Section 5 – 2035 Preferred Alternative

Preferred Transportation System Analysis - Tech Memo 12.4

This analysis looked at the County Transportation with the addition of the recommended transportation capital improvements that are included in the 20 Year Capital Projects list (Tier 1 Projects). This analysis was based used the 2035 Gamma Forecast of households and employment as the estimate of future growth and the volume to traffic operations standards required under the provisions of the Oregon Highway Plan and Metro Regional Transportation Functional Plan.

Five of the intersections analyzed during this process were determined NOT to meet the traffic operations standards. It will be necessary to develop alternate performance standards for these intersections under the requirement of the Oregon Highway Plan Policy 1.F.

ID	Intersection	Performance Standard	Tier 1 Project?	Meets Standard in Tier 1 Scenario?
124	SE Harmony Rd/SE Linwood Ave	v/c = 0.99	U103 (Grade-sep RR crossing)	No (v/c=1.41)
141	OR 224/SE Lake Rd/SE Webster Rd – ***ODOT Intersection***	v/c = 0.99	2118 (second WBL turn lane)	No (v/c=1.30)
161	OR 212/SE 172nd Ave– ***ODOT Intersection***	v/c = 0.99	U019 (Sunrise imp)	No (v/c=1.03)
406	S. Henrici Rd/OR 213– ***ODOT Intersection***	V/C = 0.75	2109 (traffic signal or roundabout)	No (v/c=0.84)
501	OR 212/SE 282nd Ave– ***ODOT Intersection***	v/c = 0.70		No (v/c=1.07)

Methodology for Identifying Gaps in the Arterial and Collector System

The County Arterial and Collector Road System has been evaluated for gaps in the system and updates to the system were recommended. Ultimately all of these recommendations were determined to be unfeasible due to topographic or environmental considerations.

Functional Class Changes

The County Road Functional designations have been evaluated and updated during the course of the TSP Update Process.

The Federal functional class designations and the National Highway System designation were update in late 2012 as part of the implementation of the MAP 21 program.

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

Tech Memo 12.4: Tier 1 Scenario Analysis

Date: August 12, 2013

Project #: 11732

To: Transportation System Plan (TSP) Technical Advisory Committee (TAC) Members and Public Advisory Committee (PAC) Members

From: TSP Project Management Team

Project: Clackamas County Transportation System Plan Update

Subject: Analysis of draft 20-Year Capital Projects (Tier 1) Network

This memorandum summarizes the operational analysis performed on the draft 20-Year Capital Projects (Tier 1) network, hereafter referred to as the *Tier 1 Scenario*. The intent of this analysis is to identify any necessary changes to the 20-Year Capital Projects list or adjustments in project priorities to best meet the TSP goals and objectives.

I. BACKGROUND

At this stage of the TSP update, the project lists for the Clackamas County Transportation System Plan (TSP) are being finalized according to the goals, priorities and available funding. This process will result in three project lists, shown in Table 1, which will define the County's transportation priorities for the next 20 years.

Table 1 TSP Project List Organization

Project List Name	Tier	Previous Name	Funding Available	Type of Projects Included
20-Year Capital Projects	1	Fiscally Constrained List	Approximately $444 million (based on funding forecast)	Top recommended projects that can reasonably be undertaken given the current estimates of available funding.
Preferred Capital Projects	2	Preferred Project List	Approximately $444 million (potential additional funding)	Additional recommended projects that the County hopes to undertake if additional funding becomes available during the next 20 years.
Long-Term Capital Project Needs	3	Vision Project List	None known	All other needed projects identified in the TSP update process. These are not expected to be funded or constructed by the County during the next 20 years, but they are still needed to meet the County's projected transportation needs.

The current draft project lists were developed based on a variety of information and input, including:

- An analysis of the transportation system and study intersections under existing conditions, the 2035 Low Build Scenario (includes funded projects as of summer 2012), and the 2035 Full Build Scenario (includes all planned projects in the previous TSP).
- A goal assessment of potential projects based on the vision, goals, and objectives of the TSP.

- Public input gathered via the Public Advisory Committee (PAC), three virtual workshops, and community outreach activities.
- Feedback from Geographic Area Priority (GAPS) groups, a Technical Advisory Committee (TAC), and County staff.

The current draft 20-Year Capital Projects (Tier 1) List reflects the recommended priorities coming out of PAC meeting #5C, held April 30, 2013. Maps and tables of the projects are available in *Appendix A*.

II. TIER 1 SCENARIO

In order to further inform the prioritization process, an operational analysis was performed to assess how the transportation system operates with the projects currently on the draft 20-Year Capital Projects List (Tier 1 Scenario). The projects included in this analysis are listed and mapped in *Appendix A*. The intent of this analysis was to identify the following:

- Tier 1 Projects that need to be adjusted (project extents, description, and/or cost) in order to best address an identified deficiency,
- Tier 2 or 3 Projects that need to be elevated in priority to address an identified deficiency,
- Tier 1 Capacity Projects that do not address a projected deficiency and therefore may not be needed in the 20-year horizon, and
- Any remaining deficiencies in the transportation system not addressed by a project on the TSP list.

A. Volume Development

The operational analysis relied on the development of link volumes and turning movement count volumes at key study intersections. As with the 2035 Low Build Scenario and 2035 Full Build Scenario assessed in earlier TSP efforts, this analysis assumed 2035 projected population and employment growth. Metro's recently released Joan Version 2 model was utilized to develop volumes, whereas earlier modeling efforts used the Joan Version 1 model. The key differences between these models are summarized in the materials provided in *Appendix B*. Based on discussions with Metro Travel Modeling staff, the differences between the two models are likely the result of the following:

1. Changes in the 2035 Land Use Assumptions – Households and Employment

The Joan Version 2 model uses the 2035 Gamma forecast, whereas the Joan Version 1 model used the 2035 Beta forecast. The Gamma Forecast has approximately 8,000 fewer households overall, fewer households in the County, and a general decrease in household incomes (which is strongly associated with reduced access to automobiles and increased demand for transits service). The vehicle trip reduction is slightly larger when analyzing the 2-hour PM peak because more transit trips are generated. As a result of these changes in the 2035 land use and economic assumptions, the total

number of vehicles trips in 2035 decreased by 13% between the Beta Forecast and the Gamma Forecast.

2. Changes to the Travel Model

A key component of a travel model is the origin-destination (O-D) matrix, which allocates all of the trips generated in a traffic analysis zone (TAZ) to the other TAZs in the regional travel model. The travel survey used in the previous Metro model was conducted in 1994 and showed that 93.2% of all trips in the County were made by automobile. The updated Metro model utilized a new travel survey from 2011 which showed that 87.6% of trips in the County were made by automobile. Therefore, the change to the new travel survey data resulted in an additional 5% reduction in the overall number of trips made by automobile in 2035.

The combined effect of these two changes to the travel model is an 18% reduction in number trips made by automobiles and a resulting decrease in the travel volumes shown by the Joan Version 2 model in 2035. These changes are reflected in the link volumes and turning movement counts utilized in the Tier 1 Scenario analysis, as discussed further later in this memo.

B. Study Intersections

Fifty intersections were selected for analysis under the Tier 1 Scenario (of the 125 intersections studied in the *Existing and Future Conditions Report*). Intersections were selected based on several factors, including:

- Intersections that were not projected to meet standards under the 2035 Low Build
- Intersections that were impacted by a Low Build project not included in the Tier 1 Scenario (i.e. in the vicinity of the Sunnybrook Extension)

The lane configurations and traffic control devices at the study intersections assumed for the Tier 1 Scenario are shown in *Appendix C.*

III. KEY FINDINGS

The operational analysis assessed operations at both the study intersections and roadway segments in the County. The key findings from both analyses are detailed below.

A. Intersection Operations

The intersection operations under the Tier 1 Scenario are shown in the figures in *Appendix D* and summarized in Table 2.

Table 2 Tier 1 Scenario Study Intersection Operations

ID	Intersection	Jurisdiction	Performance Standard	Low Build Project?	Meets Standard in 2035 Low Build?	Tier 1 Project?	Meets Standard in Tier 1 Scenario?
104	SE Johnson Creek Blvd/89th Ave	County	v/c = 1.1	No	No	2114	Yes
105	SE Johnson Creek Blvd/82nd Ave (OR 213)	ODOT	v/c = 0.99	No	No	U659	Yes (v/c=0.99)
107	SE Johnson Creek Blvd/I-205 SB Ramps	ODOT	v/c = 0.85	No	Yes	U087	Yes
116	SE King Rd/SE Fuller Rd	County	v/c = 0.99	No	No	U092	Yes
123	SE Lake Rd/SE International Way	County	v/c = 0.99	No	No	2115	Yes (v/c=0.99)
124	SE Harmony Rd/SE Linwood Ave	County	v/c = 0.99	No	No	U103	No (v/c=1.41)
125	SE Harmony Rd/SE Fuller Rd	County	v/c = 1.1	No	Yes		Yes (v/c=0.93)
126	SE Sunnyside Rd/SE Harmony Rd/SE 82nd Ave (OR 213)	ODOT	v/c = 1.1	No	Yes		Yes (v/c=0.99)
130	SE Sunnyside Rd/I-205 SB Ramps	ODOT	v/c = 0.85	No	No		Yes (v/c=0.81)
131	SE Sunnyside Rd/I-205 NB Ramps	ODOT	v/c = 0.85	No	No		Yes
136	SE Sunnybrook Blvd/SE 82nd Ave (OR 213)	ODOT	v/c = 0.99	Yes	No		Yes
138	SE Sunnybrook Blvd/I-205 NB Ramps	ODOT	v/c = 0.85	No	No		Yes
140	OR 224/SE Rusk Rd	ODOT	v/c = 0.99	No	No		Yes (v/c=0.97)
141	OR 224/SE Lake Rd/SE Webster Rd	ODOT	v/c = 0.99	No	No	2118	No (v/c=1.30)
143	OR 224/SE Johnson Rd	ODOT	v/c = 0.99	No	No	U928	Yes
144	SE Sunnyside Rd/SE 122nd Ave	County	v/c = 0.99	No	No	U123	Yes
146	SE Sunnyside Rd/SE 142nd Ave	County	v/c = 0.99	No	No		Yes
149	SE Sunnyside Rd/SE 172nd Ave	County	v/c = 0.99	No	Yes		Yes
153	OR 212/I-205 SB Ramps	ODOT	v/c = 0.85	No	No		Yes
155	OR 212/SE 82nd Dr	ODOT	v/c = 0.99	Yes	Yes		Yes (v/c=0.93)
157	OR 224/SE Hubbard Rd/135th Ave	ODOT	v/c = 0.99	No	No	2121	Yes (v/c=0.91)
158	OR 224/SSE 142nd Ave	ODOT	v/c = 0.99	No	No		Yes
159	OR 212/OR 224	ODOT	v/c = 0.99	No	No	U019 U915	Yes (v/c=0.95)
161	OR 212/SE 172nd Ave	ODOT	v/c = 0.99	Yes	No	U019	No (v/c=1.03)
165	OR 224/Springwater Rd	ODOT	v/c = 0.99	No	No	U915	Yes
201	SE Park Ave/SE River Rd	County	v/c = 0.99	No	Yes		Yes
219	SE Thiessen Rd/SE Hill Rd	County	v/c = 0.99	No	No		Yes
220	SE Thiessen Rd/SE Aldercrest Rd	County	v/c = 0.99	No	No	2113	Yes
223	SE Roots Rd/SE Webster Rd	County	v/c = 0.99	No	No		Yes
224	SE Jennings Ave/SE Webster Rd	County	v/c = 0.99	No	No		Yes
301	SW Childs Rd/SW Stafford Rd	County	LOS = D	No	No	U168 U169	Yes
302	SW Borland Rd/SW Stafford Rd	County	LOS = D	No	No	U167 U168	Yes
303	SW Mountain Rd/SW Stafford Rd	County	LOS = D	No	No		Yes

ID	Intersection	Jurisdiction	Performance Standard	Low Build Project?	Meets Standard in 2035 Low Build?	Tier 1 Project?	Meets Standard in Tier 1 Scenario?
401	Clackamas River Drive/Springwater Rd	County	LOS =D	No	No	U184 2107	Yes
402	S. Redland Rd/S. Holly Lane	County	V/C = 0.99	No	No	U197	Yes
403	S. Redland Rd/S. Ferguson Rd	County	LOS = D	No	No	U199	Yes
406	S. Henrici Rd/OR 213	ODOT	V/C = 0.75	No	No	2109	No (v/c=0.84)
408	South End Rd./OR 99E	ODOT	V/C = 0.75	No	No		Yes (LOS=F) (v/c=0.84)
409	S. Leland Rd/OR 213	ODOT	V/C = 0.80	No	No	2110 U441	Yes
412	Arndt Rd/NE Airport Rd	County	LOS = D	No	Yes		Yes (LOS=D) (v/c=0.97)
414	Arndt Rd/Knights Bridge Rd	County	LOS = D	No	Yes		Yes
415	Arndt Rd/S. Barlow Rd	County	LOS = D	No	Yes		Yes
416	OR 99E/S. Barlow Rd	ODOT	V/C = 0.75	No	No	2111	Yes
418	S. Spangler Rd/OR 213	ODOT	V/C = 0.75	No	No	1007	Yes
419	Mulino Rd/OR 213	ODOT	V/C = 0.80	No	Yes	1090	Yes
420	S. Union Mills Rd/OR 213	ODOT	V/C = 0.75	No	Yes	U302a	Yes
422	S. Union Mills Rd/S. Beavercreek Rd	ODOT	V/C = 0.75	No	No	U302a	Yes
501	OR 212/SE 282nd Ave	ODOT	v/c = 0.70	No	No		No (v/c=1.07)
502	OR 224/SE 232nd Ave	ODOT	v/c = 0.75	Yes	No	2106	Yes
503	OR 224/OR 211	ODOT	v/c = 0.80	No	No	U427	Yes

As shown in the figures and table above, forty-five of the study intersections meet standards under the Tier 1 Scenario. The majority of these intersections are directly impacted by a Tier 1 project, i.e. the addition of turn lanes or a change in traffic control. Others experience a change in projected volumes (either due to nearby improvements or model changes, as discussed above) that cause them to operate within standards. Five of the intersections do not meet standards under the Tier 1 Scenario. None of these intersections meet standards under the 2035 Low Build. Four of these are impacted by a Tier 1 project, but still fall short of standards.

B. Roadway Segment Analysis

The roadway segment volumes provide a sense of the demand for travel on roadways. Figures are provided in *Appendix E* illustrating the roadway link volumes from the weekday evening peak hour for the Tier 1 Scenario. Overall, the figures reflect a reduction in link volumes during the weekday PM peak hour, compared to the 2035 Low Build and 2035 Full Build scenarios. This reflects the changes in the model described above, including a reduction in projected household growth and automobile travel. The model used to develop the volumes makes its forecast for the PM peak hour, which has a higher

percentage of total trips occurring by transit (compared to total daily trips). This could also contribute to the overall reduction in link volumes.

The level of congestion experienced on roadway segments was estimated using the roadway segment volumes from the Metro base model and the roadway segment capacity. The volume was compared to the capacity to calculate a volume-to-capacity ratio that is used to estimate the level of congestion. Figures are provided in *Appendix E* illustrating the relative congestion during the Tier 1 Scenario weekday evening peak hour on roadways based on the estimated roadway segment volumes and capacity. The figures reflect an overall reduction in congestion compared to the Low Build Scenario (particularly on I-205, OR 213, OR 212, OR 43, Carver Bridge and SE Sunnyside Rd). The Tier 1 Scenario segment congestion analysis shows only a few isolated points of congestion, including several roadways within Oregon City, on Arndt Rd, portions of I-205, and a couple of roadway segments within Damascus.

IV. RECOMMENDATIONS

The intersections that do not meet standards under the Tier 1 Scenario were further assessed to determine what changes to the TSP project lists are needed to address these deficiencies. The draft Tier 2 (Preferred Capital Projects) and Tier 3 (Long-Term Capital Project Needs) lists were reviewed to assess whether there are any capacity projects on these lists that would address the intersection deficiencies. The results of this assessment are shown in Table 3.

Table 3 Intersections that do not meet Standards under the Tier 1 Scenario

ID	Intersection	Performance Standard	Tier 1 Project?	Meets Standard in Tier 1 Scenario?	Tier 2 or Tier 3 Project?	Meets Standard with Tier 2 or Tier 3 Project?
124	SE Harmony Rd/SE Linwood Ave	v/c = 0.99	U103 (Grade-sep RR crossing)	No (v/c=1.41)	No	No (needs additional improvements)
141	OR 224/SE Lake Rd/SE Webster Rd – ODOT Intersection	v/c = 0.99	2118 (second WBL turn lane)	No (v/c=1.30)	No	No (needs additional NBL and SBL turn lanes, NBR turn lane)
161	OR 212/SE 172nd Ave– ODOT Intersection	v/c = 0.99	U019 (Sunrise imp)	No (v/c=1.03)	2122 (Second EBL turn lane) - Medium	Yes
406	S. Henrici Rd/OR 213– ODOT Intersection	V/C = 0.75	2109 (traffic signal or roundabout)	No (v/c=0.84)	No	No (needs additional through lane on OR 213)
501	OR 212/SE 282nd Ave– ODOT Intersection	v/c = 0.70		No (v/c=1.07)	2105 (Second SBR turn lane) – Tier 3	No (needs second EBL, additional through lane on OR 212)

Each of the intersections is discussed in more detail below:

1. SE Harmony Rd/SE Linwood Ave (124)

Project U103 creates a grade-separated railroad crossing at the intersection of SE Harmony Rd/SE Linwood Ave. With this improvement, the intersection is projected to operate at a v/c ratio of 1.41, which is well over standards. The projected volumes show a large number of vehicles traveling between the south leg (SE Harmony Rd) and east leg of the intersection (SE Harmony Rd). **The project team recommends modifying the description of project U103 to include appropriate intersection improvements at SE Harmony Rd/SE Linwood Ave.** Further study is needed to determine the appropriate intersection improvements. Potential treatments include additional turn-lanes or a reconfiguration of the intersection to two T-intersections (so that SE Railroad Ave and SE Linwood Ave converge before intersecting with SE Harmony Rd).

2. OR 224/SE Lake Rd/SE Webster Rd (141) – ODOT Intersection

Project 2118 adds a second left-turn lane on westbound OR 224 at SE Lake Rd/SE Webster Rd. With this improvement, the intersection is projected to operate at a v/c ratio of 1.30, well over the standard of 0.99. **The project team recommends modifying the description of project 2118 to include additional intersection improvements,** including a second left-turn lane and right-turn lane on northbound SE Webster Rd and a second left-turn lane on southbound SE Lake Rd.

3. OR 212/SE 172nd Ave (161) – ODOT Intersection

The intersection of OR 212/SE 172nd Ave operates just over the v/c ratio standard of 0.99. Project 2122, which adds a second eastbound left-turn lane on OR 212, is currently ranked as medium priority on the ODOT project list. This project would improve operations at the intersection to bring it within standards. **Therefore, the project team recommends moving project 2122 from medium to high priority.**

4. S. Henrici Rd/OR 213 (406) – ODOT Intersection

Project 2109 changes the traffic control at S. Henrici Rd/OR 213 to a signal or roundabout. With either improvement, the intersection operates over-capacity, largely due to the heavy volumes of northbound and southbound vehicles. As a signal, the intersection operates at a level-of-service (LOS) B, a delay of 10.1 seconds, and with a v/c ratio of 0.84. Therefore, while the intersection operates well in terms of the LOS and delay, it does not meet the v/c ratio standard of 0.75. **Therefore, the project team recommends either adjusting the performance standard at this intersection or modifying the description of project 2109 to include additional intersection improvements**, such as auxiliary northbound and southbound through lanes.

5. OR 212/SE 282nd Ave (501) – ODOT Intersection

The intersection of OR 212/SE 282nd Ave operates at a v/c ratio of 1.07, above the standard of 0.70. Project 2105, which is currently in Tier 3, adds a second right-turn lane on southbound 282nd Avenue. With this project, the intersection still operates well above the v/c standard of 0.70, largely due to the heavy volume of vehicles on OR 212 using a single through lane. **Therefore, the project team recommends either adjusting the performance standard at this intersection or modifying the description of project 2105 to include additional intersection improvements**, such as auxiliary eastbound and westbound through lanes and an additional eastbound left-turn lane.

Recommendations to Address Roadway Congestion

The roadways that are projected to be congested were also further assessed to identify what changes are needed to the TSP project list to address these deficiencies. The most significant areas of congestion are discussed below.

1. OR 212

Within the Clackamas Regional Center/ Industrial Area, a portion of OR 212 near 172nd Ave is projected to be very congested. Project 2122, which adds a second eastbound left-turn lane at the OR 212/172nd Avenue intersection, is currently medium priority. As part of the intersection analysis (see discussion above), the project team recommends moving the project from medium to high priority to address deficient operations at the intersection of OR 212/SE 172nd Ave. This project would also likely ease congestion on OR 212.

2. Springwater Rd

The portion of Springwater Road near OR 224 within the Clackamas Regional Center/Industrial Area is projected to be very congested. In order to address this deficiency, **the project team recommends adjusting the description of project U184 (currently Tier 1) to widen Springwater Rd to 3 lanes with shoulders and pedways between OR 224 and Hattan Rd**. Based on the intersection operations at OR 224/ Springwater Rd, it is recommended to keep the bridge at 2 lanes.

3. Arndt Rd

The portion of Arndt Rd between OR 551 and Barlow Rd just east of I-5 in the Southwest County is projected to be very congested. Based on current development restrictions, Arndt Rd cannot be widened. Further study is necessary to determine a solution to the congestion projected for this area. **Therefore, the project team recommends a study to identify and consider roadway improvements to address access to I-5 within the Southwest County and address capacity deficiencies.**

Additional Recommendations

Several of the intersections in the vicinity of the Clackamas Town Center (i.e. SE Harmony Rd/SE Fuller Rd, SE Sunnyside Rd/SE Harmony Rd/SE 82nd Ave (OR 213), and SE Sunnyside Rd/I-205 SB Ramps) operate just within volume to capacity (v/c) standards. While improvements were considered for the regional center in earlier stages of the TSP Update process (i.e. the Sunnybrook Extension and Harmony widening), they were removed from the project lists based on feedback from the PAC, TAC, and public. It is unlikely these intersections can support much additional growth in the Town Center beyond what is included in the model forecasts. New development under current regulations will become increasingly challenging. Thus, it is recommended that the County consider modifying the current v/c ratio standard and developing alternative performance standards for the regional center (as previously recommended in the *Dynamic Traffic Assignment* Memo). In order to accomplish this, **the project team recommends a study to develop alternative performance standards for the intersections within the Clackamas Regional Center.**

V. NEXT STEPS

The results of the Tier 1 Scenario operational analysis and key findings were reviewed by the TAC during TAC Meeting #8 on July 18th, 2013. The TAC discussed changes that should be made to the 20-Year Capital Projects and adjustments in project priorities that should be made as a result of the findings. In addition, the TAC considered the feedback gathered during public outreach activities from this spring, including presentations at community and business meetings, and an online "virtual" open house. The TAC and PMT developed a set of recommendations and draft 20-Year Capital Projects list, referred to as the "Draft Recommendation to the Planning Commission."

The PAC will discuss the projects, programs, and policies in the Draft Recommendations to the Planning Commission during PAC Meeting #6 on August 20th. Discussion will focus on recommendations that have changed based on public comment, the Tier 1 Scenario Analysis, and/or TAC input. The PAC will have an opportunity to discuss the changes made and come to consensus on final TSP recommendations to be sent to the Planning Commission. Public review of the final plan will occur October through December when it will be presented to the Planning Commission and Board of County Commissioners, respectively.

LIST OF APPENDICES:

A: PAC Recommended Projects – Tables and Maps

B: Metro Modeling Materials

C: Tier 1 Scenario Lane Configurations and Traffic Control Devices at Study Intersections

D: Tier 1 Scenario Intersection Operations

E: Tier 1 Scenario Roadway Segment Analysis

Master List County Projects - PAC Recommendation

7/11/2013

***Note:** Projects are organized by geograhpic area, then by TSP Update ID.
Red text indicates changes made post-GAPS #3 Meetings
Blue text indicates change made post PAC #5B or #5C Meeting
Highlight indicates change made post PAC #5D Meeting

1000 - 1999: Public Suggested Projects
2000 - 2999: New Identified Projects
U000 - U999: Previously Planned Projects

***Note:** Projected Future Demand based on 2035 Low Build volumes from Metro Model.

15,000 assumed for multiuse path or bike/ped bridge

Suggested Tier	Total Cost:
Tier 1	$ 390,925,000
Tier 2	$ 390,270,000
Tier 3	$ 2,189,149,000

TSP Update ID	Geographic Area	Project Name / Street Name	Segment / Locations	Project Description	Project Category	Projected Future Demand*	Planning Level Cost Estimate	Final Score	TAC Meeting #7 Comment	GAPS Recommen-dation	TAC Recommen-dation	PAC Recommen-dation
1043	CRC	Boyer Dr / 85th Ave / Spencer Dr	OR 213 to I-205 bike path	Add bikeways	Upgrade - Active Transportation	5,000	$40,000	9	Local roads, bike blvd - sharrows/signing/outreach	Tier 2	**Tier 1**	Tier 1
1073	CRC	Monterey Ave	Stevens Rd to Bob Schumacher Rd	Construct collector roadway. Include bikeways and pedways	New Roadway	4,500	$6,660,000	10	potential public/private partnership	Tier 1	Tier 1	Tier 1
1080	CRC	Deer Creek Ln	Johnson Rd to Oak Bluff	Extend eastward for a few hundred feet and connect to Costco loop road (Oak Bluff Rd / 84th Ave)	New Roadway	1,000	$5,460,000	7	Conflicts with the Sunrise Project, flood plains, wetlands	Tier 3	Tier Remove	Tier 3
1081	CRC	Harmony Rd	Railroad Ave /Linwood Ave / Harmony Rd intersection	Provide a bike/pedestrian overpass over railroad in vicinity of Lake Rd and Railroad Ave	Upgrade - Active Transportation	23,000	$1,960,000	7		Tier 3	Tier 3	Tier 3
1083	CRC	Service road (OSP CSO and Precision Castparts)	Lawnfield Rd and 97th Ave	Extend to link with realignments of Lawnfield and 97th	New Roadway	1,000	$9,660,000	7	Conflicts with the JTA Sunrise Multi-Use Path	Tier 3	Tier Remove	Tier 3
2026	CRC	Flavel Dr	Alberta Ave to County boundary	Add bikeways	Upgrade - Active Transportation	2,500	$2,410,000	8		Tier 3	Tier 3	Tier 3
2048	CRC	Hubbard Rd	122nd Ave to 132nd Ave	Fill gaps in pedways	Upgrade - Active Transportation	3,000	$1,650,000	8		Tier 2	Tier 2	Tier 2
2049	CRC	92nd Ave	Johnson Creek Blvd to Emmert View Ct	Fill gaps in pedways	Upgrade - Active Transportation	11,000	$460,000	9		Tier 1	Tier 1	Tier 1
2050	CRC	King Rd	Milwaukie to 82nd Ave	Fill gaps in pedways	Upgrade - Active Transportation	14,000	$5,640,000	9		Tier 3	Tier 3	Tier 3
2051	CRC	Michael Dr	72nd to Fuller Ave	Fill gaps in pedways	Upgrade - Active Transportation	2,500	$2,620,000	8		Tier 3	Tier 3	Tier 3
2052	CRC	72nd Ave Multi-Use Path Connection	Thompson Rd to Harmony Rd	Construct multi-use path	Multi-Use Path	15,000	$1,140,000	9		Tier 1	Tier 1	Tier 1
2054	CRC	Lake Rd	Milwaukie City limits east to OR 224	Fill gaps in pedways	Upgrade - Active Transportation	9,000	$5,530,000	9		Tier 2	Tier 2	Tier 2
2055	CRC	Johnson Rd	SE Lake Rd to North Clackamas Park Trail	Identify bike/ped connections to address gaps along 82nd Ave	Study	2,500	$200,000	6	Railroad conflicts, enters into the natural area. Identify bike/ped connection for Tier 1	Tier 3	**Tier 1**	Tier 1
2090	CRC	Johnson Creek Blvd	55th Ave to I-205	Perform road safety audit or transportation safety review to identify appropriate safety improvements for	Safety	21,000	$60,000	8	Associated with U072: prioritize safety audit before construction project	Tier 2	**Tier 1**	Tier 1
2091	CRC	Sunnyside Rd	93rd Ave to 126th Ave	Perform road safety audit or transportation safety review to identify appropriate safety improvements for	Safety	38,000	$60,000	8		Tier 1	Tier 1	Tier 1
2092	CRC	122nd Ave	Eagle Glen Dr to Hubbard Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements for the corridor	Safety	8,000	$60,000	7	U123 is in Tier 1 and overlaps with the Road Safety Audit study. Prioritize study to ensure best use of funds.	**Tier 2**	Tier 1	Tier 2

TSP Update ID	Geographic Area	Project Name / Street Name	Segment / Locations	Project Description	Project Category	Projected Future Demand*	Planning Level Cost Estimate	Final Score	TAC Meeting #7 Comment	GAPS Recommen-dation	TAC Recommen-dation	PAC Recommen-dation
2114	CRC	Johnson Creek Blvd	Johnson Creek Blvd near 79th Pl	Add signal to either Johnson Creek Blvd and 79th Pl or 80th Ave	Upgrade - Vehicle Capacity	22,000	$400,000	11	Road Safety Audit 2090	Tier 1	Tier 1	Tier 1
2115	CRC	Lake Rd	Lake Rd / International Way intersection	Add northbound right-turn lane	Upgrade - Vehicle Capacity	29,000	$290,000	9		Tier 1	Tier 1	Tier 1
2116	CRC	Harmony Rd	Harmony Rd / Linwood Ave intersection	Add second left-turn lane on Harmony Rd, adjust signal timing	Upgrade - Vehicle Capacity	29,000	$30,000,000	10		Tier Remove	Tier Remove	Tier 3
2117	CRC	Sunnybrook Blvd	Sunnybrook Blvd / 82nd Ave intersection	Add turn lanes on all approaches	Upgrade - Vehicle Capacity	34,000	$860,000	6		Tier 3	Tier 3	Tier 2
2805	CRC	Sunnyside Rd	Sunnyside Rd / Stevens Rd intersection	Intersection improvments, such as additional turn lanes, turn lane extensions, and/or signal timing	Upgrade - Vehicle Capacity	30,000	$2,000,000	10	Road Safety Audit 2091	Tier 1	Tier 1	Tier 1
U001	CRC	Sunnybrook Blvd Extension	OR 213 to Harmony Rd	Construct new 2 lane roadway with pedways and bikeways	New Roadway	12,500	$10,600,000	8	* Special Note: Before the final GAPS and TAC meetings, the PAC voted to remove the project. GAPS and TAC put it in Tier 3.	Tier 3	Tier 3	Remove
U057	CRC	122nd Ave	Sunnyside Rd to Hubbard Rd	Add pedways, traffic calming and turn lanes at major intersections	Upgrade	6,000	$4,850,000	12		Tier 1	Tier 1	Tier 1
U058	CRC	132nd Ave	Sunnyside Rd to OR 212	Add bikeways, pedways, traffic calming and turn lanes at major intersections	Upgrade	5,000	$1,680,000	10		Tier 1	Tier 1	Tier 1
U066	CRC	West Collector	Johnson Creek Blvd to King Rd	Construct new 2 lane collector west of OR 213 with pedways and bikeways	New Roadway	10,500	$18,918,000	10	See U662,duplicative project	Tier 3	Tier Remove	Remove
U072	CRC	Johnson Creek Blvd	55th Ave to Bell Ave	Widen to 3 lanes with bikeways and pedways	Upgrade	16,000	$13,770,000	11	Consider modifying project or creating a new project that only addresses JCB/Linwood intersection realignment and a bicycle priority signal. Associated with Road Safety Audit 2090: prioritize safety audit	Tier 1	Tier 1	Tier 1
U074	CRC	Johnson Creek Blvd	Bell Ave to OR 213	Widen to 3 lanes from Bell Ave to 76th Ave and 5 lanes from 76th Ave to 82nd Ave ; add bikeways and pedways	Upgrade	21,000	$11,130,000	9	Road Safety Audit 2090	Tier 3	Tier 3	Tier 3
U075	CRC	Clatsop St / Luther Rd	72nd Ave to Fuller Rd	Add turn lanes and signals at OR 213 intersection; add bikeways, pedways and traffic calming	Upgrade	2,500	$7,920,000	9		Tier 2	Tier 2	Tier 2
U076	CRC	79th Ave Extension	Luther St to Johnson Creek Blvd	Construct new 2 lane collector with pedways and bikeways	New Roadway	12,500	$4,630,000	10	See U662,duplicative project	Tier 3	Tier Remove	Remove
U082	CRC	Linwood Ave	Linwood Ave / Monroe St intersection	Add curbs/sidewalks, improve horizontal alignments	Upgrade	15,000	$7,420,000	10		Tier 2	Tier 2	Tier 2
U084	CRC	Linwood Ave Bridge over Johnson Creek	Bridge	Construct bridge with bike lanes and sidewalks	Bridge	16,000	$4,860,000	8		Tier 3	Tier 3	Tier 3
U088	CRC	Fuller Rd	Otty St to Johnson Creek Blvd	Add pedways, turn lanes, on-street parking, central median and landscaping.	Upgrade	9,000	$4,000,000	11		Tier 1	Tier 1	Tier 1
U089	CRC	Otty St Realignment	Otty St / OR 213 / Otty Rd	Realign Otty St with Otty Rd at OR 213	Upgrade	23,000	$1,600,000	11		Tier 1	Tier 1	Tier 1
U090	CRC	Otty Rd	OR 213 to 92nd Ave	Improve to minor arterial standard consistent with Fuller Road Station Plan; improve curb radius, add turn	Upgrade	13,000	$5,000,000	10		Tier 1	Tier 1	Tier 1
U091	CRC	Fuller Rd	Otty St to King Rd / OR 213	Construct new 2 lane extension with pedways and bikeways	New Roadway	6,000	$22,490,000	11		Tier 3	Tier 3	Tier 3
U092	CRC	Fuller Rd / King Rd Improvements	Fuller Rd / King Rd intersection	Restricts access to right-in/right-out only	Upgrade	23,000	$255,000	10		Tier 1	Tier 1	Tier 1
U093	CRC	Monroe St	72nd Ave to Fuller Rd	Add bikeways and pedways	Upgrade - Active Transportation	6,000	$7,470,000	10		Tier 1	Tier 1	Tier 1
U094	CRC	Boyer Dr	OR 213 to Fuller Rd	Construct new 2 lane roadway with turn lanes at OR 213 and Fuller Rd, bikeways and pedways	New Roadway	4,000	$3,700,000	11		Tier 1	Tier 1	Tier 1
U097	CRC	Causey Ave	Fuller Rd to I-205	Add bikeways	Upgrade - Active Transportation	3,000	$50,000	10	Parking is important here, no seperated bikeways, traffic calming/curb extensions instead. High density res but no through traffic. Change scope	**Tier 2**	Tier 1	Tier 2
U099	CRC	85th Ave	Causey Ave to Monterey Ave	Add sidewalks and bikeways	Upgrade - Active Transportation	5,000	$30,000	11		Tier 1	Tier 1	Tier 1

