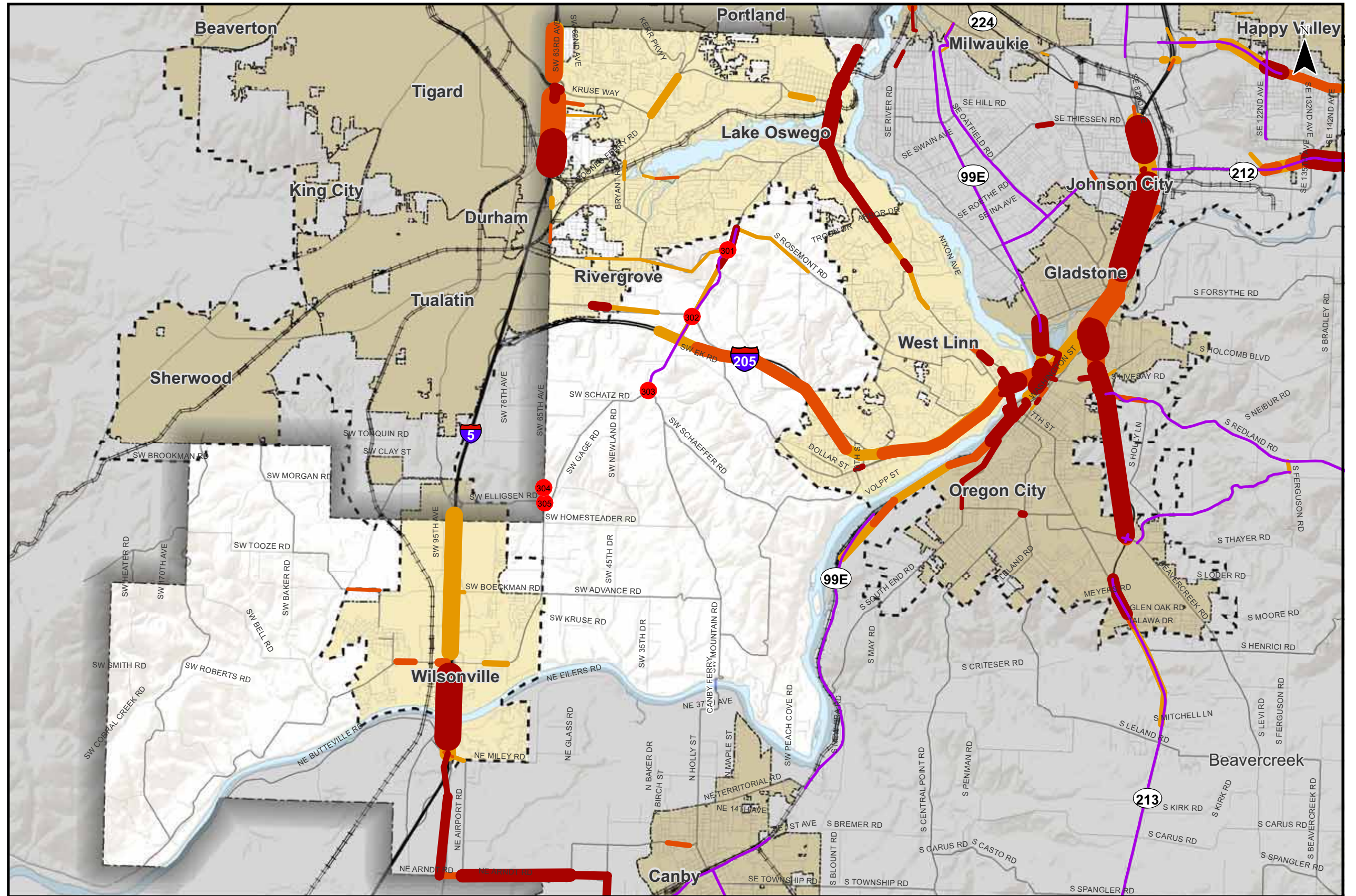
Incorporated Areas

County Boundary

UGB



Coordinate System:  
NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl  
Data Source:  
Clackamas County, Metro Data Resouce Center



**Summary of Low Build Roadway and Intersection Performance  
Northwest County**

Figure  
**X 2**



**Roadway Deficiencies: Key Findings by Geographic Sub Areas**

*East County*

- The following projects were modeled in the Low Build:

Table X 12 2035 Low Build Projects in East County

Project	ID	Location	Description
US 26	U371	East Wildwood Ave/ US 26 intersection	Install continuous two-way center turn lane from milepost 38.75 to 40.01
OR 224	U020	SE 232nd Dr/OR 224 intersection (ID 502)	Install EB left-turn lane and WB right-turn lane

- The following projects were modeled in the Full Build:

Table X 13 2035 Full Build Projects in East County

Project	ID	Location	Description
US 26*	U371	East Wildwood Ave/ US 26 intersection	Install continuous two-way center turn lane from milepost 38.75 to 40.01
OR 224*	U020	SE 232nd Dr/OR 224 intersection (ID 502)	Install EB left-turn lane and WB right-turn lane
SE 232nd Avenue	U228	OR 212 to OR 224	Reconstruct and widen (rural) (3 lanes)
Richey Road	U229	Kelso Road to OR 212	Reconstruct and widen (rural) (3 lanes), add turn lanes
Amisigger Road	U231	OR 224 to Kelso/Richey Road	Reconstruct and widen (rural) (3 lanes), smooth curves
Kelso Road	U232	Richey Road to Orient Drive	Reconstruct and widen (rural) (3 lanes)
Ten Eyck Road	U237	Lusted Road to US 26	Reconstruct and widen (rural) (3 lanes)
Multopor Overpass	U246	OR 26/Multopor Drive intersection	Add eastbound right-turn lane
Bakers Ferry Road	U247	Springwater Road to OR 224	Reconstruct and widen (rural) (3 lanes)
Springwater Road	U253	Springwater/Hayden Road intersection	Install southbound left-turn lane
Hayden Road	U254	Springwater Road to OR 211	Reconstruct and widen (rural) (3 lanes), intersection improvements
Eagle Creek Road	U256	Keegan Road to Currin Road	Perform additional safety analysis at Wildcat Mountain Drive, widen lanes (3 lanes) and shoulders to County standards
Eagle Creek Road	U257	Currin Road to Duus Road	Remove or decrease horizontal curve along Eagle Creek Road, relocate intersection, widen lanes (3 lanes) and shoulders to County standards, investigate speed zone south of Currin Road
Coupland Road	U258	Eagle Creek Road to Divers Road	Reconstruct and widen (rural) (3 lanes)
Bull Run Road	U495	Ten Eyck Road to Multnomah County Line	Reconstruct and widen (rural) (3 lanes)
Firwood Road	U502	Wildcat Mountain Drive to US 26	Reconstruct and widen (rural) (3 lanes)

\* Project also included in low build scenario

- Three of the six study intersections operate at volume-to-capacity ratios in excess of performance standards under both Low Build and Full Build:
  - OR 212/SE 282<sup>nd</sup> Avenue
  - OR 224/SE 232<sup>nd</sup> Avenue
  - OR 224/OR 211
- Of the three study intersections that did not meet performance standards under the Low Build future scenario, one is modified by a Full Build Project (e.g., a turn lane or other physical change would be made to the intersection due to a Full Build project) However, it continues to not meet standards under the Full Build Scenario:
  - OR 224/SE 232<sup>nd</sup> Avenue
- The majority of Full Build capacity projects planned for East County reconstruct and widen rural roadways to meet standards.
- Overall, low to moderate growth is forecast for the roadways in East County. Little growth is forecast for state facilities, with more significant increases in traffic volumes on County facilities (such as SE 282<sup>nd</sup> Avenue and SE 232<sup>nd</sup> Avenue).

*Southwest County*

- The following projects were modeled in the Low Build:

Table X 14 2035 Low Build Projects in Southwest County

Project	ID	Location	Description
Wilsonville Rd/I-5 Interchange Improvements	U012	On and Off Ramps, N and S of interchange	Widen and lengthen on/off ramps
I-205/Hwy. 213 Interchange	U014	Washington St. to I-205	Improve and widen OR 213 NOR 213 N N, including reconstruction of intersection of OR 213 NOR 213 N N and Washington Street. Address safety and provide congestion relief.

- The following projects were modeled in the Full Build:

Table X 15 2035 Full Build Projects in Southwest County

Project	ID	Location	Description
Wilsonville Rd/I-5 Interchange Improvements*	U012	On and Off Ramps, N and S of interchange	Widen and lengthen on/off ramps
I-205/Hwy. 213 Interchange*	U014	Washington St. to I-205	Improve and widen OR 213 NOR 213 N N, including reconstruction of intersection of OR 213 NOR 213 N N and Washington Street. Address safety and provide congestion relief.
Springwater Road	U184	OR 224 to Hattan Road	Four lane widening with left-turn lanes, widen bridge over Clack. River
Forsythe Road	U186	Clackamas River Drive to	Reconstruct and widen (rural) (3 lanes)

Project	ID	Location	Description
		Bradley Road	
Forsythe Road	U187	Forsythe Road/Victory Road intersection	Realignment, widening of Victory Road and removal or decrease of curves along Forsythe Road, relocation of intersection
Gronlund Road/Hattan Road	U188	Bradley to Springwater	Reconstruct and widen (rural) (3 lanes)
Hattan Road	U189	Hattan Road/Gronlund Road intersection	Install southbound right-turn lane
Hattan Road	U190	Fischers Mill Road to Gronlund Road	Reconstruct and widen (rural) (3 lanes)
Abernethy Road	U191	Redland Road to Main Street	Realign 17th Street intersection, widen to (5) lanes
Holcomb Blvd.	U193	Holcomb Blvd./Bradley Road intersection	Realignment of Holcomb Road to form one intersection at Bradley Road
Bradley Road	U194	Redland Road to Holcomb Blvd.	Widen lanes and shoulders to County standards (3 lanes)
Redland Road	U198	Henrici Road to Abernethy Road	Reconstruct and widen (4 lanes)
Redland Road	U199	Redland/Ferguson Road intersection	Install eastbound right-turn lanes and westbound left-turn lanes
Ferguson Road	U200	Redland Road to Maplelane Road	Remove or decrease horizontal curve along Redland Road, relocate intersection, install eastbound right-turn lanes and westbound left-turn lanes
Redland Road	U201	Redland/Bradley Road intersection	Install eastbound left turn and westbound right-turn lanes
Redland Road	U202	Redland/Grassle Road intersection	Remove bank and remove or decrease horizontal curve, relocate intersection
Fischers Mill Road	U203	Fischers Mill/Hattan Road intersection	Install eastbound left-turn lane
Redland Road	U204	Redland/Fischers Mill/Henrici Road intersection	Install eastbound left-turn lane and east and westbound right-turn lane at Henrici Road
OR 213	U208	Beavercreek/OR 213 intersection	Add dual left-turn lanes and ramps
Henrici Road	U210	OR 213 to Beavercreek Road	Widen lanes (3 lanes) and shoulders to County standards
Beavercreek Road - goes into rural area	U211	Leland Road to Henrici Road	Three lane widening
Sound End Road	U214	Warner Parrott Road to 99E	Widen (2) lanes and smooth curves
Springwater Road	U249	Hattan Road to Hayden Road	Reconstruct and widen (rural) (3 lanes)
Springwater Road	U250	Springwater/Bakers Ferry Road intersection	Install southbound left-turn lane
Springwater Road	U251	Springwater/Fischers Mill Road intersection	Perform special study, install southbound right-turn lane
Springwater Road	U252	Springwater/Redland Road intersection	Install northbound left-turn lane
Fellows Road	U260	Redland Road to Lower Highland Road	Reconstruct and widen (rural) (3 lanes)
Ridge Road	U261	Lower Highland Road to Redland Road	Reconstruct and widen (rural) (3 lanes)
Redland Road	U262	Henrici Road to Springwater Road	Reconstruct and widen (rural) (3 lanes)
Lower Highland Road	U263	Beavercreek Road to Fellows Road	Reconstruct and widen (rural) (3 lanes)
Unger Road	U264	Beavercreek Road to OR 211	Reconstruct and widen (rural) (3 lanes)