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U100	CRC	Monterey Ave	OR 213 to Fuller Rd	Construct new 2 lane extension with pedways and bikeways	New Roadway	4,500	$7,200,000	10		Tier 1	Tier 1	Tier 1
U102	CRC	Lake Rd	OR 224 west to Milwaukie city limits	Add pedways and turn lanes at major intersections	Upgrade	14,000	$4,820,000	7		Tier 3	Tier 3	Tier 3
U103	CRC	Harmony Rd	Lake Rd / Linwood Ave / Harmony Rd intersection	Grade separated railroad crossing, include bikeways and pedways	Upgrade	31,000	$20,000,000	10	Project within Milwaukie TSP	Tier 1	Tier 1	Tier 1
U104	CRC	Harmony Rd	OR 213 to OR 224	Widen to 5 lanes with bikeways and pedways	Upgrade	25,000	$33,980,000	6		Tier 3	Tier 3	Remove
U107	CRC	Phillips Creek Multi-Use Path	Causey Ave to North Clackamas Regional Parks Trail	Construct multi-use path	Multi-Use Path	15,000	$3,110,000	9	Difficult ROW project, not much of creek exposed. Costed too low. Other trails are more important and practical.	Tier 1	Tier 1	Tier 1
U108	CRC	North Clackamas Regional Park Trail	Linwood Ave to North Clackamas Park Complex	Construct multi-use path	Multi-Use Path	15,000	$1,100,000	9		Tier 1	Tier 1	Tier 1
U114	CRC	Hillcrest St	92nd Ave to Stevens Rd	Add pedways	Upgrade - Active Transportation	2,500	$1,540,000	8	Local road, however EPN	Tier 3	Tier 3	Tier 3
U115	CRC	Idleman Rd	92nd Ave to Westview Ct	Fill gaps in bikeways and pedways	Upgrade	13,000	$6,450,000	8	Not much complete. Alternative route on private roads or Causey/Utty. Happy Valley's portion is worse than ours	Tier 3	Tier 3	Tier 3
U123	CRC	122nd Ave	Sunnyside Rd to Timber Valley Dr	Add bikeways and turn lanes at major intersections	Upgrade	12,000	$2,930,000	9	Road Safety Audit 2092	Tier 1	Tier 1	Tier 1
U126	CRC	Valley View Terrace	Sunnyside Rd to Otty Rd	Add bikeways and pedways	Upgrade - Active Transportation	7,000	$5,020,000	8		Tier 3	Tier 3	Tier 3
U130a	CRC	97th Ave / Mather Rd	Lawnfield Rd to Summers Ln	Add bikeways, pedways and eastbound left-turn lanes at Mather Rd / Summers Ln	Upgrade	10,000	$4,560,000	8	Close to being done, Fill in bikelane gaps (both sides), maybe just fill in north side sidewalks? Consider splitting project? (Summers to 122nd. Tier 2)	Tier 3	**Tier 1**	Tier 1
U130b	CRC	Mather Rd	Summers Ln Rd to 122nd Ave	Add bikeways, pedways and eastbound left-turn lanes at Mather Rd / 122nd Ave	Upgrade	10,000	$6,420,000	8	Close to being done, fill in bikelane gaps (both sides), maybe just fill in north side sidewalks? Consider splitting project? (Summers to 122nd. Tier 2)	Tier 3	**Tier 2**	Tier 2
U131	CRC	Mather Rd	Mather Rd / 122nd Ave intersection	Install traffic signal or compact roundabout	Upgrade - Vehicle Capacity	8,000	$200,000	4	Road Safety Audit 2092	Tier 3	Tier 3	Tier 3
U132	CRC	Mather Rd	122nd Ave to 132nd Ave	Construct new 2 lane roadway with pedways and bikeways	New Roadway	3,000	$7,280,000	7		Tier 3	Tier 3	Tier 3
U135	CRC	142nd Ave	Sunnyside Rd to OR 212	Add bikeways and pedways	Upgrade - Active Transportation	9,000	$13,710,000	9	A little less than half done.	Tier 2	Tier 2	Tier 2
U136	CRC	152nd Ave Phase 2	Sunnyside Rd to OR 212	Add bikeways, pedways and turn lanes at major intersections	Upgrade	11,000	$5,830,000	11	Fixed the curve but issues with downhill part. Difficult project. Side slope. Perhaps use 136th instead?	Tier 1	Tier 2	Tier 3
U155	CRC	Strawberry Ln	Strawberry Ln / 82nd Dr intersection	Install traffic signal	Upgrade - Vehicle Capacity	26,000	$200,000	5	Citizen complaints.	Tier 3	**Tier 2**	Tier 2
U156	CRC	82nd Dr	OR 212 to Gladstone	Widen to 5 lane with bikeways and pedways	Upgrade	22,000	$52,861,000	7		Tier 3	Tier 3	Tier 3
U160	CRC	Mather Rd	Industrial Way to 98th Ave	Maintain as pedway and bikeway. Construct undercrossing at Sunrise mainline.	Upgrade - Active Transportation	2,000	$2,040,000	8		Tier 3	Tier 3	Tier 3
U184	CRC	Springwater Rd	OR 224 to Hattan Rd	Widen to 3 lanes with shoulders and pedways.	Upgrade	29,000	$5,500,000	8	**Move to Tier 1. High use and issues during recreation season.** 2 lane bridge currently under construction.	Tier 2	**Tier 1**	Tier 1
U338	CRC	82nd Dr	OR 212 to Lawnfield Rd	Fill in bikeways and pedways gaps	Upgrade - Active Transportation	11,000	$660,000	9	Just needs sidewalks	Tier 1	Tier 1	Tier 1
U418	CRC	Tolbert St Overcrossing	82nd Dr to Industrial Way	Construct new 2 lane overcrossing with bikeways and pedways	New Roadway	7,500	$9,210,000	10	RTP Financially Constrained List Project. (ODOT)	Tier NA	Tier NA	Tier 1
U645	CRC	Causey Ave	I-205 to Bob Schumacher Rd	Extend Causey Ave over I-205 to Bob Schumacher Road with 3 lane overpass, including bikeways and pedways	New Roadway	2,000	$21,670,000	9	Light rail precludes bridge construction	Tier 3	Tier Remove	Remove

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U650	CRC	Sunnyside Rd	OR 213 to 97th Ave	Modified boulevard treatment including lane redesign, medians, beautification, curb extensions, reconstructed sidewalks, landscaping, south side bikeways	Upgrade - Active Transportation	34,000	$3,000,000	9		Tier 2	Tier 2	Tier 2
U653	CRC	I-205 ped / bike Overpass	Between Causey Ave and Sunnyside Rd	Construct a bike / ped crossing over I-205 to connect transit services, businesses and residents	Upgrade - Active Transportation	38,000	$4,780,000	11		Tier 1	Tier 1	Tier 1
U654	CRC	North Clackamas Regional Park Trail	OR 213 to Linwood Ave	Construct multi-use path	Multi-Use Path	15,000	$1,840,000	9		Tier 1	Tier 1	Tier 1
U657	CRC	Sunnyside Rd Adaptive Signal Timing	OR 213 to 172nd Ave	Add adaptive timing to traffic signals	ITS	35,000	$1,500,000	8	Road Safety Audit 2091	Tier 3	Tier 3	Tier 3
U659	CRC	Johnson Creek Blvd	Johnson Creek Blvd / OR 213 intersection	Extend westbound left-turn lane and rebuild median	Upgrade - Vehicle Capacity	26,000	$50,000	9	Road Safety Audit 2090	Tier 1	Tier 1	Tier 1
U661	CRC	Fuller Rd / King Rd Realignment	Fuller Rd / King Rd intersection	Realign Fuller Rd west at King Rd	Upgrade	11,000	$5,770,000	10	Project is not a stand alone project. It only works with U076.	Tier 2	Tier 2	Remove
U662	CRC	West 82nd Ave Parallel road	Fuller Rd to Luther Rd	Construct new Collector road parallel to OR 213 with bikeways and pedways	New Roadway	10,500	$50,000,000	8	A new road parallel to 82nd is problematic because of the cost, limited funding sources, and impact on existing development. The facility is key to moderating future congestion on 82nd and giving local traffic a way to get through the neighborhood without having to get onto 82nd. The CRC plan traffic analysis showed that either a parallel facility will be needed or 82nd will need to be widened to 7 lanes in the nearer time frame (20 years). If the project is not feasible, some other project for 82nd Ave would need to take its place.	Tier 3	Tier 3	Tier 3
U677	CRC	162nd Ave	Sager Rd north to County line	Add bikeways, pedways, turn lanes at major intersections	Upgrade	12,000	$3,920,000	2		Tier 3	Tier 3	Tier 3
U694	CRC	93rd Ave	Sunnyside Rd to Sunnybrook Blvd	Add bikeways	Upgrade - Active Transportation	5,000	$650,000	8	I-205 Multi-Use Path is an alternative route	Tier 3	Tier 3	Tier 3
U696	CRC	Flavel Dr	Johnson Creek Blvd to Alberta Ave	Add bikeways	Upgrade - Active Transportation	6,000	$1,230,000	11	Do Bell, easter section of Alberta. Delete between Bell/Flavel. See U792, 2026. This portion of Flavel has bike lanes	Tier 1	Tier Remove	Remove
U705	CRC	Evelyn St / Mangan Dr	Jennifer St to Water Ave	Add bikeways	Upgrade - Active Transportation	14,000	$50,000	8		Tier 2	Tier 2	Tier 2
U710	CRC	Jennifer St	106th Ave to 130th Ave	Add bikeways	Upgrade - Active Transportation	6,000	$7,300,000	8		Tier 3	Tier 3	Tier 3
U715	CRC	Linwood Ave	Queen Rd to Johnson Creek Blvd	Add bikeways	Upgrade - Active Transportation	16,000	$3,600,000	10		Tier 2	Tier 2	Tier 2
U720	CRC	Monroe St	Linwood Ave to 72nd Ave	Add bikeways	Upgrade - Active Transportation	5,000	$5,330,000	11		Tier 1	Tier 1	Tier 1
U785	CRC	106th Ave	OR 212 to Jennifer St	Add bikeways and pedways	Upgrade - Active Transportation	2,000	$2,060,000	7		Tier 3	Tier 3	Tier 3
U792	CRC	Bell Ave / Alberta St / 72nd Ave	King Rd to County line	Add bikeways and pedways	Upgrade - Active Transportation	6,000	$21,450,000	10		Tier 2	Tier 2	Tier 2
U794	CRC	Cornwell Ave	OR 213 to Fuller Rd	Add pedways; connect to I-205 Multi-Use Path	Upgrade - Active Transportation	2,500	$2,560,000	10		Tier 3	Tier 3	Tier 3
U796	CRC	Evelyn St	OR 224 to Jennifer St	Add bikeways and pedways	Upgrade - Active Transportation	11,000	$1,640,000	9		Tier 2	Tier 2	Tier 2
U797	CRC	Fuller Rd	Johnson Creek Blvd to County Line	Add pedways	Upgrade - Active Transportation	8,000	$6,020,000	10	Fairly low volume collector.	Tier 3	Tier 3	Tier 3
U805	CRC	Jennifer St	82nd Dr to 135th Ave	Add pedways	Upgrade - Active Transportation	8,000	$15,690,000	10		Tier 2	Tier 2	Tier 2
U808	CRC	Johnson Creek Blvd	OR 213 to 92nd Ave	Add pedways, restripe for bikeways	Upgrade - Active Transportation	23,000	$1,400,000	10	Road Safety Audit 2090	Tier 1	Tier 1	Tier 1

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U809	CRC	Lake Rd	Johnson Rd to Webster Rd	Fill gaps in pedways and bikeways	Upgrade - Active Transportation	2,500	$8,550,000	10		Tier 3	Tier 3	Tier 3
U811	CRC	Linwood Ave	Monroe St to Johnson Creek Blvd	Add pedways	Upgrade - Active Transportation	16,000	$5,880,000	10		Tier 1	Tier 1	Tier 1
U825	CRC	Monroe St / 72nd Ave / Thompson Rd	Linwood Ave to Fuller Rd	Add pedways	Upgrade - Active Transportation	5,000	$3,970,000	10		Tier 2	Tier 2	Tier 2
U900	CRC	Luther Rd Bridge over Johnson Creek	Bridge # 06591D	Replace bridge	Bridge	2,500	$2,030,000	8		Tier 3	Tier 3	Tier 3
U909	CRC	Cheldelin Rd (Clatsop St extension)	172nd Ave to Foster Rd	Construct new two lane roadway with bikeways and pedways	New Roadway	8,000	$4,200,000	3		Tier 3	Tier 3	Tier 3
U910	CRC	Cheldelin Rd	Foster Rd to 190th Dr	Add bikeways and pedways	Upgrade - Active Transportation	8,000	$12,590,000	7		Tier 3	Tier 3	Tier 3
U919	CRC	Scouters Mountain / Mt Scott Loop Trail	Loop trail through Happy Valley, Damascus, Clackamas County and Portland	Construct multi-use path consistent with the Connecting Clackamas Plan	Multi-Use Path	15,000	$17,060,000	7		Tier 3	Tier 3	Tier 3
U937	CRC	172nd Ave Bridge	~140 feet south of Troge Rd	Replace failing bridge	Bridge	21,500	$860,000	5	Bridge Sufficiency <50		Tier 1	Tier 3
U939	CRC	I-205 Multi-use Path Gap	OR 224/OR 213 to OR 212	Study the I-205 multi-use path gap to create a plan for connection and path completion	Study	15,000	$200,000	10			**Tier 1**	Tier 1
1010	E	282nd Ave	282nd / Haley Rd intersection	Install traffic signal and lower speed limit on 282nd	Upgrade	15,000	$1,000,000	5	Road Safety Audit 2063	Tier 2	Tier 2	Tier 2
1020	E	OR 211	OR 211 / Judd Rd intersection	Realign roadway	Safety	10,000	$3,700,000	4		Tier NA	Tier NA	Tier 1
1045	E	Springwater Trail	Gresham to Estacada and Government Camp	Extend Springwater Trail to Estacada and Government Camp	Multi-Use Path	15,000	$52,500,000	9	Remove. Not defined enough at this level, Tickle Creek and Cazadero are higher priority alternatives.	Tier 3	Tier Remove	Remove
1062	E	362nd Ave	Skogan Rd to OR 211	Add paved shoulders	Upgrade	2,500	$5,980,000	9		Tier 2	Tier 2	Tier 2
2000	E	Bluff Rd	Kelso Rd to County boundary	Add paved shoulders	Upgrade	3,000	$21,230,000	8		Tier 3	Tier 3	Tier 3
2001	E	Orient Dr	US 26 north to County line	Add paved shoulders	Upgrade	3,000	$20,370,000	8		Tier 3	Tier 3	Tier 3
2002	E	Coalman Rd	City of Sandy to US 26	Add paved shoulders	Upgrade	2,500	$37,320,000	7	Low volume road. Traffic calming instead? Signage?	Tier 3	Tier 3	Tier 3
2003	E	Barlow Trail Rd/ Lolo Pass Rd	Between communities of Timberline, Welches and Zig Zag	Add paved shoulders	Upgrade	2,500	$49,180,000	8		Tier 3	Tier 3	Tier 3
2004	E	Howlett Rd	OR 211 to Wildcat Mountain Dr	Add paved shoulders	Upgrade	4,000	$10,540,000	7		Tier 3	Tier 3	Tier 3
2005	E	Wildcat Mountain DR	OR 224 to Firwood Rd	Add paved shoulders	Upgrade	2,000	$30,010,000	8	**Move down to Tier 3** from Tier 1- **use does not justify priority.**	Tier 1	**Tier 3**	Tier 3
2006	E	352nd Ave / Dunn Rd	Bluff Rd to Bluff Rd	Add paved shoulders	Upgrade	3,000	$14,120,000	8		Tier 3	Tier 3	Tier 3
2007	E	Arrah Wanna Blvd	US 26 to Fairway Ave	Add paved shoulders	Upgrade	2,500	$3,530,000	8	**Supports recreational uses**	Tier 2	**Tier 1**	Tier 1
2008	E	Fairway Ave	Arrah Wanna Blvd to Salmon River Rd	Add paved shoulders	Upgrade	2,500	$6,170,000	8	**Supports recreational uses**	Tier 2	**Tier 1**	Tier 1
2063	E	282nd Ave	US 26 to OR 212	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	15,000	$30,000	6		Tier 1	Tier 1	Tier 1
2069	E	Eagle Creek Rd	Firwood Rd to Duus Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	3,000	$50,000	7	**Move up to Tier 1 - safety issues are top priority**. Associated with U257	Tier 2	**Tier 1**	Tier 1
2105	E	282nd	282nd Ave / OR 212 intersection	Add second right-turn lane on 282nd	Vehicle Capacity	24,000	$570,000	8	Not Planned or Funded. ODOT would like clarification on operations. (ODOT)	Tier NA	Tier NA	Tier 3

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U226	E	282nd Ave	OR 212 to Multnomah County line	Add paved shoulders	Upgrade	15,000	$9,140,000	10	**Move down** - not realistic, lengthy rural roadway, probably won't be built. Springwater Corridor provides parallel facility for bicyclists. Question as to whether still needed for safety. Road Safety Audit 2063	Tier 1	Tier 2	Tier 3
U227	E	Compton Rd	US 26 to 352nd Ave	Remove vertical curve near Orient Dr and relocate intersection; add paved shoulders	Safety	7,000	$10,900,000	11	**Move down** - putting shoulders on major arterials more likely. Usage does not justify priority.	Tier 1	Tier 2	Tier 3
U229	E	Richey Rd	Kelso Rd to OR 212	Add paved shoulders and left turn lane at Richey Rd and OR 212.	Upgrade	15,000	$4,090,000	10		Tier 1	Tier 1	Tier 1
U231	E	Amisigger Rd / Kelso Rd	OR 224 to Kelso / Richey Rd	Add paved shoulders; turn lanes at Amisigger/OR 212 and Kelso/Richey; smooth curves.	Upgrade	12,000	$12,690,000	10		Tier 1	Tier 1	Tier 1
U232	E	Kelso Rd	Richey Rd to Orient Dr	Add paved shoulders	Upgrade	5,000	$15,480,000	10	**Future demand doesn't warrant project**	Tier 2	**Tier 3**	Tier 3
U233	E	Kelso Rd	Orient Dr to Sandy UGB	Remove vertical curve, relocate intersection, add paved shoulders and turn lanes at major intersections;	Upgrade	6,000	$12,750,000	10	**Move down -** putting shoulders on major arterials more likely. Usage does not justify priority.	Tier 1	**Tier 3**	Tier 3
U234	E	362nd Dr	Colorado Rd to Dubarko Rd	Remove or decrease horizontal and vertical curves	Safety	7,000	$5,310,000	5		Tier 3	Tier 3	Tier 3
U235	E	362nd Dr	362nd Ave / Deming Rd intersection	Remove or decrease vertical curve, relocate intersection	Safety	7,000	$460,000	5		Tier 3	Tier 3	Tier 3
U237	E	Ten Eyck Rd	Lusted Rd to US 26	Remove vertical curve, relocate intersection, add paved shoulders, turn lanes at major intersections; investigate speed zone	Upgrade	1,000	$34,620,000	7	Issues with grades, cliff, geology: nearly impossible to build	Tier 3	Tier 3	Tier 3
U239	E	Firwood Rd	Firwood Rd / Trubel Rd intersection	Realign Trubel Rd to remove or decrease downgrade	Safety	1,000	$3,230,000	5		Tier 3	Tier 3	Tier 3
U241a	E	Welches Rd	US 26 to Birdie Ln	Add paved shoulders; add pedways in Welches rural center	Upgrade	2,500	$6,360,000	10		Tier 1	Tier 1	Tier 1
U241b	E	Welches Rd	Birdie Ln to Salmon River Rd	Add paved shoulders	Upgrade	2,500	$5,300,000	10		Tier 3	Tier 3	Tier 3
U245	E	Lolo Pass Rd	US 26 to Barlow Trail Rd	Safety analysis; add paved shoulders	Upgrade - Active Transportation	2,500	$5,340,000	4		Tier 3	Tier 3	Tier 3
U254	E	Hayden Rd	Springwater Rd to OR 211	Add paved shoulders	Upgrade	7,000	$5,490,000	9	Move up to Tier 1? **Not high volume**, but connection to Estacada	Tier 2	**Tier 3**	Tier 3
U255	E	Springwater Rd	Hayden Rd to OR 211	Add paved shoulders	Upgrade	5,000	$22,240,000	8		Tier 3	Tier 3	Tier 3
U256	E	Eagle Creek Rd	Keegan Rd to Currin Rd	Realign Eagle Creek Rd to remove or decrease downgrade	Safety	4,000	$17,400,000	7	Road Safety Audit 2069	Tier 3	Tier 3	Tier 3
U257	E	Eagle Creek Rd	Currin Rd to Duus Rd	Remove horizontal curve, relocate intersection, add paved shoulders and turn lanes at major intersection;	Upgrade	2,000	$10,240,000	9	**Move up in priority to Tier 1** (from 3) with safety audit (2069). Safety audit could also be alternative to	Tier 3	**Tier 1**	Tier 1
U258	E	Coupland Rd	Estacada City Limits to Divers Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	3,000	$11,980,000	6		Tier 3	Tier 3	Tier 3
U495	E	Bull Run Rd	Ten Eyck Rd to Multnomah County line	Add paved shoulders and turn lanes at major intersections.	Upgrade	2,000	$20,760,000	7		Tier 3	Tier 3	Tier 3
U502	E	Firwood Rd	Wildcat Mountain Dr to US 26	Add paved shoulders and turn lanes at major intersections.	Upgrade	1,000	$16,840,000	8		Tier 2	Tier 2	Tier 2
U745	E	Eagle Creek Rd	OR 211 to Duus Rd	Add paved shoulders	Upgrade	3,000	$14,420,000	10	Road Safety Audit 2069	Tier 2	Tier 2	Tier 2
U761	E	Salmon River Rd	US 26 to Welches Rd	Add paved shoulders	Upgrade	2,500	$8,980,000	9		Tier 3	Tier 3	Tier 3
U781	E	Cazadero Multi-Use Trail	Community of Boring to City of Estacada	Construct multi-use path	Multi-Use Path	15,000	$1,690,000	6	**Move up** - in bigger discussion of trail projects, **this trail is important,** likelihood of funding	Tier 3	Tier 2	Tier 1
U901	E	Bull Run Truss	Bull Run Truss between Waterworks Rd and Bowman Rd	Replace failing bridge	Bridge	2,000	$6,750,000	5	Bridge Sufficiency <50	**Tier 3**	Tier 1	Tier 3
U903	E	Porter Rd Bridge over Delph Creek	~100 ft east of Wilcox Rd	Replace bridge	Bridge	2,500	$320,000	5		Tier 3	Tier 3	Tier 3

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U924	E	Tickle Creek Trail	Springwater Corridor to Sandy city limits	Construct multi-use path consistent with the Connecting Clackamas Plan	Multi-Use Path	15,000	$9,430,000	7	**Move up** - more equitable across the areas when looked at comprehensively.	**Tier 3**	Tier 2	Tier 3
U933	E	Dodge Park Rd Bridge	~192 feet south of Pipeline Rd	Replace failing bridge with paved shoulders	Bridge	1,000	$4,500,000	10	Bridge Sufficiency <50		**Tier 1**	Tier 1
1016	M	Rupert Rd	Rupert Rd / Oak Grove Blvd intersection	Provide pedestrian crosswalk	Upgrade - Active Transportation	2,000	$250,000	8	Reconstruct intersection and add sidewalks on the east side?	Tier 1	Tier 1	Tier 1
1037	M	Lake Oswego to Milwaukie Bridge	Between Sellwood and Oregon City	Construct bike/ped crossing over the Willamette River	Bridge	15,000	$10,130,000	6	Question - does railroad support ped/bike facilities? Potential for high-speed rail corridor? Believe corridor has been removed as potential for high-speed rail. Project will have challenges, but connection would be nice. Similar if not higher benefits than French Prairie Bridge. **Transformative project.** Move up in priority? (PBAC recommends Tier 1)	Tier 2	**Tier 1**	Tier 1
1038	M	Naef Rd	Naef Rd / Oatfield Rd connection	Open intersection of Naef Rd and Oatfield Rd to through traffic	Upgrade - Vehicle Capacity	2,500	$180,000	4		Tier Remove	Tier Remove	Remove
1039	M	Risley Ave	Risley Ave / Trolley Trail	Pave Risley Ave across the Trolley trail	Upgrade - Vehicle Capacity	2,500	$210,000	2		Tier Remove	Tier Remove	Remove
1042	M	Oak Grove Blvd	Oatfield Rd to River Rd	Fill gaps in pedways and bikeways	Upgrade - Active Transportation	2,000	$2,520,000	9		Tier 1	Tier 1	Tier 1
1072	M	Oetkin Way and Naef Rd	Oatfield Rd and Wallace Rd	Add bikeways	Upgrade - Active Transportation	2,500	$90,000	7	On Ped/Bike Master Plan. Proposed bike boulevard. Connector road, so would do sharrows (not separated bike facility). Leave in Tier 3. No change.	Tier 3	Tier 3	Tier 3
1078	M	Clackamas Rd	Johnson and Webster Rd	Fill gaps in bikeways and pedways	Upgrade - Active Transportation	3,000	$3,420,000	8		Tier 3	Tier 3	Tier 2
1079	M	Clackamas Rd	Clackamas Rd / I-205 interchange	Construct bike/ped bridge over I-205	Bridge	15,000	$5,060,000	10	Relying on the Sunrise corridor for a bike/ped fix for this area. Add a special plan to address the issues at Herbert Ct/I-205/ completion of I-205 Multi-Use Path? More of an ODOT maintenance issue. PBAC will work with ODOT.	Tier 3	Tier Remove	Tier 3
1084	M	Oatfield Ridge Connection	Between Jennings Ave and Thiessen Ave over Oatfield Ridge	Construct multi-use path	New Roadway	1,000	$180,000	8	Potential to have bike/ped connection? Topography challenges? Change description and move to Tier 3.	Tier Remove	Tier 3	Tier 3
2023	M	McNary Rd / Mabel Ave	Oatfield Rd to Webster Rd	Add bikeways and pedways	Upgrade - Active Transportation	2,500	$15,610,000	8	Move up to Tier 3. Keep this project for potential funding opportunities.	Tier Remove	Tier 3	Tier 3
2040	M	Strawberry Ln	Webster Rd to 82nd Dr	Add pedways and fill bikeway gaps	Upgrade - Active Transportation	7,000	$6,640,000	8		Tier 3	Tier 3	Tier 3
2041	M	Hull Ave	Wilmot St to Tims View Ave	Fill gaps in pedways	Upgrade - Active Transportation	2,500	$4,130,000	10	Question - local road, part on border of Gladstone. Keep in Tier 1. People may be using Hull from Trolley Trail to make east/west connections.	Tier 1	Tier 1	Tier 1
2042	M	Portland Ave	Jennings Ave to Hull Ave	Fill gaps in pedways	Upgrade - Active Transportation	2,500	$1,490,000	8		Tier 3	Tier 3	Tier 3
2043	M	View Acres Rd	Oatfield Rd to Hill Rd	Add pedways and traffic calming	Upgrade - Active Transportation	2,500	$5,280,000	9		Tier 3	Tier 3	Tier 3
2044	M	Torbank Rd	River Rd to Trolley Trail	Fill gaps in pedways	Upgrade - Active Transportation	2,500	$540,000	8	**Move up to Tier 1** - Transportation Enhancement Application, project supported by community, bike/ped community, connects to school, Trolley Trail. Double check extents (why not to OR 99E?)	Tier 3	**Tier 1**	Tier 1
2045	M	Courtney Ave	OR 99E to Oatfield Rd	Fill gaps in pedways and bikeways	Upgrade - Active Transportation	2,000	$1,860,000	9		Tier 1	Tier 1	Tier 1
2087	M	Jennings Ave	Webster Rd to OR 99E	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	8,000	$60,000	7		Tier 1	Tier 1	Tier 1

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2088	M	Oatfield Rd	Jennings Ave to Lake Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	8,000	$120,000	7	**Move up to Tier 1** - safety issues are top priority	Tier 3	**Tier 1**	Tier 1
2112	M	Thiessen Rd	Thiessen Rd / Hill Rd intersection	Add right-turn lane on Thiessen Rd; consider converting to two-way stop controlled or installing roundabout	Upgrade - Vehicle Capacity	11,000	$490,000	8		Tier 3	Tier 3	Tier 3
2113	M	Thiessen Rd	Thiessen Rd / Aldercrest Rd intersection	Add turn lanes on Thiessen Rd; consider converting to two-way stop controlled	Upgrade - Vehicle Capacity	13,000	$570,000	8		Tier 1	Tier 1	Tier 1
U004	M	Webster Rd	Webster Rd / Jennings Ave and Webster Rd / Roots Rd intersections	Construct traffic signals, turn lanes	Upgrade - Vehicle Capacity	13,000	$2,110,000	8		Tier 3	Tier 3	Tier 3
U137a	M	River Rd	Lark St to Courtney Ave	Add pedways	Upgrade - Active Transportation	8,000	$4,760,000	10		Tier 1	Tier 1	Tier 1
U137b	M	River Rd	Courtney Ave to Oak Grove Blvd	Add pedways	Upgrade - Active Transportation	8,000	$3,130,000	10		Tier 3	Tier 3	Tier 3
U137c	M	River Rd	Oak Grove Blvd to Risley Ave	Fill gaps in bikeways and pedways	Upgrade - Active Transportation	8,000	$5,570,000	10	Move down? - sufficient shoulder that could be improved at a low cost. Consider changing description	Tier 1	Tier 1	Tier 1
U137d	M	River Rd	Risley Ave to Rinearson Rd	Add pedways	Upgrade - Active Transportation	8,000	$19,580,000	10		Tier 3	Tier 3	Tier 3
U140a	M	Concord Rd	River Rd to Oatfield Rd	Fill gaps in pedway	Upgrade - Active Transportation	3,000	$7,230,000	11		Tier 1	Tier 1	Tier 1
U140b	M	Concord Rd	River Rd to Oatfield Rd	Add turn lanes at major intersections	Upgrade - Vehicle Capacity	3,000	$570,000	7		Tier 1	Tier 1	Tier 1
U141	M	Oatfield Rd	Oatfield Rd / Park Rd intersection	Install traffic signal and add turn lanes	Upgrade - Vehicle Capacity	10,000	$1,060,000	8	Signal is not part of TriMet improvement. Turn lanes will be built with TriMet improvement. Support Tier 1	Tier 1	Tier 1	Tier 1
U143	M	Oatfield Rd	Oatfield Rd / Hill Rd intersection	Add left-turn lanes, install signal if warranted	Upgrade - Vehicle Capacity	8,000	$2,448,000	5	Road Safety Audit 2088	Tier 3	Tier 3	Tier 3
U145	M	Oatfield Rd	Oatfield Rd / McNary Rd intersection	Add southbound and eastbound left-turn lanes	Upgrade	8,000	$570,000	8	Road Safety Audit 2088	Tier 1	Tier 1	Tier 1
U146	M	Aldercrest Dr	Thiessen Rd to Oatfield Rd	Add pedways to one side of the road and bikeways	Upgrade	5,000	$29,660,000	8	Move up to Tier 3. Refine description to scale back (i.e. pedway on one side)	Tier Remove	Tier 3	Tier 3
U149a	M	Jennings Ave	River Rd to Oatfield Rd	Widen to 2-lane urban minor arterial standard with bikeway and pedway infill	Upgrade - Active Transportation	8,000	$13,870,000	10	Safety audit 2087 and project on Jennings Ave, move this up to **Tier 1**, synergy. Important roadway. Prior	Tier 2	**Tier 1**	Tier 1
U149b	M	Jennings Ave	Oatfield Rd to Webster Rd	Widen to 2-lane urban minor arterial standard with bikeway and pedway infill	Upgrade - Active Transportation	8,000	$13,340,000	10	Safety audit 2087 and project on Jennings Ave, move this up to Tier 1, synergy. Important roadway. Prior	Tier 2	Tier 2	Tier 2
U150	M	Webster Rd	OR 224 to Gladstone	Fill gaps in bikeways and pedways	Upgrade - Active Transportation	12,000	$19,010,000	10		Tier 3	Tier 3	Tier 2
U152	M	Webster Rd	Webster Rd / Strawberry Ln intersection	Add signal; construct southbound and westbound left-turn lane	Upgrade - Vehicle Capacity	9,000	$770,000	5		Tier 3	Tier 3	Tier 3
U154	M	Johnson Rd / McKinley Rd	OR 224 to I-205 multi-use path	Bikeway and pedway infill	Upgrade - Active Transportation	8,000	$1,770,000	11		Tier 3	Tier 3	Tier 3
U707	M	Hill Rd	Oatfield Rd to Thiessen Rd	Add bikeways and pedways	Upgrade - Active Transportation	4,000	$16,210,000	8		Tier 3	Tier 3	Tier 3
U724	M	Rusk Rd	OR 224 South to Aldercrest Rd	Add pedways on one side of the roadway and bikeways	Upgrade - Active Transportation	11,000	$8,780,000	7	Move up to Tier 3. Refine description to scale back (i.e. pedway on one side)	Tier Remove	Tier 3	Tier 3
U795	M	Courtney Ave	River Rd to OR 99E (McLoughlin Blvd)	Construct pedway / complete gaps on the south side; add bikeways	Upgrade - Active Transportation	1,000	$5,010,000	10		Tier 1	Tier 1	Tier 1
U798	M	Greenview Ave	Thiessen Rd to Clackamas Rd	Add pedways	Upgrade - Active Transportation	2,500	$1,680,000	10		Tier Remove	Tier Remove	Remove
U799	M	Harold Ave	Concord Rd to Roethe Rd	Add pedways and traffic calming	Upgrade - Active Transportation	2,500	$3,310,000	10	Support, school connection, many complaints, support Tier 1.	Tier 1	Tier 1	Tier 1
U813	M	Naef Rd	Oatfield Rd to River Rd	Add pedways	Upgrade - Active Transportation	2,500	$3,770,000	10	Move up to Tier 3, surrounding uses justify pedways.	Tier Remove	Tier 3	Tier 3

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U814	M	Oatfield Rd	Milwaukie city limits to Gladstone city limits	Fill gaps in pedways and bikeways	Upgrade - Active Transportation	8,000	$52,220,000	10	Road Safety Audit 2088	Tier 3	Tier 3	Tier 3
U815	M	Park Ave	River Rd to OR 99E (McLoughlin Blvd)	Add pedways	Upgrade - Active Transportation	5,000	$1,750,000	10		Tier 1	Tier 1	Tier 1
U816	M	Risley Ave	Arista Dr to Hager Rd	Fill gaps in pedways	Upgrade - Active Transportation	2,500	$7,250,000	10	Move up to Tier 3, in bike plan	Tier Remove	Tier 3	Tier 3
U818	M	Roethe Rd	River Rd to OR 99E (McLoughlin Blvd)	Add bikeways, pedways and traffic calming	Upgrade - Active Transportation	1,000	$2,870,000	9		Tier 3	Tier 3	Tier 3
U819	M	Roots Rd	Webster Rd to McKinley Rd	Add pedways	Upgrade - Active Transportation	8,000	$4,720,000	10	Does this need to be Tier 1? Aren't there sidewalks on one side? (sidewalks costed at 20% completed) Decision to leave in Tier 1.	Tier 1	Tier 1	Tier 2
U824	M	Thiessen Rd	Oatfield Rd to Webster Rd	Add bikeways and pedways	Upgrade - Active Transportation	11,000	$23,830,000	9		Tier 2	Tier 2	Tier 2
1014	NW	Wilsonville Rd	Wilsonville Rd / Bell Rd intersection	Realign roadway and grade improvements	Upgrade	8,000	$3,300,000	3		Tier 3	Tier 3	Tier 3
1077	NW	Advance Rd	~2,900 ft west of Mountain Rd	Realign roadway and grade improvements	Upgrade	7,000	$2,180,000	4	**Move up to Tier 1** - safety project. Several fatalities.	**Tier 2**	Tier 1	Tier 2
2029	NW	Schatz Rd / 55th Ave / Meridian Way	65th Ave to Stafford Rd	Add paved shoulders	Upgrade	6,000	$5,060,000	8		Tier 3	Tier 3	Tier 3
2030	NW	Mountain Rd	Stafford Rd to Hoffman Rd	Add paved shoulders	Upgrade	8,000	$14,610,000	6		Tier 3	Tier 3	Tier 3
2031	NW	Schaeffer Rd	Mountain Rd to Petes Mountain Rd	Add paved shoulders	Upgrade	3,000	$11,930,000	7		Tier 3	Tier 3	Tier 3
2032	NW	Hoffman Rd / Peach Cove Rd / Riverwood Rd	Mountain Rd to Tualatin River	Add paved shoulders	Upgrade	8,000	$8,250,000	5		Tier 3	Tier 3	Tier 3
2033	NW	Advance Rd	65th Ave to Mountain Rd	Add paved shoulders	Upgrade	13,000	$11,670,000	6		Tier 2	Tier 2	Tier 2
2034	NW	Graham's Ferry Rd	County boundary to Westfall Rd	Add paved shoulders	Upgrade	8,000	$4,540,000	8		Tier 3	Tier 3	Tier 3
2035	NW	Pleasant Hill Rd / McConnell Rd / Tooze Rd	Ladd Hill Rd to Westfall Rd	Add paved shoulders	Upgrade	7,000	$12,670,000	8		Tier 3	Tier 3	Tier 3
2036	NW	Bell Rd	Ladd Hill Rd to Wilsonville Rd	Add paved shoulders	Upgrade	7,000	$12,410,000	7		Tier 3	Tier 3	Tier 3
2037	NW	Baker Rd	Tooze Rd to County boundary	Add paved shoulders	Upgrade	12,000	$7,830,000	6		Tier 3	Tier 3	Tier 3
2038	NW	Homesteader Rd	Stafford Rd to Mountain Rd	Add paved shoulders	Upgrade	4,000	$9,810,000	6		Tier 3	Tier 3	Tier 3
2039	NW	Wisteria Rd / Woodbine Rd	Rosemont Rd to Johnson Rd	Add paved shoulders	Upgrade	2,000	$7,780,000	7	Remove? Concensus to leave in Tier 3.	Tier 3	Tier 3	Tier 3
2094	NW	Stafford Rd	Rosemont Rd to Mountain Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	26,000	$50,000	7	U168 and U168 are Tier 1 and overlap with the Road Safety Audit study. **Prioritize study** to ensure best use of funds.	**Tier 3**	Tier 1	Tier 3
2095	NW	Graham's Ferry Rd	Wilsonville Rd to City of Wilsonville	Add paved shoulders	Upgrade	8,000	$2,120,000	7		Tier 3	Tier 3	Tier 3
U167	NW	Borland Rd	Tualatin City Limits to Stafford Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	21,000	$5,680,000	7	Move down to Tier 2 - likely to be driven by development in Tualatin. Forecast does not predict the road becoming urban. Road is important for hospital. Comment to do full corridor to West Linn (U741). Other support to keep in Tier 1.	Tier 1	Tier 1	Tier 1
U168	NW	Stafford Rd	Rosemont Rd to I-205	Add paved shoulders and turn lanes at major intersections	Upgrade	23,000	$8,390,000	11	Road Safety Audit 2094	Tier 1	Tier 1	Tier 1
U169	NW	Stafford Rd	Stafford Rd / Childs Rd intersection	Install traffic signal and southbound and northbound turn lanes	Upgrade - Vehicle Capacity	26,000	$770,000	7	Move to **Tier 1** from Tier 3 - capacity and safety issue. Road Safety Audit 2094	Tier 3	**Tier 1**	Tier 1
U173	NW	Rosemont Rd	Stafford Rd to West Linn	Add paved shoulders and turn lanes at major intersections	Upgrade	16,000	$8,570,000	9	**Move to Tier 2.** Ped/bike community supports.	Tier 3	**Tier 2**	Tier 2
U177	NW	Stafford Rd / 65th Ave	I-205 to Boeckman Rd / Advance Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	19,000	$21,540,000	12	Road Safety Audit 2094	Tier 2	Tier 2	Tier 2
U180	NW	65th Ave	65th Ave / Elligsen Rd / Stafford Rd intersection	Construct roundabout	Upgrade	16,000	$5,550,000	9		Tier 1	Tier 1	Tier 1

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U272	NW	Ladd Hill Rd	Wilsonville Rd to Washington County line	Add paved shoulders and turn lanes at major intersections	Upgrade	1,500	$29,150,000	8		Tier 3	Tier 3	Tier 3
U273	NW	Wilsonville Rd	Wilsonville Rd / Edminston Rd intersection	Remove bank, remove horizontal curve, relocate intersection	Safety	1,500	$3,130,000	5		Tier 3	Tier 3	Tier 3
U462	NW	Childs Rd	Stafford Rd to Lake Oswego city limits	Add pedways, bikeways and turn lanes at major intersections	Upgrade	13,000	$19,110,000	8		Tier 3	Tier 3	Tier 3
U466	NW	Petes Mountain Rd	West Linn city limit to Hoffman Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	7,000	$19,000,000	6		Tier 3	Tier 3	Tier 3
U700	NW	Bonita	Carman Drive to I-5	Add bikeways and pedways	Upgrade - Active Transportation	10,000	$11,100,000	10		Tier 3	Tier 3	Tier 3
U702	NW	Carman	Lake Oswego City Limits to Roosevelt Ave	Add bikeways and pedways; analyze for turn lanes	Upgrade	16,000	$7,070,000	10		Tier 1	Tier 1	Tier 1
U737	NW	65th Ave	Stafford Rd to City of Tualatin	Add paved shoulders	Upgrade	14,000	$11,380,000	8		Tier 3	Tier 3	Tier 3
U741	NW	Borland Rd	Stafford Rd to City of West Linn	Add paved shoulders	Upgrade	18,000	$10,030,000	10	Move to **Tier 1** to be done with U167? Stretch from Tualatin to Stafford Rd is most important.	Tier 2	**Tier 1**	Tier 1
U752	NW	Johnson Rd	Stafford Rd to City of West Linn	Add paved shoulders and turn lanes at major intersections	Upgrade	3,000	$13,140,000	8		Tier 3	Tier 3	Tier 3
U922	NW	Tualatin / Lake Oswego Pedestrian and Bicycle Bridge	Tualatin River Bridge	Construct bike / ped bridge consistent with the Connecting Clackamas Plan	Multi-Use Path	15,000	$4,890,000	5		Tier 3	Tier 3	Tier 3
U925	NW	French Prairie Bridge	Willamette River near I-5	Construct a bridge consistent with the Connecting Clackamas Plan	Bridge	15,000	$9,790,000	10		Tier 1	Tier 1	Tier 1
U926	NW	Tonquin Trail	Willamette River through Wilsonville	Construct bike / ped bridge consistent with the Connecting Clackamas Plan	Multi-Use Path	15,000	$10,030,000	7		Tier 3	Tier 3	Tier 1
U927	NW	Childs Rd	Sycamore Ave to 65th Ave	Transfer roadway to local jurisdiction	Other	9,000	$80,000	1	Move down to Tier 2 - shouldn't be high priority for County, could be Rivergrove's responsibility. Rivergrove does not have in its plan; someone should carry. Childs Rd is an anomaly in that it falls between two cities, but is County facility. Neither Rivergrove nor Lake Oswego likely to address. Potential to transfer road? **Leave in Tier 1, change description to Road Transfer.**	Tier 1	Tier 1	Tier 1
U934	NW	Wilsonville Rd Bridge	~300 feet south of Bell Rd	Replace failing bridge	Bridge	1,500	$760,000	7	Bridge Sufficiency <50		Tier 1	Tier 3
1047	SW	Redland Rd	Fischers Mill Rd to Springwater Rd	Add paved shoulders	Upgrade	6,000	$32,210,000	9	Road Safety Audit 2084	Tier 3	Tier 3	Tier 3
1050	SW	Union Hall Rd	Central Point Rd to El Dorado Rd	Add paved shoulders	Upgrade	1,500	$11,210,000	7	Low ADT	Tier 3	Tier 3	Tier 3
1053	SW	Ferguson Rd	Beavercreek Rd and Henrici Rd	Reduce the speed limit and install traffic calming features	Other (Traffic Calming)	2,500	$10,000	4		Tier Remove	Tier Remove	Tier 3
1054	SW	S Killdeer Rd	Ferguson Road and Yeoman Road	Extend S Killdeer Rd to connect with S. Ivel Rd. and provide bike/ped access	Multi-Use Path	1,000	$740,000	7	Move to **Tier 3** from Tier 1, problems with sight distance, public support, questionable need, **little use.**	Tier 1	**Tier 3**	Tier 3
1055	SW	Gribble Rd	Mark Rd to Dryland Rd	Reconstruct and widen	Upgrade	2,500	$11,450,000	5	Don't inlcude local roads on Capital Improvement Plan	Tier 3	Tier Remove	Remove
1057	SW	Buckner Creek Rd	Gard Rd to Cochell Rd	Add paved shoulders	Upgrade	2,500	$25,580,000	5	Low ADT	Tier 3	Tier 3	Tier 3
1065	SW	Molalla Forest Rd	City of Canby to City of Molalla	Pave to provide bicycle access	Multi-Use Path	15,000	$16,360,000	7	Support by Canby/Molalla. More complete ownership	**Tier 2**	Tier 1	Tier 2
1066	SW	Emerald Necklace Trail	To Canby Ferry	Extend Molalla Forest Rd to Locust St	Multi-Use Path	15,000	$430,000	9		Tier 1	Tier 1	Tier 1
1068	SW	Ferguson Multi-Use Path	Thayer Rd to Ferguson Rd	Multi-use path to connect Ferguson Rd to Thayer Rd	Multi-Use Path	1,000	$240,000	3	Needs to be further studied. Move to Tier 3 from Tier 1. Terrain challenging.	Tier 1	Tier 3	Tier 1
1074	SW	Clackamas River bridge	From Blay Rd to Palmer Rd at the Clackamas River	Construct bridge over Clackamas River	Bridge	3,000	$60,030,000	2		Tier 3	Tier 3	Tier 3
1088	SW	Passmore Rd	East of OR 213	Disconnect east of OR 213 (at school) and create cul-de-sac on western portion of roadway segment	Other (Road Closure)	2,500	$10,000	6	ODOT made large investment in area recently. Move down to Tier 2?	**Tier 1**	Tier 2	Remove (replaced with 1090)

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1089	SW	Graves Rd	Ranch Hills Rd to OR 213	Realign to create four-way intersection with Mulino Road and OR 213. Install traffic signal.	Safety	21,000	$5,550,000	12	ODOT made large investment in area recently. Move down to Tier 2?	**Tier 1**	Tier 2	Remove (replaced with 1090)
1090	SW	Graves Rd/Passmore Rd/Mulino Rd	OR 213	Realign to create four-way intersection of Mulino Road/Graves Road/ OR 213. Install traffic signal. Disconnect Passmore Road east of OR 213 (at school) and create cul-de-sac on western portion of roadway segment.	Safety	21,000	$5,560,000	12	ODOT made large investment in area recently. Move down to Tier 2?	Tier 1	Tier 2	Tier 1
2009	SW	Bakers Ferry Rd	Springwater Rd to Eaden Rd	Add paved shoulders	Upgrade	6,000	$14,040,000	9	Duplicate to U247	Tier 3	Tier Remove	Remove
2012	SW	Carus Rd	Central Point Rd to Beavercreek Rd	Add paved shoulders	Upgrade	4,000	$28,370,000	8		Tier 3	Tier 3	Tier 3
2014	SW	Canby-Marquam Highway	City of Canby to OR 211	Add paved shoulders	Upgrade	6,000	$20,900,000	9		Tier 3	Tier 3	Tier 3
2015	SW	Meridian Rd	Lone Elder Rd to OR 211	Add paved shoulders	Upgrade	4,000	$29,000,000	8		Tier 3	Tier 3	Tier 3
2016	SW	Lone Elder Rd	County line to Canby-Marquam Hwy	Add paved shoulders	Upgrade	3,000	$15,140,000	8		Tier 3	Tier 3	Tier 3
2017	SW	Barnards Rd	Meridian Rd to Canby-Marquam Hwy	Add paved shoulders	Upgrade	2,500	$15,630,000	8	Complete to County line and phase?	Tier 3	Tier 3	Tier 3
2018	SW	Leland Rd	Oregon City to Beavercreek Rd	Add paved shoulders	Upgrade	3,000	$22,400,000	8		Tier 3	Tier 3	Tier 3
2019	SW	New Era Rd / Haines Rd	OR 99E to Leland Rd	Add paved shoulders	Upgrade	3,000	$22,350,000	8		Tier 3	Tier 3	Tier 3
2020	SW	Forsythe Rd	Oregon City to Bradley Rd	Add paved shoulders	Upgrade	6,000	$13,900,000	5		Tier 3	Tier 3	Tier 3
2021	SW	Thayer Rd/Ferguson Rd	Oregon City to Redland Rd	Add paved shoulders	Upgrade	8,000	$14,690,000	5		Tier 3	Tier 3	Tier 3
2073	SW	Redland Rd	OR 213 to Hattan Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	12,000	$80,000	7		Tier 1	Tier 1	Tier 1
2076	SW	Maplelane Rd	Beavercreek Rd to Ferguson Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	8,000	$50,000	6		Tier 1	Tier 1	Tier 1
2077	SW	Beavercreek Rd	Lower Highland Rd to Butte Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	4,000	$50,000	5		Tier 1	Tier 1	Tier 1
2078	SW	Upper Highland Rd	Beavercreek Rd to Lower Highland Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	16,000	$80,000	6		Tier 1	Tier 1	Tier 1
2082	SW	OR 170	OR 99E to Macksburg Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	11,000	$60,000	8		Tier 1	Tier 1	Tier 1
2084	SW	Redland Rd	Redland Rd / Springwater Rd intersection	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	7,000	$20,000	7	Road Safety Audit 2084	Tier 1	Tier 1	Tier 1
2085	SW	Beavercreek Rd	Ferguson Rd to Spangler Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Safety	8,000	$80,000	6		Tier 1	Tier 1	Tier 1
2107	SW	Springwater Rd	Springwater Rd / Clackamas River Dr intersection	Install signal and second southbound left-turn lane on Clackamas River Dr	Upgrade - Vehicle Capacity	36,000	$770,000	6		Tier 1	Tier 1	Tier 1
2800	SW	Beavercreek multi-use path	Loder Rd to Ferguson Rd	Construct multi-use path consistent with the Beavercreek Road Concept Plan	Multi-Use Path	15,000	$4,700,000	8	Road Safety Audit 2085	Tier 2	Tier 2	Tier 2
2801	SW	Hult Rd	OR 211 to Unger Rd	Re-open and improve Hult Rd	Upgrade	1,000	$1,070,000	4		Tier 1	Tier 1	Tier 1
2806	SW	Arndt Rd Extension	Knights Bridge to OR 99E	Construct new 3 lane roadway	New Roadway	32,000	$17,040,000	8	Move down to Tier 2? Could we change description to reduce cross-section to be consistent with other roadways? There is currently congestion on the road, showing as congested in the future. Needs more corridor specific look. **Agreement to move to Tier 2**, look at description further. See draft policy 72 and 73.	Tier 1	**Tier 2**	Tier 2

TSP Update ID	Geographic Area	Project Name / Street Name	Segment / Locations	Project Description	Project Category	Projected Future Demand*	Planning Level Cost Estimate	Final Score	TAC Meeting #7 Comment	GAPS Recommen-dation	TAC Recommen-dation	PAC Recommen-dation
U185	SW	Springwater Rd	400 ft east of Hattan Rd	Construct bridge to accommodate paved shoulders	Bridge	15,000	$3,630,000	7	Passmore road goes straight through a grade school and kids must cross it to get between classes and to recess. Tier 1.	Tier 1	Tier 1	Tier 1
U186	SW	Forsythe Rd	Oregon City limits to Bradley Rd	Add center turn lane and paved shoulders	Upgrade	6,000	$41,930,000	9	Center turn lane needed?	Tier 3	Tier 3	Tier 3
U187	SW	Forsythe Rd	Forsythe Rd / Victory Rd intersection	Realign, widen Victory Rd and remove or decrease curves along Forsythe Rd; relocate intersection	Safety	6,000	$3,070,000	4	**Move to Tier 3,** usage doesn't justify priority	Tier 1	**Tier 3**	Tier 3
U188	SW	Gronlund Rd / Hattan Rd	Bradley Rd to Springwater Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	14,000	$7,610,000	7	Remove turn lanes?	Tier 3	Tier 3	Tier 3
U189	SW	Hattan Rd	Hattan Rd / Gronlund Rd intersection	Install southbound right-turn lane	Upgrade	23,000	$290,000	4		Tier 1	Tier 1	Tier 1
U190	SW	Hattan Rd	Fischers Mill Rd to Gronlund Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	10,000	$15,050,000	11	**Move to Tier 2**, use does not justify priority, somewhat regular cyclist use	Tier 1	**Tier 2**	Tier 2
U194	SW	Bradley Rd	Redland Rd to Holcomb Blvd	Add turn lanes at major intersections	Upgrade	6,000	$1,140,000	6		Tier 3	Tier 3	Tier 3
U195	SW	Redland Rd	~900 ft west of Holly Ln	Widen to include shoulders and bikeways	Upgrade - Active Transportation	19,000	$4,210,000	7	Road Safety Audit 2073	Tier 3	Tier 3	Tier 3
U196	SW	Redland Rd	~400 ft west of Holly Ln	Widen to include shoulders and bikeways	Upgrade - Active Transportation	19,000	$2,930,000	7	Road Safety Audit 2073	Tier 3	Tier 3	Tier 3
U197	SW	Redland Rd	Redland Rd / Holly Rd intersection	Install traffic signal and westbound and northbound left-turn lanes or roundabout	Upgrade - Vehicle Capacity	16,000	$770,000	9	Road Safety Audit 2073	Tier 1	Tier 1	Tier 1
U198	SW	Redland Rd	Henrici Rd to Oregon City	Add paved shoulders	Upgrade	16,000	$23,310,000	7	Add left turn lanes at major intersections? Road Safety Audit 2073	Tier 3	Tier 3	Tier 3
U199	SW	Redland Rd	Redland Rd / Ferguson Rd intersection	Construct roundabout	Upgrade - Vehicle Capacity	16,000	$5,550,000	7	Road Safety Audit 2073	Tier 1	Tier 1	Tier 1
U201	SW	Redland Rd	Redland Rd / Bradley Rd intersection	Install eastbound left-turn lane	Upgrade - Vehicle Capacity	11,000	$290,000	3	Road Safety Audit 2073	Tier 2	Tier 2	Tier 2
U203	SW	Fischers Mill Rd	Fischers Mill / Hattan Rd intersection	Install eastbound left-turn lane	Upgrade	12,000	$290,000	9		Tier 1	Tier 1	Tier 1
U204	SW	Redland Rd	Redland Rd / Fischers Mill Rd / Henrici Rd intersection	Install eastbound left-turn, eastbound right-turn and westbound right-turn lanes at Henrici Rd	Upgrade	11,000	$860,000	7		Tier 2	Tier 2	Tier 2
U206	SW	Henrici Rd	Between Driftwood Dr and Shore Vista Dr	Widen bridge to accommodate paved shoulders	Bridge	7,000	$1,620,000	2	Related to U475. **Bridge is structurally sound**	Tier 1	**Tier 3**	Tier 3
U210	SW	Henrici Rd	OR 213 to Beavercreek Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	8,000	$5,070,000	9	Expensive project	Tier 1	Tier 1	Tier 2
U211	SW	Beavercreek Rd	Henrici Rd to Yeoman Rd/Steiner Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	11,000	$11,340,000	9	Road Safety Audit 2085	Tier 1	Tier 1	Tier 1
U212	SW	Maplelane Rd	~1,800 ft west of Walker Rd	Add paved shoulders	Upgrade	6,000	$4,000,000	4		Tier 3	Tier 3	Tier 3
U213	SW	Leland Rd	~1,000 ft north of Warnock Rd	Construct bridge to accommodate paved shoulders	Bridge	2,000	$2,590,000	4	**Bridge is structurally sound.**	Tier 1	**Tier 3**	Tier 3
U214	SW	South End Rd	Oregon City limits to OR 99E	Smooth curves; add paved shoulders	Upgrade	7,000	$7,070,000	6		Tier 3	Tier 3	Tier 3
U247	SW	Bakers Ferry Rd	Springwater Rd to OR 224	Add paved shoulders and turn lanes at major intersections; remove horizontal curve and relocate intersection from Eaden Rd to OR 224	Upgrade	11,000	$20,250,000	7		Tier 3	Tier 3	Tier 3
U249a	SW	Springwater Rd	Hattan Rd to Bakers Ferry Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	8,000	$6,170,000	10	Move down to Tier 2? Improvement between Carver Bridge and boat launch (Hayden Rd). Break up project and improve from bridge to Hattan, Springwater to Bakers Ferry; Hattan to Bakers Ferry (Tier 1), rest to Tier 3	Tier 1	Tier 1	Tier 1
U249b	SW	Springwater Rd	Bakers Ferry Rd to Hayden Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	8,000	$40,720,000	12	Move down to Tier 2? Improvement between Carver Bridge and boat launch (Hayden Rd). Break up project and improve from bridge to Hattan, Springwater to Bakers Ferry; Hattan to Bakers Ferry (Tier 1), rest to Tier 3. Road Safety Audit 2084	Tier 1	**Tier 3**	Tier 3
U250	SW	Springwater Rd	Springwater Rd / Bakers Ferry Rd intersection	Install southbound left-turn lane; realign intersection to fix skew.	Upgrade	15,000	$5,350,000	8		Tier 2	Tier 2	Tier 2

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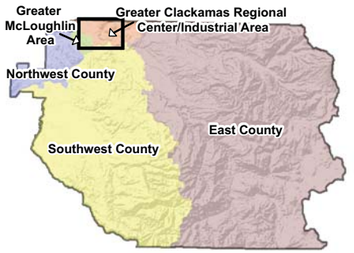
U260	SW	Fellows Rd	Redland Rd to Lower Highland Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	2,000	$18,750,000	6	Very low ADT, grade issues	Tier 3	Tier 3	Tier 3
U261a	SW	Ridge Rd	~1 miles north of Lower Highland Rd	Fix sinkhole	Upgrade	3,000	$2,230,000	6		Tier 1	Tier 1	Tier 1
U261b	SW	Ridge Rd	Lower Highland Rd to Redland Rd	Add paved shoulders	Upgrade	3,000	$15,500,000	6		Tier 3	Tier 3	Tier 3
U262	SW	Redland Rd	Henrici Rd to Springwater Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	6,000	$37,640,000	9	Road Safety Audit 2084	Tier 3	Tier 3	Tier 3
U263	SW	Lower Highland Rd	Beavercreek Rd to Fellows Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	2,000	$26,890,000	6		Tier 3	Tier 3	Tier 3
U264	SW	Unger Rd	Beavercreek Rd to OR 211	Add paved shoulders and turn lanes at major intersections	Upgrade	1,000	$27,820,000	8	Low ADT	Tier 3	Tier 3	Tier 3
U265	SW	Beavercreek Rd	Beavercreek Rd / Leland Rd / Kamrath Rd intersection	Construct roundabout with additional analysis	Upgrade - Vehicle Capacity	7,000	$4,510,000	5	SPIS (Safety Priority Index System) list, **huge safety, beneficial project**. Road Safety Audit 2085	Tier 2	**Tier 1**	Tier 1
U267	SW	Central Point Rd	Parrish Rd to Mulino Rd	Add paved shoulders; smooth curves	Upgrade	3,000	$28,550,000	8		Tier 3	Tier 3	Tier 3
U269	SW	Casto Rd	Spangler Rd to Central Point Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	5,000	$9,330,000	8	Low volume road.	Tier 3	Tier 3	Tier 3
U270	SW	Spangler Rd	Casto Rd to Beavercreek Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	3,000	$20,950,000	9	ADT very low. Need for turn lanes in the future? Phase Casto to OR 213, OR 213 to Beavercreek?	Tier 3	Tier 3	Tier 3
U271	SW	Kamrath Rd	Carus Rd to Spangler Rd	Safety analysis at Carus Rd, add paved shoulders, remove or decrease horizontal curves north of Spangler Rd	Upgrade	7,000	$4,140,000	5		Tier 3	Tier 3	Tier 3
U275	SW	Boones Ferry Rd	Boones Ferry Rd / Butteville Rd intersection	Remove bank, remove/decrease horizontal curve	Safety	1,000	$4,020,000	6		Tier 1	Tier 1	Tier 1
U276	SW	Airport Rd	Airport Rd / Miley Rd intersection	Install traffic signal	Upgrade - Vehicle Capacity	22,000	$200,000	8		Tier 1	Tier 1	Tier 1
U277	SW	Airport Rd	Arndt Rd to Miley Rd	Add turn lanes at major intersections	Upgrade - Vehicle Capacity	15,000	$1,710,000	6		Tier 3	Tier 3	Tier 3
U279	SW	Arndt Rd	OR 551 to Knights Bridge Rd	Widen to 4 lanes with median, left-turn lanes and paved shoulders	Upgrade	32,000	$23,840,000	10	Move to Tier 3 because of future congestion issues and relationship with draft policy? See draft policy 72 and 73.	Tier Remove	Tier Remove	Remove
U281	SW	Barlow Rd	Arndt Rd / Barlow Rd intersection	Realign intersection	Safety	16,000	$3,230,000	6	Project not needed and conflicts/duplicate to 2806.	Tier 1	Tier Remove	Remove
U284	SW	Knights Bridge Rd	Knights Bridge Rd / Barlow Rd intersection	Remove vertical curve; improve drainage	Safety	20,000	$2,150,000	5	Project not needed	Tier 1	Tier Remove	Remove
U285	SW	Holly St	Territorial Rd to Canby Ferry	Add paved shoulders	Upgrade	1,500	$8,620,000	8		Tier 3	Tier 3	Tier 3
U290	SW	Township Rd	Central Point Rd to Canby City limit	Add paved shoulders and turn lanes at major intersections	Upgrade	5,000	$7,940,000	8		Tier 1	Tier 1	Tier 1
U292	SW	Mulino Rd	Mulino Rd / 13th Ave	Relocate intersection to south away from railroad trestle	Safety	3,000	$3,070,000	6	Move up - **several fatalities**, safety concerns.	Tier 2	**Tier 1**	Tier 1
U295	SW	Canby-Marquam Highway	Canby-Marquam Hwy / Lone Elder Rd intersection	Reconstruct intersection; install northbound left-turn lane and southbound right-turn lane	Upgrade - Vehicle Capacity	11,000	$3,750,000	9	Road Safety Audit 2082	Tier 1	Tier 1	Tier 1
U297	SW	Gard Rd	~100 ft south of Old Clarke Rd	Construct bridge to accommodate paved shoulders	Bridge	1,500	$3,570,000	6	**Bridge is structurally sound.**	Tier 1	**Tier 3**	Tier 3
U298	SW	Canby-Marquam Highway	OR 170 / Macksburg Rd intersection	Reconstruct intersection; install southbound left-turn lane and northbound right-turn lane	Upgrade	9,000	$3,750,000	8	Road Safety Audit 2082	Tier 3	Tier 3	Tier 3
U299	SW	Dryland Rd	Macksburg Rd S to Macksburg Rd N	Realign to form one intersection at Dryland Rd	Upgrade	7,000	$3,400,000	6	High ROW impacts	Tier 2	Tier 2	Tier 2
U300	SW	Macksburg Rd	Canby Marquam Hwy to OR 213	Add paved shoulders and turn lanes at major intersections	Upgrade	4,000	$29,040,000	8	Turn lanes just needed at Canby-Marquam and OR 213?	Tier 3	Tier 3	Tier 3
U302a	SW	Union Mills Rd	OR 213 to OR 211	Add turn lanes at major intersections	Upgrade - Vehicle Capacity	9,000	$860,000	8		Tier 1	Tier 1	Tier 1
U302b	SW	Union Mills Rd	OR 213 to OR 211	Construct a should on the south side of the roadway	Upgrade	9,000	$8,970,000	8	**Move down to Tier 3** - demand for multi-use path? Equestrian interest. Alternative to upgrade to shoulders.	**Tier 1**	Tier 3	Tier 1