Project	ID	Location	Description
Beavercreek Road	U265	Beavercreek/Leland Road intersection	Add turn lanes
Casto Road	U269	Spangler Road to Central Point Road	Reconstruct and widen (rural) (3 lanes)
Spangler Road	U270	Casto Road to Beavercreek Road	Reconstruct and widen (rural) (3 lanes)
Airport Road	U276	Airport/Miley Road intersection	Realign, add turn lanes, install traffic signal
Airport Road	U277	Arndt Road to Miley Road	Reconstruct and widen (rural) (4 lanes)
Arndt Road	U279	Canby-Hubbard Highway to Knights Bridge Road	Four lane widening with median, left-turn lanes
Township Road	U290	Central Point Road to Canby City limit	Reconstruct and widen (rural) (3 lanes)
Mulino Road	U292	Mulino Road to 13th Avenue, intersection 23	Relocate intersection to south away from railroad trestle, change of stop control to 13th Avenue
Lone Elder Road	U294	Lone Elder/Barlow intersection	Add left-turn lanes
Canby-Marquam Highway	U295	Canby-Marquam Hwy/Lone Elder Rd intersection	Install northbound left-turn lane and southbound right-turn lane
Canby-Marquam Highway	U298	Canby-Marquam Hwy/Macksburg Rd intersection	Install southbound left-turn lane and northbound right-turn lane
Dryland Road	U299	Macksburg Road (S) to Macksburg Road (N)	Realignment of Macksburg Road to form one intersection at Dryland Road
Macksburg Road	U300	Canby Marquam Hwy to OR 213	Reconstruct and widen (rural) (3 lanes)
Union Mills Road	U302	OR 213 to OR 211	Reconstruct and widen (rural) (3 lanes)
Molalla Avenue/Vaughan (City of Molalla)	U311	OR 213 to OR 211	Reconstruct and widen (rural) (3 lanes)
Wright Road	U314	Feyrer Park Road to Callahan Road	Widen lane and shoulder widths to County standards
Fernwood Road	U316	Dhooghe Road to Callahan Road	Reconstruct and widen (rural) (3 lanes)
Dhooghe Road	U317	OR 211 to Fernwood Road	Reconstruct and widen (rural) (3 lanes)
Sawtell Road	U320	Maple Grove Road to Wilhoit Road	Reconstruct and widen (rural) (3 lanes)
Wildcat Road	U321	Wilhoit Road to OR 213	Reconstruct and widen (rural) (3 lanes)
Nowlens Bridge Road	U322	OR 213 to Maple Grove Road	Reconstruct and widen (rural) (3 lanes)
Blair Road	U323	Groshong Road to Maple Grove Road	Reconstruct and widen (rural) (3 lanes)
Bird Road	U325	Groshong Road to Wilhoit Road	Reconstruct and widen (rural) (3 lanes)
Maple Grove Road	U326	Nowlens Bridge Road to Sawtell Road	Reconstruct and widen (rural) (3 lanes)
Clackamas River Drive	U469	OR 213 to Springwater Road	Reconstruct and widen (rural) (3 lanes)
Holcomb Blvd	U473	Abernethy Rd - Bradley Rd	Reconstruct and widen (3 lanes)
Henrici Road	U475	Beavercreek Rd to Redland Rd	Widen lanes (3 lanes) and shoulder to County standards, remove or decrease horizontal and vertical curves, investigate 40 mph speed zone extension to east of Ferguson Rd
Beavercreek Rd	U476	Hwy 213 to Molalla	Widen to (5) lanes

Project	ID	Location	Description
Beavercreek Road	U477	OR 213 to Henrici Road	Widen to (5) lanes
Mattoon Road	U503	Fischers Mill Road to Redland Road	Widen lanes (3 lanes) and shoulders to County standards, remove or decrease vertical curves, remove or decrease horizontal curves north of Redland Road
Mulino Road (13 <sup>th</sup> St segment)	U504	Ivy Street to OR 213	Widen to (3) lanes
Toliver Road	U505	Between OR 213 and Molalla Avenue	Install traffic signal, curb and sidewalk, widen and pave

\* Project also included in low build scenario

- Ten of the 24 study intersections operate at volume-to-capacity ratios in excess of performance standards under both Low Build and Full Build:
  - Clackamas River Drive/Springwater Road
  - S. Redland Road/S. Holly Lane
  - S. Redland Road /S. Ferguson Road
  - S. Beavercreek Road /S. Maple Lane Road
  - S. Henrici Road /OR 213
  - South End Road/OR 99E
  - S. Leland Road /OR 213
  - OR 99E/S. Barlow Road
  - S. Spangler Road /OR 213
  - S. Union Mills Road/S. Beavercreek Road
- One intersection operates at volume-to-capacity ratio in excess of performance standards under Low Build, but meets performance standards under Full Build:
  - NE Miley Road/NE Airport Road
- Of the eleven study intersections that did not meet performance standards under Low Build, nine are modified by a Full Build Project (e.g., a turn lane or other physical change would be made to the intersection due to a Full Build project). However, they continue to not meet standards under the Full Build Scenario.
  - Clackamas River Drive/Springwater Road
  - S. Redland Road/S. Holly Lane
  - S. Redland Road /S. Ferguson Road
  - S. Beavercreek Road /S. Maple Lane Road
  - S. Henrici Road /OR 213
  - South End Road/OR 99E

- NE Miley Road/NE Airport Road
- S. Spangler Road /OR 213
- S. Union Mills Road/S. Beaver Creek Road
- Overall, moderate growth is forecast for the study roadways in Southwest County.

*Greater McLoughlin Area*

- In the Greater McLoughlin area, there were no projects modeled in the Low Build.
- The following projects were modeled in the Full Build:

Table X 16 2035 Full Build Projects in the Greater McLoughlin Area

Project	ID	Location	Description
Webster Road	U004	Webster/Jennings and Roots intersection	Construct traffic signals, turn lanes
River Road	U137	Milwaukie to Gladstone	Reconstruct and widen (urban) (3 lanes)
River Road	U139	River Road/Concord Road intersection	Install traffic signal and left-turn lanes
Concord Road	U140	River Road to Oatfield Road	Reconstruct and widen (urban) (3 lanes)
Oatfield Road	U141	Oatfield Road/Park Road intersection	Install traffic signal and left-turn lanes
Oatfield Road	U143	Oatfield Road/Hill Road intersection	Install left-turn lanes, install signal if warranted
Oatfield Road	U144	Oatfield Road/Concord Road intersection	Widen, add turn lanes
Oatfield Road	U145	Oatfield Road/McNary Road intersection	Add turn lanes
Aldercrest Drive	U146	Thiessen Road to Oatfield Road	Reconstruct and widen (urban) (3 lanes)
Thiessen Road	U148	Thiessen Road/Hill Road intersection	Widen, add left-turn lane on Thiessen Road
Jennings Road	U149	Oatfield Road to Webster Road	Reconstruct and widen (3 lanes)
Webster Road	U150	OR 224 to Gladstone City limits	Widen to (3) lanes and conduct OR 224 corridor study
Webster Road	U152	Webster/Strawberry Lane intersection	Install traffic signal, left-turn lanes
Johnson Road/McKinley Road	U154	Lake Road to I-205	Reconstruct and widen (urban) (3 lanes)

- Of the five study intersections that do not meet performance standards in Low Build, none are changed due to the Low Build projects. All are modified by a Full Build Project (e.g., a turn lane or other physical change would be made to the intersection due to a Full Build project).
  - SE Oatfield Road/SE Park Avenue
  - SE Thiessen Road/SE Hill Road

- SE Thiessen Road/SE Aldercrest Road
- SE Roots Road/SE Webster Road
- SE Jennings Avenue/SE Webster Road
- Three of the 25 study intersections operate at volume-to-capacity ratios in excess of performance standards under both Low Build and Full Build:
  - SE Thiessen Road/SE Hill Road
  - SE Thiessen Road/SE Aldercrest Road
  - SE Jennings Avenue/SE Webster Road
- Two intersections operate at volume-to-capacity ratios in excess of performance standards under Low Build, but meet performance standards under Full Build:
  - SE Oatfield Road/SE Park Avenue
  - SE Roots Road/SE Webster Road
- Demand for travel is highest along OR 99E, Oatfield Road, Webster Road, SE Thiessen Road, and SE River Road under both Low Build and Full Build future conditions.
- Five roadway segments are considered to be nearing congestion or have some level of congestion under both Low Build and Full Build:
  - SE River Road (SE Silver Springs Road to SE Park Avenue)
  - SE Oatfield Rd (SE Park Avenue to SE Lake Road)
  - SE Thiessen Rd (SE Hill Road to SE Webster Road)
  - SE Webster Rd (SE Jennings Avenue to SE Roots Road)
  - OR 99 E (E Arlington to South)
- Overall, moderate growth is forecast for the study roadways in this area. The most significant increases in traffic volumes are on Oregon 99E.