TSP Update ID	Geographic Area	Project Name / Street Name	Segment / Locations	Project Description	Project Category	Projected Future Demand*	Planning Level Cost Estimate	Final Score	TAC Meeting #7 Comment	GAPS Recommen-dation	TAC Recommen-dation	PAC Recommen-dation
U303	SW	Meridian Rd	Elliott Prairie Rd to Barlow Rd	Add paved shoulders; remove or decrease horizontal and vertical curves	Upgrade	1,500	$9,760,000	8		Tier 3	Tier 3	Tier 3
U304	SW	Meridian Rd	Meridian Rd / Whiskey Hill Rd intersection	Limit access/egress points to and from school on NE corner of intersection	Safety	4,000	$200,000	7		Tier 1	Tier 1	Tier 1
U306	SW	Barnards Rd	Between Needy Rd and Stuwe Rd	Reconstruct bridge and widen to 36 feet	Bridge	2,500	$3,560,000	6	**Bridge is structurally sound.** Changed rating to match 2017	Tier 1	**Tier 3**	Tier 3
U310	SW	Canby-Marquam Highway	~1,900 ft south of Barnards Rd	Replace failing bridge with 2-lane structure with paved shoulders	Bridge	6,000	$5,580,000	9	Bridge Sufficiency <50	Tier 1	Tier 1	Tier 1
U311	SW	Molalla Ave	OR 213 to Molalla City limits	Add paved shoulders	Upgrade	10,000	$9,170,000	6		Tier 3	Tier 3	Tier 3
U314	SW	Wright Rd	OR 211 to Callahan Rd	Add paved shoulders	Upgrade	1,500	$14,160,000	7		Tier 3	Tier 3	Tier 3
U315	SW	Callahan Rd S (beginning on Ramsby Rd)	Dickie Prairie Rd to Fernwood Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	1,500	$12,140,000	8		Tier 3	Tier 3	Tier 3
U316	SW	Fernwood Rd	Dhooghe Rd to Callahan Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	1,500	$6,660,000	5	Low ADT	Tier 3	Tier 3	Tier 3
U317	SW	Dhooghe Rd	OR 211 to Fernwood Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	1,500	$16,190,000	7	Low ADT	Tier 3	Tier 3	Tier 3
U318	SW	Klang's Mill bridge	~1,000 ft north of OR 211	Replace failing bridge	Bridge	2,500	$1,620,000	4	Bridge Sufficiency <50	Tier 1	Tier 1	Tier 1
U320	SW	Sawtell Rd	Maple Grove Rd to Wilhoit Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	1,500	$38,450,000	7	Phase project? Low ADT near Maplegrove	Tier 3	Tier 3	Tier 3
U321	SW	Wildcat Rd	Wilhoit Rd to OR 213	Add paved shoulders and turn lanes at major intersections	Upgrade	2,500	$29,140,000	7	Low ADT	Tier 3	Tier 3	Tier 3
U322	SW	Nowlens Bridge Rd	OR 213 to Maple Grove Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	1,000	$13,020,000	9		Tier 3	Tier 3	Tier 3
U323	SW	Blair Rd	Groshong Rd to Maple Grove Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	2,500	$3,360,000	5	Low ADT	Tier 3	Tier 3	Tier 3
U325	SW	Bird Rd	Groshong Rd to Wilhoit Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	3,000	$5,120,000	5	Very low ADT	Tier 3	Tier 3	Tier 3
U326	SW	Maple Grove Rd	Nowlens Bridge Rd to Sawtell Rd	Add paved shoulders and turn lanes at major intersections	Upgrade	3,000	$34,760,000	6	Very low ADT	Tier 3	Tier 3	Tier 3
U332	SW	Rock Creek (Kropf Rd) Bridge	~3,500 ft north of Gibson Rd	Replace bridge	Bridge	3,000	$2,160,000	4	**Bridge is structurally sound.**	Tier 1	**Tier 3**	Tier 3
U449	SW	Barlow Rd	Barlow Rd / OR 99E intersection	Add dual left-turn lanes on southbound Barlow	Vehicle Capacity	21,000	$570,000	7	Needed Project No Funding Identified. (ODOT)	Tier NA	Tier NA	Tier 3
U469	SW	Clackamas River Dr	Oregon City city limits to Springwater Rd	Add paved shoulders and turn lanes at Springwater Rd and Forsythe Rd	Upgrade	9,000	$23,240,000	12		Tier 3	Tier 3	Tier 3
U473	SW	Holcomb Blvd	Edenwild Ln to Bradley Rd	Add paved shoulders and turn lanes at Holcomb Blvd / Bradley Rd	Upgrade	3,000	$7,450,000	8		Tier 3	Tier 3	Tier 3
U475a	SW	Henrici Rd	Beavercreek Rd to Ferguson Rd	Add paved shoulders and turn lanes at major intersections. Remove horizontal and vertical curves	Upgrade	9,000	$4,900,000	8	Ferguson to Beavercreek (Tier 2 just shoulders); and Ferguson to Redland Tier 3 (along with bridge U206)	Tier 2	Tier 2	Tier 1
U475b	SW	Henrici Rd	Ferguson Rd to Redland Rd	Add paved shoulders and turn lanes at major intersections. Remove horizontal and vertical curves	Upgrade	9,000	$17,870,000	8	Ferguson to Beavercreek (Tier 2 just shoulders); Ferguson to Redland to Tier 3 (along with bridge U206)	**Tier 2**	Tier 3	Tier 2
U503	SW	Mattoon Rd	Fischers Mill Rd to Redland Rd	Add paved shoulders and turn lanes at major intersections. Remove vertical curves, remove horizontal curves north of Redland Rd	Upgrade	3,000	$15,360,000	6	Low ADT	Tier 3	Tier 3	Tier 3
U504	SW	Mulino Rd (13th St segment)	Canby City limits to OR 213	Add paved shoulders and turn lanes at major intersections	Upgrade	4,000	$24,890,000	10		Tier 2	Tier 2	Tier 2
U505	SW	Toliver Rd	Dryland Rd to Molalla City Limits	Add paved shoulders	Upgrade	2,500	$10,650,000	9		Tier 3	Tier 3	Tier 3
U738	SW	Barlow Rd	Knights Bridge Rd to OR 99E	Add paved shoulders	Upgrade	16,000	$5,400,000	8		Tier 3	Tier 3	Tier 3

TSP Update ID	Geographic Area	Project Name / Street Name	Segment / Locations	Project Description	Project Category	Projected Future Demand*	Planning Level Cost Estimate	Final Score	TAC Meeting #7 Comment	GAPS Recommen-dation	TAC Recommen-dation	PAC Recommen-dation
U739	SW	Beavercreek Rd	Yeoman Rd/Steiner Rd to OR 211	Add paved shoulders	Upgrade	4,000	$47,550,000	10	**Low usage does not justify priority 2**. Road Safety Audit 2077, 2085	Tier 2	**Tier 3**	Tier 3
U742	SW	Bradley Rd	Gronlund Rd to Redland Rd	Add paved shoulders	Upgrade	7,000	$12,300,000	8		Tier 3	Tier 3	Tier 3
U746	SW	Fischers Mill Rd	Redland Rd to Springwater Rd	Add paved shoulders	Upgrade	5,000	$18,090,000	9		Tier 3	Tier 3	Tier 3
U747	SW	Gray's Hill Rd	Green Mountain Rd to OR 211	Add paved shoulders	Upgrade	2,500	$9,720,000	8		Tier 3	Tier 3	Tier 3
U750	SW	Holly Ln	Maplelane Rd to Redland Rd	Add paved shoulders	Upgrade	7,000	$8,350,000	9		Tier 3	Tier 3	Tier 3
U754	SW	Maplelane Rd	Oregon City UGB to Ferguson Rd	Add paved shoulders	Upgrade	8,000	$8,730,000	9	Road Safety Audit 2076	Tier 3	Tier 3	Tier 3
U755	SW	Miley Rd	Airport Rd to Eilers Rd	Add paved shoulders	Upgrade	16,000	$6,130,000	8		Tier 3	Tier 3	Tier 3
U756	SW	Molalla Ave	OR 213 to Molalla City limits	Add paved shoulders	Upgrade	10,000	$7,980,000	8	Duplicate to U311	Tier 3	Tier Remove	Remove
U782	SW	Oregon City boundary to Mulino Trail		Construct multi-use path	Multi-Use Path	15,000	$14,570,000	7	Not realistic, ROW falls on multiple private property	Tier 1	**Tier 3**	Tier 3
U784	SW	Canby - Molalla Railroad Trail		Construct multi-use path	Multi-Use Path	15,000	$14,430,000	7		Tier 2	Tier 2	Tier 2
U920	SW	Newell Creek Trail / Oregon City Loop Trail	Loop around the perimeter of Oregon City	Construct multi-use path consistent with the Connecting Clackamas Plan	Multi-Use Path	15,000	$24,500,000	8		Tier 2	Tier 2	Tier 2
U929	SW	Clarks Four Corners Intersection	Beavercreek Rd / Unger Rd	Reconstruct intersection	Safety	4,000	$4,380,000	9	Potential low cost improvements (like signage), low volume roadways. Decision to leave in Tier 1.	Tier 1	Tier 1	Tier 1
U932	SW	Lone Elder Rd Bridge	~5,800 feet east of Barlow Rd	Replace failing bridge with paved shoulders	Bridge	3,000	$430,000	10	Bridge Sufficiency <50		**Tier 1**	Tier 1
U935	SW	Knights Bridge Rd Bridge	~3,200 feet east of Barlow Rd	Replace failing bridge	Bridge	15,000	$6,300,000	8	Bridge Sufficiency <50		Tier 1	Tier 3
U938	SW	Molalla Ave Flooding	Just south of city of Molalla	Construct bridge to resolve flooding issues	Bridge	2,000	$720,000	9			**Tier 1**	Tier 2

CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



Master List County Projects

PAC Recommended Priority:

- Tier 1
- Tier 2
- Tier 3
- Remove

Master List ODOT Projects

Draft Recommended Priority:

- High Priority
- Medium Priority
- Low Priority
- Recommended for Removal

- Multi-Use Path
- Incorporated Areas
- County Boundary
- UGB

★ Indicates Project for Discussion

0 1 Miles

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

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Master List Projects - PAC Recommendation
Greater Clackamas Regional Center / Industrial Area

Figure
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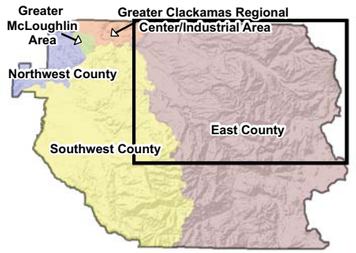
CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



Master List County Projects

PAC Recommended Priority:

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- Tier 2
- Tier 3
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Master List ODOT Projects

Draft Recommended Priority:

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★ Indicates Project for Discussion

0 1 2 3 4 5 Miles

Coordinate System:
NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl
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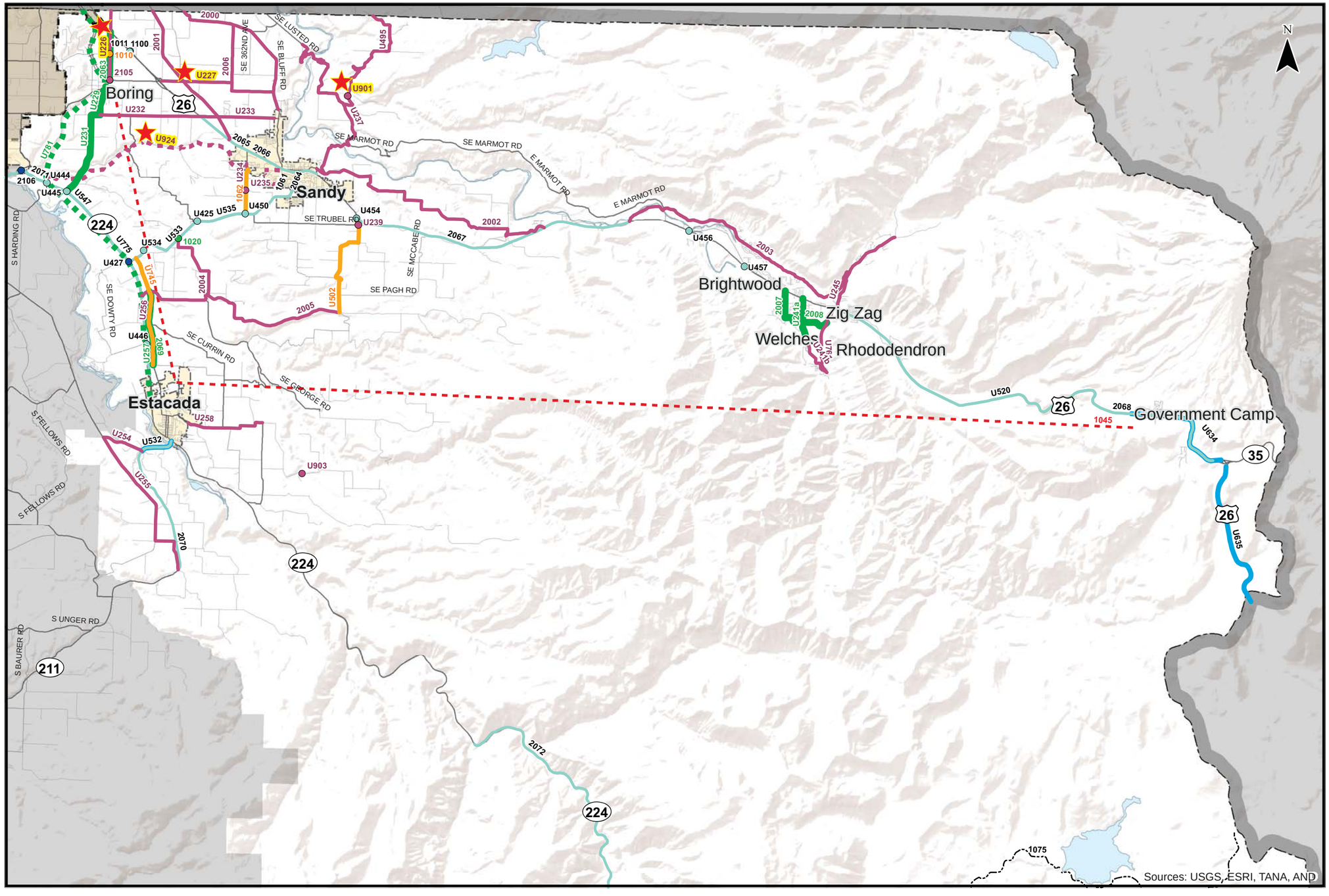
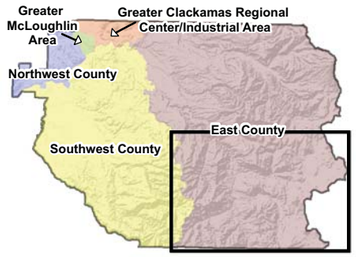


Master List Projects - PAC Recommendation
East County - Northern Portion

Figure
EN MP

CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



Master List County Projects

PAC Recommended Priority:

- Tier 1
- Tier 2
- Tier 3
- Remove

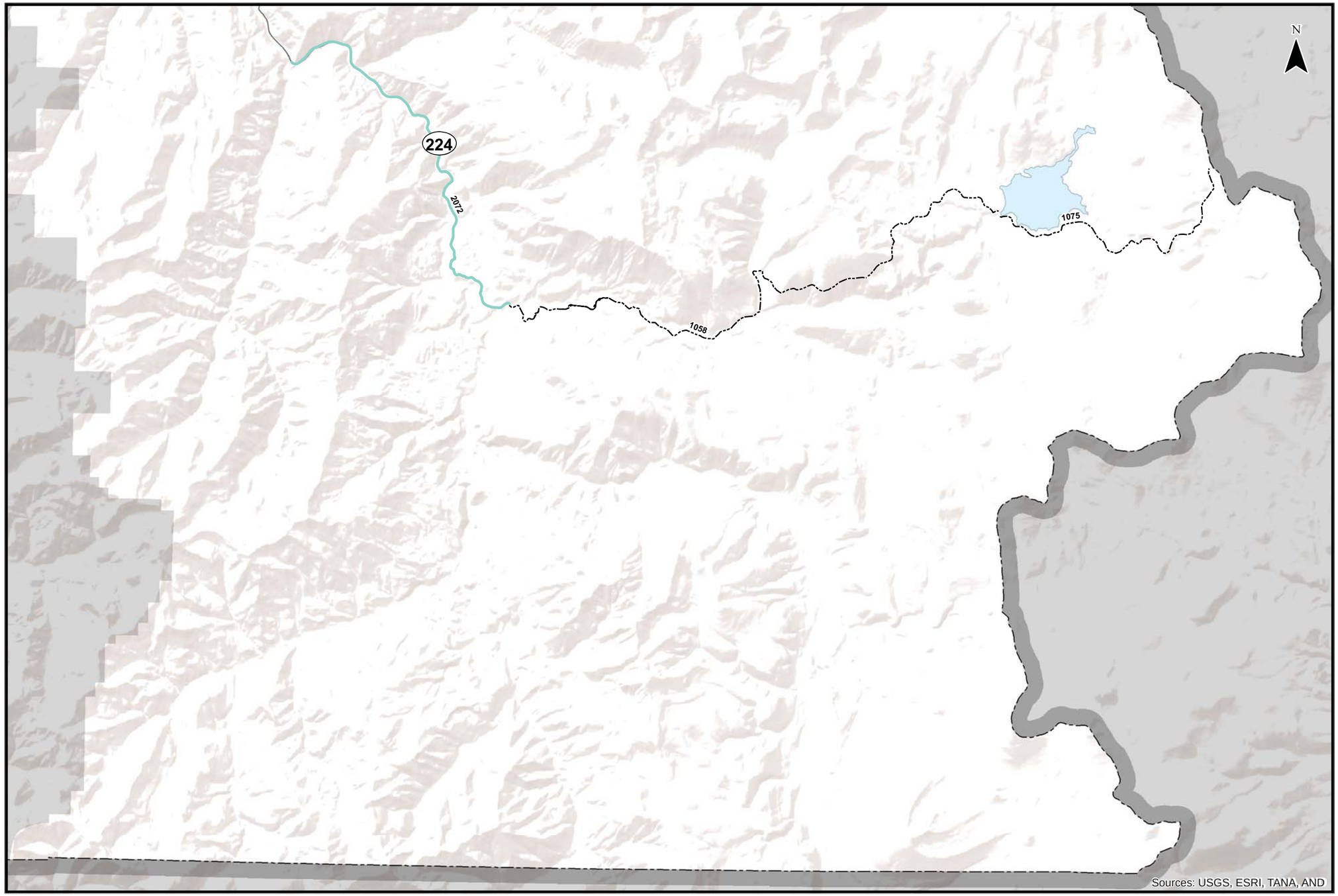
Master List ODOT Projects

Draft Recommended Priority:

- High Priority
- Medium Priority
- Low Priority
- Recommended for Removal

- Multi-Use Path
- Incorporated Areas
- County Boundary
- UGB

★ Indicates Project for Discussion



0 1 2 3 4 Miles

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

Master List Projects - PAC Recommendation
East County - Southern Portion

Figure
ES MP

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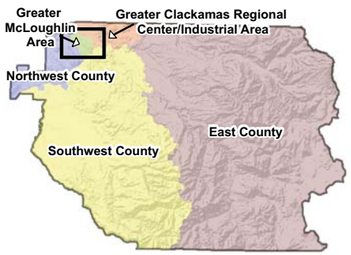
CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



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0 1 Miles

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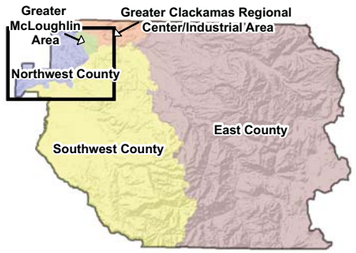
Master List Projects - PAC Recommendation
Greater McLoughlin Area

Figure
M MP

Sources: USGS, ESRI, TANA, AND

CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



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0 1 2 Miles

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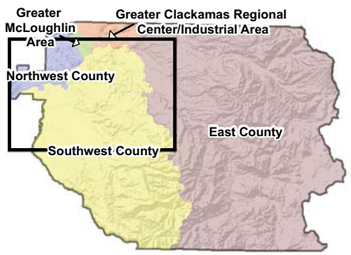
Master List Projects - PAC Recommendation
Northwest County

Figure
NW MP

Sources: USGS, ESRI, TANA, AND

CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



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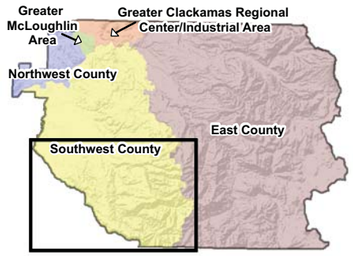
Master List Projects - PAC Recommendation
Southwest County - Northern Portion

Figure
SN MP

Sources: USGS, ESRI, TANA, AND

CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



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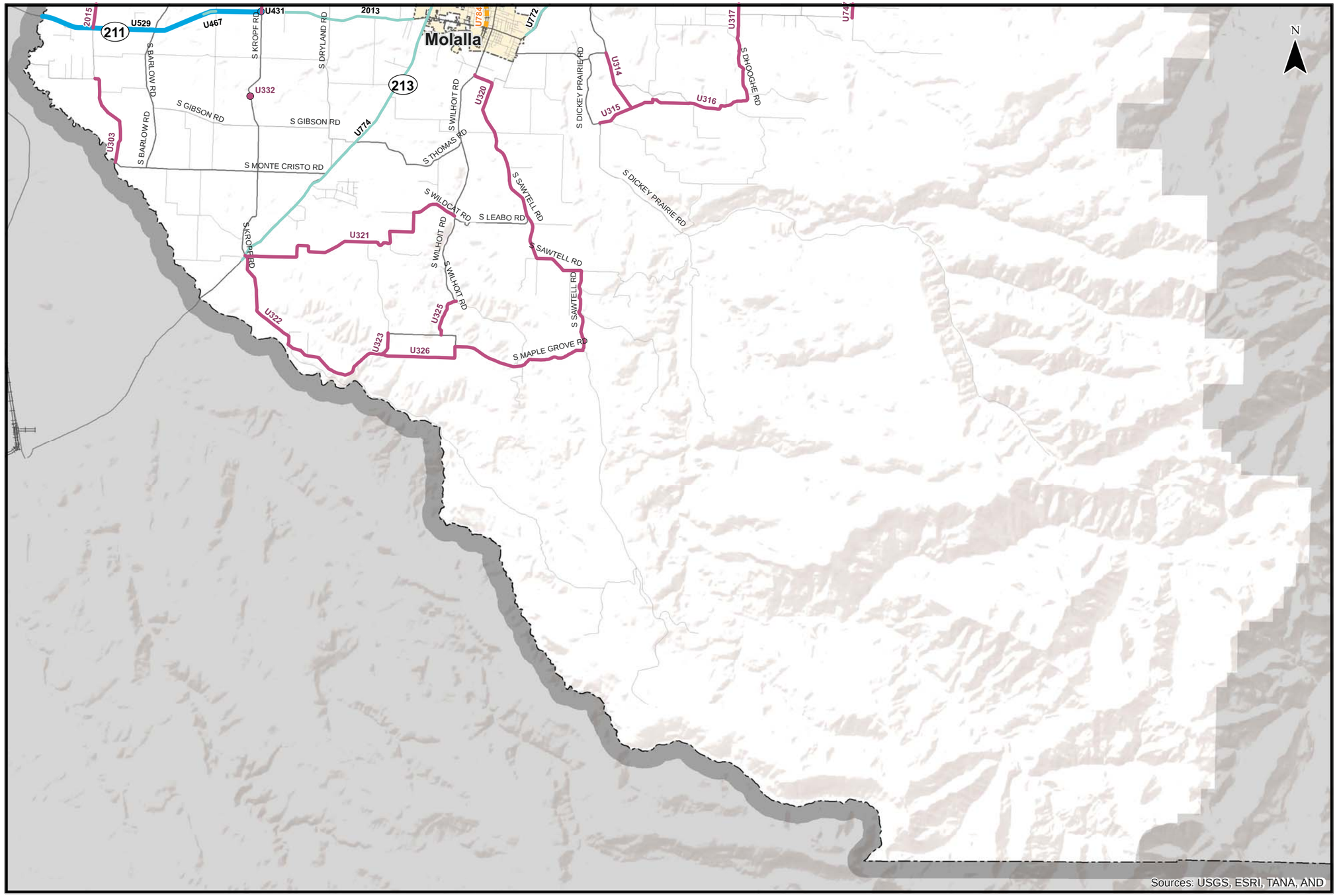


Master List Projects - PAC Recommendation
Southwest County - Southern Portion

Figure
SS MP

Wednesday, July 17, 2013

Recent Changes to the Regional Travel Demand Model

Recent changes to Metro's Regional Travel Demand Model have resulted in forecast travel volumes in Clackamas County in 2035 that are ***less than previous forecast travel volumes***. These revised forecasts, and the adoption of new performance standards, mean that the levels of projected congestion on Clackamas County roads and the number of Clackamas County intersections projected to fail in the next 20 years has ***decreased***.

This memo reviews what the changes are and the impact they have had on the travel demand forecast.

Clackamas County is updating its Transportation System Plan (Comprehensive Plan Chapter 5). As part of this work Clackamas County conducted extensive analysis of the arterial and collector road system in the County using information from Metro's Regional Travel Demand Model and other transportation data sources.

During this multi-year TSP update process, Metro's Regional Travel Demand Model has been updated and revised, resulting in changes in forecast traffic volumes on the regional arterial and collector road system.

The major changes are listed below, followed by more detailed descriptions of each.

A. Changes in land use assumptions, which result in changes to forecast vehicle trips
    a. Distribution and number of households
    b. Distribution and amount of employment
    c. Economic composition of households
B. More detailed analysis of travel, based on increased Travel Analysis Zones (TAZs),
C. Changes in travel model trip assignments
D. Changes in total amount of employment in Clackamas County

There are three levels of modeling that have been applied during this process:

1. **Beta Forecast**: Used in winter and spring 2012 for existing and future conditions modeling for 2010 and 2035 low-build and full-build scenarios with 2-hour PM peak forecasts
2. **Gamma Forecast/2-hour PM peak**: Used in summer 2013 for Tier 1 scenario modeling for 2035 (including the projects on the draft 20-Year Capital Project List) with 2-hour PM peak forecast
3. **Gamma Forecast/1-hour PM peak:** Will be used for the next round of RTP updates in 2014with 1-hour PM peak forecast and a peak spreading algorithm

The County conducted its first round of analysis using the 2010 and 2035 Beta forecasts. This analysis identified that 44 intersections out of the 125 studied would fail to meet performance standards in 2035. When the Tier 1 Scenario was analyzed using the Gamma forecast, only five intersections were identified as failing to meet the performance standards in 2035.

Clackamas County Transportation staff and Metro Travel Modeling staff have identified the following changes between the travel models.

A. Changes in 2035 Land Use Assumptions – Households and Employment

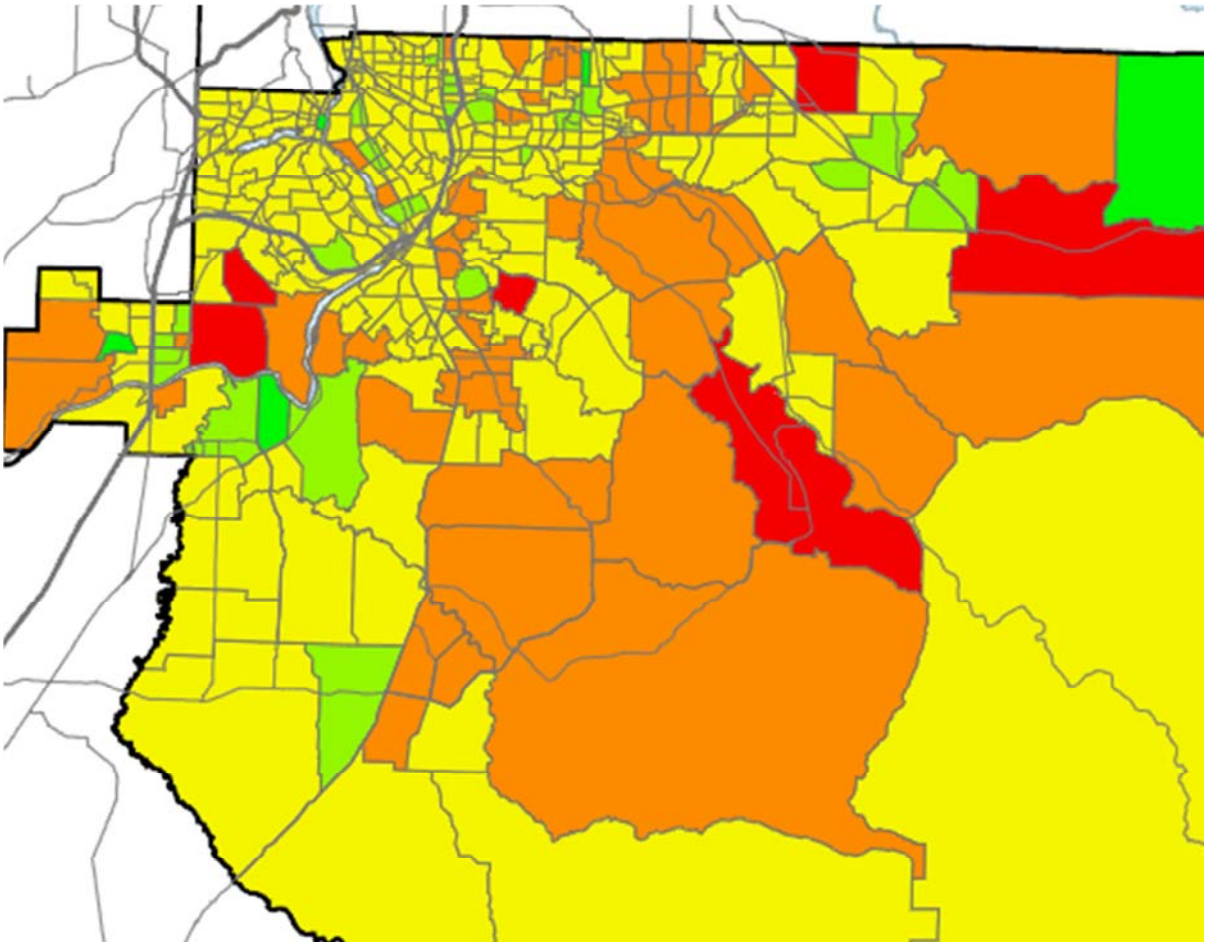
- The 2035 Gamma forecast has approximately 8,000 fewer households in Clackamas County than the 2035 Beta forecast. The final Transportation Analysis Zone (TAZ) allocations used in Metro's travel demand modeling tools for the two model runs being compared are shown below.

Total Households	2035 Beta	2035 Gamma	# Diff	% Diff
4-County* Total	1,197,568	1,168,967	-28,601	-2.4%
Clackamas County	***216,602***	***208,433***	***-8,169***	***-3.8%***

Total Employment	2035 Beta	2035 Gamma	# Diff	% Diff
4-County* Total	1,439,285	1,412,606	-26,679	-1.9%
Clackamas County	***205,960***	***210,444***	***+4,484***	***+2.2%***

The four counties are Clackamas, Clark, Multnomah and Washington.

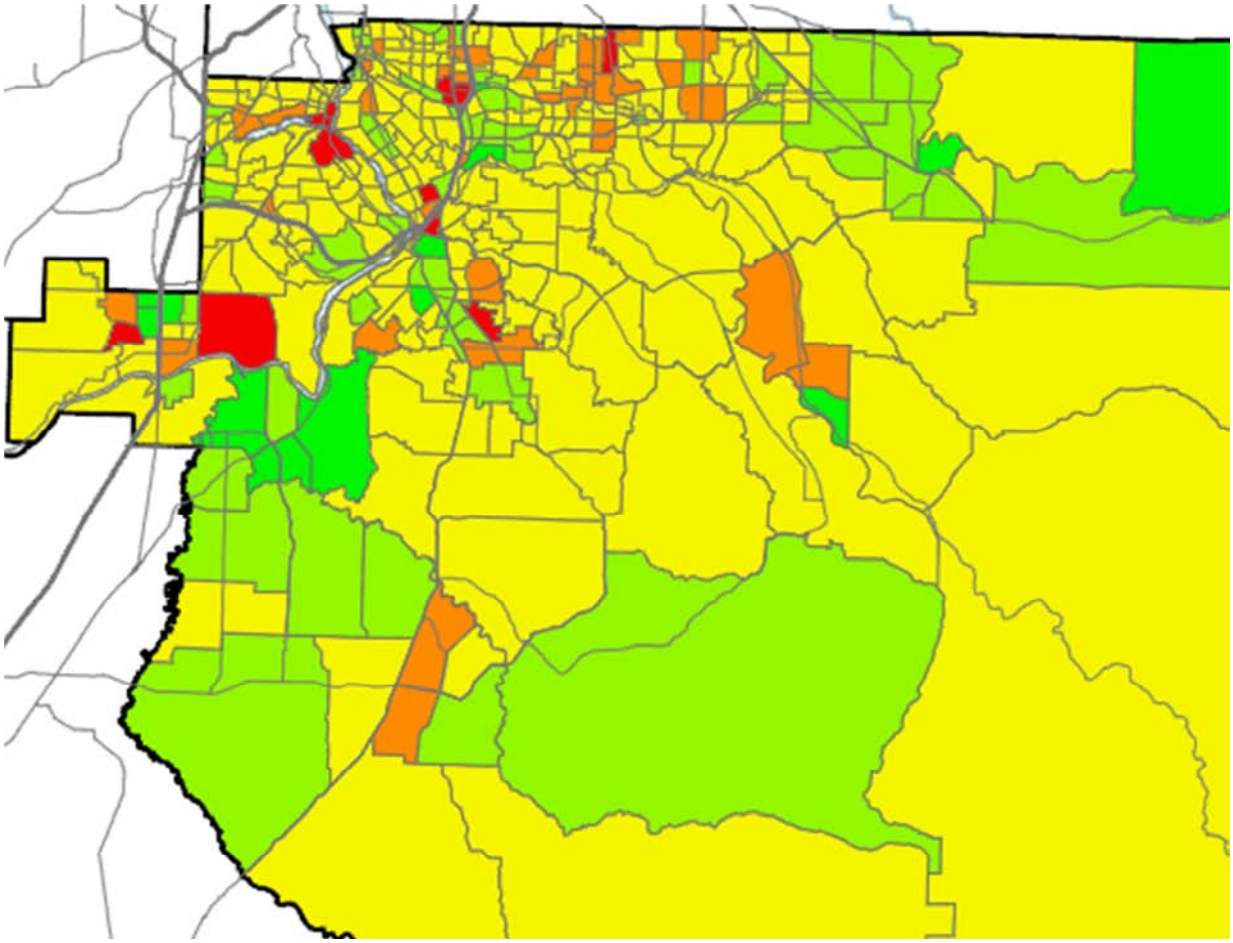
Households were redistributed within Clackamas County as shown in the map below. Red and orange indicate zones with fewer households in the Gamma forecast; green shows which zones had gains in the total number of households.



The different distribution of households results in local variations in the number of trips generated. This distribution can be described in the following terms:

- The Damascus and Estacada areas have fewer households.
- The Canby, Molalla and Sandy areas have more households.

Employment was also redistributed and increased slightly. Again, the red and orange indicate zones with less employment in the Gamma forecast while green shows the zones with gains.



There is a countywide change in the economic composition of the households between the two models, which affects the number of trips generated in the County.

- There is a general decrease in household income levels across the County, which may be related to large numbers of households with residents who are or soon will be retiring. Lower household incomes are strongly associated with reduced access to automobiles and increased demand for transit services.
- The make-up of the households in Clackamas County was changed as a result of the 2010 Census. Between the Beta and Gamma allocations, the shares of larger and higher income households were reduced somewhat, and the shares of smaller and lower income households were increased. The

percentage changes may not be large, but they are definitely contributing factors. In Metro's model, lower income households make fewer trips, own fewer cars, and are more sensitive to travel costs than higher income households.

Below are the daily trips generated by households in the travel demand model given the land use allocations:

Total Trips Produced	**2035 Beta**	**2035 Gamma**	**# Diff**	**% Diff**
4-County Total	12,330,500	11,425,400	-905,100	-7.3%
Clackamas County	***2,302,700***	***2,076,300***	***-226,400***	***-9.8%***

Total Work Trips Produced	**2035 Beta**	**2035 Gamma**	**# Diff**	**% Diff**
4-County Total	2,143,300	1,978,700	-164,600	-7.7%
Clackamas County	***426,500***	***380,300***	***-46,200***	***-10.8%***

- As a result of these changes in the 2035 land use and economic assumptions, **the total number of vehicles trips in 2035 decreased by 10%** between the Beta forecast and the Gamma forecast.

B. Changes to the Travel Model

A key component of a travel model is the Origin-Destination (O-D) Matrix which allocates all of the trips generated in a Traffic Analysis Zone (TAZ) to all of the other TAZs in the Regional Travel Model. This allocation is based on the results of a detailed travel survey of a large number of people living in the region.

- There are currently 2,162 TAZs in the Travel Demand Model.
- The old travel survey conducted in 1994 showed that 93% of all trips in Clackamas County were made by automobile. This survey data was used by the Beta model in the initial phase of the TSP update travel analysis.
- The new travel survey conducted in 2011 showed that 87.6% of all trips in the region were made by automobile. This survey data was used by the Gamma model in the Preferred Alternative travel analysis.

The following table shows how mode shares changed between 1994 and 2011 for all households.:

Mode Share by Area of Residence, 1994 vs. 2011 (source: *Metro Household Travel Survey*)

	1994	2011	1994	2011
	Region	**Region**	**Clackamas**	**Clackamas**
Single-Occupancy Vehicle (SOV)	43.4%	42.5%	46.2%	45.1%
High-Occupancy Vehicle (HOV)	43.9%	41.2%	47.0%	42.5%
Total Auto	*87.3%*	*83.8%*	*93.2%*	*87.6%*
Transit	2.9%	4.2%	1.1%	2.9%
Walk	8.7%	9.2%	5.2%	8.2%
Bike	1.1%	2.8%	0.4%	1.3%

- The survey shows that Clackamas County continues to have a higher proportion of auto trips than the 4-county region as a whole (93.2% vs. 87.3% and 87.6% vs. 83.8%). However, there were significant increases in non-auto modes between 1994 and 2011 which resulted in **an additional 5% reduction in the overall number of trips made by automobile in 2035.**
- The combined effect of these two changes to the travel model is a 15% reduction in the number of trips made by automobiles and a resulting decrease in the travel volumes shown by the model in 2035.
- The above analysis indicates that there are a number of factors contributing to the reduction of trips region-wide and in Clackamas County – fewer households, change in household composition and recalibrated mode shares. While these may not be the entire story, they explain a large amount of the differences in projected 2035 traffic volumes.

Additional Travel Model Issues

C. Travel Model Trip Assignments

- The 15% decrease in trips is based on the total daily trips.
- The model makes its forecast for the PM peak hour, which has a higher percentage of the total trips occurring by transit.
- The result of this difference is an additional reduction in auto trips of approximately 3%, which increases the total reduction of in automobile PM peak hour trips to 18%.

D. Employment Changes

- The total employment in Clackamas County increased by a few thousand jobs between the Beta forecast and the Gamma forecast.
- The change may produce shorter journey-to-work trips as people in Clackamas County households have more opportunities to be employed within the county.

The combined effect of these four factors is estimated to reduce the number of automobile trips by at least 18% from the model estimate developed as part of the TSP low-build model in the *Existing and Future Conditions Analysis*.

Model Trip Reduction and New Traffic Operations Performance Standards

- The Oregon Highway Plan (OHP) and the Regional Transportation Functional Plan (RTFP) require that the County adopt new traffic operation performance standards using a volume-to-capacity (v/c) measure.
- The combination of new performance standards and reduced travel volumes estimated by the travel model will substantially reduce the number of intersections that fail to meet the performance standards.
- **The effect of these changes is not going to solve future traffic capacity problems, but will potentially push out the time at which the problems / failures are projected to occur beyond the 20-year planning horizon.**

APPENDIX 1: Summary of Network and Model Enhancements since the last RTP Update

prepared by Metro staff, July 2013

Network Updates

- The Transportation Analysis Zone (TAZ) system was significantly modified (from 2,013 to 2,162 TAZs). The new zones are better aligned with current tax lot boundaries.
- The base year was updated from 2005 to 2010.

Updated Inputs

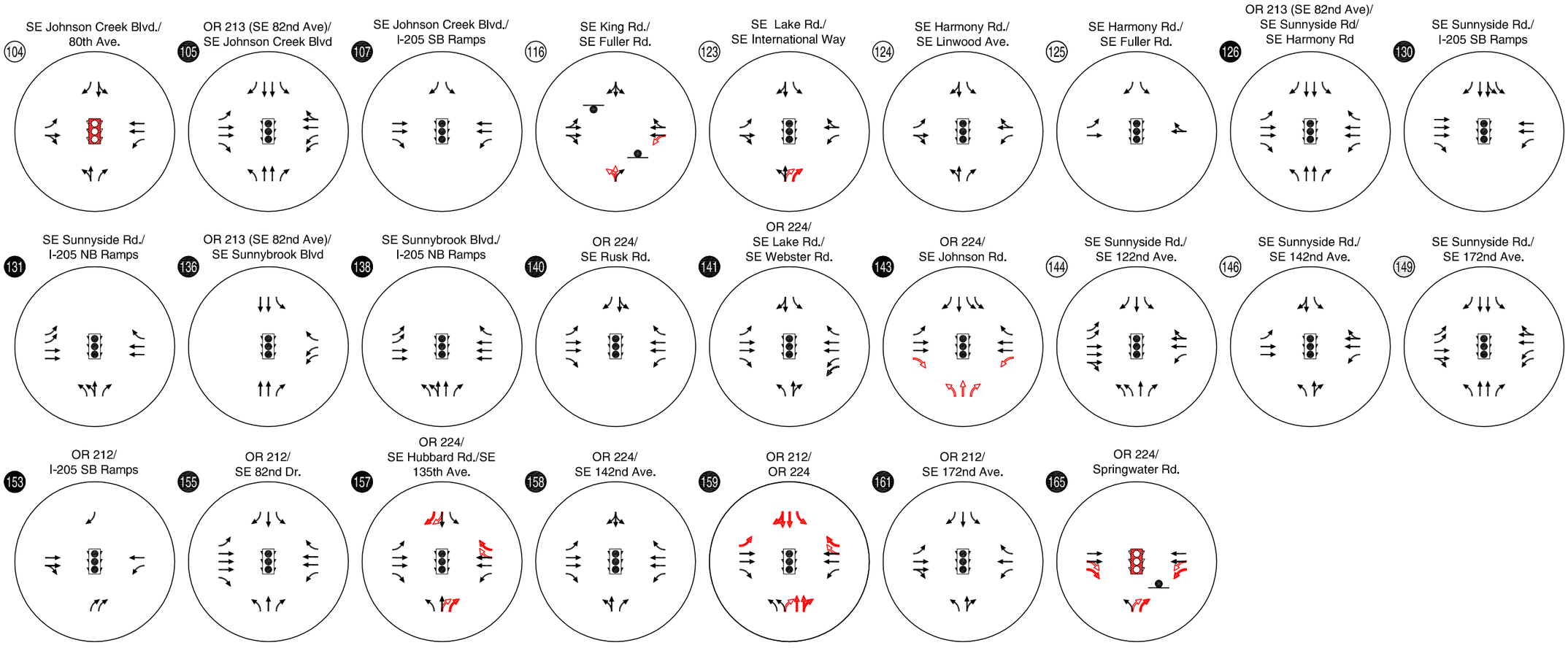
- 2040 design types updated to include more tiers based on findings from State of the Centers report and Transit-Oriented Development strategic plan reflecting that not all Centers and Station communities are in the same stage of development.
    - Regional Centers – from 1 to 2 tiers
    - State Communities – from 1 to 3 tiers
    - Town Centers – from 2 to 4 tiers
    - Corridors – NW 23rd adjusted to reflect high parking restrictions compared to other Corridors.
- Updated TAZ assumptions based on 2040 design types to allow for more control over policies being tested. Main Street, Corridor, Inner neighborhood all used to be in one classification. By splitting them, you can test parking policy on just corridors.
    - Parking factors – coordinated with City of Portland to reach agreement. Central City parking costs have been increasing at different rates in different parts of the city. Agreement reached to use a consistent value in the future.
    - Intersection densities recalculated to reflect new zone system
    - Transit pass factors updated to 2010$

Model Enhancements

- The last RTP update used the Ivan model.
- The East Metro Connections Plan used Joan model (version 1.0)
- The 2014 RTP update will use the Joan model (version 2.0), which was used by other planning efforts such as the SW Corridor Plan, Active Transportation Plan, and several recent TSPs.
    - Enhancements included in Joan Version 2.0 include:
        - Transit time perception
            - Wait time perception varies depending on stop type: pole, basic shelter, enhanced shelter/transit center
            - In-vehicle time perception varies depending on vehicle types: bus, street car, light rail
        - Park & Ride Lot Choice
            - A traveler considering using the park-ride mode is now given the opportunity to consider multiple lots locations. Prior, only one lot choice was offered.
        - Validation to the Portland/Vancouver Region Travel Behavior Survey

- The model was modified as necessary to make sure that parameters were effective in producing model results that reflected today's conditions. New regional mode shares will be reflected in new model to reflect change from 1997 to 2011 surveys: decrease in auto (87.3 to 83.7), increase in biking, walking and transit (12.7 to 16.2) (these numbers include travel to/from Clark County.

- Bike model
  - Formerly the regional model only factored trip distance into the decision to bike as well as some socioeconomic/demographic factors. The new model calculates a travel utility between zone pairs, and includes all streets. Bike lanes, boulevards, trails, etc. are flagged as more attractive than other routes. Consideration is given to the volume of auto traffic, number of stop signs/signals along route, number of left turns, slope, other network attributes.
  - The bike model assigns bike trips to the network, illustrating volume flows, identifies origins and destinations of users traveling along a given segment of the network, calculates bike miles traveled.
  - The tool is unique compared to most other regions because the bike mode competes with the other modes with regard to the attractiveness to the traveler. As the utility rises and the bike mode becomes more attractive, trips on other modes switch to bikes based upon the degree of change in the attractiveness.
- Peak-spreading algorithm
  - The treatment in the peak hour has been updated to better match count and survey data, providing a more realistic treatment of how travelers response to the peak period congestion
  - Captures the shoulder hour impacts as excess demand in peak periods is moved to adjacent hours
  - Permits inspections of performance on an hourly basis, e.g. 4:00-5:00, 5:00-6;00, 6:00-7:00
  - The algorithm does not impact the base year (2010) significantly. It is much more important in the future years in routes where demand far exceeds network capacity in the peak hours (volume / capacity > 1.0).
  - The algorithm uses today's 'most congested' corridors as a proxy for a future year congestion threshold. Future year demand is spread when congestion along corridors exceeds this threshold.
- Costs updated from 1994 dollars to 2010 dollars
- Airport demand model has been implemented
- Truck flows updated to reflect most recent land use forecast (Gamma)

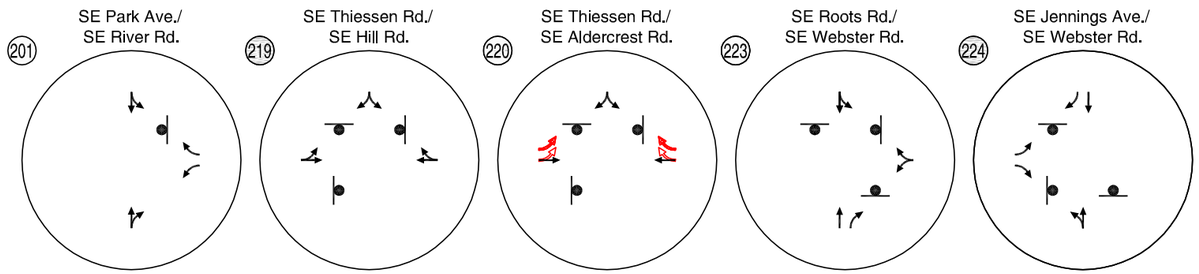


- ## - ODOT STUDY INTERSECTION
- (##) - COUNTY STUDY INTERSECTION
- - STOP SIGN
- - TRAFFIC SIGNAL
- - ROUNDABOUT
- - LANE REMOVED
- - LANE ADDED

Tier 1 Scenario Lane Configuration and Traffic Control Devices
Greater Clackamas Regional Center/Industrial Area

CLACKAMAS COUNTY Transportation System Plan Update

Figure C 1



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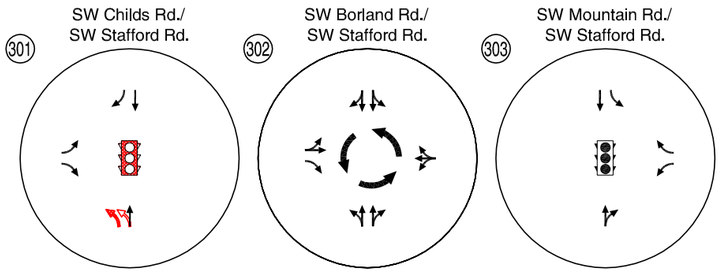
Tier 1 Scenario Lane Configuration and Traffic Control Devices Greater McLoughlin Area

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

Figure M 3



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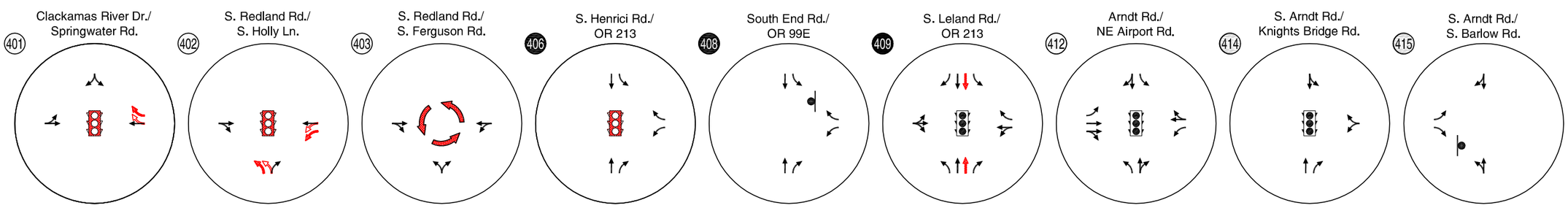
Tier 1 Scenario Lane Configuration and Traffic Control Devices Northwest County

CLACKAMAS COUNTY Transportation System Plan Update

Figure NW 34



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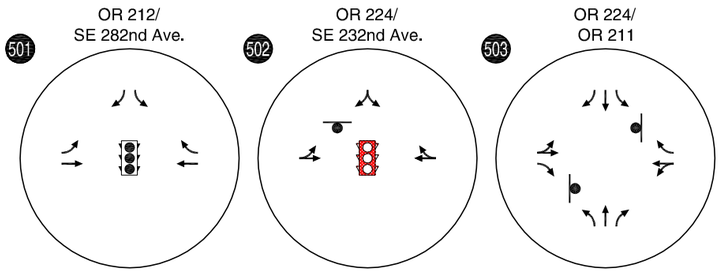
- - LANE ADDED

Tier 1 Scenario Lane Configuration and Traffic Control Devices Southwest County

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

Figure S 34



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- - ROUNDABOUT
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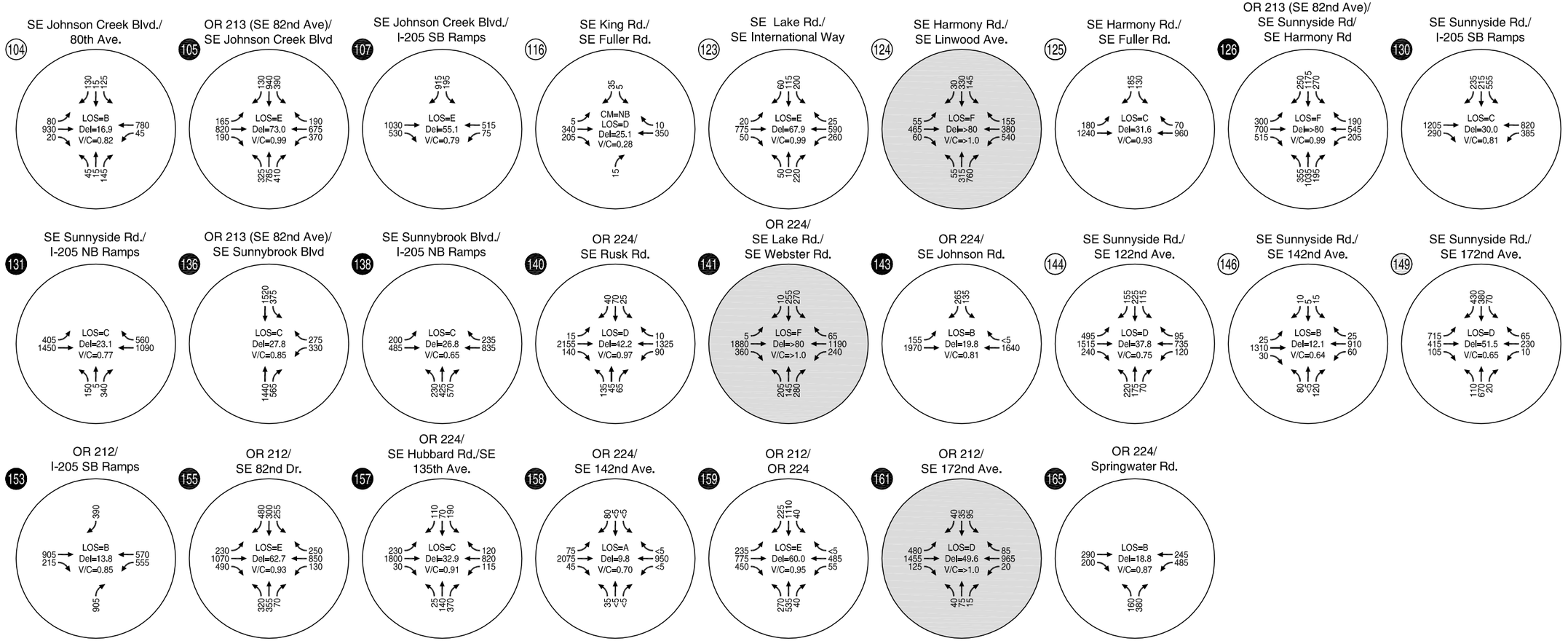
- - LANE ADDED

Tier 1 Scenario Lane Configuration and Traffic Control Devices East County

CLACKAMAS COUNTY Transportation System Plan Update

Figure E 5



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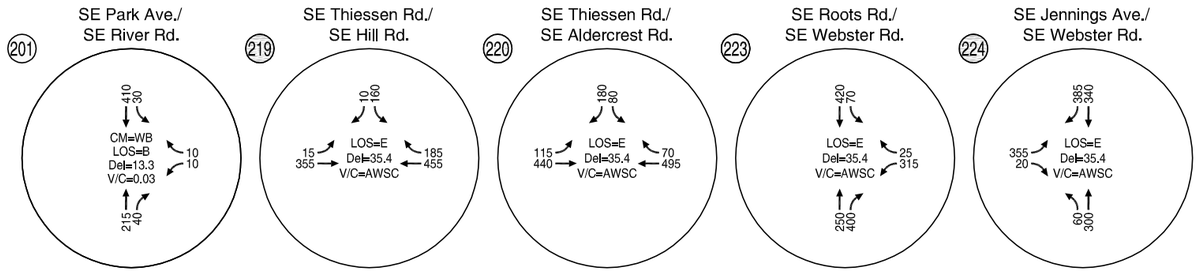
V/C	=	CRITICAL VOLUME-TO-CAPACITY RATIO
STD	=	OPERATIONAL STANDARD
AWSC	=	ALL-WAY STOP CONTROL

Tier 1 Scenario
Intersection Operations
Greater Clackamas Regional Center/Industrial Area

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

Figure C 1



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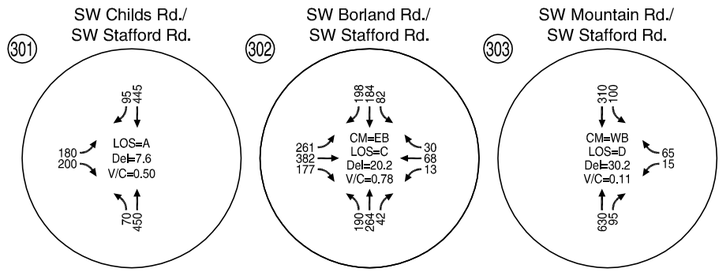
Tier 1 Scenario
Intersection Operations
Greater McLoughlin Area

CLACKAMAS COUNTY Transportation System Plan Update

Figure M 3



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V/C	=	CRITICAL VOLUME-TO-CAPACITY RATIO
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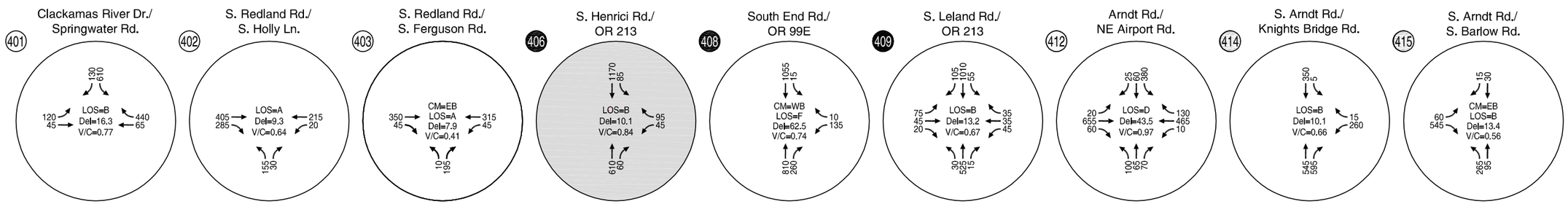
Tier 1 Scenario
Intersection Operations
Northwest County

CLACKAMAS COUNTY Transportation System Plan Update

Figure NW 34



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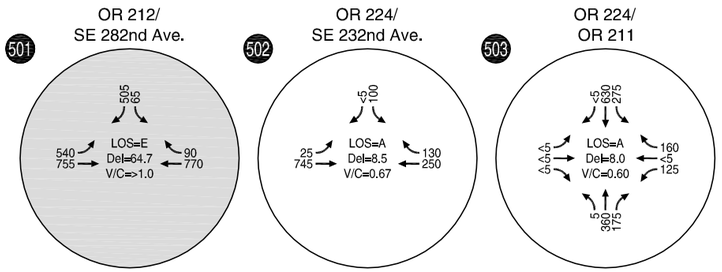
LOS	=	INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del	=	INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C	=	CRITICAL VOLUME-TO-CAPACITY RATIO
STD	=	OPERATIONAL STANDARD
AWSC	=	ALL-WAY STOP CONTROL

Tier 1 Scenario
Intersection Operations
Southwest County

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

Figure
S 34



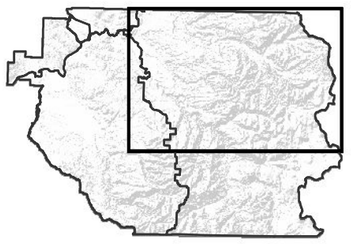
CM	=	CRITICAL MOVEMENT (UNSIGNALIZED)
LOS	=	INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del	=	INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C	=	CRITICAL VOLUME-TO-CAPACITY RATIO
STD	=	OPERATIONAL STANDARD
AWSC	=	ALL-WAY STOP CONTROL

Tier 1 Scenario
Intersection Operations
East County

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

Figure
E 5

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN *Update*

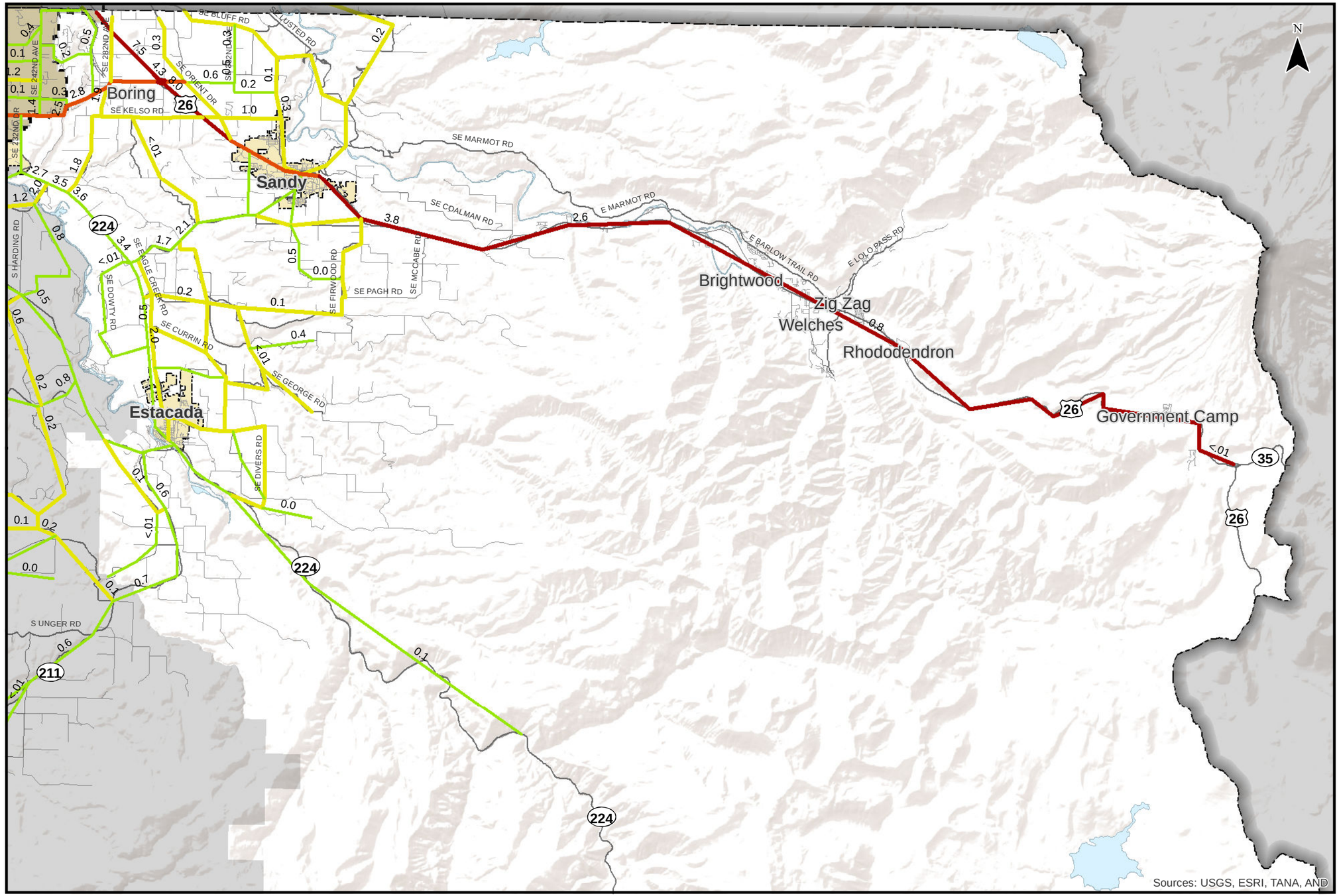


2035 Tier 1 Scenario Volumes

- Freeway
- Principal / Major Arterial
- Minor Arterial
- Other

#.# PM Weekday Traffic Volume in Thousands

- Incorporated Areas
- County Boundary
- UGB



0 1 2 3 4 5 Miles

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

Evening Weekday Peak Hour Link Volumes 2035 Tier 1 Scenario
East County - Northern Portion

Figure
EN T1

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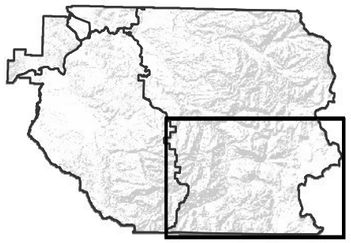
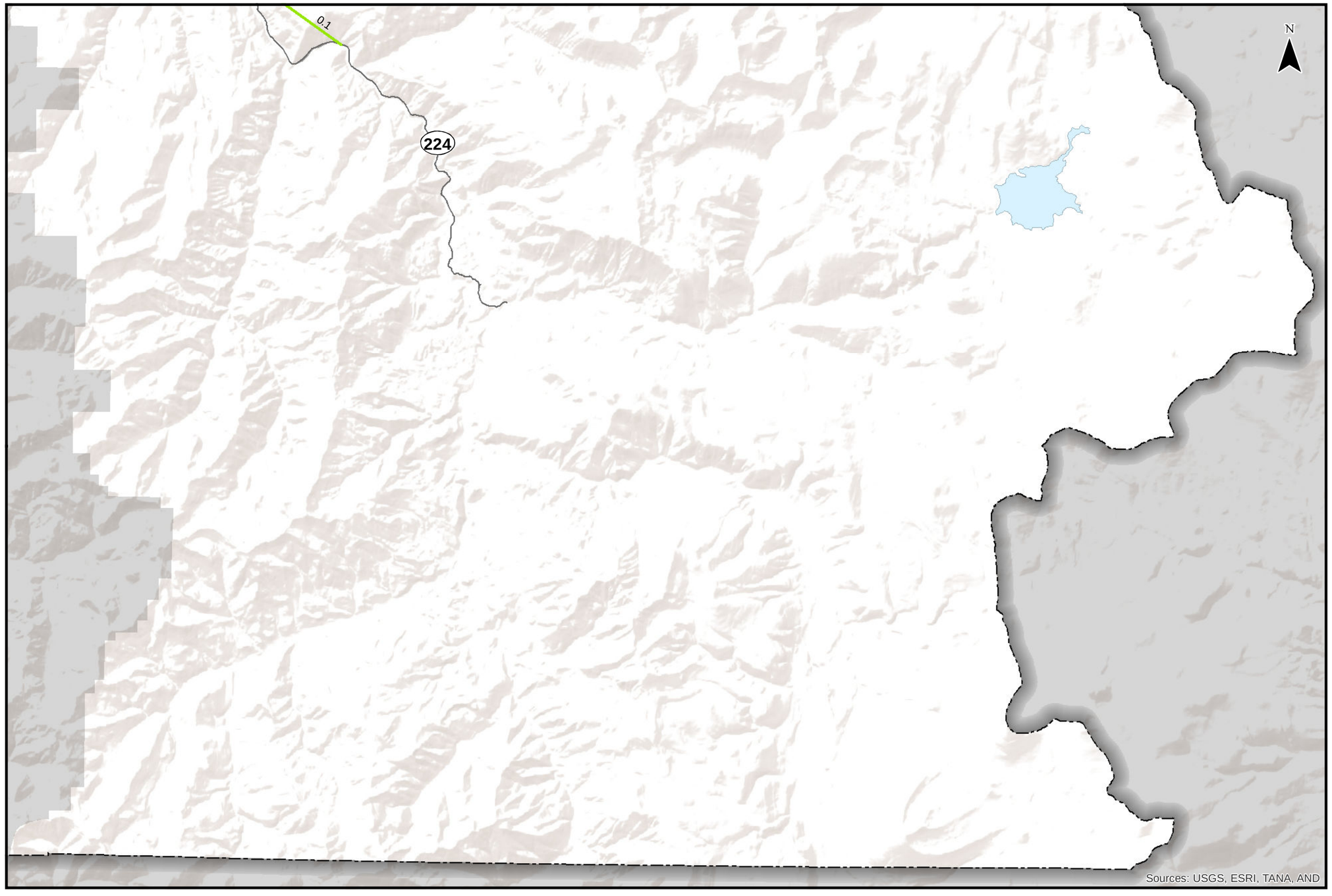
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update