*Greater Clackamas Regional Center/Industrial Area*

- The following projects were modeled in the Low Build:

Table X 17 2035 Low Build Projects in the Greater Clackamas Regional Center/Industrial Area

Project	ID	Location	Description
Sunnybrook Rd extension (W)	U001	82nd Avenue to Harmony Road	Extend as a minor arterial (4 lanes)
Industrial Way	U005	Lawnfield Road to Mather Road	New (3) lane collector
OR 212/224: 3rd WB Lane	U016	OR 212/224, UPRR viaduct to I-205	Restripe OR 212/224 to add 3rd WB lane (combination thru & right-turn lane @ 82nd Dr.); provide two signalized right-turn lanes to NB I-205 On-ramp; provide

Project	ID	Location	Description
			two right-turn lanes SB I-205 Off-ramp to EB OR 212/224; install traffic signal @ I-205 SB ramp terminals to OR 212/224; re-align multi-use path from 82nd Dr. to I-205 NB On-ramp.
Sunrise Expressway mainline	U019	I-205 to SE 122nd Ave. x OR 212/224	Construct 2-4 lane highway; construct new O'Xing structure over I-205 connecting 82nd Ave. and 82nd Dr.
Monterey Avenue	U100	82nd Avenue to Fuller Road	New (2) lane extension
Sager	U676	162nd to Foster	Improve to collector standards (3 lanes), and signalize Sager @172nd.

- The following projects were modeled in the Full Build:

Table X 18 2035 Full Build Project in the Greater Clackamas Regional Center/Industrial Area

Project	ID	Location	Description
Sunnybrook Rd extension (W)*	U001	82nd Avenue to Harmony Road	Extend as a minor arterial (4 lanes)
Industrial Way*	U005	Lawnfield Road to Mather Road	New (3) lane collector
OR 212/224: 3rd WB Lane*	U016	OR 212/224, UPRR viaduct to I-205	Restripe OR 212/224 to add 3rd WB lane (combination thru & right-turn lane @ 82nd Dr.); provide two signalized right-turn lanes to NB I-205 On-ramp; provide two right-turn lanes SB I-205 Off-ramp to EB OR 212/224; install traffic signal @ I-205 SB ramp terminals to OR 212/224; re-align multi-use path from 82nd Dr. to I-205 NB On-ramp.
Sunrise Expressway mainline*	U019	I-205 to SE 122nd Ave. x OR 212/224	Construct 2-4 lane highway; construct new O'Xing structure over I-205 connecting 82nd Ave. and 82nd Dr.
Monterey Avenue*	U100	82nd Avenue to Fuller Road	New (2) lane extension
Sager*	U676	162nd to Foster	Improve to collector standards (3 lanes), and signalize Sager @172nd.
Sunnyside Road	U045	Sunnyside Road/SE 172nd Ave Intersection	Install traffic signals and left-turn lanes
SE 122nd Avenue	U057	Sunnyside Road to Hubbard Road	Reconstruct and widen (3 lanes), add turn lanes
SE 132nd Avenue	U058	Sunnyside Road to Hubbard Road	Upgrade to standards (3 lanes), add sidewalks
79th Ave Extension	U066	Johnson Creek - King Rd	Build N-S collector (3 lanes) west of 82nd Ave
Johnson Creek Blvd.	U071	36th to 45th	Widen to minor arterial standards (4 lanes)
Johnson Creek Blvd.	U072	55th Avenue to Bell Avenue	Widen to (3) lanes
Johnson Creek Blvd.	U074	Bell Avenue to 82nd Avenue	Widen to (5) lanes plus bike lanes and sidewalks
Clatsop Street/Luther Road	U075	Luther - 72nd Ave. to 82nd: Clatsop, 82nd Ave. east to Fuller	Upgrade to collector standard (3 lanes) and signalize 82nd Avenue intersection
West Collector	U076	Luther Street to Johnson Creek Blvd.	Construct new collector (3 lanes)
82nd Avenue	U078	82nd Avenue/Johnson Creek Blvd. intersection	Add second southbound left-turn lane

Project	ID	Location	Description
Fuller Road extension	U079	Johnson Creek Blvd. to Hinkley Street	Extend street (2 lanes)
King Road	U080	Harrison/King/42nd intersection	Realign intersection, traffic signal
King Road	U081	King/Stanley intersection	Add turn lanes to Stanley
Linwood Avenue	U082	Linwood/Monroe intersection	Add curbs/sidewalks, improve horizontal alignments
Johnson Creek Blvd.	U087	1-205 - Johnson Creek interchange	Connect southbound off-ramp with Fuller, remove signal, upgrade with new ramps
Fuller Road	U088	Otty Street to Johnson Creek Blvd.	Widen to (3) lanes. Widen street, add turn lanes, sidewalks, on-street parking, central median and landscaping.
Otty Street Realignment	U089	Otty Street/82nd Avenue/Otty Road	Realign Otty Street with Otty Road at 82nd Avenue
Otty Road	U090	82nd Avenue to 92nd Avenue	Improve to minor arterial standard (4 lanes). Widen street, add turn lanes, on-street parking, central median, landscaping, add bike lanes and sidewalks
Fuller Road	U091	Otty to King/82nd Avenue	New (2) lane extension
Fuller Road disconnect	U092	Fuller Road/King Road intersection	Disconnect Fuller auto access to King Road
Monroe Street	U093	72nd Avenue to Fuller Road	Improve to collector standard (3 lanes)
Boyer Drive	U094	82nd Avenue to Fuller Road	New (2) lane extension
Fuller Road	U095	King Road to Harmony Road	Reconstruct and widen road to collector standards (3lanes)
Causey Avenue	U097	Fuller Road to I-205	Widen (3 lanes) and add bike lanes
SE 85th Avenue	U099	Causey Avenue to Monterey Avenue	Improve to collector standard (3 lanes) with bike lanes and sidewalks
Lake Road	U102	OR 224 west to Milwaukie city limits	Reconstruct, widen (4 lanes), turn lanes
Harmony Road	U104	82nd Avenue - OR 224	Widen to (5) lanes
82nd Avenue	U109	Sunnyside Road to Sunnybrook Road	Widen to (7) lanes with boulevard
Johnson Creek extension	U116	Altamont to Idleman Road	New (2) lane extension
Idleman Road	U117	Johnson Creek extension to Mt. Scott Blvd.	Reconstruct and widen to urban minor arterial standards (4 lanes), smooth curves
Mt. Scott Blvd.	U118	Idleman/Mt. Scott intersection	Realign and add left-turn lanes
Mt. Scott Blvd./King Road	U119	Idleman Road to 132nd Avenue	Reconstruct and widen (urban) (3 lanes). Improve grade.
King Road	U120	King Road/129th intersection	Add turn lanes, realign
SE 132nd Avenue	U121	King Road to Clatsop Street	Widen to (3) lanes
King Road	U122	132nd Avenue to 147th Avenue	Reconstruct, widen (3 lanes), turn lanes
SE 122nd/129th Avenue	U123	Sunnyside to King Road	Widen to (3) lanes
Causey extension	U124	I-205 Frontage Road to W. Otty Road	Collector (3 lanes) with bike lanes and sidewalks
William Otty Road extension	U125	Stevens Road to Valley View Terrace	New (2) lane collector
Valley View Terrace	U126	Sunnyside Road to William Otty Road	Upgrade to collector (3 lanes) with bike lanes and sidewalks
Foster Road	U128	Tillstrom Road to Multnomah County Line	Four lane widening with left-turn lanes
Foster Road	U129	Foster Road/Tillstrom Road	Install traffic signal, install southbound left-turn lane