2035 Tier 1 Scenario Volumes

- Freeway
- Principal / Major Arterial
- Minor Arterial
- Other
- #.# PM Weekday Traffic Volume in Thousands
- Incorporated Areas
- County Boundary
- UGB



0 1 2 3 4 Miles

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Cambridge Systematics, Clackamas County,
Metro Data Resouce Center

Evening Weekday Peak Hour Link Volumes 2035 Tier 1 Scenario
East County - Southern Portion

Figure
ES T1

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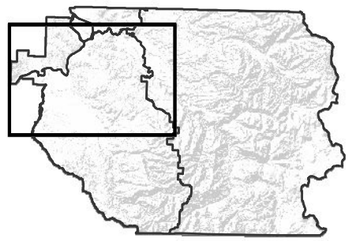
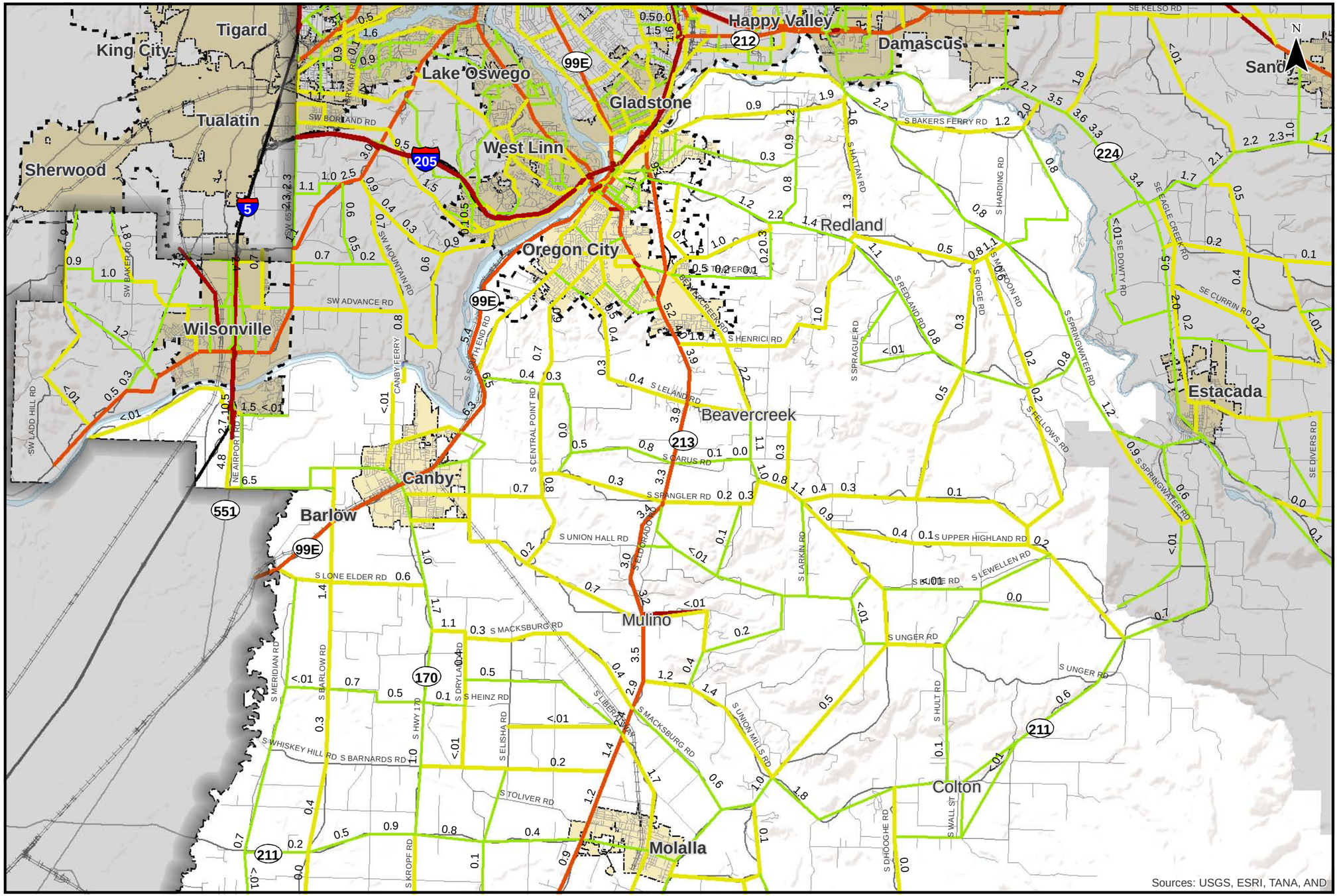
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update



2035 Tier 1 Scenario Volumes

- Freeway
- Principal / Major Arterial
- Minor Arterial
- Other
- #.# PM Weekday Traffic Volume in Thousands
- Incorporated Areas
- County Boundary
- UGB



0 1 2 3 4 Miles

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

Evening Weekday Peak Hour Link Volumes 2035 Tier 1 Scenario
Southwest County - Northern Portion

Figure
SN T1

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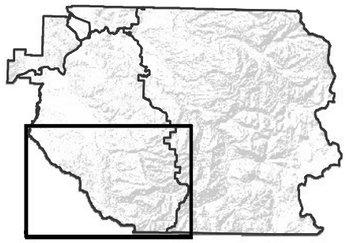
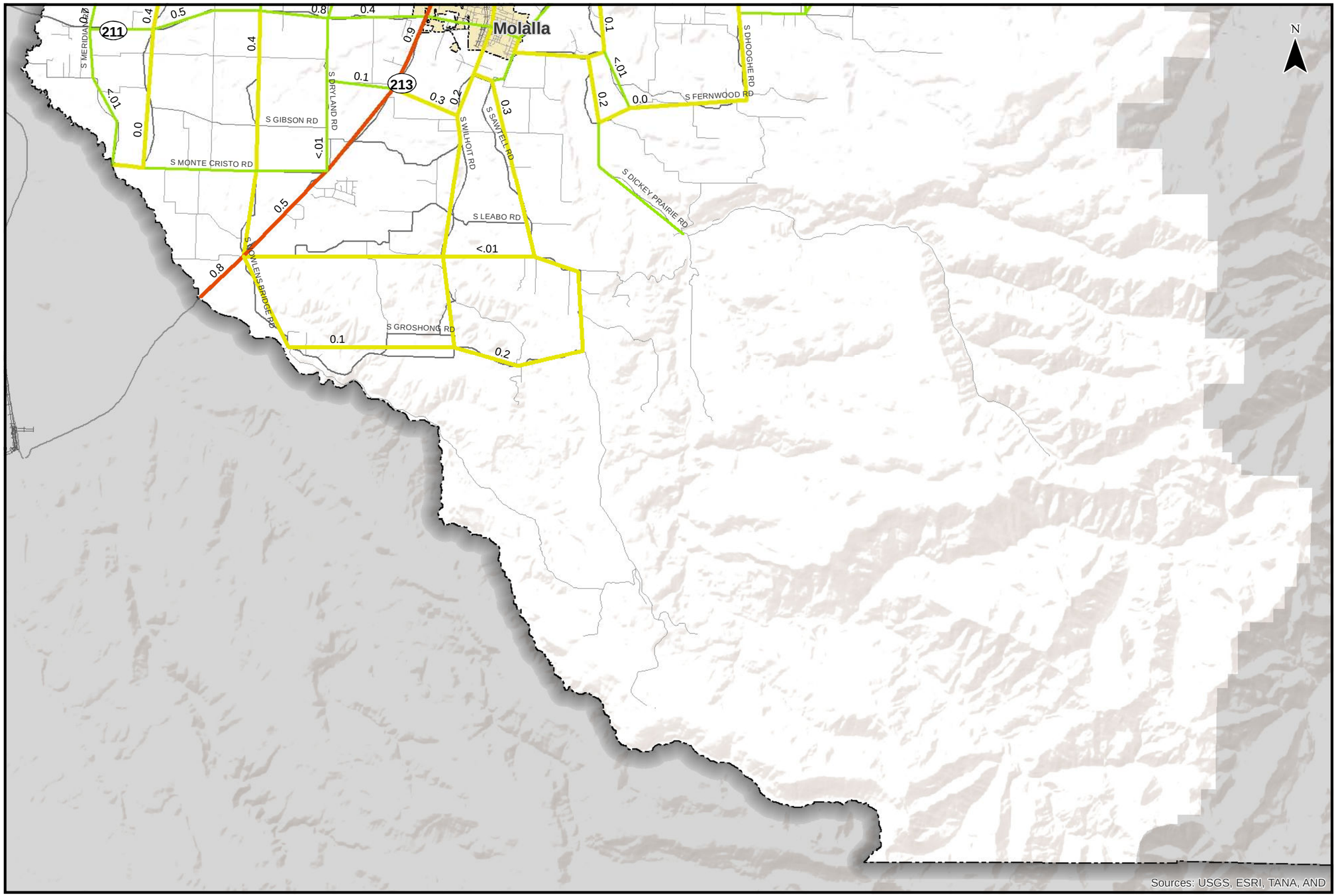
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN *Update*



2035 Tier 1 Scenario Volumes

- Freeway
- Principal / Major Arterial
- Minor Arterial
- Other
- #.# PM Weekday Traffic Volume in Thousands
- Incorporated Areas
- County Boundary
- UGB



0 1 2 3 4 Miles

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

Evening Weekday Peak Hour Link Volumes 2035 Tier 1 Scenario
Southwest County - Southern Portion

Figure
SS T1

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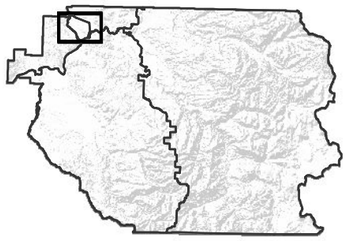
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

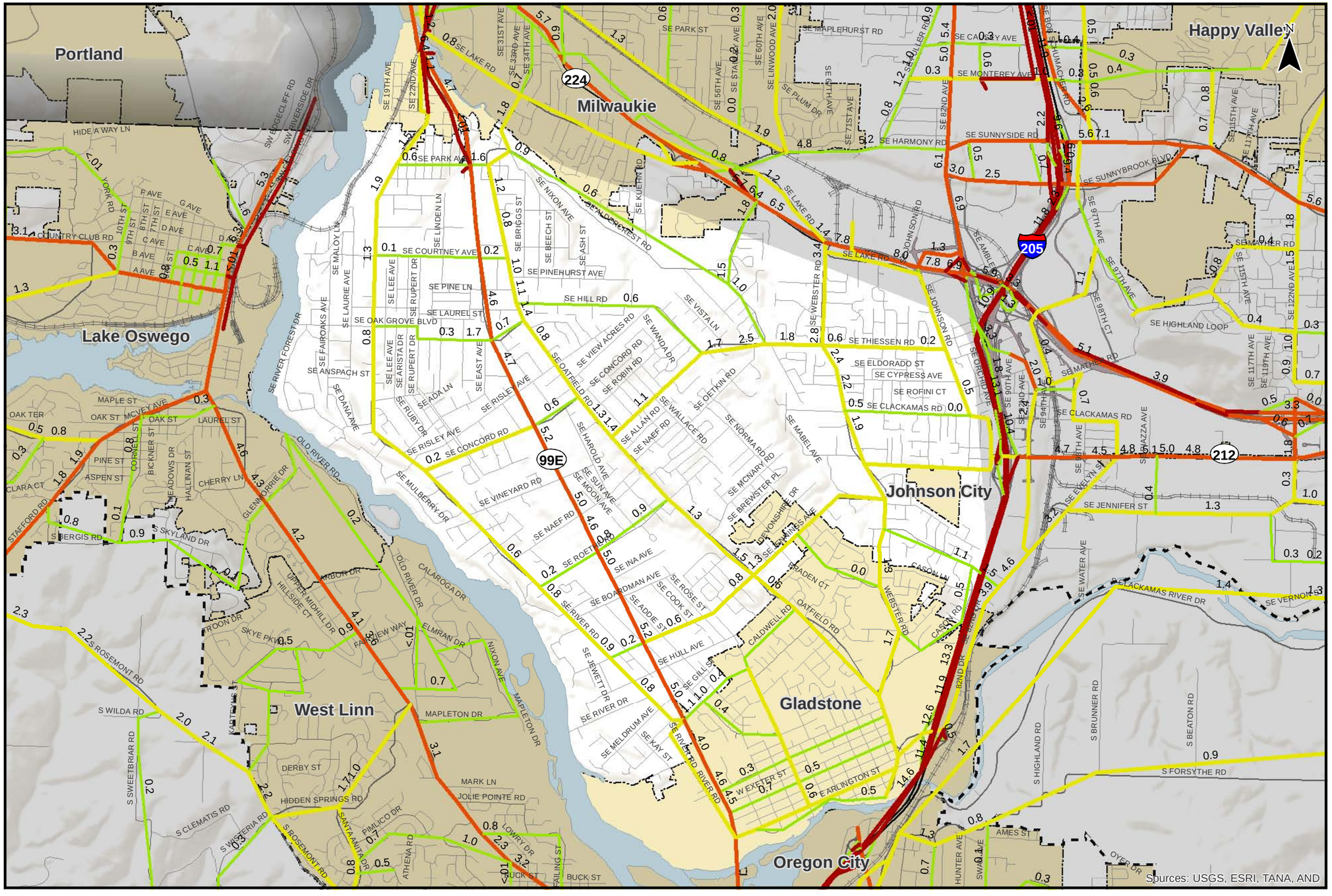


2035 Tier 1 Scenario Volumes

- Freeway
- Principal / Major Arterial
- Minor Arterial
- Other

#.# PM Weekday Traffic Volume in Thousands

- Incorporated Areas
- County Boundary
- UGB



0 1 Miles

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

Evening Weekday Peak Hour Link Volumes 2035 Tier 1 Scenario
Greater McLoughlin Area

Figure
M T1

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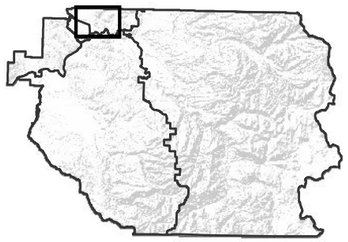
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update

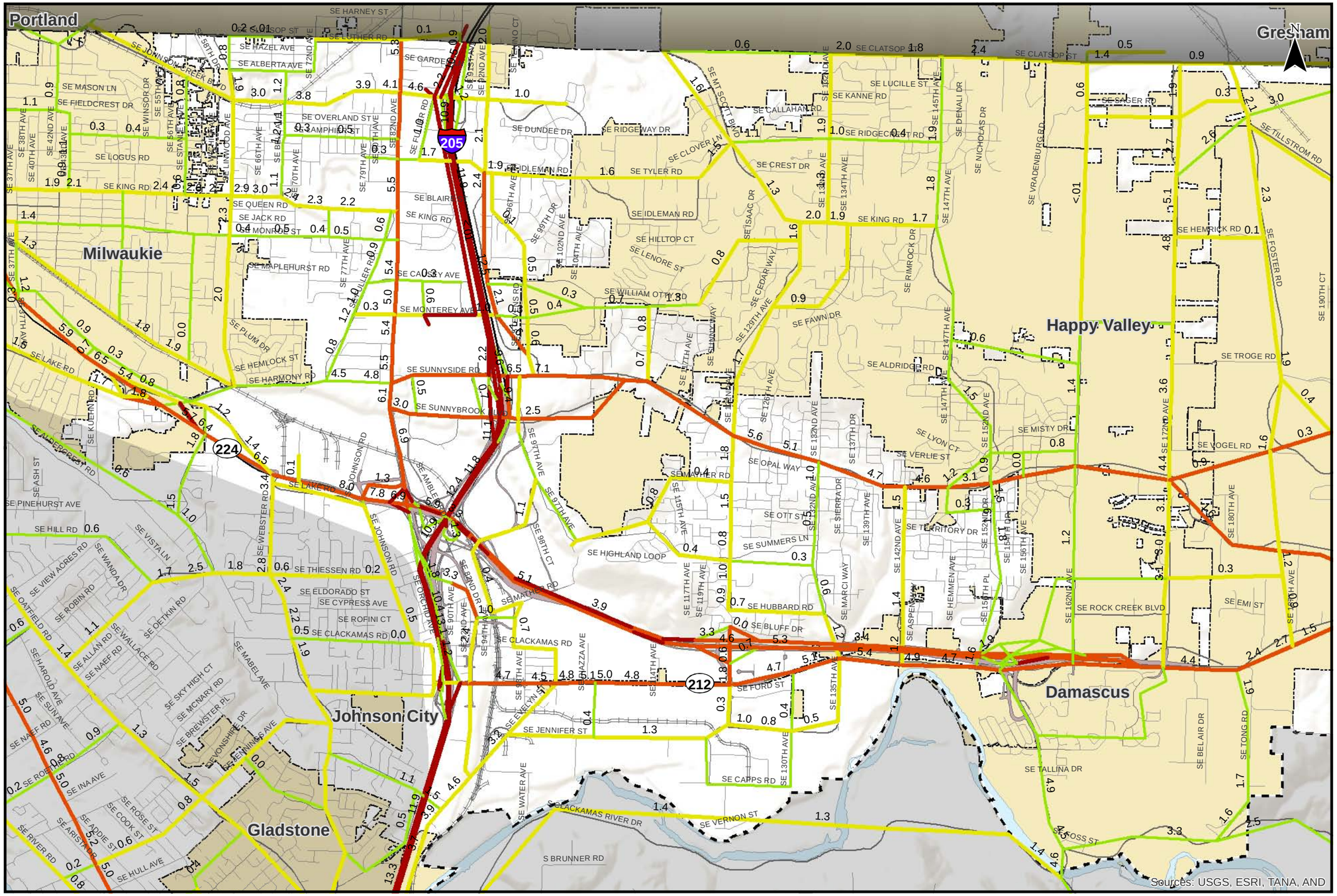


2035 Tier 1 Scenario Volumes

- Freeway
- Principal / Major Arterial
- Minor Arterial
- Other

#.# PM Weekday Traffic Volume in Thousands

- Incorporated Areas
- County Boundary
- UGB



0 1 Miles

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

Evening Weekday Peak Hour Link Volumes 2035 Tier 1 Scenario
Greater Clackamas Regional Center / Industrial Area

Figure
C T1

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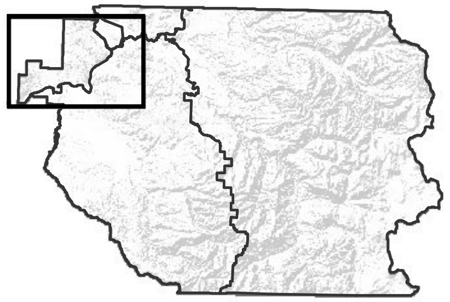
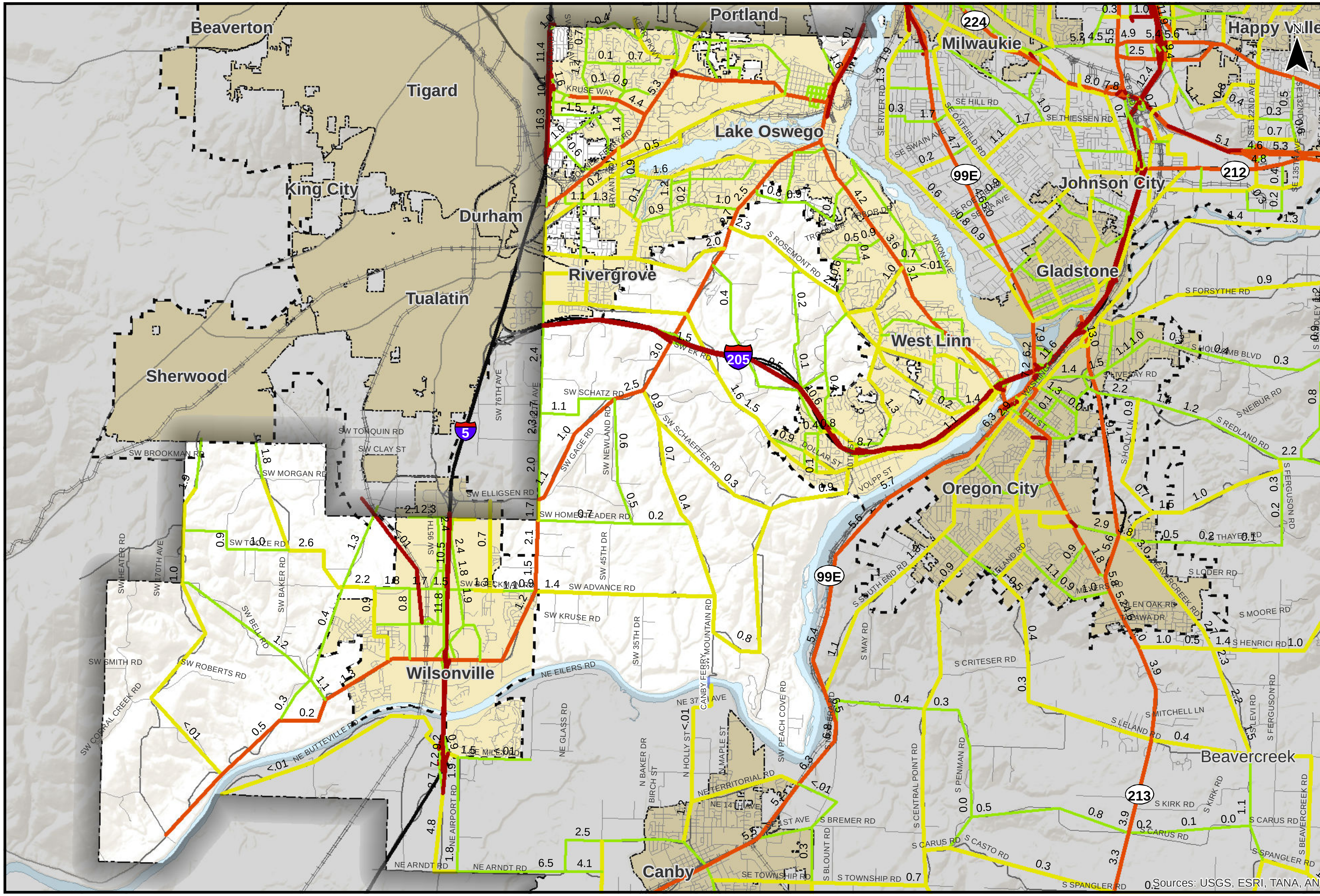
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN *Update*



2035 Tier 1 Scenario Volumes

- Freeway
- Principal / Major Arterial
- Minor Arterial
- Other
- #.# PM Weekday Traffic Volume in Thousands
- Incorporated Areas
- County Boundary
- UGB



0 1 2 Miles

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

Evening Weekday Peak Hour Link Volumes 2035 Tier 1 Scenario Northwest County

Figure
NW T1

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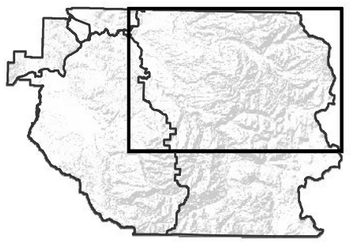
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update



Very Congested >1.10
- 1,000 Vehicles
- 5,000 Vehicles
- 10,000 Vehicles

Congested 1.0 - 1.1
- 1,000 Vehicles
- 5,000 Vehicles
- 10,000 Vehicles

Some congestion 0.9 - 1.0
- 1,000 Vehicles
- 5,000 Vehicles
- 10,000 Vehicles

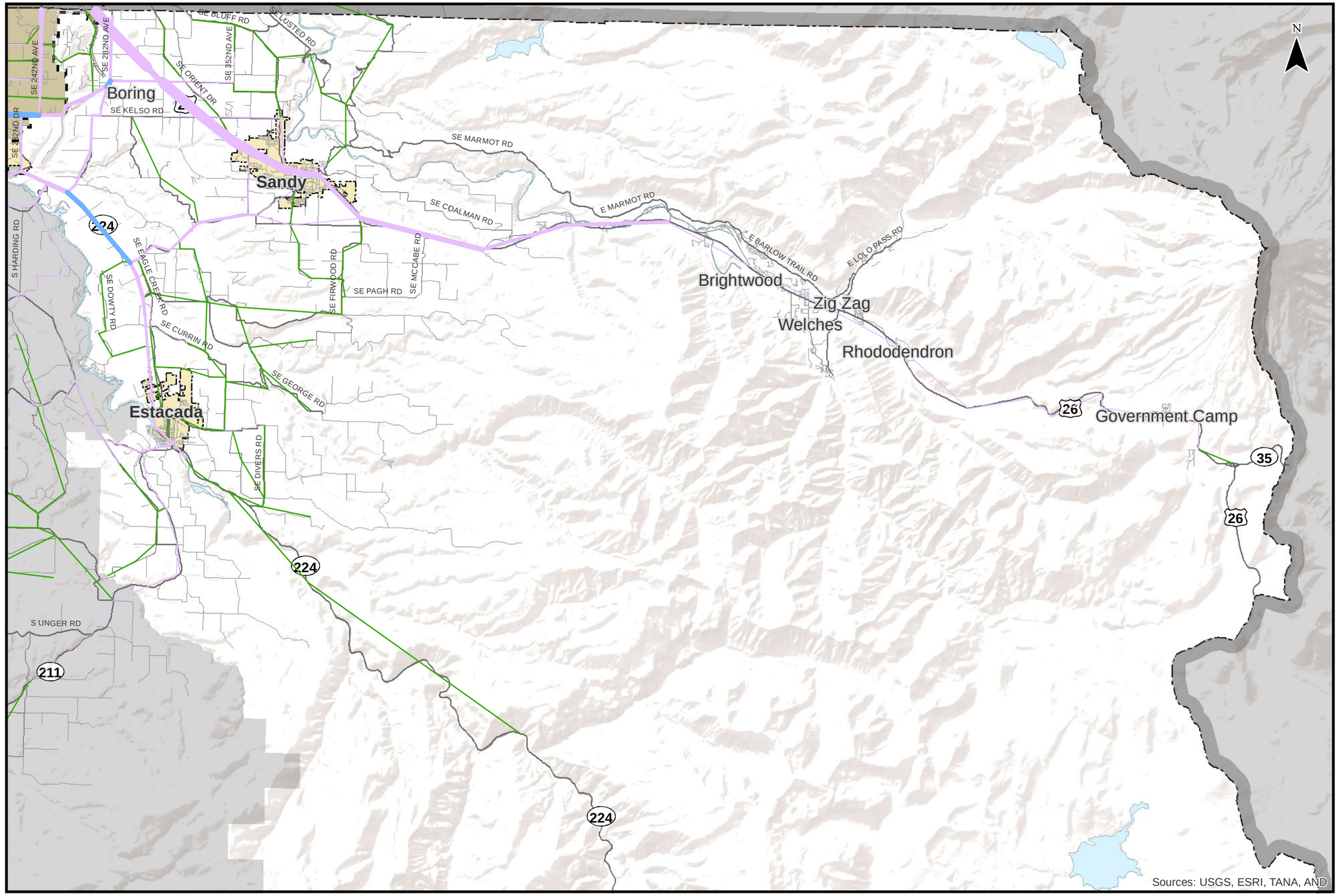
Nearing Congested 0.8 - 0.9
- 1,000 Vehicles
- 5,000 Vehicles
- 10,000 Vehicles

Less Congested <0.8
- 100 Vehicles
- 1,000 Vehicles
- 10,000 Vehicles

- Incorporated Areas
- County Boundary
- UGB

0 1 2 3 4 5 Miles

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



Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1 Scenario
East County - Northern Portion

Figure
EN T1-B

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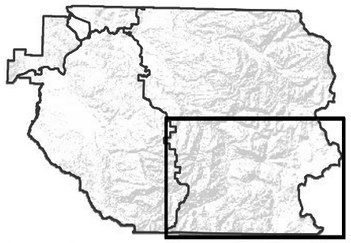
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update



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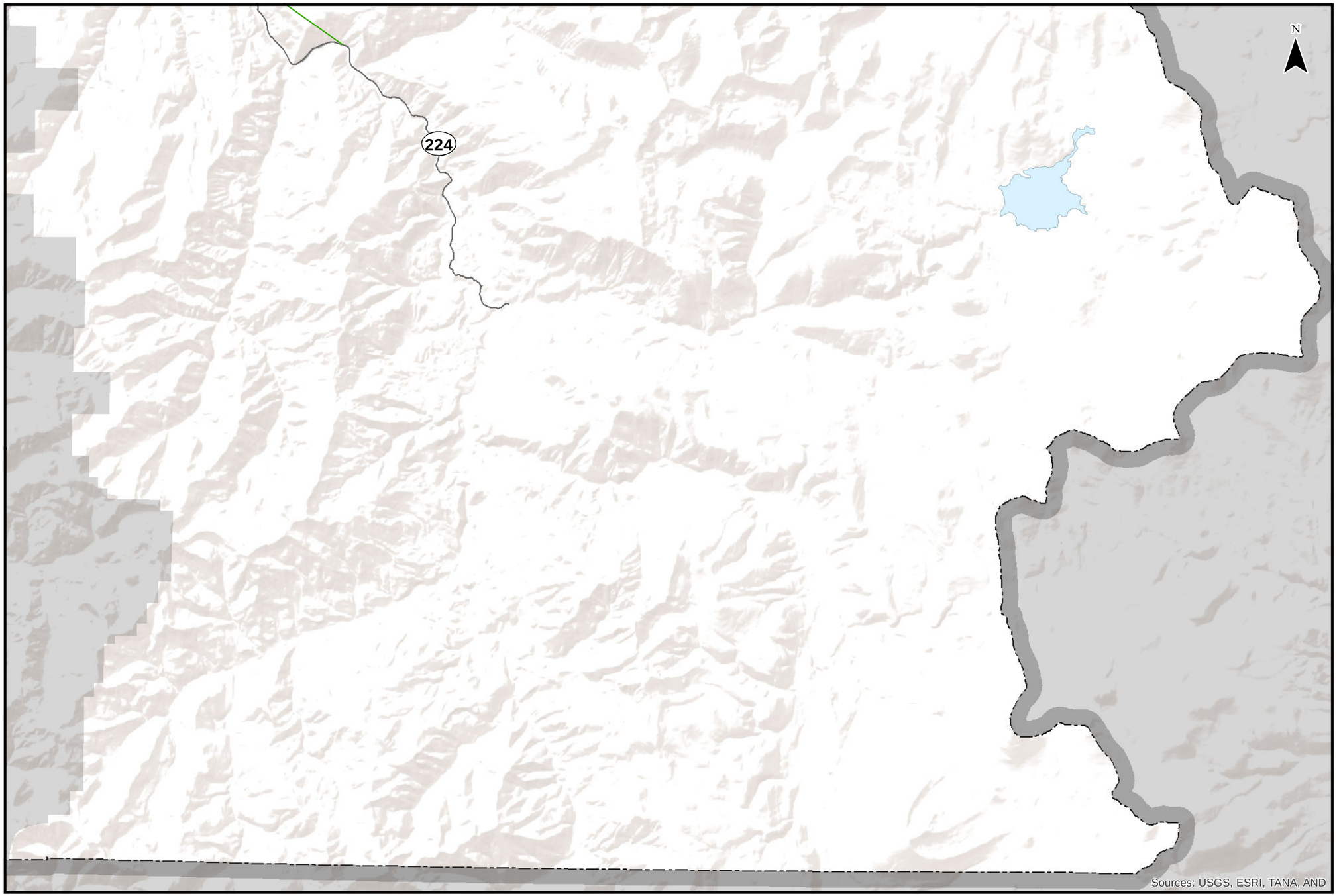
- Incorporated Areas
- County Boundary
- UGB

0 1 2 3 4 Miles

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

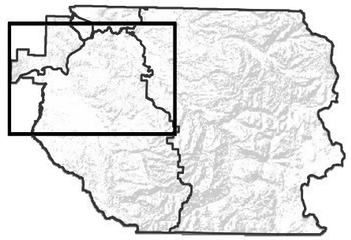


Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1 Scenario
East County - Southern Portion

Figure
ES T1-B

H:\proj\file\11732 - Clackamas County TSP\Task_12_Prioritization\Master List\Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1Scenario.mxd

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update



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- Incorporated Areas
- County Boundary
- UGB

0 1 2 3 4 Miles

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

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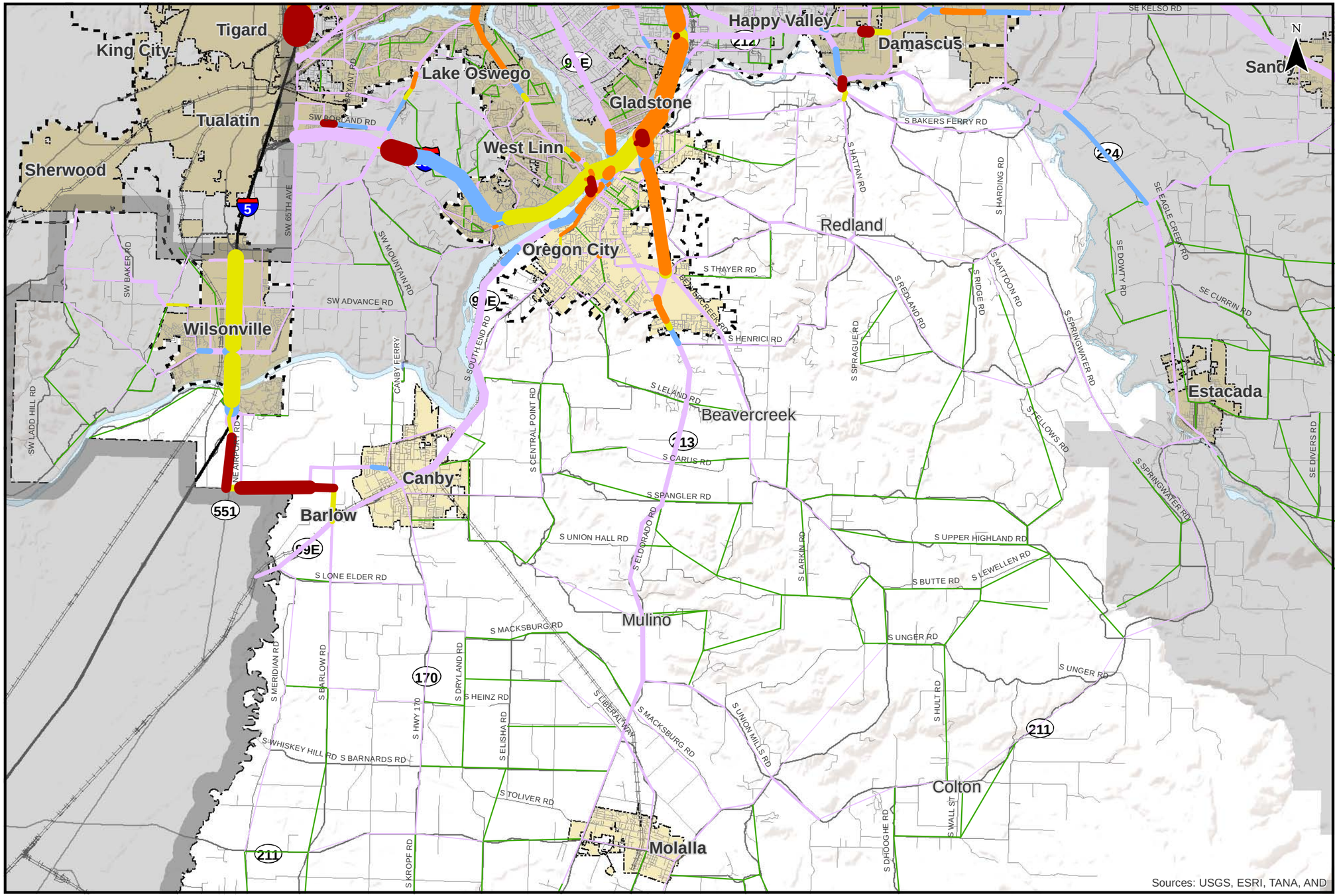
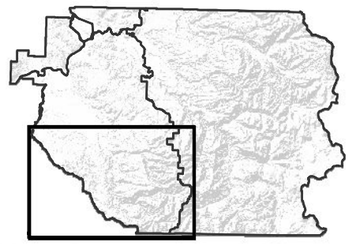


Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1 Scenario
Southwest County - Northern Portion

Figure
SN T1-B

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN *Update*



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- Incorporated Areas
- County Boundary
- UGB

0 1 2 3 4 Miles

Coordinate System:
NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl
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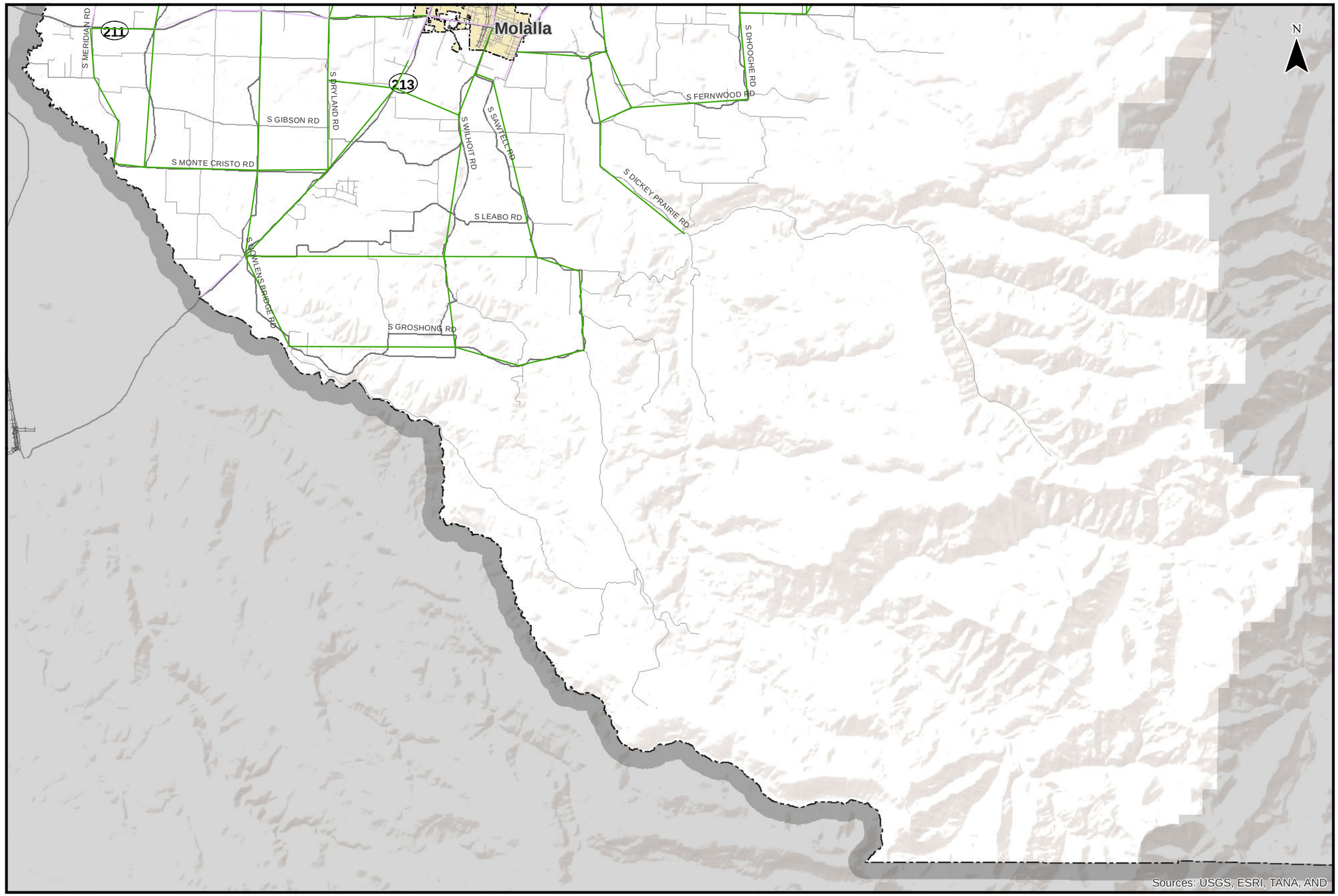

Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1 Scenario
Southwest County - Southern Portion

Figure
SS T1-B

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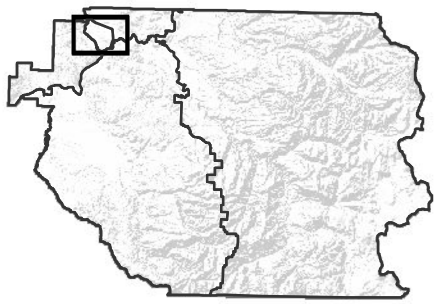
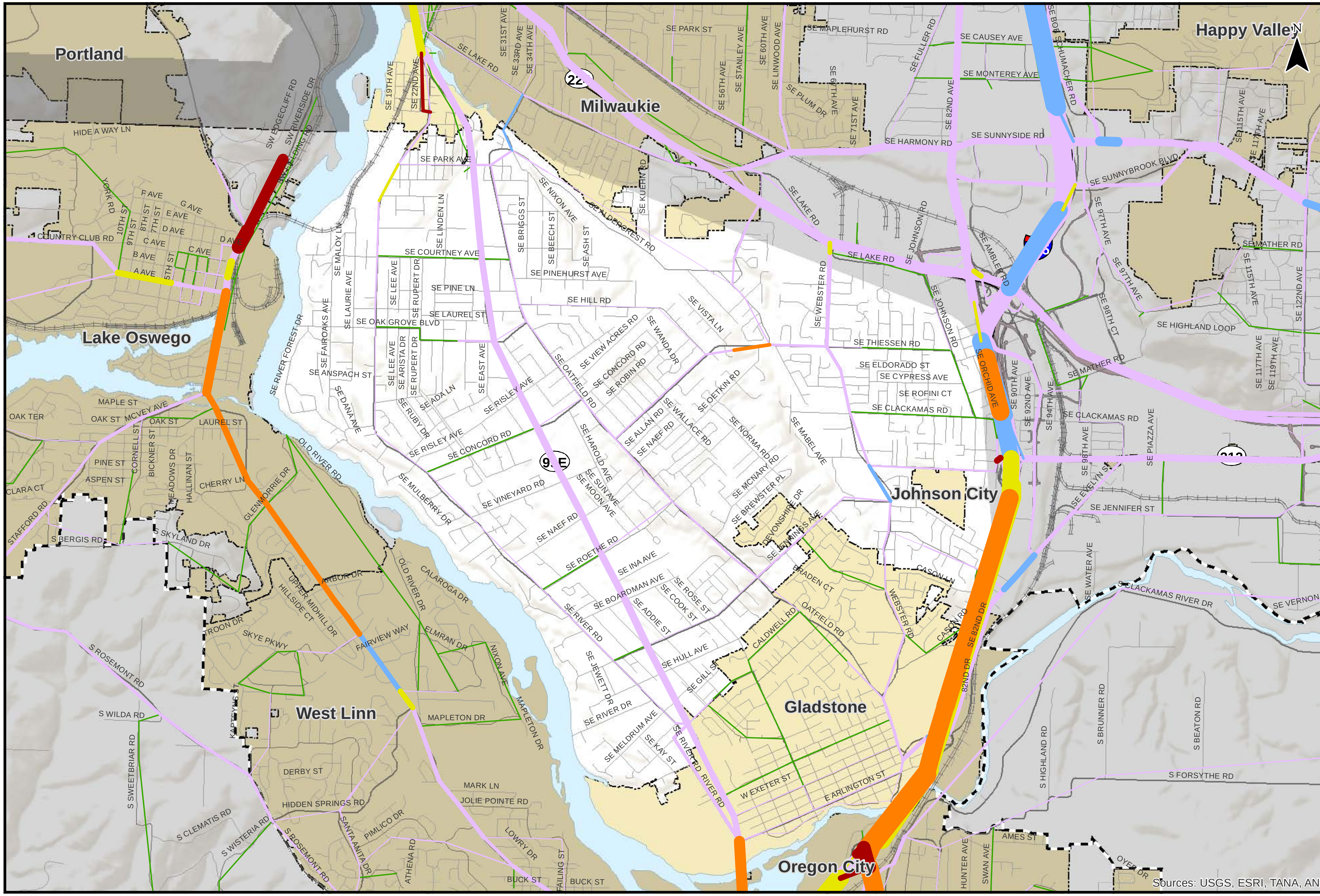
CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN *Update*





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Less Congested <0.8
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- 1,000 Vehicles
- 10,000 Vehicles

Incorporated Areas
County Boundary
UGB

0 1 Miles

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

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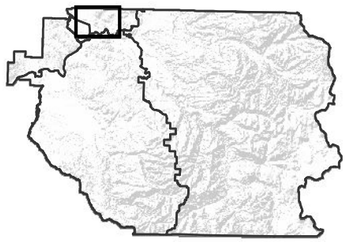
Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1 Scenario
Greater McLoughlin Area

Figure
M T1-B

CLACKAMAS COUNTY
TRANSPORTATION SYSTEM PLAN *Update*



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100 Vehicles
1,000 Vehicles
10,000 Vehicles

Incorporated Areas
County Boundary
UGB

0 1 Miles

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

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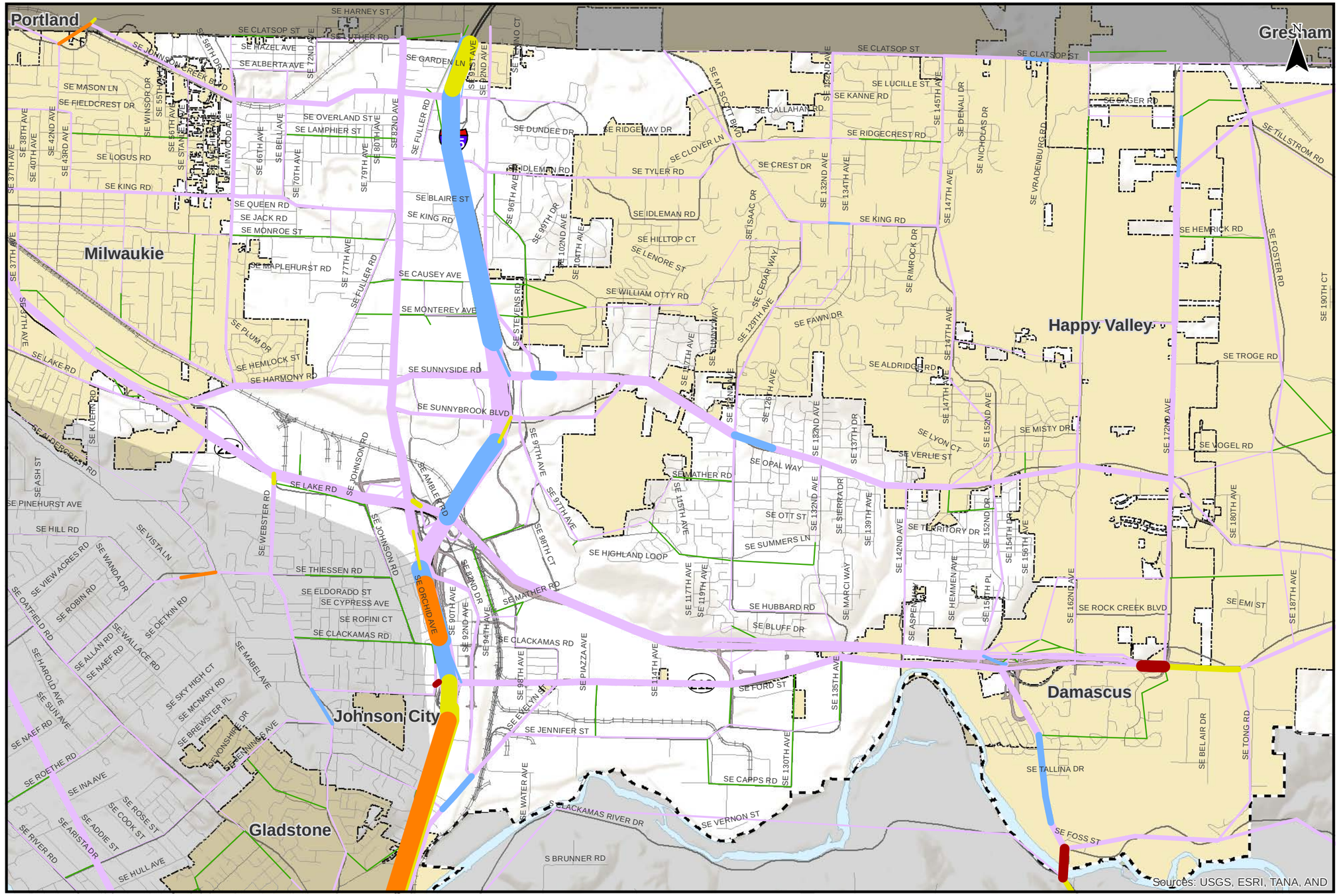
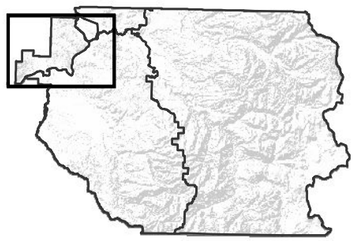


Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1 Scenario
Greater Clackamas Regional Center / Industrial Area

Figure
C T1-B

CLACKAMAS COUNTY TRANSPORTATION SYSTEM PLAN Update



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- Incorporated Areas
- County Boundary
- UGB

0 1 2 Miles

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

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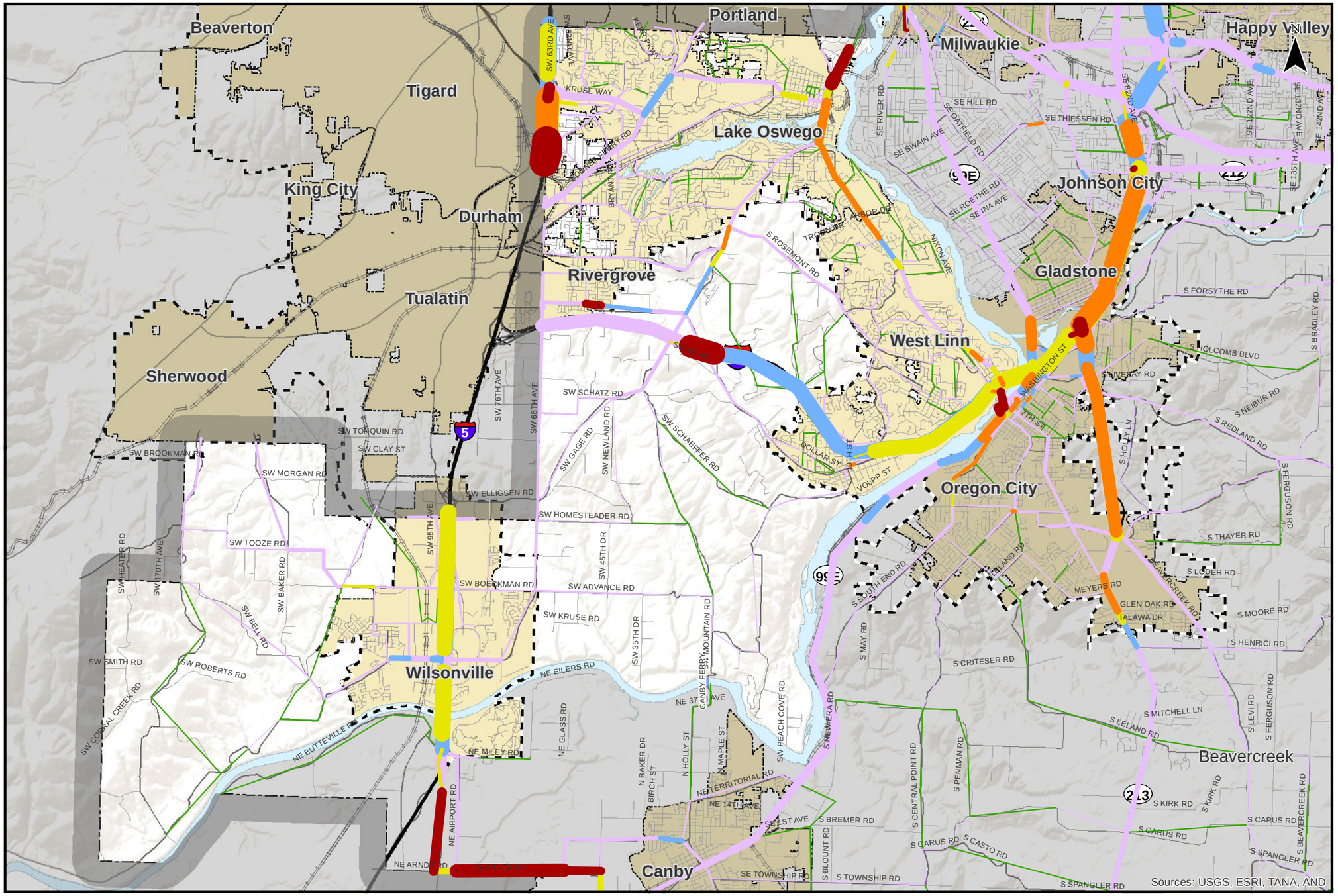


Evening Weekday Peak Hour Roadway Segment Congestion 2035 Tier 1 Scenario Northwest County

Figure
NW T1-B

Methodology for Identifying Projects to Comply with the RTFP

The following describes two analyses performed to identify transportation projects that may be necessary to include in the Clackamas County TSP to comply with the Regional Transportation Functional Plan (RTFP). The two RTFP requirements evaluated include:

- Arterial and Collector Spacing
- Local Street Network for Vacant Land

ARTERIAL AND COLLECTOR SPACING

To comply with the RTFP, local jurisdictions must "include, to the extent practicable, a network of major arterial streets at one-mile spacing and minor arterials or collectors at half-mile spacing" (Reference 1). The analysis must take into consideration barriers, including topography, existing development, and environmental protection. In addition, all analysis is limited to areas within the Urban Growth and Urban Reserve Boundaries and outside city limits.

The existing roadway functional classifications were analyzed in order to identify potential roadway projects necessary to meet the requirements for arterial and collector spacing. The spacing between major arterials, expressways, and freeways was measured to determine gaps greater than one mile. The same method was used to analyze spacing between minor arterials, collectors, and connectors and determine gaps greater than one-half mile. The maps showing roadway projects to fill gaps and deficiencies in the desired roadway spacing are color coded on the attached maps and listed in the attached spreadsheet (see Appendix 1). Gaps are areas where no roadway currently exists to fulfill the desired roadway spacing. Deficiencies are areas where there is currently a roadway but that is not classified as a major arterial or above and is necessary to meet the spacing requirement.

Upon identifying gaps and deficiencies, and documenting them on the maps, the identified transportation projects were cross referenced with planned projects to determine any overlap. Some roadway projects identified through this effort have already been identified by previously planned projects. In addition, the roadway projects were also cross referenced with the Metro RTP Mobility Corridors gaps assessments. The necessity for some identified roadway projects was confirmed by the 2035 RTP Mobility Corridors arterial gaps analysis.

LOCAL STREET NETWORK FOR VACANT LAND

To comply with the RTFP, local jurisdictions must "include a conceptual map of new streets for all contiguous areas of vacant or re-developable lots and parcels of five or more acres that are zoned to allow residential or mixed-use development" (Reference 1). All analysis is limited to areas within the Urban Growth and Urban Reserve Boundaries and outside city limits.

To help the County comply with this requirement, a GIS layer was created to show vacant and re-developable land within the UGB and Urban Reserve that is currently zoned as residential or mixed use (Vacant Parcels MU & R). This layer was then overlaid on the existing street network with respective functional classifications. Then, contiguous parcels and parcels greater than five acres were identified to determine whether those lacked an existing local street network. If so, a conceptual street network was identified. The roadway projects are labeled on the attached maps and listed in the attached spreadsheet (see Appendix 2).

REFERENCES

1. Metro. Regional Transportation Functional Plan. 2010
2. Metro. *2035 RTP*. 2010.

Appendix 1

Appendix 2

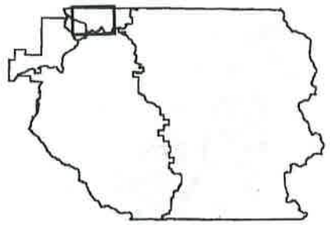
Arterial and Collector Spacing

New Proposed Project

Legend
○ Does not support goal.
◐ Somewhat supports goal.
● Definitely supports goal.

Label	Geographical Area	Street/Location	Segment	Planned Project?	Planned Project Description	New Project Description	Road Standards	Vehicle Capacity	Operations	Connectivity	Preservation	Pedestrian	Bike	Safety	Transit	Study	Other	Addressed a Deficiency?	Addresses a Gap?	TSP Goal Assessment of Project						Confirmed by Mobility Corridors Gap Analysis?	Notes	Action
																				Goal 1: Sustainable	Goal 2: Local Businesses and Jobs	Goal 3: Liveable and Local	Goal 4: Safety and Health	Goal 5: Equity	Goal 6: Fiscally Responsible			
A100	C	SE Linwood Ave.		NA	NA	Upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No							Yes	Existing development	
A101	C	Johnson Creek Blvd.		U074	Widening, and add bike and ped	Upgrade classification	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	No	Yes	No							No	Existing development	
A102	C	SE King Rd.		U092	Fuller & King intersection - disconnect auto access from Fuller to King	Upgrade classification	No	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No							No	Existing development	
A103	C	Sunrise Expressway		U019	New highway		No	No	No	Yes	No	No	No	No	No	No	No	No	No							Yes	Existing development	
A104	C	SE 122nd		U057	Widening to Hubbard (no project past Hubbard)	Upgrade classification	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes	No							No	Existing development	
A105	C	SE 142nd Ave.		U135	Widening	Upgrade classification	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes	No							No	Existing development	
A106	C	SE 79th Ave.		U066/ U076	Construct new N/S collector		No	No	No	Yes	No	Yes	Yes	No	No	Yes	No	No	No							Yes	Existing development	
A107	C	SE Monterey Ave.		U100	Construct new 2-lane extension		No	No	No	Yes	No	Yes	Yes	No	No	Yes	No	No	No							No	Existing development	
A108	C	Sunybrook Blvd		U001	Extend as minor arterial		No	No	No	Yes	No	Yes	Yes	No	No	Yes	No	No	No							No	Existing development	
A109	C	Mathers Rd		U132	New 2-lane extension		No	No	No	Yes	No	Yes	Yes	No	No	Yes	No	No	No							Yes	Existing development	
A110	C			NA	NA	Extension and upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	Yes							Yes	Topography	
A200	NW	SW Childs Rd		U462	Reconstruct and widen - 2/3 lanes	Upgrade classification	No	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No	Yes							Yes		
A201	NW	S Rosemont Rd		U173, U174	Reconstruct and widen (3 lanes); realign intersection, add turn lanes	Upgrade classification	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	No							Yes	Topography	
A202	NW	S Sweetbriar		NA	NA	Upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No							Yes	Topography	
A203	NW			NA	NA	Build connector	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No							Yes	Topography	
A204	NW			NA	NA	Build connector	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No							Yes	Topography	
A205	NW			NA	NA	Build connector	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No							Yes	Topography	
A206	NW			NA	NA	Extension and upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	Yes							Yes	Topography	
A207	NW			NA	NA	Upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No							No	Existing development	
A300	M	SE River Rd		NA	NA	Upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No							No	Existing development	
A301	M	SE Concord Rd		U140	Reconstruct and widen (urban) (3 lanes)	Upgrade classification	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes	No							Yes	Existing development	
A302	M	SE Thiessen Rd		NA	NA	Upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No							Yes	Existing development	
A303	M	Se Jennings Ave		U149	Reconstruct and widen (3 lanes)	Upgrade classification	Yes	Yes	No	No	No	Yes	Yes	No	No	Yes	No	Yes	No							No	Existing development	
A304	M	SE Webster Rd		U150	Widen to 3 lanes and conduct OR 224 corridor study	Upgrade classification	Yes	Yes	No	No	No	Yes	Yes	No	No	Yes	No	Yes	No							Yes	Existing development	
A305	M			NA	NA	Extension and upgrade classification	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	Yes							Yes	Topography	
A306	M	SE Rusk Rd		NA	NA	Extension	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes							Yes	Existing development	
A307	M	SE Clackamas Rd		NA	NA	Extension	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes									

CLACKAMAS COUNTY Update
TRANSPORTATION SYSTEM PLAN



Functional Classifications

- Freeway
- Expressway
- Major Arterial
- Minor Arterial
- Collector
- Connector
- Local
- Forest Service Paved
- Forest Aggregate Road
- General dirt, road or trail
- Other
- Railroads
- Ferry
- Incorporated Areas
- County Boundary
- UGB
- Proposed Project (major arterial)
- Proposed Project (minor arterial)
- Mobility Corridors identified gaps

0 1 Miles

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

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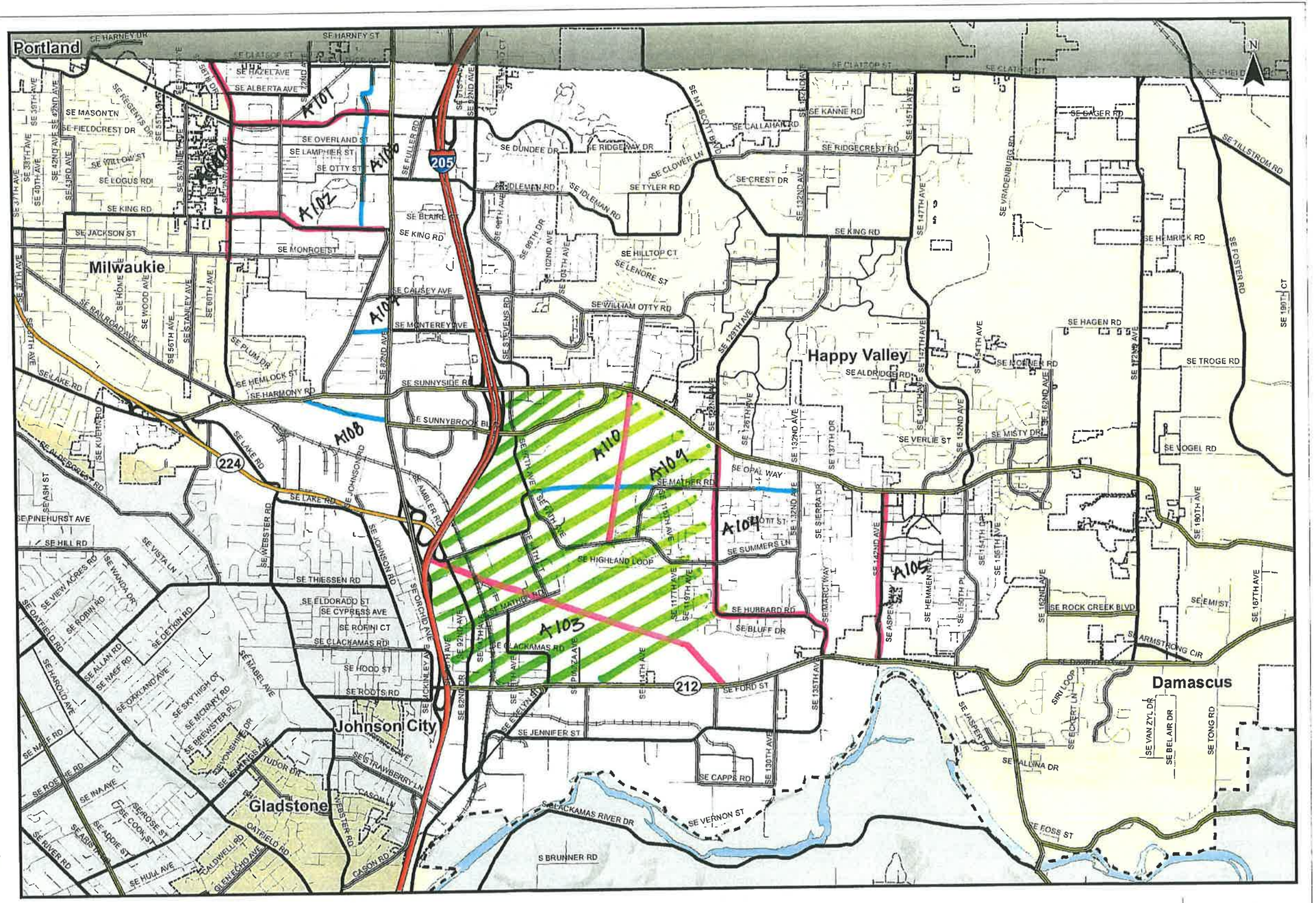
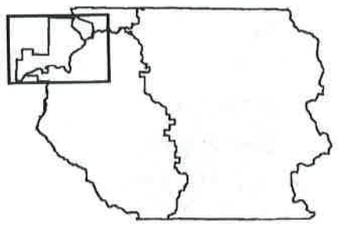


Roadway Functional Classifications
Greater Clackamas Regional Center / Industrial Area

Figure
C 10

CLACKAMAS COUNTY *Update*
TRANSPORTATION SYSTEM PLAN



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- County Boundary
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- Proposed Project (major arterial)
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0 1 2 Miles

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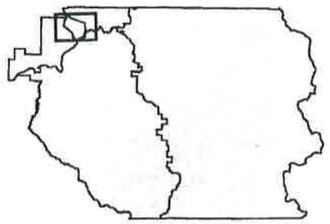
Roadway Functional Classifications
Northwest County

Figure
NW 10

CLACKAMAS COUNTY Update
TRANSPORTATION SYSTEM PLAN



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- proposed project (major arterial)
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0 1 Miles

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

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Roadway Functional Classifications
Greater McLoughlin Area

Figure
M 10

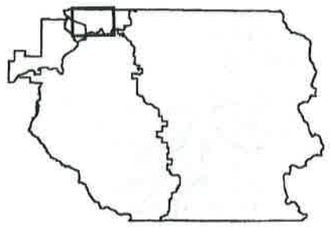
Local Street Network for Vacant Land

New Proposed Project

Legend
- ○ Does not support goal.
- ◐ Somewhat supports goal.
- ● Definitely supports goal.