Project	ID	Location	Description
		intersection	
Mather Road	U130	97th Avenue to 122nd Avenue	Reconstruct and widen (urban) (3 lanes).
Mather Road	U132	122nd Avenue to 132nd Avenue	New (2) lane extension
Summers Lane Ext. Phase 2	U133	122nd Avenue to 132nd Avenue	New (2) lane extension
SE 142nd Avenue	U135	Sunnyside Road to OR 212	Widen to (3) lanes
SE 152nd Avenue Phase 2	U136	Sunnyside Road to OR 212	Reconstruct and widen (urban) (3 lanes)
Webster Road	U151	Webster Road/Lake Road intersection	Add left-turn lanes
SE 82nd Drive	U156	OR 212 to Gladstone Phase 2	Widen to (5) lanes
Mather Road	U159	SE 82nd Drive to Industrial Way	Extend Mather Road across railroad to SE 82nd Drive
Mather Road	U160	Industrial Way to 98th	Widen to (3) lanes
Springwater Road	U184	OR 224 to Hattan Road	Four lane widening with left-turn lanes, widen bridge over Clack. River
Foster Road	U219	OR 212 to Troge Road	Four lane widening with left-turn lanes
Tillstrom Road	U220	SE 190th Drive to Foster Road	Remove or decrease horizontal curve along Foster Road, relocate intersection, install southbound left-turn lane
SE 242nd Avenue	U223	242nd/Sunshine Valley Road intersection	Install northbound right-turn lane
SE 242nd Avenue	U224	242nd/Tillstrom Road intersection	Install northbound left-turn lane and southbound right-turn lane
SE 82 <sup>nd</sup> Drive	U338	OR 212 to Lawnfield Road	Widen to (5) lanes
Hwy.-212 intersections	U423	SE 162nd to Anderson Rd.	Existing OR 212 remains two lanes with turn pockets from 162nd Ave. to Anderson Road south of limited access parkway. Design elements to be included are sidewalks, bike lanes, and a landscaped buffer.
OR 224	U443	Springwater Road/Hwy-224 intersection	Install traffic signal
162nd Ave. Extension South Phase 1	U464	Rock Creek Blvd. to Goose Hollow Dr.	Construct a new 2 - 3 lane roadway with intersection improvements at Hwy-212/162nd on all 4 approaches. The second phase is Project #11346.
162nd Ave. Extension South Phase 2	U485	157th Ave. to Rock Creek Blvd.	Construct a new 3 lane roadway with traffic signals and bridge over Rock Creek. The first phase is Project #10041. Improve north-south connectivity and provide congestion relief to 172nd Ave.
SE 242 <sup>nd</sup> Avenue	U484	OR 212 to Multnomah County Line	Reconstruct and widen (rural) (3 lanes), add turn lanes
Hwy 212 widening to 5 lane blvd	U580	Sunrise Unit 1 Terminus - East Damascus limits	Widen Hwy 212 to a 5 lane blvd section through Damascus
Mt. Scott Blvd./King Rd. Improvements	U592	Happy Valley City Limits to 145th Ave.	Widen to three lanes. Improve access to Happy Valley Town Center.
New Connection, Damascus	U595	177th to 190th	new arterial from the Rock Creek Blvd interchange. This portion within Damascus.
Rock Creek Blvd. improvements	U608	Hwy. 212/224 (planned Sunrise Corridor Rock Creek Interchange) to 177th Ave.	Construct a new 5 lane roadway with sidewalks, bike lanes and traffic signals
SE Sunnyside Rd East Extension	U610	SE 172nd Ave. to SE 242nd Ave.	Extend Sunnyside Road east from 172nd Ave to 242nd Ave. Evaluate alignment options between Bohna Park Road and Tillstrom Road for the connection from Foster Road to 242nd Ave.
162nd Ave.	U673	Hagen Rd. to Clatsop St	Construct a new 3 lane roadway with traffic signals.