																		TSP Goal Assessment of Project								
Label	Geographical Area	Street/Location	Segment	Planned Project?	Planned Project Description	New Project Description	Road Standards	Vehicle Capacity	Operations	Connectivity	Preservation	Pedestrian	Bike	Safety	Transit	Study	Other	Addressed a Deficiency?	Addresses a Gap?	Goal 1: Sustainable	Goal 2: Local Businesses and Jobs	Goal 3: Liveable and Local	Goal 4: Safety and Health	Goal 5: Equity	Goal 6: Fiscally Responsible	Confirmed by Mobility Corridors Gap Analysis?	Notes	Action
V101	C			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes									
V102	C			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes									
V103	C			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes									
V104	C			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes									
V105	C			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes									
V200	NW			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes								Topography	
V201	NW			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes								Topography	
V202	NW			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes								Topography	
V203	NW			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes								Topography	
V204	NW			NA	NA	Provides connectivity for potential future residential/mixed use development	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes								Topography	

CLACKAMAS COUNTY Update
TRANSPORTATION SYSTEM PLAN



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0 1 Miles

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

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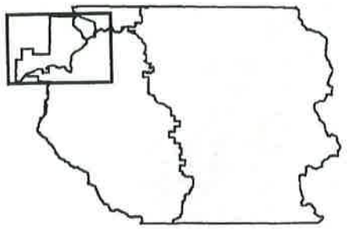
Vacant Parcels (MU & R) - Connectivity Analysis
Greater Clackamas Regional Center / Industrial Area

Figure
C

CLACKAMAS COUNTY Update
TRANSPORTATION SYSTEM PLAN



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- Vacant Parcels (MU & R)
- Proposed Project

0 1 2 Miles

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Data Source
Clackamas County Metro Data Resouce Center

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Vacant Parcels (MU & R) - Connectivity Analysis
Northwest County

Figure
NW

CAMBRIDGE SYSTEMATICS
Transportation leadership you can trust.

Memorandum

TO: Susan Wright, Kittelson & Associates

FROM: Jamey Dempster, Sean McAtee, Beth Wemple

DATE: July 18, 2012

RE: Clackamas County TSP - Preliminary list of collector roadways for possible roadway classification change

---

This memorandum presents a preliminary review of roadway corridors with the Clackamas County functional classification of "collector." It identifies corridors where peak hour volumes indicate a higher-level "minor arterial" roadway classification may be appropriate. Kittelson & Associates requested preliminary identification of these roadways in conjunction with general review of roadway designations being conducted as part of the County's Transportation Systems Plan update.

The analysis was conducted using directional PM peak hour[1] roadway vehicle volumes from the Future Low Build modeling scenario. Two thresholds were used to identify collector roadways that were near or above recommended volumes for this roadway classification. The thresholds are:

- 450 to 550 vehicles per hour per lane: nearing recommended capacity; and
- Over 550 vehicles per hour per lane: at or above recommended capacity.

These thresholds were derived from our experience working with travel demand models. Typically, roadways in the collector functional class have an upper limit capacity between 500 and 600 vehicles per hour per lane (VPHPL). This assumption is supported by roadway capacities used in the Clackamas County travel model, which set collector roadway capacity at 520 VPHPL. A critical characteristic in the consideration of collector road designation is the presence of residential driveways. Traffic volume between 450 and 550 VPHPL makes residential driveway access difficult. Without design changes, it is very difficult to have residential access onto roadways with traffic volumes exceeding 550 VPHPL. Furthermore, volumes above 550 VPHPL suggest that such facilities are functioning as arterial roadways, serving a significant amount of through traffic. Using these thresholds, CS identified collector corridors suggested for further review. Corridors identified for further review are listed below, with numeration corresponding to maps presented in Figures 1-3.

[1] The model output of PM 2-hour peak volumes were converted to PM 1-hour volumes using a factor of 0.52, as recommended by staff at Clackamas County.

555 12th Street, Suite 1600
Oakland, CA 94607
tel 510-873-8700 www.camsys.com **fax** 510-873-8701

Table 1 – Collector Roadways Identified for Further Research

ID	*Roadway*	*From*	*To*
Clackamas and Boring Area			
1	SE 222nd Avenue:	Highway 224	County boundary
2	SE 190th Drive	SE Tillstrom Road	SE Cheldelin Road
3	S Hagen Road / SE 162nd Ave	SE 172nd Avenue	SE Sunnyside Road
4	SE Idleman Road	92nd Avenue	SE Mt Scott Boulevard
5	SE Causey Avenue / SE William Otty Road	SE Stevens Road	SE 192nd Avenue
6	SE Tong Road	Highway 224	Highway 212
7	SE 32nd Avenue	SE Harvey Street	SE Tacoma Street / SE Johnson Creek Boulevard
Lake Oswego Area			
8	SE Terwilliger Boulevard	Riverside Drive/S State Street	County boundary
9	Carman Drive	I-5	Kruse Way
10	Westlake Drive/Fosberg Road	Kruse Way	SW Lesser Road
11	SW Jean Road	Lakeview Road	Bryant Road
12	Westview Drive	South Shore Boulevard	Royce Way
Wilsonville Area			
13	SW Grahams Ferry Road	SW Bell Road	Day Street
14	SW Bell Road	SW Wilsonville Road	County Boundary
15	SW 65th Avenue	SW Elligsen/SW Stafford Road	SW Borland Road

Figure 1 - Collector Roadways Identified for Further Research in the Clackamas Area

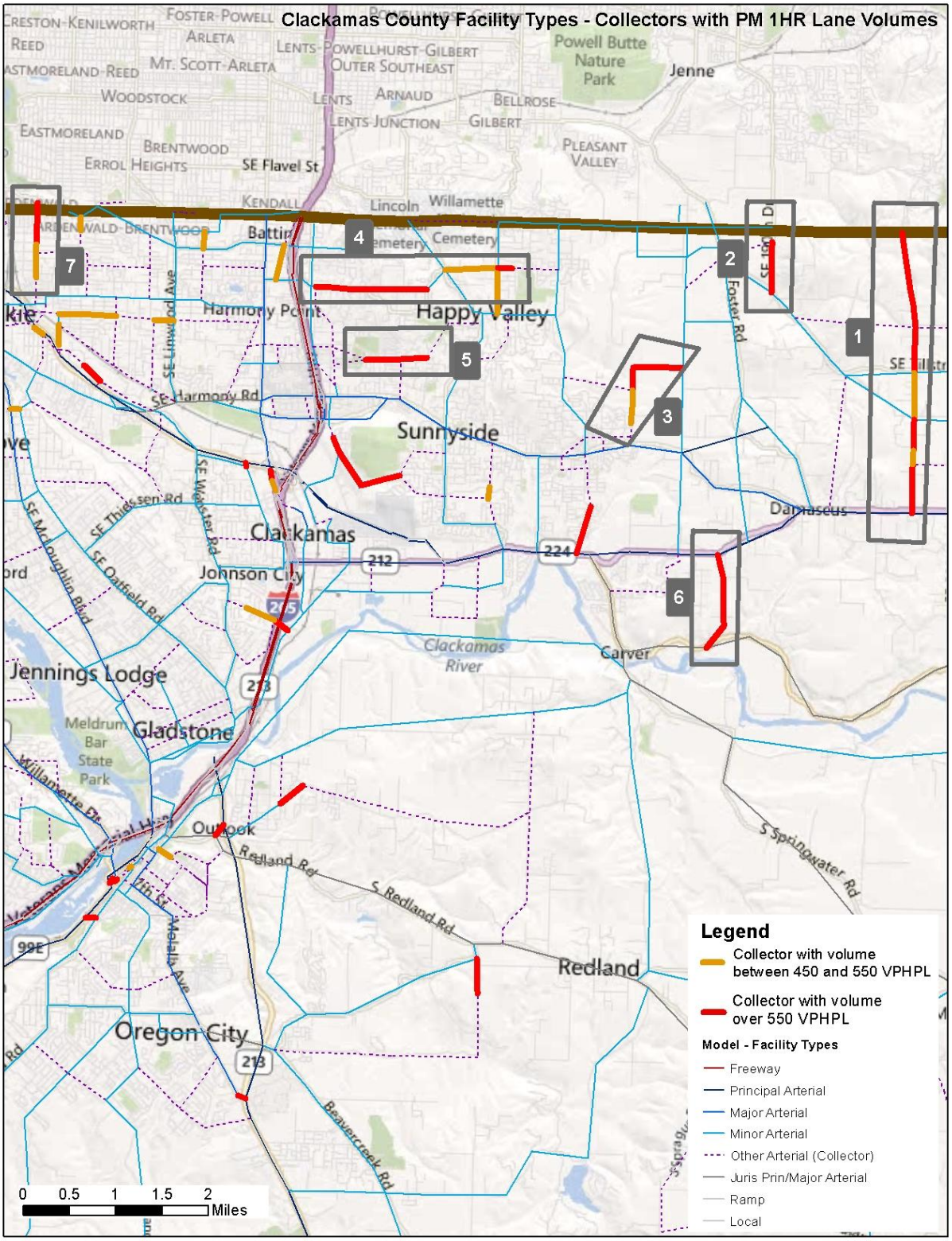


Figure 2 - Collector Roadways Identified for Further Research in the Lake Oswego Area

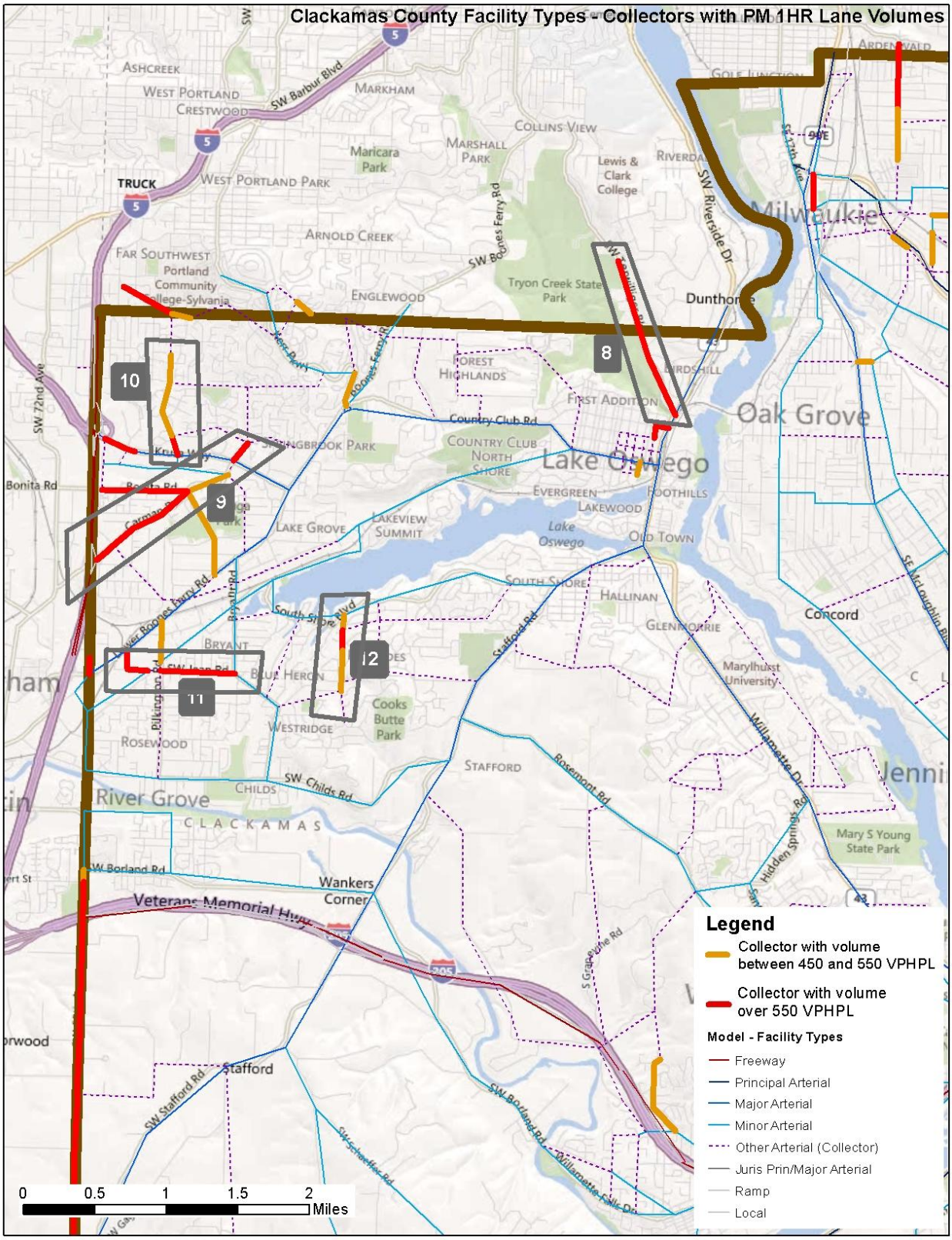
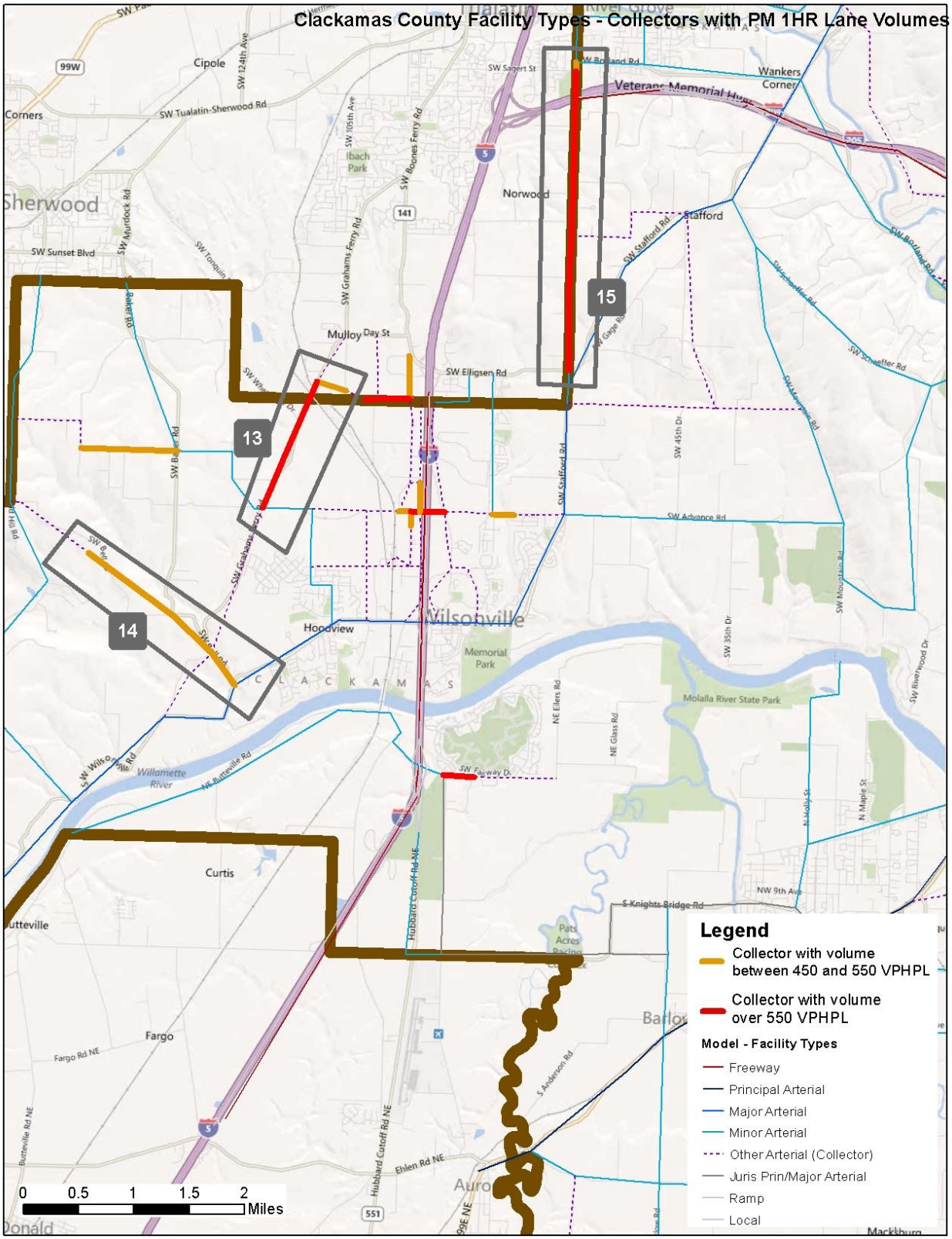


Figure 3 - Collector Roadways Identified for Further Research in the Wilsonville Area



Federal Functional Class Definitions

Principal Arterials

Interstates – I-5 and I-205

- Interstates are the highest classification of Arterials and were designed and constructed with mobility and long-distance travel in mind
- Roadways in this functional classification category are officially designated as Interstates by the Secretary of Transportation, and all routes that comprise the Dwight D. Eisenhower National System of
- Interstate and Defense Highways belong to the Interstate functional classification category and are considered Principal Arterials.

Other Freeways & Expressways OR 224 (Milwaukie Expressway), OR 217, Kruse Way

- Roadways in this functional classification category look very similar to Interstates; their directional travel lanes are separated by some type of physical barrier, and their access and egress points are limited to on- and off-ramp locations or a very limited number of at-grade intersections.
- Like Interstates, these roadways are designed and constructed to maximize their mobility function, and abutting land uses are not directly served by them.

Other Principal Arterials US 26, OR 212, OR 213N (82nd), OR 43, OR 99E, OR 213S

- These roadways serve major centers of metropolitan areas, provide a high degree of mobility and can also provide mobility through rural areas.
- For the most part, roadways that fall into the top three functional classification categories (Interstate, Other Freeways & Expressways and Other Principal Arterials) provide similar service in both urban and rural areas.

Minor Arterials OR 224 (Outside the UBG), OR 211, OR 213s (South of Leland), OR 99E Between Oregon City and Canby and south of Canby, OR 551

- Minor Arterials provide service for trips of moderate length, serve geographic areas that are smaller than their higher Arterial counterparts and offer connectivity to the higher Arterial system.
    - In an urban context, they interconnect and augment the higher Arterial system, provide intra-community continuity and may carry local bus routes.
    - In rural settings, Minor Arterials should be identified and spaced at intervals consistent with population density, so that all developed areas are within a reasonable distance of a higher level Arterial.
- The spacing of Minor Arterial streets may typically vary from 1/8- to 1/2-mile in the central business district (CBD) and 2 to 3 miles in the suburban fringes. Normally, the spacing should not exceed 1 mile in fully developed areas

Major and Minor Collectors OR 224 South of Estacada,

- Collectors serve a critical role in the roadway network by gathering traffic from Local Roads and funneling them to the Arterial network.
- Generally, Major Collector routes are longer in length; have lower connecting driveway densities; have higher speed limits; are spaced at greater intervals; have higher annual average traffic volumes; and may have more travel lanes than their beneficial to reexamine these two fundamental concepts of functional classification.
- Overall, the total mileage of Major Collectors is typically lower than the total mileage of Minor Collectors, while the total Collector mileage is typically one-third of the Local roadway network

Local Roads

- Locally classified roads account for the largest percentage of all roadways in terms of mileage.
- They are not intended for use in long distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land.
- Bus routes generally do not run on Local Roads.

Relationship between Functional Classification and Travel Characteristics

Functional Classification	Distance Served	Access Points	Speed Limit	Distance between Routes	Usage	Significance	Number of Travel Lanes
Arterial	*Longest*	*Few*	*Highest*	*Longest*	*Highest*	*Statewide*	*More*
Collector	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*
Local	*Shortest*	*Many*	*Lowest*	*Shortest*	*Lowest*	*Local*	*Fewer*

Functional Class Comparisons

Urban Functional Class	FHWA for State Highways and Local Roads	ODOT Uses FHWA Class and other classifications	Metro Regional Design Types and Functional Class	County Functional Class
Principal Arterials	**National Highway System**	**National Highway System**		
	Interstate	**Interstate**	Throughway (Freeway) Regional Principal Arterials	Freeway
	Other Freeways & Expressways	**Other Freeways & Expressways**	Throughway (Highway) Regional Principal Arterials	Expressway / State Highway
	Other Principal Arterials	**Other Principal Arterials**		Major Arterial / State Highway
			Throughway (Parkway) Regional Principal Arterials	
Arterials	Minor Arterials	Minor Arterials	Regional Boulevard / Regional Street / Major Arterial	Major Arterial Major Arterial / State Highway
	Minor Arterials	Minor Arterials	Community Boulevard / Community Street / Minor Arterial	Minor Arterials
Collectors	Urban Collector	Urban Collector	Collector	Major Collector
	Urban Collector	Urban Collector	Collector	Minor Collector
Connector	Local	Local	Local	Connector - Urban Center Commercial / MF Industrial
Local	Local	Local	Local	Local

Rural Functional Class	FHWA for State Highways and Local Roads	ODOT Uses FHWA Class and other classifications	Metro Regional Design Types – within Metro Boundary	County
Principal Arterials	**National Highway System**	**National Highway System**		Freeway
	Interstate	**Interstate**		Expressway / State Highway
	Other Principal Arterials	**Other Principal Arterials**		Major Arterial / State Highway
Arterials	Minor Arterials	Minor Arterials	Rural Arterial	Major Arterial Major Arterial / State Highway
	Minor Arterials	Minor Arterials		Minor Arterials
Collectors	Major Collectors	Major Collectors		Major Collectors
	Minor Collectors	Minor Collectors		Minor Collectors
Connector	Local	Local	Local	Connector – Rural Center Rural
Local Road	Local Road	Local Road	Local Road	Local Road

Federal Aid Funding can only be used on Principal Arterials, Minor Arterials, Urban Collectors and Rural Major Collectors

Road Name	Extent	Functional Classification	Proposed Functional Classification	Change
13th Ave	Mulino Rd to OR 99E	Local	Minor Arterial	up-class
162nd Ave	Rock Creek Blvd to OR 212	Local	Collector	up-class
162nd Ave	Sager Rd to Clatsop St	Local	Connector	up-class
162nd Ave	Monner Rd to Hagen Rd	Local	Collector	up-class
172nd Ave/190th Dr Connector	172nd Ave to 190th Dr	-	Major Arterial	new
282nd Ave	OR 212 to Multnomah	Minor Arterial	Major Arterial	up-class
312th Ave	Orient Dr to Compton Rd	Local	Collector	up-class
55th Ave	Schatz Rd to Delker Rd	Local	Collector	up-class
65th Ave	Sagert St to Elligsen Rd	Collector	Minor Arterial	up-class
67th Ave Ext	Maplehurst Rd to Furnberg St	-	Connector	remove
79th Ave (West Connector)	Luther Rd to King Rd	-	Collector	remove
79th Ave (West Connector)	South of Luther Rd	Collector	Local	down-class
79th Ave (West Connector)	North of JCB	Collector	Local	down-class
97th Ave / Summers Ln	Talbert St to 122nd Ave	Collector	Minor Arterial	up-class
98th Ct	Lawnfield Rd to Mather Rd	Collector	Connector	down-class
Armstron Cir	172nd Ave to end	Minor Arterial	Collector	down-class
Arndt Rd	Barlow Rd to Knights Bridge Rd	Minor Arterial	Major Arterial	up-class
Arndt Rd	Barlow Rd to OR 99E	-	Major Arterial	new
Atwater Rd	Andrews Rd to Bocaratan Dr	Collector	Connector	down-class
Barlow Rd	Kinghts Bridge Rd to Arndt Rd	Minor Arterial	Collector	down-class
Barlow Rd	OR 211 to Arndt Rd	Minor Arterial	Major Arterial	up-class
Beavercreek Rd	OR 213 to OR 211	Minor Arterial	Major Arterial	up-class
Bergis/Skyland	Bergis Rd to Crestline Dr	Collector	Connector	down-class
Beutel Rd	Near South End Rd	Local	Collector	up-class
Beutel Rd	Near South End Rd	Local	Minor Arterial	up-class
Birch St	22nd Ave to Territorial Rd	Local	Connector	up-class
Blair Rd	Groshong Rd to Maple Grove Rd	Minor Arterial	Collector	down-class
Boones Ferry Rd	Butteville to Marion Co boundary	Minor Arterial	Collector	down-class
Boyer Dr	82nd Ave to Fuller Rd	-	Collector	new
Bradley Rd	Gronlund Rd to Redland Rd	Collector	Minor Arterial	up-class
Bryant Rd	Old Gate Rd to Casey Ct	Minor Arterial	Collector	down-class
Butteville Rd	Boones Ferry Rd to Marion County	Minor Arterial	Collector	down-class
Carman Dr	I-5 to Parkview Dr	Collector	Minor Arterial	remove
Carpenter Dr	120th Ave to Capps Rd	Connector	Local	down-class
Cheldelin Rd	170th Ave to 190th Dr	Local	Major Arterial	up-class
Childs Rd	65th Ave to Sycamore Ave	Minor Arterial	Collector	down-class
Cornell St	Cornell Ct to Bergis Rd	Collector	Connector	down-class
Crestline Dr	Skyland Rd to Green Bluff	Collector	Connector	down-class
Dart Rd	Wilhoit Rd to OR 213	Local	Collector	up-class
Deer Creek	82nd Ave to Johnson Rd	Local	Minor Arterial	up-class
Delker Rd	65th Ave to 55th Ave	Local	Collector	up-class
Donovan Rd	Near Holly Ln	Local	Collector	up-class
Drake Rd	OR 213 to Marion Co	Local	Collector	up-class
Dryland Rd	Toliver Rd to Barnards Rd	Collector	Minor Arterial	up-class
Eaden Rd	Bakers Ferry Rd to Springwater	Connector	Local	down-class

Road Name	Extent	Functional Classification	Proposed Functional Classification	Change
Farmstead Rd	River Mill Rd to Estacada	Local	Collector	up-class
Ferguson Rd	Henrici Rd to Beavercreek Rd	Local	Collector	up-class
Gibson Rd	Dryland Rd to Barlow Rd	Collector	Local	down-class
Goodal Rd	Country Club Rd to Co line	Collector	Connector	down-class
Grahams Ferry Rd	Westfall Rd to Co line	Collector	Minor Arterial	up-class
Grapevine Rd	Woodbine Rd to Sweetbriar Rd	Collector	Connector	down-class
Grays Hill Rd / Hunter Rd	Green Mountain Rd to end of road	Connector	Collector	up-class
Groshong Rd	Blair Rd to Maple Grove Rd	Minor Arterial	Collector	down-class
Haines Rd	Mulino Rd to OR 99E	Local	Collector	up-class
Harding Rd	Bakers Ferry Rd to Fischers Mill Rd	Collector	Minor Arterial	up-class
Hebb Park Rd	Riverwood Dr to Hebb Park	Local	Connector	up-class
Hemrich Rd	172nd Ave to Foster Rd	Local	Collector	up-class
Hillockburn Rd	OR 211 to end of road	Connector	Collector	up-class
Holcomb Blvd	Swan Ave to Bradley Rd	Collector	Minor Arterial	up-class
Howards Mill Rd	Buckner Creek Rd to Ringo Rd	Local	Collector	up-class
Hudson Rd	Lusted Rd to Bluff Rd	Local	Collector	up-class
Hult Rd	Hult Rd slide area	-	Collector	up-class
Idleman Rd	92nd Ave to Nicole Lp	Collector	Minor Arterial	up-class
Johnson Creek Blvd	Linwood Ave to I-205	Minor Arterial	Major Arterial	up-class
Judd Rd	OR 211 to Amisigger Rd	Local	Collector	up-class
Knaus Rd	Leslie Ln to Cameo Ct	Collector	Connector	down-class
Knaus Rd	Goodal Rd to Forest Meadows Way	Collector	Connector	down-class
Lake Forest Blvd	Carman Dr to Washington Ct	Collector	Connector	down-class
Lawnfield Rd	97th Ave to 98th Ct	Minor Arterial	Local	down-class
Lawnfield Rd	Industrial Way to Lawnfield Rd	-	Collector	new
Lawnfield/97th	Industrial Way to Sunnybrook	Minor Arterial	Collector	down-class
Leabo Rd	Wilhoit Rd to Sawtell Rd	Minor Arterial	Connector	down-class
Livesay Rd	Near Redland Rd	Local	Collector	up-class
Loder Rd	Near Beavercreek Rd	Local	Collector	up-class
Lowe Rd	Molalla Forest Rd to Molalla	Local	Connector	up-class
Lower Highland Rd	Ridge Rd to Upper Highland Rd	Minor Arterial	Collector	down-class
Maple Grove Rd	Nowlens Bridge Rd to Sawtell Rd	Minor Arterial	Collector	down-class
Maple St	Maple Ct to 14th Ave	Local	Connector	up-class
Marmot Rd	Barlow Trail Rd to Ten Eyck Rd	Minor Arterial	Collector	down-class
Mather Rd	122th Ave to 132nd Ave	-	Collector	new
Mather Rd	98th Ct east	Collector	Connector	down-class
Mather Rd	98th Ct west	Collector	Local	down-class
Michael Dr Ext	McEachron Ave to 64th Ave	-	Local	remove
Monner Rd	147th Ave to 162nd Ave	Local	Collector	up-class
Monroe St	Fuller Rd to 72nd Ave	Local	Collector	up-class
Monterey	Stevens to Schumacher	Private	Collector	up-class
Monterey Ave extension	Fuller Rd to OR 213	-	Minor Arterial	new
Naef Rd	River Rd to Harold Ave	Connector	Collector	up-class
Otty realignment	82nd Ave	Connector	Connector	none
Pine St	Territorial Rd to 4th Ave	Local	Collector	up-class

Road Name	Extent	Functional Classification	Proposed Functional Classification	Change
Redwood St	13th Ave to Township Rd	Local	Collector	up-class
Redwood St	Territorial Rd to 12th Ave	Local	Collector	up-class
Regan Hill Rd	Near Darrow Rd	Local	Collector	up-class
Ridder Rd	Garden Acres Rd to 95th Ave	Local	Collector	up-class
Sager Rd	162nd Ave to 172nd Ave	Local	Connector	up-class
Sawtell Rd	Maple Grove Rd to end of road	Connector	Collector	up-class
Schnieder Rd	Barlow Rd to Dryland Rd	Local	Connector	up-class
Sconce Rd	Meridian Rd to OR 170	Local	Collector	up-class
Sleepy Hollow Dr	Barlow Trail Rd to US 26	Collector	Minor Arterial	up-class
Sunnybrook Ext	Harmony Rd to OR 213	-	Minor Arterial	remove
Sunrise JTA Mainline	OR 213 to 122nd Ave	-	Principal Arterial	new
Sunrise Jughandle	Sunrise/OR 224	-	Principal Arterial	new
Sunrise Mainline	122nd to 172nd	-	Principal Arterial	new
Sweetbriar Rd	Wilda Rd to Grapevine Rd	Collector	Connector	down-class
Territorial Rd	OR 99E to Haines Rd	Local	Minor Arterial	up-class
Thomas Rd	Wilhoit Rd to OR 213	Minor Arterial	Collector	down-class
Tillstrom Rd realignment	Tillstrom Rd to Foster Rd	Minor Arterial	Minor Arterial	none
Tolbert	Industrial Way to 82nd Dr	-	Collector	new
Toliver Rd	Dryland Rd to Molalla	Collector	Minor Arterial	up-class
Union Mills Rd	OR 213 to OR 211	Minor Arterial	Major Arterial	up-class
Vineyard Rd	River Rd to Harold Ave	Local	Connector	up-class
Welches Rd	US 26 to Birdie Ln	Collector	Minor Arterial	up-class
Whiskey Hill	Meridian Rd to County Line	Local	Minor Arterial	up-class
Wilda Rd	Sweetbriar Rd to Rosemont Rd	Collector	Connector	down-class
Wildcat Rd	Nowlens Bridge Rd to Wilhoit Rd	Minor Arterial	Collector	down-class
Wisteria Rd	Woodbine Rd to Rosemont Rd	Collector	Connector	down-class
Woodbine Rd	Grapevine Rd to Wisteria Rd	Collector	Connector	down-class

DRAFT

See Insert

Inset

2013 Transportation System Plan Update:
DRAFT Functional Classification Proposal

Current Functional Class

- Freeway
- Expressway
- Principal Arterial
- Major Arterial
- Minor Arterial
- Collector
- Connector
- Local
- Private w/ Address
- Alley
- Private w/out Address
- Driveway, School Roads
- Railroad
- Unnamed park roads, school roads
- Trails, ferry crossings
- Forest Service Paved
- Forest Service Aggregate Road
- General dirt, unknown road or trail
- Freeway Ramp

Proposed Functional Class

- Principal Arterial
- Major Arterial
- Minor Arterial
- Collector
- Connector
- Local
- Remove
- Sunrise Project FEIS Preferred Alternative
- City Boundaries
- County Boundary
- Water

0 1.25 2.5 5 Miles

August 11, 2013