Project	ID	Location	Description
Extension North			
Rugg Rd	U674	252nd Ave to 242nd Ave	Construction of new roadway that adds e/w capacity in vicinity Rugg Rd and connects Springwater Industrial area to Hwy 26
Cheldelin: 172nd to 190th	U675	172nd to 190th	Improve existing road to minor arterial (4 lanes) standards, signalize Cheldelin at 172nd, 182nd, and Foster.
162nd	U677	Foster to southern boundary of Pleasant Valley	Improve 162nd to collector standards (3 lanes), add signal at Foster @ 162nd.
172nd: Cheldelin south to Pleasant Valley boundary	U678	Cheldelin to So. Boundary of Pleasant Valley	Improve 172nd Ave. to major arterial standards (3 lanes).
Sunrise Project: Acquire right-of-way: Webster Rd. to SE 172nd Ave	U681	Webster Rd./Hwy. 224 to 172nd Ave./Hwy. 212	Acquire right-of-way: Webster Rd. to SE 172nd Ave. to accommodate six-through lane expressway, plus auxiliary lanes.
Sunrise Hwy. PE: Webster Rd. to SE 172nd Ave	U682	Webster Rd./Hwy. 224 to 172nd Ave./Hwy. 212	Preliminary engineering and EIS from Webster Rd. to SE 172nd.

\* Project also included in low build scenario

- Thirteen of the 65 study intersections operate at volume-to-capacity ratios in excess of performance standards under both Low Build and Full Build:
  - SE Johnson Creek Boulevard /80th Avenue
  - SE Johnson Creek Boulevard/82nd Avenue
  - SE Lake Road /SE International Way
  - SE Harmony Road /SE Linwood Avenue
  - SE Sunnyside Road /SE Harmony Rd/SE 82nd Avenue
  - SE Sunnybrook Boulevard /SE 82nd Avenue
  - OR 224/SE Rusk Road
  - OR 224/SE Lake Road /SE Webster Road
  - OR 224/SE Johnson Road
  - OR 212/I-205 SB Ramps
  - OR 224/SE Hubbard Road /135th Avenue
  - OR 212/SE 172nd Avenue
  - OR 224/Springwater Road
- Of the 13 intersections that do not meet performance standards under Full Build future conditions, six are modified by a Full Build Project (e.g., a turn lane or other physical change would be made to the intersection due to a Full Build project):
  - SE Johnson Creek Boulevard /80th Avenue

- SE Johnson Creek Boulevard/82nd Avenue
- SE Lake Road /SE International Way
- SE Harmony Road /SE Linwood Avenue
- SE Sunnyside Road /SE Harmony Rd/SE 82nd Avenue
- OR 224/Springwater Road
- Eight study intersections operate at volume-to-capacity ratios in excess of performance standards under the Low Build scenario, but meet performance standards under Full Build:
  - SE King Road /SE Fuller Road
  - SE Sunnyside Road /I-205 SB Ramps
  - SE Sunnyside Road /I-205 NB Ramps
  - SE Sunnybrook Boulevard /I-205 NB Ramps
  - SE Sunnyside Road /SE 122nd Avenue
  - SE Sunnyside Road /SE 142nd Avenue
  - OR 224/SE 142nd Avenue
  - OR 212/OR 224
- Under the Low Build Scenario, higher levels of congestion are anticipated on eastern portions of OR 212 and OR 224, southern portions of I-205, and eastern portions of SE Sunnyside Road.
- Demand for travel is highest along OR 212, SE Sunnyside Road, SE 82<sup>nd</sup> Avenue, SE Harmony Road, SE Johnson Creek Boulevard, and SE Linwood Avenue under both Low Build and Full Build. The Sunrise Expressway Mainline is expected to serve a relatively high volume of traffic.
- Under 2035 Full Build, the highest levels of congestion are anticipated on I-205, OR 224, and SE Tong Road. The projects included in Full Build, specifically the Sunrise Expressway Mainline, help alleviate congestion on SE Sunnyside Road and OR 212. Portions of other regional roadways also experience reduced congestion such as SE Monterey Avenue and SE Idleman Road.
- Overall, significant growth is forecast for the study roadways in this area.

#### Northwest County

- The following projects were modeled in the Low Build:

Table X 19 2035 Low Build Projects in Northwest County

Project	ID	Location	Description
Barber St. Extension from Kinsman Rd. to Villebois Village	U018	Kinsman Rd. to Villebois Village	Extend 3 lanes with sidewalks and bike lanes. The project will reduce the need to use I-5 and OR 217 by providing needed connections to the Villebois Village housing development and employment areas in Wilsonville and with the new Commuter Rail site.
Kinsman Rd. Extension from Barber St. to Boeckman Rd.	U021	Barber St. to Boeckman Rd.	Extend 3 lanes with sidewalks and bike lanes. Provide freight access and capacity from Barber Street to Boeckman Road. A vital alternative to 110th which is being vacated. Serves as a parallel arterial to I-5.
Wilsonville Rd/1-5 Interchange Improvements - Setback Abutments and Widen	U676	Town Center Loop W to Boones Ferry Rd	Provide additional left-turn lanes, setback abutments, improves signal synchronization, fixes sight distance problems, and provides for enhanced bike/pad safety.
Wilsonville Rd/I-5 Interchange Improvements - On/Off Ramps	U677	N and S of interchange	Widen and lengthen on/off ramps

- The following projects were modeled in the Full Build:

Table X 20 2035 Full Build Projects in Northwest County

Project	ID	Location	Description
Barber St. Extension from Kinsman Rd. to Villebois Village*	U018	Kinsman Rd. to Villebois Village	Extend 3 lanes with sidewalks and bike lanes. The project will reduce the need to use I-5 and OR 217 by providing needed connections to the Villebois Village housing development and employment areas in Wilsonville and with the new Commuter Rail site.
Kinsman Rd. Extension from Barber St. to Boeckman Rd.*	U021	Barber St. to Boeckman Rd.	Extend 3 lanes with sidewalks and bike lanes. Provide freight access and capacity from Barber Street to Boeckman Road. A vital alternative to 110th which is being vacated. Serves as a parallel arterial to I-5.
Wilsonville Rd/1-5 Interchange Improvements - Setback Abutments and Widen*	U676	Town Center Loop W to Boones Ferry Rd	Provide additional left-turn lanes, setback abutments, improves signal synchronization, fixes sight distance problems, and provides for enhanced bike/pad safety.
Wilsonville Rd/I-5 Interchange Improvements - On/Off Ramps*	U677	N and S of interchange	Widen and lengthen on/off ramps
Bangy Road	U161	Bangy/Meadows intersection	Install traffic signal, turn lanes
Bangy Road	U162	Bangy/Bonita intersection	Install traffic signal, turn lanes
Carman Drive	U163	I-5 to Quarry Road	Reconstruct and widen (3 lanes), add turn lanes
Carman Drive	U164	Carman/Meadows Road intersection	Install traffic signal, turn lanes
Borland Road	U167	65th Avenue to Stafford Road	Four lane widening with left-turn lanes
Stafford Road	U168	Childs Rd to Rosemont Rd	Four lane widening with SB turn land and NB turn lane
Stafford Road	U169	Stafford/Childs Road intersection	Install traffic signal, southbound turn lane and northbound turn lane
Stafford Road	U170	Johnson Road to Childs Road	Four lane widening with left-turn lanes
Stafford Road	U171	Borland Rd to Johnson Rd	Four lane widening with left-turn lanes

Project	ID	Location	Description
Stafford Road	U172	I-205 to Borland Rd	Four lane widening with left-turn lanes
Rosemont Road	U173	Stafford Road to Parker Road	Reconstruct and widen (3 lanes)
Rosemont Road	U174	Rosemont/Parker/Day intersection	Realign intersection, add turn lanes
Stafford Road	U177	Mountain Rd to I-205	Four lane widening with left-turn lanes
Stafford Road	U178	Newland Rd to Mountain Rd	Four lane widening with left-turn lanes
Stafford Road	U179	Boeckman Rd (Advance Rd) to Newland Rd	Reconstruct and widen (rural) (3 lanes)
65th Ave/Elligsen/Stafford Rd.	U180	Elligsen Road to Stafford Road	Realign Elligsen Road to south, install north bound right-turn and southbound left-turn lane at new Stafford Road/Elligsen Road intersection
Ladd Hill Road	U272	Wilsonville Road to Washington County Line	Reconstruct and widen (rural) (3 lanes)
Childs Road	U462	Stafford Road to 65 <sup>th</sup> Avenue	Reconstruct and widen - 2/3 lanes
Petes Mountain Road	U466	Willamette Falls Road to Hoffman Road	Reconstruct and widen (rural) (3 lanes)
SW 65 <sup>th</sup> Ave	U489	Nyberg to Childs Rd	Extension across the Tualatin River from Nyberg to Childs Road.
SW 65 <sup>th</sup> Ave	U490	Sagert to Nyberg	Widen to 5 lanes from Sagert to Nyberg.
Boeckman Rd./I-5 Overcrossing Improvements	U501	Boberg Rd. to Parkway Ave.	Widen Boeckman Road bridge over I-5 to 3 lanes. Add bike/pedestrian connections to regional trail system. Boeckman Road is designated as an arterial street in the City's TSP.
Hwy. 43 Improvements	U555	Holly St. to Arbor Dr.	Improve roadway with widening, installation of medians, turn lanes, street trees, signal interconnections, and bike lanes.
Brookman Rd	U679	99W to Ladd Hill Rd	Reconstruct road to collector standards.
Ladd Hill Rd.	U680	Sunset Blvd to UGB	Upgrade street to arterial standards (4 lanes).

\* Project also included in low build scenario

- Three of the five study intersections operate at volume-to-capacity ratios in excess of performance standards under both the Low Build and Full Build future conditions:
  - SW Borland Road /SW Stafford Road
  - SW Ellingson Road /SW 65th Avenue
  - SW 65th Avenue/SW Stafford Road
- Two intersections operate at volume-to-capacity ratios in excess of performance standards under the Low Build, but meet performance standards under Full Build:
  - SW Childs Road/SW Stafford Road
  - SW Mountain Road /SW Stafford Road
- Of the five study intersections that do not meet performance standards in Low Build scenario, four are modified by a Full Build Project (e.g., a turn lane or other physical change would be made to the intersection due to a Full Build project).
  - SW Childs Road/SW Stafford Road
  - SW Mountain Road /SW Stafford Road

- SW Ellingson Road /SW 65th Avenue
- SW 65th Avenue/SW Stafford Road
- Overall, significant growth is forecast for the study roadways and intersections in this area.

## NEXT STEPS

The remaining sections of this report present and discuss the assumptions, methods and results of the existing and 2035 future conditions analysis in greater detail. County staff and project stakeholders will review and discuss this material as well as provide their ideas regarding how to address the identified gaps and deficiencies including which currently planned projects should be carried forward into the TSP alternatives analysis.